

determinations of blood and local variations of vascular action. Dr. Neligan has expressed his opinion that this colouring matter is derivable from hematin; Professor Laycock is in favour of its carbonaceous origin. In conclusion, I am anxious to direct attention to the connexion between many anomalous appearances of colour in various secretions and the formation of indigo compounds; from the facts that the coloured exudation on the skin has been in several cases blue all the time it continued, in others blue at first and becoming black, perhaps only from intensification of the original colour, that we are not acquainted with any blue form of carbon, and that there is a colourless substance normally present in the urine, from which indigo blue is produced by mere exposure to the air.

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ART. VIII.—*Clinical Reports of Rare Cases, occurring in the Whitworth and Hardwicke Hospitals.* By SAMUEL GORDON, M.B., F.K. & Q.C.P.; Physician to the Hospitals, and Lecturer on the Practice of Medicine in the Carmichael School of Medicine.

(Continued from Vol. xxxiii., page 356.)

*Most Extensive Pleuritic Effusion Rapidly Becoming Purulent; Paracentesis; Introduction of a Drainage Tube; Recovery; Examination of Interior of Pleura by the Endoscope.*—I do not propose entering upon the history or details of the operation of *paracentesis thoracis* and the introduction of drainage tubes, but simply to record another case of recovery by this mode of treatment, and which has taken place under very adverse circumstances. I am induced to do so because I believe that this mode of treatment, originated by Dr. Goodfellow, of the Middlesex Hospital, has not met with sufficient favour on this side of the Channel.

In this city Professor Banks, Dr. Kidd, and myself have from time to time laid before the profession cases in which it has proved successful, and what is of more importance, cases whose recovery we would have despaired of if they had not been so treated.

It is not long since I had under my care a boy, about fourteen years of age, son of a physician of considerable repute in his own district. This boy upon recovering from a very severe attack of malignant scarlatina, was seized with acute pleuritic inflammation of the left side, with effusion of purulent matter to a large amount;

the case presented all the usual phenomena of a large empyema of necessity, and pointed between the third and fourth costal cartilages, and very close to the sternum. The external abscess was opened, and over a pint of purulent matter escaped; from day to day a large quantity was still drawn off by changing the patient's posture, making him cough, &c., &c.; but it was distressing to find how these same exertions, so exhausting to the patient's strength, had to be continually employed to check the accumulation of the fluid. Under these circumstances, I proposed to his father to introduce the drainage tube, in the way proposed in these papers to which I have alluded to; but he did not consider that that operation had been shown to be so advantageous as to warrant his submitting his child to a second incision into the pleura, an operation which he looked upon as in many ways most hazardous.

The boy gradually sunk from an exhausting purulent secretion, which was retained within the system. In my opinion, had the operation been performed he would, in all human probability, have made a good recovery.

I look back on this case with regret, and I have to look back with a similar feeling on some others, which I can but too well remember, and which had a similar termination, but which I believe would have had a far different ending had this means of relief been at that time known to us. Impressed with this feeling, I wish to record the following case, which I think testifies in a remarkable manner to the value of this mode of treatment.

Anastatia Baily, a very delicate-looking little girl, eleven years of age, was admitted into the Whitworth Hospital on the 27th of April last, under circumstances of urgent respiratory distress.

The *history* which her mother, who carried her into hospital, gave of her illness was, that she was always a healthy child until about two months ago, when, for the first time, she began to complain, principally of a more or less constant pain of the left side and a slight catching cough. The cough had of late become much more severe; but the urgent symptoms under which she now laboured did not attack her until about a week ago, when the pain and stitch in her side became much augmented, and when she became attacked with gradually increasing oppression of her breathing. She has had no definite rigor, though she has often complained of chills. She had been in bed for ten days previous to admission. No history of family scrofulous taint could be made out.

After admission, when examined as she lay in bed, it was observed that the decubitus was diagonal, midway between dorsal and that on the left side; the respiration was obviously much laboured and hurried—68 per minute; pulse 140, and very weak; she made much complaint of pain, tenderness, and stitch in the lower part of the left side; cried out much on being moved or asked to move, and became much more oppressed when raised into the sitting posture or made to lie on the right side.

The *physical signs* were those of left pleural effusion in a very exaggerated degree. The displacement of the heart immediately attracted attention; its apex plainly pulsated an inch to the *right* of the margin of the sternum, and half an inch *higher* than the nipple. On percussion the whole left side of the chest was absolutely dull from top to base; the dulness, moreover, encroaching on the other side beyond the right margin of the sternum, and the spines of the vertebræ being quite dull behind. The left side looked much dilated, and measurement at the level of the nipples showed it to exceed the circumference of the right by three-quarters of an inch; it presented both to the eye and hand a perfectly smooth surface, and the natural depression of the supra-clavicular fossa was quite filled up.

To the dull region corresponded absence of all respiratory or vocal sound, except over the upper part of the sternum, and in the left infra-scapular region, in which parts bronchial breathing existed. The breathing over the right lung was intensely puerile. Some enlarged superficial veins were observed traversing the front of the left side.

The remedial means adopted, which consisted in the application of two leeches to the side, and covering it with a light warm poultice, and the exhibition of small doses of mercury and opium internally frequently repeated, failed completely in promoting the absorption of the effused fluid; on the contrary, it appeared to have increased, and on the following morning the dyspnea had become much more urgent and decided evidences of insufficient aëration of the blood existed. The face and surface generally were somewhat livid; her strength was evidently sinking, and she complained more than ever of her side. Pulse 144; respiration 66.

The operation of thoracic paracentesis was performed on the 29th of April. The puncture being made between the third and fourth ribs, at a point near the sternum, where the integument was thinned, and where there was a decided impulse on coughing. Exactly a

quart of clear greenish-yellow serum was drawn off. I used Bowditch's syringe on this occasion; but despite all precaution, a considerable quantity of air entered the pleural cavity. During and after the operation the lung appeared to make a slight effort to expand; feeble respiratory murmur became audible behind and above, but not in front. The heart decidedly moved much towards the left, and immediately after the operation had nearly gained the region of the ensiform cartilage. The wound was immediately closed with adhesive plaster.

*Two hours after the operation.*—The patient had slept quietly since the operation, and her respiration had become greatly relieved. Pulse 128; respiration, 44. No examination of the chest made.

*In the evening* the pulse had risen to 136 and the respiration to 52. A tympanitic condition of the upper part of the left side showed that a corresponding portion of the pleura was occupied by air. The heart had returned to the position it occupied before the operation.

April 30.—Has been very restless and did not sleep last night. Pulse, 140; respiration, 68.

May 2.—Her weakness is extreme, and her dyspnea most urgent; her *alæ nasi* widely dilated, and her pulse scarcely perceptible. Symptoms of accumulation have gradually progressed, and to-day the symptoms of pulmonary oppression were as marked as on her admission. Her lips were blue; her pupils dilated; the heart was even more displaced than at first, being now close under the right clavicle. Pulse, 144; respiration, 72.

The chest was again tapped in the same situation; but when I found that purulent matter was escaping through the canula, I withdrew it, and closed the wound, and looked for the most depending spot in which I could safely open the pleura—the heart being under the right clavicle and the diaphragm convex downwards, I had not much difficulty in finding and opening the intercostal space. Twenty-eight ounces of purulent matter were drawn off; a *drainage tube* was then introduced through the canula, and left in the chest; the canula being withdrawn.

By this second operation she was much relieved, though not to the same amount as on the first occasion. She appeared to have less vigour of reaction than before; and she was obliged to be supported by large quantities of wine.

*Three hours after the operation.*—She slept after a small opiate.

Pulse, 140; respiration, 56. There is but a very trifling discharge through the tube. The air freely plays in and out of the pleura through the orifice during each act of respiration. The heart has not in the least returned from its abnormal situation.

May 4.—Pulse, 126; respiration, 52. Discharge from the tube very trifling. She is so weak as to require a large glass of wine every hour.

10th.—Since last report the purulent discharge has greatly increased. The patient has much deteriorated in aspect; she is now very delicate and *hectic*-looking, and seems to have wasted considerably. She sleeps constantly. She is taking bark, and chlorate of potass, and large quantities of wine. The measurement of the two sides makes them about equal

17th.—Still looking extremely delicate and hectic. Copious and very fetid discharge flows constantly through the tube; a large quantity (about five ounces) came away to-day upon the removal of the old and introduction of a new tube. The pulse has remained high, varying from 120 to 132. For the last few days she has been ordered cod-liver oil, but she obstinately refuses to drink it, because it invariably makes her sick, even in very small doses, and at very long intervals. I therefore substituted for it fresh mutton suet, dissolved in boiling milk, as much as could be taken up, and of this she drank freely day and night, taking at least two quarts of the milk so saturated in the twenty-four hours. She had some tendency to diarrhœa, which was generally checked by small doses of the pernitrate of iron; she still required eight ounces of port wine daily, and occasionally some syrup of bark. This treatment was continued for two months, and on the 21st of July, on my return after some weeks' absence, I was agreeably surprised to find her wonderfully improved in every respect. She was able to be up every day. She had become quite bright and healthy looking. The left side had become wonderfully contracted; the shoulder depressed—a marked depression corresponding to the left infra-clavicular region. The diaphragm had now returned to its normal position. The right side, on the contrary, had become much expanded, and moved exaggeratedly during respiration.

A remarkable system of large subcutaneous blue veins had become developed over the front of the chest, more especially on the left side. The heart was still under the right clavicle; a small quantity of pus escaped daily through the tube.

During the next two months there were occasional relapses

of diarrhea and of mild attacks of bronchitis of the right lung, but she was seldom confined to bed for two consecutive days, and her general health progressed favourably. The left side of the chest was gradually contracting and the right enlarging. On the 1st of October there was a difference of two inches by measurement at the level of the nipple, and the antero-posterior diameter showed a difference of two and a quarter inches. There still existed a most remarkable net-work of large superficial veins over the upper part of the sternum and left side of the thorax; at this time the contraction of the left side of the chest appears to have been at its maximum, and the child's general health being greatly improved, the hitherto contracting side from this time began to enlarge.

From this time her progress has been almost uninterrupted. On the 15th December, the smallest sized tube was introduced, and was finally withdrawn on the 13th of January. The fistulous orifice remains, and occasionally a drop of thin pus exudes from it. The sternum is bent obliquely downwards, and to the right side, the manubrium being drawn over to the left side. The infra-clavicular space is still much depressed; but, excepting this portion, the left side has fully expanded, and the intercostal spaces have again assumed their normal width. The varicose veins have almost disappeared from the front of the chest, and the heart has moved downwards, and towards the left side, being under the sternum, but not having yet passed its left border.

This case was evidently from the beginning one of very acute inflammation of the pleura, and urgently requiring thoracentesis. The fluid evacuated being serum, the wound was, of course, in the first instance, carefully closed. The extreme rapidity with which the change from serous to purulent fluid occurred is worthy of observation; it prevented one entertaining any well-grounded hope that there would not be a further re-accumulation; the opening was, therefore, in a most unfavourable situation for the constant evacuation of accumulating fluid; and I considered that there were only two plans which could be followed—either to complete the evacuation as far as possible through the opening now made, and subsequently to introduce a drainage tube, with a counter opening lower down, according to Dr. Goodfellow's plan—or, as I did, to close the original opening, and at once introduce a tube at the very lowest part of the pleura. By the latter proceeding I avoided having two pleural fistulæ where one would suffice, and at the same time effectually prevented any accumulation of pus in the

pleura. To this curative means, which the drainage tube so effectually accomplished, this patient's recovery, in my opinion, is principally owing. The case proves, also, that one insertion of a tube is sufficient, provided it be sufficiently depending, and that, therefore, Dr. Goodfellow's plan may be so far modified that, when it becomes necessary to make a second opening lower down, the upper orifice may be allowed to heal.

I never experienced any difficulty in keeping the tube in the chest, or in re-introducing it when I deemed it necessary to change it. Although these are the two principal facts to be learned from this case—1st, the advisability of treating empyema by means of drainage tubing; and, secondly, that the insertion of the tube through one depending opening is sufficient under ordinary circumstances. There are other circumstances in this case deserving of some attention.

I have seldom seen a case in which the administration of cod-liver oil seemed more clearly indicated; but, besides that the patient seemed to have a natural repugnance to it, the stomach always rejected it, even in the smallest quantity, we were, therefore, reluctantly obliged to abandon it, but fortunately were able to find an admirable substitute for it in the mutton suet, and I can confidently recommend its use in similar cases.

The enlarged and varicose condition of the veins in parts of the chest was for a long time very remarkable. I have seldom seen them more enlarged in cases of aneurism or extensive malignant disease. I considered that they were caused by the lymph which had been effused undergoing the usual process of contraction, and that this had extended to the subserous structures, and so involved the internal mammary veins and others, passing up to the left innominate, and probably a portion of this trunk itself; afterwards, when the side began to expand and the ribs again to separate, this superficial venous distention gradually diminished, and has now almost entirely disappeared.

This gradual enlargement of the diseased and contracted side is perhaps one of the most remarkable and important features in the case, and should never be lost sight of in the prognosis of empyema. We have proof here, how even when the side is reduced almost to a minimum, the process of expansion may again take place, and the lung be restored to a useful and comparatively healthy condition.

The permanent dislocation of the heart is another feature of interest. It is now pushed slightly downwards and inwards from

the place which it occupied beneath the right clavicle; owing, I believe, to a mechanical pressure on it from the enlarging right lung; but I think it probable that on account of the amount of adhesion which has probably taken place in the pleura, immediately adjoining the mediastinum, that the heart will never resume its normal position in this patient.

Another very interesting point in this case is, that although there is no sign of phthisical development, yet the hand is as good an example of what is termed the clubbed fingers as can often be seen. I believe myself that this condition is as often, if not more often, associated with chronic pleurisy than with chronic phthisis.

This case is also very remarkable as being the first in which an examination of the interior of the chest has been made by the endoscope. The facts which we satisfied ourselves of were that the lung was not compressed towards the spine, nor much reduced in size; that is that there was no large vacant pleural cavity, and that whenever we saw the pleura it presented more or less a granular surface, and no appearance of lymph.

To ascertain the condition of a lung in a case where a pleural fistula exists can never be a very easy matter, an endoscopic examination may in such cases, therefore, be most valuable—that it is perfectly practicable this case proves.

I am indebted to Dr. Cruise for making the examination. It was the first occasion upon which he had used the binocular adjustment, which renders the instrument so much more perfect.

*CASE II.—Case of Reno-Pulmonary Fistula—Ulceration of the Duodenum.*—Mary Healy, aged twenty-four was admitted into the Whitworth Hospital on the 18th of January, 1865, labouring under well-marked symptoms of hectic fever. She had profuse night perspirations, profuse purulent expectoration, and diarrhea, and during her stay in hospital she daily passed large quantities of purulent urine.

The history which she gave of her illness was, that she had been for a long time subject to what she termed “gravel;” for these symptoms of urinary distress she had never received any beneficial treatment, and they were of about twelve months’ duration; that during all this time her health was gradually declining, her appetite failing, and emaciation rapidly progressing. Within the last three months she has suffered from severe cough, which has distressed her more than all her other ailments; it is so incessant, and adds so

much to the urinary distress, as to cause almost constant stillicidium.

She was excessively pale, anemic, and slightly anasarcaous universally; her voice was excessively feeble. She had no vomiting, but a dislike to all kinds of food; and she was altogether very like a person in the last stage of pulmonary consumption; but on examining her chest there was no evidence of extensive disease in the upper part of either lung; in fact there was no sign of organic disease in any part of the left lung, but in the inferior portion of the right lung there existed the usual evidences of a pulmonic abscess; and from the extent of the dulness, and the intensity of the gargouillement and pectoriloquy, it was inferred that either the abscess was very extensive, or that it was surrounded by a large portion of solid lung. During her stay in hospital there was no important change in her symptoms. From the time of her admission she complained greatly of pain in her right side, and over all the right hypochondriac and lumbar regions there was great diffused swelling, and tenderness on pressure; it also gave her much pain to move, and her constant position was on her back, inclined to her right side. She was kept alive by wine whey, and other light nutriment, and the severity of the cough was somewhat abated, when, on the 8th of February, there was observed a decidedly gangrenous fetor from her breath and from the expectoration. Although this peculiar symptom is by no means diagnostic of gangrene of the lung in ordinary cases, still, when it supervenes in cases where the existence of a pulmonary abscess has been previously recognized, we need not hesitate to assert that the walls of the abscess have taken on a gangrenous action. In the present case there could not have been any hesitation in the diagnosis; for, in addition to the peculiar fetor, there was a sudden sinking and collapse of her already emaciated frame, and from this she never rallied. She continued to sink, and died on the 12th of February.

*Autopsy (nine hours after death).*—On removing the lungs from the chest, some old adhesions on both sides had to be overcome. Those on the left side were few, and easily broken down. On the right side they were in parts very firm, especially those which bound the apex of the lung to the cone of the pleura; the postero-inferior portion of the lung was bound to the thoracic parietes and to the diaphragm by a thick false membrane at least one-fourth of an inch in thickness. When this was stripped off from the lung, it was found to have bounded, inferiorly, a superficial cavity in the lung,

of very irregular shape, and containing probably about four ounces of offensive greyish fluid, and having the usual aspect of chronic pulmonary excavations, crossed by the ligamentous remains of blood vessels, and with several tolerably-sized bronchi gaping into it; its surface was very uneven. The portions of lung tissue bounding this cavity superiorly and laterally were, for a considerable space around it, solidified, and sank in water; there was no trace of disease, tubercular or otherwise, in any part of the remainder of that or of the opposite lung.

The heart appeared to be of normal size, and of perfectly healthy structure.

*Abdomen.*—The liver was of healthy appearance, but was found to have contracted adhesions to the surrounding parts, as follows :—A small oval ulcer in the commencement of the duodenum had perforated through all the coats of that viscus, and ulcerated its way for a certain distance into the substance of the liver, at the lower edge of the quadrate lobe, forming a small oval depression in that part; the adhesion of the liver to the duodenum in this part was very slight, giving way without the least resistance. The adhesion of the upper edge to the diaphragm was very intimate; on endeavouring to separate the inferior surface of the right lobe from the parts beneath, the sac of an abscess was opened into, which further dissection showed to be one in connexion with, but external to, the right kidney; the cyst of this abscess was, to some extent, formed by a thickened layer of the capsule of the kidney; its boundaries and extent were as follows :—It commenced in the right renal region, and completely enveloped the kidney; it was here bounded on all sides by the distended capsule; it passed directly upwards behind the right lobe of the liver, which formed its anterior boundary, and was itself tilted forwards; the posterior and external boundary was now formed by the diaphragm, pushed upwards to an extraordinary degree; and the cone of the abscess was formed by a remarkably thick deposit of lymph, but which corresponded accurately to a spot on the inferior surface of the diaphragm, which was remarkably thin and depressed, and this depression again corresponded to, and by its superior surface formed the centre of the base of the pulmonary abscess; at this spot the diaphragm was on the point of giving way, but as yet there was no complete solution of continuity.

The intestines were removed with the stomach. The latter organ was of enormous dimensions, but otherwise presented nothing

abnormal. Two ulcers existed in the duodenum, immediately beyond the pylorus. On its anterior aspect was the one already noticed as having penetrated the quadrate lobe of the liver; it was somewhat larger than a shilling. The other, of about the same size, was at exactly the same level, and towards the inner and posterior part of the intestine. It was of exactly the same character, and had perforated the intestine, and penetrated the substance of the head of the pancreas, to which the duodenum was intimately adherent. The edges of both these ulcers were raised and thickened, and hard, almost cartilaginous in feel; they were both plugged with coagulated blood. No other abnormal appearance could be detected in the intestines.

The right kidney appeared to be of enormous size. Its inferior edge extended to a distance of an inch and a half below the crest of the ilium. The abscess connected with its capsule has been already described; it was capable of containing, probably, about twelve ounces of fluid. After this abscess was completely emptied, the kidney remained of immense size, and presented to the touch a distinct feeling of fluctuation; and when the ureter was cut across, a quantity of purulent matter flowed out of it. The kidney was removed, and an incision made into it along its convex border, from which a quantity of pus escaped, and along with the pus a small loose calculus, of peculiar shape. It was round, with a great number of spiculæ projecting from it. Its general surface was of a dirty whitish colour, but the points of the spiculæ were of a dark brown, *i.e.*, the whitish investment was deficient there. Another calculus was felt, imbedded deep down in the pelvis of the kidney, and had to be dissected out, as it was very tightly impacted; it was of large size. Its general shape looked as if it had been moulded to one of the renal infundibula; its surface generally was of a dark brown colour, rough, and with small tubercles over it; in one or two places, where it was broken, it was white.

The structure of the kidney had undergone important and extensive changes. Hardly any trace of its glandular structure existed, and indeed it seemed to exist merely as a thick sort of capsule, enclosing the pus which was contained in its enormously enlarged pelvis. Its appearance when cut into was peculiar; the lining membrane was white, smooth, and thickened; and it presented numerous complicated inequalities, depressions, and elevations.

The left kidney was of large size, but of healthy appearance on section.

The urine in the bladder contained pus in copious quantity.

It is not difficult in this case to trace the progress of the disease. The formation of the renal calculus, and obstruction thereby to the discharge of the urine, was evidently the first step in this vast amount of suppuration. By degrees the entire renal structure was destroyed, partly by the pressure of the distended calyces and pelvis, and partly from disease of the secreting portions. The decomposed urine and the irritation of the calculi induced a process of suppuration, which eventually took the place of the renal structure, and distended the investing wall of the kidney to an enormous extent. How it could have borne such a degree of distention without rupture seems marvellous; it appears to have relieved itself in two ways—first, by the suppuration having ulcerated a passage around the large calculus into the ureter; and, secondly, by the process of endosmosis, by which the renal capsule was to such a degree detached, and so large a secondary abscess was formed, filling the entire right side of the abdomen. We have next to observe the efforts made for the discharge of this vast purulent collection. It appears to me that abscesses connected with the kidney attain a larger size than any other internal purulent collection, excepting perhaps empyema. The quantity of matter in the present case exceeded four pints; and we read, in Monneret and Fleury's admirable compendium, of abscesses of this kind enclosing fourteen pints of pus: they quote also Ballotta's almost incredible case, in which the left kidney presented a circumference of four feet; and the contents of the abscess in and around it—pus, blood, and calculi—measured sixty-eight pints.

We find in this case very clearly established the mode in which a reno-bronchial fistula takes place. It is more than probable that in all such cases the perforation of the diaphragm is the last thing to occur: the details of these cases (there are several recorded) give the history, first of the renal abscess, then of pulmonary disease; and, after that, the sudden expectoration of purulent matter, with a marked diminution of the quantity passed *per urethram*.

It is very remarkable in the present instance that the disease has occurred on the right side. Cruveilhier thinks its occurrence on this side impossible, on account of the presence of the liver; certainly Rayer's case is by no means satisfactory; but Sposer records\* a case which puts the possibility of its occurrence beyond doubt; and the

\* *Vide* Journ. des Conn. Med. Chir., 1840, p. 122.

present case both proves its possibility, and shows the mode of its occurrence.

The ulceration found in the duodenum at once pronounces the disease there to have been of a chronic character. It was not marked by any symptoms during life except the whiteness of the alvine discharges, and the existence of fatty matters in the stools; these were at the time, however, referred to the hepatic disease.

There are two ways of viewing this ulceration—first, from its contiguity to the large abscess, it might be considered that the pus which had already gained an entrance into the liver was endeavouring to effect a passage also into the intestine. Rayer describes and depicts a very remarkable case of *reno-duodenal fistula*; and, if there were but the one duodenal ulcer, that connected with the liver, this would probably be the more acceptable explanation; but the direct connexion of the second ulcer with the pancreas would require, at all events, some additional interpretation; we must therefore consider the duodenal ulceration as being altogether a distinct disease, and perhaps even the primary affection; and that the non-assimilation of food caused thereby was the cause more or less directly of the formation of the renal calculi, which eventually caused the death of this patient.

The calculi consist principally of lithic acid, with oxalate of lime.—(Museum, Carmichael School).

*CASE III.—Case of Hypertrophy of the Heart from Renal Disease—Mitral Regurgitation independent of Mitral Valve Disease.—*A man about forty years of age was admitted into No. 5 ward, Whitworth Hospital, in February last, suffering from symptoms of renal dropsy; there was also observed at this time a *bruit de soufflet* at the apex of the heart, synchronous with the first sound; and inasmuch as he also suffered from some pulmonary congestion, he was supposed to have disease of the mitral opening. In this diagnosis we were confirmed by the apparently increased impulse of the right ventricle, and the abnormal clearness of its sound. He had a considerable amount of anasarca, and the symptoms of pulmonary distress were also severe; but from both he obtained gradual and decided relief; and after some time he, at his own request, quitted the hospital. He remained out for some time, but returned, labouring under pericardial effusion to an enormous amount, and having also an effusion of fluid into the left pleura. The pericardial effusion was diagnosed principally by the fact, that during his long

previous stay in hospital the sounds of the heart and the impulse were always peculiarly loud and strong, but now there was no impulse whatever, even from a heart which, as shown by the *post mortem* examination, was very greatly hypertrophied. From this pericardial effusion, however, the patient recovered to a very great extent; so much so, that on the *autopsy* there was only a very small quantity of fluid found in the cavity of the pericardium. Before his death the impulse of the heart, and the sounds which had been inaudible, had returned. He died with a very great effusion into the left pleura; the left lung exhibited the carnified condition of a lung long subjected to pressure, with one or two spots of old pulmonary apoplexy, from which he had before suffered, but which were now forcibly compressed. A quantity of soft lymph was deposited over various parts of the heart's surface; but during life the fluid effusion was never absorbed to such an amount as to allow of pericardial frottement being audible. The heart and other viscera were submitted to the Pathological Society on the 8th of April last.

The principal point of interest in the morbid anatomy of this case is the condition of the left ventricle of the heart. The diagnosis during life was, that it was a case of permanent patency of the left auriculo-ventricular opening; it was not considered to be a case of much narrowing of the opening, because the pulse was never intermitting nor remitting, and was always perceptible at the wrist; there was a loud *bruit de soufflet* at the apex of the heart, not audible at the base, at least not more so than could fairly be attributed to the sound which originated at the mitral opening; this opening, it was evident from the *post mortem* examination, was not in its perfectly normal condition; the valve was very slightly thickened, but there was no puckering nor contraction of its substance; still the edges did not meet, and there had evidently been a regurgitation of blood into the left auricle. The condition of the heart, as shown by the autopsy, was not what we would expect to find if the diagnosis were correct, that the primary disease was insufficiency of the mitral valve; it was rather the condition which we usually find connected with long-continued patency of the aortic opening. It was, in fact, a well-marked example of hypertrophy, chiefly of the left ventricle of the heart. The weight of the heart was increased to thirteen ounces; the left ventricle was elongated, and its walls were nearly an inch and a-half in thickness. At first I was inclined to think that there must have been some

regurgitation from the aorta into the ventricle, but which, from some peculiar cause, was not evidenced during life. Before slitting down the aorta, we put it under a pipe to test the valves, and found the water was perfectly retained; there was, therefore, no insufficiency of the aortic valves; and, on looking at the ventricular surface, we found that the valves met accurately; there was no thickening of them, and the aorta also was sound. We must, therefore, look elsewhere to account for the greatly hypertrophied condition of the left ventricle; it certainly was not produced by aortic disease, nor is it the condition of ventricle which arises from permanent patency of the mitral opening. We are, therefore, driven to find the cause of it in the condition of the kidneys, which we find affected with extreme obstructive disease. I believe it was the first occasion upon which this consequence of obstructive renal disease was demonstrated to the Pathological Society. The idea, however, as to their intimate connexion is by no means novel. Latham, in the year 1846, wrote:—"So, too, of the heart. It will palpitate without apparent cause inherent in itself; it will undergo organic unsoundness, still without cause belonging to itself or to other parts, save what can be inferred from the presence of albuminous urine." I have long thought that one of the most common causes of hypertrophy of the wall of the left ventricle is renal disease. The principal immediate cause of this ventricular hypertrophy is to be found in the obstruction to the capillary circulation produced by the diseased condition of the blood. Dr. Basham, in his late Croonian Lectures, makes the following very clear statement as to this condition:—"It is now generally admitted that in the so-called blood diseases the capillary circulation becomes impeded; so that, whenever the blood is charged with morbid material, or is in any way rendered unfit for the processes of nutrition or secretion, a stagnation or imperfect movement through the capillaries becomes manifest, not only by obvious deviations in the integrity of the functions of the tissue or organ, but especially by the increased frequency of the heart's action, and the laborious efforts made by that organ to force the blood through the sluggish and congested vessels." Nor is it the *materies morbi renalis* alone which would thus affect the heart. Cruveilhier "has more than once observed that chlorotic or anemic palpitations have induced a hypertrophy of the heart, which has survived the cure of the anemia or chlorosis"—thus proving that it had its origin, not merely in deranged nervous action, but in the obstructed condition of the capillary circulation: for "blood [I

quote again from Dr. Basham] with these qualities appears to pass with difficulty through the capillaries, principally on account of the increased number of the colourless cells, which, larger in size than the red corpuscles, exhibit a remarkable tenacity for adhesion to the walls of the vessels." In this patient the kidneys were of extremely small size; there must, therefore, have been considerable obstruction to the passage of the blood into the renal arteries; and when we remember how large their supply is, we can understand how their obstruction would be another cause for increased action in, and therefore hypertrophy of, the left ventricle of the heart. Such cases as the above are to be carefully distinguished from those of organic disease of the heart, in which albuminuria occurs as rather a late symptom.

It remains only to explain the condition of the mitral valve in this case. The situation and persistence of the endocardial murmur during life, combined with the want of proportion between the impulse of the heart and the radial pulse, induced the diagnosis of mitral regurgitation; this want of proportion between the impulse of the heart and the radial pulse is usually ascribed to the impulse of the heart, being in such cases chiefly produced by an hypertrophied right ventricle, and perhaps in narrowing of the mitral orifice it always is so; but in the present instance an hypertrophied left ventricle, sending back a great part of its contents into the left auricle, was mistaken for hypertrophy of the right. The possibility of such an error is recognised by all writers on cardiac pathology since Laennec, who says:—"The *left ventricle* being more prone to thickness, and not less to dilatation than the right, sometimes attains a volume seldom or never acquired by the right; and when its enlargement is enormous, it occupies not only the left precordial region, but extends far under the sternum, where its impulse and sound may be mistaken for those of the right ventricle."

We are familiar with the fact, that regurgitation from the aorta into the left ventricle is perfectly consistent with a healthy condition of the aortic valves. The present case demonstrated the same fact as to the mitral valve. In the former case the valvular insufficiency is caused by a forcible drawing back of the basis of the aortic valves by a widened aorta; in the latter, the abnormal action is also exercised upon the attached extremities of the mitral valve by a widened left ventricle, which has also undergone other important changes. For this addition to cardiac pathology, I believe we are indebted to Dr. Gairdner, now of Glasgow, who

PLATE XII.



FIG. 1.



FIG. 2.



FIG. 3.



FIG. 4.

demonstrated its mode of occurrence to the physiological section of the British Association in Dublin, in 1857.<sup>a</sup> Dr. Gairdner's attention was first drawn to the point by meeting with cases like the present, "in which indications appeared, during the life of the patient, of regurgitation through the mitral orifice, but in which afterwards the valves appeared by no means insufficient." That this condition of the left ventricle is capable of producing a mitral murmur is indubitable; and it will, I think, explain fully the nature of many cases in which the endocardial murmur audible at the apex of the heart has hitherto been considered to be merely functional.

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ART. IX.—*Cases of Lithotrity and of Lithotomy, with Remarks.*

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THE presence of stone in the bladder always excites in the mind of the surgeon more or less of anxiety, not lessened by the consideration of the several expedients which may be required for its cure. That the disease is often to be met with must be admitted, if we place in the category the numerous cases of urinary calculi which spontaneously escape through the urethra, or the many calculi which are being easily removed from or through it; but if we limit our remarks to those hospital cases alone, which demand the operation of lithotrity, or that of lithotomy, the comparative unfrequency of the disease in this city, and, I may add, in the several provincial towns of Ireland, cannot be questioned.<sup>b</sup> Such cases

<sup>a</sup> See Dublin Hospital Gazette, October 1, 1857.

<sup>b</sup> The irregularity with which cases of stone in the bladder appear in our hospitals in Ireland, cannot fail to have attracted attention, and it may not be inapposite to remark, both in reference to the unfrequency and irregularity of their occurrence, that nearly a century ago (1779), Mr. Dease, one of the ablest surgeons and most successful lithotomists which this city, or perhaps any country, ever produced, makes the statement, when writing on the subject of lithotomy, that in so large a city as Dublin, then containing a population of 200,000 souls, there had not been one operation for stone, for nearly two years, and that for four years subsequently there were only three cases cut for stone—and moreover, that the aggregate number of the cases cut in the course of ten years in all the hospitals then in Dublin, was only twenty-eight,