the membrane from the thickened walls, but it was in parts intimately adherent. I decided to connect the opening in the tumour to the abdominal wall opening by sutures, and this was done after thoroughly sponging out the peritoneal cavity, my idea being to allow the contents of the tumour to be passed through the abdominal opening.

The small body felt at the operation was expelled on the twenty-fourth day after operation; it turned out to be a small ovum about the size of a broad bean. Little by little the membranes were expelled through the wound, and as portions were protruded, being offensive, I cut them away, but the major piece was discharged in a mass on the twenty-fifth day after operation. The temperature was 102.8° F. on the third day as the discharge became offensive, but, by using plenty of antiseptics, it gradually came down, and disappeared entirely when the membranes were expelled. The patient made a good recovery.

In conclusion, I have to thank Dr. Boucher, of Hertford, for kindly administering the anæsthetic, and our district nurse, who acted as my assistant at the operation and has helped materially since.

THE LETTSOMIAN LECTURES

ON

DISEASES AND DISORDERS OF THE HEART AND ARTERIES IN MIDDLE AND ADVANCED LIFE.*

Delivered before the Medical Society of London.

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LECTURE III. PROGNOSIS AND TREATMENT.

ETIOLOGY AS A FACTOR IN PROGNOSIS.

Now, prognosis and treatment, to be rational and useful, have to be based on as full and as correct a diagnosis as knowledge permits. The present disposition is to fall short of this—to rest content with an incomplete diagnosis. We say that the patient's "heart is dilated," that he has "arterial degeneration," that there is "fatty degeneration." But you will remember that we have found that cardiac dilatation may be present in every kind of cardio-vascular degeneration; that the arteries are naturally enlarged and thickened after middle life; and that we refused to call these changes morbid. Clearly, therefore, a purely anatomical diagnosis of this sort is insufficient. If you are asked what the prognosis is of fatty degeneration of the heart, you answer that you must first be told whether syphilitic or gouty disease of the coronary arteries, or strain, or alcoholism, or phosphorus poisoning, or anæmia is the cause of it. When you are planning the treatment of dilatation of the heart, you first determine whether the dilatation is a result of the stretching of a sound heart by overfilling during muscular effort, or of the insufficient emptying of failing chambers with degenerated and feeble walls. Obviously what we ought to determine in these instances and in every instance is the origin of the disease. The ultimate diagnosis to be reached for practical purposes is the etiological diagnosis.

Is this possible? Does our knowledge of the nature, characters, and course of these cardio-vascular affections enable us to say after investigating a case what the kind of the pathological change is that constitutes the disease, or in what respect the physiological mechanisms are disordered? Can the cause of senile degeneration of the heart and arteries be determined in each instance? How is the practitioner to proceed to do so? What method might be followed with advantage in making a complete diagnosis of heart disease in older subjects?

A man of 60 consults us about his heart. He says that it has caused him a good deal of anxiety lately. More specifically he describes a sense of oppression behind the sternum as often as he exerts himself, and palpitation with consciousness of irregular cardiac action when he goes to bed. We inquire for other familiar cardiac symptoms, such as pain,

angina, fluttering, faintness, giddiness, and a sense of impending death. We find that one or more are present occasionally, and that they have increased in number and degree during the last few months or years. Perhaps cough, nocturnal orthopnoea, and dropsy may be beginning to give trouble.

The next part of the inquiry relates to the patient's previous history from childhood upwards. Which of the acute diseases has he had? Acute rheumatism, chorea, scarlet fever, typhoid, diphtheria, and influenza must be mentioned individually, and in women the nature of any puerperal disease from which they may have suffered. Gout, irregular gout, gravel, eczema, sick headache, asthma, must be inquired after with the same minuteness, and so must syphilis. We next hear an account of any accident which the patient may have met with, such as a blow or fall from a horse or a carriage. This brings us naturally to question him about his occupation and modes of relaxation and amusements—whether active or sedentary, regular or irregular, their characters otherwise, and their direct effects, including strain. More difficult to elicit is a correct account of the patient's habits in respect of food, stimulants and tobacco, and his manner of life generally. As I said in my first lecture, this is an inquiry which the family practitioner has an opportunity to carry out much more successfully than the hospital physician or consultant. The family practitioner has known for years of his cardiac patient's work and worries—it may be of his large eating, of his secret drinking, of the history of syphilis in earlier years. It is always well also to inquire after a family history of gout, rheumatism, and heart disease. A list of questions like this sounds far more formidable than it is in reality. A few minutes suffice to arrive at the truth. We already have a pretty fair notion what we have to deal with—whether strain, gout, syphilis, tobacco, an old rheumatic lesion, or a combination of two or more of these.

THE INTERPRETATION OF MURMURS.

We next proceed to physical examination, beginning with the pulse and arteries, and passing on to the heart and associated structures. The characters of the precordial impulse—particularly the seat of the apex beat and the strength of the impulse—are closely—I might almost say laboriously—investigated. We must never yield to the temptation to disregard weakness or absence of the impulse. Like many other negative signs it is apt to be overlooked. Then the precordial dullness is mapped out by means of light percussion. Finally, auscultation reveals to us the presence or absence of murmurs and the characters of the sounds, in the standing and recumbent postures, and, if necessary, after a little exertion. The relative loudness of the first and second sounds over the different parts of the precordia is particularly worthy of note.

Now let us suppose that we have found a mitral systolic murmur. We ask ourselves whether it is structural or whether it is functional, that is due to relaxation and dilatation of the ventricular walls. If structural, with which (if any) of the diseases elicited in the man's previous history would it correspond? Most probably with gout or glycosuria. Thus we attempt to connect the lesion with its cause, and the cause with its effects, and have reached the ultimate diagnosis. So with other valvular murmurs; for example, aortic diastolic murmur proves to be related to syphilis. If there be no murmur audible, we naturally think of dilatation with failure, or of enlargement from strain, from Bright's disease, from arterial sclerosis, from emphysema, from an insufficient or impure blood supply in the coronary arteries, from disordered innervation, or from some rarer cause, such as adherent pericardium; and, again, with these associations in our minds we review once more the patient's history, and generally succeed in our diagnosis.

Here let me recount the significance of the principal signs and symptoms which I detailed to you in my last lecture, considered in the reverse order on this occasion, some of which are of real value in differentiating the causes of cardio-vascular degeneration. To begin with negative facts: a mitral presystolic murmur is never significant of a senile lesion. Secondly, when we meet with an aortic diastolic murmur, whether alone or along with an aortic systolic murmur, we may safely conclude that we have to deal with something more than atheroma produced by regular or irregular gout and associated metabolic disturbance, cardio-vascular disease

* A few passages are omitted from the text of the lecture as delivered.

of nervous origin, and alcoholic or tobacco heart, even if there be evidence of the presence of one or more of these in the case. Aortic incompetence developed in later life is the result of syphilis, or of acute or chronic valvular strain; but of course many instances of this lesion met with after the age of 40 can be traced to juvenile endocarditis of rheumatic or other origin. Always a serious lesion, aortic incompetence due to syphilis, or to syphilis and strain, is particularly grave, as being so frequently associated with coronary disease and consequent myocardial degeneration, fatty or fibroid, acute softening, and sudden fatal failure. A fully developed basic systolic murmur audible over the aortic area and manubrium and along the course of the carotid is a very common sign of atheroma of the aortic arch and valves and great vessels in association with regular or irregular gout, diabetes, corpulence, and allied disorders of nutrition. It is also one of the physical signs of syphilitic and traumatic affections of the aorta and aortic valves and of remote endocarditis. Further, these lesions are so often accompanied by similar degenerations in the coronary arteries and consequent myocardial degeneration that the basic systolic murmur ought at least to raise the suspicion of this in the observer's mind. An ill-developed basic systolic murmur is not uncommon in alcoholism, chronic's Bright's disease, and nervous strain; but it is difficult to dissociate from anæmia. A fully developed and audible systolic murmur in the mitral area (I mean independently of ventriculo-auricular leakage in cardiac failure) is usually traceable to endocarditis of rheumatic or other origin, rarely to injury, including ordinary juvenile strain of the valves or walls, or to Graves's disease. In some instances it is unquestionably due to valvular atheroma and attendant sclerosis caused by gout or other disturbances of metabolism, including the effects of free living, and in these instances the observer must not overlook the possible association of coronary disease and fatty degeneration. If a systolic mitral murmur prove to be somewhat indefinite and affected by posture, cubitus, and effort, to vary under observation from day to day, and to disappear under treatment, it is of no more value to us in differential diagnosis than that it signifies relaxation and weakness or disorderly action of the left ventricle, consequent on any one of the recognised causes of failure or disturbance of the heart, including the different cardiac poisons, overwork, anæmia, acute disease, poverty, and the like, and this, whether in a heart previously sound, or previously enlarged, or previously the seat of valvular disease. An accentuated ringing second sound in the aortic area or more extensively is of great value in the diagnosis of arterial tension and aortic atheroma, or of both, but it is associated with far too many different causes to be of much use in differential diagnosis. It should suggest a most careful search for Bright's disease. Slight reduplication of the first sound is common over senile hearts strained in youth and hearts degenerated by alcoholism and metabolic disorders, but everyone knows that it is not unusual in a variety of other conditions, healthy and morbid. On the other hand, the *bruit de galop* or cantering rhythm of cardiac sounds—definite doubling of the first sound followed by loud, accentuated, ringing second sound—is practically pathognomonic of Bright's disease, and is one of the most valuable, because one of the most ominous, of physical signs in connection with the cardio-vascular system. A normally-sized heart, with irregularity, increased frequency and a variable systolic murmur in the mitral area, is characteristic of tobacco poisoning. A heart enlarged on both sides, and acting irregularly without murmur, is, apart from cardiac failure, suggestive of strain in early life.

THE INTERPRETATION OF SYMPTOMS.

Cardiac symptoms, taken individually, are of less diagnostic value than signs. No symptom is pathognomonic. Palpitation is a nearly universal phenomenon of cardiac disease and disorder. Faintness and actual faints are not uncommon in cases of early cardiac strain, gouty heart, and nervous disturbances. Angina we meet with, you will remember, in regular and irregular gout, tobacco heart, strain (especially strain after 40), and in syphilis and alcoholism, whilst pseudo-angina is extremely common in nervous women; thus angina is of less diagnostic value than might have been expected.

A high-tension pulse I have found most often in juvenile strain and cardio-vascular affections of nervous origin, a low tension pulse in connection with alcoholic and tobacco poisoning and with senile strain.

When we review these facts I think we are entitled to conclude that the physical signs and symptoms carefully determined by clinical investigation may be confidently employed, along with the patient's previous personal history and the history of his present illness, to differentiate from each other the causes of cardio-vascular degeneration in individual cases; and, further, that they inform us of the seat of at least some of the lesions, valvular, parietal, and vascular. A little trouble, patience, and attentive observation are all that are required to reach a complete or working diagnosis. Now we may approach the great practical subjects of prognosis and treatment with some confidence.

PROGNOSIS.

Tobacco.

Beginning with the simplest kind of cardio-vascular disorder, let us see what the prognosis is in tobacco heart. You will have gathered from what I had to say on this subject in my last lecture, and indeed you know, as men of observation and experience, that it is comparatively favourable. All the cases I have had an opportunity to watch did well, provided the cause of their distress was avoided and the heart and vessels were otherwise healthy. Further, improvement begins early, and it may be rapid and recovery complete; but you will remember that one patient whose case I detailed to you continued to have alarming angina for six months after giving up tobacco. Recurrence attends resumption of the habit, and some of its votaries contrive to continue to smoke just short of inducing serious discomfort. Unless a successful effort at reform be made, cardiac trouble continues indefinitely. But even then I cannot say that I have seen serious damage done by tobacco alone in sound hearts; nor arterial sclerosis, as has been stated by some authorities.

Alcohol.

An entirely different and most unfavourable estimate is to be formed of the prospect of life in the alcoholic heart. Naturally, a certain proportion of cases recover if the disease be of recent development, the condition uncomplicated, and treatment faithfully carried out. Unfortunately as a rule we have to deal with alcoholism in which all these conditions of success are wanting. The habit is established, other organs besides the heart are involved, other diseases than alcoholism are present, and the patient has neither the inclination nor the power to follow our advice. Cirrhosis, neuritis, dementia complicate the cardiac degeneration, or, more correctly, it complicates one or all of these. "Chronic Bright's disease" is made to account for a number of deaths in the mortality returns that strictly belong to alcoholism. Occasionally the end comes suddenly from fatty degeneration, or in the course of some acute disease; otherwise, as we have seen, by slow cardiac failure and dropsy.

Gout.

Prognosis in gouty heart—including the heart of the man with goutiness, glycosuria, and other irregular forms of the disease—is a subject of considerable practical difficulty. In my last lecture I gave a short account of the case of a friend of my own who had had occasional attacks of gouty angina for forty years. And certainly a large proportion of the old ladies of 60 or 70, whom all have had as patients for years on end with weak heart and systolic murmur in the aortic area owe their disablement to gout, if my observations are correct. The lesion proper of the aorta and aortic valves in these cases is atheroma, but the damage is accompanied with repair in the form of sclerosis, which by increasing the loudness of the *bruit*, adds unreasonably to our anxiety about the case. Equally certain it is that patients belonging to this class improve under treatment. Still, the condition of arrest cannot go on indefinitely. In addition to extrinsic dangers—particularly those of Bright's disease, cerebral thrombosis and hæmorrhage and bronchitis, failure of the heart is liable to supervene and prove fatal from the gravest of all intrinsic causes, namely, coronary degeneration. As this increases, the myocardium is steadily more and more impoverished, its contractile vigour declines, and residual dilatation of the

chambers sets in with mechanical congestion of the viscera. Complaints of "the heart" increase, the breathing becomes oppressed, the face assumes more and more the characteristic "cardiac" appearance, and dropsy creeps up the lower limbs. Even then the prognosis is not hopeless, for undoubtedly a certain proportion of cases of dropsy in old persons with degenerated heart and vessels are still amenable to rational treatment. But the case has occasionally a more dramatic termination. As I was able to illustrate after my second lecture by a specimen from the museum of Charing Cross Hospital, a branch of one of the coronary arteries that has been narrowed by atheroma for an indefinite length of time, with consequent cardiac weakness and discomfort, may any moment become thrombosed rapidly, apparently in consequence of some passing depression or other unfavourable influence, just as in thrombosis of degenerated cerebral vessels. Fatal angina is the result. This is a point of great practical importance—that sudden death will occur in old gouty subjects, not from the lesion of which a basic or an apical systolic murmur is the evidence and which causes us concern, but from associated coronary atheroma which we probably never suspect; indeed, that it may occur in those subjects with no murmur whatsoever to attract our attention and excite our fears.

Syphilis.

Still more unfavourable must be the forecast in syphilitic lesions of the heart and vessels. Of 18 of my cases in which the result was known only one-half improved under treatment, and 20 per cent. of them died within a few years, some indeed within a few weeks, of the discovery of their disease. Cardiac failure accounts for most of the deaths, whether developed gradually with dropsy, which proves to be intractable; or progressing rapidly, with great cardiac distress, including angina; or occurring suddenly, as it often does. Aneurysm makes its appearances in other instances, of which the patient dies, or he is carried off by general paralysis or Bright's disease.

Muscular Strain.

What prospect have we to hold out to the man who has strained the wall of his heart by muscular effort? I believe that one can speak with some confidence on this subject. The middle-aged patient, who over-stretched his cardiac walls as a youth, may be comforted with the opinion that the condition is not a fatal one. The average duration of 11 cases of this order I found to have been thirty years when they came under my observation; the minimum duration was nine years; the maximum fifty years. This last case deserves particular mention. The patient was first seen by me for failure of the heart with cardiac dropsy, consequent on fresh breakdown after exertion during a holiday; and it was most encouraging to observe that compensation was restored by treatment, and that now, twelve months after that event, the patient is not only alive, but able to carry on light professional work. This case also illustrates what I have told you respecting the course of the affection, and the prospect before the patients, in long-standing strain—that there is continual liability to fresh embarrassment of the heart during exertion, in which they appear to have a lasting inclination to indulge.

Neither is strain of the heart for the first time after 40 by any means so grave as might be expected. Of course, severe muscular effort occasionally accounts for sudden death in old men; but it is astonishing how, under such circumstances, quite old persons do recover from conditions of extreme distress lasting acutely for half an hour—for instance, after running with a heavy bag to catch a train. The majority of my patients described their condition as improved after a time, but others relapsed; and on the whole the correct prognosis is that they must expect to remain variously disabled, that is, liable to precordial distress and dyspnoea on more than moderate exertion, or when subjected to circumstances of other kinds that tax the heart.

Nervous Strain.

Cardio-vascular disorder and disease referable to nervous strain, pure and simple, is amenable to treatment by complete and prolonged rest or relaxation in the majority of instances. Still, death may occur from sudden cardiac failure; or should advice be neglected or soon forgotten, as happens so frequently in these subjects, the attendant high arterial

tension and vascular degeneration too often end in cerebral lesions with or without Bright's disease. Of chronic Bright's disease itself and the associated cardio-vascular changes in their prognostic aspects I need not speak, except to say that along with syphilis it is by far the most hopeless of all these affections.

INTERCURRENT ACUTE DISEASE.

In attempting to forecast the life of a man who is the subject of cardio-vascular degeneration in middle or advanced life, we must not forget the possibility of the intercurrent of acute disease. Here is a large subject for us as practical men—one far too large and important for discussion here: the effect, for instance, of the existence of enlargement of the heart and an irregular and thickened pulse on the prognosis of influenza, or, let us say, on the chances of a successful issue after operation. Very naturally, unsound vessels and a murmur over the precordia weigh heavily against the prospect of recovery from pneumonia, for example; and yet how often do we not find a patient of 70 with one or both of these disturbing conditions come safely through such an illness. Here, again, I believe it is in great measure the true nature of the old-standing disease, not the physical signs such as irregularity of pulse or mitral *bruit*, that ought to be taken into account. A heart enlarged and a radial artery thickened by prolonged activity and nothing else will suffice to carry a man safely through an attack of influenzal pneumonia; but what chance is there for the chronic alcoholic under similar circumstances or for the subject of chronic Bright's disease?

So much for the general prognosis in each of these kinds of cardio-vascular disorder and disease. But it is the particular prognosis that we have to attempt to estimate, that is, the prognosis in the individual patient as he comes before us and asks us that trying question, What is my prospect of life and health? We have to do our best to apply such conclusions as those which I have just submitted to you, and at the same time to estimate as correctly as possible the man's personal condition, character, and disposition. After all that may be determined by an analysis of a large number of these cases, the patient's prospect in disease of the heart of every kind, degenerations included, greatly depends on how he takes care of himself.

TREATMENT.

Not the least advantage of the etiological standpoint of our survey of the disorders and diseases of the heart and arteries in middle and advanced life is the rational as well as the hopeful line of treatment which it enables us to pursue. On the whole we can control morbid influences more easily than we can alter pathological processes; and, what is of equal or even greater importance, a knowledge of the causes of disease often enables us to prevent what we could not possibly cure. For all that, the etiology of heart disease furnishes us with but one set of many invaluable indications for treatment. We must have also a clear mental picture of the pathological anatomy of the conditions we would attempt to modify, for instance, of the damage wrought by gout on the mitral valves and aortic arch, by syphilis on the coronary arteries, by strain on the walls of the different cardiac chambers. No less necessary is it for the practitioner to take into account the clinical characters and course of the case in hand before proceeding to prescribe remedies for it. As I have said more than once already, a large proportion of the distress, disabilities, and dangers attending degeneration of the heart are due to some additional or extrinsic disturbance—distension of the stomach, constipation, worry, or exertion—which alone, not the pathological condition, calls for immediate therapeutical attention.

It appears, then, that the whole natural history of the diseases and disorders of the heart, and I might add of every individual case, has to be studied and the value of its different parts absolutely and relatively estimated before rational treatment can be ordered. How different will treatment be if ordered on these principles from the routine procedure of prescribing a little strychnine and digitalis for a man with oppression on exertion and a systolic *bruit* at the base of his heart!

Let us begin this part of our subject with a brief consideration of preventive treatment, founded on a knowledge of the cause at work.

Now, the first thing to strike us about these unfavourable influences is the number of them that could be avoided or controlled successfully by simple exercise of the will. The toxic effects of tobacco, alcohol, tea, etc., are due to abuse, from thoughtlessness or ignorance, or from indisposition rather than inability to exercise self-control. The abuse of tobacco appears to create so much discomfort or even alarm, of a kind which the sufferer cannot fail to refer to its cause, that the remedy is effected automatically, and no great harm is done. We seldom have to do more than confirm the patient's suspicions in this direction, and recommend temporary abstinence from the cigarette or pipe, and greater care in the future. With alcohol it is a different matter. Alcoholism grows by what it feeds on; and our best efforts are often vain. The present is hardly an occasion for dwelling on this subject: the duty of the profession to their patients and friends in respect of the abuse of alcohol. Still, I should not feel that I had discharged to the best of my ability, or in full conformity with my strong convictions, the duties of the honourable position which by your favour I occupy as Lettsomian lecturer, if I did not urge you to exercise more fully than is at present exercised your personal influence to discourage habitual drinking. I believe (because I have found) that many men who are not open to arguments of an abstract kind can be made to pause and reconsider their manner of living by having a concrete presentment of their condition and its results placed before them: in plain English, by being thoroughly frightened. "Heart disease" is a powerful argument to employ with persons of this class, and it is one that is also justified by the issues at stake. Of syphilis and the havoc that it works on the heart, aorta, and the vascular system generally, but particularly within the nervous system, I need not speak. The profession, as I have said, is not yet sufficiently alive to it; what can the public be expected to do in the way of prevention? Gout, corpulence and allied metabolic disorders, those fruitful sources of cardio-vascular disorders and atheroma, call for temperance not only in drinking but in eating. Whilst the question continues to be discussed which particular articles of food ought to be avoided by gouty individuals, let us all join in offering them one bit of advice of the value of which there can be no doubt: whatever they eat, to eat little. Moderation in amount is, speaking broadly, far more important than avoidance of the theoretical antecedents of uric acid, whether meat or milk or sugar. With the observance of this simple and wholesome dietetic rule must go attention to free elimination by all the excretory channels, and the insurance of sufficient exercise and enjoyment of fresh air. If we wish to impress this consideration on our own minds and give effect to it in our practice, let us call to mind for a moment the number of cases that I have submitted to you of atheroma of the aorta in stout matronly women of sedentary habits, in whom indeed this kind of degeneration is quite as common as in men.

I have already said so much on the subject of cardiac strain that it is unnecessary and would be uninteresting to return to the question of the prevention of it. We have seen how often it occurs in the middle-aged or old subject by ill-considered attempts at athleticism. Moderation and due respect for age are the true guides to the useful enjoyment of exercise after 40. As for the evil effects of nervous influences on the circulation, in addition to anxiety, care, misfortune, and grief, which are usually beyond our control, nervous strain, as distinguished from simple hard intellectual work, often must be relaxed if cardio-vascular damage is to be prevented. I refer to the cases of persons in positions of great responsibility with heavy, complex prolonged duties, which they fail to overtake without exhaustion consequent on high pressure and excitement.

I would not have dwelt so long upon the measures calculated to prevent degeneration of the heart, were it not that they have to be employed with equal strictness and perseverance in the treatment of cardio-vascular disease when it is already established and our assistance is sought with anxiety. The etiological indications have still to be respected faithfully; on this I need not dwell. The next question is, What can be done for the pathological changes wrought on the arteries and the valves and walls of the heart? In syphilitic lesions we do not hesitate to say that potassium

iodide should be given freely; it is a specific remedy of great value. Can the atheromatous process be influenced with equal or with any success? It depends on toxæmia and anæmia; the obvious indication is to purify and enrich the blood. This, at least in respect of gout, glycosuria, and corpulence, as we have just seen, must be effected by a thorough reform in every department of personal hygiene. Arsenic and moderate doses of iodides, combined with an excess of alkalies, are calculated to promote the same end. Dr. Mott has shown that atheroma, whether of valves or of vessels, can be traced in many instances to disease of the vasa cordis and vasa vasorum. This carries us a step forward in our quest for indications, but the practical conclusion remains—that the healthy nutrition of the smaller arteries has to be restored by attention to the blood and the use of specific remedies.

So much for valvular and vascular lesions. There remains to be discussed the fulfilment of the greater indication for treatment: the one which directs and governs the employment of the most important and successful of all the measures comprised in cardiac therapeutics. This is the establishment and maintenance of compensation. The nutrition and activity of the myocardium can be increased and sustained by means of specific cardiac stimulants and tonics, such as strychnine, ammonia, and the digitalis group of drugs; with hæmatinics, stomachics, and laxatives to insure an abundant supply of wholesome blood; by the control of nervous influences, one of the conditions of healthy nutrition; and by the employment of the non-medicinal measures now so extensively used to increase the vigour and benefit the metabolism of the cardiac walls, particularly active and passive exercises and baths. Unfortunately the time left at my disposal in this concluding lecture is not sufficient to justify me in entering into detail on this most interesting subject.

I have now sketched very broadly the rational treatment of these disorders and diseases as far as the object of it is to prevent the occurrence or the extension of them, and to promote compensation of the disabilities which they produce. It remains for me to notice also very briefly the management of cardio-vascular degenerations when the heart fails or when it appears to fail, and distress and danger demand more direct and immediate attention. I have said "when the heart appears to fail" of set purpose. I am anxious to direct your attention, if it be but for a moment, to the fact that in many instances where precordial oppression, pain, palpitation, and faintness, with frequent small irregular pulse, are significant of serious disturbance of the action of the heart, there is no failure of the myocardium in the proper sense of the term, but only embarrassment of a temporary character. Do not conclude from this that I regard the disturbance of the heart as of little account. I have called it serious, for indeed the patient may perish of it. What I wish to maintain is that in cardiac degeneration of any kind, in chronic cardiac dilatation, and in the enlarged heart of Bright's disease and of emphysema, just as in ordinary valvular diseases, attacks of distress, alarming both to patient and doctor, often occur, which call for nothing more in the way of treatment than attention to some intercurrent influence—an indigestible meal, loaded bowels, a nervous shock, a thoughtless effort, a passing hardship, or nervous strain. Digitalis and its allies, strychnine, alcohol, nitrites, iodides, and the rest, are out of place in such an event. Complete rest in bed, a carminative draught, calomel and saline purgatives, spare and highly digestible diet, reassurance and a little time are quite sufficient means of treatment.

When true failure occurs, manifested by the familiar phenomena of residual dilatation of the heart, mechanical congestion and dropsy, a different set of measures are demanded. Now is the time to attend with expedition, energy, and completeness to the fulfilment of the three great therapeutical indications for the treatment of cardiac failure: to reduce the peripheral resistance; to increase the vigour of ventricular contraction, and rehabilitate hypertrophy; and to remove arrears of work in the form of residual blood in the cardiac chambers, mechanical congestion of the veins and viscera, and dropsy of the integuments and serous sacs. Bodily rest, a light solid diet, and a definite allowance of alcohol, if required; active purgation with mercurials, salines, and jalap; and the exhibition of sufficiently large doses of

digitalis or one of its congeners, in combination with saline and other diuretics—these are the means calculated to attain the desired objects. You will not expect me to enter into the many details of the management of cardiac failure. It is not different in any important respect in the man of middle or advanced age with cardiac degeneration from what it is in an ordinary case of chronic valvular disease. Only on a few points do I desire to dwell. First, that we must not be afraid to purge these patients, if necessary every morning. Secondly, that when the appetite flags and flatulence occurs, instead of slops a blue pill or dose of calomel should be given and light solids persevered with. Thirdly, that nocturnal restless and sleeplessness are to be met unhesitatingly with permission to spend the night in an easy chair by the bedside. Fourthly, that, according to my experience, acupuncture and drainage succeed perfectly in these senile cases with dropsy, as much as ten pints or more of serum escaping in the course of twenty-four hours, to the complete and often lasting relief of the circulation.

THE NEW TYPE OF SCARLET FEVER FROM A PUBLIC HEALTH POINT OF VIEW.

By WM. ROBERTSON, M.D., D.P.H.,

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WHILE the Compulsory Notification of Diseases Act has been followed by immense good, there are not a few who will grudge the Act some praise when its benefits are applied to such an insidious disease as scarlet fever. The grudge will be qualified with the remark that while compulsory notification, accompanied by hospital treatment, has lowered the mortality of scarlet fever it has undoubtedly altered the type of the disease. So much so that it now is often difficult to tell when one has or has not to deal with the suspected disorder. On every side one hears it repeated that epidemics are now characterised by a want of symptoms and signs. The bright red rash is seldom seen, and when there is a rash it disappears before the arrival of the medical attendant. If one looks for throat signs they, too, may have been transitory. The symptoms of onset are so slight that even an anxious parent takes no notice of a passing day's indisposition. In fact, the only points that guide one are the existence of cases elsewhere in the same school, or neighbourhood, with perhaps slight pain and stiffness due to an enlarged condition of the glands about the neck. If therefore intelligent people, who are ever eager to send for their medical adviser, can miss such fleeting signs and symptoms, one cannot express surprise that the artisan allows his children to attend school and mix freely with others while the seeds of infection are upon his family and in his house. It is these mild cases that kindle into flame the big epidemics that are becoming only too prevalent in our large towns. A town may escape an epidemic for several years, but so soon as it develops a large increase in its susceptible population the sword of Damocles hangs over that town. This sword descended with violence upon Paisley last summer, and I now take the opportunity to chronicle a few facts relating to the epidemic and its causation. The facts are not new, I confess, but they throw a sidelight upon the innumerable difficulties presented by this altered form of scarlet fever, especially in towns where there is a vast preponderance of the active artisan population.

It may be well to explain at the outset that a fixed home of scarlet fever seems to have become established in the West of Scotland. This has been very apparent during the past two or three years. Large cities like Edinburgh, Dundee, and Leith have shown a wonderful immunity from the disease, while Glasgow, Paisley, and the counties of Lanarkshire and Renfrewshire have never been without trouble from scarlet fever. There is no difference in the modes of treatment or disinfection in any of these towns. The differences, if any, are in minor details. These could not in any way account for the discrepancies indicated. The climate is slightly different, and the soil distinctly so. While clay is common in the west, gravel and sand are more frequent in the east. The winds are south-westerly in the west and easterly on the opposite coast line. Telluric influence, then, seems to have a very distinct bearing upon the question.

Scarlet fever was continually present in Paisley from the beginning of January, 1900, till the very last day of the year. There was never a week clear of notifications. Even when the numbers were at a low ebb removal to hospital was rigidly exacted; and when a case was left at home it was a rare thing to trace infection of others to that house. That there was an adjuvant to infection I had no doubt. This was faulty sanitation. This factor has never directly been brought home as an aider and abetter of scarlet fever. Unpaved back-courts and badly-constructed privy-ashpits have abounded in Paisley for years. These are now being swept away, and in this connection it may be added that enteric fever is endemic in the town.

A fortnight before the schools were to close for the summer vacation, a sudden rise in the number of notifications showed itself. All these cases, nearly every one of which was removed to hospital, were of a very mild and almost unrecognisable type. The patients were "well" in two or three days after admission, and even on the evening of admission the temperature was not above 99° F. I viewed the increase with equanimity because I felt confident the closure of the schools would soon arrest further spread of the disease. In this I was bitterly disappointed. Notifications increased, but the mild character of the diseased maintained itself. So mild, indeed, were many of the admissions, that I began to cast about for a new name to give the disease. It was a hybrid, I thought, between scarlet fever and epidemic roseola. I had seen some references to a "fourth disease," and really believed I had undoubted evidence of its existence. But to knock the fourth disease out of reckoning, in this instance at least, I may mention that we had one or two children admitted who had not scarlet fever, but who developed scarlet fever after a few days' residence in the wards. The doctors who sent in these cases were as justified in their notification as they were in many of the other very obscure cases. Moreover, desquamation was indisputable in all those cases that I thought were hybrids. As August approached, the wave rose still higher and higher. There was no suspicion of milk infection, for that was jealously watched. The large proportion of those being admitted to hospital were not children attending school.

When this feature became apparent it set me to think out a solution. The riddle was solved in the following manner. For the first time the School Board had resolved upon the experiment of keeping the playgrounds open in different parts of the town. These playgrounds had been largely taken advantage of by these young children. Doubtless the elder children had had sufficient association with schools during the session to keep them away from the playgrounds. Later in the month the cases began to come from among school-attending children, and from certain districts. Here, again, the peculiar feature was the presence in the infected neighbourhood of an open bit of common or an open-air space upon which had been erected swings and other simple gymnastic fittings. In fact, to anticipate my story somewhat, in these open-air space areas the disease clung with a provoking persistence. It was a cruel paradox, but it had to be faced. The School Board had upon my recommendation opened these very playgrounds, and when August came round I was required to miscall the playgrounds as having been the cause of so widespread an epidemic. The truth was however there, for the many unrecognised cases had been sowing the seeds of infection broadcast. During August I was able to seize no fewer than 13 cases of desquamating scarlet fever, and very unfortunately two prosecutions were necessary where scaling children were being allowed to mix with others. In every case the natural and only defence made by the parents was they had never noticed anything wrong with the children, none of whom, moreover, had spent an hour in bed with any sickness.

All the schools were affected save one. This was the school where children of a richer class were educated. Their immunity could be ascribed to the fact that they did not associate with those from the other schools, and I may also add that the home surroundings in the two cases were vastly different. The erection of high tenements in our large towns only encourages the spread of such diseases as scarlet fever, measles, and whooping-cough. Their construction, too, is all against perfect ventilation of the entrance passages. No