Therapeutic.

The indications, so far as drugs are concerned, seem to be to control the abnormal activity of the gastric mucous membrane, to counteract hyperacidity, to provide against excessive fermentative processes, and to supply suitable tonics according to the requirements of each individual case.

The initial treatment should aim at combating the first two of these indications, while subsequent management must be directed towards meeting the others by an attempt to disinfect the gastro-intestinal tract and to restore the equilibrium of organic health.

In fatigue dyspepsia there is reason to think that probably the excess of acidity, which is a leading feature of the condition, is due to an excitable and over-active state of the gastric mucous membrane; and, on this hypothesis, the following prescription is calculated to exert a controlling influence:

R Liq. morphinae hydrochloratis	...	...	āā	℥ x
Tinct. belladonnae	...	...	...	...
Sol. adrenalin. chlor.	...	...	...	℥ xx
Spts. menth. piper.	...	...	...	℥ xxx

To be taken in one tablespoonful of water half an hour before meals.

The hyperacidity will be chemically counteracted by such a combination of drugs as the following:

R Bismuthi carbonat.	...	...	...	gr. xxx
Magnes. carbonat.	...	...	...	gr. xx
Sodae bicarbonat.	...	...	...	gr. xxx

Ft. pulv.

To be taken in a wineglassful of water, whenever there is heartburn.

As a rule, within a fortnight these measures suffice to overcome all discomfort if they are adopted in association with the diet scheme above suggested.

The further requirements must now be met by a combination of drugs suited to the symptomatic demands of the patient and based upon the principle of combining a tonic with an antiseptic and a nerve sedative.

In a large majority of cases the following will be found a useful formula:

R Ext. valerian.	...	...	...	āā	gr. ij
Ac. carbol. pur.	...	...	...	...	gr. ʒo
Strychninae	...	...	...	...	gr. xx
Codeinae...	...	...	...	...	gr. ʒ
Ext. rhei	...	...	...	...	gr. jss

Ft. capsul.

To be taken three times a day, after meals.

With another class of patient, where anaemic tendencies are discernible, the formula may be modified in some such way as this:

R Ferri glycerophosphat.	...	...	...	āā	gr. iij
B. naphthol.	...	...	...	...	...
Ext. nucis vomic.	...	...	...	...	gr. ʒ
Ext. cannab. indic.	...	...	...	...	gr. jss
Pil. galban. co.	...	...	...	...	gr. jss

Ft. capsul.

To be taken three times a day, after meals.

These formulae are quoted merely as exemplifying the plan upon which the indications are to be met; but in every instance the prescription must be fashioned so as to deal with constitutional tendencies as well as to correct symptoms.

All patients will not respond with equal success to the same combination of drugs. The person and not the disease demands treatment, and satisfactory results will ensue only when every factor is taken into consideration, and a prescription formulated accordingly. The haphazard use of drugs or formulae reputed to cure or alleviate dyspepsia is of no value whatever. It is a mere shot in the dark, and more frequently misses than hits the mark.

Therapeutics is an art which does not lend itself to generalization, but, to be effective, must endeavour to combat in detail the minutiae of the health disturbance against which it is directed. So applied it is of inestimable value, and is capable of achieving happier results than those who scoff at drugs give it credit for.

In almost every case of fatigue dyspepsia constipation is a conspicuous trouble, and is largely due to hepatic inadequacy and colonic inertia. These difficulties are often overcome by liquid paraffin given in a tablespoonful dose at bedtime, followed, if need be, by from 4 to 6 oz. of

Rubinat water the following morning. Alternatively a homely but useful morning saline may be prepared in the following way: One ounce each of Epsom salts and cream of tartar, with a thick slice of lemon and two pellets of sasin, are added to a pint of boiling water; after cooling this solution is strained through muslin, and may be taken before breakfast in a dose of from a sherry to a claret glassful.

Once in four or five days the evening dose of paraffin should be replaced by an "antibilious" pill of this type:

R Hydrargyri subchlor.	...	...	...	gr. j
Fel. bovin. purificat.	...	...	...	gr. jss
Ext. colocynth.	...	...	...	gr. ij
Ext. hyoscyam.	...	...	...	gr. ss

Ft. pil.

Disciplinary.

The morning bath ought to be hot, 96° to 102° F., and the patient should be instructed to apply active massage to his abdominal walls for a few minutes while he is submerged in the water. On leaving his bath, and after an active towelling, he ought to practise a few simple exercises of such a kind as will supple and put into use all his voluntary muscles, and provide for the thorough expansion of his chest.

The day's work should be so ordered that no undue demand is put upon his energies, mental or physical, and it is of special importance that no work of any kind be undertaken after the evening meal. The relaxation afforded by an evening game of some kind has a therapeutic value of no small moment.

Eight hours out of every twenty-four ought to be spent in bed, and for those who are heroic enough a complete day in bed once a month is a counsel of perfection which will well repay the practice.

Holidays are essential, and though the popular week-end in the country is in every way excellent, it is even more important, from the point of view of conservation of energy, that once in every year a long rest should be provided for, away from the usual routine of business or professional necessity, and for choice in the quiet of the country where the peaceful companionship of nature is allowed to replace for a time the feverish activities of workaday life.

PROGNOSIS IN HEART DISEASE.

BY

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It is probably true that in no branch of medicine is an accurate prognosis more widely demanded and, withal, more difficult to offer than in diseases of the heart. The reasons are not far to seek. The oftentimes dramatic suddenness of the *exitus*, the general knowledge of the essential integrity demanded of the heart for the continuance of life, and the readiness with which its various disorders manifest themselves subjectively, make any observations, which can gain greater accuracy of forecast or, perchance, alleviate impending uncertainty, of great value. The difficulties depend upon the fact that we are dealing with a smooth muscle organ which responds with readier changes in its action, and to a wider field of possible stimuli, than does any other organ of similar type.

Accepting the fact that a gross lesion of the cardiovascular system is known to be present, prognosis must be directed to answering two questions:

1. How long may the patient live?
2. In what manner may his life be affected?

The chief gross conditions one has to deal with come under four headings: (a) Valvular disease; (b) mechanical disabilities, especially adherent pericardium; (c) cardio-arterial degeneration; and (d) malignant endocarditis.

Ruling out, for the purpose of the following observations, malignant endocarditis, whose invariable fatal issue needs no comment here, and also adherent pericardium, which is so usually associated with other gross lesions as to demand no separate consideration, we find two major groups of cases—the one, valvular disease, following most usually upon an infection in early adult life; the

other, cardio-arterial disease, representing the strain imposed upon the circulation by causes of long and gradual incidence.

I. Significance of the Myocardium.

These headings represent diagnoses and are, up to a point, useful. But for prognosis they do not offer any court of appeal. Valvular disease does not kill; nor does vascular degeneration. The factor upon which life is dependent must be the myocardium itself, and the associated conditions are to be weighed in due proportion to the effects they induce upon this essential element.

Prognosis will be helpful in proportion to the extent to which we can assay the true value of the muscle force of the heart. Subjective signs, in spite of all our new appliances for investigating the heart, must still be regarded as the most trustworthy indications of the heart's efficiency. Breathlessness following an effort which could previously be done with ease—limitation of the field of cardiac response, as Mackenzie calls it—is of the greatest significance, and the degree of its intensity offers a useful guide to the progress of the case. To what extent in practice can this sign help us? Take valvular disease. A heart is crippled in its action at a comparatively early age. Experience tells us that with a gross lesion of this type life cannot in all probability be as prolonged as would otherwise have been the case; the insurance companies know this well enough. But the actual course of these cases is far from being a regular and progressive cardiac failure. The dyspnoea may be almost at its maximum at the start. For years it may not noticeably increase. Yet these cases certainly die at a comparatively early age in many cases. Why is this? It is because in these conditions there is an increasing liability to what one may term pathological accidents, and these are roughly four in number: (1) Embolism; (2) functional disturbances, auricular fibrillation, tachycardia, heart block, etc.; (3) dilatation; (4) angina pectoris. To a less extent similar accidents may overtake the degenerative class of case.

The efficiency of the myocardium must be judged less by the initial lesion than by the effect one or more of these incidents may have upon it. Now, it is obvious that at the first undoubted appearance of the initial lesion it is quite impossible to foretell what is going to happen; a straight answer to the question, "How is it going to affect me?" cannot be given, for you are not to expect an equable and steadily progressive failure of cardiac activity. When such an event as any of the above occurs, something more may be said, as we will indicate later, but not before.

Evidence of Failure of the Myocardium.

Is there, then, no class of case which, from a symptomatic point of view, can be accepted as a standard of what to expect when there is a progressive failure of the heart's action? We believe there is, but it is not commonly to be found amongst the purely valvular cases. The type of case is one in which there can be demonstrated the particular type of pulse known as the *pulsus alternans*, in which large and small beats alternate without any disturbance of rate or rhythm. It is a form of arrhythmia of the greatest significance, seldom, unfortunately, to be made out at the wrist, never demonstrable by auscultation, requiring always graphic record.

But its significance is this: That it is universally regarded as indicative of failure of the power of contractility of the myocardium—the most essential function of all. The importance of this function is shown by the fact that evidence of its failure is almost invariably followed by a fatal issue. In my own series of 17 cases, death has followed in 14 out of the 14 in which the course of the case could be followed over two years.

The symptoms associated with such clinical findings are in an uncomplicated case exactly what one would anticipate. The case is something like this: A man, just past middle age, accustomed, perhaps, to a life of effort, finds that he is more easily fatigued than he used to be, pants a little after going up a hill which before he could mount with ease. Thinking little of it at first, he goes on until its increasing evidence suggests that he should see a doctor. His appearance may indicate little. The pulse may be of normal rate and tension, the heart not

enlarged, the sounds normal. At rest, in fact, he is a normal individual, but it is after effort that more suggestive signs may be found. His breath does not so easily return, and the pulse may maintain a quickened rate for a longer time than is normal. Careful examination of the pulse might then detect the alternation, but this is improbable without graphic curves, nor must it be expected to be always present. Often it is only noted over a few cycles; it may be seen only after effort, or for the few beats following an extrasystole. But once its presence is revealed it is never absent again for long. The course of the case is steadily downhill. From being dyspnoeic only with unusual effort he now puffs and pants with ordinary effort, and at the last may be dyspnoeic even when lying in bed. Oedema may supervene, the pulse-rate maintains a higher rate, possibly anginal attacks may ensue, and the end comes.

This is an uneventful case from start to finish, but of much significance, for it exhibits in its purest form the train of symptoms which would be expected to follow simple loss of myocardial force. It is a progressive extension throughout of the earliest signs of cardiac weakness. It is, as I have suggested, seldom that the simple valvular case presents this condition. One or other of the intercurrent calamities diverts the case from this course; it is, in fact, in the degenerative cases, *par excellence*, that alternation is most often seen; and even in these cases it is not so often seen in the above pure form, for the arterial changes, so often, but not necessarily, present, convert the clinical case into one partaking more of the character of uraemia, the result of chronic interstitial nephritis; but even with this train of complicating symptoms the alternation may often be seen, indicating the cardiac disability under the added strain of an intoxication.

Accepting such a case as a standard, we must note that it is not common in pure valvular diseases for purely incidental reasons.

II. Pathological Accidents in the Myocardium.

It is necessary now to briefly note the character of the myocardial response and the associated symptoms in the more frequent accidents which characterize the valvular case. Before doing so, however, it is necessary to point out a fact, well known, that there exists a small but appreciable minority of cases of valvular disease in which life is maintained with little or no disability referable to the heart, and a fatal issue may, in the end, be caused by some condition wholly unrelated to this organ. Some cases, that is to say, do not give any evidence of myocardial exhaustion.

1. Embolism.

A common event, which obviously cannot be foretold, not necessarily dangerous to life, sometimes as in the case of cerebral embolism, crippling in its character, but even so it may, as regards life, prolong it by cutting down the possible sources of overstrain upon the heart.

2. Functional Disorders.

Of these, auricular fibrillation unquestionably is the most important and frequent. It is responsible for 50 per cent. of the fatal cases of heart disease. Objectively it is usually characterized by an irregular and often quickened pulse, present at all times, and persistent, as a rule, to the end. Its first onset is seldom noted by the patient, except in a minority of cases, where it is of paroxysmal type. The inception of this arrhythmia, however, generally modifies the whole course of the case, and this in an unfavourable manner. These cases form the large majority of those instances of so-called "failing compensation," with dropsies, tender liver, pulmonary congestion, and so on. Towards the end this train of signs cannot be considered as distinguishable from those the result of myocardial exhaustion associated with the *pulsus alternans*, but the course of the case up to this stage is more chequered and varied. Phases of comparative well-being alternate with periods of "broken compensation"; precordial pain may at one time or in one case be predominant, or it may be that dyspnoea or palpitation; or the many reflex visceral disturbances present the most striking features; generally, at one time or another, all these symptoms appear in a manner irresponsible, and fickle to a degree. Especially noticeable in these cases is the response to drugs of the digitalis series, and no prognosis can be offered until

the possibilities of this drug have been weighed. By its means alone some of these cases can be sustained in relative comfort for years; in others, again, little influence can be detected. Personally, I have met with more difficulty in giving a prognosis in this class of case than in any other. First and foremost, as a peg upon which to hang an opinion, should be an estimation of the digitalis effect—if this is good, that is an undoubtedly favourable element. Next, the type of case in which it is present. With mitral stenosis the course is usually worse than when associated with arterio-sclerosis, or when occurring in older patients. Lastly, the degree of cardiac enlargement, as estimated by percussion, offers some help, extension of dullness to the right of the sternum being an unfavourable sign. No single subjective symptom offers much aid, however, although, perhaps, the degree of dyspnoea is the most valuable index. A final reason of the uncertainty relating to the prognosis in auricular fibrillation rests in the fact that death may ensue in such cases in two ways: There is the gradual failure, with all the signs of loss of compensation; there are also many instances of sudden death, the cause of which is in all probability to be attributed to ventricular fibrillation. Whilst the former casts its shadow before it, the latter does not, and remains an ever uncertain factor.

Paroxysmal tachycardia, as the name implies, is an occasional and spontaneous incident whose onset or duration it is impossible to foretell. In these cases only general experiential evidence can help us. Such incidents are seldom fatal of themselves, but in some cases their incidence tends to be more frequent and sometimes more prolonged; this is a general tendency only. Such cases, however, are particularly liable to be incited by some reflex cause peculiar to the individual, such as gastro-intestinal disorders, and with treatment directed to these conditions a distinct check upon the paroxysms may be given, and, consequently, a more favourable prognosis can be offered.

Heart-block of a degree sufficient to cause the typical Stokes-Adams syndrome must always be regarded as a serious condition, despite the fact that some of these patients may live many years. Death may occur at any time, directly due to cessation of ventricular activity, an event which, like the fit to which it gives rise, cannot be foretold.

3. Cardiac Dilatation.

Next to the pulsus alternans, I consider that this condition is the most serious from the point of view of prognosis. It is, perhaps, less conclusively evidence of a fatal issue of the case than is alternation, but its onset is often more quickly followed by death. It is important to recognize what one means by this term "dilatation." It is exhaustion of the property of tonicity, and loss of this function is just as much a definite incident as is, for example, loss of the power of contractility. Of the causes leading to this loss of tone we admittedly know practically nothing. Dilatation is certainly not necessarily the result of muscle failure or weakness; dilatation need not be regarded as a natural accompaniment of failure of the heart's myocardium; rather might such failure be looked upon as the result of such loss of tone. A moment's consideration should show the truth of this relation. The *post-mortem* table shows us hearts whose muscle is well developed and healthy, and yet there is marked dilatation of all the chambers; conversely, advanced myocardial disease may show not the least dilatation. Equally difficult is it to explain dilatation on the exhaustion theory from the clinical point of view, for there is every reason to believe that it may be of abrupt onset, occurring within a few minutes or hours, and showing none of the steadily progressive characters which we should expect if the myocardium was becoming weakened. For these reasons we regard dilatation as a definite possible incident which can arise in the course of a heart case. This condition is clinically characterized by three signs: (a) Quickened pulse-rate of regular rhythm; (b) extension of the area of cardiac dullness, especially to the right; and (c) general signs of dropsies, etc. To be excluded from this group are those cases where dilatation may reasonably be the result of mechanical causes, such as that associated with emphysema or certain mitral cases. The quick pulse is especially significant. Its rate is maintained throughout, even when the patient is in bed and completely resting. Subjective symptoms may be remarkably few. Drugs fail

to slow the pulse-rate; usually it progressively accelerates to the end. In some ways these cases resemble our type case; in them, too, alternation may occur towards the end; anginal attacks may occur just before death, but this is not the rule. Dilatation appears to occur indiscriminately in all classes of heart disease. There is, so far as I am aware, no sign which can indicate at the onset of the dilatation what the course is going to be. In younger people recovery may follow, but it will be slow, associated with a gradual slowing of the pulse-rate; recovery, when it occurs, can be very complete. In arterio-sclerosis the prognosis is almost hopeless; in mitral disease, too, the issue for long hangs in the balance, but certainly some cases recover.

4. Angina Pectoris.

Only to the severer type of this affection can we refer; the slighter forms—the shooting pains at the heart's apex, the vague referred pains up into the heart or around the epigastrium—all these transient and frequent manifestations, full of interest as they are, require no special note. Prognosis in angina has for years been regarded as very grave, and with this mature opinion one would agree. That patients may die in an attack—may die, we presume, from the intense severity of the agony—has given this dread condition an especial and peculiar prominence; but we do not think that this end is to be anticipated in all cases who suffer from this obscure but very real ill. Admitting as we do, however, its gravity, to what is death attributable in the remainder? We can suggest an answer for some, and this is that death is due to the same causes as those of the type case—namely, failure of contractility. Angina is met with especially in those cases which at one time or another have shown alternation; the clinical course of these cases often presents the same gradual but relentless downward trend which we have suggested to be typical of myocardial exhaustion; and it is again met with in exactly the clinical kind of case in which alternation is to be anticipated. Angina, then, owes its sombre prognostic significance not only to itself as an immediate killing agency, but also to what its presence signifies.

AN INVESTIGATION OF THE BEST METHODS OF DESTROYING LICE AND OTHER BODY VERMIN.

(A Preliminary Communication.)

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THIS investigation of the best methods of destroying lice was begun at the outbreak of the present war at a time when verminous conditions among soldiers were especially difficult to control owing to the continual arrival of fresh recruits. In former times it was customary to regard such verminous conditions as a necessary consequence of the bringing together of large numbers of men, and vermin were regarded as sources of discomfort and irritation rather than as an actual danger. But in view of the present known relationship between vermin and the transmission of disease, and in consideration of the prevalence of typhus in Serbia and elsewhere on the eastern front of the present war, it has seemed desirable to issue this preliminary note on the results of the experiments so far made.

No previous worker has succeeded in keeping lice alive and well apart from the human body. Murray,¹ in his *Economic Entomology*, describes how the Dutchman Leewenhoek, more than two hundred years ago, bred lice. Leewenhoek at first proposed to employ a poor boy as a fit subject for the experiment, but afterwards found that he could make the experiment with much more certainty on his own person, wearing for this purpose a special garter under which the lice were confined. In the present experiments it may be indicated that the laboratory boy proved equally disappointing, and that instead of a garter to confine the lice a finger-stall, while less artistic, had many points in its favour. Even when the experiments were long continued the finger suffered only from a condition somewhat analogous to a mild trench frost-bite as at present described.