On Functional Disease of the Heart

John Kirk

Functional Disease of the Heart

By functional disease of the heart is meant a disordered action of that organ which gives rise to disagreeable and frequently painfully distressing symptoms, and which cannot be ascribed to any organic lesion of the organ. These symptoms are produced by preternatural sensibility, increased, irregular, or decreased actions of the heart, occurring singly or combined. As the term palpitation is commonly understood to mean, the action of the heart unnaturally felt by the patient, we shall first speak of preternatural sensibility and increased actions; then of irregular, and lastly of decreased actions.

I Palpitations, according to Dr Hope, "may be defined to be, an increase in either the force or the frequency or in both the force and frequency of the heart's contractions, by which they become not only perceptible, but sometimes very troublesome to the patient." This definition is not sufficiently extensive, for the feeling of palpitations may arise from increased sensibility where there is very little increased action, and in chlorotic cases the impulse may even be less than usual, while great distress is occasioned to the patient. The patient is made conscious of palpitation more by in-

creased violence than frequency of the hearts action, and so, contrary to what Laennec imagined, we may have a slow pulse accompanying it. The heart's action cannot, therefore, be measured by the acuteness of the feeling of palpitation. We shall, for the sake of simplicity and distinctness, classify the symptoms of functional palpitation according to the system they affect. And first, of those which are more immediately referrable to the heart. The period of life most subject to functional palpitation is that of puberty, and a few years subsequently. It is always in proportion to the degree of excitability of the patient— the greater the excitability the greater the palpitation. It is to be borne in mind too, that persons are occasionally met with whose hearts throb with great violence without giving them any annoyance, or even without their being conscious of it. Such a state however is always connected with organic disease, and very different from what is witnessed in functional cases. The palpitation occurs in paroxysms, and during the intervals the heart's action and pulse are natural. The force of the impulse is sometimes but slightly increased, at other times it shakes the whole frame. The duration of the paroxysms varies greatly, from a few minutes to several days; in the latter case with the remissions. They have a tendency to recur, while the

ient is at rest, or in bed in a wakeful state, especially during the early part of the night. In cases depending on dyspepsia, hysteria, and hypochondriasis an amount of exercise, which would certainly aggravate the palpitation dependant on organic disease, is attended with great relief.

The respiration is oppressed and irregular or hurried; sometimes out of proportion with the pulse, the patient appearing like one out of breath with running, and complaining of choking sensations. When the force, frequency of the beats and the loudness of the sounds are increased simultaneously, there may be not only dyspnoea but orthopnoea.

The patient is commonly of what is denominated the nervous temperament, and whatever excites the nervous system increases the cardiac disorder. He is feeble and complains of much lassitude and aching of the limbs ~~after~~ after very slight exertion. The intellectual powers are often unimpaired; at other times we find delirium and syncope; or even fatal coma may occur. The general distress and fear of death is often greater than in organic disease, at least when that is not far advanced. Each pulsation may occasion a feeling of rushing through through the ears, which is so distinct as to enable the patient to count the beats by it. The praecordial anxiety accompanied by

faintness is great, and there is a feeling "as if the heart were jumping into the throat." There is pain, wandering in the vicinity of the praecordia, and it may be, stretching towards the left arm, or slight, dull and aching, or spasmodic, the pangs being excruciating and simulating angina and sometimes relieved by pressure. There may also be cephalalgia, vertigo, confused vision and tinitus aureum, with heat of head, flushed face and coldness of the extremities.

Physical Signs. The heart's sounds may be altered. The first may be so loud as to be distinctly heard by the patient or by the bystanders without the application of the ear to the chest. Dr. Hope indeed states that both are occasionally audible to the patient. ~~The first may be prolonged as well as loud or natural~~. The pulse varies as what has already been[x] said of the heart's action implies, but in general the action of the arterial system is unduly strong. Pulsations of the aorta are sometimes seen in the epigastrium in hypochondrial and hysterical cases. A systolic bellows-murmur heard loudest at the base is a frequent phenomenon in functional palpitation — why and when we shall afterwards mention. Dr. A. M. Hughes says, that it is erroneously, though commonly, supposed that the murmur is heard only at the aortic orifice — it is also heard he says at the orifice of the pulmonary artery. Reduplication of the second sound is a very

*Andral

common accompaniment, but reduplication of the ~~second~~ first is much rarer being commonly associated with organic disease. Dr Walshe (and so far as I know, he only) thinks, that a systolic bellows murmur loudest at the apex may occur in purely functional palpitation ~~[illegible]~~ Laennec and Hope state, that the frémissement cataire or purring tremor can be detected at the heart when the palpitation is accompanied by a bellows-murmur. Andral denies this flatly. He says, "Laennec, who, during the last years of his life, betrayed a singular tendency to doubt the existence of ~~[illegible]~~ anatomical alterations in conjunction with physical signs of disease, admitted that purring tremor might be produced by mere nervous disturbance; this opinion, however, we cannot possibly partake of." The purring tremor associated with a bellows-murmur is often heard at the same time in the larger arteries.

Venous murmurs are of frequent occurrence "The veins in which the murmur occurs" says Dr Walshe "may, as far as I have observed, be arranged as follows in order of frequency. The external and internal jugulars, on both sides or on one side only, in the latter case most frequently the right; the subclavian veins; the femoral (I have never failed to find it in these veins when well developed in the neck, and it may be caught in them sometimes when inaudible in the jugulars); the axillary; the superior cava and innominate veins; the veins of the head

of the elbow; certain abdominal veins; the pulmonary; and the superior longitudinal sinus, especially at its termination in the torcular Herophili." Dr Hope states that it is only in the most marked cases that he has found it in the external jugulars, and that it can be detected almost invariably on both sides, but generally louder on the right side. It is invariably continuous and varies from a soft blow to an actual roar. Occasionally it is modulated and musical, but the separate tones are always connected by a low hum, which gives it its continuousness. Whatever causes acceleration of the venous circulation increases it. In the jugulars for instance inspiration or the assumption of the erect posture has this effect.

II. The rhythm or strength or both of the heart's action may be irregular. Irregularity may coexist with palpitation or may exist without it, just as the palpitation may exist without the irregularity. Again, irregularity may exist like a certain amount of excited action without the patient being aware of it; individuals possessing this peculiar idiosyncrasy may be in the enjoyment of good health, but are they free from palpitation ~~and are so long as the irregularity does not amount free from palpitation~~. Excessive irregularity in rhythm and strength may be caused by great disturbance of the nervous system, but when this is constant and persistent it almost always indicates not functional but organic disease.

Admiral Walshe, A. M. Hughes

Irregularity of rhythm may consist in alterations in the relative length of the two sounds; in the occurrence of a beat before its time, or in the prolongation of the period of silence. In the last case the heart is said to intermit; so that intermission always implies irregularity, but irregularity does not always imply intermission. The relative length of the two sounds is not altered in irregularity independent of organic disease; the only alterations in them is that those which occur before their time are preternaturally abrupt and short, while those that occur after their time are stronger and more prolonged than natural. Intermission of the heart's action is apparently constitutional in some individuals. Dr. Christison states, that an intermission every fifteen beats is common enough in old men without any symptoms of cardiac affection. Such individuals, according to Dr. Williams, have other signs of a weak and easily disordered circulation. Some discrepancy of opinion seems to exist, as to the frequency of intermission in functional cases. While Dr. Williams affirms, that intermissions are very common in persons suffering from bodily fatigue, and Dr. Watson that they often depend on derangement of the stomach, Professor Andral maintains that they seldom occur before the age of sixty and "pledges" himself for the accuracy of the statement that "simple nervous affections very ele-

Williams Clinical Lect. Feb 24th 1852

dom cause intermittent pulsations". Intermissions are often associated with slow and feeble action, and in such cases these may be brought on by depletion and removed by stimulents. In plethoric cases this the pulse is apt to intermit though the heart does not; the ventricles contracting so feebly as not to transmit the impulse far enough into the arteries. Many of the cases of excessively so pulse mentioned by writers are probably of this description but not all of them. Laennec supposed this intermitting pulse, especially when occurring during palpitation, as an invariable proof of organic affection, but this opinion is denied by Dr Hoy, who has met with numerous cases of it in young persons free from organic disease. Dr Williams believes irregularity of strength to be commonly associated with organic disease. Although this irregularity may occur without irregularity of rhythm, these commonly are met with together, and their combinations are infinitely varied in different cases, and in the same case at different times "Amidst all this irregularity, when perhaps no three consecutive beats are of the same period or strength, there is very often something like an attempt at order, every third fourth or fifth beat being stronger, and followed by a longer interval; so that a sort of tatoo measure is more or less kept up" The irregularity is often

much greater than in organic disease! Though, as already stated, irregularity of a certain amount may be unperceived by the patient, he generally complains of a singular trembling, fluttering or tumbling sensation in the breast, which creates great alarm. When the irregularity has been of long continuance increased dulness of the heart may occur from over distension. When irregularity is coexistent with palpitation the feelings of suffocation are intense, and the tendency to fainting greater than in simple palpitations – as we might expect. The sufferings of the patient are most intense, and all the signs and symptoms stated as witnessed in simple palpitation may then occur

III Decreased action occurs in two forms. We may have it in the form of syncope, or of an habitual decrease, where the patient retains consciousness and the power of voluntary motion.

The habitual feebleness of action is most commonly met with in young females labouring under some form of disorder menstruation. It has been already stated, that when the heart's action becomes very feeble, it may not be able to propel the wave of blood as far as the artery in which the pulse is attempted to be felt; and that many of the cases of supposed excessively slow pulse have probably been of this

Dr C's Clin Lect.

kind. But a truly excessively slow pulse is sometimes observed. Dr Hope met with a patient, free from organic disease of the heart, but whose pulse nevertheless was only 28. The cause in this case was hypercatharsis after fever. The same author states, that he has frequently seen the pulse at 40 from mere nervous depression. The impulse is exceedingly weak; there is tendency to syncope; palpitation is easily excited, and reduplication of the second sound is common. The following symptoms are often, though not constantly present, anorexia or depraved appetite, foul breath, constipation, coldness of the extremities and even edema of the ankles

Syncope is an amount of decreased action - decreased in force or frequency - producing ~~often~~ ultimately unconsciousness. In some cases, as, for instance, where the mind has received a sudden shock, the syncopal unconsciousness comes on instantaneously and without any precursory symptoms. Ordinarily a sense of faintness, usually painful but in some rare cases pleasurable, sickness giddiness, disordered vision, noises in the ears, coldness in the extremities, paleness and collapse of the features, chattering of the teeth, quivering of the lips, & slight convulsions, usher in the unconsciousness When this has arrived, the pulse at the wrist is exceedingly weak, or not perceptible

ible, the heart's action is feeble, frequent, or slow, and commonly irregular; the systolic sound of diminished intensity, and the other usually inaudible; while the breathing is almost imperceptible. This state may last for a few seconds, hours, or even days. Where it is of long duration, the diagnosis between it and death is difficult, and of course of infinite importance — to this we shall recur.

Before proceeding to the causes and diagnosis of functional disease, we shall ~~remark to~~ notice the explanations of some of the physical signs. And first of the blowing murmur and purring tremor of the heart and arteries. The views laid down in Dr. Hope's elaborate treatise on diseases of the heart, are, for aught we have been able to discover during the too short time we have had for composing this essay, the most satisfactory that have been promulgated on the subject. We shall, therefore, attempt to show that we understand them, and in as brief a manner as possible. These phenomena occur together and are all dependant on the same causes, namely, modifications in the motion, of the blood, occasioning increased friction and vibration. To establish this theory, Dr. Hope sets about to prove three propositions; first "that liquids permeating tubes do occasion murmurs and tremors"; secondly, "that

in the living subject, modifications in the motion of the blood, calculated to elicit murmurs and tremors, do take place, ~~under the circumstances~~ under the circumstances in which such murmurs and tremors do occur" and, lastly, "that the explanation applies equally, whatever be the circumstances under which these murmurs and tremors occur."

Although the possibility of producing a murmur by forcing a liquid through a tube, was doubted by Laennec, this a fact easily demonstrable. It has been supposed, that the friction of the piston and tube produces a murmur, which has been misunderstood, and supposed to be generated by the friction of the fluid against the interior of the tube; but the rushing murmur is so close to the ear, as to preclude the possibility of this. The murmur is increased by increasing the velocity of the current, and by bending the tube at an angle. Provided the velocity be sufficiently great, thrill is felt on the application of the hand. M. Pellehan has produced the murmur by injecting water into the Arteries of the dead subject. The first proposition is then fairly demonstrated, and what experiment demonstrates, the principles of hydraulics would lead us a priori to expect; it being admitted by natural philosophers, that, however smooth a tube be, the passage of

a current of liquid in it is retarded by friction, that this friction is increased by irregularities in it, and, lastly that the friction increases rapidly — in more than a simple ratio — with the increase of velocity

Next, when similar phenomena — murmur and tremor — occur in the tubes of the living subject where no organic lesions exists, the circumstances, which are usually present, are such as promote vibrations in the tubes and liquid passing through them. We say, usually, because, Dr Walshe, in his treatise on diseases of the lungs & heart, states that murmur may occur in circumstances in which Dr Hope denies the possibility of its occurrence, namely, where there is no deterioration or diminution of the blood, but merely an excited action of the heart. Such cases still admit of the application of Dr Hope's theory, as we shall see presently. The circumstances are these, attenuation of the blood, infilled arteries, and a certain velocity of the current of blood. That these, unaided, are capable of producing murmur and tremor, is proved by our being able to produce them at will in the lower animals, as dogs, by bleeding and of then seeing them invariably accompanied by murmur and tremor. We see also in these experiments, the effects varying with the intensity of the cause; for modifications

in the latter are produced by modifications in the former. Also, that the effects disappear as the causes disappear, that is, as the animals are permitted to regain their natural condition.

It comes now to be asked <u>how</u> these circumstances act in producing such phenomena. All sounds are produced by vibrations of particles of matter; and in the attenuation of the blood "the particles, having lost a portion of their lubricity, are better calculated for rapid motion, and consequently for the production of murmur and vibration, by collision against each other and against the walls of the containing vessel" To understand the mode of action of the diminution of the volume of the blood, the hydraulic law, already mentioned, concerning the velocity and friction, requires to be kept in mind. When the volume of blood is diminished, it is driven with greater velocity through the arteries, and the friction and consequent vibrations of the walls of the ~~blood~~ vessels are increased; while at the same time the diminished tension of the walls render them more capable of vibrating. Although both attenuation and diminution existed, unless the heart were acting with a certain force no murmur or tremor would be produced.

The value of the experiments on dogs, practiced by Dr.

Hope, and on which he founds his ~~theory~~ record proposition, is greatly enhanced by the following case from Bouillaud. "I was summoned" says he "on August 21st 1834, to see with the surgeon-major of the 3rd Lancers, the son of a chef d'escadron, aged 16, who, after a leech-bite, had lost an enormous quantity of florid blood; very probably furnished by a small divided artery. Syncope imminent: lips and face colourless; eyes turned up and livid; general coldness; long sighing inspirations; pulse exceedingly quick and weak. On listening to the beats of the heart, which were feeble, but very abrupt and frequent, so as scarcely to admit of being counted, I heard a clear, smart, bellows-murmur, like the puff with which one blows out a candle. I made the surgeon-major attest the phenomena. I was of opinion, that the murmur depended solely on the fainting and anæmic state, during which from the hurried palpitation of the heart, the small column of blood contained in the ventricles was expelled, if not with much force, at least, with a sort of convulsive rapidity. I revisited the patient on the following day at the same hour: the hæmorrhage had ceased for more than twenty hours. There did not exist a trace of the murmur, which, according to the surgeon-major's account, had completely

disappeared ever since the preceding evening." The patient had no organic disease of the heart.

The third proposition, that the explanation applies equally, whatever be the circumstances in which murmur and tremor occur, requires but a brief notice. That pressure by the stethoscope, by the tubercular edge of a lung, or by a tumour of any kind, pressing on and indenting any of the larger vessels, will increase the friction of the blood, cannot of course be denied. We have, therefore, an easy explanation of the murmur so produced. In anæmic subjects this will be greater, seeing that it is then in part produced by the diminution in the volume and the increased lubricity of the blood.

After what has been said under the second proposition, it is only necessary to state, that the explanation applies in all cases of excessive loss of blood. Dr. Hope mentions, that he has seen, in cases of active hæmorrhage, the anæmic pulse appear sooner than could be accounted for by the quantity of the blood lost. In explanation of this he says:- "In these cases, it appears to be attributable either to the irritable temperament of the individual, or to the fright, which seldom fails to be occasioned by the unexpected appearance of blood." This is to be inferred from this, I presume, that the character of the pulse

is attributable solely to the abrupt and hurried action of the heart. If mere violence of the heart's action, unassisted by a morbid condition of the blood or bloodvessels, can produce murmurs, as Dr Walshe avers, the explanation still applies; for there is still the increased vibration produced by the increased velocity

By far the larger proportion of individuals in whom inorganic murmurs are heard, are of irritable temperament, hypochondriacal or hysterical, and subject to hæmorrhages and palpitations. Of these again the greater number are females. Now the observation of Dr Hope, during the last ten years, have fully convinced him, that in all, or nearly all ~~or nearly all~~ such subjects, there exists an anæmic, or what in his opinion is the same thing, a chlorotic state. In other words, we see in such persons the same causes in operation, namely a diminution and attenuation of the blood, and abrupt action of the heart, produced by the nervous irritability consequent on the anæmia, as we see in dogs rendered anæmic by repeated bleeding

In certain cases of aneurism by anastomosis a murmur and tremor are present. In such the occurrence of friction and vibration is favoured "in a pre-eminent degree, for, the current is broken by an

infinity of anfractuosities, and the softness of the tunics gives the same lascity to the arterial walls, as they derive in an anæmia from the unfilled state of the vessels"

(which sounds have been mentioned as often accompanying the 1st sound)

The rasping or grating murmur, is to be explained in the same way, but, according to Dr. Williams, "the vibration of the solids is the chief agent in its production; while in the blowing kind the vibration of the reflected current is the main cause, and that of the solids is less actively engaged ~~is less actively engaged~~ in its production.

According to the views here adopted, Dr. Corrigan's theory — that the murmurs are produced only in the flaccid portion of the vessels — is too partial. They are produced not merely in the portions incompletely filled, but also at the constricted orifices, and at the same time, the sound produced at the orifices, is better conducted by the flaccid walls of the unfilled arteries.

Reduplication of the first sound is most frequently met with in cases of organic disease. When it occurs, ~~the~~ instead of being lubb-dup, the hearts sounds become bullup-dup.[2] It is said to be produced by irregular action of the auricular valves, especially the mitral, causing them to flap back at different times. The same irregularity is said to produce, sometimes, a double impulse. When the action of the valves precedes or follows

[1] On Diseases of the Chest p. 216 [2] Ibid.

the impulse, ~~and~~ a double first sound is produced. Dr. Hope thinks, that in some cases where the first sound is apparently doubled, this doubling is produced not by any abnormal action of the valves, but, (in lean persons (the internal surface of whose intercostal spaces is not filled up, so as to be on the same plane as the ribs). by the impulse against the inferior margins of the fifth rib taking place after the first sound is produced Dr. Williams explanation would be more plausible, did not Dr. H. state, that it disappears when pressure is made on the intercostal space. Reduplication of the second sound is produced by the flapping back of the pulmonary and aortic semilunar valves at different instants

The systolic bellows-murmur, spoken of by Dr. Walshe as being occasionally heard in cases of chorea, is probably, he thinks, attributable to irregular action of the muscular apparatus of the mitral valves; "but of this" he says "I am not quite sure"

The formation of the venous murmur was not satisfactorily accounted for until 1837. Dr. Ward of Birmingham has the merit of being its discoverer. Laennec, and Bouillaud following him, believed the murmur to be situated in the arteries. Dr. Ward has proved that this is a

mistake, and that it is situated in the veins. His opinion is confirmed by Dr. Hope. It is invariably present in anæmic subjects. Bouillaud Andral & Hope deny that it is ever witnessed where this condition of the blood is absent; but Walshe has observed it where no symptoms of anæmia could be observed. Dr. Williams has succeeded in producing it in robust individuals, by pressure with the end of the stethoscope on the vein. The causes of its production are, doubtless, the same as of the murmurs of the heart and arteries. The conditions usually present are the same, namely, diminution and attenuation of the blood and consequent increased velocity of the blood all as already stated favourable to sonorous vibrations. Andral has endeavoured to establish an exact relation between the amount of spanæmia and the constancy of its occurrence. "If the red corpuscles fall below 80 per 1000, murmur is constant; if the range between 80 and 100, pretty frequent; if between 100 and 115, occasional; if 115 and 126, murmur is sometimes heard; never if they reach the average of health." [1] It has been stated, that the last assertion is doubted by Dr. Walshe. It is also said to be occasionally seen in plethora. In chlorotic patients treated with iron, the colour has been seen to return to the tissues before its disappearance, and Becquerel and Rodier

[1] From Walshe

found a normal amount of red corpuscles in the blood of two chlorotic girls, in whom it was distinctly marked. In such cases, probably, the sole cause is the increased velocity of the current, but as already said Hope and Andral deny that it is ever met with in association with anæmia. According to the latter, diminution of the fibrine or albumen has no effect in producing it. Dr. Walshe thinks, that the proportion of the white corpuscles has more to do with it than is commonly believed. In chlorotic patients, and in persons on whom repeated bleedings have been practised, these are increased, and must, according to him, greatly increase the friction. The augmentation of the venous hum, (which takes place during the arterial diastole, when the throbbing of the arteries is considerable) is due, not merely to the addition of the arterial whiff, as suggested by Hope and Andral, but also to the pressure then exercised on the vein by the artery. The arterial murmur can always be heard through the veinous. By pressure on the vein its murmur is destroyed, and then the arterial one is heard alone. Dr. Hope's observation, that the former seems sometimes momentarily checked by the latter, must be important in a diagnostic point of view. When the murmur is increased by position, Dr. Hohe attributes the increase to the state of tension produced being more fav-

durable & sonorous vibrations. The increase of the velocity of the current must also act favourably. Dennis Bouillaud Ward and Andral state, that the larynx acts as a sounding board to the jugular veins; and thus explain the fact, that, when the cartilage is drawn away from it, the bruit becomes less loud, or entirely disappears. But Dr. Hope boldly avers, that the whole is a mistake. When the murmur ceases altogether in such cases, he attributes it to cessation of the inadvertent pressure on the vein obliterating it. When this is avoided and the larynx pushed aside with moderate force, it is, he says, instead of being diminished, increased; probably by the steadiness given to the neighbouring parts. Venous thrill, analogous to that of the arteries, is occasionally felt, though less marked than the latter. The conditions necessary for the production of the murmurs occurring more frequently in females than in males, accounts satisfactorily for its more frequent occurrence in the former.

The predisposing causes of functional disorder of the heart (omitting for the present those of syncope) are, the nervous temperament, the termination of the menstrual period of life, the female sex, and debility.

The exciting causes ~~of functional disorder~~ (omitting for the present those of sudden syncope) are exceedingly numerous, and very different. The disorder is in all cases pro

duced by over excitement of the heart, and its varieties are produced by differences in the causes," and from the different routes which these causes pursue in order to arrive at and convey their stimulus to the heart" The causes act on the heart directly or indirectly, or in both ways simultaneously. In enumerating them we shall classify them according to the system with which they are primarily connected. And first of those which are primarily connected with the nervous system. These are, disease of the brain; spinal irritation; chorea; hysteria; hypochondriasis; mental emotions, whether of an exciting or depressing kind, as joy, anger, sorrow fear; and mental anxiety of all sorts, as protracted mental exertion & care. Here also are to be placed certain articles of luxury & diet, as, excessive smoking; spirituous potations, tea and coffee, especially green tea. "We have read" says Dr Lay "of obstinate palpitation being produced, along with severe dyspeptic symptoms, by the irritation of caries of the teeth and alveolar processes, and ceasing on the removal of the diseased teeth; and, doubtless, many other examples of inordinate or irregular action of the heart, brought on from sympathy with painful affections of distant parts, might be adduced

Plethora and Spanaemia, (including anaemia & Chlorosis),
1 Dr Cs Lect.

however induced, are frequent exciting causes. These two act in the same way. In the former the whole vascular system is overloaded with blood, and this overload in the heart creates over excitement. On the other hand, in spanæmia, the condition of the blood enables it to traverse the vessels with greater rapidity, and thus to arrive at the heart in redundant quantity. Spanæmia also acts by producing a state of nervous irritability — how is utterly unknown. Some writers state, that in this condition the cause of the disorder is a diminution of the usual amount of stimulus at the heart. This is surely a mistake, an effect is proportional to the intensity of its cause, and why it should be otherwise in this instance I know not. The blood is also said to act sometimes by being often stimulant a character. Depletions haemorrhages and excessive discharges of any description are very common exciting causes

Impediments to the function of respiration, whether from disease in the lung as hepatisation and tubercle; in the cavity of the pleura as tumours or accumulation of fluid; or from mal conformation of the thoracic parieties, may likewise give rise to functional derangement of the heart. These act by preventing the free exit of blood from the cavities, and thus overstimulating the organs

Dyspepsia is proverbially an exciting cause. It usually acts by irritation of the nervous system directly; but where it produces great flatulency its action is in the first instance mechanical — the distended stomach interferes with the respiratory movements. Enlargements of any of the abdominal viscera, ascites or a gravid uterus, act partly immediately on the nervous system, [illegible] and partly by mechanical pressure. Tight lacing, by compressing the abdomen and thorax, is also known to produce palpitation. The abuse of purgatives must also be mentioned A common cause among people of the middle ranks is continued diarrhoea with fibrinous evacuations. Gastric inflammation is also an exciting cause in some cases.

Uterine diseases, especially uterine congestion, are fruitful sources of this disorder; as also sexual excess and more particularly onanism Disease of the ovaries and breast are also known as exciting causes.

The predisposing causes of functional syncope are general debility and nervous excitability. [illegible] Many of the causes noticed below as exciting causes act often merely as predisposing causes

The exciting causes act primarily on the nervous system or on the circulation. Those acting on the nervous system often affect the senses of sight smell and hearing

1 Dr Cs Lect. 2 Ibid.

certain odours, disgusting or painful sights, music & mental excitement, or depression, intense pain, concussion of the brain, fatigue &c — all often enough produce syncope. Of those acting through the circulatory system the chief are, Spanaemia, excessive loss of blood, profuse evacuations, the too sudden removal of pressure on the abdominal contents, as in parturition and paracentesis in ascites, sudden change of position in states of debility, as in convalescence from exhausting disease. But syncope is brought on not unfrequently in the opposite condition of anaemia — plethora.

The diagnosis of functional disease falls now to be considered. Its great importance no one doubts. We cannot do better in introducing this subject than quote a couple of sentences from Dr Joy's article on nervous palpitation in the Library of Practical Medicine "How much unwarrantable suffering" says he, "is inflicted on individuals and families by the deplorable, but unfortunately too frequent, error of confounding nervous affections of the heart with those of an organic nature, is but too well known to need to be more than simply mentioned here. It is only however of late years, or since more accurate grounds for forming a diagnosis

of these two very opposite classes of diseases have been furnished by the discovery and judicious application of the physical signs distinctive of each, that the better informed portion of the Profession has become fully aware of the extent to which such errors must have formerly existed" The importance of a correct diagnosis in reference to treatment, likewise, only requires to be mentioned. Different opinions are held as to the facility of the diagnosis ~~in functional disease~~ We shall in treating of this subject take up and discuss each of the circumstances on which ~~stress is laid in forming a diagnosis~~ most attention in the examination of the patient, and then state the conclusion, to which we think we are entitled to come, as to the difficulty or facility of the subject. The frequency of organic, as well as of inorganic disease of the heart, is but too well known. Nevertheless, it is worthy of notice and of importance to know, that purely functional derangement is of very frequent occurrence absolutely and comparatively, – comparatively I mean with respect to organic disease. It is well then, to recollect a statement coming from a man of Hope's experience, that no less than one half of the patients who consulted him, in private practice, for supposed organic disease, laboured under the almost infinitely less formidable complaint of functional disorder.

The patient will always, whether anaemic, plethoric, or (if I may use the phrase) blood-healthy, be found to be of a nervous temperament. And it ought to be recollected, that anaemia is not incompatible with a full, flabby, habit of body; with which the haemorrhagic tendency is not unfrequently seen. The fact, that the symptoms are of a much severer character than the appearance (emaciation &c) of the patient would suggest, is of great moment in a diagnostic point of view[1] The emaciation, weakness &c are not commonly great, unless they have preceded the cardiac disorder[2] The anxiety is often greater than in organic valvular disease, at least in its incipient stage. The accompanying difficulty of breathing is not in proportion to the severity of the palpitation, but to the weakness of the patient[3] Also while benefit accrues both in functional and organic disease from attention to the digestive system, in the former the beneficial effects are greater and often more permanent than in the latter. While too exercise is of use rarely—very rarely indeed[4]—in organic affections, a very large number of functional cases are rapidly improved by it, when taken immediately after consultation with their physicians. Antispasmodics also remove all the distressing symptoms more effectually for the time ~~than~~ in ~~functional~~ organic cases. The existence of secondary changes, such as oedema of the limbs & pulmonary congestion, the ab-

[1] Dr. C's Lect [2] Ibid. [3] Ibid. [4] Dr. C. in his clinical lecture mentioned a case—one of the most extraordinary he ever met with—where not withstanding very extensive disease of the aorta the patient was benefit- ... ascending hills &c—the man was a farmer and engag-

-sence of intervals of perfect freedom from the distressing symptoms – one or all of them – are not implicitly to be relied on as indications of organic disease. Nervous disorder, if conjoined with spanæmia, is by no means very rarely associated with more or less extensive anasarca. And, although organic lesions be present, there may be intervals when the distressing symptoms are entirely absent

Percussion will generally show the heart to be of its normal dimensions. But temporary distension may increase its transverse ~~dulness~~ dulness; and in one variety, to be presently noticed the heart being congenitally small this is diminished Here of course as in all other cases the presence of tubercle at the edge of the lung, emphysema, or a very large mamma, may prevent the cardiac dulness from being accurately ascertained

Palpitation alone, since it may accompany every change in the heart, has little in it to aid our diagnosis. One or two points, which are of some use in this point of view, may however be here noticed. The fact, that, functional palpitation is of more frequent occurrence in females than in males, while the opposite is true of organic, is here useless The abruptness of purely nervous palpitation is of importance, in as much as it differs greatly from the heaving palpitations of an hypertrophied heart. Here too the palpit

ation comes on suddenly, and has very commonly perfect intermissions; while the opposite is the case in organic palpitations. The remarks made on the effects of attention to the digestive, dysentery of exercise, and of antispasmodics, on the distressing symptoms of the patient apply also to the palpitation.

It is well to remember in examining the patient, that the characters of the sounds are altered by a variety of circumstances exterior to the heart. An echo of the sounds may be produced in a vomica of the lung, which has hardened boundaries, or within the pleura in cases of pneumothorax. A stomach distended with gas may act in the same way. In both cases if the echo be audible to the patient, it may occasion him great alarm. The effects on the sounds of enlarged spleen or liver must also be remembered. When the heart is displaced by organs exterior to it, the point of maximum force of the sounds are likewise displaced; especially that of the first, in consequence of the heart being more moveable at its apex than at its base. The effect of debility is greater on the first sound than on the second, as might be anticipated when the causes of that sound are considered. Functional disorder has much more frequently been known to render the sounds audible at a distance than any organic disease

Dr. Walshe doubts, "if the latter can ever, unaided by nervous excitement, produce the phenomenon."

Reduplication of the sounds is absolutely worthless as far as diagnosis is concerned. "Reduplication is never (so far as I have observed) permanent and invariable; it occurs most frequently in hearts either healthy or functionally disordered only; less commonly in cases of slight organic affection, and with frequency when serious valvular disease exists"[1]

It has been already stated, that where irregularity of strength and rhythm is constant and persistent, organic disease is almost invariably present.

In treating of inorganic murmur with reference to diagnosis, I shall put out of sight that, which Dr Walshe thinks may occur with the systole and is heard loudest at the apex. The first question is:- What character does it invariably possess? It is always basic and systolic. Inorganic murmur never occurs even between the sounds, but it may so precede the first as to make that sound appear as a continuation of it[2] Dr. Walshe says that it has never been heard by him so low down as the left apex. If therefore we have a diastolic murmur or a double one or one heard most distinctly at the apex, we have something more to deal with than functional disease. But unfortunately for our diagnosis, a basic systolic murmur is also produced by obstruction

[1] Walshe [2] Dr. C's Lect

at the aortic orifice – a common disease. Is there, therefore, any peculiarity in either of these, by which we may at all times distinguish them from each other? No. We have not. The invariable softness of the inorganic is unflinchingly maintained by Dr. Hope; but the great majority (judging from the authors I have consulted) assert the contrary. It is admitted by all, that it is generally soft, while the organic is harsh generally. But the organic may be soft, and the inorganic harsh; and what is more, the latter may be rendered temporarily harsh by excitement; and as to the pitch that of the organic may be low; while the other may be shrill and whistling[1] The inorganic, however, is never permanently harsh and of high pitch. When the heart's action is calmed, it is. If along with it a murmur be heard stretching extensively along the arterial trunks coming off from the aorta, the murmur is in part at least inorganic. Although frequently confined to the aortic orifice, an organic murmur is not invariably so. The arterial inorganic murmurs are, unless exaggerated by pressure, of a soft blowing character single and synchronous with the arterial diastole of the artery. But degrees are bad criterions in diagnosis; and," midway between the organic and inorganic varieties, stands the murmur ~~pressed~~ of an artery pressed upon by an adjacent tumour"[2]

[1] Walshe [2] Walshe

There are often, however, concomitant circumstances, which, along with the other signs and symptoms, render one examination of the patient ~~of the patient~~ nearly, though not entirely, sufficient for the forming of a certain diagnosis. If the patient be anæmic and young, if he have had no attack of acute ~~of acute~~ rheumatism, if the pulse be jerking and corresponds in volume &c with the cardiac impulse, and there be a basic systolic cardiac murmur and an arterial one heard only in the aorta and larger trunks coming off from it, then we may be all but absolutely certain, that, that murmur is inorganic. Yet it is not to be forgotten, that all of them may be simultaneously present in organic disease; and more over, "that in a person of perfectly sound heart, and enjoying excellent health, you may have bruit de soufflet present, from some cause or other of only momentary duration"[1] Dr Corrigan's remarks on the relation of the pulse and functional murmur would be of importance, were they corroborated (which they are not) by others. He says "The bruit here [in chlorotic palpitations] differs from that in organic disease in the following particulars: in organic affection the beats of the pulse being 50, 60, 70, 80, or 90 in a minute, the number of times the bruit is heard, will tally exactly with this, except in cases of permanent patency of the aorta, when the sound of the returning portion of blood

[1] Corrigan

causes double bruit. ------- You cannot count the number of times in which you hear bruit de soufflet in this affection. There it goes on continuously, for one half, one, two, three, or ten seconds; there is no intermission in it as in organic disease: it may hold on thus for half a minute or a minute, but during this time there is no cessation. In this distinction we possess a never failing criterion between functional disorder and disease of the heart" It is to be recollected too, that the inorganic bruit may possibly be dependant on pressure from a solid mass produced by pleurisy, pneumonia, phthisis, enlarged bronchial glands, or abscess in the anterior mediastinum. Change of position in a case mentioned by Dr Hope, where murmur was produced by tubercular deposit in the edge of the lung, pressing on the ascending aorta, so altered the relation of the compressing portion of the lung as to cause it to disappear. A murmur, which might readily be mistaken for a cardiac one, may be produced by a tight dress, which impedes the respiratory motions. In such cases, it is rather behind the first sound, and is supposed to be produced by the violent action of the heart compressing a part of the lung and forcing the air out of it. Dr Elliotson mentions a case of ascites, in which a murmur with the first sound was present, while the distension of the abdomen existed, but

which immediately disappears on evacuation of the fluid
To explain this, he offers two theories, either of which may
explain them; though Dr. Hope rejects the first — why
he does not state. The first is distension of the right auricle
compressing the aorta — the second tilting up of the heart
at an angle to the aorta. The murmur arising from
roughness of the pericardium or and pleura, and which
sometimes resembles inorganic endocardial murmur, is
distinguished from the latter, by its remaining the same
whether the circulation is excited or calm; and by being in-
creased during inspiration

The pulse seems worthy of a separate notice here. The er-
roneous opinion of Laennec in respect to the coexistence of a
slow pulse and distressing palpitation; and the fact that
the beats of the heart may be more numerous than of the
pulse, have already been noticed. A murmur can never be
purely inorganic, which is associated with violent action of the
heart and a weak pulse. This is only found in obstructive
disease; where the obstruction neutralises so much of the
forcible impulse. The inflammatory pulse differs from the
anaemic in being full, strong, and hard, and destitute of jerk,
thrill, and bellows-murmur. But when inflammation
and anaemia coexist the pulse assumes the character of the
inflammatory pulse of weak subjects — it is sharp "These

distinctions, which to the inexperienced may appear refined in description, are perfectly familiar to practical men; and it is of great importance to the young practitioner, that he make himself intimately acquainted with them; as such knowledge will not only facilitate his diagnosis, but prevent the unnecessary and often pernicious abstraction of blood for imaginary fever and inflammation."

Venous murmurs are of great importance in diagnosis; as we have in their existence strong presumption of their being only functional disorder. But as persons with organic disease may be anæmic, and consequently, may have its invariable accompaniment—the bruit de diable, its diagnostic value is so far lessened. As already said its continuous character invariably distinguishes it. Care must be taken however not to mistake the bruit musculaire for it. Unlike the latter, it can only be excited in a very slight degree in the healthy subject, and it can be wholly and immediately suspended by pressure on the vein.

It is to be noted, that the absence of all physical signs does not indicate with certainty, that there is no organic disease. Ossification of the coronary arteries, for instance, though generally associated with endocardial lesions, may exist without them and without any physical signs.

And now what conclusion do the above considerations en-

Hope

title us to arrive at.? Are we to conclude with Dr Hope "that the diagnosis presents no difficulty to one who, to a knowledge of those afforded by percussion and auscultation, adds general signs"? No. Most decidedly not. The results of suitable treatment will alone enable us to decide between functional and organic disease with absolute certainty in a vast proportion of cases.

We come now to speak of the diagnosis of syncope. Though an ordinary fainting fit is usually easily recognized, there are states which do simulate, and might possibly be mistaken for it. Besides a state of unconsciousness, dependant on syncope, may continue for several days, and may be, may has been, has been mistaken for ~~syncopal unconsciousness~~ death. It is certainly of importance then to distinguish the two, and to prevent what has surely been truly characterised, as, "a calastrophe the most horrible the mind can conceive" When the unconsciousness is not of death, the countenance retains something of its living aspect, and the cadaveric congestions and rigor mortis are absent. It is not known whether in extreme cases the sounds are to be heard. The temperature of the interior of the body as the mouth & rectum, is higher than that of the surface There is, of course, in death entire absence of signs of sensibility on the application of what in the ordinary state would produce the most ~~cause~~ intense pains. In death too the sclerotic membrane, from being exposed to the atmosphere, becomes blackish. Of course two being

granted putrefactive changes will be begun. The conditions which might be mistaken for a faint are, a comatose condition, apoplexy and hysterical insensibility. Although pallor, which might be mistaken for syncopal, may be present in the first two of these, the continuance of the heart's action and pulse will ~~at once~~ leave no doubt in the diagnosis. In hysterical insensibility we have neither the pallor, (the colour of the lips and cheeks remaining) nor the diminution of the pulse and heart's action found in syncope. The history of the patient too — the globus hystericus and the alternate fits of laughing and crying — will guide us.

The general indications of the treatment of functional disorder (omitting for the present that of syncope) may be thus summed up' 1 Remove all causes. 2 Withdraw the patients attention from his complaint. 3 Let him sleep on the right side 4 Attend to the digestive organs 5 Use opiates and antispasmodics

We say nothing of the treatment of syncope occurring in organic affections of the heart, or when it takes place at the outlet of inflammatory disease &c. The treatment of it when occurring in functional disease may be spoken of under two heads, first that suitable when fainting is only ~~threatened~~, and secondly, that suitable when it has occurred. The remedies during both periods are ~~primarily~~ primarily directed to the nervous, or to the circulatory system. Those directed to the

'Dr C's Lect.

latter during the first period, are the horizontal posture, the removal of all compression which interferes with the respiratory movements at the chest or abdomen. Means of preventing the circulation in the extremities are still recommended by some. Those acting on the nervous system principally, are, fresh air, cold aspersion, errhines such as ammonia, a draught of cold water, some stimulant aromatic draught, as of ammonia or camphor, a glass of wine or the like. During the syncope, all the above means are continued, except the introduction of liquids ~~by the mouth~~ into the stomach; for were this attempted we should run the risk of asphyxiating the patient, by pouring the liquid into the air passages. It is also usual among the non-professional to cry shrilly into the ears, to strike the palms of the hands and so forth — no doubt, often with beneficial effect. In cases where the above means do not succeed, others must be applied to the nervous system, as stimulant injections, friction to the trunk and extremities, warm applications to the regions of the stomach and heart — a towel or spoon dipt in boiling water, and then applied to former region or to the spine is said often to be of service. In very extreme cases, where dissolution is palpably threatened, the introduction into the stomach of warm stimulants by an elastic tube ought to be employed; and at the same time artificial respiration perseveringly kept up. When syncope is produced ~~by~~ in the plethoric,

abstraction of blood is required during both periods. In the intervals the only treatment is of course to improve the condition of the patient

We come now to the last part of our subject namely the varieties of functional disorder, commonly met with in practice. This is not a piece of useless classification, seeing that each class requires a method of treatment peculiar to itself. Dr Hope's classification is, doubtless, correct so far as it goes We shall therefore adopt it adding such varieties as ~~are not~~ seem to require a separate notice

1st Class I A large class of cases are dependant on "dyspepsia hypochondriasis, hysteria, latent gout, mental perturbations of the exciting or depressing kind, excessive study with deficient sleep, and venereal excesses." In these cases it is seen in various degrees. In its mildest forms, it is dependant on intermission of the heart's action, and "a stumbling or rolling motion of the heart, with a momentary feeling of tightness and oppression", is felt. When of a rather severer form, but still with but little anxiety, the beats are quick, weak, fluttering, and irregular, the respiration is quickened, and there is a quivering sensation at the epigastrium. This occurs irregularly, or at long intervals, or several times during the day, especially if the patient be exposed to slight excitement. Again, in a still severer form, the force, frequency and loudness of the sounds are simultaneously increased, and perhaps conjoined with irregularity

Along with this there are a certain amount of anxiety, dyspnoea, or even orthopnoea. This condition may occur more or less frequently, or continue with little intermission for several days. All the symptoms are relieved by bodily exercise of such a sort, as would certainly increase that caused by organic disease. The impulse of the heart is really but slightly exaggerated. The pulse may be weak and small but is always "jerking" We must be careful not ~~to refer this variety~~ to confound organic disease of the heart ~~which~~ is accompanied with dyspeptic symptoms with this variety. In cases of this form although a variety of head symptoms may be present, there are no genuine symptoms of determination of blood to the head. We cannot enter into the treatment of this variety as to do so would require us to enter into the various disorders stated as giving rise to it. Our time will not permit us to do so.

Variety II. Is that arising from anaemia (including Chlorosis) It is more likely than any other to be mistaken for organic disease. Its general symptoms are the following. The patient has the usual cachexia or sallow hue of anaemic individuals. Here bodily exercise, producing lassitude and aching of the limbs, increases the distress of the patient. There is anorexia with loathing of animal food, and a preference for sour articles of diet. If the patient be a female the catamenia are either deficient and leucorrhoea present, or they are profuse consisting of blood, and continue for five or ten days. In the latter

case, the passive hemorrhage (for it really is so) may be the cause of the anæmia. The intellectual powers are often unimpaired; vertigo, noises in the ears and headache are common. Intolerance of light and sound, and even fatal coma may occur in the severer cases. There is breathlessness to a greater or less extent.

From the abrupt, bounding character of the beats, they are heard more distinctly perhaps than in any other form of functional disorder. It is here most frequently that the patient can by the sensation of rushing through his ears count the beats. The systolic murmur at the aortic orifice and the arterial in the carotids & subclavians are heard, or if they be not present the slightest excitement will produce them. The venous murmur is always present.

The treatment is simple. All exciting causes being shunned; large doses of the preparations of iron are administered for some six or eight weeks; and the bowels regulated by aloetic purgatives. The diet ought to consist of animal food. A change of air and exercise, short of fatigue, will also prove beneficial.

Variety III. The third variety is that arising from a too stimulant diet. Men actively employed in the open air can bear and require full animal diet, but when a change to a less active and it may be, less healthy mode of life is made, to preserve health lighter meals are only suitable. If this be an attend

ed to, distressing, and to the patient very alarming functional disorder of the heart, is induced. In a few weeks "the pulse is accelerated & full; the tongue is white; the body confined; the skin hot; the face flushed, with throbbing headache and sometimes universal throbbing." The excitability of the nervous system being much exalted, mental emotions and slight exertions give rise to palpitation. 4

The treatment is obvious. The excess of blood in the system must be reduced by bleeding, purging, and low diet. After a cure is thus obtained the returns of the disorder can be easily prevented by a moderate diet and sufficient exercise.

Variety IV We observe this variety in persons having a decided tendency to plethora, and may be produced by the same causes as generate the preceding; but sometimes no such cause can be detected. "The patient becomes louder than usual and complains of palpitation, an definable oppression in the præcordial region, sometimes with slight angina pectoris; these symptoms are increased by exertion, mental anxiety, and often by meals; the pulse is small and oppressed; the spirits dejected, sometimes with vague fears or dread of death; constipation and dyspepsia generally attend the latter sometimes inflammatory. The symptoms proceed from a gorged state of the heart and whole vascular system" The inexperienced must beware of attributing this variety,

owing to the small oppressed pulse, to nervous debility, otherwise a grand blunder will be made in its treatment.

The treatment consists in bleeding (and here this may require to be repeated more than once at intervals of two or three weeks), keeping the bowels open, and restrained diet. The imposition of a restrained diet is here easy, in consequence of the dyspeptic annoyances of the patient.

Variety V. Is most frequently met with at or about the commencement of puberty, in weak subjects, especially in females, although occasionally also in males. It may continue until the patient has attained the age of twenty or five and thirty. It consists in palpitations without pain in the precordia. Irregularity or bruit de soufflet is also present. The pulse is often irregular and intermittent; and it is of importance to recollect that is may remain so during life after all palpitation has disappeared. The disorder is much increased by pedestrian exercise, although not by equestrian, (if the patient has been accustomed to such previously) according to Dr. Corrigan (who describes the variety and from whose description I have drawn up this brief account) It is quite unconnected with the state of the catamenia; for these may be regular and of normal quantity and quality, or in any of the various abnormal conditions to which they are so well known to be liable. It is sometimes connected with a congenital narrowness of the chest or with tight lacing and

frequently on spinal irritation at some part of the dorsal region
The last cause ought specially to be noted, as if neglected serious
spinal disease may be permitted to run its course unchecked.
Dr. Corrigan states, that he has seen such cases mistaken
for hypertrophy by medical men

If by percussion along the spine, we ascertain that the
cause is spinal irritation, our treatment is immediately and
mainly directed towards it. We bleed topically, by leeches or
cupping, and follow it with counter-irritation by tartar emet-
ic ointment or blisters. If such heart disease the patients
strength is to be amended by tonics and tonic regimen, pay
ing due attention to the digestive organs

Variety V This is also described by Dr. Corrigan, and appears
deserving of a place here. It depends on subacute inflammat-
of the stomach. The pulsations of the heart are violent and tum-
ultuous, and often accompanied with pain stretching down
the left arm. The anxiety of the patient is extreme. The stomach,
having acquired the power of secreting gas often becomes
enormously distended, and over it the heart's sounds are heard
preternaturally clear and distinct. Dr. Corrigan has met
with it most frequently in persons, who were deprived of a
due supply of wholesome food, and had made up for it by
indulging to excess in every kind of stimulant, as tea tobacco
and spirituous liquors. The appearance of the tongue is peculiar,

and of diagnostic value. "Its sides, tip, and dorsum, present a red and glazed appearance; indicating, in some degree, a sub-acute gastric inflammation."

In treating it the gastric inflammation must be attacked counterirritation is applied to the gastric region. Dr Corrigan uses a mixture of croton oil, turpentine, and camphor liniment — rubbing it in night and morning, until pustulation is produced. This is persisted in for a considerable time Simultaneously oxide of bismuth with bicarbonate of soda is to be administered internally. The saccharine carbonate of iron is often, with good effect, combined with them. It is needless to state that the patients mode of life is to be changed. His diet should be nutrient, but not stimulant. Under such treatment the tongue will improve and all gastric and cardiac symptoms disappear.

Variety VII What has been called Epileptic Palpitation by Dr Corrigan, is dependant on disease of the brain — of the nature of which Dr C. does not inform us. The striking peculiarity of it is, that if its nature be not understood and it be not properly treated, it will terminate in that grave disease — epilepsy. It commences (and this is peculiar to it too) with a fainting fit, after which palpitations set in. Afterwards syncope recurs occasionally but it is not that but the palpitation which gives him concern. The heart sounds are normal. The pulse

ation and fainting fits may continue for two years before terminating in epilepsy. The point which attracts most attention, and indicates the source of the evil, is the occurrence of the fainting fit at a time when the patient is young and the constitution vigorous.

The treatment recommended by Dr. Corrigan consists in the abstraction of all mental irritation, and the use of digitalis premised by bleeding from the arm. The drug ought according to him to be given in the form of powder, and "in doses of two or three grains at bed-time every night, and in some cases, in fine grain doses until it exerts its peculiar effects on the constitution."

Variety VIII. This, the last one I have to notice, was first described by Dr. Christison, in a paper read before the Medico-chirurgical Society of Edin^r. January 8^th 1845. It is apt to be mistaken for hypertrophy of the heart, and Dr. C. states, that, in his experience, it generally has been so mistaken. It occurs generally in male adolescents and young adults. "The affection seems to occur usually with a slender frame of body, yet with a muscular system tolerably well developed, and at all events firmly knit." There is always increased nervous excitability met with in functional disorder of the heart. Disorder of the digestive system may or may not coexist. There is always pulsation felt at the heart, which with the pulse-

ations in the carotids and temporals (when such exist), proves especially troublesome while the patient is in bed, and more so, if lying on his left side. The pulsation is frequent and violent; so that in examining it, the observer's head is raised by the impulse given to the stethoscope, and the agitation of the chest is visible at a distance of eight or ten feet, when the patient is stripped. The symptoms are increased by violent though not by moderate exercise. There is no marked dyspnœa. A number of symptoms common to all varieties are usually present. There is no bellows-murmur however violent, the heart beat. It has however three peculiarities. The first is the constancy of the palpitations — for, whether the patient be conscious of them or not, they are present, though varying at different times in strength. The second is the abnormal position of the beat of the apex of the heart. It is found not between the fifth and ribs as in health, nor lower down as in hypertrophy, but between the fourth and fifth. Dr. C. however mentions one case in which the apex was found to beat at its normal site. The third is the diminished cardiac dulness. Dr. C has had the opportunity of watching for years some of the cases which have fallen under his care, and in these he has invariably found, that, while in the course of time with due care on the part of the patient the distressing symptoms have been mitigated, the physical signs have remained unchang-

ed. A writer in Ranking's Abstract states, that, in his experience, the distressing symptoms have been induced frequently by unnatural excitement of the sexual ~~system~~ organs. The pathology of such cases is, according to Dr. Christison, congenital smallness of the heart which is at the same time displaced lying nearer the sternum than usual

The treatment consists in avoiding all over excitement and violent exercise, an unstimulating diet with as little animal food as possible, the administration of chalybeate tonics with moderate exercise, and, as in all other cases of functional disorder, due regulation of the bowels

It will be observed that, while among the general indications of treatment we have placed, the withdrawal of the patients attention from his complaint, sleeping on the right side, and the use of opiates and antispasmodics, we have not spoken of them in the special treatment of the different varieties The reason of this is that in all the varieties these points ought to be attended to.