In this last region it forms a flat plaque which can be felt on rectal examination and may be mistaken for a sigmoid growth, especially if, as sometimes happens, there is widespread peritoneal invasion with incomplete obstruction.

There are three additional methods of investigation which are of great value, especially in the early stages. They are (1) X ray examination after a barium meal, (2) chemical examination of the stomach contents, and (3) examination of the *fæces* for occult blood. Of the three, the *X ray examination* is most helpful. In the early stages of cancer there is rapid emptying of the stomach, probably the result of interference with the pyloric sphincter, but in the later stages there is delay in emptying and certain characteristic filling defects. The most usual is a flattening of the shadow of the greater curvature of the pyloric antrum, and later on other evidences of gross deformity arise. Occasionally one may see a typical hour-glass contraction of the central portion, but the usual picture is one of greater or less deformity of the pyloric region.

Examination of the stomach contents is conducted, after the administration of a test-meal, either by withdrawing them one and a half hours after the test-meal was given, or by withdrawals of a portion of the contents every half hour by means of the Rehfuß tube. The "resting juice"—that is, the contents of the stomach before the test-meal was given—is also examined and this is of great value. The amount of the "resting juice" and its character, and the condition of the test-meal is estimated macroscopically, microscopically, and chemically. The presence of blood and pus is suggestive and tissue cells and micro-organisms may be detected.

The most important investigation is the test for the presence of free HCl. In at least 50 per cent. of cases of cancer free HCl is absent from the early stages, and in late stages it is nearly always absent. It must be remembered, however, the free HCl is diminished or absent in other diseases, such as pernicious anæmia and cirrhosis of the liver, and it is not always found in some cases of simple ulcer.

Occult blood in the fæces is easily tested for by the benzidine method. The case must be prepared by withdrawing meat from the dietary for three days and bismuth should not be given as its presence in the stools may give a positive result. In view of the many possibilities of error due to chance hæmorrhage in other parts of the gastro-intestinal tract, especially from hæmorrhoids, the test is not an exact one, and has perhaps more of a negative than a positive value—that is, that the absence of occult blood after repeated examination is of more value in excluding the possibility of gastric cancer than its presence is in favour of cancer. Occult blood is found occasionally in simple ulcer of the stomach, but it is much more frequent and more constant in cancer, where it has been estimated to occur in 75 per cent. of cases.

SOME POINTS IN DIAGNOSIS AND TREATMENT OF AURICULAR FLUTTER AND FIBRILLATION.

BY

A. J. SCOTT PINCHIN, M.D. LOND.,
PHYSICIAN AND PHYSICIAN-IN-CHARGE OF CARDIOGRAPHIC
DEPARTMENT, CITY OF LONDON CHEST HOSPITAL.

THE subject chosen for review is perhaps a little stale, but there is some excuse for a reconsideration of the matter; for, although the diagnosis of these conditions is undoubtedly now made correctly in most cases, yet, the treatment seems still to present a good deal of difficulty in carrying it out to a satisfactory conclusion. This management should be in the hands of the practitioner who has charge of the cases, in most patients, and it should not be necessary for the patient to be constantly watched by the cardiologist.

In no cardiac condition can a more satisfactory result be obtained, and in most cases to attain this all that is necessary is a clear view of the condition, close observation of the patient, and common sense.

We are constantly seeing patients who, starting with a failing heart from fibrillation, then have cardiac failure from excessive dosage with digitalis, and finally drift back again to uncontrolled fibrillation, on the withdrawal of the digitalis.

IRREGULARITIES REVIEWED.

To review our conception of irregularities. The cardiac condition when the patient first consults his doctor is usually one of decompensation; in this connexion we must remember that whilst in valvular disease we are helping the mechanical defect as well as the cardiac load by resting the patient, in the case of pure defects of rhythm rest has little effect on the defect; we rest the heart only to improve its condition and then endeavour to rectify the defect in rhythm. Irregularities arise by the supersession of the pace-maker normally present in the sinus node, and by ectopic stimuli arising in the muscle or neuro-myogenic tissue. The physiological type of irregularity due to nervous influences arising in the sinus can be ignored as far as ectopic rhythms are concerned.

An ectopic beat arising below the sinus suppresses the effect of the sinus for one beat; if the ectopic beats are continuous and multiple they suppress the sinus for as long as they occur, and directly they cease the sinus resumes control again.

Single ectopic contractions or premature beats are most often met with arising in the ventricle, but series of ectopic beats lasting with regularity for minutes or hours (the condition known as paroxysmal tachycardia) are most commonly of the auricular type.

Paroxysms of ectopic beats of this variety arising in the auricle are effective in traversing the bundle and cause corresponding contractions in the ventricle, the rate of the two chambers being the same, but the rate in this type does not (roughly) exceed 200; the contractions are regular, the condition has a sudden onset, a sudden termination, and the cardiac rate is little influenced by position.

It is important to recognise the condition, for digitalis has little effect and intensive dosage is not indicated.

There is a further condition in which ectopic rhythm arises in the auricle. In this type the rate of the contraction of the auricle is much more rapid, 300–400, and the ventricle is not able to respond to each contraction and is protected by a condition of relative physiological block, which prevents the effective passage of some of the stimuli down the bundle; the ventricle in this type does not respond to each auricular stimulus but to a definite proportion of them, every other one every second or every third, a condition of 2–1, 3–1, and 4–1 block.

It is this holding-up action of the bundle which protects the ventricle and prevents a too frequent and ineffective contraction, as may occur when the ventricle itself goes into fibrillation.

AURICULAR FLUTTER.

This state of regular, equal, and very rapid contraction of the auricle is known as auricular flutter. The further development of this state is that in which the ectopic auricular rate is still more rapid coupled with less effective passage down the bundle and a greater number of stimuli blocked; though, owing to their greater number, more may reach the ventricle and the ventricular action is more rapid. This is the state known as auricular fibrillation.

There would appear to be an obvious difference between paroxysmal tachycardia and flutter, whilst flutter and fibrillation appear to be akin as the one condition may pass into the other.

Although the sinus rhythm is superseded by any rhythm arising below it which exceeds it in rate, yet it steadily perseveres so that when a paroxysmal tachycardia ceases the sinus immediately takes control again; when a fibrillation or flutter ceases the sinus again controls. It follows that if we are able to break the abnormal, the rhythm we return to is the normal. It is a little difficult to understand the great difference between paroxysmal tachycardia and the condition of fibrillation and flutter. The latter two conditions certainly seem to be best explained by Lewis's adaptation of the circus movement theory. This is doubtless known to all, and it is easy on this assumption to see why flutter should pass into fibrillation, by the induction of a high degree of block by digitalis (we know

that clinically fibrillation may follow a pathological heart-block); and it makes easy to understand the resumption of the normal rhythm by means of quinidine, the refractory period of the ring of muscle being so increased that the vicious circle is broken.

The state of flutter of the auricles is distinctly rare in comparison with other irregularities, and its main importance lies perhaps in the fact that the condition may be easily overlooked, for reasons to be mentioned later.

Being usually associated with cardiac sclerosis, it is met with more frequently in older patients; in younger people it occurs in toxæmias and sometimes in association with rheumatism and badly damaged hearts. The series of cardiograms of a recent case, of a girl of 19, with severe rheumatic carditis, adherent pericardium, and heart failure, shows the transition from flutter to fibrillation and then to normal rhythm, on intensive digitalis medication; the rhythm has now remained normal for many months and shows that even in the worst kind of case a return to normal may sometimes be obtained.

The pulse is regular and usually before treatment half the auricular rate, with an auricle of 300, pulse 150; occasionally, especially in children, for a short time the physiological block may lift, allowing a very rapid action of the ventricle for short periods and associated with fainting attacks, the tendency is for the block to increase so that a 2–1 block becomes a 3–1 or 4–1; the corresponding ventricular rate will be 150–100–75; whatever the degree of block as long as it is regular the pulse will be regular, but in the higher degrees a variable block is often observed, 3–, 4–, or 5–1 periods irregularly occurring, as a consequence of which the pulse is irregular.

Before the heart has failed observation of the venous pulse in the neck will often by its "fluttering" reveal the condition, and one should emphasise the importance of this inspection of the veins of the neck as a routine examination; it is often omitted and conditions easily diagnosed are overlooked in consequence.

The patient at the onset is usually very uncomfortable, complains of dyspnoea, sternal pain, palpitation and cough, and is somewhat cyanosed, the symptoms are often so much pulmonary that the patient is thought to be suffering with some trouble in the lung.

During the early stages with a 2–1 block and a rapid pulse the condition is perhaps not so likely to be missed as when the degree of block has increased for as in the case of which a cardiogram was shown; a 4–1 block produced a ventricular rate of 75 completely regular and simulating a normal pulse.

In many instances the physician, having been rendered suspicious that the condition exists, the cardiograph renders absolutely apparent the regular rapid auricular action.

AURICULAR FIBRILLATION.

Auricular fibrillation may be regarded as a stage further in the disease ; although it does not appear that fibrillation originates in flutter most cases of flutter can be driven into fibrillation. The ætiology of the condition in fibrillation is of extreme importance as our method of treatment will be modified according as to the condition causing the abnormality.

It is met with (*a*) in valvular lesions, especially in mitral stenosis ; (*b*) in senile degenerative changes apart from valvular disease ; (*c*) in hypertrophied hearts with degenerative changes ; (*d*) in toxic conditions, autogenous or exogenous ; and (*e*) as a sequel to heart-block.

The rheumatic group comprehends mostly young subjects, the sclerotic group the old ; a large proportion of the cases are rheumatic in origin. Mitral stenosis combines the two factors tending to produce the condition—namely, enlargement of the auricle with degenerative changes and increased tension, with often some degree of block in the bundle. The main feature about fibrillation is the fact that the symptoms may be mild in degree and that the patient may have had the condition for a considerable time without treatment or knowledge of the disease ; the symptoms commence with decompensation.

The points in *diagnosis* are the complete irregularity in force and rhythm of the pulse beat. The irregularity is more evident in the pulse than at the cardiac apex, and is often not very obvious, unless instrumental methods are employed ; but a polygram or sphygmogram is sufficient to indicate the state, and the difference in the force of the beats is well shown by taking the systolic blood pressure by the auscultatory method, when the systolic force of the beats will be found to vary from just above the diastolic pressure to the maximum systolic, and the proportion at the higher or lower pressure will give some indication of the efficiency of the heart.

The feature on which we place most reliance as an aid to *treatment* is the pulse deficit—that is, the difference between the apex beat and the pulse beat, or the measure of the efficient beats. There is only one type of heart that gives difficulty in diagnosis, and that is the heart that is rapid from failure associated with frequent ectopic beats ; if these are numerous it is often very difficult to form an opinion with any degree of certainty without a cardiogram.

The object of the treatment of auricular flutter is to block the auricular stimuli until the ventricular rate is within reasonable limits—that is to say, to give digitalis with the idea of producing fibrillation—the patient often being more comfortable with this condition than with flutter, and further the heart may revert to normal rhythm after the digitalis effect has worn off.

The treatment of fibrillation is first of all to control the heart by digitalis, and having arrived

at that control we then consider whether we shall keep it in this state or endeavour to obtain normal rhythm by means of quinidine.

The amount of digitalis necessary may be worked out on Eggleston's basis of $2\frac{1}{4}$ minims of the tincture per pound body-weight—that is, for a patient of 10 st., 5 fl. dr. total dose. It is not necessary to give it in the intensive way suggested by him ; the same effect will be produced when the total has been given if allowance is made for an excretion of about 20 minims a day.

Assuming that the patient is fibrillating with an apex beat of 150. Put the patient to bed (endeavour to gain control should not be made on an ambulatory patient), give 20 minims of the tincture of digitalis three to four hourly, and have both the pulse and the apex charted ; as the apex rate comes down the pulse will rise, which may lead to false conclusions if the apex is not observed.

The pulse and apex curve will meet and descend together until they have arrived at the optimum rate 60–70. This is where failure so often seems to occur in treatment ; if the patient is not carefully watched this state may be passed. The pulse increases again due to digitalis poisoning, it is thought that control has not been obtained, digitalis is continued, and the condition of patient steadily becomes worse ; it is seldom one goes very long without seeing a heart reduced to this condition. Therefore watch the patient carefully, especially when getting near the limit of dose, and look out for nausea, vomiting, headache, faint attacks, anorexia, and above all for coupling of beats, one of the first signs of digitalis poisoning.

Having controlled the heart, gradually allow the patient to do a little, keeping on a dose of digitalis sufficient to keep down the rate, and find the amount that is sufficient to control the rate by constant use when the patient is about, he will then need only occasional observation. Most cases respond readily in this way and with little trouble. Rarely we meet cases which it seems almost impossible to control satisfactorily ; but of all diseases fibrillation is certainly one in which judicious medication gives a great reward.

Having obtained a normal ventricular rate we have to consider whether it is advisable to endeavour to obtain a reversion to normal rhythm by means of quinidine, a drug by no means devoid of danger, and we may well consider whether, if the patient is comfortable with digitalis control, the use of quinidine is justified.

The main action of quinidine is to lengthen the refractory period of the muscle ; it also slows conduction, but in this is not comparable with digitalis. Cases obviously unsuited for treatment by it are those in which fibrillation has been caused by some condition which is still present, such as mitral stenosis ; in mitral stenosis especially a clot is often present in the auricle and coördinate contraction is not desirable. Other conditions which are quite unsuitable in association with fibrillation are infective conditions of the heart, such as

subacute endocarditis, or any badly damaged heart, also those cases in which the heart cannot be controlled with digitalis, and finally those occasionally seen in which anginal attacks have ceased with the onset of fibrillation.

CASES IN WHICH THE ADMINISTRATION OF QUINIDINE MAY BE CONSIDERED.

(a) If there is no evidence of structural damage (cardiogram). (b) Cases of recent onset, but these may occasionally clear up themselves. (c) Cases without serious valvular defects. (d) In Graves's disease if muscle is fair and an operation is in view.

If quinidine is used let the patient get fairly free of his digitalis, at the same time keeping the heart controlled; commence with 5 gr. and increase daily. First day, 5 gr.; second day, 10 gr.; third day, 15 gr.; fourth day, 20 gr.; fifth day, 25 gr.; sixth day, 30 gr.; seventh day, 40 gr., divided into three doses.

If during this period rhythm has reverted, keep same dose for two days and reduce rapidly to 5 gr. daily. If at the end of the period it has not changed stop the quinidine; it is toxic to the heart, and if the change does not occur soon it is doubtful if it is wise to force the drug. In any case it is wiser when giving quinidine to have the patient's condition controlled occasionally by means of cardiograms.

RADIOGRAMS AS AN AID TO DIAGNOSIS IN LUNG DISEASES.*

BY

A. GOODMAN LEVY, M.D. LOND.,

PHYSICIAN TO THE CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST.

THE remarks I have to make are derived solely from the impressions which I have received in the course of routine work as physician to this hospital.

X RAY EVIDENCE.

Let us first consider what is the relative value of the X ray evidence in lung disease.

An old teacher of mine, Dr. Frederick Roberts, used to sum up examination of the chest as follows: (1) Inspection, (2) palpation, (3) percussion, (4) auscultation. To this summary of physical signs I feel we should now add (5) visualisation or X ray examination. It need not always be employed, but it should be always available. Please note carefully I am not encouraging you to resort to X rays as a short cut to diagnosis. The X ray picture is a physical sign as much as the recognised physical signs, and it should rank with

them, and be interpreted in conjunction with them. If reliance is placed on the interpretation of the X ray picture alone you are liable to serious mistakes.

Nevertheless, it must be admitted that sometimes radiograms afford information that all the other signs and symptoms taken together do not give. For instance, a new growth may be found in its early stage, although totally unsuspected. The congenital absence of the diaphragm on the left side was one of the surprises I have encountered, and a long list of instances might be given. For this reason the routine X ray examination of every chest seems to me very desirable.

Sometimes the X ray causes the physician to modify or change his diagnosis; generally it is useful in cases of doubtful diagnosis, but in the great majority of instances it simply serves as a check on diagnosis. Let me particularly warn you against the detailed and positive reports which are submitted by some X ray specialists. The frequent allusion in those reports to hilar phthisis has to be received with much scepticism—it is, in fact, better disregarded *in toto*—it is entirely unjustifiable to condemn a patient to a diagnosis of phthisis on the evidence of such reports. So also such refined points as the activity or non-activity of tubercular foci, I can assure you, are not worthy of serious attention. Regard the broad indications of your X ray not as a method of complete diagnosis, but as physical signs, and you will be in the right path.

TUBERCULOUS DISEASE OF THE LUNGS.

It is my experience that X rays usually demonstrate an extent of disease which is in advance of the clinical signs, but in cases with very definite physical signs the X ray may be in accordance with the signs as regards extent. It is especially in so-called early cases with few signs and little constitutional disturbance that we may see more than we expected, and I can show you plates of such cases in which the disease is seen to be actually very extensive, but much of what the radiogram shows is old mischief, the actual activity being localised to a small area. My present opinion is that it will probably be found that any tubercular disease of the lung sufficiently developed to give rise to symptoms and signs can throw a definite X ray shadow.

Does the converse hold good? I can say no more than this: When the diagnosis from physical signs is doubtful and the X ray throws no definite shadow, this is strong evidence in support of a negative diagnosis. I have not so far come across a case which could be definitely diagnosed as tubercular and which showed no X ray evidence, but it is likely that early miliary tubercle will not be revealed by the X rays.

Pleural Exudates.—The presence of fluid in considerable quantities is generally readily diagnosable, but it is quite easy to be in error, and to show plates which demonstrate errors both

* Abstract of a Post-Graduate Lecture delivered at the City of London Hospital for Diseases of the Chest on June 23rd, 1926.