the horn-glass shaped capsule:—The operator standing on a stool seizes the thigh flexed at a right angle to the trunk with one hand, and with the other grasping the head of the femur he, by a system of extension combined with rotation and gradually increasing abduction, opens the way into the dormant-lying acetabular pocket. When the abduction, which must be gradually exerted, has reached a considerable degree, the head of the femur is felt to leap over the posterior border of the acetabulum and the surgeon feels that reposition has taken place. This important event is marked by a distinct sound of reduction. The articulation is at first insecure re-dislocation readily taking place. The third step is to render the joint secure. This is begun at the time of operation by forcible manipulation of the head of the femur in the acetabulum, but it is chiefly effected by allowing the patient to walk on the limb fixed in full abduction by a plaster case. Support is required at first, and this is kept on for three months, and is then replaced by a similar support applied with the limb in a diminished amount of abduction, the sound foot being raised from 2 to 4 inches in order to maintain some degree of abduction. Massage and gymnastics are advised. At the end of a second period of three months the fixation apparatus is removed. In double dislocation Lorenz operates on one leg at a time, and only commences treatment of the sound leg when the joint first operated on is firm.

REMARKS.

It will be seen that Lorenz's new method combines some of the features of Schede and Paci with forcible extension. The effect of the latter is to obtain in a short sitting what in Buckminster Brown's method is obtained in many months. Lorenz's method of forcible extension is open to criticism. I should be inclined to apply the extending fillet above the knee in addition to one at the ankle. In the third of my cases alluded to in this paper I have obtained by a few myotomies and by gymnastics so much relaxation of the parts that the top of the trochanter comes readily to Nélaton's line. In my second case extension, followed by the use of apparatus to press inwards the head of the femur, appears to have effected a real and permanent reposition. In the case of children of not more than 4 years of age forcible extension would probably be unattended by danger, in older children however a preliminary course of gymnastics would doubtless be of advantage. Every case must be carefully studied before the method of treatment is selected, and no sound surgical resource should be left untried. Among surgical resources Lorenz's latest method is without doubt a valuable one.

REFERENCES.

¹ *Bulletin et Memoires de la Société de Chirurgie*, Paris, 1891, xvii, p. 470.
² *Annales d'Orthopédie*, May, 1893. ³ See a paper by G. R. Elliott, *New York Medical Record*, May 29th, 1897.

ERRATUM

IN Dr. Hunter's paper on Cholelithiasis in the *BRITISH MEDICAL JOURNAL* of October 30th, there is an error on p. 1240, fifteenth line from the top. The sentence, "The intrahepatic catarrh is secondary to duodenal catarrh" should have read "is not secondary to duodenal catarrh."

PRESENTATION.—Dr. J. H. S. May, who for a number of years has been Chairman of the Sanitary Committee of the Plymouth Town Council, has, on the occasion of his retiring from that office, been presented by the staff of the Committee with a silver bowl bearing a suitable inscription.

DINNER TO SIR WILLIAM GOWERS.—The dinner at which Sir William Gowers is to be entertained by the Society of Medical Phonographers will take place at Limmer's Hotel, London, W., on November 25th, at 7.30 P.M. The chair will be taken by Sir William Broadbent, Bart. The primary object of the dinner is to afford to the members an opportunity of thanking Sir William Gowers for his services to it, and of congratulating him on the honour which he has recently received from the Crown. It is, however, felt that the dinner may have a somewhat wider significance as affording an occasion for an expression by the medical profession of their recognition of the services rendered by him to the profession at large, and anyone who may desire to be present is invited to communicate with Mr. L. E. Creasy, 1, Windsor Road, Ealing, or Dr. James Taylor, 49, Welbeck Street, W., from whom tickets (price 10s., exclusive of wine) may be obtained.

THE BRADSHAW LECTURE

ON

PROGNOSIS IN HEART DISEASE.

Delivered before the Royal College of Physicians of London, on November 4th, 1897.

By E. MARKHAM SKERRITT, M.D.LOND., F.R.C.P.,

Professor of Medicine in University College, Bristol; Senior Physician to the Bristol General Hospital; Fellow of University College, London.

MR. PRESIDENT AND GENTLEMEN,—It is probably the wont of those upon whom from time to time devolves the responsibility of delivering the lectures associated with this College to select for their discourse matters to which they have devoted special consideration, or which are to them invested with peculiar interest. Therefore when you, Sir, did me the altogether unexpected honour to invite me to deliver the Bradshaw Lecture for the present year, it seemed to me that I could best attempt to discharge the important duty with which I was entrusted by treating of some subject which had been in the forefront of my observation and thought during my active professional life. And my choice fell upon a theme which has also engaged the attention of those who have spoken with an authority to which it is not for me to aspire—one, however, which in its importance is always fresh, and is constantly present to the practical physician, offering for his solution ever-varying problems.

The Father of Medicine has said: "The Art of Physic is of great extent, life short, opportunity slippery, experience fallacious, and judgment difficult." Still but too true of our Art as a whole, this applies with equal force to one at least of its branches. Who is there that of his own experience cannot say of prognosis in disease that "opportunity is slippery, experience fallacious, judgment difficult?" And assuredly a full share of difficulty and fallacy surrounds the subject which I have chosen for this lecture; for although in none of the ills which flesh is heir to is a knowledge of what the future has in store of greater moment than in heart disease, yet in few things is the possible margin of error so wide.

It is not practicable within the time at my disposal to enter into a detailed consideration of the prognosis of heart disease in its various forms. Nor should I here venture to trespass upon ground that has before been occupied by those with whom I could not presume to compete. I propose rather to treat the subject from a general point of view, and to discuss it in certain aspects and phases, having special regard to the origin and nature of some of the uncertainties by which it is surrounded.

The following factors enter into prognosis in heart disease: First, an accurate estimate of the nature and extent of the changes that have occurred in a given case; that is to say, a complete diagnosis; next, a knowledge of its past history, with especial reference to the causation of the cardiac trouble and the length of time that it has existed; thirdly, an acquaintance with the course that may be run by a lesion such as is present; and lastly, a due weighing of the special features of the case in question.

There is no need to argue at length the dependence of prognosis upon diagnosis. If diagnosis is imperfect, or faulty, or totally wrong, prognosis will be correspondingly erroneous. The foundation of prognosis is an accurate appreciation of the changes produced by disease and of the pathological nature of the processes concerned; a knowledge, that is to say, not only of what alterations have occurred in shape or size, or structure or function of an organ or part, but of how they have been caused, and what is the ultimate history of the morbid agencies to which they are due.

When the heart is concerned, error in prognosis may arise in connection with either of these two factors—on the one hand, through mistake as to the actual physical condition of the organ; on the other, owing to failure to realise what will be the resultant of the various forces which are rightly recognised as being at work; and difficulty in these two directions tends rather to lie towards either extreme of age—in early life the discovery of the lesion is usually easy, but there are wide possibilities as to its future course; while with advancing years comes the time of degeneration, which in its

gravest forms often cannot with certainty be recognised. For youth is the period of acute inflammation, of pericarditis and endocarditis, which are commonly discovered with ease by the skilled observer; but no wisdom will avail to surely foretell the future whilst acute endocarditis is running its course. Whether when the inflammation subsides the roughened valve will be smoothed, and that unusual event occur—the disappearance of the murmur of acute endocarditis—or the morbid sound persist, but based on so little actual valve-change as to remain a murmur and nothing more; or whether the lesion is destined to work havoc with the heart and bring life to a speedy close, all this is beyond the reach of human foresight. Diagnosis is simple, definite prognosis impossible.

Towards the other end of life the opposite tends to obtain. Degeneration has no distinctive physical signs; and it often cannot be said with certainty whether the halting action of the organ is due to change which is organic and will remain, or comes from simple and remediable weakness. Upon the view that is taken of the nature of the affection depends the prognosis that is given; on the one hand, a grave forecast of increasingly impending evil; on the other, it may be, the prospect of restored powers and lengthened years. But, perchance, the promise of peace and length of days is made to the man whose heart is changing into fat, and the sword is hung over one whose only need is nourishment and rest.

It is important to recognise what is the position of physical signs in heart disease; how far they can be relied upon as evidence of the nature and extent of existing morbid changes and of their tendencies.

Speaking of valvular disease, Markham¹ says, "A too curious investigation of physical signs is apt here, as in the case of all other diseases where physical diagnosis is concerned, to make the observer less attentive to the general signs and symptoms than their real importance demands." And Wardrop² expresses his views in still stronger terms: "How many examples of erroneous prognosis do we not all meet with? And I am convinced that nothing has contributed more to extend this humiliating catalogue than the introduction of auscultation."

It is needless to say that the stethoscope does not merit such sweeping condemnation; and yet it cannot be denied that many of the errors made in the prognosis of heart disease, and especially of valvular lesions, arise from too narrow a reliance upon its indications. The stethoscope will discover the "physical sign proper," the murmur, and therefore decide to which of the classes of valvular defect any case belongs, and, by placing it in this category or in that, determine what are the usual tendencies of the affection; but here its function ends—beyond this it does not indicate what is in store for the particular patient. It is well known that the quality of a murmur is no guide to the amount of valvular mischief which exists; for while the loudest murmur may remain for many years with quite unimportant results, the effects of a valvular lesion may sometimes be too grave for the production of a murmur at all; but we cannot go so far as to adopt Latham's dictum,³ that "as a very general fact, the louder the endocardial murmur, the less is the amount of valvular impediment." There is, in truth, no rule in either direction, but each case must stand by itself in this respect.

A true estimate of the gravity of the lesion can only be gained by a general survey of the case in the broadest light; to determine, first, what has been its effect upon the heart itself, and then how far its influence has extended beyond this organ. If it is found that a murmur is present, no matter at which orifice, and that there is no change in that part of the heart upon which the strain first comes; and if it is also known that this murmur has existed long enough for the effects of increased work to be manifested; then it follows that the lesion is trivial and stationary, and may remain so for an indefinite time. On the other hand, if hypertrophy, or dilatation, or both, exist, their degree is a test of the actual interference with the heart in its work. Due weight is also given to the character of the pulse, and to symptoms such as dyspnoea or palpitation or syncope, and to any evidence of interference with the pulmonary or the systemic circulation, or of the presence of associated disease elsewhere.

It is, however, necessary not only thus to check the special

physical signs of valvular disease, but also sometimes to estimate the value of symptoms by physical signs. When this happens it is usually in young patients, who are far removed from the class to which I shall next refer. A short time since I had under observation a young man who suffered from most alarming cardiac symptoms, of which a grave view had been taken; frequent attacks of palpitation and dyspnoea, with a tendency to syncope, being associated with a mitral systolic murmur and a moderate amount of dilated hypertrophy. Between the paroxysms, however, the heart was capable of steady efficient contraction. It appeared to me that the phenomena were seriously out of proportion to the actual degree to which the organ was affected, and that the outlook was therefore favourable; and I am informed that time has shown the truth of this conclusion.

I have referred to conditions in which the physical signs may attract more attention than is their due. There is an opposite group, especially associated with advancing years, where they are apt to be by no means proportionate to the gravity of the actual state. In this case an intelligent consideration of the symptoms is essential, since they are of greater importance than the physical signs. For instance, a man beyond middle life, whose general nutrition is failing, suffers from shortness of breath and a tendency to palpitation. The heart's action is found to be somewhat weak, and that is all. And yet fatty degeneration exists, of which the patient may at any moment die.

The importance of "history," the second factor in prognosis, is never underrated by the practical physician. By it are determined the origin of any morbid state, the length of time that it has existed, and its tendency to development in one direction or in another; and an accurate appreciation of the information which it conveys is of the greatest value.

In heart disease, where valvular defect is due to acute endocarditis, it is important to know whether there is a liability to a fresh onset of the malady in which it originated. For instance, when endocarditis arises during the course of an acute specific disease, such as scarlet fever, which usually attacks a patient once only, the prospect is better than in the case of acute rheumatism, where recurrence is common and often lights up fresh endocardial inflammation. Or the history shows that a murmur may be due, not to endocarditis, but to weakness of heart following acute illness or originating in anæmia; in which event there is a reasonable prospect of cure. Or the cause is perhaps preventable or more or less removable, as when muscular strain produces cardiac dilatation. Or it is a diathetic condition such as gout, which can be kept in check, but not eradicated. Or the affection may originate in a persistent and irremediable condition, as when dilated hypertrophy results from chronic Bright's disease or from the arterial degeneration of age. In every case a recognition of the cause of a cardiac lesion, and therefore of the degree to which it may be influenced or removed, enters into a rational prognosis.

It is difficult to overestimate the value of a knowledge of the length of time that a heart lesion has existed. This aspect of history does not always receive the attention which it deserves. I will illustrate it in the case of acute endocarditis.

I have before pointed out that it is impossible during an attack of this inflammation to determine what will be its ultimate outcome. Walsh⁴ says: "Viewing all forms of valvular impediment as a single group, it is not possible to make any statement of the least utility on the question of duration. Nay, even if any individual disease of the whole number be selected, the extremes of brief and of protracted course are found to lie so widely apart that it becomes practically useless to strike a mean..... We must be content to register the unexplained truth that all forms of valvular disease may, on the one hand, prove the main instruments in rapidly killing, or, on the other, remain for a well-nigh indefinite period subjectively latent." And with this Latham's⁵ testimony accords: "Such cases as have fallen in my way have taught me that the period for which life may be still continued is very various. It may be a few months only, or a few years, or it may be for many years, even ten, or twenty, or thirty. Of these facts I am certain, but I cannot array them numerically and statistically; and because I

cannot, I can determine no relative proportion between those who survive months and those who survive years, or those who survive few years and those who survive many; yet the facts are sure."

Walsh is unable to account for so wide a divergence, but Latham's⁸ explanation is as follows: "When the heart is left in a state of unsoundness from past inflammation, two principal consequences are to be expected. Either there may be a renewal of inflammation in the unrepaired structure, or the unrepaired structure, remaining as it was left, may become the element of further material changes in the whole organ. The latter consists in alterations of bulk and size and shape and capacity, no other causes being engaged in bringing them about than those which are constantly at work in the healthy heart, namely, its own vital movements; only they are now at work with more or less energy than is either natural or healthy, or they are at work without their natural and healthy harmony."

Considered from the point of view of pathological anatomy, the result of acute endocarditis may be as follows: First, resolution, with removal of the products of inflammation, and consequent disappearance of all abnormal physical signs. I believe this to be one mode of termination, although this view is not universally held. Walsh⁷ says "An indubitable endocardial murmur, holding on from the beginning to the end of the acute disease, never, so far as I have known, totally disappears in after-life." It will be allowed that murmurs are sometimes met with having all the characters of those due to acute endocarditis, and that they may disappear with convalescence from the fever or comparatively soon afterwards. It has been urged that because the murmur does not persist, therefore it cannot be due to endocarditis. This important point is well argued by Byrom Bramwell,⁹ who arrives at the conclusion in which I have expressed my own belief. I have myself met with what I have believed to be instances of such complete recovery. Latham⁸ indeed asserts that out of a series of 63 cases of rheumatic endocarditis, "perfect reparation occurred in 17; for in them the murmur ceased entirely." And Sibson¹⁰ records the recoveries from mitral endocarditis as 25 out of 51. This is so large a proportion that the doubt arises whether in some the murmur was not due to a cause other than inflammation of the endocardium.

Resolution, then, being recognised as one mode of termination of acute endocarditis, undoubtedly a more usual result is the subsidence of inflammation, but the persistence of its products. The young connective tissue growth in the affected portion of the endocardium goes through the same changes which occur in similar tissue elsewhere—it matures into fibrous tissue, which as it develops tends to contract; and therefore the valve segments become more or less thickened, and perhaps distorted to such a degree that their function is permanently interfered with.

When this process of change of the products of inflammation into fibrous tissue is finally completed, acute endocarditis is at an end. Pathologically, therefore, the result in all hearts thus effected is the same—the persistence of the matured products of inflammation. But the practical difference between one heart and another is great. In the one, perhaps, "a little ridge on the surface of a valve, a little granule on its free edge, a little shortening or thickening of a tendinous cord;" possibly so slight a change that, though permanently marked by inflammation, the valve is practically perfect, and therefore no murmur exists; anyhow too trivial to give rise to definite interference with the function of the organ. In the other, the self-same morbid process results in some grave valvular deformity forming an obstacle before which the heart speedily fails. Pathologically identical, the outcome of the same affection, the clinical position of the two hearts is widely different.

"The renewal of the inflammation in the unrepaired structure" may occur in one of two ways: either by repeated attacks of acute inflammation similar to the first, or by the passage of endocarditis from the acute form into the chronic. Latham¹¹ says: "When rheumatism has been once suffered in early life there is a fearful likelihood that it will be often-times suffered again. Moreover, the first attack is generally the type of every attack which is to follow. They will all take the same course and involve the same structures. If the first involve the heart, so probably will they all." No

one will dispute the liability of acute rheumatism to recur. Yet in my own limited experience it is not very exceptional for this fever to attack a patient in early life, and not again though many years may have elapsed. For instance, the other day I saw a man, aged 27, who had suffered from rheumatic fever once only, at the age of 3 years; here a loud aortic systolic murmur existed, but without symptoms. And exception may also be taken to Latham's second point, that the first attack involving the heart, all the later will probably do so too. For I do not think that it is rare for acute rheumatism to recur without the renewal of endocarditis. This is a point upon which it is not easy to speak dogmatically, owing to the difficulty in determining that the heart does remain free from fresh inflammation; but it is fair to infer that this is so when the disturbance of the organ is not out of proportion to the general symptoms of fever, and no changes can be recognised in the cardiac area either during the acute stage or afterwards.

Opinions differ as to the frequency with which acute endocarditis passes into chronic inflammation. Latham¹² says: "This I believe to be a fact which, if not true in every instance without exception, is true in the majority—namely, that after inflammation of the endocardium has ceased, whatever remnant of unsoundness is left, it continues ever after without increase in its own kind. After the lapse of years the very appearance of all we find seems to testify that it has long been stationary. And when the results of clinical observation are compared with those of morbid anatomy they will be found to testify the same thing."

This important question is not adequately discussed by authorities on pathological anatomy. You, Sir, point out the reason for this when you say¹³: "Specimens of endocarditis in this early stage are frequent enough; but it is not easy to say what occurs next in the process, because we do not have many opportunities of seeing the intermediate conditions between this which is found in cases of death from the acute fever which causes the endocarditis, and that advanced state of change in the valves which long afterwards proves fatal by disabling them. It appears to us that, in the interval between acute endocarditis of rheumatic fever and the death long afterwards from valvular disease of the heart, many frequent repetitions of the inflammation must occur; sometimes we find inflammatory products of two distinct dates on the valves, some recent, some older. But more usually a constant state of inflammatory irritation persists, slowly changing the valve."

Judged by clinical evidence, my own experience points to the view that both these things happen; while in many instances there is only too good reason to conclude that the mischief is progressive, yet in some acute endocarditis comes to a definite end, and no further change takes place in the tissue which has been the seat of inflammation. I have met with many cases in which no perceptible alteration, either in the character of the murmur or in the general state of the heart could be detected at successive examinations, in some instances extending over a considerable number of years. It is reasonable to conclude that if the condition of the organ is thus stationary from the clinical point of view, it also remains structurally unaltered. On the other hand, instances are only too common in which it is plain that the valvular lesion is progressive, and the obvious inference is that chronic endocarditis has carried on the work begun by the acute inflammation.

It has thus been seen that the results of acute endocarditis vary within the widest extremes, and that no data exist by which it can be foretold during an acute attack what will be the ultimate position of any given case. How then will this most important question be answered? The problem will be solved by time alone. Let me remind you of the statement which I have already made—that a knowledge of the length of time that a heart lesion has existed is of the greatest value in prognosis. Endocarditis must be estimated by the results which it produces—the damage which has been done to the heart in a given time is a test of what will happen in the future; and prognosis becomes a problem in proportion.

What then are the indications that a condition is, on the one hand, grave in its tendencies, on the other unimportant? The only test is the degree to which the heart has become secondarily affected, the evidence showing that the organ is

hindered in its work. The presence of hypertrophy, the existence of dilatation, and their amount; signs of defect in the conduct of the circulation in the lungs or in the systemic circuit—these it has before been said are what have to be sought.

Let it now be supposed that the patient comes under observation some considerable time after an attack of acute endocarditis—it may be twelve months, or two years, or longer—and that a murmur is present. Prognosis, as has been said, becomes a problem in proportion. If the heart is in a certain state at the end of a certain time, what will be its condition in six months, or twelve months, or in five, or ten, or twenty years? And the longer the interval that has elapsed since the acute inflammation, the more certainly can this question be answered. If in the same period one patient has arrived at the stage of dropsical effusion, while another has a much enlarged heart, which can still, however, overcome the obstacle to its work; and, again, another is unconscious of disease, and there is but slight increase in cardiac size and strength; and in yet another no change whatever has occurred—the inference is plain, that as it has been in the past, so it will probably be in the future: disease that has advanced will continue to increase, that which has been quiescent will remain so still; and through the whole series the foundation of prognosis is time—time, and the changes which it has wrought.

I will conclude the consideration of the position of history in prognosis by reference to a case which well illustrates its importance. Nearly eight years ago I saw in consultation a patient who had been informed that he was suffering from aortic aneurysm. The existence of disease had been discovered by accident, and had not previously been suspected, the patient feeling in his usual health. I found a most intelligent man, fully able to grasp the bearings of all that was said respecting his condition. The heart was enormously enlarged and hypertrophied; the impulse was so forcible as to shake the chest wall, and could be plainly felt through the clothes. Although I was of opinion that the physical signs, into which I need not enter, did not justify the diagnosis of aneurysm, yet they were not such as altogether to negative its existence. But I was much struck with the point already mentioned, that the trouble had been discovered by accident, and not from symptoms complained of by the patient, who was exceptionally intelligent and observant, and had led an active life. It appeared to me that a lesion accompanied by cardiac action differing so markedly from the normal, if of recent origin, could not arise without attracting the attention of the patient; and on careful inquiry it came out that the strong beating of the heart had been noted in his early adult life; and, further, that when he was a child his father once came into the nursery when the boy was undressed, and observed something which led him to bring the family medical adviser, who examined the chest. I therefore concluded that the patient had grown up with the lesion which existed, so that to him it gave no abnormal sign. It followed that aneurysm, which would be a recent development, did not exist. The prognosis attaching to the latter being thus set aside, the question arose as to what the future had in store. On the principle which I have already discussed, it was argued that if compensation was so complete that the heart, although enormously enlarged, had been able through all these years to do its work in such a way that an active man had no suspicion that it was otherwise than normal, there was no reason why it should not long continue equally efficient. As a matter of interest, and as showing how inconclusive were the physical signs, I may add that, as opinions so divergent were given upon a subject of such importance, the patient was examined in London by two eminent authorities, one of whom came to the conclusion that aneurysm existed, while the other agreed with my view of the case. The patient, after hearing either diagnosis fully argued by its supporter, made up his mind that the balance of evidence was against the presence of aneurysm, and laid his plan of life accordingly. This was nearly eight years ago. I have examined him at intervals since, and have been unable to detect any signs of advancing disease; he is not conscious of any trouble; he leads a busy and fairly active life, and looks the picture of health.

I have gone thus fully into this case because it is a forcible

illustration of the value of a knowledge of the past as a guide to the present and the future. A most important decision turned upon the history, and the result has proved that reliance was rightly placed upon its indications.

An acquaintance with the course which is usually run by a given form of heart disease is one of the factors which have been enumerated as entering into prognosis. From what has already been said, it will be plain that this knowledge often cannot be applied with sufficient accuracy to be of much value. It has been seen that in acute endocarditis it is practically useless for determining what will arise in a particular instance. Nor, viewing all forms of valvular impediment, in whatever way originated, is it possible to make a statement with regard to any one of them that will necessarily hold good of a given case. A lesion that in one instance may end fatally within a few months, may in another be consistent with long life and practically good health. It is, however, recognised that each form of valvular lesion has certain general tendencies, and that some of these are more serious than others. The relative gravity of valvular derangements is variously estimated by different authorities. Walsh¹⁴ places them in the following descending series: Tricuspid regurgitation, mitral regurgitation, aortic regurgitation, pulmonary constriction, aortic constriction;—tricuspid constriction and pulmonary regurgitation being too little known to warrant their being placed in position in the list.

The worst results follow those lesions which directly obstruct the circulation behind them. Hence tricuspid regurgitation has the first place, hindering as it does the return of blood from the whole of the organs and tissues of the general circulation, the heart itself included. Similarly mitral disease, the two forms of which come next in the series, causes obstruction to the passage of blood from the lungs, and consequently tends to produce all the series of pulmonary complications which are due to this back pressure. On the other hand, lesions of the arterial orifices—the aortic and the pulmonary—so long as they exist alone, do not affect the circulations behind them, protected as they are by the auriculo-ventricular valves; and the result turns therefore solely on what effect is produced on the ventricle itself, and how far there is interference with the supply of blood to the artery.

Apart from the liability to sudden death, aortic regurgitation is much more serious than obstruction at the same orifice, because of the tendency to over-distension of the ventricle during diastole. Of all valvular lesions, aortic obstruction is the most favourable, the left ventricle frequently undergoing hypertrophy sufficient to overcome the obstacle at the orifice of the aorta. Pulmonary constriction has probably no more serious tendencies than aortic obstruction.

Further, it is well known that the sufferer from certain forms of valvular disease is placed in a better position, especially as regards prolongation of life, by having one or more other forms of affection of the orifices added to that which already exists. For instance, there is less liability to sudden death in aortic regurgitation if it is associated with mitral incompetency, probably because the regurgitation through the mitral orifice during the systole of the ventricle lessens the amount of blood driven into the aorta, and therefore the quantity and force of that which distends the ventricle during the succeeding diastole. Another familiar illustration is afforded by the effect of tricuspid regurgitation in relieving the pressure upon the pulmonary circulation caused by mitral disease. It has, doubtless, fallen to the lot of most to meet with cases in which urgent lung symptoms have been caused by the position of the pulmonary circulation between the obstruction to the onward flow due to the affection of the mitral orifice on the one side, and the increased *vis a tergo* of a hypertrophied right ventricle on the other. When at last the tricuspid valve gives way, part of the force of this hypertrophied ventricle is now expended in returning blood into the auricle; and thus tension in the pulmonary circuit is lessened, and the urgent lung symptoms are relieved; though at great cost as regards the systemic circulation.

I have before pointed out that the prognosis of valvular disease resulting from a non-recurrent specific fever is more favourable than that originating in acute rheumatism, inas-

much as further attacks of the latter may occur, bringing with them fresh risk to the heart. But the prospect is better when valvular disease is due to the endocarditis of rheumatic fever than if it results from inflammation which is chronic from the first. For while the former may, as we have seen, remain quiescent unless the valve is attacked afresh during a recurrence of the fever, the latter is commonly due to some persistent cause, leading to progressive inflammation with its increasing valvular deformity. An exception may be made in the case of endocardial mischief arising in old people; in my experience it is here of small practical moment, slow in progress, and causing but slight disturbance in function of the affected valve; and altogether of secondary importance to the degenerative changes in the vascular system generally, of which it is a part.

Time fails me to dwell upon the usual course of chronic degenerative changes occurring in the heart wall. When fatty metamorphosis—the most important of these—is once established, it usually tends to increase owing to the persistence of its cause.

Similarly no prolonged consideration can be devoted to the prognosis of hypertrophy and of dilatation. Their fate is bound up with that of their cause. As this is usually persistent and often progressive, the secondary cardiac enlargement is correspondingly permanent, and frequently tends to increase. The greater the hypertrophy in proportion to the dilatation, the better will the difficulty be overcome; but only while the nutrition of the heart remains good. If the time comes that degeneration begins in the hypertrophied wall, the balance between work and power is disturbed, never to be restored. This is commonly illustrated in the late history of chronic Bright's disease. When renal inflammation becomes established in a patient whose nutrition is good, the increased vascular tension is met by hypertrophy of the left ventricle. The balance is thus so well maintained, that the heart carries on with ease the greater work of the circulation. But let the patient pass on to the time when the nutrition of the hypertrophied wall tends to fail, the strength of the heart is diminished while the calls upon it remain, and the symptoms of cardiac distress arise.

The liability to sudden death is an aspect of prognosis of great practical importance. In the minds of the laity, "heart disease" of every kind carries with it this awe-inspiring risk; and to inform a patient that his heart is not sound is to condemn him to a life of miserable uncertainty. The physician, however, knows that this danger attaches chiefly to certain forms of cardiac affection; it is, therefore, his duty to relieve the patient of the dread of this accident in any case where it is not likely to happen. Sudden death may occur in certain forms of chronic valvular disease; in dilatation; where degenerative changes exist; and from rupture of the heart or of an aneurysm of the heart.

It is well known that the valvular lesion which carries with it by far the greatest risk of sudden death is aortic regurgitation. It is said by some authorities that this accident is liable to happen even when there is comparatively little insufficiency. Walsh¹⁵ quotes a case in which there were absolutely no symptoms of disease, and there was neither hypertrophy nor dilatation of the ventricle; yet the patient dropped down dead. He mentions, however, that the superficial pulses were markedly visible. In my own limited experience I have not seen the tendency to fatal syncope unless regurgitation is considerable and the ventricle is correspondingly enlarged. It will be noted in Walsh's case, that while the ventricle is said to have been normal in size and force, the superficial pulses were markedly visible. I have never met with the well-marked pulse of aortic regurgitation where dilatation of the ventricle was not present. And on theoretical grounds it is not plain how a pulse indicating considerable regurgitation can exist while dilatation is absent, since the ventricle has to contain an increased amount of blood. Short of the existence of distinct secondary dilatation, I should regard a patient with aortic regurgitation as safe from fatal syncope. On the other hand, many in whom aortic regurgitation and its accompanying changes are extreme, die, not suddenly, but by gradual increase of trouble.

One other valvular lesion sometimes ends abruptly; that is, mitral regurgitation. This does not often happen, and is

not to be feared unless compensation has failed. But that it may occur, is impressed on my mind by the memory of an occasion on which I discussed with a medical brother, and with the friends of the patient, the course of life that should be followed, and death from syncope ensued within a short time of our leaving the house.

The remaining varieties of valvular disease may be regarded as practically free from the risk of sudden death. The same cannot be said of dilatation, where the weak thinned wall sometimes unexpectedly ceases work.

It is, however, the degenerations which supply the majority of the instances of sudden death. Angina pectoris is notably a malady which tends to terminate thus; and in fatal cases some change in nutrition is practically always found—usually fatty degeneration of the muscular substance, and especially affections of the coronary arteries interfering with the nutrition of the heart wall. Fatty infiltration, if excessive, may end in sudden syncope; and this is much more likely in the weak heart of fatty metamorphosis. But of all conditions, sudden death is most imminent where the degenerate heart has to face increased arterial tension. Here the type of cardiac action indicates the danger that threatens. The pulse is usually quickened; it may be irregular and intermittent, or fairly regular, and is often of good volume; but its notable feature is the high tension. The short and toneless first sound of the heart is hurriedly followed by a ringing aortic sound. This kind of action marks a ventricle that can hardly hold its own until the strain is taken off by the closure of the aortic valves; and it is plain that the patient lives on the brink of a precipice, over which a trifling extra demand upon the heart may at any time cause his fall.

The last division of prognosis—the consideration of the special features of a given case—includes many factors, such as social status, sex, temperament, and general habits, and the condition of other organs; but their influence cannot be discussed in detail.

Excepting the state of other viscera, perhaps the most important of these is position in life. If the sufferer from cardiac trouble can be placed in an environment as nearly ideal as is attainable by the lavish expenditure of care and money, his prospects differ much from those of another who has to work for his bread in the station in life which he may chance to occupy when the malady overtakes him.

This is exemplified in the case of acute endocarditis. I hold strongly that it is of the greatest importance to keep the heart as far as possible at rest for some considerable time after an attack of endocarditis. Rest is the first essential to the cure of inflammation and the removal of its products. This is so obvious in the case, for instance, of a joint that it is always recognised. And it behoves the physician to keep just as clearly in view the state of the recently-inflamed valve. When the social position of a child who has suffered from acute endocarditis will allow, it is my practice to enjoin the retention of the recumbent position for from three to six months. After this, if a murmur persists, the gentlest exercise is gradually allowed, but for several years all violent exertion is forbidden. At the same time great attention is paid to the general health. The intelligent co-operation of the friends—and so far as possible of the little patient—is needed to the success of this method. But where it has been practicable I have seen reason to be well satisfied with the result. In the case of older patients the treatment approximates to this as closely as circumstances will allow. The prognosis of endocarditis largely turns upon this one question—whether or no the heart can for some time be saved all but the irreducible minimum of work. Any trouble and pains are well expended that will lessen the prospect of valvular disease in after-life.

Contrast with this the case of the hospital patient. The child or the young adult is treated for acute rheumatism complicated by endocarditis. The fever is quickly subdued, but the affected valve has not recovered its normal condition, even if active inflammation has subsided; it still remains a thickened and softened structure, ill fitted to withstand the pressure of the blood stream. The whole future life may turn upon what the next few months will bring to this valve. And yet the exigencies of hospital work are such that the patient must be discharged when convalescent from the fever, and take his chance with a still damaged valve. He receives ex-

cellent advice when he leaves; the boy must not do as boys are wont to do, the older patient is warned against those things which are placed in his way by his lot in life. And the wise counsel is not followed; and the still softened tissues give way before the blood current, or acute endocarditis becomes chronic inflammation with its progressive increase of mischief. In heart disease there is more truth than is often the case in the saying that there is one law for the rich and another for the poor.

In conclusion, I am constrained to put forward a plea for leniency in the prognosis of heart disease. No one is exempt from the human attribute of liability to err. In the case of the physician this imperfection may be viewed in two aspects: as it affects his own reputation, which is of some moment, and in its influence upon the subject of his error. It is the latter with which I am now concerned.

The philosopher Bacon might well have had in view the prognosis of heart disease when he counselled "not to engage a man's self peremptorily in anything, though it seem not liable to accident; but ever to have a window to fly out at or a way to retire."

Instances where the unexpected has happened in heart disease must be known to all. I remember meeting with a man, 59 years of age, who was the subject of most pronounced cardiac affection. When 20 years old he was warned that his life was in danger, and at the age of 40 was condemned to die within the year. The other day I saw a young man who had a mere trace of aortic obstruction; ten years before it was said that he might die at any moment. Some twelve years ago I examined a child with marked mitral stenosis and dilated hypertrophy—such a condition as might well have led to an early catastrophe; she has grown into a well-developed young woman, who would not be suspected of the lesion which she carries. A man over 60 became the subject of symptoms such as are met with in fatty degeneration; these disappeared after a short course of tonic treatment, and for the last twelve years he has had no trouble. A lady of 84 has suffered for nearly twenty years—sometimes in a most alarming form—from all the symptoms of cardiac weakness commonly associated with fatty degeneration; and she still lives.

The wider experience becomes, the more does certainty give place to probability; and it is wise to give due weight to possibilities; and especially should this be the case in dealing with disease of the heart, which carries with it to the sufferer the thought of constantly impending trouble.

It has been my lot from time to time to meet with those who have been told without conclusive reason that some grave cardiac lesion existed. To restore hope to life, to give the patient to the full the benefit of such doubt as may attach to his condition, and of the uncertainty which attends the prediction of his future—surely this is not only justifiable, but also right. And the lightening of the depressing influence of fear and dread will of itself tend to avert the danger that may threaten.

For the imperfect and inconsequent way in which this lecture has been placed before you, I crave your indulgence. I have touched the borders only of a subject whose importance deserves far abler treatment than it is mine to bestow.

REFERENCES.

- ¹ *Diseases of the Heart*, Second Ed., p. 106. ² *Diseases of the Heart*, p. 283. ³ *Diseases of the Heart*, New Sydenham Society, p. 275. ⁴ *Diseases of the Heart*, Fourth Edition, p. 392. ⁵ *Loc. cit.*, p. 241. ⁶ *Loc. cit.*, p. 269. ⁷ *Loc. cit.*, p. 258. ⁸ *Diseases of the Heart and Thoracic Aorta*, p. 373. ⁹ *Loc. cit.*, p. 35. ¹⁰ *Reynolds's System of Medicine*, vol. iv, p. 462. ¹¹ *Loc. cit.*, p. 242. ¹² *Loc. cit.*, p. 274. ¹³ *Wilks and Moxon, Pathological Anatomy*, Third Edition, p. 134. ¹⁴ *Loc. cit.*, p. 392. ¹⁵ *Loc. cit.*, p. 394.

We are requested by Mr. W. E. Miller, dispenser, St. Pancras (47, Clarendon Square, N.W.), to state that a meeting, at which all public dispensers are invited to be present, will be held at Trinity Schools, Gray's Inn Road, Holborn, E.C., on Tuesday, November 9th, at 7.30 P.M. It will be proposed to form an association to further the interests of dispensers and improve their position.

EDINBURGH is threatened with a considerable epidemic of scarlet fever. The figures for the last four weeks are 87, 88, 133, and 95 notifications. There are over 400 cases in the City Hospital. Happily the cases are mostly of a simple kind, and the deaths have thus far been few. There have been two or three cases of well-marked relapse.

AN ADDRESS

ON

THE ARMY MEDICAL SERVICE.

Delivered to the Students at the Opening of the Schools of the Royal College of Surgeons in Ireland, November 1st, 1897.

By SIR WILLIAM THOMSON, F.R.C.S.I.,

President of the College.

[AFTER some words of welcome addressed to the students, congratulating them on their choice of a school, Sir William Thomson turned to the main topic of his address]:

I think I may assume that all of you have already begun to think of what you will do when you have passed your final examination. Some of you will probably pass into the struggle of civil practice with its great possibilities and great uncertainties. Some of you look forward to the public services, which have the advantage, at all events, of security of income, with a fair share of honours. You cannot, therefore, fail to be interested in the agitation, which seems to arise with almost rhythmical regularity, concerning the Army Medical Service. You are, of course, aware that at the examinations held in August last, candidates to fill 36 places were advertised for, and that only 22 presented themselves, and that in February last there were 35 vacancies and only 28 candidates, of whom but 13 qualified to enter the service. In the two preceding competitions practically the same state of things existed. The result is that at the present moment there are over 80 places vacant, places which cannot be filled. That is a very startling fact, because in some respects the Army Medical Service offers a splendid career to a young surgeon. It has its risks, of course, but a man who enters it must accept them, and we know that they have not in former times prevented some of the best of our licentiates from joining. In a monetary sense it far exceeds the combatant branches. In addition to better pay, it is possible for a man to leave the service after twenty years with a pension of £1 a day, and so on in proportion to time. Compared with the ordinary results in civil life, this is a very exceptional position; and therefore the dissatisfaction which has led up to this abstention of candidates must be of a serious character. Several Commissions have sat to take evidence as to these grievances, and warrant after warrant has been issued yielding certain claims. But a number still remain unsatisfied. I do not propose to occupy your attention with these in detail, but I shall shortly refer to one or two that stand pre-eminent.

The primary grievance is a question of rank, and here we find the views of the combatants and the surgeons directly at variance. The medical officers declare that, although they are styled surgeon-captains and surgeon-majors, and so on, these titles give them no real rank whatever in their relation to other officers and men of the army, and that they are constantly subjected to humiliations which make their position unbearable. The rank is a departmental rank; that is, they are surgeon-captains within their own department, and it is alleged that the other officers make this difference felt in such a way that the example set is followed by the rank and file. Indeed, at the Camperdown Commission of 1890 one very distinguished general officer said he addressed the head of the Army Medical Department as "W. MacKinnon, Esq., C.M., Director-General Army Medical Staff," although the title to which that gentleman was entitled was "Surgeon-General MacKinnon," and he was marked in the *Army List* as "ranking as Major-General."

Now it may be supposed that the army surgeons have only to do with the sick in hospital and the wounded on the field. But they have actually military duties to perform. They have under their direction a body known as the Medical Staff Corps, which is composed of bearers and male nurses, and generally of men who aid in rescuing the wounded and carrying all the equipment of hospitals on the field. These men are drilled by medical officers and marched into action by medical officers. The position of civilian Mr. John Smith, Surgeon, then, in command of a disciplined and armed bearer company, would thus be rather an anomalous one.

The case on the opposite side is that medical men in the army have only rank in their own department, and that to