DISTURBANCES in CARDIAC ACTION
and their CAUSES and SYMPTOMS.
DISTURBANCES in CARDIAC ACTION may be primarily divided into two groups according to their general cause.

1. **Organic**, i.e. those which are due to disease of the heart, whether of the valves or of the heart muscle, e.g. Irregularity in Mitral disease.

2. **Neurotic or Functional**, i.e. those which are not primarily due to some disease of the heart but which are due to some cause acting from a distance, e.g. Palpitation in Exopthalmic goitre.

This is the first division to be made, as generally speaking, organic disturbances of the heart's action indicate a more or less serious failure as regards the capability of the heart to do its work, whereas those disturbances which are neurotic in origin, although they may indicate very serious trouble are often quite compatible with long life. The chief differences between organic and functional disturbances are

1. In functional disturbances there is a great disproportion between the subjective phenomena and the signs /
signs of disturbed circulation.

2. Functional disturbance more often assumes a paroxysmal form.

3. Functional disturbances generally occur in young people with a neurotic temperament, whilst organic disturbances are more commonly seen in those of middle age, no matter what the temperament may be.

4. The absence of physical signs of disease in the structure of the heart, in functional disturbances.

5. No marked increase of symptoms on exertion.

This last is probably the most important of all, but must be observed with caution, because,

(A) There may be some degeneration of the cardiac structure with little or no sign on physical examination.

(B) Both functional and organic disturbances may appear together without any direct relationship as to cause.

Both the Organic and Functional disturbances may be subdivided into the following groups.

1. /
1. Palpitation.
2. Tachycardia, or increased frequency of cardiac action.
3. Bradycardia, or diminished frequency of cardiac action.
4. Irregularity.
5. Intermission.
6. Angina Pectoris.
7. Syncope or sudden failure of heart's action.

**PALPITATION**

Palpitation is often defined as the sensation of tumultuous action of the heart. It varies greatly in degree; from being merely a feeling of fluttering; to a disturbance of the most violent and distressing nature. This difference in the amount of the distress is not of itself always a guide to the force and state of the heart and its valves. Persistent palpitation is often a symptom of dilatation of the heart. Bramwell's definition in "Diseases of the heart" Chap VII is, "Palpitation of the heart is a symptom not a "disease. It consists of excessive action of the "organ."
organ. The frequency of the heart's action is usually but not always increased; the cardiac action, which is in some cases irregular or intermittent, is vividly, and sometimes painfully, perceptible to the patient. The condition is usually paroxysmal.

This is I think as good a definition as can be given. The statement as to palpitation of the heart being a symptom holds good not only as regards palpitation, but also as regards the whole group which is generally known as "Cardiac Neuroses" and which I am describing under the heading of "Disturbances of the Cardiac Action."

According to Balfour in Lecture X on the "Diseases of the heart and aorta" "Palpitation is merely the occurrence of abnormally rapid pulsation in the heart or in the abdominal aorta. This may persist only for a few minutes, and then die off, or it may last continuously for a much longer period." This I think not quite the case as the action of the heart is not always increased in frequency during an attack of palpitation. Professor Sir Thomas Grainger Stewart in /
in his lectures divides palpitation into the following types.

1. From mental emotion the heart sometimes beats with tremendous vigour.

2. Use of strong tea or coffee often brings on palpitation some hours after.

3. Marked palpitation sometimes is the result of dyspepsia, and the longer a meal is delayed the more certain is the result.

4. Palpitation in connection with anaemia and chlorosis.

5. In cases of exophthalmic goitre where the action of the heart is very rapid.

6. In cases of Cardiac Hypertrophy where cardiac action is strong and vigorous.

7. After results of such processes as influenza.

8. In connection with gouty processes frequently aggravated by dyspepsia.

9. Where palpitation is superadded to organic disease.

10. Nervous individuals getting palpitation from small causes and this form is often accompanied by an actual fear of death.

Etiology /
Etiology:

The predisposing causes of palpitation are, neurotic temperament; general debility; inanition; mental and bodily exertion; hysteria; all diseases which cause deterioration of the blood either in quantity or quality; e.g. gout, scurvy, chlorosis; and also diseases of the muscle and valves of the heart.

The exciting causes are violent exertion bodily or mental; shock and all sudden excitement of the nervous system; dyspepsia; and the excessive use of alcohol, tea and tobacco, in short anything which causes excitability of the nervous and muscular structure of the heart.

Symptoms:

The symptoms as I have already mentioned may vary from a mere sensation of fluttering to a violent and painful action of the heart. It is also found occasionally /
occasionally in the form of a single action of the heart but is much more frequently a number of actions. When it occurs as a single action it very often comes on during sleep, when the patient is awakened by it. I may here mention the case of a patient whom I had, and who was suffering from very severe dyspepsia. He was frequently awakened by such a single action, and said he was conscious of something being wrong with his heart. It was in this case accompanied by a feeling of weight and fulness in the epigastric region. Sometimes, however, there are no accompaniments and the patient may again go to sleep without any further inconvenience. It is however, more common to find palpitation occurring in paroxysms, in which there may be only a slightly increased cardiac action, or there may be very prolonged and violent action in which the heart seems to thud against the chest wall, or the heart may seem to the patient to be rising into the throat. The following subjective phenomena are also very often present; choking feeling, (globus hystericus); clammy, cold sweat; and a partial unconsciousness.

PHYSICAL /
Physical Signs:

Inspection and Palpation show that the cardiac impulse is in a normal position, unless the palpitation is a symptom of organic trouble, when it may vary enormously. The impulse is as a rule diffuse and much exaggerated in force. On percussion, the area of dulness is not enlarged. Auscultation gives very varying results. The heart sounds are always exaggerated and sometimes very markedly so. The sounds are sometimes heard over a large area. Very frequently a metallic ring is heard usually accompanying the second sound at the base. The sounds are not always loud, but may be simply very clear and distinct. The carotids and large arteries also throb. The radial pulse does not always give a true indication of the excited state of the heart. It may be sharp and jerking, and sometimes it is small and weak which is a sign of an overloading of the right side of the heart. These signs when the attack is due to organic disease are accompanied or masked by the signs of the disease.
disease. When the paroxysm ends the heart may immediately return to its natural state, but there is often for some time afterwards an irritability of the heart's action.

Diagnosis:

In diagnosing a case of palpitation the physician has to make up his mind as to three things.

1. Whether the palpitation is organic or neurotic.
2. What cardiac lesion is present, if any.
3. If there is no cardiac lesion to what the attack is due.

This is not always very easy because there may be a cardiac lesion present without any very marked physical signs. I have already mentioned the chief points by which we are aided in the first portion of our diagnosis, namely,

1. The disproportion between the subjective phenomena and the disturbance of circulation in functional palpitation.

2. /
2. The paroxysmal nature of the functional form.
3. Absence of marked increase of symptoms on exertion in the functional.

We must take into consideration also the age, sex and temperament of the patient. Neurotic palpitation is usually seen in young people whilst the organic is more common after middle age. This is, however, not invariably the case, as young people may have organic disease, whilst old people may have palpitation without any signs of organic disease. This is, however, very rare I believe and in all cases the heart should be very carefully examined. In fat elderly people who suffer from palpitation, and in whom there are no physical signs of organic disease, there is always the probability of some fatty change of the heart muscle. Severe functional palpitation is often complained of by women at the menopause. If there are no signs of organic disease, then a careful examination must be made for other causes. Such diseases as anaemia and Graves' disease when present cause severe palpitation.
In fact severe palpitation without exopthalmos, or without enlargement of the thyroid may be the symptoms of the latter; hysteria is often the cause and its other symptoms must be looked for. In some cases the habits of the patient aid us in our diagnosis, e.g., in those who abuse alcohol, tea or tobacco, etc.

Treatment:

The treatment in cases of palpitation is:—

1. To relieve the paroxysm.
2. To remove or alleviate the cause of the attacks.

For the relief of the paroxysm simple remedies very often do all that is required. For instance if the patient takes one or two deep breaths, or the administration of a small dose of brandy. If the patient is at the time in a state of excitement, the physician can often do a great deal of good by soothing him.

The /
The treatment for the removal or at any rate to alleviate the cause is often simply rest, and removal from all source of mental worry, with administration of a simple tonic of iron and arsenic. In cases of cardiac debility by the use of the cardiac tonics such as digitalis and strophanthus. In cases of cardiac hypertrophy with very strong and violent action the use of Iodide of Potassium is often attended with good results.

Bramwell in Chapter VII of "Diseases of the Heart" says, "The application of a galvanic or faradicoeur rent to the vagus and sympathetic nerves in the neck is often distinctly beneficial."

Case 1. /
Exophthalmic Goitre:

Mrs B. aet. 60 years. She complains of weakness and a feeling of nervousness. On the slightest exertion or excitement she suffers from a violent and painful palpitation. Sometimes also the palpitation comes on very severely without any exertion and is accompanied by dyspnoea, which is sometimes so bad that she sits up in bed and gasps for breath. On questioning her she stated that she had a swelling in her neck. This swelling in her neck first began about 30 years ago.

History: Her father died at the age of 78 from the result of an accident. Her mother died, aet. 65 yrs. from heart disease. Patient says that no member of the family had a lump on the neck like hers. She has two brothers alive and well, and two sisters one of whom died in childbirth, the other is alive.

Habits: Her appetite is somewhat irregular. She has always been accustomed to good plain food and has a very comfortable home. She is a total abstainer from alcohol.

Previous illnesses: She had neither illness nor accident previous to this, and never knew what it was to stay in bed except at her confinements. She has had four /
four children and one miscarriage on the occasion of her last pregnancy which was about 30 years ago.

**Time and Mode of Origin:**

The illness commenced about 30 years ago after her miscarriage, which kept her in bed for a month. After she got up she was very weak and then suffered from palpitation, but did not take much notice as her doctor said she was very bloodless, but would get better. However the palpitation grew worse and about 18 months after her miscarriage she noticed a slight swelling in the neck, which did not give her any pain and which increased in size very slowly. She was treated with iron and quinine at the time and was told to take as much open air exercise as possible. She improved somewhat, but the attacks of palpitation never left her altogether and she was under treatment off and on until about 5 years ago when her old doctor died. Since then she has consulted a doctor once or twice and has continued taking the iron and quinine occasionally. Lately the paroxysms have become very violent and the swelling has increased until it is now the size of a bantam's egg. She says she first noticed a little protrusion of the eyeballs about 2 years /
years ago but this has never been very bad. When I first saw her she was sitting up in bed panting for breath, and also suffering from a very severe and painful attack of palpitation.

**General Facts:**

- **Height**: 5ft ½ inch.  
- **Weight**: 7½ stone.

The patient is a small very delicate looking woman. No jaundice or dropsy, but she has very sudden flushings; no evidence of any injury. There is a swelling in the middle of the neck about the size of a bantam's egg. There is a slight protruberance of the eyeballs, and the patient has a very anxious expression. The temperament is nervous and irritable.

When I was called in the patient was sitting up in bed clutching the bed-clothes and gasping for breath. Temperature was 99.4°F.

**Alimentary System:**

- Tongue dry and parched also the lips and mouth; this however passed off after the paroxysm. Her appetite is very poor, she at first complained a good deal of thirst, but this soon passed off. No morbid sensations before or after meals; she is sometimes troubled with constipation; no abnormality about her abdominal /
abdominal organs.

**Haemopoietic System:**

There is no change in the lymphatic glands. Thyroid gland is swollen to about the size of a bantam's egg. The swelling is somewhat irregular and larger on the right than on the left side. The size varies and on excitement the tumour becomes larger and more tense. The tumour is elastic and pulsation can easily be made out in it especially during excitement.

There was absolutely no enlargement of the spleen.

**Circulatory System:**

**Subjective Phenomena:** The patient does not complain of much pain except during the more severe attacks of palpitation, and then she says that she has a dull pain over her heart. Palpitation is very marked and comes on at the least excitement. Exertion also induces the attacks but not to such an extent as excitement. She complains very often of feeling faint, but she says that she has never actually fainted. Dyspnoea is very marked and accompanies the attacks of palpitation.

**Inspection:** The praecordia is not prominent, but the cardiac /
cardiac impulse is very well marked. This was partly due to the thinness of the chest wall. When the patient was lying quiet the impulse was seen in the 5th intercostal space about 3 inches from midsternum. Palpation confirms inspection. On placing the hand on the chest wall the cardiac impulse is very marked. The rate varies from about 80 to 120 per minute. On the occasion when I first saw her the rate was 130. The heart beat is also somewhat irregular but only during the attacks of palpitation. Percussion does not show any increase in the area of dulness the heart extending 1 1/2 inches and 3 1/2 inches to right and left of midsternum. Auscultation shows very distinctly the alteration in the rate of the heart beat. There is relatively no diminution in the pause. There is slight increase in the loudness and clearness of the sounds, but nowhere are they masked or in any way accompanied by a murmur. In auscultation over the enlarged thyroid, a distinct murmur could be heard which was systolic in time and of a soft blowing character. The pulse was regular and varied considerably as to its rapidity. During the paroxysms the pulse is full and bounding. The pulse rate varies between 80 and 130.
The carotids pulsate visibly, and so also do the temporal arteries. The arteries are quite soft.

Respiratory System:

There is nothing abnormal in the respiratory system with the exception of the dyspnoea. This was sometimes very marked especially when the patient was excited. The tumour in the neck causes no difficulty in the breathing.

The urinary system is quite normal; the urine being of a straw colour with a specific gravity of 1020. The urine contains no abnormal constituents.

The reproductive system is also normal. Patient ceased menstruating at the age of 35.

Nervous system is normal with the exception of the slight protrusion of the eyeballs. The sight is very good considering the patient's age.

When I first saw the patient the palpitation was very severe. I gave her a tablespoonful of brandy.

I /
I then gave her a mixture containing:

\[
\text{Rx}
\]

Pot. Brom. \(\text{grs. 120}\)
Tinct. Digit. \(M90\)
Aq. Camph. \(3\ 6\)

Sig.

\(3\ 6s\) every 3 or 4 hours until palpitation is relieved. This medicine was continued for 24 hours, and then was given three times a day. This was continued for a week and then I gave her 4 grain doses of Quinine. She was given a simple and nourishing diet, and I kept her in bed for about a week. Then she insisted on getting up. As opposition simply aggravated the palpitation I let her up but got her to sit quietly in a big arm-chair. In about a month's time her general health was much improved and the attacks of palpitation were much slighter and did not occur so often. When I last saw the patient about 6 months after, she said she had had no more severe paroxysms and was continuing in good general health. She said she thought the lump on her neck was a little smaller but I could not make out any difference.

Case II. /
Case II. Exophthalmic Goitre:

I mention this case because it showed in such a marked fashion the very tumultuous action of the heart.

Mrs W. aet. 72 years.

I was called in to see this patient one night and found her sitting up in bed and gazing with wide staring eyes as if under the influence of some great fear. Her breath was coming in quick short gasps and when she spoke her voice was very husky. She could only articulate a few words at a time, and then paused to gasp for breath. She told me that she felt she was going to die every minute, and that her heart was beating very quickly and painfully. This in connection with the exophthalmos led me to suspect a case of "Graves Disease" and on opening her nightdress I saw the third sign, namely an enlarged and pulsating thyroid. The patient was in too bad a condition to allow of a thorough examination but I was able to note the following points. There was some slight bulging in the praecordial region.
region, and a very rapid and diffuse cardiac impulse. On auscultation the heart sounds were very rapid and irregular. I could make out no murmur anywhere over the heart or in any of the areas. The pulse was also very rapid and irregular. There was also a "false intermittence", some of the heart beats being so feeble as to cause no radial pulse wave. The rate of the pulse was 160 per minute. I gave her a hypodermic injection of digitalin. However in spite of every care the patient died the same night.

I was unable to obtain permission for an autopsy.
TACHYCARDIA

Tachycardia or increased frequency of the Cardiac Action. Like palpitation tachycardia is often due simply to a nervous disturbance, but when so it is merely temporary. Persistent Tachycardia is due generally to fever, and when not accompanied by rise of temperature it is generally a sign of heart weakness, caused either by some organic disease, or merely by a general weakening of the whole system. There is however another type described as Recurrent or Paroxysmal tachycardia. Of this however I have had no personal experience.

Etiology:

The predisposing causes are much the same as those which I have given for palpitation, namely, neurotic temperament; general debility; inanition; hysteria; and those diseases causing deterioration of the blood, either in quality or quantity. There is also sometimes a slight quickening of the heart's action, which may be said to be an idiosyncrasy. I had under my care a young girl whose pulse under normal conditions was over 90. I could make out absolutely /
absolutely nothing the matter with her. She had consulted me about a sore throat, and I had noticed an unusual rapidity of the pulse. This fell somewhat as she got better, but was never less than 90, even when she was quite recovered.

The Exciting Causes are:

I. Fever: I put fever first because it is the most common of all the causes of increased frequency. When I say fever I do not mean merely those diseases which are commonly known as fevers, but any disease which causes marked increase in the temperature, with perhaps one exception, which strangely enough is a Fever, namely Typhoid or Enteric Fever. In this there is a very moderate increase of the rapidity of the cardiac action, in proportion to the rise of temperature: e.g. we may have a temperature of 104°F. with a pulse rate not exceeding 100. In fact a marked increase of the rapidity of the heart in typhoid fever is generally a sign either of collapse or of the appearance of some concurrent disease such as pneumonia. I here give instances of two cases of typhoid fever which I had under my care, and which showed this /
this rapidity of cardiac action.

Case I. Margaret B. a young girl act. 18 years.

In this case everything went well for about 17 days, the temperature varying from 102° F. to 104° F. and the pulse never rose beyond 105. One morning however I found the patient in a state of collapse. Pulse 140, weak, small and soft. There was also great increase in the frequency of the respiration. There was no very marked pain or tenderness in the abdomen. The patient passed stools which consisted almost entirely of blood, and in spite of all treatment she died the same night. I could not obtain permission for a post-mortem examination.

Case II. William H. Iron worker, act. 27 years.

The patient was a strong, well built man. He had a severe attack of typhoid fever and on the 21st day his pulse, which on the day before had been 100, now rose to 140. There were no other very marked symptoms, but he soon showed all the signs of pneumonia at the base of the right lung. In this the first sign was an increase in the rapidity of the heart's /
heart's action. The patient recovered from the pneumonia and made a good recovery from the typhoid also.

On the other hand when a febrile disease is accompanied by meningitis the rapidity is often lowered. In a person who has heart disease and who contracts fever, the heart's action is often quicker than in a patient with the same amount of fever and with a normal heart.

II. The different forms of anaemia.

III. In valvular disease of the heart, sometimes even with complete compensation.

IV. In heart failure. As in the collapse after fever where there is a fall in the temperature without a corresponding decrease in the rapidity of the pulse. Also when there is failure of compensation in valvular diseases of the heart, and in disease of the muscular substance of the heart, e.g. fatty heart.

V. In some of the neurotic diseases such as Exopthalmic Goitre, (Graves' disease), hysteria and Angina Pectoris.

VI. In cases of extreme pain.

Symptoms:

These /
These vary according to the nature of the cause, and in fact as I have said before I think Tachycardia is itself merely a symptom. Subjective phenomena such as uneasiness and fluttering of the heart are sometimes observed by the patient. This is sometimes accompanied by sleeplessness. There is often very marked pulsation in the carotids. The pulse becomes very rapid.

The Physical Signs which mark tachycardia are enormous acceleration in the rate of the cardiac action, with a corresponding rapidity of the pulse. These signs of course are often accompanied by others showing organic disease of the heart.

Diagnosis:

The diagnosis of tachycardia is easy, but there is often great difficulty in finding out the cause and unless we can do this there is not much chance of treating the disease successfully. Tachycardia when caused by pyrexia is accompanied by rise of temperature. When caused by organic disease it is accompanied by the signs of the disease. It is when the disease /
disease is caused by degenerations in the heart muscle or from some nervous cause that the difficulty is so great. If caused by degeneration of the heart such as fatty disease the diagnosis is only theoretical, and must be arrived at by exclusion of the other possible causes. When caused by hysteria some of the other phenomena of this malady will be present. When caused by anaemia, the pallor of the patient, together with an examination of the blood will give proof.

Treatment: In these cases the treatment is that of the disease which causes it. In cardiac debility the treatment is by the use of cardiac tonics along with rest. If the cause is a neurotic one then the use of bromides is advocated. Potassium Iodide in these cases is often of great benefit. The insomnia which is sometimes present may be combated by bromides or chloral. The use of the opium preparations is strongly advised by all the recent writers on diseases of the heart (Balfour, Byrom Bramwell and Gibson) and I have always found it very beneficial and not accompanied by any evil effects.

Case III. Mary D. aet. 47, unmarried.

The /
The patient complains of palpitation, which is almost constant, and is greatly aggravated not merely on taking exercise, but even on the slightest movement, and more especially if she gets a sudden start however small the cause of it. This has been going on for some 3 or 4 years and has been gradually getting worse.

History: Father died 57 years of age. Cause of death uncertain, but patient thinks it was inflammation of liver brought on by drinking. Mother is alive and is 69 years of age, and is very healthy. She has two brothers alive and one dead. The two living ones are strong and healthy. The brother who died had had rheumatic fever when 7 years old which left him with a weak heart. He died at the age of 21 from an attack of pericarditis. Patient has no sisters. Patient has a good home. She never touches stimulants but is an inordinate tea drinker. She has had rheumatic fever three times. The first attack was when 7 years old and she was in bed 7 weeks. Her mother says that this attack left her perfectly healthy.
healthy. The second attack was a very slight one and occurred when she was about 30 years old. The third attack occurred 12 years ago, when the patient was 35 years of age and kept her in bed for 6 weeks. This attack she says also left her perfectly healthy.

The present illness commenced about 3 years ago, when, in the patient's own words, "after a heavy meal she was troubled with a feeling of weight in her stomach and shortness of breath." This came on shortly after the meal. She was not at first troubled with palpitation. This has been getting gradually worse however and when I first saw her she complained of shortness of breath and continual palpitation.

General Facts:

Height 4ft. 11 inches. Weight 7 stone.
There is a slight swelling of the ankles and feet.
Her face is very thin and she has a very marked anxious look. Temperament is intensely neurotic.

Alimentary System:

The teeth are very much decayed. Tongue at the back is covered with a dark brown fur. The appetite was fairly good. The patient had a sinking /
sinking feeling unless she had something to eat pretty frequently. After eating she had a marked feeling of distension with a pain between the shoulders. She was also troubled with waterbrash and eructation. She was much constipated, sometimes passing two or three days without having her bowels moved. Liver dullness was quite normal.

Haemopoietic System was normal.

Circulatory System:

Subjective Phenomena: There was no pain. The patient suffered a great deal from palpitation which came on after taking food, and also on the slightest noise or sudden movement. The patient informed me that she had never fainted in her life, but that occasionally she seemed to lose all power in her limbs. She also had some difficulty in breathing especially after taking food.

Inspection: The form of the praecordial region was normal, and the cardiac impulse was seen in the fifth intercostal space, about three inches from midsternum. There was no pulsation to be seen in the epigastrium. The cardiac impulse was very rapid.

Palpation: /
Palpation confirms inspection in every way and not the slightest pulsation can be made out in the epigastrium. On palpation the great rapidity could easily be made out, which even when the patient was lying in bed was about 100 per minute.

Percussion showed the superficial dullness to be normal. The extent of deep dullness was also normal and extended three inches and one and a half inches to the left and right of midsternum, and from the lower border of the third to the sixth rib.

Auscultation: In the mitral area the heart sounds were very distinct. The first sound was slightly accentuated. The sounds were unaccompanied by any murmur. The pause between the sounds was much shortened. In the Tricuspid aortic and pulmonary areas the marked rapidity of the heart sounds could also be made out. There was absolutely no murmur to be made out anywhere, not even on prolonged exertion.

I examined the patient one night, after her niece, with whom she was staying, had been confined, and when she was greatly excited. Her heart was beating very forcibly /
forcibly and rapidly, but there was absolutely no murmur.

The pulse, when the patient was lying quietly in bed, was 100 to the minute, and this was increased on exertion to between 130 and 140. The pulse was equal fairly full and easily compressible. The vessels were normal; temporal arteries were very prominent, due to a great extent to the emaciation.

Respiratory System:

The rate of breathing varied a great deal, but was always slightly increased from the normal. On great excitement the patient gasped for breath. The type of breathing was thoracic. There was no pain and no cough. There was nothing abnormal to be found on inspection or palpation. Percussion and auscultation also showed the lungs to be perfectly normal. Integumentary and other systems were normal.

Provisional Diagnosis was dyspepsia accompanied by a neurotic rapidity of Cardiac Action.
Treatment:

I first of all treated the dyspepsia as I thought that the tachycardia was simply due to this. The constipation was relieved by means of the following pills, one to be taken twice a day:

\[ R \]

Extract Aloes. grs. I
Extr. Bellad.
Ext. Nuc Vom. \( \frac{2}{3} \) gr. ¼
Ext. Gent. grs. II

For the dyspepsia I gave her a mixture, which was to be taken, one tablespoonful three times a day after food. The mixture was:

\[ R \]

Sod. Bicarb. ₃⁹
Bismuth. Carb. ₃⅛
Acid H.C.N. dil. \( M_{24} \)
Tinct. Card. Co. ₃⅛
Aquam ad. \( ₃\overset{}{\text{vi}} \)

This was continued until the dyspepsia and flatulence was relieved and then I gave her an iron tonic in the form of Capsules Pil. Blaud (Duncan & Flockhart). The rapidity of the heart's action was however still continued /
continued so I gave her Pot. Brom. in 5 grain doses in Infusion of Gentian. The tachycardia however still continued although the palpitation was greatly relieved.

I put the patient on the diet recommended by Professor Grainger Stewart in his lectures, e.g. For breakfast; Toast, either dry or with a little butter when cold. A chop or fish (boiled or steamed) or an egg. One cup of weak tea which was to be taken at the end of the meal, with cream in moderation. Nothing was to be taken in the forenoon. A dinner of two or three courses was taken in the middle of the day and consisted of a little soup or fish, not both, a thin slice of meat from a joint, or a piece of white meat from a chicken, and a little milk pudding, or stewed fruit. No stimulants. Tea consisted of toast as at breakfast, with a lightly poached egg or a little fish, with a cup of weak tea. Then if she desired it she might have a cup of milk and a biscuit, or a cup of gruel or Benger's food about an hour before bed-time. She was forbidden to take:

1. Too much food at any time.
2. Food either greasily or badly cooked.
3. Salted /
3. Salted or tinned meats especially if cooked afterwards.

4. Cheese or pastry.

5. Hot or highly seasoned foods.

6. Much liquid at meals.

7. Much tea, especially if strong.

8. Potatoes, or vegetables which grow below ground, e.g. carrots, turnips.

The general treatment for a few days was complete rest, and as she improved she was advised to take plenty of open air exercise.

Under this treatment the dyspepsia improved and so also did the palpitation and breathlessness. The tachycardia however remained and was I think due to her extremely neurotic temperament.

Paroxysmal Tachycardia:

I have had no personal experience of this, and have taken this description from the chapter on Cardiac Neuroses in Dr Gibson's "Diseases of the Heart and Aorta." The predisposing causes are hereditary transmission, and such diseases as Rheumatism, Influenza and /
and Diphtheria. The exciting causes are such as give rise to physical disturbance. In the six cases examined after death the following appearances were found. In one, fatty degeneration of the heart, in two, chronic interstitial myocarditis, and in three, cardiac dilatation. In none of these was there a trace of any nerve lesion. Gibson's own opinion of the essential cause of paroxysmal tachycardia is:

"That it is a periodic variation in the functional activity of the heart muscle, and that it is analogous to the respiratory changes in "Cheyne-Stokes" respiration."

Dr. Gibson also states a case, in which the pulse rate at the commencement of the examination was 250 per minute, and at the end of the examination it had fallen to 78 per minute. He says that this was probably caused by a chronic myocardial change of a fibroid character.
Bradycardia or undue slowness of the heart's action. This is occasionally seen to some slight degree by itself without any other change, either in the heart or in the general health, and may be then regarded merely as an idiosyncracy. It is as a rule only when the pulse falls below 60 per minute that one may begin to suspect some such disease as sclerosis of the coronary arteries, or commencing fatty heart. Indeed this may be the only system present and should cause a very careful examination to be made into the condition of the arteries generally. There is also a type of this recurrent bradycardia, which like recurrent tachycardia is sometimes seen. Something very like recurrent bradycardia is sometimes seen during the paroxysms of bad colic, a description of which is seen later.

Balfour in his Clinical lectures on the "Diseases of the heart and aorta" Lecture X. says:-

"Though cardiac action is occasionally really slow, "yet the bulk of those cases in which the pulse was "said to range between 20 and 30 a minute, were really "cases in which one or two of the ventricular beats "were /
were regularly and permanently imperceptible in the pulse, every second or third pulsation only reaching the periphery." He also mentions a case with an extremely slow pulse averaging about 20 per minute, and says; "On careful examination I found, that her heart acted with perfect regularity, but with unequal force, so that the apparent abnormal slowness of the pulse was due to the fact that, only about every third beat reached the periphery." I have found this in several cases of slow pulse, but in the case which I describe later the radial pulsations were carefully compared with the cardiac ones and the action of the heart was really slow.

Etiology:

The causes of bradycardia are to be looked for in the following directions; increase of arterial pressure in the peripheral circulation; diminution of pressure by haemorrhage; the toxic action of substances circulating in the blood and acting on the heart muscle; and changes in the structure of the heart.
heart muscle and endocardium. This being so, a slowing of the heart's action is to be looked for in the following.

1. In cases of acute nephritis, and is very often seen in scarlatinal nephritis. Here however the diminution in frequency is as a rule not very great, and is due to an increase of arterial pressure in the kidney circulation.

2. In cases of diminished pressure in consequence of haemorrhage, and occasionally in fevers ending in a fatal collapse.

3. Sometimes seen in aortic stenosis, but here the change in frequency is not very marked. Aortic stenosis however does not often occur alone, so that it cannot be put down as a very frequent cause. Dr. Gibson mentions a case in which the pulsations were 61 per minute.

4. In disease of the heart muscle, such as fibroid and fatty degeneration. In these cases the pulse is not always a sure, as sometimes there are "false intermissions", where the heart beats but not strongly enough /
enough to cause a perceptible pulse wave. In these cases it is advisable whilst examining the pulse at the same time to auscultate the heart, and by this means to see whether there may not be some individual heart beats which are not registered by the pulse.

5. In some cases of old age, even without any very serious disease of the heart, and in cases with marked wasting from malignant disease.

6. In some brain diseases and in meningitis. In these cases it is said to be due to irritation of the vagus centre, and the slowing of the heart is often very marked. Even patients who have a very rapid febrile pulse, on the development of meningitis often exhibit very marked slowing.

7. In cases of diseases of abdominal organs, and very often in cases of gastric ulcer. Here the slowing of the heart's action is not very great. I have several times seen cases of gastric ulcer in which the pulse rate sank to about 60 and on recovery rose again to the normal average of 72 or 76.

8. Often seen in the crisis of fevers after the influence /
influence of the high temperature on the heart has worked off. This is probably caused by some of the febrile products, circulating in the blood, acting on the heart, and is only temporary.

9. In some cases of jaundice, more especially in catarrhal jaundice. It is said in these cases to be due to the gall acids in the blood acting on the heart. If the jaundice continues for any length of time this slowing disappears, and is followed by a quickening especially if there is any failure of the power of the heart.

10. In some poisonings, e.g. lead and acute alcoholic poisoning.

From this it will be seen that the diseases which cause bradycardia are in some cases very similar to those which cause the opposite effect of tachycardia, and it is difficult to say why in one case you may get a quickening and in another case with the same cause, and almost precisely similar conditions you may find a marked slowing of the pulse.

The /
The principal features are disturbances in the nervous and respiratory functions, and these often lead to complaints of giddiness and faintness accompanied by dyspnoea. These symptoms are however most often marked by, or included among those caused by the diseases to which bradycardia is due.

Physical Signs. There is often very marked pallor accompanying these cases. The arteries are often to be seen rigid and tortuous, with a pressure usually below normal and not so well filled as normally. Sometimes however the pressure and fullness of the arteries is above the normal. The pulse rate is lowered, but is perfectly regular. The apex beat is usually seen somewhat further to the left than normal, with a corresponding increase in the area of cardiac dullness. The cardiac sounds vary very greatly with the causes of the change, and the sounds are often obscured by murmurs. Sometimes but only very occasionally there are absolutely no physical signs or symptoms present except the unusual slowness of the heart's action. I had this demonstrated to me very thoroughly in the case of a medical friend of mine. He had a pulse which never averaged over 60 and this was not caused by /
by any "false intermittence." I examined the heart at the same time and found that its beats corresponded exactly with the pulse waves. The curious thing about this case was, that, when he had an attack of influenza with a temperature of 100.2° F., his pulse rate never exceeded 70. I have stated above, that the lowering of the pulse rate is one of the signs, but it is by no means trustworthy, on account of those cases of false intermittence which are quite regular, and of which Balfour states a case where only every third beat caused a pulse wave in the radial artery.

**Diagnosis:**

The diagnosis of the symptom itself is easy. The only cases in which any difficulty arises, are those cases of "false intermittence." This difficulty is removed by examining the pulse and auscultating the heart at the same time. There is often however, considerable difficulty in diagnosing the cause, as it may be the sole symptom of such lesions of the cardiac muscle as fibroid and fatty degeneration.

**Treatment** /
Treatment. This resolves itself into the treatment of the various causes. In those cases where brady-cardia is associated with increase in the arterial resistance at the periphery, the drug which often does the most good is Iodide of Potassium. When given in small doses and continued over a considerable time it acts by diminishing the peripheral resistance. If there are signs of cardiac failure, strophanthus nitro-glycerine and strychnine may be used with advantage. Digitalis in these cases does not seem to do much good.

Paroxysmal Bradycardia:

This like paroxysmal tachycardia is also of very rare occurrence. I have had no personal experience of it unless the case which I relate below, and where there was a slowing of the action of the heart during the paroxysms of lead colic, may be regarded as such. I have therefore taken a short account of it from Dr. Gibson's "Diseases of the Heart and Aorta".

"It is more commonly seen among elderly people associated with arterial sclerosis and degeneration of /
of the heart of a fibroid or fatty nature. Among the symptoms is the following, that the rate of the pulse is permanently reduced, and during the paroxysms falls to a still lower rate. Halberton mentions a case in which it fell to 5 beats per minute. The pulse is usually regular with the pressure below normal. Cardiac pain has been described with these cases, but many of them are quite free from any uneasy sensations. Dyspnoea is often a marked feature, whilst Cheyne-Stokes respiration is often present. There are often sensations of giddiness and faintness.

Lead Colic with slowing of the cardiac rapidity during the paroxysms.

James R aet. 48 years. Ships painter.
He was a strong well-developed muscular man. He had several of the symptoms of lead poisoning, including the line on his gums and the paroxysms of lead colic. These paroxysms were very severe and during them, the rate of the heart beat fell to 58 per minute. Between the paroxysms which were not very frequent, it gradually.
gradually rose to 78 per minute, which was the normal condition. The rate of the heart's action varied somewhat with the severity of the paroxysms.

**IRREGULARITY of CARDIAC ACTION.**

Irregularity in the shape of a diminution of the force of the cardiac action, may be due neither to organic heart disease nor to any nervous functional disorder of the heart. It is merely due to loss of energy without any structural change and is known under the name of weak heart.

In such cases there may be absolutely no symptoms under the usual conditions of life, and the heart is quite equal to the calls made upon it. If however the heart is called upon to meet any period of great exertion or excitement, it is unable to do so, and this shows itself by palpitations and dyspnoea along with weak and irregular contractions. If however the period of exertion is long maintained then all the symptoms of dilatation come to the fore.

There are also apart from this condition, several causes which bring about a weakened condition of the heart.
heart. Chief among these is long continued pyrexia, and long continued abuse of alcohol.

Etiology of Irregularity: Irregularity of cardiac action may belong either to the organic or neurotic variety, and of these irregularity due to organic diseases is the more common and the more serious of the two. The neurotic variety is often seen in gouty people, and in people addicted to the abuse of alcohol, tea and tobacco. In gout the action of the heart may be affected in several ways and these disturbances are most commonly seen in what is known as "Irregular Gout." This term is used when other structures, besides the joints, are affected. These symptoms sometimes come on during an attack of regular gout, and, when they do, the joint symptoms at the same time very often subside. The action of the heart may be very rapid and irregular, and even intermittent and accompanied by the most unpleasant sensations, such as a feeling of weight or tightness, or a sense of suffocation and anxiety.

At other times the cardiac action may be very slow and weak with a tendency to syncope and sometimes there are /
are all the symptoms of an irregular attack of Angina Pectoris. In gout there may also be chronic affections of the endocardium, which may of themselves cause irregularities in Cardiac Action.

The other neurotic causes such as the abuse of tea and tobacco are not of such serious import although the symptoms and sensations may be very severe. In these cases the removal of the cause with a strengthening diet, combined with the use of simple tonics will usually effect a cure.

When the irregularity is due to organic causes, it is more serious, as it marks the commencement of degeneration of the heart substance. Irregularity usually supervenes sooner or later in the course of valvular diseases.

In Lecture V of "Clinical Lectures on the heart and aorta" Balfour says that "extremely irregular action of the heart is almost pathognomonic of mitral stenosis."

In organic disease, irregularity of the heart's action /
action is frequently unattended with any symptoms. The symptoms which are present in these cases are not due to the irregularity, but to the various lesions which may cause it. When however the irregularity is neurotic the symptoms are often very marked and severe. Such patients often complain of a feeling as if the heart stopped or turned over. This is accompanied by choking feelings and dizziness with often a tendency to syncope and cold shivers.

**Physical Signs:**

Irregularity of the action of the heart is very often accompanied by increase of its force and rapidity. The physical signs in cases with organic disease, vary with the nature of the valvular lesions, and may of course be represented by any of the murmurs and signs which mark these lesions. In those cases which are neurotic in origin, the irregular action is the only sign of disturbance of the heart. This irregularity however /
however may vary from the slightest pause to a rapid fluttering. There are also very great differences in force, the heart sometimes beating firmly and strongly and at other times very feebly. These cases give rise to the so called "false intermittence." This false intermittence is when there are disturbances in the rhythm of the pulse, without any corresponding disturbance in the cardiac rhythm and is caused by some of the heart beats being so weak as not to reach the periphery. These irregularities often are in sequence, and we get the strong and weak heart beats following one another in a regular order.

Diagnosis:

The diagnosis of this condition like that of all the disturbances in cardiac action, is easy, but again the difficulty of finding out the cause is to be faced. This may be found from the history to be due to toxic causes such as the abuse of alcohol, or it may be shown by
by the physical signs present to be due to some organic change in the structure of the heart. It is however in those cases in which no further physical signs are present, e.g. in chronic interstitial change, and also when the history does not aid us as regards the presence of toxic influences, that the great difficulty arises.

The diagnosis of the chronic interstitial changes, such as fibroid and fatty degenerations is usually simply a matter of exclusion and inference. As I have already mentioned great care must be exercised in the diagnosis of false intermittence.

**Treatment:**

The treatment is that of the various causes to which the irregularity may be due. When the cause is an organic one the treatment resolves itself into a treatment to insure as much compensation as possible, and by this means we may mitigate, or even cure the irregularity for a time, but it is almost certain to return.
return sooner or later when the heart muscle has altogether lost its power to restore compensation. When the cause is a neurotic one we may however hope to perform a radical cure. In these cases the patient should be assured that there is no likelihood of sudden or immediate death.

Then if it has been caused by the abuse of alcohol or tea, these should be absolutely forbidden. The treatment in short is similar to that of the other neurotic disturbances.

Case V Mitral Incompetence and Chlorosis:

Mrs B, aet. 48 years.

The patient complains chiefly of palpitation which is increased on taking exercise. She has absolutely no pain. She also complains of breathlessness especially on going up stairs. She is very weak and quite disinclined to make any exertion. This commenced about two years ago, but she thought nothing of it and expected that it would go away as she got stronger.

History. Her father died at the age of 64. The cause of death was pneumonia. Her mother died of some form of /
of heart disease at the age of 56. She has two brothers alive and well. She has had two sisters who died of heart disease. She was married about 10 years ago and has had no children. The patient has got a very poor appetite. She takes a little alcohol in the shape of one glass of beer a day. She is however somewhat immoderate in the use of strong tea. Her surroundings at home are very comfortable.

Previous Illnesses. She had when about 18 years old an attack of rheumatic fever which had kept her in bed for about a month, and left her with a weak heart. She suffered no inconvenience from this and was quite able to attend to her duties. She has had three attacks of Influenza. The last attack was about two years ago and it was after this attack that she began to suffer from palpitation. She thought that this was simply due to the weakness from the Influenza, and went away for a rest and a change. She derived great benefit from this. About three weeks after her return home, the breathlessness and palpitation came on gradually, until /
until she could not make the least exertion without having an attack. This was the condition she was in when I first saw her.

**General Facts:**

Height 5 ft 1 inch. Weight 7 st. 8 lbs. The patient is very pale and thin and her muscular development is very poor. There are no very marked morbid appearances except her excessive pallor. Her temperament is decidedly neurotic. When in bed the patient is unable to lie down, but reclines with her head well raised. She says that when she lies down she feels as if she could not get enough breath.

**Alimentary System:**

The lips are very pale and dry. The teeth have nearly all been lost. The tongue is slightly furred, and her appetite is small. The patient has no morbid sensations.
sensations either fasting or during and after eating. She is inclined to be constipated. Her abdominal organs are all normal, the liver not being at all enlarged.

Haemopoietic System:

The patient has no enlarged glands. The spleen and thyroid are both normal.

Circulatory System:

Subjective Phenomena. The patient does not complain of any pain, but suffers a great deal from palpitation, which is brought on by the slightest exertion or excitement. She is also very subject to fainting fits, but recovers very quickly when she is laid on her back. Patient also suffers greatly from dyspnoea and prefers to lie with her head and shoulders well raised. She says that if she lies on her back for any time she feels suffocated. She says that she has sometimes a feeling as /
as if her heart tumbled over.

Inspection showed no alteration in the shape of the praecordial region. The cardiac impulse is very slight and is somewhat diffuse in character. Its position was slightly further to the left than normal.

Palpation confirms inspection in every way. The cardiac impulse can best be felt in the fifth interspace about 3½ inches from midsternum. The impulse felt is slight and diffuse and feels like a short slap against the chest wall. The frequency of the contractions was somewhat increased being about 90 per minute and were slightly irregular.

Percussion. The area of superficial dulness is not increased very much. The deep dulness however is increased and extends from the lower border of the third rib in a curve to the left and downwards to the lower border of the sixth rib at a point a little more than 3½ inches from the midsternal line.

Auscultation. The rate of the heart sounds was somewhat increased. There was also some irregularity in the /
the force of the cardiac contractions, there being three or four strong contractions followed by the same number of weak ones. In the mitral area the first sound is accompanied by a murmur, which is systolic in time and soft and blowing in character. This murmur is very fleeting in its nature, and when the heart is contracting feebly cannot be made out. If however the heart be made to contract more forcibly by means of any bodily exertion, the murmur becomes more distinct. The murmur is propagated upwards and to the left for a little distance. The area in which it is heard is only about the size of a five shilling piece. The murmur was not conducted at all towards the sternum. There was some slight diminution in the aortic second sound and the pulmonary second sound was accentuated a little. With the exception however of the systolic mitral murmur, there were no murmurs to be made out. The pulse rate was 89 per minute, and the volume and tension of the pulse were diminished, the rhythm of the pulse was irregular. On auscultation over the large vessels /
vessels at the root of the neck, there was a well marked "bruit de diable".

Respiratory System:

The breathing is somewhat increased in frequency especially so on the slightest exertion. The patient is very subject to slight attacks of bronchitis, but the sputum has never been in the slightest degree tinged with blood. Inspection showed nothing abnormal about the chest. The breathing was thoracic, the movements of the whole chest wall were good. There were no local bulgings or in drawings. During an attack of dyspnoea the raising of the upper part of the chest is well marked. Palpation confirms inspection. Does not show any friction or bronchial fremitus. Percussion note was clear and resonant and percussion gave no increase in the sense of resistance.

Auscultation. (A) When the patient was first seen she was suffering from a slight attack of bronchitis, and
and on auscultation, expiration was found to be somewhat prolonged. The breath sounds were distinct but were accompanied by moist rales. Fine crepitations can also be heard during inspiration and these are present chiefly over the base of the right lung.

(B) After the patient had been in bed for a few days she recovered from the attack of bronchitis and the rales and crepitations disappeared.

**Integumentary System**:

The skin is very pale and perspires freely. No oedema present anywhere.

**Urinary System**:

There are no abnormal subjective phenomena such as pain. No increase in the frequency of micturition, the urine was quite normal.

**Reproductive System**:

Patient /
Patient had had no children and no miscarriages. Menstruation had ceased at 39 years of age. There were no abnormal discharges.

Nervous System was normal.

**Treatment:**

The medicinal treatment consisted in treating the chlorosis and at the same time improving the condition of the heart, as I thought that the irregularity of the cardiac action and the mitral incompetence were both functional being due to dilatation of the heart from anaemia. I therefore gave the patient a tonic containing,

\[ R \]

- Ferri Ammon Cit. \text{grs 60}
- Tinct. Digit. \text{3i ss}
- Syr. Aur. \text{3y}
- Aquam \text{ad 3 6}
- Sig \text{3x2 ter die}

This mixture I found that the patient took well.
I also ordered her to regulate her bowels by means of the bitter Extract of Cascara.

She had in the meantime a diet consisting mainly of milk, fresh eggs and fish, and meat slightly underdone, with a couple of glasses of light claret twice a day. I advised her to stop tea of which she drank a great deal and very strong. I kept her in bed for a week until all signs of the bronchitis had disappeared. After this I advised her to take things quietly for a little but to have as much gentle open air exercise as possible without tiring herself. I continued this treatment for about two months and found that her heart was beating much more regularly. Her colour and general health were much
much better and she very seldom suffered from palpitation. The murmur which had at first become somewhat louder had now completely disappeared. The heart was not now dilated at all and the area of dulness was diminished. The cardiac impulse was stronger and more distinct and was in the 5th interspace 3 inches from midsternum. The "bruit de diable" in the neck had also disappeared. I had stopped the digitalis after a fortnight's use but continued the iron. She then went away to the moors for a change and when I saw her again in a month's time, she was in splendid health.

Case VI. Weak and irregular action of the heart due to a long continued abuse of alcohol:

Maggie T. aet. 34 married.

Patient complained of weakness, with loss of appetite, she also complained of breathlessness, and is nervous about the state of her heart, as she says it seems to flutter and she says that it occasionally seems to stop. Her father and mother are both alive and /
and strong. They are not intemperate in their habits. She had one brother who is also healthy and she had one sister who died in childbirth. She has had three children and all her confinements have been good. Her social condition had been good, but was now very much the reverse as both she and her husband drank heavily. She had no previous illnesses of any moment. Her general appearance showed her failing. Her face was blotched and her eyes were red and watery, and her hands were unsteady.

On examination she showed all the signs of long continued alcoholism. Her lips were dry and parched, her tongue furred and trembling. She had no appetite for food, but complained of great thirst. There was some slight increase of liver dullness.

Circulatory System:

The heart sounds were very weak and irregular, but were accompanied by no murmurs in any of the areas.
The cardiac impulse could not be seen and could only be felt when the patient lay on her left side. There were no signs of dilatation of the heart. The pulse was irregular, weak, and of low tension. The rate was 85 per minute.

The Nervous System also showed the signs of alcoholism. The patient was very nervous, the slightest unexpected noise making her start and shiver. There was nothing particular to be noticed in any of the other systems.

Treatment:

I told the patient that I could do nothing for her unless she would give up alcohol. She said that she would try and her mother took her home and said she would take care of her for a while and see that she did not get any. I gave her a simple acid tonic, with plenty of good nourishing food. She continued this /
this way for a month without tasting drink, and her heart became much stronger and more regular, and at the same time her general health improved. She however could not resist any longer and went back to her old ways, and when I last saw her the condition was as bad as ever.

Intermission:

Intermittent action of the heart is when the heart seems to stop beating during the time which would be occupied by one contraction. Balfour in "Clinical Lectures on Diseases of the heart and aorta, Lecture X. says; "Simple intermittence is the slightest form of derangement of the cardiac action and consists in the occasional omission of a pulsation, the next occurring at the usual period without any alteration in the cardiac rhythm. The intermission may occur once every two beats, or once every twenty or forty or more; it may consist in the omission of only one
"one pulsation, or two or three pulsations may be
omitted each time, or one pulsation may be generally
omitted, and at occasional times we may have the inter-
mission extending over two or three pulsations, thus
introducing the element of irregularity in its simp-
lest form. In these cases we have the pulsation equal
in strength but with intervals of varying length be-
tween them. But this irregularity is frequently not
confined to the intervals, but extends to the pulsa-
tions themselves which in such cases occur not only
after pauses of uncertain and varying length but are
themselves of very varying length." When inter-
mission is present it generally forms a regular se-
quence, the heart beating for some three or four beats
and then intermittting one, then again giving three or
four beats and so on.

Etiology:
I think that intermission may be considered sim-
ply as an excessive form of rhythmical irregularity
and /
and such being so the causes of intermission are the same as those causing irregularity. It is more frequently seen in old than in young people. Very often intermission of the heart's action is seen in malignant disease. Occasionally an intermittent action of the heart is seen in old people without any disease. It often occurs during a very slight febrile attack in old people, who have weak hearts or valvular disease and is usually a sign of bad portent.

Again in Lecture X. Balfour says; "Simple intermittence is sometimes only an early indication of failure of cardiac power dependent upon anaemia, overwork or worry, or upon valvular disease or gout, but it is often a purely nervous phenomenon. In the former class of cases we have an intermittence followed by a thump; as the disease progresses this thump becomes associated with a sensation of tumbling, and by-and-bye the irregularity and inequality of the heart's action reveals itself to the sufferer by a rapid and irregular succession of thumps and tumbles of varying force. In the nervous class of cases, however /
"however, the disease never progresses beyond the 
thumping stage, and the thumps are not even very 
distinct. The patient has at the most an uncomfort-
able sensation in his cardiac region of varying intensity, lasting for less than a second, and if we happen 
to feel the pulse at that moment we become aware that 
this uncomfortable sensation is associated with the 
omission of a radial pulsation, and nothing more and 
sometimes this takes place regularly without the 
patient being in any respect conscious of it."

Symptoms:

The symptoms caused by the intermittence are not 
often very marked and the condition is only found out 
during an examination for some other illness. The 
usual run of symptoms seen in other cases of heart 
failure are usually present, such as dyspnoea, syncope, 
and oedema of the dependent parts. These are often 
associated with the sensation of tumbling mentioned 
above /
above. Very often the most prominent symptom is a feeling of anxiety, which is very often increased to an actual fear of impending death. There is also very often pain in the praecordial region.

**Physical Signs:**

The physical examination does not give any very marked peculiarity except on auscultation. Of course if the intermission is caused by valvular disease or dilatation, the physical signs of these diseases mask the signs of intermission. Apart however from these signs, intermission is shown as I have already said by the heart giving three or four contractions and then omitting one. The omission may however only occur in every twenty or thirty beats, every other beat may intermit. These intermissions however do not always occur regularly.

**Diagnosis:**

Here again the difficulty lies not so much in the appreciation /
appreciation of the intermission, but in diagnosing the cause to which it may be due. As in the case of other functional disorders, the history of the case may show that it is due to the abuse of tea or alcohol, or the physical signs may show that it is caused by some organic heart disease, but the main difficulty lies in diagnosing the degenerations of the cardiac structure of which this may be the only symptom, and in these cases it is very often merely a matter of inference. For instance if these intermissions are found in people who are very obese, the possibility is that the heart is fatty. If it is associated with arteries the walls of which are hard and firm, there is a great possibility of chronic fibroid degeneration of the heart muscle.

Treatment :

The treatment in these cases varies with the cause.
The treatment is as a rule in the direction of rest, and by means of cardiac tonics to try and improve the general condition of the heart. In the "Clinical Lectures" on diseases of the heart, Lecture X, Balfour says: "Alcohol is the one domestic remedy, which exercises the most potent influence upon an irregular "and intermittent heart; it is, however one which "must be used with caution because excess in its use "is apt to perpetuate and increase the very evil it is "employed to cure." He recommends a good claret and pure whisky as being the best forms to use. If the intermission be found to be caused by the injudicious use of articles of diet, such as tea, the moderation in the use of these combined with a simple tonic, and judicious open air exercise may effect a cure.

Potassium Iodide in small doses, continued for a considerable time is often followed by a marked improvement. In children with an intermittent pulse, treatment as regards the heart itself is not as a rule required, as it is more often caused by worms and irregularities in /
in the bowels than by anything else. Therefore by means of anthelmintics and by regulating the action of the bowels, more by diet than by medicine, if possible, we may do all that is required. As a sedative for continuous use Balfour recommends bromide of ammonium, but it must be given, he says, in full doses of from half a drachm to a drachm three times a day until its full sedative effect is secured.

Case VII. Margaret Y, an old married woman of the age of 76. She had suffered for some years from Mitral Stenosis and Regurgitation, and also from Chronic Bronchitis. She was very prone to acute exacerbations of the latter from very slight causes. I obtained this information from Dr. Howell who had been her medical attendant for some years. I was called in to see her one night on his behalf and found her suffering from great dyspnoea. She was quite unable to lie down, and her expression was one of great anxiety. Her condition was so bad that I was unable to make a very full examination, but I made out the /
the following points. On examination of her thorax moist râles and crepitations could be heard over the whole of both lungs, and more especially the base of the left lung. She had a very troublesome cough, with a great quantity of sticky sputum slightly tinged with blood. The cardiac impulse was in the sixth interspace, four and a half inches from midsternum. It was very weak and irregular and gave the impression of fluttering. On auscultation the heart sounds were very weak and irregular, there was a murmur systolic in time, accompanying but not obliterating the first sound. There were 4 heart beats and then a pause of the duration of one beat. The pulse was very irregular and also gave evidence of the intermission. The pulse rate was 110 per minute. I gave her a mixture containing Tincture of Digitalis, in ten minim doses every 3 or 4 hours. I also ordered her whisky, but in spite of every care the patient died during the night.
Angina Pectoris

Angina pectoris is the term applied to a group of symptoms indicating a functional disease of the nerves of the heart, often attendant upon organic affections chiefly fatty degeneration and atheroma of the coronary arteries. Bramwell in "Diseases of the Heart" Chap. VII. defines Angina as being, "A neurotic "affection characterised by paroxysms of intense pain "in the region of the heart, and a terrible sensation "of impending death. The pain usually radiates through "the thorax, up to the left shoulder and down the left "arm. The affection is in many cases associated with "organic disease of the heart and the root of the "aorta: and in its typical and severe forms is apt "to prove fatal." According to most authorities the chief change is that of calcification of the coronary arteries.

Grainger Stewart in his lectures divides Angina Pectoris into the following types.

I. Pseudo Angina.

(A) In /
In the case of those people who are afraid of having angina. The pain in these cases is of the nature of neuralgic pains not in any way connected with the heart. These are often neuralgia of the intercostal nerves.

(B) Pains connected with neuralgia about the cardiac end of the stomach, and in these cases you find gastric symptoms very marked, i.e., waterbrash, pain on swallowing and distinct dyspepsia.

II. Neuralgia in connection with the cardiac nerves, and find an uneasiness in the region of the heart which is not a pang, but which lasts for some time. The pain may radiate but is continuous. These cases are unattended with any change in the heart and blood vessels. It is very often found in women of a nervous temperament, at the approach of the menopause, and in nervous men who have had an overstrain.

III. A form of angina associated with inflammation of the aorta. In these cases the patient complains of pain in the upper part of the thorax. The pain is sometimes very distressing, but is generally localised /
localised to the upper part of the thorax. Tokens of inflammation around the aorta are present, and the aorta itself may be the seat of inflammation. Often have the physical signs of disease of the aorta and aortic valves. In these cases the anginal attacks come on after excitement.

IV. The most typical form of angina is where the patient is seized with a tremendous pain in the region of the heart, the pain spreading up over the chest and down the left arm. This is accompanied by a feeling of impending death. It sometimes comes on when the patient has been excited or has overexerted himself, but sometimes when the patient is lying quietly in bed. This pain is due to an overmastering of the heart and weakness on the part of the heart muscle itself or from vascular obstruction. It is a condition referable partly to the muscle and partly to the nerves.

"Death in Angina Pectoris", according to Balfour, "is due commonly to gradual decrease of the Aortic pressure as the result of a gradual diminution in the heart force. He goes on to say; "We have in Angina /
Angina two distinct sources of cardiac depression; "first, we have the directly depressing influence of a "pain, the most acute and severe which the human frame "can experience; and second, we have the action on "the cardiac motor ganglia of the same cause which, acting on the same nerves gives rise to the exeruciat¬ "ing agony, and we cannot but suppose that as a rule "the functional depression of the motor nerves is not "much less than that of the sensitive ones," (Lecture XII. Clinical Lectures on diseases of Heart and Aorta).

Etiology:

Predisposing Causes:

Heredity is said to be one of the principal pre¬ disposing causes. Some families are no doubt more liable to degenerative processes of the heart and arteries and it is in connection with these degener¬ ations that angina is most commonly seen.

Sex has some influence in regard to this disease.
It is comparatively rare in the female sex. This is probably due to the fact that men are more liable to the conditions of strain both bodily and mental in connection with which the degenerations of the heart muscle so often occur.

Age is another of the influences, as it is most commonly seen in late middle life or in the commencement of elderly life. It is however occasionally seen in early life and Balfour mentions a case which occurred at the age of 24.

Occupations necessitating long continued physical exertion in as much as they predispose to degenerations of the heart muscle may also be put down among the predisposing causes of Angina Pectoris. Those occupations also in which there is great intellectual strain are seen in connection with this affection.

Angina Pectoris is more common in northern than in southern regions, and this is said to be due not so much to climate as to habits.

People who are possessed of a very nervous temperament are more susceptible.

Then /
Then such a disease as syphilis which causes changes in the arteries is probably an indisputable cause, also toxic substances in the blood, and an injudicious use of alcohol, tea and tobacco.

Exciting Causes:

The immediate cause of angina is probably a deficiency in the blood supply of the heart muscle, and this is the opinion which Balfour holds, for in Lecture XII. he says "In a very large experience of angina, including over a dozen cases which have been known to be fatal, I have never failed to detect indications of defective blood supply to the heart, and in the only three dissections I have had this view has been abundantly confirmed." Apart from this, attacks of angina are often caused by a condition of stress, and attacks are often caused by dilatation of /
of the stomach. Physical exertion may induce an attack, also mental emotion such as anger or a sudden nervous shock. The influence of such agents as cold and damp must not be forgotten. Tobacco is very often the exciting cause. Very often patients have an attack of angina with apparently no exciting cause.

**Symptoms:**

The chief symptom which is complained of is pain, and this may vary from a slight feeling of uneasiness in the pseudo anginas to one of the most terrible agony that
the human frame can experience. Very often you find in the same patient the various stages of pain at different attacks. This pain is paroxysmal in character and sometimes the most intense pain is suddenly developed, and at other times it comes on gradually. The pain is generally behind the lower half of the sternum, from which it tends to radiate in a given direction usually to the upper part of the thorax and down the left arm. This is not always the case and the pain may vary as greatly in extent and position as it does in intensity. Very often this pain is accompanied by a feeling of constriction about the thorax. Patients very often complain of the want of breath, and the breathing is shallow, due more to the fear of aggravating the pain by drawing a long breath, which the patient is quite able to do if desired. There is also a fear of impending death, which is always present in cases of true angina. This is often accompanied by a sensation of sinking, the patients saying that they feel as if they were falling through the bed. The face /
face of a patient during a paroxysm expresses great anxiety, and is usually very pale the skin being beaded with perspiration. The position which the patient may assume is very variable. He may stand with his arms resting on some object as if to gain support, or he may sit with elbows on knees, stooping or leaning forward.

**Physical Signs:**

The physical examination in cases of angina pectoris may or may not show any serious change in the circulatory system. The signs may vary very much in different cases. There may be widely diffused impulse or a quick sharp one, or no impulse may be seen at all in the praecordial region, according to whether the heart is hypertrophied, dilated or weak. The area of dulness may or may not be increased, and on auscultation murmurs may be heard varying with the different valvular lesions which may be present. The most common physical signs are those denoting some change /
change in the left side of the heart. The condition of the pulse is also very variable. The tension is sometimes very low, and the pulsations small, weak and irregular. Very often absolutely no abnormal signs are present.

**Diagnosis:**

There is not much difficulty in diagnosing a typical form of angina. The paroxysmal attacks of pain, the agonising nature of the pain, the uneasiness, and the sensation of impending death, which is always present, are only too certain guides to the nature of the disease. The physical signs which may be present will help to give us an idea as to the cause, and we should always look for signs of atheroma of the arteries. The absence of physical signs however does not always prove the cause to be a functional one, as there may be very serious degeneration without physical signs.

**Treatment** /
Treatment:

I have not had much personal experience in the treatment of such cases, as most of the cases of angina I have seen and examined have been through the kindness of other practitioners. In cases of angina the treatment lies in two directions. (1) During the paroxysms. (2) Between the paroxysms.

1. During the paroxysms, the general drug in use is Nitrite of Amyl. The most convenient way to make use of it is stored in little glass capsules, which can be easily crushed and the fumes inhaled. This is said to act by relaxing the non-striped muscle in the arterioles and so reducing the peripheral blood pressure. Nitroglycerine is also much recommended and is conveniently carried in the form of tabellae. Chloroform inhalation is sometimes used followed by a hypodermic injection of morphia, by this means inducing a long period of rest.

2. Treatment between the paroxysms. It is of great importance in all cases of cardiac pain to see that
the alimentary system is healthy, as such pain is often referable to a faulty digestion; also the respiratory system must be examined, and those diseases which interfere with the proper purification and aeration of the blood must be attended to. Great care should also be taken to try and calm any nervous excitability and irritability which may be present. Organic heart diseases are to be treated by the usual methods. We often get very good results from the use of Iodide of Potassium. Patients who have had one attack of angina should be advised to always carry Nitrite of Amyl or Nitroglycerine.

Case VIII. Pseudo Angina:

Charles B. 67 years was a remarkably healthy looking man, well developed and well nourished. He was very agile and had taken to lawn-tennis about 10 years ago and played regularly every summer. There was no history of angina, or of heart disease in his family.
He himself had never had rheumatic fever or gout, but he was of a very nervous temperament. The first attack was in last May, and he had been having a good deal of worry and anxiety in connection with his work. The pain seized him when he was in bed, and was situated in the praecordial region, and radiated somewhat towards the left shoulder. When I first saw him his face betokened great anxiety, and he said he had a feeling as if he was sinking through the bed. The sensation of impending death was also present. The attack was very soon relieved by the inhalation of Nitrite of Amyl. On examination there were no signs of any organic disease of the heart. The heart was beating a little irregularly and the cardiac impulse was weak. The heart sounds were weak but they were unaccompanied by any murmur. As he recovered from the shock of the attack the heart beat more regularly. The pulse rate was 82 and the pulse was small and of low tension. On examination of his alimentary system, I found what I believed to be the cause of his attack /
attack. The tongue was thickly coated with yellow fur, and he complained of having a bad taste in his mouth. The stomach was greatly distended, and the patient suffered a great deal from flatulence. He was also greatly constipated often going for two or three days without having his bowels relieved. He had always, he told me, had what he called a weak stomach, and had foolishly partaken of a heavy supper before going to bed. All the other systems were normal. I believed this to be a type of pseudo angina, the pain being caused by the over distension of the stomach, and the attack induced by the mental worry and heavy supper. I relieved his anxiety by telling him that I thought his heart was perfectly healthy. I then gave the patient a dose of chloral, from which he had a good night's sleep. I put him on a strict diet, and gave him a mixture containing

\[ R_1 \]

Mag Sulph. \( 3 \text{ ss.} \)
Mag Carb. grs 40
Spir. Aeth Nit. \( 3 \text{ ij} \)
Aq Anethi ad \( 3 \text{ 6} \)

Sig. \( 3 \text{ ss. ter. die. p.c.} \)
I also gave him the Pil Colocynth et Hoys of which he was to take one or two as he required them. The attacks of pain recurred occasionally, but as his digestive powers improved, they became slighter. The patient then went away for a holiday and when I last saw him, he told me he had not had an attack for six weeks.

This I believe to have been an attack of cardiac pain due entirely to his impaired digestion, and from mental worry, without the heart being implicated by disease.

Syncope (συνκοπή) :

By this term is indicated the state of unconsciousness, which is brought about by failure of the heart's action.

Etiology :

Syncope may be caused by conditions acting on the
the heart in various directions.

1. By causes acting immediately on the heart.
2. By causes acting on the heart through the nervous system.
3. By causes acting on the heart through the blood.

It is more common, however, to find two of these causes acting together, for instance by fright acting through the nerves on a heart already disabled by organic disease or by excessive haemorrhage.

1. Syncope due directly to the heart itself is found in organic disease, especially those changes leading to dilatation, and degeneration of the heart. Also by pressure on the heart which may be due to some diseased condition of adjacent parts, or by tightness of dress. Excessive heat is often the cause of fainting and may do so by its action directly on the heart, or through the nervous system. Certain drugs and poisons cause syncope, by their action directly on the heart and among these is chloroform. Lightning induces a condition very like syncope.

2. Causes acting through the nervous system:

These /
These are very often simply emotional, especially in cases of nervous and hysterical people, e.g., grief, fear and joy. Emotional syncope such as this may prove fatal. Balfour in Lecture X (Clinical Lectures on heart and aorta) speaking in reference to this says:— "But emotional inhibition of the heart is often a much more serious matter, and may fatally arrest its action. This probably never occurs in those whose hearts are structurally sound, but it has happened often enough in those who are known to labour under cardiac disease to make it a possible occurrence to any one past middle life, and to some even at an earlier period.

Sudden injury of the brain or spinal cord may cause prolonged and fatal syncope. Very often syncope is due to causes in the other systems acting reflexly on the heart, e.g., in the alimentary system, (corrosive and irritant poisons, worms) in the kidneys and uterus; (calculi displacements and injuries) or painful injuries of any kind. Bad smells and painful sights cause syncope especially in nervous people /
people. Cases of idiosyncrasy are sometimes observed, where the smell of certain flowers, or the fact of an animal, such as a cat; being in the room have caused alarming syncope.

3. Causes acting through the blood are most frequently seen in cases of excessive haemorrhage, where it is often beneficial in aiding the natural arrest. Cases of excessive anaemia, such as pernicious anaemia are often predisposed to attacks of fainting.

Very often, however, syncope is due to a combination of causes. For instance, fainting in a hot impure atmosphere is due partly to the direct effect of heat on the heart, partly to interference in breathing and partly to malaeration of the blood due to carbonic acid gas. Also in severe injuries, syncope may be due to pain, haemorrhage and shock.

In people with organic heart disease, and those suffering from extreme anaemia, the exciting cause may be very slight, e.g., exertion or excitement.

Symptoms:

An /
An attack of syncope may be divided into three stages.

1. A period immediately preceding loss of consciousness.
2. Period of unconsciousness.
3. Period of recovery.

(1) The first symptom usually observed when a person is going to faint is one of pallor. This is accompanied by a feeling of weakness, and the patient is unable to stand. If he is standing he catches hold of or leans against the nearest object. The eyes close and there is impairment of sensibility. The pulse becomes small and weak and the respirations shallow. If the patient is addressed, he is vaguely conscious of it and may answer after some lapse of time. This period is usually accompanied by various subjective phenomena, such as a sinking feeling in the epigastrium, dizziness and singing in the head.

(2) The second stage is marked by complete insensibility and all the muscles become flaccid. The skin is pale and clammy, the eyes are closed, the pupils dilated and do not react to stimuli.
The action of the heart is for a time imperceptible or very weak. The pulse is also imperceptible. At times there are no respiratory movements. In short the patient has all the appearance of death, and at times this stage may pass on to a fatal termination.

(3) The third period is marked by a gradual recovery from the attack. Signs of increase in the power of the heart is shown, by lessening of the pallor, and an increase in the force of the pulse and cardiac action. The first signs usually noticed are trembling of the eyelids and slight movements of the hands, accompanied by one or two deep sighs. The eyes begin to react to stimuli and the patient can soon be roused, and able to sit up.

The duration of an attack may vary from a few seconds to a period lasting several hours. The attack usually ends in recovery, but when due to organic disease or haemorrhage, the syncope is often fatal. Sometimes a patient may recover partially and /
and then pass into another faint.

**Diagnosis:**

There are several other conditions leading to loss of consciousness either partial or total and from those the condition of syncope has to be distinguished. These conditions are apoplexy; concussion of the brain; loss of consciousness from some poisons, drunkenness and shock.

In most of these the differential diagnosis is not difficult. Those conditions of unconsciousness which commence in the brain, can be diagnosed from syncope by means of the pulse, but it must be remembered that these conditions often are continued into one of syncope. In apoplexy, the heart often beats very vigorously and the breathing is stertorous. In the coma produced by uraemia, there is a history of convulsions, and usually long standing illness. In the epileptic coma, the heart is not weak and there is the history of the fit. In the syncope due to haemorrhage, you often have convulsions, but here the /
the history and signs of haemorrhage aid the diagnosis. The diagnosis between syncope and shock, which of itself causes a certain amount of syncope is sometimes very difficult. Syncope is however as a rule more transitory than shock, and in shock the patient is not usually totally unconscious. In some cases of shock there is a degree of restlessness and excitability present which will aid in the diagnosis. In concussion of the brain we have the history of injury.

Treatment:

In the treatment of syncope the first thing to be done is to remove the cause if possible, and then restore the action of the heart. For instance if the patient is in a hot stuffy room, carry her out, or open windows and give her air. Lay the patient flat on her back and raise the limbs. Open the dress at the neck and chest. Sometimes when this is done the patient will recover without any further treatment.
treatment. If haemorrhage is present, steps should be taken to insure immediate arrest. Stimulation of the heart reflexly by hot sponges to the praecordia, cold douching to the temples, or by vapour of ammonia to the nostrils. Cardiac stimulants of which brandy or whisky is as a rule most available should be given. If the patient make no attempt to swallow, a subcutaneous injection of ether is of great benefit. If these means do not effect a cure, galvanism, or if the syncope be due to haemorrhage, transfusion of blood, or of the saline solution may have to be tried. The patient must not be allowed to sit up too soon or excite himself or the fainting fit may again come on. An attack of syncope is often the first sign of serious organic trouble.