tractility in the muscular fibres of that organ, disturbing the balance between the contracting walls, and resisting fluid; hence it is systolic. The nervation which induces this peculiar action is one of great tension, but small in quantity (if I may be allowed the term). In this way we can explain the absence of the *bruit* as recorded by Datin; also its localisation in the carotids whilst absent in the heart, as in the case of Mrs. H. The rushing and throbbing in the head, particularly during excitement, is due to temporary excessive *vis a tergo*; any injurious consequences to the brain being guarded against by the thyroid body acting as a diverticulum; hence the goitre which is from simple hyperæmia at first, then hypertrophy, increases with excitement, and essentially differs from endemic goitre. The exophthalmic state is a consequence of distension of the intraorbital vessels, pressing the eyeball forwards, as thought by Hænoch, Walton, Siebel, Hirsch, etc.; and it is proved to have this origin by the fact of pressure reducing the exophthalmos, and in fatal cases by the eye receding into the orbit after death (Begbie). It is certainly not due to serous infiltration, as thought by Hamilton, Roche, etc.; nor to excess of intraorbital fat (Middlemore, Desmarres); nor to increase of intraorbital cellular tissue (Basedow, Køben, Heusinger, Naumann); nor to increase of the vitreous humour (Stokes), because the measurements of the globe are not increased; nor to irritation of the sympathetic affecting the orbital muscles (Aran), because the motions are perfect. Vision is rarely impaired, as might be inferred from the ophthalmoscopic examinations of Withusen, Follin, and Argyll Robertson, who found some changes in the choroidal pigment, and increased vascularity.

The coexistence of heart-disease is accidental in the early stage; but, if the disease persist for a long time, we should reasonably expect dilatation of the cavities, without relative hypertrophy of the walls; which has been proved to exist before death by Trousseau, and recorded as a pathological fact by Marsh, Christison, Begbie, etc. The dilatation of the veins is the last expression of the disease; it is not due to the pressure of the goitre, for Begbie found the inferior vena cava dilated; but is no doubt due to static congestion.

DIAGNOSIS. The presence of heart-symptoms, emaciation, goitre, and exophthalmos, characterise this disease. From organic disease of the heart it is known by the history, its rapid development and subsidence under treatment; from endemic goitre, by the size of the tumour, by its feel, by the thrill and bruit, and by its subsiding after, and increasing with, excitement.

The **PROGNOSIS** is always favourable, and the more so when the disease has not existed long; the more chronic it is, so much the more likely are we to have secondary organic complications.

The **INDICATIONS OF TREATMENT** are to allay the irritable stomach by the use of ice; to give bland unstimulating nutritious food in small quantities and at short intervals; to produce sound and refreshing sleep by morphia, or any non-stimulating soporific; to administer digitalis to steady the weak heart and control its excitement. Iron is to be given to improve the quality of the blood; and hygienic means must be employed. I do not think local applications of iodine have any good effect upon the goitre. Ice will frequently give relief by diminishing the hyperæmic state.

In considering the disease in its totality, I cannot agree with Begbie, that it is a variety of anæmia, induced by wasting discharges; nor with Bouillaud, that it is a variety of chlorosis; nor with Aran, that it is always associated with heart-disease; nor with Stokes, that it is neurosis of the heart and cervical vessels. I am inclined to think it is hypernæmia of the brain and sympathetic; that this hypernæmia modifies the primary and secondary assimilation; that the latter interferes with the normal elimination of one of the primary animal com-

pounds formed in secretion (cholesterine?), and thus induces spanæmia; that this spanæmic state, acting upon the brain and cardiac nerves, causes the palpitations; and that the other symptoms arise as a consequence of a continuance of this peculiar action of the heart, and of spanæmia, even up to organic changes in the viscera, heart, and vessels.

CHOREA: RHEUMATISM: PERICARDITIS.

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INSTANCES occasionally occur in which, during the acute symptoms of rheumatism, or shortly afterwards, irregular choreal movements come on. These cases are especially manifested after the heart has been implicated in the rheumatic affection; and the closeness of the sympathy between the heart and the spinal centres has led to the supposition that the fibrous tissues of the cord become affected by rheumatic disease. Of this there is no proof, although it is almost exceptional to find chorea without abnormal sound about the heart, either from pericardial or endocardial disease: still, the connection appears to be one arising from the nervous system, and not from organic change of the spinal membranes or metastasis. Fatal cases of chorea rarely happen, and in such instances either acute pericarditis or valvular mischief, as shewn by fibrous vegetation on the mitral or other parts, are generally detected; but no organic change has been discovered in the spine or its membranes.

It is a matter of doubt whether the energetic treatment, generally adopted in rheumatic carditis, does not favour the irritability of the nervous system, of which chorea is the expression; for patients are rendered anæmic and prostrate by the free use of salines, by calomel and antimony, by depletion and spare diet.

Of the following three cases, the first was one of acute rheumatism with heart affection, in a girl aged 16. Salines were given; and, at the end of the second week, choreal symptoms came on, but quickly subsided under the use of bark and an improved diet. In the second case, a young married lady had acute rheumatism, with slight affection of the heart, four months after the birth of her second child. She was compelled to wean her infant; but, although the rheumatism soon subsided, chorea shortly supervened, and did not completely cease till her strength became established by change of air and sea bathing. The third instance was that of a boy afflicted with chorea. He was relieved by generous diet and by steel medicine, and a systolic bruit became less distinct; but in three months he returned with another attack of chorea, and with pericarditis. The prostration of strength was extreme; still, he rallied, and the chorea ceased; but, after a relapse, the cardiac mischief increased, and fatal syncope ensued. This case was also interesting from the presence of erythema circinatum, an occasional accompaniment of rheumatism. In the first and last of these cases, although pericarditis was well marked, there was an absence of pain in the left side and in the region of the heart; and this will be found to be generally the case in simple pericarditis, that is, where the pleura is not also affected.

CASE I. *Rheumatic Fever: Pericarditis: Choreia.* Sarah B., aged 16, was admitted, under my care, into Guy's, October 26th, 1862. She was a servant; and, two days before admission, experienced pain in the ankles, feet, and legs; and when she was brought to the hospital the symptoms of rheumatism were well developed. A purgative of blue pill and compound rhubarb pill was

given, and half a drachm of bicarbonate of potash in barley-water every four hours; and a diet of milk and beef-tea.

On October 28th she was in severe pain in the joints, which were red and swollen; the skin was perspiring; there had been no sleep; the bowels were open; there was a to-and-fro sound over the region of the heart, and a systolic *bruit* in the course of the aorta; the pulse 116, compressible; the respiration 28. She had no pain in the region of the heart, nor tenderness at the scrobiculus cordis. A grain of opium was ordered at night.

On Oct. 29th there was rather less pain; she had had a little sleep in the night; and the friction-sound was less distinct; but the systolic *bruit* was more distinct. The respiration was easy, 28 in number; the pulse 112.

On the 30th she had a distressed expression of the countenance, although there was less pain in the joints, and none in the region of the heart, nor in the left side; the friction-sound was again very distinct; the pulse tolerably compressible and small, 116; respiration 40. The bowels were open; the tongue had moderate white fur. She was ordered to continue the bicarbonate of potash; and six ounces of blood were taken by cupping from the cardiac region.

On November 1st the symptoms continued as before, and it was found difficult to maintain the warmth of surface which was desired, on account of the patient throwing aside her flannel gown.

November 3rd. The friction-sound was still very distinct, of a harsh and dry character; the pulse was irritable, compressible, and frequent; but there was rather less pain in the limbs. Other symptoms remained as before. A blister was applied to the region of the heart.

On the 5th there was no pain in the joints, but the friction-sound persisted; and, on raising the patient up, the base of the left side of the chest was found to be dull, with tubular breathing, bronchophony, and imperfect tactile vibration; the tongue was clean; the respiration 40 to 50; the pulse 116, compressible. A small quantity of iodide of potassium was given with the bicarbonate of potash. She positively stated, that she had not suffered from any pain in the left side.

On November 7th the friction-sound was still very marked; but she had no pain in the joints; the tongue was clean; the pulse sharp and frequent; the bowels open. For two or three days, irregular jactatory movements had been observed; the mouth was distorted when she attempted to drink, and the hands and arms were suddenly jerked about. She was ordered four ounces of sherry wine, fish, two eggs, milk, &c.

November 11th. The irregular movements continued. The respiration was hurried; pulse 120, small, compressible, and jerking. The friction-sound was less distinct, but audible at the base of the heart. She was ordered to take, three times a day, bicarbonate of potash gr. viij; tincture of bark ʒss; syrup of orange ʒj; decoction of bark ʒj; and to have eight ounces of wine.

November 12th. There was less choreal movement, but the pericardial sound could be heard; and signs of effusion still existed on the left side. Pulse 144, irritable; tongue clean; bowels open freely. A blister was ordered to be applied to the left side.

November 15th. The chorea was diminishing; so also the friction-sound; but a double *bruit* (valvular) could be heard over the aortic valves. Pulse 116, compressible. Early in the morning, when she was more composed than when visited midday, the pulse was 92; the tongue was clean. She was ordered to have ten grains of potassio-tartrate of iron three times a day in water.

November 22nd. The friction-sound had ceased, and only a systolic *bruit* was heard. She was evidently gaining strength.

November 26th. Systolic *bruit* over the aorta was still

audible; but the fluid had become absorbed from the left base; and, although the resonance on percussion was not good, the respiratory murmur was heard to the base.

December 2nd. She was sitting up, and quite convalescent.

On the 9th the systolic *bruit* was much less distinct. The patient was walking about the ward, and about to go home in a few days.

REMARKS. The presence of heart-disease of a functional or organic character with chorea is of very frequent occurrence; and, as a sequence of rheumatic carditis, chorea is by no means rare. Chorea from fright only occurs where the system is in a weakened state, and in proportion to the nervous exhaustion the disease is easily induced; it would seem, also, that the exhaustion from loss of blood, the anaemia following mercurialisation and the excessive use of alkalies, may induce a state in which chorea is easily set up. The connection between pericarditis and chorea is one which is not easily explained; for the supposition that the fibrous tissues of the spinal membranes are implicated in similar disease has not been borne out by pathological observations. It is, however, notorious how very closely the heart sympathises in changes taking place in the cerebro-spinal system of nerves, as shewn by the slow labouring pulse of cerebral disease, and not less intimate is the connection of the heart with abdominal disease; thus palpitation, irregularity of rhythm, feebleness of action, even actual syncope, may take place from diseases of the stomach or intestines. The irregular movements of chorea may be the converse of these symptoms, and the nervous supply of the heart in its altered state may induce changes in other parts of the nervous system.

The saline treatment in this case was not pushed to an extreme degree; ʒiij were given in the twenty-four hours; but she soon became anæmic and prostrate, and then the choreal symptoms came on; the improvement after the administration of bark and of a more generous diet was very rapid. This beneficial effect of the cinchona and its alkaloid, quina, is well known, and we have often witnessed its value; but we have no experience in the use of large doses of quinine during the acute stage of rheumatism.

The entire absence of pain in the side was remarkable, with the signs of pleuritic effusion; but we have seen dulness, bronchophony, bronchial breathing, and loss of tactile vibration produced by great distension of the pericardium, an instance in which thirty-six ounces of purulent serum were found after death, the pericardium filling nearly the whole of the left side. In the patient with rheumatism, however, the pericardial friction-sound being persistent, with the signs of effusion, precluded such an idea. Both endocardium and pericardium were affected; and, though the signs of valvular mischief disappeared, it is probable that pericardial adhesions took place.

CASE II. *Acute Rheumatism: Chorea.* A young married lady, having an infant four months old, went out December 5th, and walked in the wet without goloshes; again on the 6th she went out in a dense fog, and felt a sense of great coldness in the extremities. On the 10th she suffered from febrile excitement, and some aching pain in the left foot; saline medicine was ordered. On the 11th the ankle was swollen and slightly reddened. On the 12th the left knee was attacked, and she experienced faintness from nursing. The tongue was furred; the heart was free from abnormal sound; pulse 120, compressible. She had taken a scruple of bicarbonate of potash every four hours, and a grain of opium at night. She was ordered to wean her baby, and sherry wine was given. On the 13th the right leg became affected; but the pulse was improved, 108. The bowels were acted on by magnesia and colchicum; the tongue was slightly

furred. On the 14th both legs were affected; the right arm slightly. The skin was perspiring; the tongue had a whitish fur; the heart's action was free; the night was disturbed. She was ordered to continue the salines and opium at night. On the 15th the limbs were generally affected, and she was quite fixed in bed, but suffered from slight pain only, except when moved. The pulse 104, and less compressible; the skin perspiring; the tongue had a creamy fur; the bowels were confined. She had nursed only once during the day. The medicines and the magnesia draught were repeated. On the 16th she had several hours sleep in the night. The bowels acted three times; urine was passed more freely; pulse 96; the sounds of the heart were not perfectly smooth and clear. Acetate and nitrate of potash with tincture of henbane were added to the bicarbonate; and the opium was repeated at night. On the 18th she was considerably relieved; and still more on the 21st. On the 24th there was a slight relapse; but on the 29th she was able to sit up, and to walk round the room. The slight muffling about the sounds of the heart ceased, and she continued steadily to improve under the use of quinine and a more generous diet; but very soon afterwards, while she was still pale and weak, irregular movements of the arm came on, with irritability of the pulse. Steel and quinine were given with relief: but the symptoms did not entirely cease till the strength was completely restored by change of air and sea-bathing.

REMARKS. This was an ordinary case of acute rheumatism with slight affection of the heart, but it came on when the strength was taxed by almost wholly nursing an infant four months old. The symptoms quickly subsided, but they left the patient in an anæmic state; it was then, without any very definite exciting cause, the chorea came on. In the former case, the irregular movements came on more quickly, but they also subsided more speedily.

CASE III. *Chorea: Pericarditis: Erythema Circinatum: Rheumatism: Fatal Syncope.* Frederic M., a delicate anæmic boy, aged 10, from Croydon, was admitted under my care into Guy's Hospital, June 11th, 1862. About five weeks previously, he had been frightened; two days afterwards, pains in the head and limbs came on; and three weeks later, irregular jactatory movements. These movements increased till admission. He was a spare, pallid boy, with dilated pupil, irritable pulse; tongue clean; bowels confined; abdomen contracted. The movements were excessive, and he was unable to stand. A faint systolic *bruit* was audible. He was ordered two drachms of steel wine three times a day; a saline rhubarb powder twice a week; and meat diet with milk and vegetables.

The movements slowly but steadily diminished; and on July 8th he could walk tolerably well. On the 22nd he was sent home, well.

On October 29th he was again brought to the hospital; and it seemed that he had again been frightened. He stated that a man ran after him in the streets. The general symptoms were the same as before; but the heart-affection was more marked. A double sound was heard over the heart, and a systolic *bruit* below the nipple; the pulse was sharp and irritable. There was no pain whatever in the joints; but the child was anæmic and very feeble. Steel wine was again ordered. On November 1st, on examining the surface of the skin, a red rash in crescentic curves, rings, and in long gyrate markings, was observed on the trunk and legs. The edge was slightly raised; the centre of the patch presented the normal colour of the skin; the rash resembled erythema circinatum.

On the 5th a systolic *bruit* only could be heard over the heart; the rash was more distinct; the bowels open; the chorea as before. The child was very feeble. He was ordered to have a grain of quinine three times a day, and two ounces of wine.

On the 11th the irregular movements were diminished, but the rash was still present.

On the 22nd the rash was nearly gone, but the child was very feeble; the general movements were better, but the tongue was especially affected; the child being scarcely able to speak, and the tongue was jerked out for a moment, if protruded at all.

On the 25th he was not so well. His friends had brought sweets for him; and he had been taken out of bed, imperfectly clothed. Vomiting followed, the pulse became rapid, and he became also pale and prostrate. At the base of the heart a friction-sound was very distinct, and there was a systolic *bruit* below the nipple. He was ordered ten minims of aromatic spirit of ammonia in water every four hours.

On the 28th he was very ill, anæmic, and prostrate; the friction-sound was as distinct as before. Ten minims of the tincture of sesquichloride of iron were ordered in water three times a day; and the wine was continued.

On the 30th he died suddenly.

Inspection was made on the 1st December. The lungs were emphysematous at the edges; the lower lobes congested, soft, and dense. The heart was enlarged; the whole pericardium was covered with an adherent layer of lymph, but the adhesions easily separated. In the right auricle was an *ante mortem* clot. Minute vegetations were found around the whole of the mitral valve, and upon the aortic crescents. The liver, spleen, and kidneys were healthy; the mesenteric glands were slightly enlarged. There were patches of lymph both in the pleura and pericardium.

REMARKS. This patient on his first admission resembled one with ordinary chorea; and, although he had experienced a fright, the pain in the head and in the limbs were remarked as being probably of a rheumatic character. On his second admission, he was more than usually prostrate, the pulse was very compressible; the pupils widely dilated, and there was manifest affection of the heart; still there was no pain whatever, except slight pain in the head after some wine had been given; and no febrile disturbance, but an unwillingness to take nourishment or to be in any way disturbed. The choreal movements subsided, and he regained a little strength; but after fresh exposure to cold, and the administration of improper diet, the heart became so enfeebled by the renewed attack of pericarditis, that death took place suddenly from syncope.

The erythema appeared to be uninfluenced by the renewed pericarditis; neither could we trace any connection between it and the fatal termination. The presence of erythema marginatum and circinatum is not common in acute rheumatism; and in patients thus affected under my care several years ago, bright patches of erythema marginatum appeared during the acute symptoms, and, as the rheumatic affection subsided, gave place to purpurous spots. The history and progress of the case entirely confirmed the following remark of Wilson, in his work on *Diseases of the Skin*. "I have before me the notes of a case of this form of erythema associated with acute rheumatism which occurred in the hospital practice of Dr. Watson. The spots were first developed on the abdomen, and quickly spread from this point as from a centre, until they had occupied with their curves the whole surface of the trunk of the body and limbs. The case in other respects presented no characters different from ordinary rheumatism; the characters of the latter were neither aggravated nor relieved by the invasion, and it appeared to be developed in connection with augmented perspiration." Again, he states that in erythema marginatum "there is a greater degree of congestion of the skin than in the preceding (erythema circinatum), there is a deeper but variable tint of redness, which frequently approaches to a purplish hue; the border of the circles is more raised, and slightly papular, and the margin is well defined."