and more especially the actions on which exfoliation depends after amputation, I have drawn the following conclusions.

1. The proneness to diseased action in the lining and investing membranes of the bone may fairly be considered as one of the causes of danger in amputation. This action commences at the sawn extremity; and if it extend far beyond, involving any considerable portion of the bone, it produces an irritative or hectic fever, wearing out the powers of life, and ultimately destroying the patient. One of the most remarkable circumstances attending the development of the exfoliating process is that it will occasionally take place, while the stump in the greater part of its extent is soundly uniting. An example of this I have already brought before you.*

2. It is evident that whatever influence a local disease of the soft parts of the stump may in some cases exercise upon the bone, the process of exfoliation is neither dependent upon nor essentially connected with it. In some cases, where the stump has been firmly and healthily united, I have found exfoliation had been going on. In other cases similarly situated, the bone, on the contrary, has been rounded with callus.† In a third series of cases, although the stump has been three months in healing—long continued disease marking the case—no exfoliation was perceived; nay, even when the parts divided by the knife have been exceedingly diseased, including the periosteum, I have often been unable to detect any process of exfoliation. All these facts tend to prove that exfoliation arising from the necessity of nature's efforts to remove the sharp edges of bone, which would otherwise remain sources of irritation to the soft parts, and to throw off the parts which, by immediate bruising and contact of the saw, lose their vitality, may be effected in two ways.

1. By gradual absorption of minute particles which are conveyed into the circulation and out of the system, with other effete particles separated by the various secretory organs; and, 2ndly, by an absorbent ulcerative process effecting a line of separation, and throwing off larger or smaller portions of the extremity of the bone, as sloughs are separated and thrown off in soft parts. The mode which may be adopted by nature is determined by causes and influences extremely difficult to appreciate, and not clearly referrible either to the state of the surrounding parts, or to any obvious changes in the general health of the patient.

* See Case II., vol. ii., p. 498.

† See Case I., vol. ii., p. 497. †

RESEARCHES

INTO

VALVULAR DISEASES OF THE HEART,

IN CONNECTION WITH THE

SOUNDS OF THAT ORGAN;

ILLUSTRATED BY CASES.

By THOMAS MOORE, Esq., M.R.C.S., late Secretary to the Dublin Medico-Chirurgical Society.

[Read before the Dublin Medico-Chirurgical Society.]

GENTLEMEN:—Since the publications on diseases of the heart, which, within the last twenty years, have emanated from the press, not only in Great Britain, but also on the continent, little remains for the junior practitioner to do, excepting to compile what has been already written; to translate the works of those whose experience and talented treatises on this branch of the profession have deservedly attained a very high rank in the medical world; or to remain silent, and admire or condemn; praise or dispraise, "in thought's deepest reverie," the labours of those who have had the priority of him; the innumerable theories which have of late distracted his medical brethren; and the host of refutations daily adduced by others opposed to them; each succeeding theory, grounded on some recently-discovered experiment, a repetition of those already performed, viewed in a different light; the adaptation of some newly-invented instruments, or the modification of those already in use; whether established on all these linked together, or any one taken by itself, tends, nay, is always sure, either to differ in some respect from, or upset altogether, the theory or theories which have preceded; and yet the deductions drawn by each and all of those individuals, from the observations they have severally made, seem to them perfectly clear, satisfactory, and such as will set at rest immediately the errors of those who are now mouldering in their graves; the researches of those distinguished alike for their acuteness of observation, as for their unremitting zeal in the investigation of the truths of medicine; the disputes which have arisen; the discussions which have taken place; the labours and opinions, too, not merely of individuals, but even of committees, selected and appointed especially for the purpose; and despite all these exertions, would fain impress on the minds of their readers the necessity of adopting theirs, as the only true and sensible mode of accounting for the occurrence of certain phenomena, to the utter exclusion of all others.

Amidst those perplexities, and the conflicting opinions of the day, it is with no small degree of reluctance that an essay on

"Valvular diseases of the heart, their complications, and connection with the sounds of this organ," has been composed for this evening's discussion: nor does the writer expect that any remarks of his contained herein will, in the least, influence the ideas entertained by others, respecting the subjects he intends bringing under the society's consideration, but adhering strictly to facts; not drawing conclusions from preconceived notions, but such as must be obvious to, and force themselves upon, every unprejudiced mind, after attentively considering the particulars noted during life, and then examining the appearances which the morbid specimens present, he thus hopes to be able, if not to contradict universally, at least to correct a few of the errors pervading many of those works published on this subject, and to confirm pathologically some of the physiological observations recently made in this city, as well as elsewhere.

It is his determination to proceed at once to the recital of cases which he had an opportunity of witnessing; and instead of recounting upwards of twenty different explanations offered about the sounds of the heart, and the various modes of accounting for abnormal noises, as the latter have been all proved to be erroneous by those authors who have most recently written on diseases of the heart.

CASE I.—Disease of auriculo-ventricular valves, with dilatation and hypertrophy of the cavities. First sound, altered in character, being accompanied by a bruit de soufflet; second sound, unimpaired; aortic and pulmonary valves healthy; also the coats of the arteries.

History.—A shoemaker, twenty-eight years of age, of very intemperate habits, and born of asthmatic parents, when a child was attacked with measles, during which the lungs became seriously engaged; and since then he has been always subject to slight coughs, usually attended with frothy expectoration and shortness of breath. For several years he has experienced little or no inconvenience, till, from repeated attacks of cold, the dyspnoea became more oppressive, being much aggravated towards the approach of damp or foggy weather. About the age of fifteen, whilst engaged in very active exercises, he felt a jumping or fluttering of the heart, which, having continued for several minutes, gradually subsided, and again returned whenever he resorted to the same practice. As he advanced in years, and indulged more freely in the use of ardent spirits, he was more frequently troubled with this complaint, each time in a more serious form, being induced of late by comparatively trivial causes. Five weeks from the period at which this report was taken, he swelled in the feet and ankles, from whence the oedema spread upwards, engaging the legs, thighs, scrotum, and abdomen, produ-

cing such an increase in the size and weight of those parts, as to oblige him to relinquish his work.

Symptoms.—His countenance, on admission, was bloated; integuments of face, chest, and back, infiltrated with serum; cheeks, tip of nose, and lips, of a dark red, or livid hue; eyes watery; conjunctiva tinged with yellow; neck short, swollen, and tippet-shaped, particularly on right side; jugular veins much distended, pulsating with strength, and remaining permanently swollen, whether in the erect or recumbent posture; cough husky, and prolonged, worse at night, accompanied with much straining, and a seromucous expectoration, streaked with blood, and rusty-coloured particles; sleep interrupted by startings, unpleasant dreams, and feelings of suffocation; appetite good; a greater degree of thirst than natural; tongue clean, and moist.

Physical Signs of Chest and Heart.—The left side of chest is evidently bombé; the motions of both sides, viewed horizontally, do not preserve that uniformity of equable elevation, so well marked in those unaffected by disease; the preponderance of energy being in favour of the right; percussion, generally, clearer than natural, better marked over the left side; the respiratory murmur is exceedingly feeble throughout the entire of left lung, almost inaudible in the supero-anterior portion; in the posterior parts of both lungs, there exists every variety of bronchitic râle; the respiration in right lung is stronger, but, in a great measure, marked throughout its entire extent by wheezing, sonorous, and cooing râles. Over the cardiac region, percussion is more extensively dull than natural, extending higher up, and crossing the mesial line to the right of the sternum: the heart's action is strong, violent, and can be heard along the entire of sternum, over a great portion of the right side, and beneath the clavicles: immediately below left nipple, a very distinct bruit de soufflet is audible by-times, which after continuing three, four, or even more beats, disappears, and is replaced by the two sounds of the heart; after a short interval it reappears, being much increased in intensity by stirring in bed, or any movement calculated to accelerate the circulation; when present, it can only be heard at left side of heart, accompanying the first sound alone, the second being quite free; the action of large and middle-sized arteries is perfectly normal.

When the bruit de soufflet is absent, the first sound is not by any means healthy, being indistinct, not possessing the muscular energy so peculiar to it; pulse 108, occasionally small and weak; frequently full and compressible; but though irregular in strength, yet no well-marked intermission occurs. Respirations 27; laboured. Abdomen swollen, free from pain, affording a sense of fluctuation when tapped; the scrotum is enormously

distended with fluid; the shape of penis altogether destroyed, glistening, semi-transparent, and distended almost to bursting; lower extremities considerably tumefied, tense, firm, and pitting on pressure; bowels confined; urine scanty, and high-coloured. Venesection to twelve ounces. A cough mixture with tartarised antimony to be given every three hours, and a purgative draught immediately.

It would be superfluous, and irrelevant to the objects of this essay, to detail at length the daily reports of the symptoms and treatment; it will suffice, for the most part, that the physical signs relating to the circulatory organs, not only in this but other cases, be mentioned, excepting that circumstances of a very interesting nature should occur.

On the second day after admission, the bruit de soufflet had become much more constant, and increased in loudness; its frequency was more than in an inverse ratio to the normal sounds of the heart, as observed when admitted. This change probably had been occasioned by his turning in bed; it still continued most intense below the nipple, diminishing as we departed from this point; in other respects, the phenomena were the same as described when first examined; pulse 100, small and weak.

Feb. 19, five days after admission, a decided improvement was observed; his countenance being clearer; lividity of lips and nose diminished; less tension of the feet and legs; anasarca of thoracic and facial integuments decreased; dyspnoea less distressing; the bronchitis, which had recently supervened on the chronic affection of the lungs, and was so acute in its symptoms, was yielding to the treatment; the respiratory murmur being more distinct in the right, and slightly so in the left, but still very feeble; pulse 86, stronger.

Rx *Calomel*, gr. j;

Powder of ipecacuanha, gr. ss.

To be made into a pill, to be taken every four hours.

Rx *Nitrate of potass*, 5j;

Tincture of cantharides, 3ss;

Infusion of juniper berries, ℥vj. M.

An ounce to be taken every four hours.

The following is the report made the 22nd February:—

“The bruit de soufflet this morning, whilst in recumbent posture, is almost inaudible, and both sounds in cardiac region nearly natural, the first possessing more of its natural character than has yet been observed; directly under nipple the bruit de soufflet is slightly audible, elsewhere imperceptible; after walking twice or thrice up the ward, it became very loud and sharp, being confined to the left side of heart; the pulse examined at the same time, beat 100 per minute, was regular, and free from intermission; as soon as he settled into a state of quiescence, the

bruit gradually lessened, but did not altogether disappear.”

The next morning he died quite suddenly, to the great astonishment of the other patients, having, a short time previous to his death, uttered expressions indicative of a great improvement in his general health.

Autopsy.—No examination of the head or abdomen was permitted. The exterior of the body presented the same appearances of anasarca and lividity noted during life; on the lower extremities several vesications had formed, which, by bursting, had left several extensive, ill-conditioned ulcers. The venous congestion about face, neck, and depending parts of the body, at once attracted our attention. After removing the sternum, the lungs, instead of collapsing, rather protruded; very strong adhesions, apparently of long standing, united the pleura on each side firmly together, so that, in endeavouring to separate them, the structure of the lungs was partially lacerated; the left lung throughout its entire extent was emphysematous; the air-cells so much dilated on its antero-superior surfaces as to form large transparent sacs, some nearly equalling in size that of a walnut, evidently originating in the rupture, and coalescence of several minor ones; the right lung was also emphysematous, but not to the same extent; in the bronchial tubes were the evidences of acute inflammation having supervened on a chronic disease of the mucous membrane, also some engorgement of the parenchymatous tissue.

The heart was much larger than natural, nearly double its regular size; the venæ inominatæ, venæ cavæ, and right auricle, were vastly distended with blood, as were also the cardiac veins. The muscular fibres of the right auricle were considerably hypertrophied; the ventricle dilated to double its usual capacity; the thickness of its parietes seemed but little altered; the right auriculo-ventricular valves and those of the pulmonary artery presented nothing remarkable; it seemed, however, as if disease were commencing in the first-mentioned, since there appeared to be protuberances on, or situated near, the free edge of the valve; the left auricle and ventricle had also undergone the process of dilatation, with slight increase in the size of their muscular fibres; the auriculo-ventricular opening remained permanently patulous, as the process of “contraction” had engaged at least three-fourths of the valves, so that the parts thus affected scarcely exceeded the one-eighth of an inch in breadth; their edges also had a wrinkled and warty appearance; the tendinous cords were shortened; the fleshy column, to which the healthy portion of valve was attached, nearly doubled the size of the others; the valves and coats of the aorta were quite healthy.

There are some particulars connected with this case interesting and worthy of notice,

which may be stated in the following order :—First, the intermission in the bruit de soufflet; second, its being present with the first sound; third, the pathological condition of the heart, harmonising in many respects with the physical signs heard during life; fourth, the inferences which may be deduced therefrom relative to the sounds of this organ.

Although the heart was frequently stethoscoped, and its action found at one trial free, almost normal, at other times obscured by a loud bellows sound, yet at no period did this phenomenon vary in being connected with the first sound; evincing, in a striking manner, that, however perplexing it might be to form a conjecture as to its probable cause, some degree of certainty might be entertained as to the integrity of the second sound. How far the presence of the “bellows murmur” can be satisfactorily accounted for by the condition of the valves and the left auriculo-ventricular aperture, must remain open for discussion; but, I believe, it may be stated, without fear of contradiction, that in the contraction of a portion of the valvular apparatus, in the thickening of its margins, and in the protuberances on its surface, exists a sufficiency of disease which may be assigned as the indubitable cause of its presence. Can we, in like manner, attribute to any known cause, or account for its absence in a manner just as satisfactory? Can we, by taking a retrospective glance at the physical signs present during life, and the pathological appearances just described, carefully comparing and poisoning them in the same balance, declare that this is a point which can be disposed of with the same facility? Certainly not. Nor is it reasonable to suppose, nay, it is quite impossible to conceive, that those valves so diseased as to account for the bellows murmur at one moment, could in the next have undergone such an alteration in their structure, position, and action, as to explain its total absence: remember, too, it could be produced at will, rendered more loud, and made to reappear by the patient's stirring in bed, walking about, or by desiring him to perform certain acts. Further on we must return to this subject.

It requires not a very accurate degree of pathological knowledge to trace an obvious affinity between the disease of the auriculo-ventricular opening here, and that of the aortic aperture first described by Dr. Corrigan in a paper published in the “*Edinburgh Medical Journal*,” to pass any comment on which is quite uncalled for; it having obtained, from the first periodicals of the day, praises which are scarcely adequate to its merits; a better name than “permanent patency” cannot be applied to it; a name which Dr. Elliotson also has given to a diseased condition of this opening, differing essentially in its pathology. M. Bouilland, in his admirable work on Diseases of the Heart, describes a dilatation of the openings, and an in-

sufficiency of the valves to close them; and Dr. Williams, in one of his lectures published in the “*London Medical Gazette*,” notices a similar disease; but the writer is not aware of any author who has published cases of valvular disease, with a permanently patulous state of the apertures, precisely similar in their pathological appearances to those about to be mentioned.

The connection between the bellows murmur and sounds of the heart had better be postponed till the particulars of several other cases have been stated.

UNUSUAL EFFECTS OF CONTINUED CONSTIPATION.

To the Editor of THE LANCET.

SIR:—As I consider the following case highly interesting and instructive, I feel it my duty to transmit it to you for insertion in your Journal. I send it as recorded in the notes and remarks made during the time of my attendance. I remain, Sir, your obedient servant,

ALFRED LORD.

Islington, July 10, 1841.

April 13, 1841. I was called this night, at half-past eleven, to see W. F. L., ætat. 19, who had just arrived at Staple-inn, from the country, where he had held the situation of an assistant in a classical academy. His most urgent symptom was violent spasm of the muscles of the upper part of the trunk, for which I prescribed a sedative mixture, leaving his case for more full investigation next morning.

14. I found him this morning up and dressed; he had passed a tolerable night; his countenance was florid, but not flushed; eye bright; pupil contracted; face indicating no emaciation; the body and limbs muscular, and even fat; chest pigeon-shaped; ribs flattened on left side, over region of the heart; he still suffers, though in a less degree, from spasmodic action of the diaphragm and muscles of the back and chest; pulse 70 to 80, regular; tongue (last night) moist, and slightly coated with a brown fur; dyspeptic. He has constantly vomited blood in large quantities, and also passed the same by stool, and with his urine, and been subject to frequent epistaxis: has slight cough, with expectoration tinged with blood; breath very short; there exists great tenderness to the touch under both clavicles, and over the region of the heart; respiratory murmur at upper part of left lung dull; perspiration at night occasional, but not profuse. The bowels previous to his illness were habitually constipated. He informs me that he has frequently had diarrhoea during his illness, which has been checked by anodynes; and that when he has taken purgatives his motions have been relaxed, but mixed with