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MISCELLANEOUS

CONTRIBUTIONS TO THE STUDY OF
PATHOLOGY.

BY

JOHN W. OGLE, M.D.,
PHYSICIAN AND LECTURER ON PATHOLOGY, ST. GEORGE'S HOSPITAL.

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HAVING from time to time during the last two or three years collected material from our hospital books for clinical and pathological lectures, I propose in this series to place on record some of the cases from that source which have furnished me with a basis for my lectures.¹ I shall also incorporate with them a few other cases which have come under my own notice bearing on the subject in hand, and append allusions to any cases from other quarters which may appear specially illustrative of it. The instances of chorea which I have placed in Chapter the *First* I had already prepared and intended to have supplied (now nearly a year ago) to this Review, but postponed them on ascertaining that my friend Dr. Tuckwell, of Oxford, was engaged upon the observations which, in connection with the interesting case of fatal maniacal chorea, were published in the number for October last.² I propose to add, by way of short notes upon the individual cases, such observations as each one may suggest, and at the end of the chapter comment upon them as a whole.

¹ The cases which I have prepared for this series are cases of chorea, of fatal tetanus, and of fatal poisoning.

² I shall append to this chapter the details of a chronic but severe case of maniacal chorea in a pregnant unmarried girl, which not long ago came under my care at the hospital.

CHAPTER I.

Remarks on Chorea Sancti Viti, including the History, Course, and Termination of Sixteen Fatal Cases, and also certain details of Out-patient and other Cases which were not fatal.

CASE 1.—*Chorea ; pregnancy ; fibrinous deposits on the heart's valves.*¹

Anne G—, æt. 23, pregnant for the second time, was admitted July 21st, 1841, with chorea, which had been apparently brought on by a fright. She was confined forty-seven hours before death. No further particulars are recorded, except that she died August 30th.

Post-mortem examination.—*Cranium.*—Pia mater much congested, especially over the cerebellum; brain much congested; its ventricles of natural size, containing only a slight amount of fluid.

Spinal cord healthy; intra-vertebral veins very congested. Whole of brain and spinal cord rather softened, but this probably owing to great heat of temperature.

Thorax.—Heart's walls softened; *the tricuspid valve had, on its segments, several soft fibrinous granulations, easily removable.*

Abdomen.—The right kidney and ureter were wanting, but the corresponding supra-renal capsule was in its natural position; the bladder had only one urethral aperture; the uterus was contracted to the size of a foetus' head; the corpus luteum unusually small, and the coats of the Graafian vesicle could scarcely be seen within the yellow matter.

Remarks.—As points worthy of notice in the history of this case, I would draw attention to the pregnant condition of the patient, and to the fright which she experienced; both being circumstances generally acknowledged as frequently instrumental in the causation of choreic affections. Amongst the anatomical characters presented after death worthy of consideration were the congestion of the nervous centres, and the condition of the heart's valves. The softening of the spinal cord need not be looked upon as other than a result of post-mortem change. The absence of the right kidney, though of course without any possible connection with the disease which the patient suffered from, is a fact worthy of notice² (149).

CASE 2.—*Chorea ; congestion of the brain ; unusual amount of faecal accumulation in and adherent to the intestines.*

Emma L—, a maid-servant, æt. 17, was admitted November 16th, 1842, with violent chorea, which had been coming on gradually for the previous fortnight. The catamenia had been absent since

¹ This case I find has been related by Dr. Robert Lee, in his "Clinical Midwifery," 1848, p. 112.

² We have the history of several cases in our hospital records, in which absence or malformation of a kidney existed.

August, but then was scanty. She had not been frightened and no cause of the disease could be given. The pulse was quick and the tongue coated, and thirst was complained of. She had had no medicine excepting some purgative pills. Two three-grain doses of calomel, followed by a dose of senna, were given, and a warm bath ordered. As on the next day the bowels had not been opened, the calomel and senna were repeated, also the warm bath. Two days after admission the pulse was more feeble and quick. She was quieter, though she had had no sleep, and been very violent in the night. A large-sized evacuation had followed the enema. The choreic movements rather quickly ceased, and she became comatose, and died in the middle of the following night.

Post-mortem examination.—*Cranium.*—Great congestion of the vessels of the brain existed; there was slight serous effusion at the base of the brain, and the outer parts of the brain were much darker than usual; the bloody puncta in the white parts were much more numerous than natural; ventricles of natural size. No other morbid appearance.

Spinal canal.—Congestion of the posterior vertebral veins existed; and slight effusion of serum in the theca vertebralis; the substance of the spinal cord was congested. No other morbid appearance.

Thorax.—The right side of the heart was gorged with blood, and slight hypertrophy of the left ventricle existed; the lungs were adherent to the chest walls. No valvular disease.

Abdomen.—The small intestines from the jejunum to the ileo-cæcal valve were filled with fæces, very tenacious, and in many parts so adherent to the bowel as only to be removed with much difficulty; the large bowel also was filled with fæcal matter; the lining of the cæcum and ascending colon very congested; the peritoneum everywhere was very congested; the uterus and ovaries were *unusually large*,¹ the former very congested, as also the vagina; the ovaria containing several cysts.

Remarks.—In this case, which followed a very rapid course, there appears to have been no history of fright or of rheumatism; neither were the heart's valves found after death to have been affected. Amongst the noticeable post-mortem appearances are the congestion of the brain and spinal cord; the remarkable loading of the small bowel with fæcal matter, unusually adherent as it was to its walls; also the loading of the large bowel, which was congested; also the congestion of the peritoneum and of the uterine organs (75).

CASE 3.—*Chorea; diseased clavicle; fibrinous deposits on the heart's valves; fæces adherent to the colon.*

Mary K—, æt. 15, was admitted November 6th, 1844. She had enjoyed good health until twelve years of age, when before one

¹ Much larger than in those who have borne children,

of the catamenial periods she was attacked by chorea, commencing gradually and becoming severe, at first affecting one side chiefly, then becoming general. The movements ceased during the night. She was often drowsy, and felt pain across the forehead. The abdominal organs appeared to be natural. She got well in two months by taking tonics, purgatives, and sedatives. About two months afterwards she had a *second* severe attack, preceded by drowsiness, and recovered under the same remedies. The catamenia then appeared, were regular for eight months, and the girl enjoyed good health. Afterwards menstruation became irregular, and finally ceased; and after three months the involuntary movements returned.

She came into hospital with slight chorea, which increased, coming on in paroxysms, leaving great exhaustion. She died, quite worn out, November 24th. Before death she complained of pain like rheumatism about the left wrist and the right side of the chest.

Post-mortem examination.—*Cranium.*—The brain was wet, otherwise it was natural.

Spinal canal.—The veins of the cord were much congested, otherwise the cord was quite natural.

Thorax.—The clavicle was denuded of periosteum, having an abscess under the pectoral muscles in connection with it; the lungs were condensed posteriorly; *fringes of fibrine-coagulum were found on the auricular side of the mitral valve curtains.*

Abdomen.—Much light-coloured fæces were found adherent to the inner surface of the colon, otherwise the abdominal contents were natural; the generative organs were vascular.

Remarks.—In this case the recurrence of the malady three times (with distinct intervals) is to be noticed; the two first attacks, at any rate, appearing to have some definitive relation to the uterine functions; also the headache and tendency to drowsiness, and after death the congestion of the spinal cord; also the condition of the heart's valves. The abscess about the clavicle appears to have been unnoticed during life (258).

CASE. 4.—*Chorea; congestion of the brain; fibrinous deposits on the heart's valves.*

Mary H—, æt 26, a married woman with two children, the youngest being æt. 4, was admitted January 8th, 1845. She had complained of pains in the head since her last confinement; shortly afterwards she had twitchings and jactitations of the left side, generally not severe, but sometimes so sudden as "to take her off her legs." The movements were worse when the headache was bad, and also worse when recumbent. She had had rheumatic fever two months previously and recovered, and about ten days afterwards she was suddenly thrown down in the park by sudden jactitations on the

right side of her body. These then gradually affected the other side of the body and increased.

Some days before admission she had had no sleep, and had dysphagia. For a long period she had had hæmorrhage for a week at a time every fortnight.

When admitted the face was flushed and hot; jactitations were violent all over the body equally, and she could hardly speak or swallow. She was quite sensible, and complained of pain in the head; the pupils acted readily; the pulse was frequent, but almost imperceptible. The tongue was coated; the bowels open.

Fetid gums were ordered, and ordinary diet and porter given.

On the day following pain in the head was very bad. Calomel and opium were given every four hours, and a turpentine enema administered; the head was shaved and ice applied. The bowels acted twice after the injection. She slept in the night a quarter of an hour, and then the jactitations ceased; they again came on when she awoke. The calomel and opium were repeated.

On the 10th the pulse was 140; she slept in the night, and on the following morning (the 11th) she was noticed to be drowsy. The calomel and opium were omitted; she became exhausted, and the pulse much slower and weak. She sank and died the same day.

Post-mortem examination.—*Cranium.*—The scalp vessels were gorged with blood, as also the meningeal veins. The cerebral membranes were healthy. The grey substance of the brain was dark, and the puncta large and numerous. The pons Varolii and medulla oblongata were very congested. Their substance was firm.

Thorax.—The lungs were congested posteriorly. *Slight fibrinous deposit existed round the mitral orifice of the heart on the auricular surface.*

Abdomen.—The uterus was large and hard, and its cervix could hardly be cut, but no scirrhus deposit was met with. The neck and lips of the uterus were much, but superficially, ulcerated. Extravasated blood existed in the ovaries, in cysts.

The other organs were healthy.

Remarks.—Notice in this case the pains in the head, to which treatment was directed, the existence of dysphagia, and the previous existence of rheumatic fever. After death the congestion of the nervous centres (the spinal cord unfortunately being not examined), the state of the heart's valves, and the condition of the uterine organs are noticeable (10).

CASE 5.—*Chorea; areolar tissue inflammation and erysipelas; abscess of the mediastinum, and empyema.*

Anne M—, æt. 17, was admitted October 15th, 1845. Six or seven months previously she had had a fright, which deprived her of movement or speech for a quarter of an hour, and afterwards she had

symptoms of chorea, with twitching of the muscles of the face and upper limbs. Catamenia absent ever since. She had ascarides. There had been no previous attack of chorea.

On admission the face was flushed, the movements very troublesome; the heart's sounds were natural, but its action was quick; breathing natural but hurried.

Iron and purgatives were given, and morphia subsequently to procure sleep.

A swelling existed on one of the wrist-joints from frequent movements, and there was soreness of the back and limbs. The symptoms of chorea were almost instantly relieved by a water-bed following a warm bath, but she complained of a "pricking pain" at the heart, and a loud bruit came on *with both cardiac sounds*—at the apex loudest with the first sound, loudest at the base and downwards towards the aortic valves with the second sound.

Calomel and opium, and afterwards quinia and belladonna, were administered.

October 31st.—It was noted that the chorea had almost ceased, the chest symptoms increasing. Dyspnœa was oppressive; there was short cough, and expectoration; the pulse was irregular and quick; the fingers almost constantly flexed, thumbs drawn into the palms.

November 3rd.—So weak as to require stimulants.

5th.—The heart's bruit had *disappeared*, but the left side of the chest was dull, and not rising on inspiration. She became worse and dyspnœa increased.

7th.—Erysipelas of the ankle set in, and she became weaker until she died; a slight return of chorea came on two days before death, which occurred November 12th.

Post-mortem examination.—Sloughs on the surface, and erysipelas.

Thorax.—An abscess was found in the anterior mediastinum, and pus in the left pleural sac. The lungs were compressed, and without air. The heart was healthy in all respects.

Cranium.—The brain was natural.

Spinal column.—Much fluid existed in the arachnoid cavity of the spinal cord; otherwise the cord was natural. A small abscess existed in connection with an intervertebral cartilage just below the diaphragm.

Remarks.—Notice in this case the fright as the assigned cause, and absence of catamenia since the commencement of the attack. The abscess of the mediastinum and the empyema were probably of pyæmic origin, and connected with the bed-sores. Unfortunately, the wrist-joints were not examined after death. The *disappearance* of the cardiac murmurs must not be disregarded (261).

CASE 6.—*Chorea; liability to rheumatic fever; old pericarditis; fibrinous deposit on the heart's valves. Softening of the spinal cord.*

George S—, æt. 19, was admitted June 27th, 1850, unable to stand or walk. It was stated that he returned from work on the 20th complaining of pains in the knees, which had since then swelled. He had had several attacks of rheumatic fever since he was twelve years old. On the 24th involuntary movements of the hands and legs had begun, and had increased ever since. On admission the movements were very decided, but not very frequent or severe, and there was a vacant and painful expression of face. The heart's action was excited and its sounds nowhere very distinct; a well-marked bruit existed at the point where the apex was felt beating. The urine was very loaded, bowels relaxed, tongue whitish. He was ordered half a grain of tartar emetic every four hours, under which the movements became much controlled. He put out his tongue without much difficulty, but the painful, almost sardonic, countenance continued. On the evening of the 30th he became more restless, and at times delirious; he answered questions with more difficulty, and the choreic movements became more frequent. He had to be placed on a water-bed to prevent the evil effects of friction. Calomel and opium were given, but he became worse, and would at times almost jerk himself out of bed. For two days he was passing his evacuations involuntarily. He quickly emaciated, and sank and died July 4th.

Post-mortem examination.—Cranium.—The sinuses of the dura mater and the cerebral and meningeal vessels were full of blood. The brain was tolerably firm throughout, but very congested, the "puncta vasculosa" being very large and many. The ventricles were nearly empty.

Spinal canal.—The spinal veins were very distended with blood. The whole spinal cord was rather softer and more moist than natural, and opposite the third or fourth upper dorsal vertebræ it was completely broken down and almost diffuent.

Thorax.—The pericardium was universally and firmly adherent. The left ventricle of the heart was firmly contracted; its other cavities contained small coagula. *The margin of the left auriculo-ventricular opening was fringed with a row of beads of firm fibrine.* The other valves were healthy. Both lungs were loaded with blood, and their bases contained patches of hæmorrhage.

Abdomen.—The various organs were natural.

Remarks.—Observe the tendency to rheumatic fever, and the existence of the cardiac bruit, also the delirium. Among after-death appearances the softening of the spinal cord, the state of the heart's valves and of the pericardium, and the hæmorrhage into the lung are to be noticed (113).

CASE 7.—*Chorea ; apparent softening of portions of the spinal cord.*

Mary W—, æt. 17, was admitted with chorea November 24th, 1855. She was emaciated, and had never menstruated. She had been quite well until five or six days previously, when she experienced slight jerkings of the limbs, which gradually increased in frequency and severity. There was no history of any fright, and she had never had any "fits." Her complexion was flushed. The tongue was moist and fissured. The pulse was full and soft, and the skin warm. At times the jerking was absent for a period of the day, but returned at night. She was perfectly rational. Morphia at night was prescribed, and four grains of sulphate of zinc every six hours, which was subsequently increased. Two days after admission she was talking incoherently and in a hysterical manner, and she refused to take medicines. She became exhausted by the constant jactitations, and chloroform was exhibited, which speedily acted, and for a time quieted her; but the movements again returned, and the chloroform was again required.

At 10 a.m. on the 28th she became stertorous and the breathing hurried; absence of all movements ensued, and she sank and died in two hours.

Post-mortem examination.—Cranium.—The bones were natural, and the brain and its membranes were quite healthy.

Spinal column.—The bones were natural; the central parts of the dorsal and the upper parts of the cervical portions of the cord appeared to be somewhat softer than they ought to be; otherwise nothing of note was found.

Thorax.—The heart and lungs were healthy.

All the other parts of the body were natural.

Remarks.—In this case there is no mention of fright as a supposed cause. The catamenia were defective. The case illustrates the relationship of the affection to, or its coincidence with, hysteria, and to a certain degree the periodicity which pertains in some instances. The sudden stertor which came on, and after death the softening of the spinal cord, are to be observed; also that the brain was natural (309).

CASE 8.—*Chorea ; abscesses beneath the integument.*

Mary A. R—, æt. 7, was admitted with chorea, October 10th, 1860. She was a delicate-looking child, and very irritable, and had always been considered nervous and excitable.

Three weeks before admission she had been pushed into a ditch and greatly frightened. She remained greatly excited, and ten days afterwards she became affected by choreic movements in the limbs of both sides; the speech also became embarrassed. The bowels had been confined. The tongue was furred. The sounds and impulse of the heart

were natural. An enema was administered, and antimonial wine with nitrate of potash given in solution, and ordinary diet prescribed.

At the end of about a week nausea and vomiting were produced, and the spasmodic movements were less violent. Sulphate of zinc and valerian were subsequently given, but apparently without advantage; to this sulphate of iron was added. Friction of the hands had been so great that the skin was to a great degree rubbed off, and the hands had to be fastened down. Subsequently the choreic movements were constant and no sleep was procured. Opium and antimony were given every four hours; later on an abscess was formed under the integuments of the chest, near the shoulder. This was opened by means of poultices. Wine and bark were ordered.

At the beginning of November redness of one heel was observed, and an abscess at that place eventually formed. The abscess on the thorax also discharged blood, and she became very low, with sordes on the lips. She sank and died November 6th, the choreic movements having continued to the last.

Post-mortem examination.—Cranium and spinal column.—The brain and its membranes, as also the spinal cord and its coverings, were natural.

Thorax and abdomen.—There was a large cavity over the pectoralis muscle, extending into the axilla from the clavicle to the seventh rib. The lungs were very void of blood. The heart was natural. The abdominal organs were natural.

An abscess also existed over the fibula, near the ankle-joint.

All the tissues of the body were very pale.

Remarks.—In this case a history of fright is given. The abscesses under the integuments are to be noticed. The nervous centres were natural (295).

CASE 9.—*Chorea; death after coma and convulsions, following an attack of scarlet (?) fever; plugging of the carotid artery by fibrine.*

Edith S—, æt. 11, was admitted into the hospital October 23rd, 1861, with slight chorea, affecting chiefly the *left* side (of three weeks' standing), which was said to have followed a quarrel in which she was engaged. Her general health was good; but her father had been subject to epilepsy, and had died of aneurysm. The bowels were much loaded, and she was purged and treated by generous diet and stimulants. After a time fever and sore throat (? *scarlet fever*) came on, but without any eruption on the surface, and was attended by an albuminous state of the urine. An epileptic attack came on, and death shortly followed (Nov. 29th).

Post-mortem examination.—Cranium.—The brain was anæmic; there was no excess of ventricular fluid. The carotid artery in the cavernous sinus, on the left side, as far as the origin of the ophthalmic artery, was full of firm fibrinous coagulum.

Neck and thorax.—The heart and other organs were natural, except that the trachea was lined by soft, fibrinous exudation, the heart's cavities being full of yellow blood-coagulum; an abscess existed in the neck about the cervical glands.

Abdomen.—The kidneys were large, congested, and dripping with blood.

Remarks.—Whether the plugging of the carotid artery in this case was the result of embolism is uncertain. Possibly some fibrinous deposit may have existed on the heart's valves or lining, and been overlooked; or it may have once existed during life, and been removed before death¹ (288).

CASE 10.—*Chorea following scarlet (?) fever; congestion of the brain; fibrinous deposits on the heart's valves; recent pericarditis.*

Ann H—, æt. 9, was admitted March 5th, 1862. She had had chorea two years previously, following a fright, which quite yielded to treatment; and she went on well until November, in 1861, when she had what was called *scarlet* fever, and since then had had pains in the limbs and ankles, which had latterly been worse. Ten days before admission the chorea again came on, preventing sleep for several nights; when admitted the tongue was coated, and the pulse 76; urine turbid and scanty; a loud systolic bruit existed at the apex of the heart; the choreic movements were most severe, and she ground her teeth loudly; if the movements ceased at all she would often scream.

Purgatives, iod. of potass., bark, and morphia at night, were ordered.

No improvement occurred, and on the 7th she passed no urine; on the 8th one sixteenth of a grain of strychnia was given every six hours, and during that and the next day some diminution of convulsions occurred, but bed-sores owing to friction began to form. She became very low, and wine had to be given with quinine, in addition to morphia at night. The strychnia was omitted. The movements became less as she became weaker, and she died March 14th.

Post-mortem examination.—*Thorax.*—The lower parts of one lung were hepatized. *The inner surface of the mitral valve flaps was beaded with recent blood-stained fibrine.* Slight indications of recent pericarditis existed.

Abdomen.—The kidneys were vascular; other organs natural.

Cranium.—The vessels on the surface and in the substance of the brain were very full of blood; the brain otherwise natural.

Spinal cord.—Flakes of red coagulum were adherent to the side of the spinal dura mater (supposed to be of post-mortem origin), and the neighbouring veins very full of blood. The inside of the dura mater was of a dull red colour, but quite smooth and shining; the

¹ This case has been related by myself in connection with the plugging of the carotid vessel in the number of this Review for October, 1865 (see page 499).

pia mater and cord itself were natural.¹ Numbers of small recent blood clots were met with beneath the periosteum covering the central parts of the bodies of all the dorsal vertebræ, and were seen on removing the spinal cord.

Remarks.—Notice the history of a previous attack of chorea from fright, the existence of so-called scarlet fever (? rheumatic), followed by pains in the limbs, preceding this, the second attack. Notice also the cardiac bruit, and after death the condition of the heart's valves, the fulness of the cerebral veins, the blood coagulum adherent to the dura mater and beneath the periosteum of the vertebræ. The spinal cord itself and brain were natural (71).

CASE 11.—*Maniacal chorea; epileptic attacks. Fibrinous deposits on the heart's valves.*

Mary A. M—, æt. 20, and a married woman, was admitted June 14th, 1862. She was a barmaid, and had had rheumatic fever in the winter previous, and had been ailing subsequently. She had also had two "fits" since. For five days before admission she had had chorea, and for three days but little sleep. When admitted she was in an excited state, and in something like an hysterical condition, in addition to the chorea. She was treated with zinc and valerian and iron. These movements could for a time be partially controlled by suitable stimulants. On the day following she became decidedly maniacal; but after taking several quarter-grain doses of tartar emetic, from which she vomited, she became quieter. On the next day she was again sensible, but the choreic movements continued. In the evening she had an epileptic attack, and again became violent. She soon sank, and died June 17th.

Post-mortem examination.—*Cranium.*—The cerebral veins were full of blood, and the grey matter of the brain very dark and containing many puncta.

Spinal column.—The cord was very vascular on its surface and in the substance of its grey matter, but was otherwise natural.

Thorax.—*Much recent fibrine existed, fringing the mitral valve flaps of the heart, which were also much thickened.* The other organs were natural.

Abdomen.—In the ovaries were several cysts containing blood. The cervix of the uterus was congested, and presented an appearance thought to be from ulceration:² Fallopian tubes containing pus-like fluid.

Remarks.—In the life history of this case notice the attacks of an epileptic character which had existed previously, and which recurred shortly before death; also the hysteria-like condition in which at

¹ This case has been related at length in the 'Lancet,' May 17th, 1862; see p. 515.

² The uterus and ovaries are preserved in the St. George's Hospital Pathological Museum. See 'Catalogue,' series xiv, No. 5.

one time she was. As points of pathological anatomy, the congestion of the brain, the congestion of the uterus and the cysts of the ovary, as also the state of the heart's valves, are to be regarded (164).

CASE 12.—*Chorea ; nervous centres congested, fibrinous deposits on the heart's valves.*

Jane G—, æt. 16, was admitted May 27th, 1864, having been suffering from chorea three weeks, attributed to a fright. The catamenia were absent two months, and during that time she had complained of rheumatic pains and had some redness of the joints. On admission she was very thin, having been but imperfectly fed, owing to the chorea. Articulation was impossible; respiration very rapid, and loud râles existed in the bronchi. Wine and nourishment, and morphia with tartar emetic, were ordered. The muscular movements became more extreme, and she died in the evening of the day of admission.

Post-mortem examination.—*Cranium.*—The veins on the surface of the brain were full of blood, and the brain-substance very congested.

Spinal cord.—The vessels of the cord and its membranes were very congested. On section the grey matter of the cord was darker than usual, and covered with points of blood.

Thorax.—The right lung was partly hepatized. *Recent fibrinous beads existed on the mitral and aortic valve flaps of the heart, which was otherwise natural.*

Abdomen.—The spleen contained white specks of matter like tubercles; the kidneys were congested.

Remarks.—Notice the fright mentioned as the assignable cause, and after death the congestion of the nervous centres, and the state of the heart's valves (132).

CASE 13.—*Chorea ; congestion of nervous centres.*

Mary C—, a well-grown girl, æt. 15, was admitted June 30th, 1863, with violent choreic convulsions, affecting chiefly the upper limbs. These movements could for a time be partially controlled by placing the arms over the chest, and when she was steadfastly gazed at in the eyes. The tongue was much affected, and she could only speak in a monosyllabic cry, which could not always be understood. The power of swallowing was pretty good. Her expression was anxious, and her eyes often suffused with tears. The pupils were natural; the heart's sounds and movements were natural.

It appeared that, seven months previously, she had lived in a hard place, and was awakened often by shouting into her ears. This had much frightened her, and she left her situation, but had ever since been subject to twitchings of the muscles, and was by others considered "very nervous." The catamenia had appeared seven months back, and only once since, and then only very scantily.

No good arose from the use of sulphate of iron and zinc with sulphuric acid, and she was then ordered half a grain of tartar emetic in a morphia draught every four hours. Sleep came upon her at times, but never lasted long. The urine passed freely. Wine was given and the medicine continued.

On the 3rd a very restless night was reported, and the pulse was 150, and weak.

The movements only ceased a short time before death, July 4th.

Post-mortem examination.—The body and limbs were well nourished and healthy looking; excoriations of the skin over the gluteal regions and ankles existed.

Cranium.—The white substance of the brain contained many puncta, and the large blood-vessels in the ventricles were very distended; the corpora striata and optic thalami were natural.

The pons Varolii was very full of blood, giving a pink colour to the tissue, chiefly the anterior parts. The medulla oblongata was of a pink colour.

The cerebral dura mater was congested.

Spinal cord.—This was very vascular, and particularly the grey matter, and the vessels of the pia mater were large and full of blood.

Thorax.—The heart's cavities were uncontracted; its walls blood-stained, and the contained blood very fluid, otherwise nothing was noticeable in connection with it.

Abdomen.—The os uteri and vagina were bathed with pus, and showed evidences of mechanical irritation, the os uteri being also very open. The uterus and appendages were very full of blood; other organs natural.

Remarks.—Observe in this case the peculiar and exceptional manner in which the chorea movements were under voluntary control, as also that "fright" was the supposed cause of the attack; after death mark the congestion of the nervous centres, and the extreme irritation of the urinary organs (167).

CASE 14.—*Chorea; altered state of the spinal cord; fibrinous deposits on the heart's valves.*

Leopold L—, æt. 11, was admitted July 13th, 1864; he had been an in-patient with chorea, but was discharged, still suffering to some degree. The symptoms never left him, and in three weeks he returned (the disease having lasted three months, and no cause having been ascertained for it). The whole body, which was well nourished, was affected with the movements. After the use of sulphate of zinc and iron the movements became less marked, the appetite continuing fair. He subsequently relapsed, and strychnia was given (gr. $\frac{1}{6}$ th up to $\frac{1}{2}$ th) along with iron; still he became worse, began to emaciate, and arsenic was substituted for the other

medicine. The surface of the body was frequently torn with the boy's nails, and the tongue often bitten. The lips became very parched and deeply and remarkably cracked and fissured, and the motions passed involuntarily. The severity of the convulsions prevented his being lifted out of bed, and in consequence a "water-bed" was resorted to. There appeared to be also great excitability and passionateness of temper, and to some degree the paroxysms could be controlled by speaking sharply to him. He had at last to be tied down, so great were the struggling and kicking; and the hair of the back of the head became worn off. The mouth and tongue became deeply ulcerated. Belladonna and other remedies were tried in vain. He sank and died from exhaustion, retaining consciousness to the last.

Post-mortem examination.—Cranium and spinal column.—The surface and also the other parts of the brain were generally injected. The ventricles were natural. The veins within the spinal column were very distended with blood, as well those lining the spinal cavity as those of the dura mater and those covering the spinal cord itself. On section the cord did not at first present any unnatural appearance; but on minute examination portions of the grey matter were of a duller and more yellow colour than natural, and this was chiefly so towards the upper part of the cord.

Thorax.—The right pleura contained a few adhesions. The left ventricle of the heart was contracted. *Upon the inner edge of the mitral valve was a line of soft beads of fibrine, easily detached.*

The kidneys were much congested; the other abdominal organs were natural.¹

Remarks.—The congestion of the brain, the diseased state of the spinal cord, and the condition of the heart's valves are to be noticed in this case (249).

CASE 15.—*Maniacal chorea, pregnancy, intestinal worms, congestion, and softening of nervous centres, fibrinous granulations on the heart's valves.*

Harriet S—, æt. 17, a general servant, was admitted under my care, April 24th of the past year (1867), with well-marked but not severe Saint Vitus's dance, affecting the whole body, which she had suffered from since about Christmas. The catamenia had been absent three months, but before that had been regular; she had never had rheumatism. She had had measles the previous summer. She was reported also to have vomited worms of the size and shape of earth worms. She was very violent in temper, and whilst in the hospital showed this considerably. The abdomen was very large, and evidently contained a pregnant uterus; this was confirmed by the ful-

¹ This case was related by myself in the 'Transactions of the Pathological Society,' vol. xvii, p. 421: and the fissured state of the lips, illustrated by a woodcut.

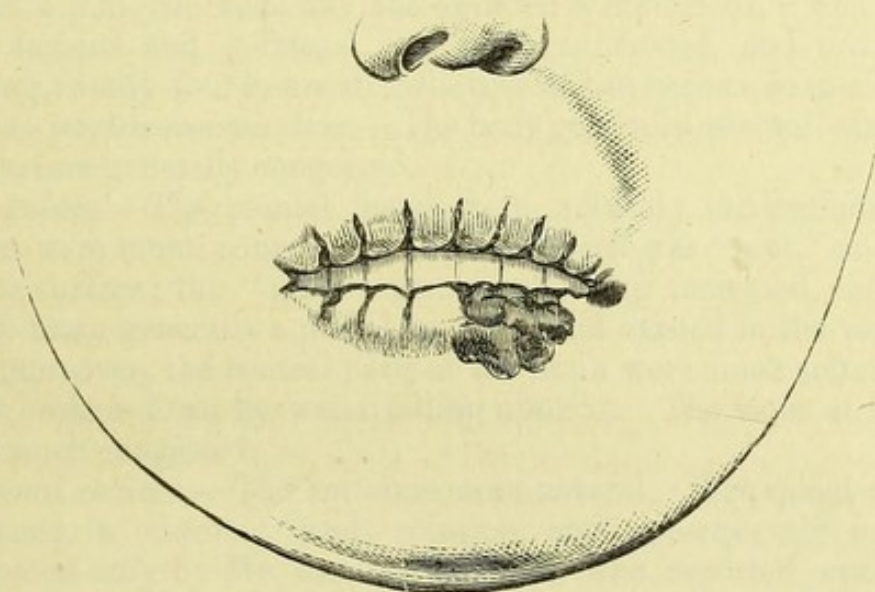
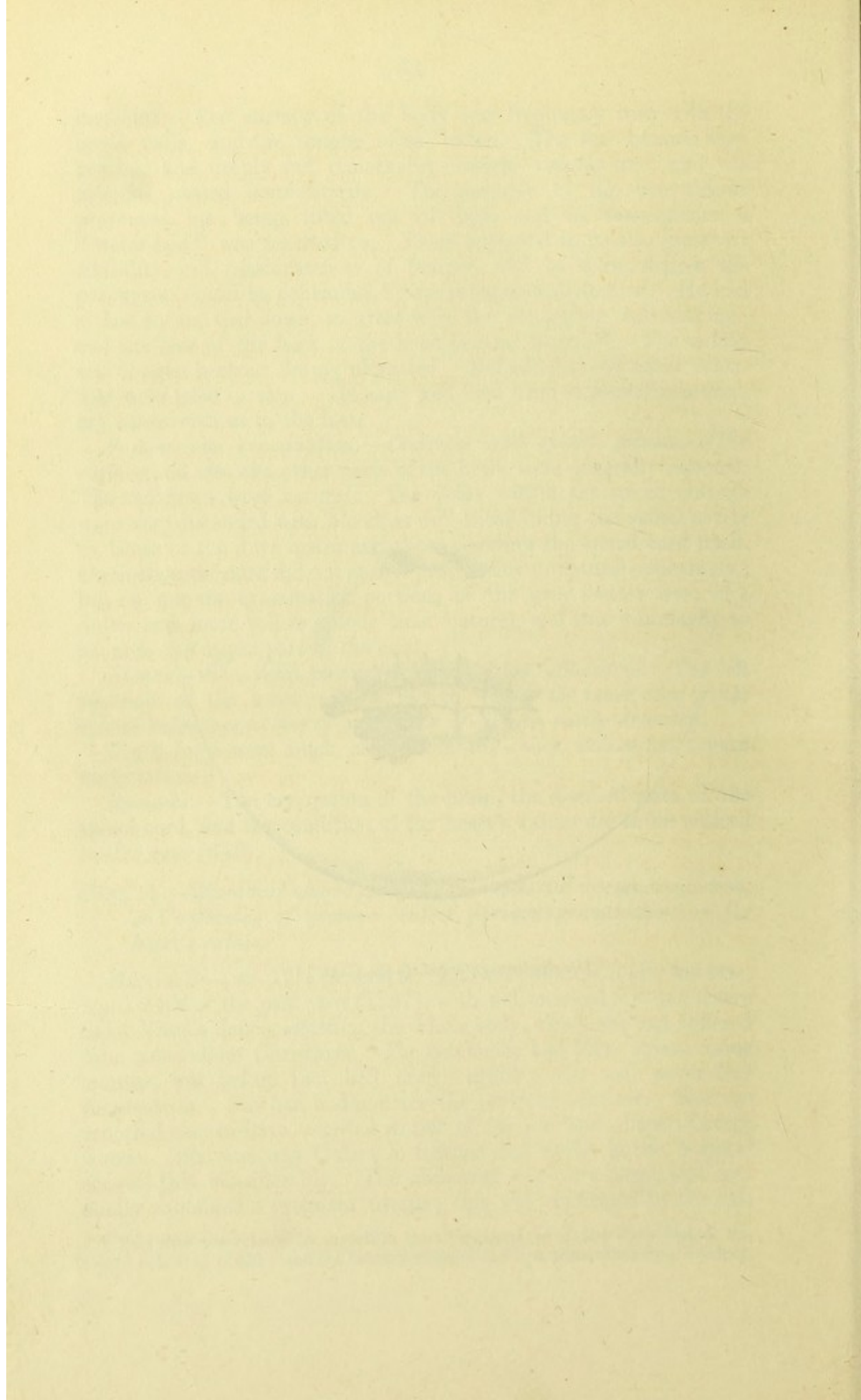


Illustration referred to in CASE 14.



ness of the mammæ, and the well-marked dark colour of the areolæ of their nipples, which were found to exist. The face was rather flushed, and the patient was evidently greatly distressed in mind about her pregnancy. The heart's action was quickened and irritable, and a systolic bruit existed. The pulse was regular, but feeble. The urine was free from albumen and sugar. Bowels confined; the pupils were *not* quite of equal size, but acted tolerably well to the light. Calomel and jalap were at once given, and subsequently the *mistura ferri co.* with valerian thrice daily, and one third of a grain of the extract of *cannabis indica* ordered every night. In the course of the evening of the 29th it was found requisite to give her morphia, as she had become more violent, and as this increased, in the middle of the night she had a quarter of a grain of acetate of morphia, and one sixtieth of a grain of sulphate of atropine injected subcutaneously. She had to have the jacket applied. The violence of the choreic movements continued unabated, and sordes were formed on the lips and tongue; she also screamed much and was evidently highly delirious. The injection was repeated May 1st, and at 4 p.m. the same day she vomited a lumbricus. She became more furious and maniacal, and more exhausted, and died in the evening, twenty-four hours after the disease had become so much worse.

Post-mortem examination.—The body generally was well nourished, the surface generally congested.

Cranium.—The cranial bones were natural; the cerebral membranes were much congested; the brain itself was "wet," and pitted on the surface; the "puncta vasculosa" being increased, and giving to the brain generally a pink hue. No fluid existed in the ventricles, and, moreover, the central parts of the brain were much softened, and easily broken down by water falling upon it. The veins at the base were much congested.

Spinal column.—The vertebræ were natural. The spinal cord was hardened in chromic acid solution, and subsequently examined *microscopically* by Mr. Lockhart Clarke, who reported upon it as follows:—In the cervical and lumbar portions of the spinal cord no appreciable alteration of structure was discovered; but in the lower part of the dorsal region, at the ninth dorsal nerves, the anterior columns were swollen, and formed a convex protuberance of considerable size. In a transverse section of the cord carried through this part, and examined under the microscope, it was very evident that extensive morbid changes had been going on, the white substance had been softened, and was now very friable under the action of chromic acid. In two or three places there were circumscribed effusions of blood, surrounded by granular exudations, which had probably occurred before the effusions.

Thorax.—The left lung was very greatly gorged with blood in patches—it however floated in water. No tubercular deposit existed. The bronchial tubes were congested, and contained much

mucus; the lower lobe of the *right* lung was in the same state. The left ventricle of the heart was contracted and empty, the right one partially contracted, and containing a decolourised clot. The structure of the heart was firm; the mitral valve-flaps were slightly thickened, and on the auricular surface of the orifice some *beads of soft fibrinous deposits of recent origin and easily removeable existed*; the other valves were natural.

Abdomen.—The liver was congested; a small fibrinous deposit existed in its right lobe, which was slightly fatty; the spleen was soft. Both kidneys were coarse, and congested, and mottled. The intestines were natural with exception of containing one ascaris lumbricoides in the duodenum. The uterus contained a foetus of about four months' period.

Remarks.—In this case we have the very unusual conjunction of four conditions which are separately apt to be looked upon as having a close connection with chorea, viz., the presence of intestinal worms, the pregnant condition, the anxious state of mind consequent on the concealed pregnancy, and fourthly, the heart-affection. The case passed through a very rapid course, and its complication with mania is worthy of note. The absence of rheumatic history is to be regarded. Amongst the pathological conditions ascertained after death the congestion of the nervous centres and the condition of the heart's valves are particularly noticeable (118).

CASE 16.—Chorea; sudden congestion of the lungs; effusion into the pericardium; fibrinous granulations on the heart's valves.

Mary A. G—, æt. 12, was admitted under my care, October 3rd of the past year (1867), with slight chorea of about six weeks' duration. She was pale and anæmic, but it was affirmed that she had never been laid up with rheumatism. A very decided rather loud and rough cardiac bruit existed, attending both the systole and diastole, and heard both at the base and apex; not particularly conducted along the large vessels.

Auscultation showed nothing unnatural about the lungs.

She was at first treated by steel in various forms, and frequently purged, and santonine was twice given in hopes of evacuating any lumbrici. She was going on much the same, when dyspnœa came on suddenly December 3rd, and the right lung became full of moist sounds. She was confined to bed, and small doses of morphia and antimony were given every four hours. On the day afterwards she had greatly improved, and was in all respects much better. The antimony was continued.

She went on improving until the 20th, when vomiting came on, and the dyspnœa and the heart's action and the pulse were greatly increased, the cardiac bruit being much intensified. Congestion of the lungs set in, and she suddenly died early on the 26th.

Post-mortem examination.—*Cranium.*—The bones were natural. The cerebral membranes were natural, but the brain itself was “wet” and anæmic; otherwise it was natural. The large vessels at its base contained much dark, only very slightly decolourised and well-adherent blood-clot.

Spinal column.—The vertebræ were natural. The spinal cord was placed in a solution of chromic acid for future examination. I have later on to give the results.

Thorax.—The lungs were very loaded with serum and somewhat solidified. *The pericardium was quite full of clear serum.* The left ventricle of the heart was contracted and empty, the right one dilated and full. Around the margin of the mitral valve orifice on the auricular surface a number of beads of soft recent fibrine were found adherent, forming a distinct ring round the edge of the orifice. A similar ring of fibrinous beads was met with around the right auriculo-ventricular aperture. Similar deposits were also found on the surface of the endocardium in several parts. The structure of the heart was natural.

Abdomen.—The liver was fatty and nutmeggy, and greatly congested; the spleen was natural; the kidneys congested.

Remarks.—In this case observe the absence of rheumatic history, the condition of the heart as ascertained during life and after death, the suddenness of attack of lung symptoms, the unexpected death. It is noticeable that the brain showed no signs of congestion (305).

Reviewing the above sixteen cases, I will now proceed to indicate certain points, suggested by their consideration, connected with that form of chorea¹ of which they are illustrations.

First of all as regards the SEX of these cases. It is generally acknowledged that chorea much more affects the female than the male sex.² This will be amply exemplified by the details of the cases of non-fatal chorea contained in the tables given later on; but among the above-detailed fatal cases this preponderance in favour of the female sex is remarkable, inasmuch as, out of the sixteen cases, we have no less than fourteen that were females. It is interesting to find that the late Dr. Bright observed that the *acute* form more affected females than males. Trousseau observes that the *rare* instances of chorea affecting persons after the age of puberty have almost exclusively occurred in women.

As to AGE, these fatal cases occurred in individuals presenting, on an average, a greater advance of life than is generally given for all cases (including fatal and non-fatal) of this variety of chorea, as

¹ I shall have the opportunity of describing one or two cases later on of other forms of chorea (not the St. Weit's dance proper) which have come under my notice.

² In Dr. Bright's experience males were more affected by chronic chorea than females.

we shall see in connection with the table of my out-patient choreic cases; for out of the sixteen fatal ones only two were under the age of ten (viz., Cases 8 and 10, which were respectively 7 and 10 years of age), whilst three were of the age of 20 and upwards (viz., Cases 1, 4, and 11), the rest being intermediate—two being aged 11, one aged 12, two aged 15, one aged 16, three aged 17, and one aged 19. The extent to which age, sex, and other so-called predisposing causes may favour attacks of chorea, will be more fully alluded to when my non-fatal cases of chorea shall have been given in an ensuing Number.

As regards the LENGTH OF TIME during which the patients had suffered from the affection before it proved fatal, it will be found that of those whose history contains information on this point, this period was, on the whole, a short one; for though in the case of one (viz., No. 13) it was possibly seven months, in another (No. 5) six or seven months, in two others (No. 14 and 15) three months, in another (No. 8) six weeks, in another (No. 16) nine weeks, in two others (Nos. 10 and 12) three weeks, in No. 2 two weeks; yet in No. 6 it was only ten days, in Nos. 7 and 10 only ten days, and in No. 11 only eight days.

As regards the fact of the patients having suffered from PREVIOUS ATTACKS of chorea or not, in only three cases have we mention of this—viz., in Case 3, in which two previous attacks occurred; in Case 10, in which one previous attack had existed; and in Case 14, wherein a relapse was suffered while the patient was in the hospital. Speaking of this well-known tendency to relapse, Romberg quotes a case in which a girl aged 9 had nine relapses, with intervals of about one year.

The details of my cases are not sufficiently explicit to show which parts of the body were, in various instances, chiefly affected.

Respecting so-called important COMPLICATIONS of the affection, it will be seen that in Cases 3 and 4 *headache and drowsiness* had been suffered. (Of course, I exclude in such complications the headache, &c., which might attend the effects of opiates and other remedies, and which might also result from exhaustion, pain, want of sleep, &c.) In one case (No. 11) *epileptic* attacks had existed; in one case (No. 9) chorea and *convulsions* followed an attack of scarlet fever; in two cases (7 and 11) *hysteria*-like symptoms; and in Case 6 *delirium* existed. In this latter case, also, the *sphincters* were mentioned as having been affected.¹ In Cases 11 and 15 (one a married woman, aged 20; the other aged 15) *mania* existed. It may here be worthy of mention that authors speak of a connection between chorea and other so-called neuroses. For example, Dr.

¹ Jules Simon observes that in chorea the sphincters may be also affected, or rather that the faecal matter is propelled by the contractions of the abdominal and visceral muscles. This would appear to be so at any rate in those cases in which there is inability to retain the urine, a somewhat rare occurrence.

Theophilus Thompson, in his article on this disease in 'Tweedies' Library of Medicine,' alludes to chorea as being, at puberty, superseded by hysteria, and this by neuralgia, seeming to depend on a similar condition of the nervous system; he also refers to chorea as inducing fatuity, epilepsy, or hemiplegia. Dr. Bright thought an analogy could be traced between chorea and other diseases of the nervous system, marked by general irritability, and remarks, "Thus, I am induced to point out a connection in this respect between chorea, hysteria, and the delirium of drunkards." Again—"In chorea that part of the nervous system which ministers to voluntary motion is chiefly affected; whilst in hysteria the nerves on which organic life and involuntary matters depend are principally irritated; and in the delirium which takes place in drunkards those portions of the brain which are particularly associated with the manifestations of thought and reason are labouring under disease." Thompson speaks of "choreic movements being mistaken for drunkenness." It is interesting to find that Youatt speaks of chorea in the dog as terminating in epilepsy, or palsy, or paralysis-agitans. Todd closely associated chorea with certain epileptic phenomena, for he was of opinion that the actual state of the nerves and nervous centres, upon which choreic hemiplegia depends, was very analogous to that which exists in the so-termed epileptic hemiplegia.

As regards the SECONDARY AFFECTIONS which supervened in the fatal cases, we have two instances (viz., 5 and 8) in which so-termed *phlegmonous* or *erysipelalous* inflammation existed. In one of these there was empyema also.

With reference to the oft-mooted question as to what links may be supposed to exist in the chain of causation of that perversion or disorder of the muscles secondarily and of the nerves primarily,¹ which results in the condition termed chorea, it may be worth while to consider how much light and instruction these fatal cases tend to afford. The histories of many of them show that some disturbance of the generative system existed, for in five cases (Nos. 3, 5, 7, 12, and 13) the catamenia were defective, and in two cases (1 and 15) pregnancy existed.² Now, it is well known that irritation of the genito-urinary system has been often looked upon as an exciting cause of the malady. Out of the six cases which Dr. Bright had known to end unfavorably, in one "the most unequivocal evidence of extreme uterine irritation was found after death;" in a second one (at the Manchester Infirmary) the patient was four months advanced in pregnancy; and in two others the patients were of an age "when

¹ Not of the MOTOR nerves alone, of course, as it is well known that the sensory nerves are oft-times also affected, as proved by the anæsthesia and sometimes hyper-æsthesia which exists.

² Later on I shall be able to quote one or two cases of non-fatal chorea, in which pregnancy existed, one being that of a woman lately under Dr. Page's care at the hospital.

uterine irritation is most likely to exist." Bright assumed that it was probable that the uterus was in many cases "the source of that general irritation which so strongly marks chorea, inasmuch as many cases were connected with irregularities in the menstrual discharge, or with amenorrhœa."

Romberg says that "the occurrence of chorea before the first supervention of the catamenia, or during amenorrhœa, or even during pregnancy, proves that the uterine system may be the source of the irritation;" and quotes three cases of the kind which came under his own notice, in all of which pregnancy existed. In one case the woman became pregnant a second time, and again had chorea. He observes that "the chorea generally commences at about the third or fourth month of pregnancy; it rarely occurs earlier, and then less frequently during the latter months." He quotes cases bearing on the question from Dr. Lever's paper "On Disorder of the Nervous System associated with Pregnancy and Parturition."¹ He remarks that it is quite exceptional to find chorea occurring after delivery, whether at the full period or premature. I find, however, a case recorded by Spiegelberg in which chorea came on in the latter half of pregnancy.² Dr. Levick, of America, in 1862, recorded three cases of chorea associated with pregnancy, and described uterine irritation as one of the causes of the disease. Quite recently Gubler and Dumont have recorded a very severe case of chorea in a woman five months pregnant, who was cured in eight days by large doses of bromide of potassium.³

Trousseau, speaking of pregnancy in connection with chorea, states that the disease is owing merely to the chlorosis which so frequently attends pregnancy.

Again, as regards MENTAL EMOTION or ALARM being influential in exciting or determining the choreic state, it will be seen that out of the sixteen cases there are eight in which fright or other emotion was supposed to have contributed to its production (viz. Cases 1, 5, 8, 9, 10, 12, 13, and 15); in others, it was either denied or not ascertained to have occurred. Some observers are inclined to protest against the idea that fright is nearly so adequate a cause of the affection as is generally imagined, but there can be no doubt of this being frequently the case, and almost every author who writes on the subject supports the supposition by authentic cases. One of the most positive and remarkable cases of this kind is quoted by Dr. Bright. It was that of a child, aged 9, who, having got well of an attack of chorea, was sleeping with his father. The father had an attack of apoplexy, which so frightened the child that "FROM THAT TIME the chorea returned." Mayo, in his 'Outlines of Human Physiology,' p. 170, relates the case of a woman who,

¹ 'Guy's Hospital Reports,' second series, vol. v and vol. vi.

² Quoted in the 'Sydenham Society's Year-Book,' 1859, p. 389.

³ See 'Bulletin de Thérap.,' 1865-8, p. 178.

during pregnancy, was greatly frightened; the alarm induced chorea in the foetus. The child grew up, but always remained choreic.

As respects the history of RHEUMATISM or rheumatic symptoms having existed, we have mention of it doubtfully in Cases 3 and 10, but decidedly in Cases 4, 6, 11, and 12; in the last instance, the rheumatic symptoms came on during the absence of the catamenia.¹ Presumably also, in Cases 1, 9, 14, and 15, rheumatism may have existed, as after death it was found (to be noticed hereafter) that cardiac affection existed. In Case 16 particular inquiry was made, and a complete denial of any previous rheumatism given, although the heart was obviously recognised as being diseased during life, and found to be so after death. At the present day we in England almost unanimously connect chorea and rheumatism together (whatever may be the mode of connection); this, no doubt, is mainly owing to the researches of Bright and Todd, following those of Bouillaud; still, there are those who have only found them to be at times coincident, and observers are much divided on the subject. I shall speak of this again when reviewing my series of non-fatal cases. In the mean time I may state that Romberg, a high authority on all nervous diseases, says that the rheumatic disposition was rarely traceable in the cases which he has observed. He, however, noted cases of chorea as being greatly affected by climate and weather, being always worse in winter; and mentions that the disease occurs more frequently in the southern than the northern climates. Peacock found that in 14 cases of chorea rheumatic or cardiac symptoms had existed in 5, but states that this proportion is probably too large. Trousseau says, that of all predisposing pathological states, rheumatism is the most marked and the least questionable: and one of the most recent French writers looks upon chorea as a manifestation in the rheumatic diathesis.

As regards the PATHOLOGICAL ANATOMY presented by the various fatal cases, we find that congestion (more or less complete) of the nervous centres (brain or spinal cord, or both), was met with in six cases (viz. 3, 4, 10, 12, 14, and 15), whilst in Case 7 there was actual softening of the spinal cord, and in Case 14 the spinal cord was otherwise affected. In Case 15 there was softening of certain parts of the brain.²

In Cases 2, 3, 4, 10, and 13, there were proofs of congestion and

¹ It is interesting to find that Dr. Todd established a connection between rheumatic fever and deranged *uterine* secretion. He stated that some of the most severe cases of rheumatic fever he had ever seen followed dysmenorrhœa. He observes, "It would seem as if, in these cases, the uterus were but imperfectly evacuated, and its contents becoming decomposed and getting into the circulation, produced a morbid state of the blood, which gives rise to the symptoms under which the patient labours, and requires for its cure the elimination of the unhealthy material by the various emunctories—a state similar and analogous to pyæmia."

² With reference to such lesions in connection with chorea and chorea-like symptoms, it will be not uninteresting briefly to quote such cases as have been pre-

other graver lesions of the genital system; in Cases 1 and 16 (as before noticed) pregnancy existed. In Case 2 the peritoneum was greatly congested, and in Cases 2 and 3 the condition of the intestines was remarkable, inasmuch as they contained fæcal matter which was in a peculiar and exceptional manner adherent to the walls of the bowel.

Coming now to the state of the HEART, it was found that out of these sixteen cases IN NO LESS THAN TEN CASES there existed more or less fibrinous deposit or granulations upon some portion of the heart's valves or lining membrane, viz. in all Cases excepting 2, 5, 7, 8, and 13; in Case 6 old pericarditis existed, and in Case 10 we have decided evidence of recent pericarditis having existed, although in this case we have no mention of a cardiac 'to-and-fro' murmur having been observed to our London Pathological Society. Thus, at page 16 of vol. v is a case of chorea following a fit, related by Dr. Hale, in which chronic disease of the cerebral dura mater was found. In a second case, which came on immediately after a fright, related by Dr. Goodfellow (see vol. xiii, p. 19), extensive softening of the brain and spinal cord was met with. In a third case, related by Dr. Broadbent, at p. 246 of the same volume, a tumour was found arising from the centre of the spinal cord.

Romberg quotes seven fatal cases in which similar organic lesions were met with after death. They are as follows:—Case 1 was quoted from Dr. Hughes' digest of 100 cases of chorea (see 'Guy's Hospital Reports,' 1846). Here the fornix and the surface of the third cerebral ventricle were softened. An OPAQUE GRANULAR DEPOSIT also existed on one of the SEMILUNAR VALVES of the heart. Case 2 was that of Dr. Bright's, already quoted. Case 3 was related by Frerichs. In this case the choreic movements existed DURING SLEEP.¹ After death the medulla oblongata was found pressed upon by an enlarged odontoid process. Case 4 was from Cruveilhier, and was combined with paralysis. Softening of the occipital cerebral convolutions and atrophy and degeneration of the spinal cord were found. The remaining cases were from Romberg's own practice. In one case, aged 76, chorea had existed since she was six years old. Softening of the crura-cerebri and atrophy of the brain were met with. In Case 6 the central parts of the brain and corpora quadrigemina, and in Case 7 softening of the spinal cord, were found. Dr. Peacock (see number of this Review for Oct., 1863) records the fatal case of a boy, aged 11, who died in a comatose state six days after admission into the hospital with chorea, which had been observed one month. After death the arachnoid membrane, on the surface of the hemispheres, was found opaque, and much serum existed beneath it and in the ventricles. The spinal cord was not examined. The pericardium and heart were healthy, except that two of the aortic valve flaps were congenitally united. Recently Mr. Hine has recorded, in the 'Medical Times and Gazette,' August 5, 1865, the case of a pregnant woman who had chorea, apparently caused by emotion, in whom softening of the spinal cord was found. Dr. Aitken, in a case of chorea, found ('Glasgow Med. Journal,' vol. i.) that the sp. gr. of the corpus striatum and optic thalamus was decidedly greater on one side than on the other. Dr. Chambers, in his 'Lectures,' pp. 361 and 369, mentions that in three fatal cases of chorea he found after death that the nervous system was perfectly healthy. In a fourth fatal case tubercles were found in the spinal cord. Skoda, speaking of softening of the septum lucidum and fornix, sometimes found in fatal cases of chorea, suggests that an EXUDATION in the spinal cord or in the brain is the immediate cause of the disease ('Canstatt's Jahrb.,' vol. iii, p. 57). I propose to examine the records of all fatal choreic cases which I can find, to ascertain in what proportion organic lesions existed.

¹ Marshall Hall observed that sometimes the movements continued during sleep if dreaming existed; and Youatt noticed that in the dog if the sleep was disturbed choreic movements might continue.

served during life.¹ It is noticeable that in several of these cases in which after death fibrinous deposit on the heart's valves existed, we have no record of the occurrence of any valvular murmur whatever during life. It is worthy of comment that in several of those cases in which, after death, fibrinous deposits on the heart's valves, &c., were discovered, we have no record of the existence of any valvular murmurs whatever before death; indeed, only in Cases 9, 15, and 16, does such a record exist. In Case 5 we have a distinct notice of a double valvular bruit at the base of the heart having existed and having subsequently disappeared;² in this case we have no mention of any fibrinous deposit on, or other affection of, the heart's valves. In Case 16 the pericardium was found to be distended with serum, and possibly this caused the patient's death. This sequel in cases of chorea is, of course, of uncommon occurrence. It is, however, mentioned by Dr. T. Thompson, in his article above quoted, that in chorea serous effusions into the arachnoid cavity and into the PERICARDIUM may come on.

Concerning the presence of the fibrinous granulations or fringes so often met with in the heart's valves in these cases, the readers of the case of maniacal chorea described by Dr. Tuckwell in this Review (to which I have alluded at page 208) will remember that that gentleman drew marked and renewed attention to the probable existence of this phenomenon in the majority of cases of fatal chorea; also to the fact that softening of the brain or spinal cord frequently was found in such cases, and will remember that he supposed that the softening of the nerve centres often resulted from the plugging up of the cerebral and spinal arteries, and accounted—as would irritation of the same parts from a similar cause—for the chorea. Dr. Kirkes had, in 1863, pointed out that when chorea and acute rheumatism are associated the connection really was between chorea and valvular disease of the heart; and Dr. Tuckwell shows that Dr. Kirkes had been the first to indicate that chorea “was the result of irritation produced in the nerve centres by fine molecular particles of fibrine which are set free from an inflamed endocardium, and washed by the blood-current into the capillaries of those centres.” Dr. Kirkes, with

¹ I lately had a most interesting instance of the rapid way in which pericardial friction sounds may come on. The patient was brought into the hospital for rheumatic fever, and was examined very closely. The heart's action was increased, but, though carefully listened for, no bruit (exo- or endo-cardial) could be detected. In two hours afterwards a positive and distinct friction sound was heard all over the base of the heart. That this suddenly occurring pericarditis may be swiftly fatal also is shown by a case of chorea, related by Dr. T. K. Chambers in his ‘Lectures,’ p. 173, in which loud friction sound came on in the course of the day, and the patient died of pericarditis in the evening.

² Such disappearance of cardiac murmurs in chorea might take place if the bruit was resulting from that condition called anæmic, or from some irregularity (of choreic origin) of muscular or tendinous fibres controlling the movements of the heart's valves or the exit of the apertures of valves, or even, in some cases, where owing to recent fibrinous deposits connected with them, such bodies are liable to be washed off by the blood stream.

other observers, had noticed the occurrence of softening of the nerve centres in this affection, but erroneously thought that all such were cases of pale or white softening, and did not attribute it to embolism of large vessels, as does Tuckwell, but rather to "the imperfect nutrition of the nervous centres, or the unhealthy state of blood which affords the development of the chorea."

It will be seen, on reading Dr. Kirkes' paper, that he does not, in forming this view, repudiate the influence assigned to supposed exciting or outward causes; for he remarks that, owing to this assumed defective nutrition of nerve centres, they become unnaturally capable of being affected and excited by what would, in a state of health, prove to be but ordinary impressions; and with this tendency they are liable additionally to be affected by blood rendered irritating by rheumatic affections or by disease of the heart's valves. With the above views of Kirkes and Tuckwell in mind, the large proportion of cases which I have recorded, in which the heart's valves are affected, will prove, I think, of considerable interest. Still, for my own part, I am not at present prepared to give adhesion to a necessary connection between even the grave and fatal cases of chorea and embolism; whether the embolism consist in plugging up of large, tangible vessels, or in the circulation of minute atoms of fibrine within the minute capillaries of the nervous structures giving rise to "IRRITATION;" although, on the whole, I incline to think the latter supposition is, perhaps, the more tenable.

I venture to throw out some considerations, as a contribution to the question, to which I have been led by thinking over the subject.

In the first place, either view necessitates the division of all true choreic cases, not merely into those that are and those that are not fatal, but into those that depend upon embolism and those which do not; although in each kind of case the phenomena be not only so alike, but so identical, that until death it would be impossible to predicate of any one instance to which category it pertained.

Dr. Todd had suggested that the choreic cases of adult life, and more advanced ages, might not be due to the same morbid condition "as that which gives rise to the ordinary choreic convulsions of early life." Dr. Tuckwell suggests that, possibly, the causation of the chorea in fatal cases may be different from that of the non-fatal ones; that, in fact, there may be a centric and an excentric chorea; but I think he seems inclined to suppose, though he leaves it an open question,¹ that in all kinds of chorea we have the de-

¹ He says, "We have not as yet sufficient evidence to justify the conclusion that embolism is a direct cause of severe chorea, but we have enough to warrant the strong suspicion that such may be the case, and to fix the attention of medical men on the heart and blood-vessels in the future examination of all fatal cases." Dr. Tuckwell will, I hope, excuse my quoting from a letter which he wrote to me some months ago on the subject. He observed:

"I was glad to find in the post-mortem you made in your fatal case of chorea [the case referred to at foot-note of page 220] that the mitral valve was studded with beads of soft fibrine. I have a notion that, if the valves of the heart are

position of fibrine on the heart and valves, which, being removed and transported, produces the cerebral or spinal embolism which is the cause of the affection. Certainly, as both he and Kirkes suggested,¹ inquiry led to the finding of this deposit in a very large per-centage of fatal cases, and very careful inquiry, instituted WITH THE OBJECT OF FINDING SUCH, may lead to their discovery in a still larger proportion. Still, even if they were met with in ALL cases, something more, I would with deference submit, would be required to warrant the inference being inevitable that the essential cause of chorea was embolism; and for the following reasons:—Supposing that chorea were owing to the presence of MOLECULAR fibrinous material in the blood, circulating in all directions and parts, as fibrine would do in this form of mechanical subdivision, I would ask how we could find an explanation of the fact that chorea (under conditions operating so generally) is so frequently unsymmetrical and one-sided as it is, or even confined, it may be, to certain muscles or series of muscles. Should we not of necessity get other and graver motor symptoms than merely defective harmony of associated movements? I suppose that the “ONE-SIDED” or mere local effect from such a MECHANICAL cause would be considered as being not at all analogous to those similarly partial effects produced by certain chemical alterations of the blood (such as we have often in cases of uræmia, in rheumatic, neuralgic, miasmatic, and other blood-poisons strictly so called), in which the supposed materies morbi has what may be termed an affinity for certain parts or tissues, or in which, so to say, such tissues appear to ATTRACT the baneful elements.

Again, when by experiment fibrine, in a minutely divided state, or any other finely powdered substance, is made to circulate in the blood-current, do we meet with results at all comparable with the symptoms *carefully* examined in all fatal cases of chorea, similar, though sometimes very delicate, beads will be found. If you should open a body in which this appearance is not present, will you kindly tell me? I am sure that the appearance is sometimes overlooked in these cases in the eagerness of the pathologist to find something in the spinal cord. I think I told you of a case I saw in the Hôtel Dieu, where the heart was opened as usual, and put aside as *healthy*; and when the spinal cord was sent to Robin for examination to supply Trousseau with material for a clinical lecture, a German student, who was present and poking about among the *débris* as only Germans who wear spectacles can poke, routed out the heart, and found that, when examined minutely, the mitral valve was fringed on both flaps with very fine and delicate beads of fibrine. This was shown to Trousseau, but he took no notice of it, dilating on a supposed enlargement of the capillaries of the spinal cord which had been found. Again, a woman in the fourth month of pregnancy died with bad chorea in the Vienna Hospital, and was brought down to Rokitsansky. His assistant, who made the post-mortem, dilated on the pregnancy as the cause of chorea, and took no notice of the condition of the cusps of the aortic valve, which were *covered with abundant, very delicate, beads of fibrine.* These are obviously the two cases which he quotes in his paper to which I allude.

¹ Kirkes had prophesied, as quoted by Tuckwell, “that future experience will still more positively demonstrate that an affection of the left valves of the heart, with the presence of granular vegetations upon them, is an almost invariable attendant upon chorea, *under whatever circumstances the chorea may be developed.*” The italics are my own.

of chorea? If, also, the chorea were the result of cerebral or spinal capillary embolism, surely we ought always, in fatal cases, even when such ulterior stages as suppuration and abscess are not arrived at, to encounter lesions (stasis, congestion, or other appearances met with in that condition which goes by the name of *secondary* deposit, the result of mechanical impediment) which, if they existed in such delicate tissues as those of brain or medulla, would be at once apparent. Then, if they existed at all, they would most likely, according to some, be in the neighbourhood of those parts which Dr. Todd pointed out as probably constituting the centre of volition and the centre of emotion. Where we have reason in other cases to suspect capillary embolism, have we not rather the symptoms, and also the post-mortem appearances, of pyæmia or of gangrene? I cannot call to mind a single instance of acknowledged capillary embolism attended by phenomena which could even suggest chorea. Then, again, supposing chorea to be caused by plugging of the larger cerebral or spinal vessels, how rarely in those cases in which such a state is determined to have existed, producing softening, did chorea-like symptoms arise; and how rarely have such symptoms been mentioned in cases of softening of nervous structures of any description or arising from any cause¹ (though, of course, convulsive action may have existed). How rarely, again, do choreic symptoms accompany rheumatism, a condition in which fibrinous deposits on the heart's valves so often exist. Moreover, under such a supposition as the above, how should we be able to account for that sudden occurrence of the disease as a result of mental emotion, which undoubtedly often exists, or, what is perhaps more to the purpose, for its frequently sudden disappearance or cessation,² or for the good effects at times found to attend the use of certain remedial measures? Will it ever happen, I would ask, that watching the effects of remedies of whose action physiologically we may know or learn something will give a clue as to the part of the cerebro-spinal axis affected in chorea, if, indeed, any one part is specially concerned in this affection? The chorea ought (under the above supposition), taking an average of cases, to be found mainly affecting one side in correspondence with the frequency with which embolism occurs on one side. Perhaps investigation may prove this to be so.

Again, it might be asked, if there was merely a mechanical cause

¹ Dr. Tuckwell quotes from Dr. Todd to show that cases of softening of the brain are sometimes attended by movements so choreic as to be mistaken for real chorea.

² Many cases might be quoted illustrating the rapid removal of the affection. A remarkable instance is mentioned by Skoda of severe and general chorea being cured in *five* days by tartar emetic and cold douches to the head. Dr. Guy, of King's College, observes:—"One of the worst cases of chorea which I have seen, and which combined constant restlessness and grotesque action of the muscles with mental incoherence, was cured within *ten* days by aperient medicines only." A very severe case of a form of chorea, of which I have notes—that of a young man in Derbyshire—took its leave during the time the patient was being carried to an infirmary.

(which, of course, would be constant in operation), such as embolism, why should the movements be so decidedly and universally *uninterrupted* during quiet sleep? Or why should certain peculiarities as to age or sex be considered as predisposing influences?

Recognising the frequent existence of these fibrinous deposits or granulations on the heart's valves in chorea, I should be much inclined to look upon these post-mortem appearances rather as results of some antecedent general condition of the blood, common also to the choreic condition. It is very freely recognised that this affection is frequently, in some way or other, connected with that condition of blood which obtains in what we call anæmia,¹ or that existing in rheumatic constitutions. In both of these states, we know that the fibrine of the blood is much in excess² (as also it is in pregnancy, another condition looked upon as obnoxious to chorea), and in these states we know that the fibrine (with which the blood is surcharged) is very prone to be readily precipitated, either owing to its superabundance or from other obscure and acquired properties (possibly also from some interference with the relation of the fibrine and the other constituents of the blood) upon the heart's walls or valves.³ May not this hyperinosis be the explanation of the coincidence alluded to? In most cases the deposit is probably very slight, and in many cases so slight as to require search for it. May it not infrequently be that it is often only formed in quite the dying state? Speculation might suggest that the fibrinous deposits arise from some interference with the degree of solubility of the fibrine, induced by the presence of some unwonted elements within the blood (some result of tissue metamorphosis), produced by the excessive muscular action and other functional disturbance which exists in the choreic state, thus being not in any way related to this state as a cause, but as a consequence,

POSTSCRIPT.—For the following notes of a highly interesting case of chorea, successfully treated by the oil of male fern, I am indebted to my friend, Dr. Giles, of Deptford. It illustrates well quick recovery under the use of remedies.

“Case of acute chorea, caused by the presence of a tapeworm, and successfully treated by the oil of male fern.”

“I was requested to see the following patient by one of the surgeons of the Pimlico Dispensary, during his absence in the country. He described it to me as a complication of rheumatism, chorea, and worms, and said that the only remedy that seemed to do any good was atropine, which he had given in gradually increasing doses. She had been under his care for about a month.

¹ Some authorities look upon rheumatism as causing anæmia.

² Andral, giving 3 as the average relative proportion of fibrine to 1000 parts of healthy blood, states that the variation in disease ranges from 1 up to 10½ per 1000. In cases of anæmia he gives the proportion of fibrine as 3.5, and in rheumatism as 10 per 1000.

³ I do not speak of the condition of the heart's valves alluded to as being the result of endocarditis.

"Ellen L—, æt. 9, residing in Pimlico, was first seen by me on 29th September, 1863. She was evidently suffering from acute chorea; had had no sleep for four days and nights; there was constant irregular spasmodic action of the whole body and face; she was never still for a moment (continually working). A bed-sore had formed over the sacrum the size of the palm of the hands, and the elbows were much chafed. She from time to time uttered a feeble whine, and wore a pitiable look of distress; her consciousness was perfect. The tongue was dry and brown, and sordes had accumulated on the lips. The pulse was exceedingly rapid and feeble. The pupils were moderately dilated. She had taken no nourishment, except a little wine and beef-tea, for some days. She seemed rapidly sinking. The mother told me she had been in the habit of passing portions of tapeworm for the last three months, and that large pieces had come away while under treatment; she had never seen the head. I saw by the patient's letter that scammony and calomel had been the medicine used. Thinking all these nervous symptoms might proceed from the intestinal irritation, I resolved to try a full dose of male fern. The mother was at first unwilling to have any change made in the medicine (morphia) which had last been prescribed, thinking the case hopeless, but at length yielded. I prescribed *Ol. Filicis Maris* ʒj, ex *Mistura Acaciæ* ʒiss, to be taken immediately, and to be followed in six hours by *Ol. Ricini* ʒss.

"On visiting her the following morning, I found the child asleep, quite free from any convulsive movement. The mother told me the draught had acted freely four hours after taking, that the child turned very pale and faint, and she thought she was dying. She however gave her some wine, which revived her, and in the course of a few minutes she was fast asleep and quite quiet, with the exception of occasional twitching. She slept for two hours; on waking she took some beef tea, and then slept again. When she awoke the convulsive movements commenced again, though in a greatly mitigated degree. About seven yards of tapeworm were collected, and the head with the four suckorial discs found. The castor oil had not been given.

"The subsequent history is simple. She continued to improve daily, the mouth and lips cleaning. The bed-sore gradually healed under the use of nitric acid lotion. In a few days all convulsive movements had ceased, and in ten days she was able to leave her bed. The medicine prescribed was bark and ammonia, generous diet, and a little wine at first. On the 16th of September I took my leave of her, she having been able on the previous day to leave the house. During her convalescence I examined her heart several times, and always found a distinct mitral murmur.

"I have lately seen her mother, and she tells me her daughter has enjoyed good health ever since, and has seen no more tapeworms."

It may be remembered that in describing the post-mortem examination in the fatal case, No. 16, I said that the spinal cord was placed in a solution of chromic acid for future examination. Mr. Lockhart Clarke has since then kindly examined it for me, and found that, extending nearly half an inch downwards from the second cervical nerve, an oval area of considerable granular disintegration, having at its outer side another strip of the same disintegration, existed at the base of the "caput cornu" of the grey matter.

Having concluded the details of the fatal cases of chorea which I have to record, and offered such observations as were suggested by them, I will now give some particulars regarding eighty non-fatal cases, all of which, with two exceptions, occurred in my former out-patient practice at the hospital.¹ To these I shall add the relation of a few cases illustrating one or two of the more unusual or complicated forms of chorea. The eighty cases I have arranged as follows in a tabular form, which will enable them to be compared with each other with some degree of facility.

¹ For help in accumulating the details of many of these cases I have to thank many of our hospital students, who so willingly from time to time assisted me in collecting notes of interesting cases in the out-patient department.

No.	Sex.	Age.	Side affected.	Duration of present attack.	Probable or assigned cause of the chorea.	Whether previous attack existed.	Peculiarity of symptoms.	Treatment.	Length of hospital attendance, and results.	Further remarks.
1	M.	12½	Right.	Two weeks.	None known, but had ascarides nine months previously.	Had an attack four years previously, owing to fright.	Remarkable; rolling about of the tongue.	Calomel and jalap at intervals. Quinine and steel, and afterwards spirit of chloroform added.	Five weeks. Became quieter, then left off attendance.	No worms seen.
2	F.	12	Left.	...	None known; no fright, but had ascarides one yr. previously, and four years ago had a fall on the head.	Had similar attack, and was in-patient previously for it, and then the whole body affected.	Right pupil rather larger than the other.	Steel wine and aloetic wine together.	Two weeks.	
3	M.	11	Left.	...	...	No.	...	Jalap and calomel, followed by steel wine.	One week.	
4	M.	11	Left. Confined to the face and neck.	Attack has been gradually coming on for four years.	None assignable. No worms, no fright, no rheumatic fever.	No.	...	Jalap and calomel, followed by syrup of iodide of iron, and later on by cod-liver oil.	Was patient five weeks. Discharged as well.	

No.	Sex.	Age.	Side affected.	Duration of present attack.	Probable or assigned cause of the chorea.	Whether previous attack existed.	Peculiarity of symptoms.	Treatment.	Length of hospital attendance, and results.	Further remarks.
9	F.	11	Both sides.	Nine months.	Had rheumatic fever five weeks before present attack began. No other assigned cause.	Had two previous attacks, and was in-patient (both sides being affected on each occasion). Was well of first attack in nine weeks; of the second attack in six or seven weeks.	Had been out of health for a year since he broke his leg. In previous attacks speech greatly affected, and teeth "apt to clench on the tongue."	Under jalap and calomel, followed by zinc and strychnia, he greatly improved; later on he had steel, and afterwards, as headache came on, salines and mercurial aperients, then belladonna plaster to cardiac region, with antimony.	Twenty-six weeks. Result doubtful, as he ceased to attend.	The mother had had chorea three times. Often had pain in the head, and was noticed as being dull and nervous at times; at first pains in the knees, and then swelling of the back of the hands, and strong cardiac action, with a systolic bruit, supervened.
10	M.	12	Left.	...	Ditto.	Had similar attack twice previously, and been in-patient both times.	Much flatulence, generally wakes up in morning with pain in the head and sickness, when he becomes "white, and shaking, and cold."	Syrup of iodide of iron and quassia, rubarb and magnesia aperients.	Only a patient one week, and discharged as being well.	

11	F.	18	Right.	One month.	Ditto.	No previous attack.	Eyes rather staring, speech affected.	Mist. ferri comp. and dec. aloes comp.; senna, calomel, and hyoscyamus aperients.	Attended one week. Result unknown.	Had only been married six weeks; a sister had similar attack six years previously.
12	F.	14	Right.	...	Ditto.	None.	Speech affected.	Sulphate of zinc, steel, and aloes wine.	Attended but one week. Result unknown.	
13	F.	10½	Left chiefly, but not entirely.	...	Ditto.	None.	...	...	Attended two weeks. Result unknown.	
14	F.	24	Right.	Three weeks.	Ditto.	Had previous attack twelve years previously from fright.	Often bites the tongue, troubles only when eating. Bronchitic symptoms.	Treated only for bronchitis.		
15	F.	11	Right.	Twelve days.	Ditto.	None.	For two months had lost much flesh; formerly was very deaf, but less so since attack.	Calomel and jalap.	Six weeks. Result unknown.	
16	F.	13	Both sides, but chiefly the left.	...	...	Previous attack four years ago.	During sleep much affected.	Sulphate of zinc and steel, calomel and blue to the spine, opium plaster to cardiac region.	...	Had much headache in illness.

No.	Sex.	Age.	Side affected.	Duration of present attack.	Probable or assigned cause of the chorea.	Whether previous attack existed.	Peculiarity of symptoms.	Treatment.	Length of hospital attendance, and results.	Further remarks.
17	F.	11	Both sides, but chiefly the right.	Five or six weeks.	...	Had several attacks since 3½ years old, and generally in autumn, remaining until past Christmas. First attack followed measles.	Has some choreic movements during sleep; often has headache, and then "has something before his eyes."	Calomel and jalap, quinine and iron, and zinc; followed by shower baths and decoction of aloes.	Six weeks. Result unknown.	
18 ¹	F.	14½	Right.	Three weeks.	Has large number of ascarides; attack followed an attack of palpitation of three weeks' standing. No cardiac bruit found at any time.	Had an attack three years previously from a fright, and then the same (the right) side chiefly affected.	Often has pains in limbs, but never rheumatic fever. Often had palpitation.	Calomel and jalap, quinine and iron, and zinc; subsequently one third of gr. of extract of belladonna every night; shower baths.	Four or five months.	There was some dragging of the affected foot, and a slight leaning forwards, as if from tendency to fall; great weakness of the back; appetite ravenous; said to be better after the belladonna pills. Catamenia irregular.

¹ One year afterwards this patient again had chorea, and was out-patient for eleven weeks, and got quite well under the use of carbonate of iron and shower baths and the Mist. Ferri. comp.

19	F.	10	Limbs on both sides.	Two months.	None assignable.	...	Previous to illness had much pain in head. Symptoms first affected the mouth and tongue. Mouth became drawn to the right, and speech less distinct. Feet became more affected, and hands less so.	Shower baths. Sulphate of zinc, quinine and steel, calomel and jalap; zinc increased to seven grains twice a day.	Fourteen weeks. Dismissed as well, excepting being "rather fidgety."	No sickness produced by the large doses of sulphate of zinc.
20	F.	11	The entire body.	Three months. Been in-patient five weeks.	Fright. Had had ascari-des for one year.	Previous attack, several months before.	The right pupil became larger than the left. Had nausea, but no vomiting.	Quinine and zinc, calomel and jalap, calabar bean.	Two months. Discharged much improved.	Improved much after began to take the calabar bean.
21	M.	15	Left.	Five weeks.	No cause assignable.	Had an attack two years previously, and was in-patient for eleven weeks.	Slight loss of power in the left side.	Zinc and valerian, calomel and jalap.	Ten weeks. Left off attendance, and result unknown.	
22	F.	6	Entire body.	One week.	Ditto. Had fallen down stairs three weeks previously.	...	...	Quinine and iron, scammony and calomel.	Two months. Dismissed very much improved.	Her mother had chorea when aged 14.

No.	Sex.	Age.	Side affected.	Duration of present attack.	Probable or assigned cause of the chorea.	Whether previous attack existed.	Peculiarity of symptoms.	Treatment.	Length of hospital attendance, and results.	Further remarks.
23	F.	10	Left.	Two months. Been in-patient one month.	No cause ascertainable. But had had rheumatic fever three months previously. Heart natural.	...	Had had pain at the left side, before she came to hospital. Appetite voracious; lost flesh since illness began.	Quinine and iron, calomel and jalap.	Three months. Discharged as very much improved.	
24	F.	10	Entire body.	Four days.	Fright and quarrel. Had had rheumatic fever three months previously. Heart natural.	None.	Always worse in bed, when first roused up from sleep.	Calomel and jalap, steel wine.	One week. Result unknown.	
25	F.	20	...	Had symptoms for eighteen years, off and on.	Fright, when aged two years.	...	Subject to pains of so-called "rheumatic" kind." Choreic spasms confined to muscles of face and eyelids.	Senna aperients, colchicum and opium, iodide of potash and valerian.	Three weeks. Rheumatic pains recovered from, choreic spasm the same.	
26	F.	14	...	...	Fright.	Previous attack, and in-patient four years previously.	Has symptoms indicative of phthisis.	Quinine and iron, squills.		

27	F.	11	Right.	Three months.	Followed immediately an attack of rheumatic fever. No cardiac bruit existing.	None.	...	Steel wine ammonio - citrate of iron, followed by sulphate of zinc.	Eleven weeks. Discharged the same.
28	M.	11	Right.	...	No cause assignable.	...	Often falls when walking.	Steel calomel, and jalap, quinine and iron, and zinc subsequently.	Two months. Discharged himself, and result unknown.
29	F.	18		Three weeks.	Had had rheumatic fever, and six weeks in bed nine months previously. Cardiac sounds natural.	None.	Face and eyes not affected. The hands first affected by spasms, & then the legs and the left of face only three days before attendance.	Steel and quinine, rhubarb aperients.	One week. Result unknown. Catamenia only appeared once since rheumatic fever. Says that she sees stars when moving about, and at times has double sight. Occasionally great palpitation.
30	F.	21	Right.	...	Had had several miscarriages of recent date. No other cause ascertainable.	An attack four years before, affecting the right side.	Sensitivity of the skin generally much impaired.	Zinc and steel and valerian.	Two weeks. Result unknown.
31	F.	15	Entire body.	...	...	An attack one year previously.	Pyrosis.	Calomel and rhubarb and bis-muth.	One week. Result unknown.

No.	Sex.	Age.	Side affected.	Duration of present attack.	Probable or assigned cause of the chorea.	Whether previous attack existed.	Peculiarity of symptoms.	Treatment.	Length of hospital attendance, and results.	Further remarks.
32	F.	14	Left.	Five weeks.	...	...	Occasional headache, at times vomiting.	...	Two weeks. Result unknown.	Catamenia never appeared.
33	M.	8	...	...	None.	No actual attack, but one year previously for about three months was in habit of twisting about the shoulders very much.	Choreic movements very peculiar, consisting chiefly in opening the mouth about every minute. <i>This goes on in sleep, but less frequently.</i>	Syrup of iodide of iron.	Seven weeks. Much improved.	Before the attacks has much shuffling of the shoulders, and at times headache.
34	M.	15	Left.	...	An attack three years previously, and then the <i>mind was affected.</i>	...	...	Shower baths. Mist. ferri co. and dec. aloes. Zinc subse- quently.	Two months. Improved, but result unknown.	Father died of apoplexy.
35	M.	16	Right.	Two weeks.	Ditto.	An attack, lasting four months, seven years previously. Galvanism used without benefit. Both sides affected. Lost speech.	The urine was apt to be retained, and sometimes for twenty-four hours. Pupils very dilated.	Aperients, zinc and sesquioxide of iron.	Was two weeks under treatment. Then left, and again returned two months afterwards. Became so well that he was discharged with a fortnight's medicine.	Had peculiar disorder like to anything round the neck.

36	F.	14	Both sides, but chiefly the left.	...	None.	An attack four years previously.	Pupils unusually dilated. Is said to "plunge" when asleep in bed.	Salt-water shower baths. Quinine and zinc, and steel subsequently; also cod-liver oil.	One month. Relieved.
37	F.	9	Left.	...	Began during recovery from rheumatic fever and cardiac affection.	None.	Chiefly arm and hand affected.	Steel wine. Shower bath.	Three weeks. Left off attendance. Improved.
38	F.	8	Left.	One week.	...	...	...	Valerian, belladonna, steel.	One week. Result unknown.
39	F.	8	Right.	Eight days.	Fright. Has ascariæ.	...	Subject to screaming at night.	Zinc, steel, and quinine, calomel and jalap; shower baths.	Two months. Quite recovered.
40	F.	7	Right.	Six weeks.	Had sores on head three months before. No other cause known.	...	Headache, and pain from bad teeth. Liable to choke at times when eating.	Zinc and steel. Blistering the neck.	One week. Result unknown.
41	F.	10	Entire body.	...	None known.	...	Restless when asleep. Liable to pains in the joints.	Calomel and scammony, zinc increased to 7-grain doses, extract of belladonna.	One month. Became worse and made inpatient.

No.	Sex.	Age.	Side affected.	Duration of present attack.	Probable or assigned cause of the chorea.	Whether previous attack existed.	Peculiarity of symptoms.	Treatment.	Length of hospital attendance, and results.	Further remarks.
42	F.	6½	Right.	...	...	An attack three months previously.	...	Calomel and scammony, quinine and steel.	One week. Became much quieter.	
43	F.	12	Whole of right side; and the left side of the neck.	...	Fright, which appeared to bring on general convulsions, after which the choreic spasm set in. Has ascarides.	...	Had much loss of power of left side; much pain in the groins came on, causing screaming. In sleep the eyes would twitch much.	Senna and valerian, arsenic, steel; other aperients.	...	A sister, now aged 8, is beginning to imitate the patient "blinking and acting," as the mother said.
44	F.	17	...	Two weeks.	...	...	Liable to hysterical attacks.	Mist. ferri co., dec. aloes.	...	
45 ¹	F.	17	Entire body.	Sixteen weeks.	Fright.	...	Swallowing very difficult; had constant rotation and protrusion of both arms; and at times peculiar movements of both upper eyelids; constant jerking of entire body.	Potassio-tart. of antimony; blister to neck; wine; subsequently assa-fetida in mixture and in enemata.	...	Would fall down on trying to sit up; had great pain in the head and dimness of sight of right eye. When in bed constant extension of both legs in a shuffling way.

¹ Was in-patient under Dr. Page. (Elizabeth T—, admitted May 12, 1858.)

46	M.	12	Right.	...	None.	...	...	Saccharated carb. of iron, senna, calomel and jalap; subsequently sulphate of zinc.	Three weeks.	Two week. Result unknown.
47	F.	6½	...	Four days.	Has ascarides.	...	...	Scammony and calomel, quinine and steel, shower baths; subsequently sulphate of zinc added.		
48	F.	11	...	...	None known.	...	...	Mist. ferri comp., shower baths, aperients.	Eight weeks. Recovered.	
49	F.	12	Left.	Four weeks.	...	...	...	Steel wine, calomel and scammony, shower baths; quinine, steel, and zinc subsequently.	Seven weeks. Recovered.	
50	F.	11½	...	...	Has a systolic cardiac bruit at base, but never had rheumatic fever; has many decayed teeth.	...	...	Calomel and scammony, sulphate of zinc, iron and quinine.	One week. Result unknown.	

No.	Sex.	Age.	Side affected.	Duration of present attack.	Probable or assigned cause of the chorea.	Whether previous attack existed.	Peculiarity of symptoms.	Treatment.	Length of hospital attendance, and results.	Further remarks.
51	M.	9 $\frac{3}{4}$	...	...	Had worms a year ago.	...	Muscles of the left arm and shoulder atrophied, and the bone very atrophied also. Prominence of sternum and costal cartilages. Subject to headache.	Steel wine, jalap, shower baths.	Eight weeks. Recovered.	It may be supposed that the chorea was independent of the cause of the atrophy, which has been since one year of age. Left leg gives way, but not atrophied.
52	F.	21	Left.	Two weeks.	Fright.	...	Stammers and talks "thick." Pain in left of head and down arm and leg. Drags left leg much; at times has palpitation of heart.	Calomel and scammony, mist. ferri comp., blister to neck.	Two weeks.	Can only get the left arm to a right angle by much effort.
53	F.	13	At first right side affected, but now the left.	Fourteen weeks.	None.	...	...	Quinine and steel, shower baths; sulphate of zinc added subsequently.	Eight weeks. Recovered.	

54	M.	15	Left.	Two weeks.	None.	...	Had slight convergent squint of right eye ever since three years of age. Had feeling as "of blood racing cold down the back."	Calomel and jalap, arsenic and potash.	Five weeks. Discharged very much improved.
55	F.	14	Left.	...	...	...	...	Mist. ferri comp., shower baths; sulphate of zinc, quinine and steel.	Ten weeks.
56	F.	9	Both sides.	Nine days.	None.	Had similar attack twice before.	...	Saccharated carb. of iron, calomel and scammony.	Two weeks. Then described as "walking and talking better." Left off his visits.
57	F.	10	Both sides.	One month.	Fright. Had lumbrici some months previously.	...	Had twitchings of the whole body; constantly making a noise; "jumping, and hallooing," as friends said. Shouted much in sleep.	Steel wine, calomel and scammony, sulphate of zinc and valerian.	Seven weeks. Was much quieter in three weeks. Left as being "well enough."

No.	Sex.	Age.	Side affected.	Duration of present attack.	Probable or assigned cause of the choræa.	Whether previous attack existed.	Peculiarity of symptoms.	Treatment.	Length of hospital attendance, and results.	Further remarks.
58	M.	13	Right.	...	None.	...	The mouth much drawn to the right side. Speech affected. Eyes and root of tongue affected.	Calomel and scammony, sulphate of iron, quinine and zinc, up to four grains for a dose.	Six weeks. Discharged, having only very slight movements at times.	Sickness caused by the zinc.
59	F.	20	...	Previous attack some months before.	...	...	Much spinal tenderness, also furred tongue and constipation.	Mist. ferri and dec. of aloes; dry cupping to dorsal region; aloes and myrrh, shower baths, quinine and steel. Stimulating embrocations to back.	Ten weeks. Very greatly relieved.	
60	M.	10½	Both sides, but left one chiefly.	Two weeks.	Fright.	Had an attack one year before, lasting three or four months.	Foams at the mouth and loses power of speaking, but not the senses.	Mist. ferri comp., steel wine, and subsequently zinc, quinine, and iron; calomel and jalap; cod-liver oil subsequently.	Fourteen weeks. Recovered.	

61	M.	12	Right.	Two months.	None.	...	...	Quinine and steel; senna; steel wine subsequently.	Two weeks. Result unknown.	
62	F.	15	Left.	Six weeks.	Ditto.	None.	Sometimes cannot open her jaws to talk, and spasm of the muscles of the left jaw. Often moves whole body abruptly, as a child will do in a pet.	Croton oil, saccharated carb. of iron, the sesquioxide of iron, and latterly sulphate of zinc.	Four weeks. Result unknown.	Partly hemiplegic on right side when first taken ill; used to beat her hands in the night. Was excited at one time, as if going out of her mind.
63	F.	9	Both sides.	Nine days.	Ditto.	Had two attacks previously, and then on the left side.	...	...	Two weeks. Much improved.	
64	F.	43	Left.	Fourteen months.	Ditto.	None.	Much headache at times, and has often "black spots" in the sight. Leucorrhœa and irregularity of catamenia, menorrhagia succeeded.	Quinine and steel, and valerian; shower baths and galvanism; later on gallic acid. Heat and cold alternately applied to the neck.	Four months. In six weeks was much quieter.	Worse after shower baths. Had 'queer' and unpleasant feeling at back after the ice application.

Married.

No.	Sex.	Age.	Side affected.	Duration of present attack.	Probable or assigned cause of the chorea.	Whether previous attack existed.	Peculiarity of symptoms.	Treatment.	Length of hospital attendance, and results.	Further remarks.
65	F.	11½	Right.	Six weeks.	None.	Had chorea for seven years every autumn, lasting from September to Christmas.	Pupils dilated.	Calabar bean, the tincture, about 75 drops thrice a day; scammony and calomel.	...	Not so well after shower baths. Had nausea, headache, and giddiness.
66	M.	10	Left.	...	Fell downstairs two months previously.	None.	Had had scarlet fever three months before, and been weak in left hand for six weeks. Very little power in left arm and leg. Right pupil rather the largest.	Tincture of the calabar bean, 5j, reduced to 5ss at a dose, owing to vomiting. Castor oil.		
67	F.	12	Both legs, and only the left arm.	Six weeks.	None.	Previous attack fifteen months before, and another one when æt. 7.	At times has palpitation of the heart.	Tincture of calabar bean, up to 5iss ter die, ¹ Syrup of iodide of iron and quinine subsequently.	Three months. For the first two months no better; began to amend after a week's action of the iron. Discharged at last as quite well.	

¹ The strength of this tincture was in proportion of one drachm of the bean to one ounce of rectified spirit.

68	F.	12	Right.	One month.	Ditto.	None.	Right larger than left. Heart's action quick and irritable, but no bruit; pulse quick and feeble; "quite a job to feed herself."	P. jalap. co.; tinct. of calabar bean up to ʒj thrice a day.	In six weeks was "almost quite well," the right leg only "giving a little." At last discharged as quite well.
69	F.	9	Right.	Six weeks.	Ditto.	Ditto.	...	P. Jalap, co. quinine and iron.	Eleven weeks. Discharged as quite well.
70	F.	7	Both sides.	...	Rheumatic attack preceded chorea. No cardiac bruit remaining.	...	...	Dec. aloes comp., steel wine, sulphate of zinc, quinine and iron.	Two weeks. Discharged as quite well.
71	F.	18½	...	Six months, and very ill for one month previously.	...	...	Right rather smaller than left, both acting well; right eye opened more fully than left; speech "thick and weak" after long talking.	Rhubarb and magnesia, quinine and iron.	Four weeks. Left off attendance, and much better in all ways.

No.	Sex.	Age.	Side affected.	Duration of present attack.	Probable or assigned cause of the chorea.	Whether previous attack existed.	Peculiarity of symptoms.	Treatment.	Length of hospital attendance, and results.	Further remarks.
72	F.	8	Left.	Two weeks.	Not been quite right since illness five mths. previously—"a kind of a fever." Slight obscuration of the last cardiac sound remaining.	...	...	Calomel and scammony, cod-liver oil, steel wine.	Three weeks. No further appearance.	
73	F.	11	Right.	...	Has number of ascarides.	Had some severe attacks three years previously, and never quite recovered from afterwards.	...	Calomel and jalap, quinine and steel.	Five weeks. Result unknown.	
74	F.	19	Left.	Four months.	Fright.	Previous attack four years previously. Had "low fever" a yr. previously.	Has less power in the left arm and leg and left side of face than on the right. Right pupil rather larger than the left one.	Aperients; quinine and steel, to which sulphate of zinc was subsequently added.	Five weeks. Somewhat improved.	Mother had chorea, and was treated by Dr. Bright, of Guy's Hospital, and since has had the mouth drawn to the right side.

75 ¹	M.	9½	Both sides, but left one chiefly.	Two weeks.	None. Had "a fit four years previously."	...	Grasp with left hand much weaker than on other side, and want of power in left side of face. <i>Sensibility of skin of left arm and leg diminished.</i> No twitching of muscles of neck.	...	In hospital three weeks. Went out much the same.	Present attack began with shaking of left hand, and then the leg and side began; vomited once or twice after illness began.
76	F.	6	Entire body.	Six years.	Ditto.	...	Had lost much flesh of late.	Sulphate of zinc and iron, scammony and jalap. Subsequently the Calabar bean, and then strychnia.	Improved for three weeks, and then became stationary.	Had been taking the sesquioxide of iron throughout illness until she came into hospital.
77	F.	8	Both sides.	Two weeks.	Fright. Had loud systolic bruit at the base of heart, following the course of pulmonary artery. Never had rheumatism.	...	...	Sulphate of zinc, increased to large doses; iron and magnesia, scammony and jalap.	About a month. Speech became much better; he altogether improved very greatly.	

¹ No. 75 was an in-patient under Dr. Page whom I watched; and Nos. 76 and 77 under Dr. Fuller.

No.	Sex.	Age.	Side affected.	Duration of present attack.	Probable or assigned cause of the chorea.	Whether previous attack existed.	Peculiarity of symptoms.	Treatment.	Length of hospital attendance, and results.	Further remarks.
78	F.	15	Both sides.	Six or seven weeks.	Had fright, which made her worse. No original cause.	No.	Movements confined to head and arms.	Calabar bean. This changed for aloes and steel. Afterwards sulphate of zinc up to 9-grain doses.	Seven weeks. Improving.	Catamenia been scanty, and only twice in ten months.
79 ¹	F.	11.	...	Ten weeks.	Slight blowing murmur at apex of heart with first sound. Had never had rheumatic fever.	Ditto.	...	Sulphate of zinc, iron, and magnesia, and subsequently strichnia added. Also shower baths.	Between six and seven weeks.	The friend said there had been slight paralysis of the right arm since she was quite young, but of this evidence was very slight. She had lost all power in the adductors of the right thumb.
80	F.	16	Both sides.	...	Had mumps, and three weeks afterwards became hysterical and choreic. Heart-sounds mature; never had rheumatic fever or experienced fright.	Ditto.	Decidedly hysterical. Chorea began with movements in hands and face.	Sulphate of zinc, iron, and quinine. Shower baths, which had quickly a good effect.	Six weeks. Got quite well.	Catamenia always very abundant and frequent, and long standing.

¹ Was an in-patient under my care, admitted June 19, 1867.

Reviewing the contents of the foregoing Tables, I will now proceed to summarise some of the information which they afford; and first of all, with regard to the SEX of the patients. In giving the details of the sixteen fatal cases of chorea, in the January number, page 223, the preponderance of females over males was, it will be remembered, very conspicuous, the proportion being fourteen of the former to two of the latter.¹ Out of the eighty non-fatal cases in the Tables it will be seen that the females are very much in the majority, there being sixty-one of this sex to nineteen of males, *i.e.*, rather more than three to one—a proportion which strongly suggests that there are circumstances in their case which render them especially prone to the affection.²

As respects AGE, I find that out of the eighty cases all, excepting fourteen, were under the age of sixteen. Eleven is the age in which the greatest number were affected, *viz.*, thirteen.³ Up to this age the numbers increase pretty uniformly from the age of eight, and decrease to the age of fifteen, being at the age of eight and nine, six in number; at the age of ten, eight in number; and again (on the outer side of eleven), being nine at the age of twelve; seven at the age of fourteen; and six at the age of fifteen. The youngest was five years of age, and that was the only instance under the age of six.⁴ The only two cases which were above the age of twenty-one were twenty-four and forty-three years old respectively. Thus it is very clear that circumstances of age as well as of sex have marked influence in connection with the affection.⁵

¹ Taking the fatal cases of chorea registered as having occurred in England during several years, I find that the proportions as regards sex were as follows:—In 1848, 24 females to 14 males; in 1849, 24 to 10; in 1850, 39 to 21; in 1851, 67 to 10; in 1852, 54 to 19; in 1854, 28 to 20; in 1855, 47 to 22; showing in some cases a much higher figure for the females in comparison with the males.

² Dr. Willshire, who has had much experience in the diseases of children, states (see 'Med. Circ.,' Feb. 15, 1865, p. 101) that chorea is much more difficult of treatment in boys than in girls. It is curious to observe that Hamilton, whose great panacea for chorea was purgation, hints that the disease is more difficult of cure in girls, *because* the structure of the female pelvis allows of greater opportunity for the accumulation of feculent matter.

³ The influence of youth in predisposing to chorea is also apparent in the lower animals. Youatt observes that in dogs it oftenest occurs in young ones, and after the distemper.

⁴ The patient in case 17 had had an attack of chorea, when aged three and a half years.

⁵ In the 'Register of deaths in England for 1839,' p. 121, a case of chorea, which proved fatal at the age of seventy-five, is recorded. In the 'Lancet,' for June 1, 1861, p. 530, Mr. Ellis records a case of chorea in a gentleman, aged seventy-five (the third attack). The movements came on at irregular intervals. He had a daughter who was epileptic, and a son who was insane. In the 'Medical Times,' for July 25, 1863, is reported a case of chorea, under Dr. Brown-Séquard's care, of the age of sixty-eight, and also one under Dr. Peacock's care, of the age of fifty-seven, the results of alarm. At the same place a case is given of chorea, from which the patient, aged twenty, had been suffering nearly all his life. Such a case, recorded by Rostan, is also alluded to in note at foot of page. In the

As respects the PARTS AFFECTED, it does not appear that one side was much more decidedly affected than the other. For, excluding ten cases in which no mention of this matter has been made, I find that in twenty-four cases it is stated that the *right* side only was affected, whilst the *left* alone was affected in twenty; and in twenty-five cases it is recorded that *both* sides were affected, although in some instances one or other side was more involved than the opposite one. In one or two cases the movements appear to have changed from one side to another, as in case 53. In cases 1, and 3, and 35, in which the *right* side was affected, both sides had been affected in a previous attack; in case 5, in which the right side was affected, it had been the left side in a previous attack. In case 63, in which both sides were affected, the affection had been one of hemichorea on the left side in a former attack.¹

Respecting more restricted localisation of the choreic movements in certain cases (taking any period of the attack), the following were worthy of note. In case 19, the first symptoms were confined to the mouth and tongue; in case 25, they were confined to the muscles of the face and eyelids;² in case 80, the hands and face were first affected; in case 29, the hands

'British Medical Journal,' for May, 1867, a case of choreic movements in a woman, aged seventy-four, under the care of Mr. Hutchinson and Dr. Hughlings Jackson, is detailed. Mr. Henkeimer describes in the 'Deutsch. Klinik,' 1859, 52, the case of a man, aged eighty-four, who had a choreic affection of the arm and leg of one side, following an attack of numbness in the arm and confusion of the mind, after drinking. Dr. T. Thompson quotes cases of chorea at the age of seventy and eighty, recorded by Dr. Powell and Bouteille; and Trousseau quotes three or four cases of chorea at the ages of sixty and seventy, and also one described by Roger, at the age of eighty-three. On scrutinising the ages of 39 fatal cases, which are registered as having occurred in England, in 1839, I find that they were as follows:—Under four years of age, 1; under five, 5; between five and ten, 12 cases; between ten and fifteen, 7; between fifteen and thirty, 1; between thirty and forty, 1; between forty and forty-five, 2; between forty-five and fifty-five, 2; between fifty-five and sixty, 2; between sixty and sixty-five, 2; between sixty-five and seventy-five, 3; between seventy-five and eighty, 1.

¹ Romberg, in his work on 'The Nervous System,' vol. ii, p. 56, observes that, in the majority of cases both sides of the body are affected, and that the statement of Ruzs and others, that the left side is more violently and more frequently affected than the right has not been confirmed. He quotes from Wicke, who found that out of fifty-eight cases, the left side was affected in twenty-three, and the right in twenty-six; that in one case it passed from the left to the right. Trousseau observes that most commonly unilateral chorea is on the left side. Bond, in an interesting article on chorea, in the 'Brit. and For. Med. Chir. Rev.,' July, 1860, observes that, according to Seé and Grisolle and others, including himself, chorea generally begins in the left arm, and that the hemiplegic form generally occupies the left side, which, if true, Dr. Bond suggests may be owing to the fact that the left limbs being, as a rule, subordinate to the right, are of weaker organisation, and therefore more liable to the influence of disturbing agencies.

² I have never seen a case in which the muscles of the *eyeballs*, so as to produce squinting, were affected, though of course we often had rolling about and distortion of the eyes. Youatt (op. cit., p. 121) mentions that in dogs sometimes the muscles of the eye are affected; I suppose he means the eyeballs. Trousseau mentions a case of chorea in which strabismus existed.

were first affected, and then the legs and the left side of the face, only three days before attendance, the eyes and the other side of the face remaining *unaffected*. In case 33, the movements consisted in "opening the mouth about every minute." In case 78, the movements were confined to the head and arms. In case 43, whilst the whole of one (the right) side was affected, it was only the muscles of the neck of the left side which were affected. In case 53, the right side was first alone affected, and afterwards the left alone. In case 67, both legs, but only the left arm, were affected. It has been observed by some authors that choreic movements are more localised in the case of adults. Youatt says that in the dog they are often confined for long to one limb. The stringhalt in the horse, a local affection, has been looked on by some as analogous to choreic movements.

I now pass on to the apparent CAUSES of the choreic affection, including in one consideration those causes (determining or exciting) which by friends were assigned or thought probable; and also those which may be looked upon as being predisposing or remote. I find that out of the eighty cases, in ten no mention is made of any causation whatever, and therefore no conjecture can be formed regarding them. In thirty-five it is recorded that no cause of any kind was suspected by friends. *Fright or mental emotion* being often thought to act as a determining influence, I find that in five cases this cause alone was assigned. In another case (No. 78) it was said to have aggravated the already existing affection. In an additional case (No. 24), fright and quarrel, following an attack of rheumatic fever, which had existed three months before, were assigned causes; and in six more cases fright and the presence of the common ascarides, or of lumbrici combined, were thought to have been influential in producing it.¹ As respects the presence of *intestinal worms*, in addition to the cases above alluded to, eight were said to have worms at the time of commencement of treatment, and three had formerly had them. I have notes of a case under Dr. Bence Jones's care, in the hospital, June, 1858, who passed a large lumbricus whilst in the hospital, and in whom there was loss of power in the right arm and leg, thought to be choreic.

As respects *rheumatism* or *rheumatic fever*, or *cardiac affection*, in connection with the disease, it appears that in eight cases rheumatic

¹ In the Registrar-General's return for the week ending February 1st last is the record of a fatal case of chorea in a girl, aged twelve, "occasioned by the fright produced by the explosion," *i.e.*, the Clerkenwell Fenian explosion. In the same return for the week ending February 22, is the record of the death of a woman from "paralysis, accelerated by fright from the same explosion." We not long ago had a girl, aged sixteen, at St. George's Hospital with chorea, which was brought on by an attempt on the part of a young man to strangle her, by seizing her at the throat. The man had had a summons directed against him by the magistrates, on the testimony of neighbours, to the committal of the assault and of its leading to her illness.

fever had existed. In one of these cases (No. 8) no mention of the state of the heart's valves has been recorded; whilst in five cases it is stated that the cardiac sounds were natural, and in one only (No. 12), (and in this case it was somewhat doubtful whether the fever spoken of had been rheumatic), were the cardiac sounds interfered with, there being slight obscuration of the second cardiac sound.

In cases 50 and 77, it appears that a systolic bruit existed at the base of the heart; but in both cases it was affirmed that no rheumatic fever had occurred. In case 79, a systolic bruit at the apex of the heart existed; but there had been no rheumatic attack. Most likely in several cases there had been unnoticed temporary cardiac bruits, arising either from an anæmic state of blood, or from irregular action of the fleshy columns and tendinous chords of the heart.

In case 18, it appears that the attack was preceded by *palpitation* of three weeks' standing, but it is stated that there had been no rheumatic attack. Pains, however, in the limbs and palpitation had been experienced.

Dr. Chambers found that out of thirty-three cases of chorea in his books, in six the affection either began during rheumatic fever, or followed immediately after it, or else rheumatic fever succeeded to the chorea. He, however, made out no connection between the chorea and previous valvular or pericardial tension of the heart, only one of the six above cases having any cardiac affection. He justly, however, observes that, "considering how very common inflammation of the central organ of circulation is in rheumatic children, and that it is at this age that chorea usually occurs, on the mere doctrine of chances they would (*i.e.*, chorea and heart disease) often coincide." In the statistics of the London Hospital for 1864 (see 'Hospital Reports,' p. 388), it is stated that out of twenty-four cases of chorea twenty had a systolic bruit at the apex of the heart, persistent in all but two; and in the statistics for 1865 ('Reports,' p. 422), it was said that out of thirty-seven cases, 15 or 40½ per cent. had valvular disease of the heart.

As regards *derangements of the uterine system*, I find that in one case (No. 3) the attack followed a miscarriage, and in five cases it is stated that the catamenia had been scanty and irregular, or overabundant and too persistent.¹ Looking to what may be termed

¹ It will be remembered that, among the fatal cases before recorded, two were related in connection with pregnancy. Of these, I find that one (No. 1) had been previously related by Dr. Lee, in his 'Clinical Midwifery,' 1848, p. 112. Dr. Barnes has recently informed me of a patient who had experienced several attacks of chorea which came on at various intervals always during pregnancy. In the early part of last year we had, in St. George's Hospital, under the late Dr. Page's care, a patient with chorea who was pregnant. In the 'London Obstetrical Society's Transactions,' vol. vii, p. 102, are two cases related by Dr. B. Woodman, showing the combination of chorea with pregnancy; one, the case of a young

alleged causes of MISCELLANEOUS character, in case 40, the affection was thought possibly to have been connected with *sores on the head*.¹ In case 75, a fit had occurred, but a long time (four years) previously; in case 22, the patient had fallen down stairs three weeks before the attack came on; and in case 66, a fall had occurred two months previously. In both the latter cases the fright of the accident may have been instrumental in causation. In case 74, so-called low fever had existed; and in case 80, the attack followed, at a short interval, an attack of mumps.

In cases 22 and 74, the mothers of the patients had had chorea; and in case 11, it was stated that a sister had had it, possibly from imitation. Authors quite recognise the *hereditary* character of chorea in some, though rare cases. Thus Bright mentions it in page 469 of his work;² and Seé says he has found the disease to

woman who had constantly had chorea from the age of seven to thirteen, in his own practice, and one following fright, in Dr. Down's, at the London Hospital. He expresses his belief that choreic movements are chiefly reflex, and connected with the sympathetic nervous system, and alludes to a third case of chorea in a pregnant woman which he had heard of. I have before alluded to Dr. Levick's paper (in the 'American Journal of Medical Science,' January, 1862, p. 40), giving the details of three cases of chorea and pregnancy associated. Of these cases one was fatal, and in this it is said that "the brain was found very much congested throughout; the heart small and firm, with a bead-like deposit on the aortic valves." In these cases the choreic movements, though mitigated, did NOT come during sleep. Dr. Levick quotes five cases of chorea, combined with pregnancy, from Dr. Ingleby ('Lancet,' 1840, p. 783); also two such cases from Dr. M. Duncan (Ed. 'Med. and Surg. Journal,' January, 1854); and contains cases of association of convulsive movements and pregnancy, described by Shenkins, in 1609 ('Observ. Med. Rer.,' De Spasmo, pp. 128-9). I would here allude to a paper in Virchow's 'Archiv. f. Path. Anat.,' Bd. xxiii, 1862 (Hft. 1 and 2, p. 149), "Ueber Chorea Gravidarum," by Dr. Mosler, in which he has collected and analysed twenty-one cases of chorea in pregnant women. They were chiefly of an age between seventeen and twenty-four. Of these five had had chorea previously, and fourteen were primi-paræ. In eight cases fright, or other mental emotion was assigned as the cause. The period of pregnancy at which the chorea commenced varied, but in seven cases it was at the second, and in eight cases at the third or fourth month. It was seldom that one side only of the body was affected; in many cases the chorea was accompanied by epileptiform convulsions, and in most there had been hysteria previously. In very few was there any intellectual aberration. Four aborted and three were confined before the proper term; three times the abortion was followed pretty rapidly by cessation of the choreic movements. In five the chorea remained until the end of pregnancy, and in nine cases recovery occurred before that time. Treatment was chiefly by iron and zinc. These cases include several of the cases which I have alluded to, and were recorded by Ungen, Frank, Haud, Jeffrey, Bezold, Romberg, Helfft, Aran, Duncan, Ingleby, Lever, Scanzoni.

The whole subject of the connection between menstrual and uterine irregularities, suppression of the menstrual function, &c., and so termed nervous diseases, even insanity, is of the highest interest, and both worthy and capable of much greater development and attention than it has at present received.

¹ In the 'Brit. Med. Journal' for May 17th, 1862, a case of chorea, immediately following a severe burn, is related as being under Mr. Craven, of Hull; recovery ensued before the burns healed.

² Dr. Day, in his 'Clinical Histories,' p. 103, alludes to the more than ordinary

be hereditary in very many cases. They also allow that *imitation* may be, in certain instances, instrumental in its propagation. I find that Bricheteau describes the case of eight patients, within a space of six days, contracting the disorder after the admission of a severe case into the ward, requiring instant separation of the patients;¹ and Chambers, in his 'Lectures,' before quoted, records the interesting case of a boy, aged sixteen, who had been operated on for stricture, and accidentally placed in a bed opposite to one occupied by another boy with chorea. He soon began to imitate the movements which he witnessed, although moved into another ward, and eventually died, abrasions and pericarditis (possibly due to pyæmia) having come on. I may mention here that we lately had two patients with chorea in the same ward, in St. George's Hospital (as I am informed by Dr. Archer, who was attending to the cases in the ward). One was much worse than the other, and the severer case was at one time so injuriously acting upon the other, whose imitative powers appeared considerable, that they had to be placed in separate wards.

As respects the fact of the patient's having had PREVIOUS ATTACKS or otherwise, I find that (excluding thirty-three cases in which no mention of this has been placed on record, and one case (No. 33) in which it is doubtful), there are nineteen cases in which it is stated that no previous choreic attacks had been experienced, against twenty-five in which previous ones HAD occurred, and out of these five (viz., Nos. 9, 10, 56, 63, and 67) had suffered from two previous attacks. In case No. 17, the patient had had SEVERAL attacks since the age of three and a half years. Case No. 65 had had chorea every year for seven years, lasting from September to Christmas. In order to prevent relapses, Sydenham, who bled regularly for the disease, enjoined bleeding and purging for a few days on the year following, at the same time of the attack or

frequency amongst the Jews of chorea as an argument in favour of the existence of an hereditary tendency to the affection; and he has obligingly furnished me with the following CIRCUMSTANCES referring to this supposed prevalence of chorea among the Jews. He observes—

"1. In 1834 I heard the late Dr. Addison (Guy's) say, during some some bedside clinical remarks, that he had noticed 'chorea' to be very common in Jewish families.

"2. Dr. Stiebel says that chorea is particularly frequent amongst the Jews (vide 'Wochenschrift für die gesammte Heilkunde,' No. 1, 1837); also the 'Brit. and For. Med. Chir. Rev.,' October, 1837, p. 504.

"3. In 1842 I attended a family of Jews consisting of father, mother, and five children—four girls and one boy; all the four girls had 'chorea,' three of the number being attacked at one time. The mother had had chorea when a child, and the father's mother had also suffered from the same affection.

"4. An intelligent old Jew (gentleman), well up in the history and peculiarities of his nation, told me some short time before his death, which took place in 1865, that 'his people were often attacked with St. Vitus's dance, and that, when in Germany, he had known whole families to be affected with it.' "

¹ 'Gaz. des Hop.' 1863, No. 46.

earlier. Heberden also alludes to the fact that a "little tendency" to the recurrence of chorea in some cases has been felt every spring and autumn for three or four years.

Case No. 73 is a peculiar one, inasmuch as it was stated that the patient had "had some severe attacks three years previously, and never quite recovered from them." In several instances the attacks had been of long standing. Thus, in case 4, they had gradually been coming on for four years; in case 25, the symptoms had existed off and on for eighteen years; and in case 76, for six years. In none of these long-standing cases have we indications showing that any cerebral or spinal lesion had existed.

I will now pass on to consider such cases as presented any PECULIARITY IN THE SYMPTOMS which it seems desirable to take notice of. In addition to other interests, this inquiry might have special value with respect to the question as to whether the choreic symptoms had reference, in any cases, to organic disease of the central nerve organs.¹

Taking into consideration the state of the MIND, in only two cases (Nos. 6 and 34) have we mention of any complication. Even in

¹ To the subject of choreic movements having their source, in some cases, in obvious disease of the brain or spinal cord, I alluded at pages 21, 22, and said that I purposed to make an inquiry into such cases as I could find, in which organic lesion existed. I may here, in passing, allude to an interesting case, described by Youatt (op. cit., p. 122), of a dog which had chorea complicated with "fits," and also had a peculiar tendency to run "round and round." After death, neither inflammation nor softening of the brain were found, but two spicula of bone were met with, one sixth of an inch long, projecting from the inner surface of the parietal bone, near the sagittal suture. The brain was, to all appearance, natural in substance. In the footnote to page 22 I have alluded to the supposition of Skoda's, that an exudation in the nervous structure may be the cause of chorea. I find that a case of chorea in a man aged 19 is described in the 'Wien. Wochenbl.,' xvii, 1861, 35 and 36, by Stoffella, in which, along with softening of the spinal cord young connective tissue-formation was met with in the form of fine greyish-coloured opaque stripes, the grey substance of the cord being very fatty. It seems that Rokitsky found similar areolar-tissue-formation in the spinal cord in *certain cases of tetanus and of hyperæsthesia*. I have at hand notes of the following recently recorded cases of fatal chorea in which lesion of the brain or spinal cord was found after death, or suspected:—Bouchut ('Gaz. des Hop.,' August, 1863) describes a case of semi-chorea with incomplete hemiplegia in a child, following a fall upon the head and unconsciousness. The strabismus, deafness, loss of memory, and pains led to the supposition that cerebral congestion was the cause of the chorea. The patient recovered. At the Middlesex Hospital, in 1863, was a fatal case of chorea, under Dr. H. Thompson's care, the result apparently of fright. After death the substance of the brain generally was found much softened, especially the anterior pillars of the fornix and the septum lucidum, and the left side was more softened than the right. Considerable softening also existed of the spinal cord from the third or fourth to the sixth and seventh dorsal vertebræ, and the cervical swelling was softer than natural (see 'Med. Times,' July 25, 1863). The reader of Dr. Copland's 'Dictionary of Medicine' may remember that, in 1821, he recorded a case of chorea, complicated or alternating with rheumatism, and with metastasis to the heart and spinal membranes, which, after death, were found to be covered with coagulable lymph, &c.

case 6, complication is not quite clear, and in case 34 it was only in a former attack that the mind had been affected. In case 62, mental excitement, "as if she was going out of her mind," had existed at one time. This comparative immunity from any affection of the mind in these choreic cases is perhaps worthy of comment, as some authors have spoken of the not unfrequent alliance between the two.¹ In cases 44 and 80, the patients had been more or less liable to hysterical attacks; it may be remembered that in two of my fatal cases, hysteria had co-existed. Dr. Chambers also records a case (op. cit., p. 365) of chorea in which hysterical attacks had occurred.²

Regarding PARALYTIC symptoms, in eleven cases we have distinct mention of paralysis of some kind or other (viz., in cases 18, 19, 21, 43, 52, 58, 62, 66, 74, 75, and 79). In this category I have placed only those cases in which actual want of power in the muscles of the limbs or face existed, and not those cases in which muscular weakness resulted as a consequence of want of power of direction of and of harmonising the muscular action.

In cases 30 and 75, positive anæsthesia existed,³ and in the latter

¹ Marcè, mentioning their frequent coincidence (see number of this 'Review' for July, 1859, p. 256), describes the association in a systematic manner as being of five varieties, as follows:—1. Troubles of moral sensibility, irritability of temper, sadness. 2. Troubles of intelligence, loss of memory, mobility of ideas, and inability to fix attention. 3. Hallucinations, between waking and sleeping, and of the sight chiefly. 4. Maniacal delirium, which, if recovery occur, may leave the mind affected. In the 'Year Book of the Sydenham Society for 1865,' p. 84, are related two highly interesting cases, recorded by Thore, and quoted from the 'Ann. Med. Psych.,' 1865, in which insanity followed chronic attacks of chorea; and allusions are made to the writings of several well-known authors, showing that various kinds of intellectual and emotional insanity may occur in cases of chorea, though it appears that Thore considers that these mental affections can hardly depend upon the choreic state, but are chiefly caused by coincident diseases, such as typhus, rheumatism, or chlorosis. Dr. Inman, in his 'Foundation for a New Theory of Medicine,' 1861, p. 153, observes that "in chorea we have at times a mental prostration, amounting almost to idiocy." Romberg, vol. ii, p. 57, observes that in chorea, "except in complications, no psychical disturbances are manifested." Trousseau, on the other hand, observes that in every case of chorea there is, with few exceptions, more or less marked impairment of the intellectual faculties.

² I have now a boy in St. George's Hospital with chorea, who has had two or three attacks of chorea, with long intervals previously, and his mother assures me that on each occasion he has during the attacks forgotten "all his learning," so that he actually had to be taught his alphabet afresh after each attack. He has never had any fright nor rheumatic attack, but has had ascarides.

³ Trousseau speaks of diminution of sensibility existing in most cases of chorea, and of anæsthesia, when it exists, being greater on the most convulsed side. I have lately had related to me by Dr. Ilott, of Bromley, a case of chorea, in which the movement was confined to the right arm, which "was constantly in motion, unless strapped down to the body; when relieved, the movement would instantly begin. It was almost entirely devoid of sensation during the earlier part of the time. This want of sensation gradually improved, and the movement became less violent." It seems that "the improvement dated from a time when the patient had a peculiar thrill down his arm, similar in character to one he had at the commencement of the attack." From this time the move-

case there was loss of power in the left arm and left side of the face. The atrophy of the muscles and of the bones of the shoulder, in

ments were much "more under control, and it was only when he became excited that he had any twitching. He has now quite recovered, and is employed as a French polisher. The medical treatment consisted chiefly in the use of iron in various forms." The patient was an orphan boy, aged 13, and of average ability, as Mr. Cattlin, of Brighton, who knew him, informs me. He has also told me that the boy had paralysis during his first dentition, and also, he thought, had been the subject of tapeworm. He had been under Dr. Gull's care, at Guy's Hospital, and also under Dr. Hare's care. The case reminds one of those cases described by authors, in which the movements consist of "malleation." The following case, described in Dr. Charlton's book 'on the Bath Waters,' p. 53, may form a pendant to that of Dr. Ilott's:—A woman had a fright, which first brought on convulsions and great pain in the stomach. Afterwards she was the subject of a peculiar involuntary motion of the right arm. This movement was perpetual, "like the swing of a pendulum," raising the hand, at every vibration, higher than the head, and seemed to alternate with convulsive movements. The motion of the arm always ceased during sleep, but returned immediately on waking, and continued all day. She got well, as was supposed, under the influence of opium, given in considerable doses.

Dr. Parkes, in 1861, had a case under his care at University College, in which the movements were limited to the right arm, and were like those produced by electrical shocks. Sometimes there was *anæsthesia* of the affected arm, and once a tendency to twitching of the opposite arm. It was described as being like the cases recorded by Dr. Pignacca under the name of electrical chorea, given by Dubini, of Milan, and which are probably epileptic in character (see 'Lancet,' March 2, 1861, p. 214). Dr. Parke's patient recovered. A case of "chorea electrica traumatica" treated successfully by wet-sheet packing is quoted in 'Schmidt's Jahrbuch,' 1860, p. 305.

Along with these cases also may be quoted one described by Dr. Aspray, in the 'Lancet,' for July 15, 1865, p. 65, in which the patient, a female, was affected by violent choreic jactitations, first of the right arm, which was thrown upwards and downwards, from the face to the knee, occasionally changing to the rotatory motion, and then of the opposite arm. The patient had no return of the attacks. She had been suffering from constipation.

In connection with the above cases, mention may also here be well made of the case described by Dr. Sanders, in the 'Edinburgh Med. Journal,' for May, 1865, under the name of "pseudo-paralysis agitans," or "spinal chorea" (?) a case belonging to the class "tremores." "The case bore a general resemblance to those of chorea," but "really differed entirely from this affection," the movements being shaking, oscillating to and fro by the alternate action of antagonistic muscles, repeating themselves rhythmically and usually symmetrical. The predisposing cause of the affection seemed to be an accident some months previously, and the existing cause, fright, occasioned by a second fall; and Dr. Sanders thought that the affection depended on a weak and excitable condition of the motor centres in the spinal cord, due to *anæmia* of its grey substances. Sometimes no doubt the diagnosis between true chorea and other forms of morbid muscular movements is difficult. Dr. T. Thompson (op. cit.) quotes a case described by Dr. Dufour and Rennes, in which the choreic movements were "zigzag," in character, and were mistaken for those of drunkenness.

It has been remarked by Dr. Elliotson, that when the disorder is confined to the muscles of one arm or of the hand, and especially in the adult, he had never known the disease cured.

Although not an instance of chorea, but rather of hysteria, I may here record the following interesting case which I witnessed:—The patient, a young lady, had been watching her dying father, whose respirations were very loud and of rather a peculiar rhythm. After his death, the daughter, stunned as it were by her loss, and hardly realising it, could not shed tears, but for some time (three or four hours) continued pacing up and down the room with a peculiar movement of the head,

case 59, are worthy of notice; but, dating so far back as they do, they appear to have had no connection with the choreic state. In case 79, there was atrophy of the adductor muscles of the thumb on both sides.¹

Looking at the condition of the PUPILS of the eyes, I found that in many cases dilatation of both pupils existed, as is commonly noticed by observers of chorea; but of this appearance I have not made special note in my cases. In the following cases, however, disparity between the two pupils was noted (a much more important phenomena, I need hardly say, than equal dilatation of both), viz., in cases 2, 20, 61, 71, and 74; and in all of these instances it is curious to note that it was the *right* pupil which was dilated more than the left.²

Respecting PAIN experienced, I observe that, excluding such pain in the limbs and joints as may be looked upon as being rheumatic, &c., we have notice in the following cases of distinct pain in the head, viz., in case 10 (in which, apparently, some syncope co-existed) in cases 16, 17, 19, and 64. In case No. 59 "much spinal tenderness" was complained of.

Regarding acknowledged affections of VISION, such seem to have existed in No. 17, where "something before the eyes was always noticed;" and in case 45, where dimness of sight of the right eye, along with headache, existed; and in No. 64, where "black spots" in the sight were spoken of.

As respects any connection between the affection and *sleep*, it will be admitted that in cases 16, 17, and 33, the choreic movements were wont, more or less, to continue during sleep; whilst in case 36 the patient was said "to plunge when asleep in bed;" and in case 43 the eyes would "twitch much" during sleep. In case 24, the patient was said to be "always worse in bed when first roused up from sleep."

In case 60, "FOAMING at the mouth" was described as existing; and in case 40, a liability to CHOKING whilst eating. This, no doubt, is an exaggeration of the difficulty in swallowing, which, as well as difficulty of speech, is so common a symptom in

which, as did her footsteps, repeated and kept up the same time as the respiration of the dying man. At last this state had to be checked and arrested by friends.

¹ Rostan (quoted by Aitken, in his 'Science and Practice of Medicine,' vol. ii, p. 340) mentions the case of a woman, aged 50, who had been the subject of chorea, affecting the entire left side since she was a child, in whom the limbs on the *same* side were *atrophied*. After death no morbid appearances were met with in the brain.

² Youatt records the case of a dog with chorea, in which both pupils were much contracted.

³ Dr. Fox of Clifton has told me of a case now under his care of an old lady in whom choreic movements of the right leg, hand, and arm, exist. They are most intense *during sleep*, but may be absent for a day together, and can almost always be controlled by a touch of any one's hand.

certain of the severer cases of the disease, or it may have been hysterical in its character.

Case 35 was remarkable, as exhibiting a tendency to RETENTION OF URINE, which sometimes lasted for twenty-four hours, Dr. Chambers, in his 'Lectures,' page 360, mentions the case of a boy, aged nine, with chorea, who was unable to retain his fæces or urine; and Trousseau alludes to cases of relaxation of the sphincters of the rectum and bladder. To the condition of the sphincters in chorea, I have already alluded in connection with one of the fatal cases described (see footnote, page 18). Dr. Levick, in his paper above quoted, states that Dr. Pepper, of the University of Pennsylvania, told him that he had known incontinence of urine to interchange with chorea of the external muscles and conversely.

In addition to the above cases of chorea, I have notes of one or two other remarkable cases, in which the symptoms were exceptional. Thus, three or four years ago, we had in our wards for a length of time a case of a lad aged eighteen, the son of a medical man, affected with a form of chorea in which, in addition to the more ordinary involuntary spasmodic movements, the most grotesque and at the same time alarming actions were exhibited, for he was constantly and violently throwing about and twisting his whole body and his head to and fro, and his arms in all directions, sometimes falling down as if dragged down by his own contortions; constantly "banging himself" against the bedstead, and making his face quite turgid, and putting himself out of breath by his exertions and jactitations, making also a peculiar grunting noise; all this time being made worse whenever he was noticed or questioned about it. It was said that he had caused the affection by masturbating habits, and that he had been treated by caustics applied to the urethra.

He had been in St. Mary's Hospital, and most accidentally I found that it was the case described in Dr. Chambers' 'Lectures,' p. 378, as being under his notice in St. Mary's Hospital in 1860. The movements are well described as "coming on in paroxysms, principally affecting the muscles of the neck, and twisting his head so far round sometimes as to cause him to tumble down, screaming and barking." Among other remedies, morphia was tried subcutaneously injected at St. George's Hospital, and it was also tried, along with other things, at St. Mary's Hospital, but no good appeared to follow. He left London in much the same state as when he came, and eventually he was, as it turned out, placed under the care of my friend, Dr. Boyd, at the Wells Asylum, where I accidentally saw him several months afterwards, whilst on a visit at Wells. He was out in the garden, talking to himself among some bushes, and I was told that his habit was to be out much alone, which was permitted. He

recognised and was pleased to see me, and talked about St. George's Hospital. He was very much quieter than when I had seen him previously, though he still knocked about his head and body to a great extent. In a letter received from Dr. Boyd in December last, he says, with reference to him—"The young man with chorea, now aged twenty-four, is still here. He has not been under any course of medical treatment lately, but he still uses the cold douche himself or the shower-bath. He is rational, and in very good health, but still has spasms affecting the muscles of the face and neck principally; he stammers, and the spasms increase when spoken to, especially by strangers. During the summer he was able to join at cricket, also in the weekly dances, and he assist the attendants out of doors occasionally. He has always cared little for cold air, but heat oppressed him. He has a large appetite for food. He might now engage in some suitable occupation."

In the case of a young woman, with deformity of the fingers and toes, who was in our hospital with an hysterico-choreical attack about two years ago, and who often visits the wards now, the chief symptom consisted of spasm of the neck-muscles, a peculiar jerk of the head, accompanied by a remarkable squeaky noise formed in the larynx, reminding one of that made by a guinea-pig, as if the breath were suddenly and involuntarily propelled by some spasm of the expiratory muscles.¹ A similar jerking back of the head from chorea of the neck-muscles is related by Dr. Barker in the 'Medical Times and Gazette' for 1863, July 25th. No other muscles of the body were affected; the patient recovered. On the same page (92), a case of chorea under Dr. Brown-Séquard is recorded, in which GREAT HYPERTROPHY of the muscles of the neck was caused by their constant action. The above-mentioned peculiar sound or squeaking noise recalls to mind a remarkable case of chorea related by Dr. Thompson, of Bideford, in the 'British Medical Journal' for February 11, 1865, in which, along with a variety of other odd symptoms, the patient had "a peculiar convulsive voice-sound, somewhat resembling hiccough, repeated with almost the rapidity of time-seconds, and accompanied by an agitation of the neck much resembling paralysis agitans."

In another case, which was under my care as an out-patient at the

¹ Romberg, in vol. ii, p. 55 of his work (Sydenham edition), relates the case of a female, æt. 48, with chorea of eight years' standing, in whom "inspiration was often accelerated, and accompanied by a loud *whistling* sound;" also that of a child, æt. 8, in whom dyspnœa, *whistling* inspiration, and palpitation existed; and a third one, a child, in whom was observed a "rapid and short concussion of the thorax," "invariably accompanied by a brief snapping noise," the result of an affection of the inspiratory, specially intercostal muscles, and a spasmodic condition of the glottis. Trousseau speaks of the voice being altered in some cases of chorea, and the patients uttering "a kind of a bark," and also of the voice "coming out in inspiration, instead of expiration."

hospital, the patient (a woman) was constantly *rotating* the head as fast as she possibly could; the velocity of this movement was excessive, but it appeared to have no important effect upon the patient, whereas on trying myself to execute it with the same rapidity, I became quite giddy at once, and unable to proceed. The patient had been subject to the affection for some months, and never appeared at the hospital without this rotation of the head going on.¹ After a time I quite lost sight of this patient. In another case, apparently of chorea combined with hysteria, related lately to me by a non-medical friend, during the attacks the patient would rotate round her own axis with great quickness, somewhat reminding one of those singular and rare cases of disease and injuries of the different parts of the cerebrum proper, also of the pons Varolii, medulla oblongata, and cerebellum, or its peduncle,² in which rotatory movements are at times

¹ Flourens, in his 'Experiments on the Respective Independence of the Cerebral Functions,' related to the French Academy, April 1, 1861, found that section of the semicircular canals produced brusque motions of the head in various directions, according to the canal injured.

² It may be of interest here to refer a little to these rotatory motions. Authorities, chiefly French, as to the cause of such movements are mentioned by various writers of past years, but the reader will find more recent interesting observations, by Gratiolet and Leven, related to the French Academy, on rotations on the axis of the body, produced experimentally, recorded in the 'Archives Gén. de Méd.,' vol. i, 1861, p. 112. They found that vertical section in the centre of the lateral lobes caused the animal instantly to rotate, and when the rotatory movements were arrested for a time the least noise or movement produced their return. The observers came to the conclusion that in the uninjured animal all the muscular equilibriums were in accord and harmonious, whilst after lesion of the cerebellum there was a manifest dissociation of these equilibriums,—this effect constantly resulting from every lesion of the lateral parts of the organ where resides the sense of co-ordination of the movements of the body. In the 'Journal de Physiologie,' 1861, Wagner, in his observations on the functions of the brain, details the results especially of experiments on the cerebellum. In addition to other consequences he found that injuries on one side of the cerebellum produced movements of rotation sometimes on the side of the injury, at others on the opposite side; but these movements after a time disappeared. In the same journal is a note by Brown-Sequard on rotatory movements *à propos* of a case of "mouvement de manège" in a cat, the result of hæmorrhage into the pons Varolii, in which he suggests that rotatory movements are the result of convulsions localised in certain groups of muscles, and that some direct or indirect irritation is the cause of these convulsions. In the 'Comptes rendus,' 1860 and 1861, the results of observations, by Flourens and Czermak, on the peculiar movements of the head, caused by injury of the semicircular canals, will be seen. A highly interesting case of epilepsy in which unmeaning laughter, tetanoid spasm, and peculiar rotatory movements, chiefly from right to left, has been described by Dr. Paget, of Cambridge, in the 'British Medical Journal,' Sept. 22, 1860. In Dr. Brown-Sequard's 'Lectures on the Phys. and Path. of the Central Nervous System,' 1860, remarks exist (p. 192) about the production of these rotatory or vertiginous movements, which vary "according to the place injured and the depth and size of the injury," and are the result of spasm of certain muscles, or of anæmia or irritation of distant nerves,—injuries of the different parts of the optic thalamus, the crus cerebri, the tubercula quadrigemina, processus cerebelli, auditory and facial nerves, and the neighbourhood of insertion of the cervical roots of the par vagum, according to the experiments of himself, of Flourens, Schiff, Magendie, Lafargue, M. Magron, &c., being quoted. The various theories regarding such rotatory

manifested.¹ Trousseau, among other varieties of chorea, speaks of chorea rotatoria and chorea oscillatoria.

Similar cases are mentioned by Dr. T. Thompson, who alludes (op. cit.) to instances of involuntary movements of the whole or of parts of the body, and observes that rotation of the head had been noticed by Drs. Conolly and Crawford, and Mr. Hunter, and others; he especially quotes also a case of Dr. Watt's, in which a girl was wont to spin round on her feet like a spinning-top, or to roll rapidly in bed from one side to the other sixty times a minute. Dr. Winn, in the 'Med. Times and Gaz.,' 1855, records the case of a child who, being nine years old, had had from infancy constant rotatory movements of the body from left to right. Sometimes these movements are doubtless the results of habit. A child with dropsy and disease of the kidneys, under my care in the hospital lately, had clearly the habit (without any disease causing it) of rolling the head on the pillow constantly from side to side. Another child in the next bed, under the care of my colleague, Dr. Barclay, had this movement also, but in her case the patient was subject to remarkable epileptiform attacks, which could be at any moment excited by a sudden (unexpected or not) tap on or shake of the head or shoulder. Dr. Barclay will publish this interesting case, I believe, but allows me here to mention it.

Among these anomalous cases of chorea or chorea-like affections few are more singular, perhaps, than those which, consisting of bowing movements, have been termed "eclampsia nutans," and by the late Sir C. Clarke "salaam convulsions." Of this affection I have only seen one instance, and that was in a child whom I attended along with Dr. Marshall Hall, who has described this form of disease. In this, the patient, a child, was from time to time affected by a peculiar slow and measured to-and-fro motion of the entire body. Levick (op. cit.) speaks of this variety, and describes two cases of it which he had seen, one in a child, and another in an adult. He quotes several authors who have described or given cases of this singular affection.²

movements are also considered in connection with experiments upon the tadpole, by Velpeau, in the 'Gaz. Méd. de Paris,' 1862, No. 20. Friedberg, of Berlin, communicated to the Academy of Sciences the case of a patient who was trephined for fracture of the right parietal bone, and who subsequently became affected with diabetes, then the rotatory or "manège" movements in the longitudinal axis of the body, then hemiplegia on the right side, and then paralysis of the par vagum. He takes occasion to make several propositions regarding the conditions for the production of this rotatory movement. Mesnet also, *à propos* of a curious case, has a paper in the 'Archives Gén. de Méd.' for May, 1862, upon the so-called "circular" or gyratory, and the manège movements, which he likens to the staggers in sheep, except that they are not the result of the presence of *cænuri*.

¹ This movement has been noticed in the chorea of dogs.

² West, Barton, Bird, Newham, Wiltshire, Faber. In the 'American Journal of Medical Science' for April, 1843, a case of "salaam convulsion" is related by Dr. Bennett. Dr. John Clarke informs me he has seen one case of this affection in a

The following case of anomalous chorea was under my care some months ago :—

Emma F—, æt. 11, one of seven sisters, of whom all others were healthy, though the family was phthisical, was admitted into St. George's Hospital, October 4th, 1864, with chorea. She had been ill twelve months, and done no work all that time. Her illness was described as having begun with symptoms of cold and swelling of the knees, and when admitted there was some enlargement of the inner condyles of both tibiæ, and some œdema of the legs. The heart's sounds were natural. There was a little cough and pain in the head. The urine was phosphatic and turbid and contained a slight amount of albumen. The patient left the hospital on the 24th, in the same condition as when she came in; and it was said that she had a brother who died after an eighteen months' illness of the same disease, but without the St. Vitus's dance.

She was again admitted February 27th, 1867, under my care, but in a much worse state than when she left the hospital, having for five months QUITE LOST HER SPEECH. The catamenia had never appeared.

When admitted, it was found that she would lie in bed without changing her position, but having almost continual choreic movements over the whole body; when the movements ceased the limbs were rigid. She was quite unable to articulate, but understood all that was said to her. She was apparently suffering pain, and she was frequently putting her fingers into her mouth. The pupils were rather dilated, but equal in size, and acted well to light; no strabismus existed. There was complete paralysis of the sphincters of the rectum. The limbs were all, as before said, rigid, and when moved they would remain in *the same position in which they were placed*, and the head was generally drawn over to the left owing to spasm of the right sterno-cleido-mastoid muscle. The pulse was 160 per minute and the skin very perspiring and 99° F. of temperature. She had an oil and assafoetida enema, and scammony calomel, at the same time.

In the evening the temperature was 101 F.°, and on the following morning 99·8°. Large crepitation was found in both lungs, and two or three days later the left hand was spasmodically contracted, and she had been very noisy and delirious, requiring the subcutaneous injection of morphia, which was afterwards from time to time repeated. Quinine, and steel, and valerian, and stimulants, were given. About a week after admission, the pupil of the *left* eye was

child with mesenteric disease: the movement of the head was from side to side, and existed hardly without intermission for three weeks. After death, congestion of the cerebral membranes and softening of the brain with effusion of serum in the spinal canal were found.

found from time to time to be *smaller* than the other one, but not always so. The lungs continued loaded, but there was no dyspnœa.

The temperature continued very high, generally about 101.6° . Continual recumbency on the right hand had produced some soreness and vesication. It was observed that the extensor muscles of the right arm seemed partly paralysed, whilst those of the left arm and of the toes of the right foot were spasmodically contracted. She took strychnia subsequently, along with steel. She varied much both as to taking food and sleep, sometimes requiring the morphia injection; at times she was also much noisier than at others. The profuse perspirations were treated by opium and sulphuric acid, though not with much success. On the 11th of March, it was noticed that an abscess had formed at the left temple owing to the head being so much drawn to that side. At the end of March, it is reported that her appearance was improving, and that she continued to take food well. Both knees were drawn up to the abdomen constantly as before, the bed-sores looking better. Moist sounds existed extending in both lungs. The temperature was then generally 98.6° . The tincture of Cannabis Indica and shower-baths were prescribed. Throughout, the pupils were very dilated. About April 5th, she spoke a few words occasionally. The bed-sores continued to do well; the Cannabis was increased, and subcutaneous injections of morphia and atropine were given. On the 20th she went out having from time to time spoken a few words. I have heard nothing of her since.

The high temperature in the above case is of interest, though perhaps not so much so as if the case had been less complicated. No doubt it must be considered as resulting from the quickening of the heart and circulation, consequent upon the muscular activity. In many ordinary cases of chorea I have failed to meet with any positively increased temperature.¹

is In connection with this subject, as a result of muscular movements, I may here allude to the high *specific gravity* of the urine, and the amount of *urea* in that excretion spoken of by some as existing in cases of chorea. The reader will know that I allude to the observations of Walshe (see Lectures on Clinical Medicine, 'Lancet,' 1849, vol. i, p. 85), Bence Jones, Todd, and others. For myself, in a great many ordinary cases of chorea, I have been unable to find anything of the kind beyond what would doubtless be produced by the comparatively high feeding which chorea patients are subjected to. In many cases, even where much food was taken, the

¹ My friend Dr. Fox tells me that he has found the temperature in chorea to be " 99.3° and 100° , and even rather more at night, and that was so in cases where there was not much muscular movement." He thinks it probable that temperature in chorea is higher in cases in which rheumatic element exists. Dr. Ringer has kindly lent me the records of the temperature of three patients with chorea, and in two of these the temperature was, for a short time, raised; but this elevation appeared to occur when the patients were suffering from rheumatism.

urine did not range above 1019 or 20°, but lithates were very abundant.

No doubt under the light of former physiological knowledge it was naturally expected that an increased excretion of urea would take place as an inevitable result of tissue metamorphosis in chorea. Present teaching, however, shows us that we ought neither to have found nor sought for such increase of urea in chorea. On this matter see the 'Ed. Med. Journal,' Feb. 1866, wherein Dr. K. Anderson describes the daily amount of urea in the second week of typhus, as being "decidedly below the standard of health, notwithstanding that the patients were in a state of high fever with the temperature and pulse much above the normal state." See also the experiments of Bischoff, and Voit, and Fick, and Wislicenus of Zurich, corroborated by Professor Frankland, from which it appears that muscular power is derived from the oxidation of hydro-carbonaceous material mainly, though not entirely. Frankland thinks the mechanical force of the muscles is derived from the oxidation of matters contained in the blood, and not from that of the muscles themselves. Dr. Parkes (see 'Proc. Royal Soc.,' Jan., 1867), from experiments, came to the conclusion that, unless nitrogen be found to disappear through the skin, it must be supposed that muscular force is derived from the carbo-hydrates, the amount of nitrogen excreted during active exercise being lower than that excreted during a period of rest, though in the period of rest following work, it is slightly increased. Pettenkofer and Voit noticed recently that muscular work seems to have no influence on the amount of urea excreted.

I will now add the details of a case which was not under my care, but of which I have been favoured with the following notice. I have alluded to it at foot-note to page 26.

It was that of a boy who lived in Derbyshire. He had had some kind of "fever" and was inefficiently nursed, and, subsequently, became severely affected by chorea; during sleep he was perfectly quiet, but on waking would at once commence singing and shouting vociferously, and jumping and "working about" as friends described it, until he was quite exhausted. He would jump violently, and scream loudly, and by jerking motions eject the spittle to an enormous distance. For some time he was unable to swallow any substance, and at last became in consequence "so frantic for food" that he swallowed everything whole directly he put it into his mouth. In this condition he continued for several weeks, and was treated by T. Fentem, Esq., of Eyam, who, in addition to other treatment, applied a blister at the back of the neck. At last, it was determined to take him to the Sheffield Infirmary. To the boy's delight (expecting cure at the Infirmary), a carriage was procured for him, and he was conveyed thither a distance of several miles. He jumped

about and was unmanageable in the vehicle for some time as usual, but when they arrived at the Infirmary with him it was ascertained that he was now all but well.¹ They kept him in the Infirmary for two weeks and treated him with tonics, good food, &c., and he left it still remaining quite well; and since then he has married, and has had no return of the affection. It was the conviction of himself and his friends that he was cured by the shaking of the carriage. This case somewhat reminds one of those cases analogous to chorea termed "*epilepsia saltatoria*."²

¹ I have previously (specially when referring to this fact as a reason against the supposition of serious injury to the nervous centres existing in such cases) alluded to the rapid removal of chorea which sometimes takes place. I may here quote the case of a girl, A. H—, who was admitted into St. George's Hospital with chorea, under the late Dr. Page's care, not long ago. She became the subject of scarlet fever, and the chorea almost entirely departed, apparently in consequence of this attack. I find in the '*British Medical Journal*,' August 1st, 1863, p. 121, a case, quoted from the '*Gaz. des Hôp.*,' of chorea cured, and permanently so by an attack of fever caught in the hospital. Dr. Painter, of Beaufort Gardens, has lately informed me of a case of aggravated hysterical paralysis, which was singularly cured in his presence by the "fright" produced by the sight of a leech on the ground. Many readers may remember the case of paralysis cured by Sir H. Davy, merely by the daily placing the thermometer under the tongue.

² The reader will find the details of a fatal case of chorea in a girl, æt. 13, related by Dr. Inman, of Liverpool, in his work on '*Neuralgia*,' 1860, p. 249. The patient appears to have died of exhaustion; the choreic motions ceased some hours before death. "The post-mortem showed as healthy a body as it was possible to examine." This case is also related along with another fatal case, in which the symptoms "resembled those of tetanus and chorea, but were identical with neither," in his work the '*Foundation of a New Theory*,' &c., p. 466. In Schmidt's '*Jahrbücher*,' 1865, Bd. 137, ser. 2, p. 169, are quoted two cases of so-called "*chorea magna*," of which one proved fatal. This case had been under the care of E. Vecchiotti, in the Ospedale Maggiore at Bologna, and was that of a boy, aged 13, who had had acute rheumatism. The choreic movements commenced in the right arm, and then extended to the entire body. Among other symptoms pressure on the vertebral column was painful. The *temperature was increased*, and the skin greatly perspiring. After death, in addition to other appearances, the veins of the vertebral canal were found distended with blood, the cellular tissue injected, especially about the first dorsal vertebra; and the veins and capillary vessels of the cerebral membranes were injected. The spinal cord opposite the first dorsal vertebra was greatly softened, and of a reddish colour. The *other* case of "*chorea magna*" did not prove fatal, and was communicated by Dr. Frangue of Munich. The patient was a boy 11 years old, who after a fright from a blow on the shoulder lost his speech for six weeks. Speech returned afterwards for a single day, and then disappeared again, choreic movements coming on. Speech again returned, but the choreic movements became worse, and eventually of a most violent kind. With intervals of intermission the disease continued above two years. Much urate of ammonia was passed, and on two examinations abundance of SUGAR was found in the urine. Frangue says that in a female choreic patient he had found sugar in the urine which was not there before, or in the intervals, after every attack. Other cases of so-called "*magna chorea*" are on record, chiefly in German literature, and it seems to bear the name with some authors of "*Chorea Germanorum*." As far as I can learn, Skoda first used the name *chorea magna*, which he described ('*Allg. Wien. Med. Zeitung*,' 1858, 36) as being distinguished from so-called "*chorea minor*" only by its paroxysm-like invasion: the movements may be, however, of a springing, revolving character, and generally are very violent, but not trembling, as in *paralysis agitans*. Among such instances of *chorea magna*, two cases are particularly interesting, one described by Mossler,

In bringing to a close these observations upon chorea, I will (in reference to the questions connected with the history of the fatal cases which I have already given) add the notes of yet other *fatal* cases,¹ two of which have not been yet placed on record. Of these, that already published by Dr. Day, in his 'Clinical Histories with Comments' (see p. 101), is so interesting that I may be pardoned giving a brief abstract of it. The case was that of a boy, aged nine years, who had had acute rheumatic fever two years previously (? with any heart mischief), and who experienced a second attack. Four days after the commencement of the second attack chorea set in. Pericarditis came on, and he died eventually completely exhausted, retaining consciousness to the last. It was remarkable that the choreic spasms were not arrested (only lessened) during sleep; and also that the acid perspirations were confined to different parts of the body at a time, sometimes to one side only, or to a particular limb. After death, in addition to old-standing valvular roughnesses, the fleshy columns and tendinous chords of the heart were covered with "*lymph-like exudations*." The brain was healthy, but the vessels of the spinal membranes were very distended with blood, and in some cases had given way. The spinal nerves over a large extent of the chord, where emerging from the intervertebral notches, seemed pinched, their membranous covering being "at least four times as thick as it normally should be, so that it appeared to form a complete stricture, whilst both before and behind this constriction there was ample evidence of inflammatory action." Moreover, large discoloured spots were found under the skin of the body in many parts. Dr. Day alludes to Dr. Stiebel's opinions (see 'Wochenschrift f. d. Gesamm. Heilk,' 1837, No. 1.; also, 'Brit. and For. Med.-Chir. Rev.,' Oct. 1837, p. 504), that chorea was entirely occasioned by spinal-nerve-irritation, the result of turgescence of the membranes of the spinal cord or medulla oblon-

of Giessen ('Deutsche Klinik,' 1860, p. 30) in a girl aged 12, apparently connected with menstrual efforts, and ending in hysterical convulsions; and another, described by Roth, of Bamberg (see 'Jahrbuch,' vol. cxix, p. 294), in a child aged 11, who became insane and epileptic.

¹ Dr. Fox, of Clifton, has quite recently sent me the note of the following case of complicated chorea. It was "that of a girl who had been epileptic for some years. In spite of this she went to school, and was much impressed by the sayings and doings of a curate with Revivalist tendencies. She was brought to the infirmary with violent choreic and jactitations of the sides, and spent several days and nights in screaming, praying, and swearing. She considered me an impersonation of Satan, and on one occasion bit me severely. In fact, she resembled some of the worst cases of Revivalist hysterical mania, with the element of chorea superadded. In a few days she became more calm, and the chorea gradually left her, but, against my orders, the curate was allowed to see her during her convalescence, and a recurrence of all her symptoms, choreic and other, was induced. She recovered entirely after a complete separation from the religious exciting cause. She died some years afterwards of fever, having been convulsed almost without interruption for forty-eight hours before death, and no lesion of the spinal cord or brain was detected."

gata, and that possibly such other causes as "injuries to the spine and metastasis of rheumatic inflammation" may exist, which causes would of course produce the above-named spinal-nerve-irritation. He, however, unlike Dr. Stiebel, denies that all cases of chorea are dependent on one universal and unalterable cause, and suggests "that in the milder and more yielding forms of the affection, there is mere functional disturbance," while in the "graver attacks there is ALWAYS going on a local lesion of a severe character." Dr. Day observes that in the milder cases the movements were rather like exaggerated natural motions with a shade of "CONTROLLABILITY," whilst in the severe forms "all control is evidently gone, and the spasmodic affection seems to partake almost of the nature of tetanus."

Dr. Day adverts also to the suggestion of Dr. Stiebel, that in the milder cases of chorea, which generally occur amongst young growing persons, it is probable that, as the spinal marrow and the origin of its nerves lie within a bony canal, there may be during development "some want of due relation between the bones and the enclosed part of the nervous system, the cavity not corresponding to the increasing marrow, and then a constriction or pressure may for a time produce an irritating effect." I need hardly say that such an anatomical cause would *arcely* hardly be consistent with the changing and transitory character, and the rapid curability or removal of the affection in many cases. Dr. Stiebel remarks that of the nearly one hundred cases of chorea which he had seen, in not one was there wanting the evidence of an irritation of the spinal nerves, few of the patients not having had pain in some one of the vertebræ during the course of the disease. I have myself frequently noticed that pain was produced in choreic cases by pressure of certain parts of the spine; but I would suggest that such pain need not of necessity indicate any irritation of spinal nerves; it might have been rheumatic, and connected with the fibrous structures about the vertebræ. In connection with this symptom a case related by Dr. Marshall and quoted by Dr. T. Thompson (op. cit.) is interesting, in which symptoms resembling chorea were apparently produced by lightning, and these symptoms were much aggravated by pressure at certain points of the spine. Dr. Day, in alluding to the discoloured spots under the skin in his fatal case, takes occasion to comment on the connection established by some authors between "nerve lesions" and certain eruptions and morbid appearances of the skin. I will here refer to the mention made by Dr. T. Thompson (loc. cit.) of cutaneous diseases, such as urticaria and roseola, co-existing along with chorea and probably resulting from the same state of the nervous system. He quotes one case of chorea of a remarkable kind, in which diffused patches of a bright-red eruption came out near the elbows, on the day the motion ceased, and lasted three days. It came on afterwards again on the arms, when the eruption recurred. I find that Dr.

Bright noticed the coincidence of roseola with chorea (loc. cit. p. 489).

Dr. Day has obligingly lately sent me the notes of the following case which proved fatal.

"A young woman, in the third month of pregnancy, was admitted into the (Stafford) infirmary, suffering from occasional attacks of chorea. The involuntary movement of the voluntary muscles were strange and grotesque, but at first not violent; they soon, however, became so, and so uncontrollable, that she was placed in a ward by herself, all the furniture being removed and the floor being covered with bedding to prevent her injuring herself. No treatment seemed to benefit her, and I was requested to see her a few days before she died. I suggested that the uterus should be emptied; this was not assented to. I had ice bags applied to the spine (there was considerable spinal tenderness) but this did not make matters any better. I then succeeded in bringing her under the influence of chloroform, and she got some rest and *disturbed* sleep; upon waking, the movements commenced as violently as before. She obtained rest and sleep every now and then from the chloroform, but at last died thoroughly exhausted, retaining her consciousness to the last. Post-mortem examination disclosed everything natural except the membranes of the spinal cord, which showed evidence of intense inflammation."

The third and last additional fatal case of which I spoke was as follows. It quite recently occurred at the Somersetshire Asylum, and for its particulars I have to thank my friend Dr. Boyd.

C. C—, æt. 23, married, was six months pregnant with her second child. She was the subject of most severe spasmodic action of the limbs and neck; the cheeks were reddened from friction caused by jerking of the face against the bedding. She was able to answer questions but with great efforts. The tongue was moist and white. The pulse could not properly be counted owing to the jerking of her arms. Bowels confined; the swallowing of food was difficult. She was labouring also under severe bronchitis and her breathing was difficult. The œdema had existed three weeks when premature labour occurred, the fœtus having apparently been dead two or three days; on the following morning she died. She had sleep from an opiate the night before her death, but for several nights previously had had no sleep.

After death the brain, which weighed forty-four ounces, was found congested but natural in structure. The spinal cord was soft and pulpy throughout its entire length. It was examined for me by Mr. Lockhart Clarke, who has sent me the following notes of the specimen: "The spinal cord was slit through longitudinally; only the lower part of the lumbar enlargement remained entire, and this was

not sufficiently hardened to admit of making thin sections. The lower portion of the dorsal region which had been slit through was evidently softened; small fragments examined under the microscope exhibited, however, chiefly an admixture of granules, with some compound granular corpuscles, without any remarkable alteration in the condition of the nerve-fibres. This condition resulted no doubt from an early stage of softening in which a granular fluid exudation was poured out. Just below the middle of the lumbar enlargement the tissue was perfectly pulpy—of the consistence of cream; and a small portion of this picked out and placed on a slide with as little disturbance as possible, showed under the microscope scarcely anything but broken nerve-fibres mixed with granules and some compound granular corpuscles. Almost every fibre had assumed the form of the well-known globular or oval masses of myalin or white substance, of different sizes; so that under a low power the arrangement resembled the cellular structure in a section of wood or stem of plant. In the lower part of the lumbar enlargement that had not been slit the grey substance was evidently in a state of disintegration." The lining membrane of the bronchial tubes was red and coated with reddish mucus. The abdominal organs were healthy.

Thinking it might be interesting to search out what might have been the number of deaths from chorea returned and registered, as having occurred in England and Wales during a series of years, I found that from the year 1839, the first year of our present national plan of registration, they were as follows:

Deaths from Chorea.		Deaths from Chorea.		Deaths from Chorea.	
1839 . .	54	1851 . .	77	1859 . .	55
1840 . .	25	1852 . .	73	1860 . .	66
1841 . .	28	1853 . .	67	1861 . .	71
1842 . .	19	1854 . .	48	1862 . .	52
1847 . .	39	1855 . .	69	1863 . .	63
1848 . .	38	1856 . .	59	1864 . .	73
1849 . .	34	1857 . .	44	1865 . .	88
1850 . .	60	1858 . .	53		

The number of deaths in the various years is very unequal; it would be interesting to try and find out if this difference could fairly be attributable to any peculiar atmospheric or climatic cause. Many authors (this is mentioned by Bond) have found chorea to prevail much more in cold weather and winter than in summer, and certain observers practising in tropical climates have never met with it there. Others again, as quoted by Dr. T. Thompson (*op. cit.*), consider it to be more common in summer.

Corrigenda.—At page 23, in the third line from the bottom, in the place of "the exit of," read "altering"; and in the line below, read "are," in place of "being." Also, at page 27, in the second line from the top, in place of "and universally uninterrupted," read "and almost universally uninterrupted."