CASE IV. March 16th, 1863. M. Adolphe B., aged 40, a musician, was suffering from severe tic in the right cheek, and had the muscles of this side of the face drawn and contracted to a considerable degree. With few intervals, he had suffered from the pain for three and a half years. The face became contracted on the painful side two years ago. Before the pain began, he had been treated for three months with iodide of potassium for constitutional syphilis. He smoked excessively, and allowed that he had for many years been very intemperate in sexual matters. His dinner consisted chiefly of a beef-steak and a pint of stout, taken at a chop-house. He drank tea in large quantity, taking it cold with his tobacco. He never drank any spirits. He had had nearly all his teeth drawn, in the hope that the pain in the cheek might be referred to the irritation from some diseased tooth.

He was recommended to smoke less, and to try a mild tobacco when he did smoke; to take coffee in place of tea; to eat oily and fatty matters, and less lean meat; and to take three drachms of cod-liver oil and ten grains of hypophosphite of soda three times a day.

March 23rd. For the last three days he had been almost altogether free from pain; and last night he slept for several hours continuously (he had been recommended to take a glass of stout shortly before going to bed). This—i. e., sleeping satisfactorily—for several years had been unknown to him.

March 30th. He had had no pain whatever since last visit, and considered himself quite well.

May 19th. Except an occasional pang, for which he said there had been generally good reason, the tic might be said to be altogether at an end. He had lost altogether the anxious nervous look which he had when I first saw him; and the contracted facial muscles had almost altogether recovered their natural condition.

CASE V. M. W., aged 28, a lady's maid, suffered from almost constant nervous headaches. She had never been quite free from these pains for two years, but lately they had been much worse—so much worse, that she was now compelled to leave a good situation. A great moral shock, arising from the discovery of a fellow-servant dead by her side on waking in the morning, was referred to as the cause of the pain.

She had had a great deal of medicine; but did not know what kind of medicines were given, except that they were generally intended to act on the bowels, and to promote menstruation, which was always very scanty and painful, and which was once, six or seven years ago, often accompanied with a great deal of hysterical agitation. She was ordered to take cod-liver oil and hypophosphite of soda, with middle diet and porter.

April 4th. The oil made her sick. She was ordered to take the hypophosphite by itself.

April 6th. She slept much better, and woke this morning without headache—a thing she had not done for two years. She was ordered to resume the oil.

April 8th. She was evidently gaining ground. She had a bad headache now, brought on, it appears, by a violent altercation with another patient in the same ward. The medicine was continued.

April 15th. She had been improving progressively since the last report. There had been no headache for the last three days. The treatment was continued.

May 2nd. There had been no headache at all since the last report. The bowels now acted regularly without medicine. She was much improved in general health.

EFFECT OF SUGAR AND TOBACCO ON THE TEETH. Parents and guardians will be pleased to hear that, at the Congress of Odontologists lately held at Frankfort, it was decided that sugar and tobacco, when taken in a pure state and in moderation, are not injurious to the teeth.

Illustrations OF HOSPITAL PRACTICE:

METROPOLITAN AND PROVINCIAL.

ST. GEORGE'S HOSPITAL.

OBSERVATIONS ON CEREBRAL HÆMORRHAGE, FROM AN
ANALYSIS OF FORTY FATAL CASES.

By THOMAS JONES, Assistant Resident Medical Officer at
the Hospital.

[Continued from page 82.]

b. *Partial Paralysis.* The sudden supervention of hemiplegia is, of all others, the most sure symptom of hæmorrhage into the brain; and this is the most common symptom, for, as seen by the foregoing table (page 82), it occurred in 54 per cent.

In paralysis of one side of the body, the arm and leg are almost always simultaneously affected: this was observed in 16 out of the 31 cases. When any difference existed as to the degree of paralysis, the arm was the limb most completely affected; for, of the 16 cases, the arm was *completely* paralysed in all except one; whilst the leg was but *completely* paralysed in 11. When the paralysis was confined to one extremity, this was found in all the cases to be the arm, as was seen in 3 out of the 16 cases. In my last paper, I related a case of cerebral hæmorrhage, in which the paralysis was confined to the lower extremities; but in the following three cases the paralysis was confined to the arm. I shall give a short summary of each.

CASE II. *Paralysis confined to the Left Arm and Left Side of Face: Intellect Clear until the Sixth Day, when the patient died comatose; Hæmorrhage into, and Disintegration of, the Right Optic Thalamus: Escape of Blood into the Right, and a small quantity into the Left, Lateral Ventricles.* A cab-driver, 50 years of age, was admitted into St. George's Hospital on the 26th of May. He stated that he went out after tea feeling quite well; but soon afterwards, whilst on the box, he was seized with vertigo. He immediately came to the hospital. On admission he was quite sensible—able to give a clear account of himself. There was convergent strabismus of the left eye, and complete paralysis of the left upper extremity. He had perfect power over his legs, and was able to walk upstairs. The face was flushed; the pulse was full and bounding. He was cupped to fourteen ounces, a turpentine injection administered, and ten grains of calomel and a drop of croton oil were given. On the morning of the second day his pulse was still very full and bounding; he was therefore bled to sixteen ounces, and repeated in the evening to twelve ounces; ice was applied to the scalp. In the evening his bowels acted freely. On the third day there was well marked facial palsy of the left side, and convergent strabismus of the right eye. Three grains of calomel were given every six hours; leeches ordered to the temples; and a blister to the nape of the neck, which was dressed with mercurial ointment. Urine could not be obtained for examination, as he passed it with his motions. On the fifth day he remained much in the same condition—still sensible; but on the sixth day coma supervened, and, while in this state, he died in the evening.

POST MORTEM EXAMINATION, twenty-three hours after death. The body was extremely fat. The arteries at the base of the brain were highly atheromatous. The right lateral ventricle was filled with a very large loose clot of blood. A part of the blood had also passed into the left lateral ventricle. The right optic thalamus was

extensively disintegrated; the corpora striata were quite healthy. The right optic thalamus contained a very minute clot of blood. The heart was large, weighing one pound and half an ounce. The wall of the left ventricle was very thick, while that of the right was much diminished in thickness, and the muscular substance partly replaced by a layer of fat. The lungs were healthy in structure; they contained a good deal of blood. There was a white patch on the surface of the spleen, and a small block of fibrine in its substance. The kidneys were rather large, soft in substance, and somewhat congested; their cortical structure was somewhat of a mottled hue, apparently from fibrinous deposit in the parenchyma. The surface was quite smooth. The liver was healthy.

CASE III. *Paralysis of Left Upper Extremity; Complete Unconsciousness: Enormous Effusion in the Arachnoid Cavity over the Right Side.* Mary M., aged 32, was admitted with a history that twelve days since she had a "fit", and that she had been since almost entirely unconscious. She was able, however, to put out her tongue when spoken to loudly. There was an obscure history of her having received a blow over the right eye from a man. On admission, the right arm was quite useless, and the right pupil was dilated much more than the left; and she was almost completely unconscious. She was well purged with calomel and jalap; a mixture was given of compound decoction of aloes, tincture of cantharides, and acetate of potash in nitre draught three times a day; and a blister was applied to the nape of the neck. On the second day the left arm was completely paralysed, and the patient could move the right freely. The urine was free from albumen. Croton oil was administered; eight leeches were applied to the right temple, and a blister placed behind the ears. This treatment, however, was followed by no improvement. She died the same evening comatosed.

POST MORTEM EXAMINATION, fourteen hours after death. The body was in good condition. The skull-cap was very thick. On removing it, the dura mater was seen raised on the right side by an enormous effusion of blood into the arachnoid cavity. This effusion was strictly limited to that side of the head; it extended to the bone, and covered the whole hemisphere. The blood was partly fluid, partly clotted, and adhering pretty firmly to the parietal arachnoid; but none was decolorised. The source of this hemorrhage remained obscure. The vessels of the brain (both at the base and vertex) seemed quite healthy. Most of the branches of any considerable size were followed as far as possible, but no lesion was discovered. The capillaries of the pia mater were examined microscopically, but were found to be quite healthy. The substance of the brain was healthy, and quite free from ecchymosis. The convolutions on the opposite side (left) were flattened, and the cerebral substance pale. On section, the left lateral ventricle was found much enlarged and distended with clear serum. The right lateral ventricle was nearly obliterated by the pressure from without; the central bodies being almost brought into contact with the septum. The latter, also, was pushed considerably beyond the middle line. The central parts of the brain were healthy. Some vascularity was noticed in the scalp on the right side; but there was found no trace of injury, either to the soft parts or the bones, though it was carefully looked for. All the viscera were examined and found healthy.

CASE IV. *Paralysis of Right Arm: Ptosis of Left Eyelid: Partial Loss of Speech: Coma on the Fourteenth Day: Death on the Fifteenth: Hemorrhage into the Right Corpus Striatum, escaping into the corresponding Lateral Ventricle: an older Clot in the Left Optic Thalamus.* William L., aged 48, by occupation a stone-mason, was a patient in the hospital during part of June and July, suffering from rheumatic gout and albuminuria, but without dropsy. He left on the 15th of July, but re-

turned in a fortnight, still suffering from his old complaint—rheumatic gout. On the 26th of August he was discharged in a fair state of health. On the 29th, whilst at home, he was seized with an apoplectic fit and partial paralysis. He was conveyed into the hospital on the 1st of September. On admission, there was ptosis of the left eyelid; both pupils were remarkably contracted. The right arm could only be raised with very great difficulty, although the motion of the corresponding leg was perfect. The right arm and hand were very oedematous, and also the right leg. There was slight swelling of the left leg. He was conscious. His urine was loaded with albumen, had a specific gravity of 1018, and contained granular casts containing oil-globules. He was purged with calomel and compound jalap powder; he took a draught containing nitrate and bicarbonate of potash in water every six hours; and two ounces of gin daily. A blister was applied to the nape of the neck. He remained in much the same state until the 11th of September, when his speech became somewhat affected. On the following day he was seized with a "fit"; after which he gradually became unconscious and semicomatose. He was attacked by convulsive movements, which recurred frequently, and died on the 13th of September, the fifteenth day of the attack.

POST MORTEM EXAMINATION. There was much œdema of the lower extremities. The skull was very thick. The convolutions were flattened, and the surface of the brain pale. The right ventricle was much enlarged, and its cavity partly occupied by blood and serum, but for the greater part by a very large clot of recently effused blood. This blood had passed into the ventricle from an extensive laceration of the corpus striatum, through which a clot, of the consistence of currant jelly, was projecting. This clot filled the body, and the anterior and descending horns of the ventricle; and in the anterior part it had encroached considerably on the substance of the brain, which was lacerated and softened. It had not, however, reached the surface of the organ. There was, in the optic thalamus of the left side, an old clot of a light tawny colour and very lax consistence, enclosed in thickened cerebral substance, but without any distinct cyst. The substance of the thalamus was much encroached upon; but the effusion had not penetrated into the ventricle, from which it was still separated by a thin layer of white matter. The heart seemed in structure healthy; it weighed twelve ounces and a half. There was, however, some calcareous deposit in the substance of the anterior flap of the mitral valve. The margin of the liver was rounded, and its surface puckered and thickened; it weighed three pounds twelve ounces. The kidneys were pale in colour; their surfaces excessively granular. Scattered through the cortical substance were numerous yellowish-white deposits of very small size, which, when examined microscopically, appeared to consist chiefly of fat; and the kidney-tubes contained also much fat. The radial and iliac arteries were found to be excessively atheromatous, with numerous calcareous deposits.

It should be noted that, in two of the above cases, the lesion existed in the optic thalamus of the opposite side. Doubtless the paralysis of the right arm, in the last case, depended upon the older clot in the left optic thalamus, and that the hemorrhage in the right corpus striatum occurred on the day before he died, when he was seized with his fatal attack.

In all the cases of *complete hemiplegia*, which were at first marked by improvement, the lower extremity recovered its power partially, and oftentimes completely, whilst the upper remained paralysed to the last. It should have been stated, that not unfrequently it was observed that the patient was at first seized with *general paralysis*, but that the power of one side was soon regained, hemiplegia remaining.

Coincidentally with hemiplegia, there existed loss of consciousness more or less complete. Of the 21 cases,

this was observed in 18; in one case consciousness was clear; in the remaining two, no note was made on this point. Of the 18 cases, there existed complete loss of consciousness in 9; and partial loss was observed in the remaining 9. In several of those cases with complete loss of consciousness, this symptom came on gradually. Although not stated in any of the cases, I have no doubt that it is a fact that, in the nine cases of partial loss of consciousness, the patient gradually recovered from a state of complete unconsciousness. It is an interesting fact to observe that, in the three cases in which the paralysis was confined to the arm, there existed complete unconsciousness; thus showing that there is no correspondence between the extent of paralysis and the degree of loss of consciousness. And this is more strongly proved by the fact that in nine cases, in which there was complete unconsciousness, there existed no paralysis of any part.

Paralysis of other parts may occur at the same time as hemiplegia. These are: the muscles of the tongue; the muscles of the face; the lips; the muscles which move the eyes; the eyelids; the rectum and bladder; the pharynx and œsophagus; the muscles of respiration; the muscles of the neck and larynx; etc.

Paralysis of these parts is not nearly so frequent as that of the extremities; it constantly occurs on the same side as the paralysed limbs.

The *tongue*, with respect to its movement, is affected in various ways. Sometimes it cannot be protruded at all; in such cases articulation is generally considerably affected. Some persons, again, after frequent attempts at protruding this organ, suddenly recover the power over it, and it is abruptly protruded; when this is effected, it generally deviates to one or the other side. I find that in all the cases in which this deviation was noted, it was towards the paralysed side. That this should be the case, is curious. The explanations proposed to account for it are nothing more than hypotheses; but the most feasible is that which regards the tongue as being *pushed* to the affected side by the action of its unparalysed muscles of the opposite side. In some instances the tongue is protruded perfectly straight.

Paralysis of the *muscles of the cheeks* is very perceptible; for, every time the patient expires, one or both cheeks is observed to be passively distended: and, when food is introduced into the mouth, it is found that the paralysed buccinator is unable to act upon it during mastication, therefore the morsel collects between the cheek and the teeth. In almost all the cases in which there existed complete state of unconsciousness and general paralysis, the cheeks of both sides were paralysed. This symptom is one indicative of extreme danger; for the patients presenting this died very rapidly. In those cases of hemiplegia in which the cheek was paralysed, that was always on the same side as that of the limb.

Considerable discrepancies are frequently committed in noting the state of the commissure of the lips, owing to the difficulty of detecting it; for, so long as the muscles are kept quiescent, no paralysis is perceived, but the instant the muscles are thrown into action, as when the patient opens his mouth, speaks, or smiles, the deviation becomes most perceptible. This will account for the fact that, of the forty cases, the state of the lips is stated in only three; and of these it is distinctly noted that the deviation was towards the *side of the body paralysed*, and the side on which the other muscles were stated to be paralysed; and in the other case—of general paralysis—the lips were drawn to one side. From notes I have taken, however, of cases not included in these forty, I find that the muscles which move the lips are much more frequently affected, and that always on the side of the body paralysed; so that the commissure of the lips was drawn to the opposite side, inclining sometimes upwards and sometimes downwards.

Paralysis of the eyelids, or ptosis, was observed but in

four cases: in two, in which the paralysis was confined to one side of the body, the ptosis existed on the same side; in both of these extensive hæmorrhage was found on the opposite half of the brain, in a situation such as would not readily affect the third nerve after its exit from the brain. In another the ptosis was on the opposite side to the one paralysed (Case iv). In the other case there was drooping of both eyelids, and the paralysis of the body was on both sides.

The *muscles which move the eyes* are occasionally paralysed. Deviation of the eye in one direction, as strabismus, is a symptom of rare occurrence in cerebral hæmorrhage; for, of the forty cases, two only are mentioned in which this phenomenon was observed. In one case of hemiplegia, there existed convergent strabismus of both eyes; in the other, on the contrary, there existed internal strabismus of the right eye, with a state of complete unconsciousness and general paralysis. In the former, the lesion was in the lateral ventricles; in the latter, in the pia mater, about the base.

The *respiration* may be variously affected. Sometimes the respiratory muscles of one side are paralysed, and that side of the chest in consequence is seen to expand insufficiently, and the air entering the corresponding lung very feebly; sometimes the respiration is very deep and slow, accompanied with a noisy inspiration, or stertor. I find that stertor existed in more than half the cases; and that the site of the hæmorrhage in all of them was either in the central ganglia at the base, the pons, or the medulla, or some other part in the immediate neighbourhood of the base. It is a symptom of most serious omen. The patients that presented it generally died, and that very rapidly. In one case of cerebellar hæmorrhage, however, this symptom was well marked, but the patient recovered; but was readmitted for a second and a fatal attack. Cerebellar hæmorrhage is considered more fatal than cerebral hæmorrhage, because the former is more frequently attended by stertor. Paralysis of the muscles of the pharynx and œsophagus, causing dysphagia, is very rare; for it was only observed in three cases, all of which proved rapidly fatal. I have seen a case in which the power of deglutition was so lost that the patient was fed by means of the stomach-pump, the paralysis ceased, and the patient recovered with perfect power of deglutition; thus showing that those cases are not altogether hopeless which present this symptom. Vomiting occurred in seven, and nausea in three of the forty cases. This is considered to be a constant symptom of *cerebellar hæmorrhage*. In two only of the seven did the hæmorrhage involve, besides other parts, any portion of the cerebellum; and in one case, in which there existed two or more large clots in one of the cerebellar lobes, there was no vomiting.

Paralysis of the *sphincters* is noted in eight of the cases; paralysis of the *bladder* is not a very common phenomenon after the first shock of the attack has passed off.

Even the *arteries* are not exempt from the paralyzing influence of hæmorrhage into the brain. I found in one case visible pulsation in all the principal arteries of one side of the body, whilst those of the opposite could not be felt. This visible pulsation was on the same side as the principal clot (which was very large) in the brain; but there was also hæmorrhage in the ventricle of, and the subarachnoid space over, the left side. Paralysis of the limbs was complete on both sides. This condition of the pulse has not been frequently observed. Whether the visible pulsation was caused by the obstruction to the circulation of the blood on the right side of the brain, or by paralysis of the vaso-motor nerves, I shall not attempt to discuss until I see more of such cases. It is important, therefore, to ascertain, before we adopt our treatment, the condition of the pulse *on both sides*, as collapse may coexist with a *full pulse* on one side of the body.

In cerebral hæmorrhage, what is the state of the pupils? These present a variety of modifications. The following table shows the relative frequency of the different alterations of the pupils as observed in twenty-nine cases, in which notes on this point were recorded.

Condition of Pupils.	No. of Cases.	Per Cent.
Both contracted . . . 9	31.034	
One only contracted . . 4	13.75	
Total contracted . . . 13	44.784	
Both dilated . . . 5	17.24	
One only dilated . . . 5	17.24	
Total dilated . . . 10	34.48	
"Inactive" . . . 2	6.87	
Natural . . . 4	13.75	
	29	99.88

Thus we find the pupils much more frequently altered than natural: this was observed in 86 per cent. But it should be remembered that the size of the pupil is extremely variable, even within the range of health. We may, however, confidently assert that inequality in the size of each pupil, or inactivity of the same, are never phenomena attending sound health; and this condition is positively stated to have occurred in about 39 per cent. of the cases. Although small and dilated pupils are frequently seen in healthy persons, yet these states in the degree noticed in the above cases, their permanency, together with their sluggishness, mark them at once as depending upon the appreciable lesion found in the brain in each case. After excluding all sources of fallacy, these facts show that modifications of the pupils occur, in by far the majority of the cases, as the effect of cerebral hæmorrhage.

Now, what relation do these several conditions of the pupils bear to paralysis of the extremities, etc.? Of the nine cases in which both pupils were contracted, there existed hemiplegia in five, paralysis of both sides of the body in one, and in the remaining three there was no paralysis. Further, of the four cases in which one pupil only was contracted, there was hemiplegia in two; in one of which the paralysis of the extremities was on the same side as the contracted pupil, and in the other on the opposite side; in one there was paralysis of the limbs on both sides of the body, and in the other there was no paralysis. Thus, in contraction of one or both pupils, paralysis is more frequently present than absent, for this was observed in about 70 per cent.; and paralysis of one side more frequently than that of both, for hemiplegia existed in about 54 per cent., while general paralysis only in about 15 per cent. There does not seem to exist any relation between the contracted pupils and the site of the paralysis in different parts.

Of the ten cases in which one or both pupils were dilated, there was paralysis of the limbs in all except one. Of the five in which both pupils were dilated, there was hemiplegia in three, paralysis of both sides in one, and no paralysis in the other. Of the five cases in which one pupil was dilated, there existed hemiplegia in three; in two of which on the corresponding side to the dilated pupil, and in the other on the opposite side. In the other two there was general paralysis.

The foregoing seem to point that paralysis is even more frequently associated with dilated than contracted pupils; for with the former state of the pupils paralysis occurred in 90 per cent. It also shows that general paralysis is more frequently observed with dilated pupils than with the contracted state, as it occurred in 30 per cent. as compared with 15 in the latter. Again, as to the relation of these various modifications of the pupils and the site of the hæmorrhage in the brain, it seems that, in by far the majority of cases of contraction of the pupils, the membranes of the brain are the seat of the hæmorrhage: this was observed in 61 per cent. But to particularise. Of the thirteen cases in which the pupils were contracted,

the hæmorrhage was found in the membranes in eight, or 61 per cent.; in the lateral ventricles in three, or 23 per cent.; and in the hemispheres in two, or 15 per cent. In the nine cases in which both pupils were contracted, the lesion of the membranes existed in those of both sides of the brain in five, and on one side only in one. In one the hæmorrhage was in the lateral ventricle, and in the remaining two in the substance of the hemispheres; in one of which the clot was situated very near the base, so as to encroach very materially upon the membranes. Of the four cases in which one pupil only was contracted, the hæmorrhage was in the membranes on both sides of the brain in one; on one side, which was opposite, in another; and in the lateral ventricle in two—in one on the opposite, and in the other on the corresponding, side. In those cases in which the lesion was in the membranes, it was either in the cavity of the arachnoid, or in the subarachnoid tissue, within the meshes of the pia mater.

The above points to an important fact, that in almost all cases contraction of the pupils is almost always associated with hæmorrhage in contact with the membranes, either on the surface of the brain, which is more frequently, or when these extend into the lateral ventricles. To these points I shall have occasion to refer further on. In the ten cases in which the pupils were dilated, the following shows the several sites of the hæmorrhage in the brain, and their relative frequency.

Seat of Lesion.	No. of Cases.	Per Cent.
Membranes . . . 3	30	
Lateral ventricles . . 6	60	
Hemisphere . . . 1	10	
	10	100

Thus it is interesting to note the complete reversion of the order of the parts affected in the latter, as compared with what was observed in the cases of contracted pupils. In the cases of dilatation, the membranes were the seat of lesion in 30 per cent.; whilst in those of contraction, they were affected in 61 per cent. In dilatation, the ventricles were the site of the hæmorrhage in 60 per cent.; whilst, in contraction, these were observed to be but affected in 23 per cent., and in those cases the hæmorrhage was found in very inconsiderable quantity, such as would not cause much pressure.

Of the five cases in which both pupils were dilated, the lesion was found in both lateral ventricles in four, and in the membranes covering both sides of the brain in the other. In the other five cases, in which one pupil was dilated, the lesion was in the membranes in two—in one of which on both sides of the brain, and in the other on the same side; in the lateral ventricles in two—on the corresponding side in one, and on the opposite in the other; and in the other case the lesion was in the substance of the opposite hemisphere. The following are the main inferences which the above data seem to warrant us to draw.

The pupils are altered in the majority of cases of cerebral hæmorrhage.

Of the modifications, contraction is the most frequent variety.

Contraction of the pupils coexists with paralysis, of which hemiplegia is the most frequent form.

Paralysis is more frequently associated with dilatation of the pupils, and that more frequently general in its extent.

Alterations of the pupils bear no relation to the seat of the paralysis when partial.

Contraction of the pupils almost always depends upon lesion in the membranes; dilatation upon lesion in the substance of the brain, when sufficient to exert a considerable degree of pressure.

[To be continued.]