under the notice of every practitioner, and hitherto most difficult to remedy, this painless and bloodless mode of treatment, which, it is reasonable to suppose, would be equally efficient in other cases, in relieving the sufferings of helpless childhood, and lessening a mother's cares, seems deserving of attention.

Belfast, May, 1843.

ART. XVI.—*Clinical Researches in St. Vincent's Hospital.* By J. M. O'FERRALL, M. R. I. A., Member of the Royal College of Surgeons in Ireland, and First Medical Adviser in Ordinary to St. Vincent's Hospital.

No. I.

ON THE DIAGNOSIS OF CERTAIN VALVULAR DISEASES OF THE
HEART.

THE following cases may be considered as representing a greater number of the same kind, too numerous, however, for periodical publication. They are grouped, because they appear calculated to elucidate certain points in valvular diseases, the diagnosis of which, in the present state of our knowledge, is allowed to be unsettled. I am led to believe, that the evidence they contain is capable of lessening the confusion about physical signs, which has induced some pathologists of experience, and whose opinions have a weight, in proportion to their well-earned reputation, to reject them altogether as delusive.

CASE I.—*Shortening of the Mitral Valve, without Contraction of the Orifice ; Regurgitation ; Bruit with the first Sound.*

Anne Doyle, an unmarried woman, 20 years old, stated that she had rheumatic fever in July, 1836, and that she was then cupped and blistered over the heart. The pains in her knees and feet continued for three or four months afterwards.

About nine months after the fever she observed her feet and legs became swollen, and the swelling extended rapidly to the abdomen, hands, and face. Difficulty of breathing and palpita-

tions preceded the swelling, and are now increased; she has had hæmoptysis from time to time.

She was admitted into St. Vincent's Hospital on the 12th June, 1837;—her condition, then recorded, was as follows: general anasarca; urine scanty, deep coloured, without deposit, and coagulating with nitric acid; bowels confined; frequent cough with mucous expectoration, but no blood in the sputa for the last two months; great dyspnœa; pulse irregular, small, and about 120 in a minute; mucous rales were heard all over the chest, which was moderately clear on percussion; cardiac dullness extended beyond its natural limits; the impulse of the heart was strong, and accompanied by marked vibration to the hand; a loud and rough bruit was heard just below the mamma, and for a short distance, though fainter, to the right of this point; the bruit was systolic; the normal sounds were audible elsewhere.

It is not necessary to the present purpose to detail the treatment in this case. Successful at first, but soon followed by relapse, it involved no new principle, and was adapted to the varying conditions of pectoral distress or weakness, which this poor girl exhibited during the struggle. She was a very patient young woman, and often sat up in her bed, leaning forward on her knees, a whole night, without disturbing the neighbouring patients by a moan.

It is enough to state that the physical signs remained unchanged to the day before her death, when they were last examined.

Autopsy.—General infiltration of the cellular tissue; congestion, with considerable œdema of the lower lobes of the lungs; some fluid in the pleuræ. The pericardium was universally and firmly adherent to the heart; the latter was enlarged; the apex appeared (after some dissection) to be formed by both ventricles in nearly equal proportions. The cavities were enlarged; the parietes of the left hypertrophied, while those of the right were thin in proportion to the cavity.

The anterior lamina of the mitral valve was irregularly thickened by deposit of a cartilaginous consistence under its covering. Its measurement, in the direction towards the aorta, was remarkably shortened. The auricular aperture was patulous, and only crossed by a few thin cordæ tendineæ. The posterior portion of the valve was altered, but in much less degree. The auricular aspect of the opening presented nothing unusual; it was of the ordinary size.

The other valves and openings of the heart were examined with care, and found to be in a healthy state. The liver was congested; the kidneys small, pale, and contained the white deposit described by Dr. Bright. The minute description of these, and other organs, although exceedingly interesting in other points of view, is not so material to the present inquiry.

The remedies which so often restore a patient to the feeling of perfect health, could have produced little, or only temporary benefit in such a combination of renal and cardiac disease.

I could not learn from this young woman, whether mercury had been employed in the rheumatic fever which originated her fatal disease. She had been cupped and blistered over the heart, and I therefore conclude, that pericarditis was detected. She did not remember ever having soreness of the mouth, or salivation.

The first evidence of interruption to the circulation was dyspnoea, with cough and occasional hæmoptysis. It is worthy of remark, that the latter symptom disappeared immediately after the serous infiltration began in the extremities.

The organic lesion was, *inadequacy of the mitral valve*, uncomplicated with even the slightest degree of obstruction in the orifice. The obstacle to the circulation was occasioned solely by the action of the left ventricle, the force of which was misdirected by the faulty condition of the mitral valve.

The physical sign which accompanied this state, namely, a

rough systolic bruit, loudest at the extreme left of the cardiac region, was ever present when the chest was examined.

This case was one of common occurrence in the hospital, and the diagnosis was therefore made without reserve. The simplicity of the lesion, and the limitation and constancy of the physical sign, leave little room for doubting their connexion, when associated with the train of general symptoms described. I cannot help thinking that Dr. Addison himself would agree with me, if he examined this case during life, and afterwards inspected the parts.

That there may be no bruit present, and yet the mitral valve be found to be the seat of serious organic change, I am aware, because I cannot easily forget the impression made upon my mind by the following case, which a little reflection, however, enabled me to explain.

CASE II.—Shortening of the Mitral Valve ; Bruit de Râpe ; progressive Contraction of the Auriculo-ventricular Opening ; Bruit removed.

Ellen Whelan, 43 years old, presented herself for admission on December 13th, 1837. She was induced to come to town by her sister (see Case IV.), who had been in hospital for a similar complaint.

She complained of cough, which destroyed her rest at night ; beating at the heart ; breathlessness on ascending a hill, or making the least exertion ; she had spitting of blood about six months before. Her extremities were swollen, cold, and livid ; her face was tumid ; the sclerotic conjunctiva elevated by infiltration, and giving the appearance of a watery eye. The pulse small, irregular, intermittent, and counting about 80 ; the pulsations of the heart were 116, tumultuous and unequal in force. A loud bruit de râpe was audible below the left mamma, it corresponded to the first sound ; no bruit elsewhere. Distinct fremitus to the hand laid over this region. Bronchial rales were heard all over the chest, and the base of both lungs sounded comparatively dull on percus-

sion ; the renal secretion was scanty, high coloured, depositing lithates, but without any trace of albumen ; the bowels were alternately relaxed and constipated.

The history of her malady was this : she was exposed to heavy rain while going to market about a year and a half before ; she remained several hours in her wet clothes, and the next day complained of shivering, with pains in her limbs, which ended in rheumatic fever. From the latter complaint she continued to suffer, she says, for three months, and never was well since.

Under suitable treatment her bronchitis now subsided, and the swelling disappeared ; the bruit underwent no change. She became uneasy in hospital, and left in twelve days after her admission. She came, however, occasionally with her sister for some time, during which the bruit was never absent.

At length, after an interval of four months, she returned looking very ill. Her complaint then was sore throat, but it was evident that she had lost flesh considerably ; and, on inquiry, it was found that her limbs were swollen to the middle of the thighs ; her face was bloated ; her arms were wasted, and she admitted that she spat blood frequently.

I requested one of the pupils, who had seen her before, to examine her chest. He came to me with pleasure to announce, that her old complaint, at least, was better, for the bruit was gone. On examination, it proved that he was correct in saying the bruit was gone ; although the assemblage of symptoms under which she laboured, too plainly told that the danger of her condition was increased. The heart's action was forcible but unequal, and the pulse had even less correspondence with its rhythm than before. The normal sounds of the heart could be both distinguished. I could scarcely detect the existence of the tremor, which had been so perceptible on former occasions. She was offered a place in the hospital, but like most poor people from the country, when they have a presentiment of approaching death, she preferred being with her friends.

From this period to the time of her death, I had her visited

several times at the residence of her sister in Golden Lane, on no occasion, however, was the formerly well-marked bruit to be discovered. It is curious that I was invited to make the post mortem examination in this case, by her sister, whose sufferings, in her own instance, gave her an interest in the investigation. The following is the report of the inspection.

Autopsy.—Body and arms emaciated ; legs and thighs, as far as the groin, œdematous ; they were of a purplish hue, and presented several gangrenous patches. The state of the brain, as well as of the abdominal viscera, belong to other questions in pathology, and need not be detailed here.

There were two small apoplectic clots, the size of walnuts, in the right lung, and one in the left ; the postero-inferior portions of both lungs were gorged with blood and serous fluid ; the bronchial lining membrane was vascular, the tubes loaded with mucous ; the pleuræ contained about a pint of dark coloured fluid. On opening the pericardium, about four ounces of serous fluid, of a sanguineous tinge, escaped ; the upper and posterior portion of the membrane was adherent to the heart ; the remainder was free, but perceptibly opaque. The heart was enlarged to nearly double the natural dimensions in a female ; the apex was formed by the right ventricle ; an incision made through the apex was carried on to near the base, through both ventricles and septum, so as to display their comparative size. Both cavities contained grumous blood, with a small portion of semi-transparent fibrine. When these were washed away, the mitral valve presented a remarkable appearance. There was great thickening and deformity of the anterior or greater lamina. It covered the posterior lamina completely, and by presenting a flat surface to the thin or free border of the latter, shut out all communication with the auricle. The cordæ tendineæ were so much shortened, that their muscles almost reached the free edge of the valve. Both auricle and ventricle contained blood, but not a shred of coagulum connected their contents with each other. The actual dimensions of the anterior por-

tion of the valve was manifestly much lessened in the direction towards the aorta ; but the shortening of the cordæ tendineæ, as well as of the posterior lamina, and the very contracted state of the orifice, had brought the latter within the reach of its protection. No vegetations were visible at this side. The aortic aperture, as well as its valves, were natural in every respect.

On clearing out the left auricle, its cavity appeared to be prolonged towards the ventricle, and presented numerous vegetations along the margin of the opening into the ventricle ; none of these extended into the fissure. The shape of the opening was that so well described by my friend, Dr. Adams. It was crescentic, and contracted to dimensions so small, that the point of the little finger could not be forced through. The parietes of the auricle were hypertrophied, and had a strong, muscular appearance ; the lining membrane was of a yellowish white colour, and its surface was so irregular, as to be in some parts mammellated. The area of its cavity was remarkably augmented. The pulmonary artery was somewhat dilated ; the right ventricle enlarged, as well as its auriculo-ventricular opening ; its walls were not thicker than usual ; the valves of this side of the heart were natural in appearance.

This was the first case in which I was enabled to verify the previous existence, and final disappearance of a bruit in cardiac disease. Both facts were well and satisfactorily established by the observation of others, as well as by my own.

When Whelan first came into the hospital, the diagnosis of disease of the mitral valve with regurgitation was recorded ; and the general symptoms of cardiac disease corresponded with this view of the nature and locality of its cause. The difficulty of breathing, and dropsical symptoms, were so much diminished by treatment, that she considered herself well, and returned to her friends, carrying with her, however, the well-marked and ominous physical sign of the disease.

On several occasions, subsequent to her leaving the hospital, she attended the public consultations, and the bruit was ever in same place. At length, after a longer absence than usual, the bruit is found to have disappeared, while her general symptoms and sufferings have undergone considerable aggravation.

At this juncture, I confess my confidence in this physical sign was much shaken, and I was tempted to adopt the conjecture, that regurgitant disease of the mitral valve had never existed in this case, notwithstanding the bruit, and that this murmur had no necessary connexion with that lesion, and had its origin in some other and less permanent cause.

In considering this question, we must, even if we assumed the absence of regurgitation, have admitted the presence of some interference with the circulation, of a nature equally grave and embarrassing. The small and irregular pulse; the palpitations; the dropsy; the dyspnœa, cough, and hæmoptysis,—and all of these showing a constant disposition to relapse;—formed a series of symptoms which indicated progressive disease of the central organ.

Supposing then, that there were some disease of the heart, but that it was not regurgitant disease of the mitral valve, considerable difficulty would be found in explaining the murmur by reference to other valvular lesions. Thus, obstructive disease of the auriculo-ventricular opening, if it produced a bruit, should present it in connexion with the second sound; and contraction of the aortic opening certainly does not occasion the same inequality and irregularity of pulse, or want of correspondence with the rhythm of the heart. To this I might add, that the locality of the murmur, and its absence about the root of the aorta, were against this view.

If we assumed that the disease itself had undergone no change, the only other condition of the heart, with which authors have connected the general symptoms alluded to (including the peculiar pulse, permanently existing), is softening of its

muscular substance. Chronic softening of the heart, so well described, though differently explained, by Laennec, Bertin, and Bouilland, is known to produce the peculiar pulse which occurred in this case, and which, together with certain other general symptoms, give it so strong a resemblance to disease of the mitral valve. According to Dr. Hope the diagnosis is easily accomplished. He has stated that this peculiar pulse, when caused by disease of the mitral valve, is always accompanied by the characteristic bruit under the left nipple ; while the same pulse, without the occurrence of this murmur, he considered, as clearly owing to softening of the muscular substance of the heart. Whelan's case, as we have already seen, shows that a diagnosis made on this principle would have been erroneous. Perhaps if the case had been seen for the first time, at the period when the bruit had disappeared, such a conjecture would have carried with it an air of probability. I remarked, however, that the action and sounds of the heart were not sufficiently feeble to correspond with softening, and that the previous existence of a murmur rendered it impossible to make a satisfactory diagnosis, from the present state of the case.

These were our reflections during the life-time of the patient. Having now made the inspection, we were in a condition to inquire how far they enabled us to explain the anomalies in this case.

When exhibiting the parts at my clinical lecture in the hospital, I observed, that the points most certain in this case were, 1st, that there had been no bruit for some time before death ; and 2ndly, that the mechanism of the parts, as we then saw them, seemed incompatible with regurgitation.

So far the present anatomical characters were in strict accordance with the recently observed physical signs. But as it was equally certain, that a bruit had been previously audible and persistent, the question for solution was, whether the present condition of the parts could have existed at the time when the murmur was heard ; or whether our knowledge of the laws of

progression, observed by organic changes in the heart, would justify us in supposing, that a different anatomical relation of the parts had been present at that period.

In the history of endo-carditis,* it is well ascertained, that the left cavities are first attacked, in the greater number of cases; and that in these, the fibrous tissue, included in the mitral or aortic valves, is its primary seat. In my own experience, the free margins of the valve have most frequently presented the tumefaction from interstitial deposit, which constitutes its earliest change, and which I believe precedes the occurrence of vegetations on their surface. But, whether vegetations existed or not, I have reason to think, that the ventricular aspect of the valve is affected long before that which looks towards the auricle, or than the ring of the aperture itself. I have notes of several cases of acute and rapid pericarditis, with well-marked results of endo-carditis, and in none have I witnessed these products of inflammation, in the lining membrane of the right auricle. When this latter cavity becomes diseased, it appears to be the result of long continued morbid action, aided, perhaps, by the habitual distention to which it has been subjected.

If this, then, be the order in which the changes succeed to each other, is it not reasonable to suppose, that shortening of the mitral valve most commonly anticipates the contraction of its orifice; and consequently, that regurgitant disease in this part most commonly precedes the phenomena of obstruction.

In Case I. (Doyle) which terminated during the existence of regurgitant disease alone, the fatal issue was obviously hastened by the coincidence of Bright's disease of the kidney. In that case the mitral valve was shortened, but the cordæ tendineæ were lengthened, and the orifice remained of its normal size. Regurgitation, therefore, was inevitable, and the physical sign continued to the last.

In Whelan's case, the valve was also shortened, but further

* The obscurity which attends the diagnosis of endo-pericarditis is well exemplified by cases in that valuable work, "*Dr. Graves' Clinical Medicine.*"

changes had been superadded. The thickening and shortening had engaged the cordæ tendineæ, and this brought the free edge of the valve closer to the opposite wall of the ventricle. In addition to this, the posterior lamina of the valve had become contracted in a remarkable degree, so as to lessen the diameter of the aperture to be protected.

Considering, therefore, the anatomical configuration of the parts, and the order in which the changes are apt to occur, it was impossible to resist the conclusion, that a different relation of the valve and its aperture had existed, at the period when the murmur was distinctly perceived.

The considerations here offered applied of course to the case of Whelan alone, and I could not venture to believe it an explanation of all the anomalies, with respect to this murmur, which had so discouraged others, until it appeared to gain additional importance by the occurrence of the following case.

CASE III.—*Shortening of the Mitral Valve ; progressive Contraction of the Orifice ; Bruit in the early Stage ; Murmur afterwards lost.*

Catherine Kavanagh, 46 years of age, was admitted into St. Vincent's Hospital, 18th October, 1838, labouring under symptoms of morbis cordis. She attributed her complaint to exposure to wet and cold, but had no recollection of having any rheumatic disease. She had been subject to winter coughs for three years, but only felt uneasiness about the heart eight months ago. Since that period she had suffered from palpitations on exercise, considerable difficulty of breathing, continued cough, with mucous expectoration, and on two occasions with copious hæmoptysis ; her feet and legs were œdematous ; the renal secretion scanty, but free from albumen ; her complexion was sallow ; her lips purplish ; her countenance expressive of suffering ; the pulse was irregular, unequal, and small, it counted 84 in some minutes, and rather more in others ; occasional intermissions were perceptible. The chest was clear on percussion in front ; cardiac dulness preternaturally extensive, and lower than

natural, as well as verging towards the median line ; bronchial rales every where audible ; the force of the heart was considerable, but unequally so ; pulse at the heart 90 ; fremitus ; a distinct bruit de soufflet, rather rough, was heard, just where the apex of the heart struck the finger ; it was systolic, and very limited in extent ; the natural sounds were audible in other parts of the new cardiac region ; the dulness on percussion in the hepatic region was lower than usual.

The diagnosis made was *bronchitis ; emphysema ; hypertrophy of the heart ; regurgitant disease of the left auriculo-ventricular opening.*

Her bowels having been attended to, the renal secretion was in a few days augmented by mercurials and diuretics combined, and marked relief to all her symptoms was experienced. At the end of a week more, the cough and expectoration had nearly ceased ; her breathing was more comfortable ; the urine had increased in quantity, and was pale, and the œdema nearly gone. At this time the heart had perceptibly ascended in the chest, but the same murmur was still distinctly audible.

Kavenagh went on tolerably well from this time to the latter end of November, the swelling of the feet, and palpitation giving her less trouble than usual. The heart was repeatedly examined, and the bruit de soufflet was always found in its place.

About this time she caught cold, which she attributed to an open window. Acute bronchitis of a very severe character set in, and for many days she was in danger of suffocation. During this period of suspense, the murmur was less distinct, but this was thought to be accountable from the predominance of the mucous and sibilous rales. Her condition soon demanded stimulant expectorants, and under these, and nutritious diet, the bronchitic symptoms began to decline. It was now clearly perceived that the murmur had become fainter, and after a lapse of eight or ten days was altogether lost.

The case of Ellen Whelan quickened our attention to this change in the physical signs, and from this time to January 11th, 1839, when she died, the cardiac region was made the subject

of almost daily examination. The action of the heart became more tumultuous, and less accordant with the pulse at the wrist, but the bruit de soufflet was heard no more. In the early part of January she was attacked with hæmoptysis, with evidence of pulmonary apoplexy in the lower lobe of the right lung. Her dyspnœa now increased; she could not lie down; the urine was scanty; the swellings increased, and she died asphyxiated.

Necropsy.—The right lung contained a large coagulum in the middle of its lower lobe, the remainder was gorged with bloody serum. The left pleura contained more than a pint of red fluid; the base of the lung was œdematous; the lungs in front were emphysematous, and in some degree concealed the actual size of the heart, for it was larger than was even supposed. The pericardium contained about two ounces of reddish serum; no trace of lymph or adhesions; the right ventricle formed the apex of the heart; a section carried through both ventricles and septum, displayed the great size of the right, the walls of which were thin in proportion. The left ventricle contained no blood, it was small and contracted; the aortic opening and valves were sound; the mitral valve was shortened, thickened, and pursed up; the cordæ tendineæ were crowded together, and so much shortened as to be scarcely distinguishable; the anterior lamina of the mitral valve projected beyond the posterior, and concealed it from view. When a probe was introduced behind the former, the two portions of the valve were found to have lain in close opposition, so that the narrow chink of which the auriculo-ventricular opening consisted, could be opened only by their mechanical separation. It was impossible to conceive a regurgitant current with such an arrangement of the parts. The left auricle was dilated, its walls thickened, and its opening semilunar and contracted; a few very small vegetations marked the line of its margins. The valves of the right heart were healthy.

The striking resemblance between this and the former case, as relates to the order of the symptoms during life, gave to the post mortem examination an unusual degree of interest. The

symptoms which succeeded to the disappearance of the bruit were those, rather of increased obstruction, than of mere debility of the organ. The latter view of the case was entertained, but the phenomena did not support it. When the left ventricle, however, was opened, no doubt could remain of the coincidence between absent murmur, and a mechanism incompatible with regurgitation. The only question was, whether the same reasons existed for supposing that, as occurred in Ellen Whelan's case, a regurgitant disease of the mitral opening was superseded by its progressive contraction. Nothing in this case seemed adverse to the supposition, and the most careful comparison of the phenomena convinced me, that the order of the sequences was the same in both.

In Kavenagh's case the change took place, it might be said, under our eyes. It is impossible to say how far it was influenced by the invasion of the bronchitis, but it is not improbable that the inflammatory fever, by which it was accompanied, had some share in hastening the morbid change.

The case which now follows is curious, as an instance of the rheumatic diathesis developed in a second member of the same family, and leading to organic changes in the heart in many respects the same.

CASE IV.—*Regurgitant Disease of the Mitral Valve ; Bruit de Râpe ; Contraction of the Aperture ; Disappearance of the Murmur.*

Mary Whelan, a woman about 40 years of age, was admitted into St. Vincent's Hospital on the 19th June, 1836, labouring under rheumatic fever. It was her third attack of the disease, and she had generally been confined to bed six or eight weeks in each.

In addition to the usual fever and appearance of the joints, with which every physician is familiar, this poor woman complained of intense pain in the cardiac region, and such a degree of dyspnoea as made the horizontal posture insupportable. The agony she suffered, from her swollen and powerless joints, was

forgotten, whenever she happened to slip down in the bed, and she never cried so piteously as when she begged to have her shoulders raised again. A harassing cough added to her miseries by shaking her entire frame, and she spat blood or rusty adhesive mucus from time to time. Her face was rather sub-livid than flushed, although her skin was burning hot ; her eyes were watery, and the countenance full of anguish ; the urine was scanty, red, intensely acid, but not albuminous ; her pulse was small, intermitting, and at the rate of about 110. The physical examination of the chest supported the opinion entertained of her danger, from a first view of her case. Extensive dulness in the cardiac region, and extending upwards as high as the level of the second rib, was bounded, at the latter point, by distinct double *bruit de frottement*, while at the proper cardiac region the sounds of the heart were nearly inaudible. A distant murmur could be distinguished beneath the mamma. The chest, posteriorly, was comparatively dull, the right side remarkably so in its two inferior thirds, and affording to the ear a mixture of small and sub-crepitant rales.

In addition to free leeching over the heart (for she could not have endured cupping), I directed colchicum to be administered every half-hour until vomiting was produced, and then a full dose of calomel and opium, 10 grains of the former with 2 of the latter. The dose to be repeated every six hours.

At visiting hour next morning the relief was most remarkable ; her countenance was greatly improved ; she had several hours' sleep, and the pain and swelling of the joints were considerably diminished ; her pulse was more developed, though still intermitting ; the sputa were scarcely tinged with blood ; the breathing more tranquil, and the dulness posteriorly was more limited. The most important change, however, was observed in the cardiac region ; the evidence of liquid effusion was nearly gone ; the extent of dulness was diminished ; the frottement was audible as far as the nipple, and here, a more deeply seated *bruit de râpe* could be distinguished.

A few days more placed this poor woman out of immediate danger. The rheumatism disappeared, and the signs of pericarditis also faded away, leaving, however, the bruit de râpe to prove the previous existence of organic disease. No doubt could be entertained of the latter fact, when she stated, that she had constant cough, palpitations, occasional spitting of blood, and swelled ankles, for two years.

She left the hospital in sixteen days afterwards, and feeling herself as well as usual.

In four months from this period she returned to the hospital, not on her own account, but bringing her sister, a woman three years older than herself, whom she had induced to come to town for the relief of symptoms very similar to her own. (See Case II.) The opportunity was not lost. Our old patient's heart was examined, and the same bruit, in the same place, was distinctly audible. She still suffered from palpitation; she could not ascend the stairs without stopping, and she spat blood whenever she caught cold. Her feet were inclined to swell, but she kept this symptom under, as she informed us, by drinking parsley tea. I heard no more of this patient, until she presented herself, as an external patient, on account of acute bronchitis in March, 1837. The character and situation of the bruit remained as before. The pulse was at first thought to be less frequent, but on comparing it with the heart, it was ascertained, that every second or third beat of the heart was less forcible, and not transmitted to the wrist.

The next interview with Whelan was in August, 1838. Her sister, whose case was much worse than her own, had in the interval been in St. Vincent's Hospital; had returned home relieved; had relapsed, and after lingering some time had just died. Naturally anxious to throw light on her own disorder, which so closely resembled her sister's, she now requested me to examine the body of the latter.

On this occasion too, we examined Mary Whelan's heart, and found the murmur under the left mamma unchanged.

The result of this examination has already been detailed.

Sometime after the death of her sister, this woman was again attacked with rheumatism, and placed herself under the care of Mr. Dormer of Bishop-street; she had been some days ill, when at the request of this gentlemen I saw her with him. She had rheumatism of the ankles and wrists; there was no frottement about the heart, but the former bruit was no longer to be found. She recovered from this illness tolerably well, but the murmur did not return. From this time to December, 1838, she called occasionally to the hospital. On every such occasion the chest was carefully examined. No trace of the bruit was to be detected. Her state was, however, daily becoming worse, and at length, after a confinement to bed of three weeks, she died. Mr. Dormer kindly assisted at the post mortem examination.

Necropsy.—The lungs posteriorly were solidified at several points; some of which were deep black, others of a grey colour, as if the colouring matter of the blood had been absorbed; there was not much fluid in the pleuræ. The pericardium was adherent to the heart, except posteriorly, about the base of the left ventricle; a small quantity of reddish fluid occupied this space. A section of the heart and pericardium shewed great apparent thickening, from organized deposit beneath the latter. The right ventricle was very much dilated, and formed the apex of the heart; the whole organ was enlarged to double its natural size, and extended high up in the chest. The left ventricle contained a little dark blood; its interior presented a striking resemblance to those already described; the mitral valve occupied a situation in the cavity, lower down than usual; the cordæ tendinæ were shortened; the two laminae of the valve were thickened, and adherent at their commissures. Their margins lay in close contact; the anterior projecting a little beyond the posterior laminae of the valve, so that when the ventricle was filled, the contraction of its parietes must have pressed their edges closely together, no regurgitation could have taken place. The aortic opening and valves were natural. The apparatus of the right heart were also healthy; the

right auriculo-ventricular opening was very large, but I concur in the opinion, that this is not to be regarded as a pathological state. The left auricle was capacious, and its parietes thickened; the aperture depressed, contracted, crescentic, and dotted with small vegetations, which did not, however, extend into the fissure.

When disease of the mitral valve proves fatal, in its earlier or middle stages, the event is generally found to be owing, either to complication with renal, or some other chronic disease (as in Doyle's case), or to one of the many accidents, in the lungs or pleuræ, to which this affection so often leads. Pulmonary apoplexy, pneumonia, bronchitis, or pleurisy, frequently interpose to prevent the completion of the morbid process. I possess the notes of many such cases, well observed during life, and in all of these, the characteristic murmur was present and persistent, to the last.

I have also, in addition to those already detailed, records of two others, in which the previous presence, and subsequent disappearance of *bruit de soufflet*, was found to coincide with a contraction of the opening so great, that even the shortened valves were rendered capable of preventing a reflux.

The former are a class of cases of rather frequent occurrence, and in which I am led to think, notwithstanding the doubts expressed by Dr. Addison and others, the sign may be considered as established.

The latter are, however, the cases which have created the greatest difficulty; because, being examples of extensive valvular disease, without a trace of abnormal sound, they have appeared to negative all the ordinary rules of cardiac auscultation.

The error has, I conceive, arisen from a hasty or imperfect analysis of the anatomical characters of the lesion, and from assuming, that extensive disease of the valve must necessarily include all the conditions for the production of morbid sound.

The three last cases are examples of disease of the mitral

valve, in the advanced stage of which, no morbid sound was produced. Can we doubt, that if those cases were seen, for the first time in this stage, by those who follow the text of Dr. Hope, that a corresponding diagnosis would have been made, and the existence of valvular disease altogether denied.

I am far from believing the rule to be, that in the advanced stage of disease of the left auriculo-ventricular opening, the phenomena of regurgitation shall cease. On the contrary, I have records of many cases, in which great contraction did not prevent the occurrence of a reflux current through the aperture. But in these cases, the inadequacy of the valve was still apparent, on inspection. I only maintain, that a valve, so shortened as to be incapable of closing the normal opening, may become adequate to its task, in consequence of progressive contraction, *combined with* a favourable adaptation of the aperture itself.

In the cases here related, there is reason to believe that this order of the morbid changes actually obtained ; and, therefore, that the apparent anomaly, of a bruit, persistent for a certain time, and then permanently absent, far from proving the fallacy of physical evidence when applied to the diagnosis of valvular disease, is, in reality, only an illustration of the accordance of the phenomena with the changes in the mechanism which produced them.

It will be perceived, that no abnormal sound was produced, in these cases, by the narrowing of the opening. The consideration of this fact, as well as of the causes of that rare occurrence, a diastolic murmur in this situation, may be the subject of another communication.

The facts and observations here adduced may, perhaps, be reduced to the following propositions.

1st. That regurgitant disease of the mitral valve is attended by persistent murmur with the first sound.

2nd. That the subsequent disappearance of this murmur does not lessen the value of the sign, nor contradict the diagnosis, at the time it was made.

3rd. That the order of the phenomena here described, in *combination* with the *general symptoms* of this disease, constitute a rational evidence of the supervention of contraction of the opening, to a degree proportioned to the previous shortening of the valve.

4th. That uncomplicated obstruction of the aperture is not necessarily attended by a murmur.

5th. That the general symptoms of disease of the mitral valve are not to be distinguished from those of *softening*, merely by the presence of murmur, as has been asserted by authors.

6th. That the diagnosis can be made, only, by the observation, that a well-marked systolic murmur had *previously* existed, in *combination* with the *general symptoms* of the disease.

ART. XVII.—*On a peculiar Morbid Affection of the Stomach, characterized by Regurgitation of its Contents, without Nausea.* By SIR HENRY MARSH, Bart., M.D., M.R.I.A., Physician in Ordinary to the Queen in Ireland, President of the College of Physicians,* &c. &c.

THERE are three processes, each very different from the others, by which the stomach is capable of expelling its contents: the first is that which enables the stomach, by the contraction of its muscular fibres, to propel its contents into the duodenum: the second is the act of vomiting—a convulsive movement by which the contents of the stomach are returned along the œsophagus, and rejected through the mouth,—a movement which affects the whole frame, and is preceded by, and accompanied with, nausea: the third is the act of regurgitation, whereby, without nausea, without convulsive effort, the contents of the stomach, gaseous,

* A paper on this subject was read by Sir H. Marsh at an evening meeting of the College of Physicians, on the 18th March last. The cases which are now recorded, being purely medical, and therefore unsuited to a mixed assembly, were not on that occasion introduced.