

gangrene or low forms of inflammation are to be apprehended we must, from the commencement, deal liberally with the case, especially as regards wine. Of medicines, the sulphate of quinine is unquestionably the best.

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ART. XIV.—*Commentaries on Diseases of the Heart and Vessels.*

By ROBERT D. LYONS.

THE following observations will, I trust, be received with indulgent consideration. Their object is to discuss, not in set manner or in systematic order, some points which appear to me of practical interest and importance in the pathology, diagnosis, and treatment of certain forms of disease of the heart and great vessels.

*Irregular and Intermittent Heart and Pulse, without Discoverable Organic Disease.*—The phenomenon here indicated I have had occasion to observe in youth, in adult, and in old age, in connexion with acute as well as with chronic disease, and also in conditions of the system in which no other lesion was present.

I have observed the following amongst other instances of irregular cardiac and vascular action:—

1. A state pretty common in persons of 60 years of age, and upwards, in which there is momentary arrest of the cardiac and radial beat once, perhaps, in a minute, and this at certain intervals in the day, and not observable at all times. During confinement to bed, from trivial and temporary ailments, especially those affecting the chest, this phenomenon becomes more constant. It often then recurs twice or three times in the minute, and is followed by a peculiar hurried action of the ventricles for three, four, or half a dozen beats. The momentary cessation of the cardiac action is in some patients sensible to themselves, is attended by a thrill of apprehension through the whole system, and is often the cause of much anxiety and distress of mind. I have, in some well marked cases of this affection, observed the presence of very fully developed *arcus senilis* around the cornea. So far I think this supports the assumption that the irregular cardiac action in question is due to a weakened, flabby, and probably fatty condition of the ventricles. It may be further noticed, that in cases of this kind the heart's action is very much influenced by the respiratory movements. Thus

a sudden cough, or an unusually deep inspiration, or any sudden check to either the inspiratory or expiratory effort will be sufficient to cause an immediate, but momentary, arrest of the heart's beat and the radial pulse.

The practical therapeutic indications which I think derivable from the consideration of these phenomena are to avoid lowering and depleting measures when such patients are affected with subacute bronchial, or other pulmonic lesions; and, on the other hand to fortify the system, and the heart especially, by nourishing broths and a liberal but judicious use of stimulants.

2. A state in which, in persons of adult age—30 to 40—irregular action of the heart, with momentary cessation of its beat, occurs in the condition of physical and nervous prostration which supervenes to that of inordinate excitement maintained for ten days or a fortnight at a time by excessive indulgence in alcoholic drinks. One of the most marked instances of this kind which I have met with was recently under my observation. There was great sense of depression, collapse, and weakness referred to the cardiac region, the patient putting his hand upon the heart, and saying, "It is all there." The cardiac impulse was found to be feeble, the rate of circulation from 65 to 70, and the first sound weak. A cardiac pause occurred at about 15 to 20 beats for two or three days; it then became more irregular, and occurred once or twice in every two or three minutes; subsequently it occurred only during part of the day, towards evening, when the patient's system ran down; gradually this symptom disappeared. The same patient, on several previous occasions, after excessive abuse of alcoholic drinks, complained of great cardiac sinking and depression; but the heart and pulse never before exhibited the phenomenon of momentary interruption of its beat.

I have, in several instances, noticed the connexion of dipsomaniac indulgence with great languor and debility during portions of the day—usually the afternoon—coupled with cardiac depression and feelings of a hypochondriacal character, and with melancholy forebodings. The circulation is, under these circumstances, found to be languid, the heart's action feeble, the sounds dull, and wanting "tone" and "ring;" and the pulse at the wrists is readily compressible, and wanting in resiliency.

I feel persuaded that this train of symptoms is connected with incipient fatty degeneration of the muscular structure of the heart. Bracing air, tonics, the preparations of iron, animal food at frequent

intervals, and moderate stimulation, especially by such wines as those of the Burgundy vintages, which fortify and invigorate without producing excitement of the circulation—are the remedies which I have found most beneficial. By such means I have no doubt that cardiac degeneration can be arrested.

3. Another, and more singular, form of cardiac irregularity is that which I have found to occur in persons of advanced age. The pulse is slow—at or under 40 in the minute; it is a long, slow, and labouring pulse-wave, which lingers under the finger, but is altogether devoid of resistance or force, and can be completely extinguished by slight pressure. The cardiac impulse is extremely feeble; but it is on applying the stethoscope that the most marked phenomena are discovered. The rhythm of the cardiac sounds is altered; and, instead of a double sound, we may find a treble or quadruple sound. One very well pronounced example of this affection came recently under my notice. The patient was aged over 70 years, a female. The pulse at the wrist was hardly 40, and this seemed its permanent rate. The cardiac impulse was very feeble; and, on applying the stethoscope, a distinctly triple rhythm of the heart's sounds was audible. This, be it observed, was not a temporary or momentary condition, but one which we found, after repeated examination, to be, so to speak, the normal state of the heart's action in the patient.

I conclude this case to be another example of weakened and probably fatty heart. The occurrence of treble, and even quadruple, sounds attending the heart's beat I think admits of ready explanation by a want of synchronism in the action of the several *pairs* of the parts of the heart which, we know, usually perform their motions together. Thus, if the ventricles do not contract at precisely the same moment we have doubling of the first sound; if the great vessels, aorta and pulmonary artery, do not react on their contents at precisely the same instant, reduplication of the second sound will be the result.

We know that, under the influence of nervous excitement, in young females, in certain chlorotic states, and even in males at or about the age of puberty, and under other conditions not well defined, a triple rhythm of the heart's action is occasionally induced. It is in these instances, however, but a transient and temporary phenomenon, and disappears under treatment.

*Feeble Heart, with Hypochondriacal Symptoms.*—Another class of cases may be now noticed. They occur, so far as my observations

extend, chiefly in individuals of rather full and plethoric habit, and who are supposed to be in robust health. They are usually persons in the prime of adult life, 30 to 45 years of age, rather over than under the middle height, well coloured, of energetic minds, and at one period of their lives, if not actually so when under observation, of vigorous frame, and capable of undergoing much physical exertion. The appetite is usually good, and the various functions of the body are performed with regularity. What, it may be asked, are or *can be* the ailments of persons apparently in such rude health?

When individuals, in the circumstances now under consideration, make known their complaints it is not unusual to find them treated by their friends as “fanciful,” “hippish,” or “indolent;” and so much do appearances belie their statements that they are not always accorded sympathy, still more rarely entire credence. And yet their ailments, and I may even say their sufferings, are as real, and occasionally as severe as those which occur in disease of a less questionable character.

In these cases it will often be found that the patient complains much of general debility, with total prostration of nervous energy, and sensations of great weakness, sinking, and even collapse—the latter chiefly referred to the cardiac region. There is much hypochondriac feeling, with morbid forebodings, and an irresistible melancholy seizes upon the mind, which it is found impossible to shake off by any effort of the will. In some patients these symptoms prevail during a great part of the day, and constitute an aggregation of misery and distress that eventually becomes almost intolerable. In other instances it is only in the latter half of the day that the patient's system runs down, as it were; or, as it was on one occasion very strikingly illustrated to me, the patient feels as if the system were like a piece of clock-work, wound up and set to go for a certain number of hours, during which nervous and mental energy were well sustained, and physical exertion, even of considerable amount, could be well borne. A moment seemed to arrive, however—in this instance about one o'clock in the day—“when the weights had run down,” the clock-work ceased to go with its previous energy, and the patient, feeling the nervous system all unstrung, and the muscular apparatus feeble and relaxed, was no longer capable of voluntary exertion of the will or mind to the full extent of their powers. Feelings of melancholy, depression of spirits, sighing respiration, disposition to lie down, and, in some instances, a heavy sleepy state supervene. In some cases recourse is secretly had to the use of stimulants, from

the knowledge which the patients have, by experience, acquired of their efficiency in, at all events temporarily, relieving the state of wretchedness and depression into which they are accustomed to sink at a particular hour of the day.

The heart's action and pulse are usually, in these cases, very feeble, the radial pulse being "shabby" and "thready." There is manifestly an incomplete and inefficient circulation of blood, due, I think, primarily to a weakened and atonic state of the ventricles, and possibly, at a subsequent period, to incipient fatty degeneration.

Change of air, horse and foot exercise in a bracing climate, a tonic regimen, frequent use of broiled meats, an early and light dinner, avoidance of succulent vegetables, the moderate use of brandy rather than whiskey, properly diluted, and the more tonic and invigorating wines of the Burgundy rather than the claret vintages, I have found to be attended with most excellent results. In many of these cases there is a mechanical as well as a physical connexion and dependence manifested between the stomach and heart. The state of collapse above described is generally found to occur about the time that the stomach is empty and idle. A small quantity of broiled meat, with a glass of Macon, Beaune, Volnay, or other tonic Burgundy wine at this period of the day will be found an excellent stimulant to the heart as well as to the whole system. The bitter vegetable infusions, with or without the preparations of iron, are also indicated; while in many cases the ammoniated tincture or the infusion of valerian, given in effervescence three or four times a day, will be found highly beneficial.

These cases, if neglected, have unquestionably a tendency to run on into confirmed fatty degeneration of the heart—a full development of which state may be anticipated between the 50th and 60th years, if not earlier.

*Aortic Murmurs.*—In young and otherwise healthy persons, males, at or about the age of puberty, I have in several instances observed murmurs referrible to the ascending portion of the aorta, and in point of time following, with a slight but appreciable interval, on the ventricular systole. The individuals in question appeared in the enjoyment of fair average health, being well nourished, well coloured, and in no respect anemic or chlorotic, and of vigorous, if not robust frame. In some instances the murmur was detected in consequence of an examination of the heart being asked for by reason of slight palpitation and distress in the precordial region.

In other instances I have become aware of the presence of this variety of murmur, under circumstances which called for a general exploration of the chest, but in which no suspicion was entertained by the patient himself that anything abnormal existed in the action of the heart or vessels. The murmur has been usually of a somewhat rough blowing character. I have found it limited by the aortic valves, and in no instance diffused in the direction of the ventricles. I have more than once known it to be scarcely audible till the stethoscope was passed an inch or more above the level of the sigmoid valves. Its point of maximum intensity was about the junction of the middle and upper third of the sternum; and, though audible at the top of this bone, it was but faintly propagated into the carotids. The ascending portion of the arch of the aorta and its contained blood must be interrogated for the cause of this murmur. The integrity of the valves of the aorta seems to me to be guaranteed in these cases by the faintness, and, in some instances, absence of the abnormal sound at the "cardiac centre," and the purity and clearness of the second sound in this situation in all the cases that I have observed. Spanemic and chlorotic states of the blood I have judged not to exist, from the well-nourished condition of the body, and the florid colour of the face and surface generally.

In persons of more advanced age atheromatous states of the aortic walls, with or without calcareous degeneration of the inner coat, and the production of the so-called "osseous" plates will readily account for murmur localised in the aorta, and unattended by abnormal valvular sound. It is well known to pathologists that even in very advanced states of degeneration of the walls of the aorta, extending to within a very short distance of the origin of the vessel, the semilunar valves will often be found in a condition of perfect integrity, retaining their transparency, and being in every respect adequate to perform the office of closing the mouth of the aorta, and preventing the return of the blood into the ventricle.

But though atheromatous change is possible, it is certainly of great rarity prior to, at, or shortly subsequent to puberty. I think we may even assert, in general terms, that *atheromatous disease is of exceptional occurrence prior to the thirtieth year of life*. (I have, however, myself seen well marked exceptions to this rule.)

It becomes a question of great nicety, as well as of much practical importance in reference to prognosis, to determine the nature and source of murmur in the class of cases in question. If of organic origin, and dependent on atheromatous degeneration of the aortic

walls, we can at best but anticipate slow aneurismal dilatation of the primary arterial trunk, with the probable formation of a fusiform "true" aneurismal tumour in the chest by the time the patient reaches his fortieth or forty-fifth year. In the interval he runs the risk of rupture of the more inelastic *atheromatized* inner, and middle coats of the aorta, as the result of any unusual strain the vessel may be subjected to by blows upon the chest, violent muscular exertion, forced respiratory efforts, or other agencies of similar effect. Rupture of the coats of the vessel will, of course, be speedily followed by the formation of "dissecting" or "false" aneurism, a diseased state which, under the most favourable aspect, is incompatible with a protracted duration of life—far less so, as will be subsequently shown, than in cases of "true" aneurism.

To put the problem in question in a definite and concrete shape before us we shall pose it thus:—

*Given*—A youth, from 17 to 25 years of age, well formed, of medium stature, build, and weight, well nourished frame, and well coloured complexion, with every evidence of well arterialised blood, and all the functions discharged in a healthy manner, the circulation being tranquil, or but slightly disturbed. It is desired for any of the reasons, half social half commercial, so numerous in the present day—to insure his life for a liberal sum. The most careful general exploration gives no evidence of disease, with the exception of a rough, blowing murmur audible in the aorta, not heard at the cardiac centre, but more or less audible in the carotids. Whether is the examining physician to recommend for insurance or to reject such a life?

It is unnecessary to dwell on the important issues at stake, and the responsibility that attaches to the verdict of the medical practitioner under these circumstances. And be it remembered that they are circumstances in which compromise of opinion is impossible. He has but one alternative—to reject or to recommend the life. Now I believe that, guided by precedent, and by what may be deduced from systematic works, the life in question would be rejected in the majority of instances. And yet I am persuaded the decision would be an incorrect one.

Besides others that have come before me at various periods, I have more recently had the opportunity of observing not less than five cases of this affection. The murmur is well marked in all; in all the limits of its diffusion are those above assigned; and in all the frame is well nourished, and the blood well oxygenated; in two

there is, or rather was, for a time, slight palpitation and some slight cardiac uneasiness; but in none of them is there the slightest abnormal sound, or action in the heart itself. In some instances I have known the murmur to disappear altogether in the progress of the case.

In the five examples now cited the murmur remains, and therefore they may be considered still *sub judice*. I have myself, however, acquired the strongest conviction that in no single instance out of the five is the murmur dependent on atheromatous or other organic change in the walls of the aorta. This conviction I base on the following considerations:—

(a). The youth of the patients.

(b). The absence of pain, distress, or uneasiness, referrible to the aorta in the majority of cases.

(c). The tranquil state of the circulation.

(d). That I have known the murmur to disappear in similar instances previously observed, the action and sounds of the heart and aorta being perfectly normal.

*Obstructive Disease of the Aortic Orifice.*—In this important form of lesion of the heart the usual phenomena are those of impeded circulation, systolic murmur propagated into the aorta, cardiac distress and palpitation, and finally death, from the effects of imperfect circulation, venous congestion, secondary engorgement of the lungs, liver, and kidneys, and dropsy in the extremities or the great cavities. It cannot however, I think, have escaped the notice of observant physicians that cases agreeing in the acoustic phenomena, and therefore, and justly so, classed alike as instances of aortic obstruction, differ very widely in duration, in the amount of suffering entailed, and in the general state of the patient's health and fitness or capacity for the ordinary avocations of life. In some of these cases a fatal issue ensues after no long interval, and with much suffering; in others, as in the following instances, a comparative state of health and physical comfort is long maintained.

One of our dispensary cases at Jervis-street Hospital exemplifies in so striking a manner the principles involved in our first and second propositions, that I think it will be useful to consider its features somewhat in detail. Several of our pupils recently examined the case of Mrs. M., amongst our out patients, at that institution. She is a *healthy-looking*, fresh-coloured woman, of middle stature, comfortably clad, the wife of an artisan, in moder-



ately easy circumstances for his position in life. It is worthy of remark, that this woman sought advice for a trifling derangement of the stomach, with foul tongue, and of recent origin. She made no complaint or reference whatever to her heart till she perceived, after she had explained her gastric symptoms, that I did not identify her. I had, however, recognised her face as one perfectly familiar to me. She then mentioned her name, and the fact of her having been under my care for "Heart Disease" two years and a half previously. This brought her case, with its history, symptoms, and pathology to my mind in all its vividness. Fresh inquiry elicited a repetition of her history, to the effect that some seven years since she had an attack of rheumatic fever, subsequent to which she complained of heart affection. At the period of my last seeing her, two and a half years since, she went to the country for change of air, by my advice, and she has since not only enjoyed very fair health, but has borne another child, now just weaned. She is perfectly aware that she has "the Disease of the heart," as they generally term all cardiac affections. She suffers but very slightly, and that only occasionally.

Now let us see what are the stethoscopic signs in this case. I examined her with much care and interest, and many of the pupils can confirm the observations then made. The pulse at the wrist was regular, and in no way remarkable for excess or deficiency of force or volume. The cardiac impulse is full and sensible over an increased surface of moderate extent; the precordial dulness is likewise increased in extent to a moderate degree. On applying the stethoscope a very loud whirring murmur is audible with the first sound of the heart, or rather replacing or drowning it. This murmur is very intense, much louder than in any of the other cases at present under observation. It is audible from the apex to the base of the heart; it is propagated up the line of the aorta, and is heard at the root of the neck and in the carotid arteries with great intensity; it can be traced as a very loud sound, and still of a whirring character, in the descending thoracic aorta; it is audible between the scapulæ and over the last dorsal vertebræ; it is heard, almost with the same intensity, in the lumbar region; and it is perfectly audible and distinct when the stethoscope is carried to the lower end of the sacrum. And it is to be borne in mind, that in this case our examination was made through the numerous and thick folds of a female's dress. I have no doubt that the murmur is audible in this patient in the iliac and the femoral arteries, and

perhaps through the whole arterial tree. Now, note again the remarkable features of this interesting and instructive case. The patient makes no complaint of heart symptoms; she has for two years and a half enjoyed average health, with freedom from cardiac distress, except at rare intervals, and she then suffered but little. There is little, if any, disturbance of the equilibrium of the circulation. Not only have the functions generally been performed with every indication of integrity on the part of the great organs, but she has safely gone through that most wonderful of God's operations performed in the human economy, viz., that of child-bearing, and the subsequent process of suckling her child.

Taking it all in all, there will rarely be met with a case more full of interest and instruction.

From the fullest consideration which I have been able to give this case I regard it as an instance of obstructive disease at the mouth of the aorta, the result of vegetative growth in the semilunar valves, which offers a certain amount of impediment to the egress of the blood from the ventricle into the aorta, by which it is thrown into vibrations, and so the murmur is produced synchronously with the first sound of the heart. But observe, the second sound of the heart is, in this case, perfectly pure, clear, and distinct. From this we infer that the lesion of the valves is such that while it impedes the outflow of the blood from the ventricles, it in no way interferes with the integrity of the aortic valves, and they are, therefore, as fully able as in the state of health to close the aortic orifice, and so prevent regurgitation from the aorta into the ventricle.

But we have, I think, in this case something special in the cardiac mechanism, under its new conditions of disease.

I may compare for a moment the case of Mrs. M. with that of poor G., another patient in hospital, with similar stethoscopic signs of disease. In the latter instance we have great cardiac suffering, the equilibrium of the circulation is profoundly impaired, the lungs and liver suffer in consequence, there is much œdema, general debility, and incapacity for exercise, not to say manual labour or active avocation of any kind. And yet the case of G. presents essentially the same stethoscopic phenomena. There is but a single murmur; it is systolic or audible with the first cardiac sound; it is propagated up the aorta. It is not, to be sure, of anything like the same intensity as that in Mrs. M.; it is not propagated one-tenth of the distance; it has not the same whirring character. But all this, if we confined our attention to local and stethoscopic signs, would

only mislead us, for we should be led to imagine that Mrs. M's. was far the worse case of the two. Whereas, in practical reality, Mrs. M's. state of health is one of comparative ease; poor G's. is one of much suffering, and our prognosis must be of the most unfavourable kind, and implies a speedy issue in death. They are both cases of *non-regurgitant* obstructive disease of the aortic valves. Wherein do they so essentially differ? Are we to assume that it is a mere freak of disease; that in one there is tolerable health over a period of at least two years and a half, and this compatible with child-bearing and nursing; while in the other the debility is extreme and the suffering great? It is not a freak of nature or disease; this is, I believe, a term of a by-gone day, and implies insufficiently or unsuccessfully explored causes.

From a review of the numerous morbid specimens which are in my possession I think I can satisfy myself that there exist two very distinct forms of non-regurgitant obstructive disease at the mouth of the aorta. (The various proofs from examination and comparison of specimens cannot be given in print in the absence of illustrations.) In one of these forms it may be observed that the aorta is constricted at its mouth, and the vegetations are so placed as to present a very serious obstacle and impediment to the egress of the blood from the ventricle. I shall call this variety obstructive aortic valve disease, with narrowing of the mouth of the aorta—for brevity sake we shall term it “obstructive stenosis.” It is well exemplified in some of my specimens; it is what I believe exists in the case of G. It is necessarily attended with great disturbance of the equilibrium of the circulation, and a permanently incomplete and ineffective circulation of blood. The lungs, the liver, and the other organs so directly implicated when the balance of the circulation is destroyed in the heart's chambers, become necessarily diseased in this form of valvular lesion.

Now, contrasting other specimens, I find there exists obstructive disease, it is true, in the aortic valves; but though the vegetative masses are considerable, the mouth of the aorta is larger than natural, and though the warty vegetations obstruct the blood as it flows from the ventricle, still the vessel is so capacious that no serious impediment to the egress of the blood takes place. The impediment is sufficient to throw the blood into vibrations, which cause systolic murmur, but the circulation is efficiently maintained, for the great arterial tube readily admits of the free passage of the blood through it. This latter condition I assume to exist in the

case of Mrs. M. I think we may, with propriety, designate it obstructive disease at the mouth of the aorta, with a patulous, or it may be a dilated state of the vessel. We may, for brevity sake, designate it "obstructive patency." There is one difference in the signs in these two cases, to which I have not yet called attention, and I presume it will hold for the two classes of cases. It is the condition of the radial pulse. In the one class of cases, that of stenosis, it is a small weak pulse, that of an imperfect circulation. In the other class of cases, like that of Mrs. M., the pulse is natural in force and volume; it is the pulse of a vessel receiving its full charge of blood at each stroke of the heart. In fine, in the one case we have a deficient and wholly inadequate circulation; in the other the circulation is well and fully sustained, and quite as much blood finds its way at each stroke of the ventricles into the aorta, and thence into the peripheral vessels as in health, *malgré* the vibrations given to it at the mouth of the aorta, as it issues from the ventricles, by the vegetations aforesaid.

I have elsewhere taken an opportunity of showing how the considerations to be derived from a study of the states of patency and stenosis apply to mitral as well as aortic valve disease. In my mind they give us a new light to aid in the explanation of the apparent anomalies and paradoxes which we have been accustomed to associate with our ideas of cases, bearing the same technical designation, but differing as widely in practical result to the patient as the cases of Mrs. M. and poor G. are seen to do.

Another case, which bears out the foregoing observations, may be cited from my note-book. It is that of a gentleman, then aged 36, whom I saw in consultation about two years since. He was then labouring under an aggregation of aggravated and apparently hopeless maladies. At the period I speak of I found him suffering from delirium tremens, extreme anasarcaous swellings of the lower extremities, dropsy of the abdomen, and an anasarcaous state of the upper extremities and of the face. The urine was albuminous, but *not* of low specific gravity. But his chief complaints were referred to the precordial region and chest generally. The breathing was hurried and oppressed; much palpitation and cardiac distress being complained of; the pulse was rapid and feeble; and on applying the stethoscope over the heart a very loud, rough, and whirring systolic murmur was audible, which could be traced up the aorta and into the carotids with great intensity.

For more than a week this gentleman's life was despaired of.

His will was executed in anticipation of an immediately fatal issue. Extreme delirious excitement prevailed to such an extent that it was next to impossible to keep him in bed, all those immediately in attendance on him being overborne by the violence of his demeanour. The dropsical state was daily increasing; and it was evident that he was fast wearing out the slender thread of life that remained to him.

Much against the will of his friends, who from former experience supposed that almost unlimited supplies of stimulants were required to maintain his system under the state of delirium, I insisted (and not without much difficulty were my injunctions carried out) in having the supplies cut short. With the more rational frame of mind thus soon induced we were enabled to enforce the regular use of diuretic and purgative medicines, and other suitable remedies. A rapid improvement in his state was speedily effected; a copious drain by the kidneys and bowels was maintained for several days; and ultimately we had the gratification to find that the dropsical swellings completely subsided; the circulating system became tranquilised; *though the cardiac murmur was still persistent*; the respiration returned to its normal rhythm; strength was gradually restored; and the patient was enabled, after the lapse of a couple of months, to resume his ordinary avocations in the country. He even acquired a very considerable amount of vigour, which he had been a stranger to for a long time previous to his illness; and, amongst other things, it may be mentioned that, though married for some five or six years prior to the illness in question, it was only about a year subsequent to it that he became the father of a child. He still lives in the enjoyment, I am given to understand, of fair average health.

My interpretation of this case is very much the same as that given for the preceding one, viz., that it was, or rather is, an instance of "obstructive patency" at the mouth of the aorta. The dropsical state I am disposed to refer to a temporary overturning of the equilibrium of the circulation, with congestion of the lungs, liver, and kidneys, induced by the state of excitement consequent on continued and excessive indulgence in alcoholic stimulants.

We can readily conceive, it appears to me, how in the case of Mrs. M., and in that of this gentleman, the circulation can be fairly maintained under the exigencies of the new conditions of obstruction and patency at the aortic orifice as long as the blood is not driven at too high a speed, or under too high pressure. The patency of

the aortic orifice seems, under these circumstances, to compensate for the obstacles opposed to the egress of the blood by the warty vegetations on the valves. When, however, under alcoholic or other stimulants the circulation is driven at a high pressure, the equilibrium of the compensating agency and the obstruction becomes lost; each cardiac beat is attended with incomplete and inefficient discharge of blood from the ventricle into the aorta; each successive ventricular contraction and dilatation leaves a small surplus of blood undischarged from the ventricular chamber; this of necessity tells, in a retrograde manner, upon the left auricle and its blood-charge; this again, in its turn, upon the pulmonary veins; congestive stasis is thus produced in the lungs; through the terminal radicles of the pulmonary artery, through this vessel itself, and finally through the right ventricle and auricle, and so through the venæ cavæ to the liver and other great organs and parts the impediment is propagated. Finally, dropsy supervenes as a mechanical result of the congested state of the venous system in the great viscera and in the extremities.

*Pure Uncomplicated Myocarditis.*—The last case I shall cite in the present paper is one which I regard as of uncommon interest and importance. It furnishes an example of complete restoration of the heart to the most perfectly normal and regular action after years of prolonged suffering from cardiac disease.

The patient, a gentleman now aged 44, of light but vigorous frame, sanguine temperament, and active habits of mind and body, and who had formerly enjoyed uninterrupted health, in the early part of the year 1850 began to find himself in less satisfactory condition than usual. In July of that year—and then suffering much from debility and unpleasant sensation in the chest, with pain at the left side—he consulted a physician, who pronounced him to be labouring under “heart disease.” The pulse was then ascertained to be 120 per minute. Leeches, and subsequently blisters, with 20 drops of tincture of digitalis, three times a day, were the remedies employed. Little or no improvement took place. And, speaking of his own case in a very able report, which he has placed in my hands, and which he has been good enough to review while in the press—the patient says:—“I grew worse daily; the action of the heart increased, with pain and soreness of the heart itself; until, at the end of two months, I became unable to go down stairs, and was obliged to sit on a sofa all day, and could not even move without increasing the heart’s action.” The treatment was continued for

four months "without further alteration;" but it appears the pulse was reduced to 72 per minute in November, 1850. The patient's report continues:—"I was then in a wretched, weak, nervous state; could not rest in the same position for a moment; nervous twitchings, and horribly unpleasant sensations all over the body." About the middle of January following, 1851, the heart again got into excessive action. "About the beginning of March I found myself in a most wretched condition; heart's action so rapid and violent; the beating of the heart at night rendered sleep impossible; and being deprived of the power of reading (from unpleasant sensations in the head, caused by the effort to read, long complained of then and subsequently), and unable to devise any other suitable occupation or amusement, I thought I should go mad." Two or three months subsequently some slight amelioration appears to have taken place in the general state; but the head was not improved; the patient "could not read three minutes consecutively without heat and pain in the head, and horrible sensations extending from the head downwards to the heart, and all over the body."

Change of air and regimen subsequent to this produced some considerable improvement in the general health and strength, so that the patient could walk some miles in the day (with repeated intervals of rest).

The history of this interesting case is protracted over the three or four succeeding years, with many alternations of partial improvement and retrocession. On the whole, however, a slow but gradual amendment in the state of the general health, and in the condition and action of the heart, took place between the years 1852 and 1855. Towards the middle of this latter year the patient found himself well enough to resume his practice at the legal profession; but he adds, "I cannot say that my health was *perfectly* restored until 1857."

The various plans of treatment employed in this case comprised digitalis, prussic acid, bitter infusions, ignatia, iron, zinc, and other tonics. Vesication—or, as the patient himself terms it, "the blister torture"—was continued every third day for ten months; and during four months longer the patient "was weaning himself off it"—that is, continuing its use, but at longer and longer intervals.

A tonic regimen, with cold shower baths, was persevered in for nine months with, apparently, some improvement to the general health, as during its use he was able to walk about two miles in the course of a day. But that there was no substantial gain may be

judged from the fact which he states that "having one day over-fatigued myself, I was not able to stir out for a month, and did not recover the effects of it for the entire winter." Shortly subsequent to this he underwent a course of hydropathic treatment, which was prolonged for a year and a half. He appears to have improved a good deal in general health for a time, while under this treatment, which he himself ascribes to "the effect of the air and regimen as much, if not more, than the hydropathic treatment, which was administered very sparingly at first." It is worth while to note, that during this period his allowance of animal food was diminished one half—his hydropathic physicians recommending little meat and much vegetables. Hydropathy was abandoned in its turn; and finally the patient placed himself under mesmeric treatment.

In proceeding to comment on this singular case I may premise, that I had several opportunities of examining this patient at periods when the heart was in a state of the highest excitement. Under these circumstances the debility was extreme, the patient's sufferings most intense, and the cardiac action almost more violent and tumultuous than I have ever witnessed it in any other case. The face was flushed, and the malar bones especially much congested, but of a vivid, not a cyanotic hue. The pulse was rapid, 120 to 130, but not irregular; and it was not remarkable for force or volume. The impulse of the heart to the hand, placed over the precordial region, was very violent and tumultuous; percussion gave no positive indications of much increased size of the organ; but when the stethoscope was applied, a loud, diffuse, systolic bellows-murmur was audible, with great and equable intensity over the whole precordial region. No doubt remained on my mind, on any of the occasions on which I examined him, that this gentleman laboured under incurable organic valvular lesion, and that it was but a question of time as to when the fatal issue might be expected. I believe I am justified in saying that this opinion was fully shared in by all those who examined the patient, and amongst them were some of the ablest stethoscopic observers whom I am acquainted with.

The subsequent history of the case is soon told. This gentleman resumed the practice of his profession in the month of June of the year 1855, as above stated. In the year 1857 he considered himself *perfectly* restored to health. In the following year it became desirable to effect an insurance upon his life, and from the entirely satisfactory report of the examining physician as to the total absence of all morbid signs or symptoms referrible to the heart, or indeed



any other portion of the system, he was accepted as a first-class life. On two subsequent occasions, it became my duty to examine his life for insurance, and after the most minute, prolonged, and careful stethoscopic examination of the heart, and a full exploration of the general state of the system, I could come to no other decision than to recommend him, as a first-class life, to be insured without extra risk premium. As in the former instance, his life was accepted in both the Companies for which I was concerned. It is needless to add, that a full history of his previous illness was, in every case, submitted with the proposal for insurance, and the medical examiner's report. I may, in conclusion, state that while this paper is in the press I have made a renewed and most careful exploration of the heart in this gentleman. Its impulse and sounds are *perfectly* normal and regular, and the pulse is equable, of moderate force and volume, and steady at 72 per minute. In reflecting on this very singular, if not unique case, the following considerations arise:—

1. It might be assumed that the patient laboured under a functional affection of the heart.

2. The disease might be assumed to be of the nature of those cases of chlorosis and anemia which we know may and do occur in the male, but which are so much more common in the female.

3. It might be assumed that this gentleman laboured under an obscure form of disease of the nervous system, with secondary and symptomatic disturbance of the circulating system.

4. It might be supposed that the case was one of organic lesion, affecting the mitral valves.

5. It might be assumed that the case was one of obstructive disease at the mouth of the aorta.

*Cor.*—As a corollary to the 4th and 5th propositions, it might be now assumed that the case was, or rather is, an example of organic disease of either the mitral or aortic orifice, with suppression of the murmur, usually attendant on those affections, in the manner pointed out by myself and others.

6. It might be assumed that the case was one of pure, uncomplicated, but very chronic myocarditis.

That the last theory is the only tenable one, and that which will alone explain all the phenomena of this very singular and instructive case, I shall presently endeavour to show. We shall, in the first instance, make a few observations for the purpose of refuting the other theories which may, as we have seen, be advanced to account for the principal features of this gentleman's case.

Very singular and anomalous cases of functional disturbance of the heart, must be familiar to all practitioners much versed in cardiac pathology. I am not, however, aware of any instance, nor indeed can I even conceive the possibility of any such case, in which functional disturbance of the heart was continued over such a protracted period as in the example now before us. Besides, it is beyond all question that the cardiac distress, pain, and tumultuous action of the organ, with the quickened pulse, flushed face, and vividly congested malar bones and general debility, observable in this case, were positive and not subjective phenomena. The violent ventricular impulse, and the loud whirring murmur audible by the stethoscope, would have satisfied any observer that the case was one of organic lesion of some kind, and that no functional derangement could produce phenomena of so unaccountable a character. Against the hypothesis of chlorosis and anemia, the patient's previous history, temperament (sanguine), habit of body, and colour of surface generally, as well as of the face, constitute, in my mind, conclusive evidence. Further, to judge upon the good old rule, from the arguments furnished by the *jüvantia* and *lædentia*, iron and tonics failed to give the smallest relief, and so far make directly against the supposition of any chlorotic state, which, indeed, there was, in my mind, no ground for thinking to exist.

In reference to the fourth and fifth propositions, it may be affirmed that, in the whole range of cardiac pathology, we are not acquainted with any facts that would warrant the conclusion that the valvular apparatus of the heart, once impaired by organic lesion, can ever be restored to perfect integrity. Indeed, the most superficial consideration of the anatomical disposition and the delicate texture of the semilunar or mitral valves, must satisfy us, from *a priori* reasoning, that even slight injury of these extremely fine membranous expansions does not admit of repair by any efforts of nature. While pathological anatomy demonstrates that the various morbid conditions of the heart's valves—such as fissure, cribriform perforation, ulceration, warty vegetation, calcareous deposit, or other change of what kind soever—tend, in proportion to the duration of the case, to become more and more aggravated morbid states. That, under certain circumstances, in which the equilibrium of the circulation is but little disturbed, life may be prolonged, in cases of valvular lesion of the heart, for almost an indefinite period, we have already proved. But we have no evidence whatever to show that organic change in

the valves of the heart admits of radical cure, with a return to perfectly healthy action of the organ, and total cessation of all morbid phenomena.

It will be desirable to advert here to certain remarkable instances of temporary suppression of cardiac murmurs developed in connexion with organic lesion of the valves, and which, as before stated, it might be supposed would furnish adequate explanation of the phenomena of the case now before us.

The temporary suppression, or even final cessation of murmur, developed in the mitral orifice, is familiar to physicians fully versed in the pathology of the heart.

Such suppression of cardiac murmurs has been noticed in the brief interval before death, when the heart's contractions lose their accustomed vigour, and the blood is not propelled with sufficient force over the valvular irregularities to produce murmur.

Suppression of mitral murmur has likewise been noticed in certain cases at a period long antecedent to death. It seems to be due to an artificial re-establishment of the equilibrium of the circulation, and a cessation of ventriculo-auricular regurgitation, by an adaptation of the diseased, but now much thickened and enlarged valves, to the mitral orifice. These valves, which when first attacked by disease were rendered incapable of closing the orifices which they were destined to protect, become, by thickening of the valvular texture, or by peculiar adaptation of the vegetative masses, again competent to close the orifice, which in many instances has itself likewise become *adaptively* diminished in size. I had myself an opportunity, some years since, of calling the attention of the Pathological Society of Dublin to a similar adaptive process, which I found to be effected, in the case of the aortic valves, with concomitant suppression of the murmur previously heard with great intensity.

Both in respect to the aortic and the mitral valves it is to be observed, however, that suppression of murmur is not attended with alteration in the general phenomena of the case. The disturbance of the equilibrium of the circulation, and the consequent embarrassment of the organs in physiological connexion with the heart remain as before. There is no restoration to health, and the morbid condition is sure to end fatally sooner or later.

In reference to the sixth proposition, it may be observed, in the first place, that myocarditis, though comparatively unknown to the clinical physician as yet, is a morbid state well recognised in the records of pathological anatomy.

The cases cited by Testa, amongst other authorities, prove the occurrence of inflammation of the parietes of the heart independently of valvular lesion; and abscess in the walls of the heart, though not hitherto recognised during life, is a well-known pathological occurrence. We also know that several other lesions of the muscular texture of the heart present themselves in cases in which no lesion of the pericardium, endocardium, or valves is discoverable. We may cite, as examples, the softening of the heart in typhus fever, and fatty degeneration of the heart. I have myself witnessed cancerous deposit in the ventricular walls without any attendant morbid state of the lining membrane, or the serous covering of the organ.

Inflammation of the muscular texture of the heart, irrespective of valvular or pericardial lesion, is thus, it may be concluded, a very possible, I would even go the length of saying a very probable, occurrence. Indeed, I am disposed to regard it as a morbid condition of greater frequency than is commonly supposed.

It may be acute or chronic; it may be attended with the formation of abscess or purulent infiltration in a more diffuse form; and, again, we can readily conceive the occurrence of chronic inflammation of the walls of the heart, without the formation of pus. Having, as I think, conclusively shown that no other of the morbid states assumed is capable of explaining the phenomena of the case of this gentleman, we are, I think, driven, *par voie d'exclusion*, to adopt the theory of a pure uncomplicated myocarditis, to account for the otherwise unexplained, and, indeed, unexplainable history of the case before us.

The general state of perfect health now enjoyed, after the lapse of so many years, with the complete state of integrity of the circulating apparatus, as tested by so many and so searching explorations, at long intervals, by different observers, for the purposes of life insurances, are conclusive proofs that no lesion impairing the valves existed at any period.

The cardiac distress, pain, palpitation and murmur, diffuse and not specially limited to any valvular area, and the occasional œdema are readily explicable on the assumption of a chronic myocarditis; while the complete restoration of the heart to healthy action, after years of suffering, is explicable on no other theory of cardiac pathology with which we are yet acquainted.