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CANADA

MEDICAL & SURGICAL JOURNAL.

ORIGINAL COMMUNICATIONS.

Case of Cerebro-Spinal Sub-arachnoid Hæmorrhage, proving suddenly fatal after several attacks of temporary loss, of consciousness. — Autopsy. By GEORGE A. BAYNES M.D., CM.

Read before the Medico-Chirurgical Society 2nd April, 1875.

On the night of the 3rd of March I was called on to see W. T. S. Not being at home the messenger went for Dr. Scott who saw him after having recovered from what was said to be a faint or fit, the doctor ordered him to bed and to receive a cup of tea.

On my return at 11 P.M., I went to the club and saw him he was lying in the Strangers' Room, on pillows; he was much excited being very talkative and throwing his legs about. On enquiry I found that he had had one fit or faint early in the evening, losing consciousness completely but had recovered almost immediately. After some little time he was dressed and placed in a cab to be taken home, when he said that he felt another faint coming on him, and only had time to step from the cab when he fell prostrate on the sidewalk. Calling some of the waiters he was carried into the club again and placed in the strangers' room where I found him. After conversing some little time we dressed him and drove to his rooms in Bleury street. I gave him a purge of calomel and jalap, after which he soon fell asleep, but was very restless all night.

March 4th.—Saw him both morning and evening to-day; at both visits he was dull and very heavy looking, dozing at

intervals. Complained of pain at the epigastrium and nape of the neck, the latter he attributed to the fall after getting out of the cab the night previous. In the evening I gave him a couple of cathartic pills, the purge of the night before not having operated. I remained with him until he was sound asleep.

March 5th.—Saw him at 11 A.M. He still had a very dull, listless appearance; bowels moved once,—complained of dyspepsia. He had been subject to indigestion for some time, for which I had previously prescribed. He asked for more of the pills I used to give him, they were:

℞. Ferri redacti	gr. xl.
Zinci Valerianatis	gr. xx.
Strychniæ	gr. i.
Glycerini	q. s.

Mix and divide into 20 pills; one three times a day after meals.

I also gave him a dose of Bromide of Potassium at night,

March 6th.—Much better to-day, but still very nervous and having a presentiment of another fit. Walked about the room very restlessly from one seat to another; continued the pills with a dose of Bromide at night.

March 7th.—Very much better to-day; more lively. Went out for a drive. Slept well the previous night—continued the same treatment.

March 8th.—Still improving; walks with greater ease than previously, but still is nervous and fears another faint, so I proposed a consultation, asked him who he would have? said, Dr. Campbell. I called on the Doctor and made an appointment for the morrow; continued the same treatment with the Bromide but stopped the strychnine pills.

March 9th.—Dr. Campbell saw him in consultation with me to-day; he told him that he had slight congestion but he would recover; he must take this as a warning, and to be very guarded in the future as to his living. Ordered him to continue the Bromide of Potassium with spt. of Chloro-

form; to get another purge of five grains of Calomel in a cathartic mass.

He walked very fairly to-day but rather weak. Dr. C. pronounced his heart sound.

March 10.—Much improved to-day, more lively; walked talked, ate and drank well. Went out for a drive; complained of no pain whatever. Same treatment was continued.

March 11th.—Saw him this A.M. He was remarkably well. Went out driving again to-day, and wanted a beefsteak, but I allowed him nothing but slops. In the evening about 10 I was sent for to see him, as he had another fit. I went at once, but he had just recovered as I entered the house, the messenger did not wait for me but went for Dr. Campbell, who could not attend; so the messenger went on to Dr. Howard, who arrived almost immediately after I did, and prescribed:

℞ Ammon. Bromide ℥ij; Capsici Tinct. ℥iv;
Syr. Limonis ℥j; Aquae ad ℥vj.

A tablespoonful every hour until quiet or sleep ensues

March 12.—Very little better to-day, weak and nervous, and has a presentiment of coming evil. Wishes to make his will. Saw him in the evening, was a little quieter; left him asleep; all evening he complained of a pain in the back, Continued the Bromide of Ammonium and Capsicum mixt.

March 13.—Still very nervous and restless,—so much so that I proposed to him to see Dr. Howard again, which he consented to. Complained of great pain in the back of the neck and spine, for which I dry-cupped him. It seemed to give him instant relief, for he fell into a quiet sleep and continued so all night. Stopped the Capsicum mixture today and returned to the Bromide of Potassium and Spirits of Chloroform.

March 14th.—Dr. Howard saw him in the afternoon. On examination found his heart healthy, only excessively nervous.

After the Doctor left he talked quietly and walked with

out faltering; seemed very much relieved in mind when his heart was pronounced healthy. Examined his urine but found nothing remarkable. Continued the Bromide and Chloroform.

March 15.—Better to-day; went out for a drive,—ate slept and walked well. In the evening complained of pain in his back, for which I dry-cupped him again.

March 16th.—Still continues well. Went out driving again, ate and walked well; still had a little pain in the back of the neck, this pain was aggravated at night, so I cupped him again, affording the same relief which lasted all night; this evening, for the first time, he complained of pain in the back of the thigh—continued the Bromide and the Spirits of Chloroform.

March 17.—He was marvellously well all day. Talked of starting for England the following week. Drove himself out with a pair of horses. Seemed very strong and well; no pain in the back,—ate well, and walked as if nothing was the matter, but said he had a little Rheumatism in the back of the thigh.

March 18th.—I was summoned at 1.30 A.M., to attend him in another fit. On my arrival I found him dead.

Family history was good. He had served in the Madras army for about 7 years.

He told me he had suffered while in India from an attack of Hypochondriasis, which was very troublesome both to himself and his medical attendant. While here I had treated him for some minor complaints, but with these few exceptions he had had uninterrupted health.

AUTOPSY.—36 hours after death; weather cold; cadaveric rigidity very marked; body well nourished and fat; muscular system greatly developed; uniform purple discoloration of all the posterior part of the body.

CHEST.—I may mention here *en passant* that the left pectoral muscles were absent.

Lungs large—filled with dark blood, slight nodular, fibroid induration at the apex of the right lung—largest and hardest in the left apex.

HEART—not distended with blood; substance flabby—of good color; no opacities or discoloration visible in its cut substance, nor under the endocardium, nor in the fleshy columns; three or four minute white patches of atheroma in the substance of the fibroid ring to which the semilunar segment and anterior mitral segment are attached; no roughening of the surface of the walls on either side of the heart; no disease, in fact, in the heart except the patches of atheroma above mentioned; lining membrane of the ventricles and arch of the aorta deeply stained of a mahogany red from imbibition. Some atheromatous patches without calcareous matter under the lining of the aortic arch. No aneurism of the thoracic or abdominal aorta.

LIVER—large, venously congested, not corrugated nor indurated. Both kidneys normal: one much congested throughout and of dark red color, like liver. Spleen healthy.

HEAD.—Little blood escaped in cutting the scalp and calvaria. Encephalon filled the skull; the membranes were closely applied to brain; the dura mater, normal: not injured at all by the saw or chisel. Convolutions of the convexity and sides of the brain flat and considerable transparent fluid in the sulci and meshes of the pia mater. Extensive extravasation of blood at the base of the brain in subarachnoid space, most abundant and forming thickest layer upon and around the Pons Varolii, and in the neighborhood of the upper and basilar surface of the Medulla oblongata, and upon and around the Crura Cerebri. The extravasation extends forwards in the Pia Mater, as far as the extremity of the Olfactory bulbs, backwards upon the under surface of the cerebellum to its posterior border. It is much thinner in both places than at mid base. On opening the Sylvian fissures, blood is found extravasated in them—more on the right than on the left side—and also along the longitudinal fissure, from the optic commissures in the course of the anterior cerebral arteries. This blood is nearly all black and coagulated; some more recent-looking, redder and not perfectly coagulated, lies on the

surface of the larger, solid extravasation at mid-base [i.e. on and around the Pons Varolii.] The membranes cover all this blood and none of it is effused into the cavity of the arachnoid. The blood is seen to extend down the vertebral canal, forming a black envelope around the spinal cord, in the situation of the cerebro-spinal fluid. Having removed the brain, a few detached superficial small extravasations, as if from minute ruptures, are seen on the sides of both hemispheres, especially over the posterior lobes, but not reaching the upper surface of the brain.

On slicing the cerebrum, the punctæ vasculosæ are not large nor numerous; the cerebral substance is not at all congested; both lateral ventricles filled with transparent serum, of the colour of weak claret and water. A long, narrow, black coagulum extends from the central cavity of the right lateral ventricle in the course and along the external border of the choroid plexus down into the middle cornu, and back into the posterior cornu. The same appearance is found in the left lateral ventricle; the 3rd ventricle is filled with a small, black blood clot which can be traced thence into the 4th ventricle, which cavity is also filled with coagulated blood. In none of the ventricles is there any discernible laceration of the brain-substance, the commissures of the 3rd ventricle being intact. No extravasation is found in the substance of the brain anywhere.

On examining the blood vessels of the brain at the base many of them present opaque, white patches of atheroma. On the left vertebral artery, a circumscribed white fusiform dilatation of the vessel is visible, the enlargement is found on slitting up the vessel to be chiefly one of thickening of the coats at this point; a similar one is seen at the anterior part of the basilar, and upon slitting up the basilar an irregular opening was found about the middle of its course and on its right side in the neighborhood of where it gives off transverse branches; it is difficult to decide if this opening had been made by the accidental cutting off with the scalpel of one of these branches: but there appears to

be some pouching of the walls when the vessel is examined from the inside; no sac is found attached to the basilar artery, but that vessel is covered by and occupies about the centre of the thickest extravasation.

On opening the spinal membranes they are found blackened by extravasated blood within them throughout the entire length of the cord. On removing this and slitting up the Dura Mater Vertebralis, a thin layer of coagulated black blood is found completely enveloping the cord down to the cauda. No blood is extravasated outside the spinal membranes.

Some observations on the Preceding Case of Cerebro-spinal Meningeal Hæmorrhage. By R. P. HOWARD, M.D., etc., Professor of Medicine, McGill University.

Read before the Medico-Chirurgical Society, Montreal.

Having twice seen, during his illness, the subject of the interesting paper just read by Dr. Baynes, and having pronounced a favorable prognosis, I gladly avail of the opportunity of making a few observations on the case.

About 11 P.M., on Friday the 12th March, immediately after his third seizure, I found Mr. B. lying on the floor, surrounded by his Medical attendant and other friends. He appeared much alarmed, and talked in an excited but rational manner. His face was natural; head and general surface of normal temperature; no paralysis existed; the tongue did not deviate when protruded; the pupils were alike, and of average size; articulation was distinct; the cardiac sounds were free from murmur, and, beyond moderate excitement of the heart, and considerable mental agitation, nothing else was noticed. He had taken only a sip of brandy and water just before the paroxysm set in, and it was of such short duration, that before the early arrival of Dr. Baynes it had disappeared.

Again, in consultation, I saw the deceased upon the

14th. He exhibited no signs of cerebral disease; he lay, however quite flat on his back and did not move his head about nor raise it from the pillow while drinking from a cup which he held in his hand. This attracted my attention as it suggested the idea that he either could not or would not raise his head. He complained of feeling very weak, and of having pain in his back; he slowly, and rather as if it caused pain, sat up that I might examine his vertebral column. No tenderness on pressure or percussion, and no projection of a spinous process, curve or depression existed. The cardiac impulse, rythm and sounds were again found normal, and but for pain in the back and the weakness, which appeared to me out of proportion to the duration and suspected nature of the seizures, he appeared to be almost well.

In reply to the anxious questionings of his friends, I gave it as my opinion that the attacks were probably of the nature of epileptic coma or vertigo, and that they were not due, as the patient had feared, to disease of the heart.

The recurrence of the seizures; their short duration; the initial pallor of the countenance, and the absence of paralysis and mental impairment in the intervals between the attacks, suggested the probability that they were the *pseudo-apoplectic phenomena* of *Fatty degeneration* of the heart. However, the youth of the patient, the absence of the physical signs of that affection and the circumstance that he had not previously experienced any symptoms of a weak heart appeared sufficient to exclude such a view. *Cerebral hæmorrhage* seemed to be incompatible with the great suddenness of invasion, with the brief duration, and the complete and prompt removal of the loss of consciousness, with the entire freedom from defective or perverted cerebro-spinal function, whether intellectual, motional or sensory after the seizures; and especially with the frequent recurrence of the symptoms. *Uræmia* was rendered improbable by the absence of albuminuria, œdema of eyelids or ankles

and of non-compensating hypertrophy of left ventricle, and by the transient nature of the attack, and the non-co-existence of epileptiform convulsions.

It was for these reasons that I fell back upon the conclusion that the case was one of "Epileptic Coma, or Vertigo," that variety of *petit mal* in which there is recurring but transient loss of consciousness without convulsions.

Meningeal hæmorrhage not caused by violence nor by the breaking through of a cerebral hæmorrhage,—i. e., primary meningeal hæmorrhage, is generally by pathologists regarded as of rare occurrence, although Dr. Lidell in his "Treatise on Apoplexy" calls this in question, and relates three undoubted examples of it, and one additional instance respecting which only slight doubt as to it having been caused by violence existed. However, I cannot help thinking that his experence is exceptional in this matter.

The *diagnosis* of Hæmorrhage into the *meninges* from hæmorrhage into the *cerebral substance* can only very rarely be made, and then it is rather a lucky guess than a reliable diagnosis.

"The following combinations of phenomena," according to Dr. Reynolds, who is copied by most authors, indicate a probability of Arachnoid hæmorrhage.

1st. Profound coma without paralysis, or with very slight general paralysis.

2nd. Profoundcoma without paralysis but with rigidity or clonic spasm.

3. Hæmiplegia without implication of the facial muscles.

4. An apoplectic attack without anæsthesia.

5. An apoplectic attack of which the symptoms are sometimes interchangeable and assume a remittent course.

6. Imperfect coma with general paralysis.

Reynolds also says that *severe pain* in the *head* not uncommonly precedes the attack for a certain time; that the seizure is not generally so sudden as in Congestive Apo-

plexy or in Cerebral Hæmorrhage; and that "the symptoms are developed seriatim, and rarely simultaneously."

Now, in this case, very many of the above characters failed.

(1). The illness was not preceded by severe pain in the head; (2). The seizures were sudden; (3.) The symptoms did occur simultaneously, and (4) the combinations Nos. 2, 3, 4 and 6 did not obtain. Those observed were complete loss of consciousness, which, however, was of short duration, and remissions, or rather intermissions in the course of the illness.

It appears to me that Reynolds has confounded together true primary sub-arachnoid hæmorrhage and hæmorrhage into the arachnoid cavity consequent upon chronic inflammation of the dura mater, the pachymeningitis interna of Virchow. In the latter affection circumscribed pain in the head precedes the other symptoms for a considerable time; the loss of consciousness, impairment of motility, etc., supervened slowly, are not developed simultaneously, and frequently remit in severity; hemiplegia occasionally occurs but it is apt to be incomplete; the affection is observed most frequently in the course of severe forms of insanity, and involves almost always the convexity of the brain.

This variety of Meningeal hæmorrhage must be excluded, and our future investigations must be directed to that much more *rare* affection primary subarachnoid hæmorrhage, of which the case under discussion is an example, before its diagnostic characters can be accurately determined. Unlike the former, this variety appears to be far more frequently observed at the *base* of the brain, and the blood readily diffuses itself more or less symmetrically and widely all over the base, and sometimes down the spinal membranes and up into the ventricles—facts which may yet assist in distinguishing the two affections, the localized hæmorrhage into the arachnoid cavity on the convexity of the brain, and

usually over one hemisphere, from the diffuse extravasation under the arachnoid at the base of the brain.

Finally, the case before us resembles other recorded instances of Meningeal sub-arachnoid hæmorrhage, in the comparatively early age at which the hæmorrhage occured; in the habits of the patient; in the absence of premonitory symptoms of a suggestive kind, in the suddenness of the seizures, and in the rapidly fatal issue of the final attack.

Its more striking peculiarities appear to be the recurrence of the attacks of loss of consciousness; the transient duration of each attack; the prompt and complete recovery of the faculties after the first three seizures; the pain experienced in the back and thighs; the extensive disease found in the blood vessels after death, and the large effusion of blood along the entire length of the cord in addition to that within the cranium. It may be that the extravasation of even a little blood about the pons and medulla oblongata sufficed to produce instant (but slight) shock, or as Trousseau calls it "cerebral surprise," during which further hæmorrhage ceased, and from which in consequence of the small amount of extravasation, or its wide diffusion, so that it failed to exert much pressure, recovery was prompt and complete. The second seizure which occurred very shortly after the first, may be referred to fresh bleeding during reaction, and while the patient was exerting himself. The subsequent seizures probably coincided with fresh extravasations. The pain in the back and thighs may be accounted for by the presence of the blood in the spinal membranes where it must have compressed the nerves. The *absence* of paraplegia and anæsthesia has been noticed by other observers in these very rare cases of hæmorrhrge into the spinal meninges.

The existence of well marked atheromatous disease of the blood-vessels is interesting, first because such condition is nearly always present in idiopathic cerebral hæmorrhage; and secondly, because of the early age at which the arterial

degeneration had attained such development. The miliary aneurisms of Messrs. Charcot & Bouchard were not carefully looked for. This is of less conseqence in this instance than might at first sight appear. The authors just named do not refer *Meningeal* hæmorrhage to these miliary aneurisms, but extravasation into the cerebral *substance* only. And some high authorities (Rindfleisch, Niemeyer, and others), deny that they produce copious hæmorrhage, and affirm that they develop merely punctiform extravasation.

Montreal, 2nd April, 1875.

Case of Wasting Palsy, with Remarks by JOHN D. CLINE, B.A., M.D.

(Read before the Medico-Chirurgical Society, Montreal.)

William Brownlow, aged 14, was admitted into the Montreal General Hospital on the 6th of March 1875, under the care of Dr. Roddick, and is at present under the care of Dr. Reddy.

He has three sisters and three brothers alive and in good health,—some younger and some older than himself. His father was a butcher by trade, but has followed farming for several years; he is a delicate man, having suffered from a severe form of dyspepsia for the last three years. The patient knows little of the family history on the father's side; has heard of his father having two brothers, who are both dead. His mother had two sisters, who died from fever, scarlatina he thinks. Maternal grandfather still alive. Maternal grandmother died at the age of 80. Father and mother both very temperate. Patient has always been more delicate than the rest of the family, suffering frequently from what he calls "sickness at the stomach." Has always had full power and free use of his limbs till the time of the present attack in August, 1872. Has never been hard worked, doing only the light work about the house. On the 5th of January, 1868, (he is very particular about dates) he received a kick from a horse on the forehead, which injury

laid him up for six months. He was stunned by the blow but soon regained his consciousness. While he was laid up from this injury he suffered great pain in the head; some pieces of necrosed bone came away. There is a scar and depression in the bone marking the seat of this injury.

It is situated directly over the frontal sinus. He recovered perfectly from this, and has never suffered any inconvenience from it since.

For the last three years he has had a spot of eruption, vesicular in character, about three to four inches in diameter, over the point of the right shoulder. Never any eruption anywhere else on his body,

On the the 3rd of August, 1872, got up "all right" in the morning. It was a wet, rainy day. The patient went out with his brother, barefooted, to pick raspberries. In the afternoon he had a headache but was not sick. Next day (Sunday) he was sick in bed all day, vomited, and his headache was very bad. On Monday he was better and went to the brook for a pail of water. On the way he felt his legs giving way under him. In about five minutes he got up and walked home. At night in walking across the floor he fell again. Got up and got on a chair by himself but his legs felt very weak. Slept well that night, and in the morning found he could not walk at all. He could stand alone, but whenever he attempted to move he fell. His legs remained weak and got "awful itchy' for a day or two. This itchiness was soon replaced by a severe steady pain all over the limbs from the buttocks to the feet. Never had any pain along the spine on movement or pressure; never had sensations of constriction around the abdomen. The pain was relieved by hot fomentations. It lasted for about six months, with occasional intermissions of an hour or two Never had cramps or twitches in the muscles; never had sensation of numbness nor any peculiar sensation besides the itchiness and pain. During these six months he remained in bed, his legs growing weaker all the time, and he noticed them growing smaller. About a month after his

illness began, Dr. Hamilton was sent for, who gave him medicine internally and applied a blister over the sciatic nerve, and gave him a liniment, which he says took away the pains. As soon as he got rid of the pain he stopped doctoring. During all this time his general health was good. He is of opinion that his legs have not grown any weaker or smaller since the first year of his illness. The right limb has been throughout stronger than the left, he says. There is a patch of long hair three to four inches in diameter on the anterior aspect of the right thigh, which he says has grown since his legs began to get weak. No admission of masturbation can be got from him. No history of any exposure to lead poisoning.

He insists that he could run and walk as well as ever he could until after this exposure to cold and wet.

Present Condition.—The upper part of his trunk and upper extremities are well developed, but his legs are little more than bone. He cannot walk at all. His mode of progression is by his hands, his heels being close together and resting against his buttocks and held there by a strap passed around his legs and over his neck. In this way he is very active, and can go up and down stairs with considerable ease, proving the strength of his arms and upper part of his trunk. He can stand for a short time with the aid of a table. The only support that he gets from his limbs, is from the right one. When standing his appearance is peculiar from the great exaggeration of the lumbo-sacral curve of the spine which arises from atrophy and weakness of the erector spinæ muscles, as well as from atrophy of the gluteal muscles. This is also noticeable almost to the same extent when the patient is lying on his back, and the curvature cannot be reduced by pressure even. This is due to the fact that these muscles were weak from the first and that the shoulders were thrown back in order to place the centre of gravity as far back as possible, so that the vertebræ have become permanently moulded in this position. Also

when lying on his back the limbs are rotated inwards which is due to atrophy of the gluteal and other external rotators. and the weight of the foot.

The measurements of his lower limbs are as follows :—

Around left buttock over groin	15½ inches
Around right buttock over groin	17 "
Left thigh 3 inches below trochanter	10½ "
Right " " "	11½ "
Left 7 " "	9 "
Right " " "	9¾ "
Left thigh just above knee	8 "
Right " "	8½ "
Calf of left leg at largest part	7⅛ "
" right " "	6½ "
Right and left feet at instep are equal	7½ "

Thus while the right buttock and right thigh are larger than the left buttock and thigh the left leg is larger than the right; still all the muscles are atrophied. There is not a single muscle of the lower extremities that has escaped. The muscles of the right thigh are in the greatest state of preservation, and retain considerable tonicity, and can be rendered tense at will, especially those on the anterior aspect of the thigh, all those composing the quadriceps extensor. The vastus externus is the largest and hardest of them. All the rest of the muscles of both limbs communicate a dead flabby sensation to the feel. The muscles, flexors and extensors, of the left leg, though much larger than the corresponding ones of the right, are relatively in a much more advanced state of degeneration than those of either thigh. The abdominal muscles are soft and relaxed, more on the left than on the right side and the walls of the abdomen cannot be kept retracted for any length of time without a sense of fatigue in the muscles. When these muscles are contracted the recti are tensest, and the right oblique more so than the left. The spinal muscles do not appear to be wasted much, but when in a state of contraction

they are softer than they should be; those on the right side more so than the left. As would be inferred from the relative development of the muscles all the movements of the right thigh, flexion, extension, abduction, and adduction, are more easily and powerfully performed than those of the left. These movements of the left are done with a flail-like action. It takes considerable force to antagonise the extension of the right limb. The movements of flexion and extension of the right foot and toes are entirely lost while they are feebly retained in the left leg. If he bend forward when sitting he cannot return to the erect position without his hands on his knees. Thus the degree of voluntary motion is proportioned to the degree of preservation of the muscles. There is almost absolutely no remnant of muscles on the right leg.

Fibrillar tremors are noticed on pressure with the finger in the muscles of both thighs and in those of the abdomen, and frequently in the muscles on the anterior aspect of the right thigh without any irritation, especially when the limb is forcibly extended. These are tremulous wire-like elevations running along under the skin. He never has, and does not now, suffer from cramps or twitches in the muscles. The response of the muscles to the galvanic stimulus is also proportioned to their degree of preservation. I used a powerful induced current of a two-celled battery, which could scarcely be tolerated at all in the healthy muscles. Applied to the anterior of the right thigh it induced a convulsive action of the muscles. The effect was much less on the posterior aspect. On the left thigh and leg it only produced a fibrillar contraction which could be felt but not seen. In the right leg it produced no effect on the muscles, but when over the nerve it would cause the leg to be drawn up. The right gluteal muscles responded more actively than the left, as also the right abdominal more than the left. The left spinal muscles responded more actively than the right. Thus the atrophy is less as we

ascend, though not uniformly on the two sides. Sensation is perfect in the two limbs. There is no morbid sensation as of pain or numbness in the limbs. He says he has occasionally pain in the abdominal muscles, lasting two or three hours at a time. The limbs become very readily cold. His general health is and has been throughout unimpaired. All the organic functions are performed perfectly. Has no difficulty in evacuating his bowels or bladder. I examined his urine and found nothing abnormal. He passed 43 oz., in 24 hours. Sp. Gr. 10.18. Dr. Reddy kindly calculated the quantity of nitrogen in this quantity of urine. It was 368.295 grains.

For the history and some of the notes of this case I am indebted to Dr. Bell, the student who was reporting it, and to Dr. Roddick.

Now, gentlemen, I think there is no doubt this is a case of Cruveilhier's Progressive Muscular Atrophy. We have a muscular atrophy which is progressive, however rapidly, the loss of voluntary motion being proportionate to the degree of atrophy, and the atrophy affecting special muscles or special groups of muscles more than others. But there are some points of peculiar interest in this case. I think to the exposure to cold and wet may be assigned the cause. This is one of the admitted causes. The others are hereditary predisposition, excessive muscular exercise, especially of particular muscles leading to the partial variety, and injuries and diseases of the spine. I am inclined not to connect the disease at all with the injury to the head from the time (four years) that elapsed, from the sudden onset of it after exposure to cold and wet, and from my failing with the greatest care to extract from the patient the history of any weakness in the limbs, or tendency to stumble in walking, previous to this. I have not been able to get any confession of onanism which is sometimes said to be a cause.

The disease usually begins in the upper extremities, the favorite starting point being the thenar region of the hand. But of 105 cases collected by Dr. Roberts, who is the author

of a monograph on the subject, and is also writer of the article on it in Reynolds' System of Medicine, it started in the lower extremities in 18 cases. The pain which our patient had for about six months is not a very usual symptom, though according to Dr. Roberts it is more common when cold and wet is the cause. But the most peculiar feature of the case is the suddenness of the onset of the disease and the rapidity of the atrophy. The patient was exposed to cold and wet on Saturday, and on Monday in walking felt his legs becoming weak, and fell, and from this time within a year his legs became extremely wasted, the wasting being accompanied with severe pains during this the most active period of the disease. The usual course of the disease is very insidious, the wasting being first noticed, and the weakness which existed all the time being discovered probably by accident. In this case the loss of power was present before there was any wasting, before there could have been any wasting. Yet this loss of power was not absolute at any time; it was not paralytic in character. There are cases in which the onset of the disease has been thus sudden, but efforts have always been made to explain this by maintaining that the disease had been slowly progressing, and been noticed by the patient by reason of some sudden event, and thus, to make the history of the case coincide with the usual history of such cases. The best view to take of this case, I think, is that it is one of Progressive Muscular Atrophy, complicated with a lesion of the motor centres of the spinal cord. If in the words of Dr. Roberts: "The nutrition of the muscles is placed under the control of a special set of organic nerves, having upward connections with the sympathetic ganglia, and the cerebro-spinal axis which are by no means identical with the central connexions of the motor nerve-fibres of the same muscles," an opinion which is steadily gaining ground, we may suppose that the same lesion affected the central connexions of both set of nerves at the same time, the motor lesion being manifested first, while the process of atrophy was begun.

As to the prognosis in this case, I think it is very unfavorable. The Progressive Atrophy has not been arrested yet. Dr. Roberts says, that the presence of "Fibrillar tremors is a sign that the disease is advancing, as they are never present in muscles that are wholly destroyed, nor in muscles that have ceased to be the seat of action of the disease." The same author says: that if the disease starts in the legs it will probably become general, and that it is more apt to become general when it arises from cold. But *it* will probably run a long course. It has already lasted two years and a half, and according to the patient, has not advanced much lately.

Correspondence.

Sanitary Matters in Montreal. By A. B. LAROCQUE, M.D.
Editor of Canada Medical and Surgical Journal.

SIR,—Since a few years a great deal has been said and written on sanitary affairs, and we may say that little has been accomplished comparatively with what could have been done had we the power to enforce the numerous suggestions recommended in the reports of the Health officers.

His worship Mayor Hingston, whose inaugural address on health was undoubtedly read with interest by every citizen having at heart the prosperity of our city, has lately called together the Presidents of the Police and Health committees, the city attorney, the chief of Police and the Health officers. The object was to know what were the duties and power of the Health committee and of the Board of Health, composed of the Health and Police committees

Mr. Roy the city attorney explained that legally the Health committee was the executive power of the Board of Health; its duties consisting in attention to the general sanitary condition of the city. That in urgent cases such

as when the city is threatened by epidemic disease, the Board of Health, after a proclamation of the Governor General had the power to enforce any measure thought necessary to prevent the spread of epidemic and contagious diseases.

We know that the Government of the Province of Quebec at the last session, in the amendments to the charter of the city of Montreal, authorised the Council to pass any Bye-law which had for its object the promotion of public health, such as compulsory vaccination, domiciliary visits, the disnfection of dwellings, and the destruction of all things considered dangerous, or which might propagate contagion.

At a meeting of the Board of Health held on the 11th inst., the mayor suggested that a sub-committee composed of Aldermen Grenier, McCord, Holland and Mullin and (his worship of course) be named in order to organise the different departments of the Board of Health, viz., vital statistics, inspection of houses, yards &c., &c., of alimentary substances, scavenging, drainage and hospital for contagious diseases. The sub-committee intends to meet once a week at the health department and to report at stated periods to the Board of Health.

The first meeting took place on Wednesday last. All the members were present, also the health officers. His worship read a code of sanitary by-laws presented by the President of the Health committee. After having made a few alterations in some of the clauses it was resolved that the remaining part of the code should be read at the next meeting. It was also resolved that the mayor and the health officers should choose the nomenclature and classification of diseases to be used in the compilation of vital statistics. The president of the health committee suggested that public notice be given in the papers that vaccination would be performed three times a week at the health department, it was adopted and the committee adjourned to next Wednesday.

In performing vaccination regularly at the health depart-

ment, we hope to be able to establish a bureau of vaccine, from which vaccine will be procured in sufficient quantity for the wants of Montreal and the Province of Quebec.

Small pox is at present prevalent throughout the Province of Quebec, vaccine is every where required. Up to this day the want of proper organisation has placed the health department in the position of being unable to satisfy the demand for lymph. We would call the attention of the medical profession to the fact that it is impossible to keep a constant supply of fresh lymph, unless a sufficient number of children come to be vaccinated and return on the eighth day in order to verify the character of the vaccination and to collect lymph on ivory points and in tubes. We would therefore request medical men to induce poor parents to bring their children to the health department to be vaccinated. We would also request the medical profession of Montreal to recommend more generally than has been done heretofore revaccination which is as necessary as primary vaccination. The urgent necessity of revaccination has been evident this winter during the violence of the epidemic of small-pox. A great number of adults vaccinated in childhood, took small pox. We know that if they had been revaccinated, they would have either escaped altogether or else the disease would have assumed the varioloid or modified form, as was lately proved in several cases of revaccinations in which there were no constitutional symptoms, and only a few pustules here and there on the face and body.

The sub-committee will soon ask the adoption of most urgent sanitary measures, such as those which would lead to prevent the propagation of epidemic and contagious diseases, especially of typhoid fevers and small pox, also concerning scavenging, drainage, and inspection of alimentary substances.

We shall call on the medical profession to report the cases of small pox and typhoid fevers which might be under their care.

The intention of the Board of Health is to coöperate with the profession in the arduous task of diminishing the causes of epidemic and contagious diseases, which so considerably increase our death rate. We are confident that the medical men of Montreal who have always shown a great deal of interest and devotedness to the sanitary cause will kindly favor the different by-laws about to be adopted by the sub-committee. The results will no doubt tend to elevate the standard of the medical art and promote the welfare of society.

I remain &c.,

A. B. LAROCQUE. M.D.,
Health Officer.

423 St. Catharine street.

Periscopic Department.

SURGERY.

Severe Prolapsus Ani in a Young Adult treated by Cauterisation with Nitric Acid. — Under the care of Mr. HUTCHINSON.

Prolapsus ani, although so common in children, and not very unfrequent after the middle periods of life, is rare in young adults, and when met with in them is almost always with a history of its having begun in childhood. It is thus but seldom that the surgeon has to treat cases resembling the following one, in which the protruded portion was very large, and had been produced for the first time in a healthy young adult.

Jane D., aged eighteen, a servant girl, was admitted with prolapsus recti on November 10. She was pale and rather stout, but in fair health. The prolapse begun eight weeks before she came in, the bowel coming down when she went to stool. The day before this occurrence she had lifted a

nine-gallon cask full of beer from the floor on to the chair —an unusual effort for her. The gut remained prolapsed for three days, after which it was returned by a medical man. It afterwards continued to come down every time her bowels were moved. Sometimes she was able to return it, and sometimes not. She never had prolapse in childhood, nor did any of her brothers and sisters suffer from it.

From November to January she was kept in bed, took iron internally, and used astringent lotions to the rectum. For a few days in January she wore a pessary, but it did not prevent the prolapse from returning. Towards the end of January, the condition remaining the same—at least an inch and a half of gut being prolapsed every time she went to the closet,—Mr. Hutchinson cauterised the exposed mucous membrane with nitric acid, applying it in broad streaks parallel with the length of the gut. The bowel was returned. Two days afterward she complained of severe shooting pain up the back.

On the third and part of the fourth days her temperature was constantly from 104° to 105°, but after the fourth day her bad symptoms subsided. Her bowels were kept inactive for ten days by opium. At the end of that time she had a motion attended by some pain and soreness, but not followed by any prolapse. About ten days later (three weeks after the operation,) she was discharged. The bowels had been opened regularly every day, and no sign of a return of the prolapse had occurred. Digital examination revealed the presence of distinct ridges on the parts cauterized. There was no pain in the lower part of the bowel at any time after the operation, nor any discharge from the cauterized surfaces.

The occcurrence *de novo* of such extensive prolapsus of the rectum at the patient's period of life is very unusual, and for that reason is worth putting on record, no less than on account of the complete cure which was effected by destroying longitudinal bands of mucous membrane with nitric acid. Although, however, she recovered quickly from the

operation, it is to be observed that she had symptoms for a few days very suspicious of commencing peritonitis—a fact which shows the necessity for great caution in the performance of operations upon the unaltered mucous membrane of the rectum.—*Medical Times and Gazette.*

Nussbaum on the Treatment of Ununited Fracture by Transplantation of Bone.

In the *Aerztlickes Inteligenz-Blatt*, Feb. 23, 1875, Professor Nussbaum, of Munich, publishes a very interesting and practical clinical leeture on the treatment of ununited fracture, its pathology and methods of treatment, and particularly on the treatment by the transplantation of bone, in complicated gunshot fractures, resulting in an open false joint, with great loss of bone-substance and necrosis, where the cartilage encrusted extremities are merely bound together by a long thin tendinous band. As regards the limbs, he confesses that he has had only hitherto one instance in which he has employed the method, but with such a singular amount of success as to afford great encouragement to further attempts in the same direction.

A Saxon lieutenant, twenty-four years old, on July 22, 1870, in the fight at Mars-la-Tour, received a very severe gunshot wound in the right forearm. The ulna was smashed in the middle, the splinters of bone had necrosed, the periosteum had been destroyed, and subsequent cicatrisation had resulted in a false joint, having about two inches and a half of open wound. The two approximating ends of the fractured bone were united by means of a thin fibrous cord Although the radius was intact, the functions of the bone were so limited, and its abnormal motion so exaggerated, that the patient was invalided. On July 14, 1874, the patient being chloroformed, the false joint was exposed. Both ends of the fractured bone were thin, covered with a pointed cartilaginous process, and slightly united by means of a weak, tendinous false ligament. The pointed car-

tilaginous extremities and the thin false ligament, being rather in the way than useful, were cut off with strong scissors. Next, the upper surface of the proximal end of the ulna was half sawn through, about two inches and a half from its extremity, and with a sharp cutting chisel this upper piece of the ulna, with its periosteum, was split off, parallel with its upper surface, yet so that the periosteum of the pointed extremity and of the under surface were not both cut through; thus the detached portion of bone had still a slight nutrient bridge derived from the periosteal covering. Finally, the portion of bone thus detached was so deposited in the gap, that its internal upper surface now became external, the under internal, and the outer surface became the upper one. Had the transplanted portion been turned downwards so that the now upper surface had become the under, the periosteal bridge remaining on the under surface must have been much more dragged upon and torn, and it would have been probable that the blood-communication, through the connecting periosteal slip, might have been entirely cut off.

In the gap in which the transplantation portion of bone had been placed, a tolerably deep incision had been previously made into the indurated soft parts, to promote some inflammatory action in the neighbourhood, and to favour the adhesion of the introduced portion of bone. The wound was dressed with carbolised dressing and closed with seven sutures, and subsequently enclosed in a gypsum bandage furnished with a trap-door.

The operation was so successful that in December, 1874, the patient was gazetted to a grenadier regiment.

Professor Nussbaum makes the following remarks on the two great mishaps after fracture, viz., healing bent, or with considerable shortening. Supposing a case is met with within six months, the badly united fracture should be simply broken up again under chloroform, as, before the definitive callus is formed, a refracture is neither difficult nor dangerous.

A linen cloth should be laid on the edge of a table, and the fracture to be rebroken brought quite to the margin. A strong pressure downwards readily breaks the provisional callus, and it is best broken in the direction corresponding with the faulty curve, and should be commenced by extension (for which purpose an extension bandage is most serviceable). Considerable risk is run in refracture, during this stretching, of rupturing some artery adherent to the callus, since the process is never effected slowly but always with a powerful jerk. But if the callus be broken up by bending inwards, the necessary amount of stretching can be conducted slowly and surely. A good position having been obtained, the new fracture can be treated as a simple one.

If six or seven months have passed and the definitive callus have become of ivory hardness and stronger than the sound bone, should any attempt be made at refracture, it would remain intact, and the resulting fracture of the normal bone would render the condition worse than before. Under these circumstances only operation is of use.

Langenbeck employs two processes in the subsequent operative procedure on the bones. After having made a small incision in the skin, he first bores through the callus at the angle; he then enters a small fine key-hole saw into the hole thus bored, and cuts through the bent bones right and left, to such an extent that merely a thin bridge of the cortex of these bones remains intact. The wound is then carefully cleansed. After granulation has taken place and the integument has healed over, he undertakes as the second part of the operation, the fracture of the remaining thin cortex, and treats it, by means of a gypsum bandage, as a simple fracture of the bone. The idea is admirable. The object of this partial sawing is, that the mass of definitive callus which has become as hard as ivory and could itself not be broken up, is readily ruptured when it has been about three parts sawn through, and the fracture can be effected at

the 'place of election.' It is a matter of fact that the wound effected by boring and sawing portions of the operation produce such inflammatory reaction that the remaining lamellæ thereby become soft and elastic, and so the rest of the operation is rather a bending than a fracture. The most important advantage, however, of Langenbeck's operation, consists in this, that when there is a wouud there is no fracture; and at the time when one has to be made and treated, there is no open wound.

The American surgeons reduce the bones to be broken later on, simply by drilling five or six holes through them. Szymanowsky saws a wedge-shaped piece out, three parts of the thickness of which he removes, and after the healing of the soft parts, breaks through the remaining portion. Professor Nussbaum's plan is to avoid the sawdust and *debris* arising from the drilling and sawing operations, by using a fine sharp cabinet-makers' chisel. He chisels through about three-quarters of the thickness of the bone, and then withdraws the chisel, allows the wound to heal, and afterwards breaks through the remaining portion.

[The entire paper is one of great clinical interest, not only as regards Professor Nussbaum's own experience, but of that of others; the reader is therefore referred to the original for greater detail.—*Rep.*] *London Medical Record.*

Cases of Fracture of the Skull.

THE MIDDLESEX HOSPITAL.

Case 3.—*Fracture of Base of Skull, with escape of Cerebro-Spinal Fluid—Recovery.* Under the care of Mr. Morris.

(From Notes by Mr. Lee Macintire, the Dresser.)

Alfred W., aged fifty-two, a grocer, was admitted into Broderip ward on September, 15, 1874, in a semi-stupid

state. He had been drinking, and was knocked down by another man, who struck him a blow on the mouth. In falling backwards he hit his head against a lamp-post.

On admission there was a small scalp-wound above the right ear; the lower lip was contused and cut on the mucous surface; and there was a continuous oozing of blood from the left ear. The blood is described as thin in character.

September 16.—The stupidity about his manner which was noticed when first admitted, and which probably was entirely due to the drink which he had just previously taken, soon passed off. He seems now quite well in every respect, excepting, however, that the oozing of thin blood from the left ear continues. Temperature 99°; pulse 96. Bowels have been freely open. Spoon diet; ice-bag to head.

19th—Suffers occasional headache. No blood escapes from the left ear now, but there is a slight occasional discharge of a watery fluid from the same ear.

20th.—A plugget of cotton-wool which was yesterday inserted into left earhole was found, on removal this morning, to be saturated with what looked like blood-stained serum. With the exception of a slight headache occasionally he feels quite well, and thinks it strange and unreasonable that objection is made to his going out, and even to his getting up. He cannot hear the ticking of a watch held close to his left ear, but recognises the kind of noise when the watch is applied near to the right ear.

21st.—Slight headache; the cotton-wool in left ear is stained with discharge.

29th.—Still discharge from left ear; has occasional headache, and some singing noise in the left ear; keeps his bed, and is still on spoon diet and bread and butter.

October 3.—Has been getting up for a short time the last three days; he has no giddincss or headache when up; there is still a little discharge from the ear; was allowed meat diet for the first time to-day.

8th.—Discharged convalescent, with instructions to take

great care, and to keep very quiet for some time to come.

Remarks.—The continnous escape, in the first place, of "*thin*" blood, then of what looked like blood-stained serum, and subsequently of a watery fluid, together with the loss of power of hearing on the same side, all point to the existence of a fracture through the petrous bone, with laceration of the cerebral membranes. On the other hand, the absence of any symptom of concussion or cerebral irritation proves that the brain could not have been injured by the accident to any appreciable extent.

The next case is one of much interest, and though by no means very uncommon in its nature or its termination, is yet pregnant with instruction when looked at from a clinical point of view. First, it teaches us the same lesson as the three preceding cases—viz., that fracture of the base may occur without injury to the brain, or any immediate consequent brain symptoms; but it teaches the lesson much more forcibly, for the patients in two of those instances were rendered insensible for a time, whereas in this case the man after a few moments protested he felt quite well, and proceeded on his journey as though nothing had happened. Secondly, it shows the necessity of immediate rest after an injury to the head, even though no cerebral disturbance is produced. After fracture of the base of the skull without immediate symptoms, death may, and does often follow in one of two ways: either within thirty-six or forty-eight hours from hæmorrhage slowly going on, perhaps from a branch of the middle meningeal artery, dissecting off the dura mater from the bones and producing compression of the brain, as in this case; or it may be after several days, or even after three or four weeks, from inflammation and suppuration of the membranes of the brain, Death in the manner first named might possibly often be prevented by immediate and prolonged rest and the early application of ice; whilst death from meningitis would no doubt much oftener than is now the case follow fractures of the skull, were not the rules of absolute rest, low diet, and cold applications to the head as commonly insisted on as they are.

Case 4.—Fracture of Skull—Extensive Hæmorrhage between Dura Mater and Cranium—Death in Twelve Hours.

For notes of the following case, which occurred in country practice, we are indebted to Mr. Lucas, the able Resident Medical Officer at the Middlesex Hospital, by whom the post-mortem examination was made.

W. C., aged thirty-one years, a well-built labourer, while leading a young horse along the roadside, attempted to get upon his back, and in doing so fell backwards under the horse, the animal stamping upon the left side of his chest and head. He was stunned, but recovered his consciousness in a few moments; and protesting he felt quite well, proceeded on his journey. No unsteadiness of gait was noticed by the bystanders; but he was observed to retrace his steps for some hundred yards, and then recollecting his mistake, to turn round and continue his journey in the right direction for a distance of five miles. He complained of headache during his walk, but of no other inconvenience. After putting the horse up he went to bed, and soon fell into a sound sleep. His breathing at first was noticed to be rather heavy, but after two or three hours it became stertorous, and his friends, becoming alarmed, sent for medical aid; but the patient died before any could be procured. A period of twelve hours had supervened between the time of the accident and his death.

At the post-mortem examination a large bruise was seen on the left side of the chest, but no other external mark of injury. On reflecting the scalp some extravasated blood was observed beneath the skin immediately above the left ear. On opening the head, the dura mater lining the middle fossa of the skull was seen stripped off from the bone, and a clot of blood equal to an orange occupied a space between it and the skull, compressing the brain in this region; there was no laceration of brain substance. On removing the clot, a fracture presented itself extending through the squamous portion of the temporal bone across the middle fossa of the skull to the body of the sphenoid; but it did not appear to run beyond this point. The lungs were engorged with blood, and the kidneys were congested, otherwise the organs were healthy.—*Medical Times and Gazette.*

Hæmorrhage.

In his second Lettsomian Lecture Mr. Maunder stated his conclusions from his cases of hæmorrhage as follows :—

1. That no operation is to be performed when bleeding, has ceased, unless a repetition of it would directly endanger life.

2. That the bleeding vessel is to be sought at the seat of injury, and to be secured if divided, at both ends, either by a ligature or by torsion; if only wounded, by a ligature above and below the wound; or after section, by torsion.

3. That the injured vessel is only to be tied on the cardiac side of, and at a distance from, a wound in it, when the attempt to secure it at the wound has either been made and failed, or when such an attempt would be either anatomically injurious or pathologically useless.

4. That it is desirable to ligature the brachial artery, rather than both radial and ulnar, for secondary hæmorhage from the hand.

5. That ligature of the brachial, while it stops bleeding, also arrests destructive inflammatory changes caused by useless local efforts to check hæmorrhage.

6. That blood flowing from the distal side of a wound in an artery, or ligature upon it, will in the lower extremity be often, in the upper extremity occasionally, venous in colour.

7. That in malignant disease, when the growth cannot be removed and it is impossible to check bleeding by milder measures, the feeding artery may be ligatured in its continuity.

8. Where a part is more or less disorganised, and hæmorrhage renders repair very doubtful, amputation should be performed to arrest bleeding and remove a hurtful member.

9. Indirect compression will occasionally arrest severe bleeding.

10. That both the axillary and the femoral arteries may be wounded, and a pulse be felt at the extremity of the limb.

11. That a wound in an artery may be recognised by the warm blood impinging on the inserted finger.

12. That a direct compression upon the bleeding point will often succeed *after* the main artery has been tied, though it failed *before*; and this fact is a justification for tying a main vessel.—*The Doctor.*

MEDICINE.

Dr. Richardson, F.R.S., on Action of the Septinous Poison on the Production of Fever.

In a lecture delivered by Dr. Richardson before the Society of Medical Officers of Health, at their last meeting, a new theory was offered on the action of the poisons of the contagious diseases in the production of symptoms which mark those diseases, and especially the symptom of fever. In a lecture delivered before the same Society, in the year 1865, the author detailed his original experiments on the poisonous action of an organic substance he had obtained from the sero-sanguineous fluid that had been removed by Mr. Spencer Wells from the peritoneal cavity of a woman suffering from pyæmia after the operation of ovariotomy. To this organic poisonous substance he (Dr. Richardson) at that time gave the name of septine, and he showed not only that it would communicate fatal disease to an inferior animal, but that the same disease could be communicated from the secretions of the primarily infected animal to other healthy animals in direct series. He also showed in the same research that the organic poison could be made to combine with acids so as to form salts which retained the poisonous qualities of the original substance. That a similar poisonous substance is present in decomposing blood, and that the poison can be transmitted in a series of animals, have since been confirmed by the independent researches of many physiologists, and the fact may be considered as fully established, although great difference of opinion still remains as to the nature of the organic product, some assigning to it purely physical, others vital properties.

We may be able by and by to discuss these different views at length. At present we are intent only to indicate the new theory which the author, whose communication we now notice, offers as to the mode in which the organic poisons produce their peculiar effects. On this important

inquiry he has been occupied ever since his researches in 1865, and the result is to the effect, that the poisons exert their deleterious action through the property they possess of setting at liberty the oxygen of the blood in undue quantities in the extreme circulation. By way of experimental demonstration, Dr. Richardson took specimens of solutions of peroxide of hydrogen, and inoculated them with points of different organic poisonous animal substances—viz., decomposing blood, pyæmic poison, pus, fibrine, and vaccine lymph. In the presence of all these bodies, oxygen began to be immediately liberated from the solution. Other organic substances—mucus, for instance—would not liberate oxygen, a fact which could be applied (as was shown by an experiment) for diagnosing mucus from purulent matter. Proceeding with his demonstrations, Dr. Richardson charged blood with oxygen from the peroxide solution; then, by inoculating this blood and setting oxygen at liberty, he showed the temperature of the blood rose 4° Fahr. In his further observations, he explained that these organic disturbing substances are themselves decomposed in the process of the change they excite, and that they all seem to be derived originally either from fibrine or cellulartissue.

The conclusion arrived at, and which was advanced admittedly as a theory in its present state, is that the fever-producing poisons act in the way described by setting oxygen free in the blood in undue proportion. The theory, it was urged, explains the phenomenon of remittency. The accession of fever is due to the presence of the poison, but as the poison becomes destroyed the disturbance ceases until a new charge is locally produced and carried into the blood. The theory also explains the phenomena of those malignant, contagious diseases in which death occurs very rapidly, with symptoms of asphyxia and convulsion. Here, it is assumed, the liberation of oxygen is sudden and complete, and the blood so surcharged with poisonous matter that it cannot duly absorb and fix oxygen in the pulmonary circuit. Thus an asphyxia commences from the blood itself

Some therapeutical considerations brought the lecture to a close. It was shown that certain medicinal substances, among which quinine was specially named, counteract the different poisons in their power of liberating oxygen.

Our readers will gather from this summary that a new field of inquiry on the subject of the poisons of the contagious diseases is opened by these researches. That the inferences drawn support the physical side of the question may naturally be expected, coming as they do from an author who for so many years has been one of the most prominent exponents of the physical theory of contagion *The Lancet.*

Lewin on Infectio Sine Coitu.

Dr. Lewin brought before the Medical Society of Berlin (Pick and Auspitz's *Vierteljahrschrift für Dermatologie und Syphilis,* 1874)some instances of syphilis communicated through kissing, suckling, and inheritance, which illustrate several important points in the natural history of the disease. In the first group of cases were two women and their children. One woman had an indurated scar on the lower lip, and a maculo-papular eruption of the body. She had noticed in the seventh month of her pregnancy a pustule on her lower lip ; having also for some time previous remarked that her husband had sore lips. This pustule left a hard scar. The child, born prematurely, had several spots and small ulcers on the skin, and gummous orchitis. The second woman, having given birth to three healthy children, was infected by suckling a syphilitic child. She had a hard sore on the right nipple and constitutional syphilis. Lewin holds that these cases establish, among other better known facts in the natural history of syphilis which he enumerates certain points less generally admitted, viz., that a woman even when infected in her latter months of pregnancy, and suffering only from early secondaries, may give birth to a child who presently shall have a tertiary form of the

disease; and again, that tertiaries do not need mercury for their production. The next proposition he laid down was, that the symptoms of inherited disease which manifested themselves at birth may disappear without any treatment. The disorder may then become latent, and break out again several years later. [Though this is doubtless a correct statement, Lewin does not adduce any evidence in this paper to confirm it.]

In the following group, a woman with a child at her breast, by giving suck to a syphilitic chid, was inoculated herself, and subsequently infected her own child and her husband. The husband died not very long afterwards from cerebral affections, which the *post mortem* notes proved to be syphilitic. The woman was married to a second husband, who never had syphilis, notwithstanding that his wife had frequently syphilitic affections of the pharynx and larynx. Two children resulted from the second marriage, making her offspring three. The child of the first marriage, who had acquired syphilis at her mother's breast, was treated with mercury, and the symptoms disappeared. Nevertheless she must have had further troubles, for when examined there were found scars and adhesions of the soft palate and a notch in the epiglottis. She, moreover, has suffered from her sixteenth year from lupus of the thigh, and periostitis of the os frontis and tibia, continually relapsing. At seventeen she married a man not previously syphilitic, who died a year and a half afterwards from tubercular meningitis. A premature child was born, who lived fourteen days. Two years later she was married again, and has now a child seventeen months old, who has scrofulous lichen and a gummy ulcer of the thigh. To continue the history of the children of the second marriage of the first woman; one died of syphilis at five and a half months; the other, now a girl aged thirteen, was healthy till her sixth year, when syphilitic eruptions appeared which continued for five years. This family is a striking example of the long duration of the syphilitic poison, and how deeply it penetrates into the

organism. Further, one of these cases shows that a child may inherit syphilis which will not become apparent for several years subsequently to birth. Probably many cases of ulcerating skin-disease, especially lupus, are really manifestations of syphilis. Lastly that hereditary syphilis can be derived solely from the mother is also clearly shown by these histories.—*London Medical Record.*

BERKELEY HILL.

A Danger of Ether at Night.

Dr. Wm. Hunt publishes in the *Philadelphia Medical Times* a very important caution as to the use of this agent at night—viz., that the lights should always be *above* the operator and etheriser, and the neighbourhood of a low grate or open stove should be carefully avoided. The vapour of ether is very heavy, and falls rapidly, as anyone can test by pouring a little of the liquid into a saucer and watching it roll and fall over the slides. One of the most exciting and seriously threatening scenes that Dr. H. has ever been engaged in happened, he says in this way:—"A man required amputation of the arm (which was crushed by an engine) high up. There was, fortunately, just room for the tourniquet. The residents of the hospital, together with Drs. Agnew and Herbert Norris, were assisting. The latter administered the ether from a large sponge, and placed the bottle on a chair at his side. I had just removed the dangling fragments of the limb, when an assistant brought a candle close to the stump, and almost directly under the sponge. Instantly we were in a blaze. Dr. Norris involuntarily started back, and, in doing so, knocked over the chair with the large ether bottle, which broke! Its contents were quickly spread, and the whole ring of the amphitheatre was on fire. A nurse lifted the patient from the table and placed him on the floor. Fortuuately, the tourniquet held. Others sprang into the side wards and seized blankets, coats, and everything at hand, and we soon stamped the fire

out, but were all more or less singed. The walls of the amphitheatre bore evidence for a long time, in the scorched wood and blistered paint of the danger. The exposed parts of the patient were superficially burned, but he never knew what had happened. He was placed on the the table, and the operation was finished. The thorough anæsthesia here was fortunate for all. Had the fire taken place earlier, terror and excitement from ether combined would have made the man uncontrollable, and a fearful panic might have occurred in the hospital. As it was, no alarm was spread beyond the room."

Night operations with ether should, therefore, only be those of absolute necessity, and with the cautions enjoined there need be no danger. Chloroform, not being inflammable, has a great advantage over ether in this respect; but Dr. H. is afraid of it.—*The Doctor.*

Crayons of Iodoform.

M. Gallard prescribes crayons of iodoform, which he allows to remain in the cavity of the neck of the uterus, retained in position by means of a tampon of cotton. These crayons are used with advantage in cases of superficial ulceration of the neck which has invaded the cavity. The formula is—

R Iodoform, in very fine powder, ʒiiss.;
Gum arabic, finely powdered, gr. viiss.

Sufficient mucilage to make into a pilular consistence. Divide into ten cylinders each about one inch long; dry in the air for twenty-four hours. Each crayon contains a little less than a grain of iodoform. These cylinders are hard and resistant; they may be divided into morsels without breaking.

They become disintegrated in the open air, and much more rapidly in the uterine cavity. In order to preserve these crayons, they should be sealed in a dark and air-tight bottle.

We should think this mode of employing iodoform would be useful in other localities.—*The Doctor.*

Transport and Inoculation of Virus by Flies..

An interesting paper on this subject from the pen of a French veterinary surgeon, M. Mégnin, appears in the second number of Robin's *Journal de l'Anatomie.* M. Mégnin observes that the idea that the spread of charbon or the "pustule maligne" amongst cattle is due to the introduction of the poison by the prick or bite of flies is widely spread, both amongst the populace and men of science: some of the latter indeed, like M. Davaine, going so far as to maintain that the inoculation is always effected by this means, notwithstanding the fact that charbon has been known to be propagated in severe winters, when not a single fly could be detected in sheds or stables.

So recently, however, as October, 1869, M. Raimbert reported to the French Academy of Sciences some precise experiments he had made, from which he concluded that the flies effecting the transport of the poison were not such as possessed pricking instruments (*mouches piquantes*), but those with soft probosces; that such flies having fed on decomposed or diseased substance, carried the poison by means of their feet, wings or probosces to healthy animals, and that the poison possessed the power of penetrating the skin. In another memoir, presented by M. Davaine in 1870 who had worked at the subject independently, the same conclusion was arrived at in regard to the fact that flies with soft probosces, like the common blue bottle, were capable of communicating the poison; but this observer was of opinion that some lesion of the skin must exist, and hence imagined that in the majority of cases one or other of the biting flies belonging to the Tabanidæ or Stomoxidæ was the real culprit. M. Mégnin calls attention to a remarkable report made by M. Tisserant, of Lyns, on a formidable epizootic affection that ravaged the plain of Candrieux in the Department of the Rhone, and which he found to be due to the simulium maculatum belonging to the Tipulidæ a family of Diptera. The bites of this insect produced sharp

pain and swelling of the part, followed by colic, dyspnœa, tumultuous action of the heart, and death in from four to twelve hours. M. Mégnin had the opportunity of watching the effects of multitudes of these flies in the garrison of St. Michel, in 1869; but, to his surprise, though the animals were covered with them, and severely bitten, no serious effects were observed. He consequently considers himself justified in drawing the conclusion that two conditions are requisite for the transportation of poison by flies—first, that there is an animal already affected with charbon; and then, that certain flies, amongst which the Simulium, Stomoxis, and Tabanus deserve special mention, feed on them, and by their bites transmit the poison to healthy animals.—*The Lancet.*

Case of Obscure Nerve Disorder. By C. HANDFIELD JONES, M.B. Cantab., F.R.S., Physician to St. Mary's Hospital.

J. B., aged twenty, female, single, admitted September 12, 1874. Short, of broad build, not anæmic; sent up from the country. Catamenia regular; pulse feeble, languid; skin cool; appetite not good. Has been unable to speak above a whisper for more than seven months, and has had sores on her left leg four months. At inner side of leg, a little above the ankle, there is a small separate sore, besides a group originally consisting, as it seems, of three, but two have coalesced. They are enclosed by a thickened area of dull red skin; they look cachetic, and not in process of repair; are rather deep, and produce a watery secretion. She says that her leg was all in a blister at first, from her knee to her foot; the sores came after. No mechanical injury to leg. The epiglottis appears normal, but the lining membrane of the upper opening of the larynx is red and somewhat swollen. The aspect of the ulcers was suggestive to me of a specific cause—viz., syphilis; and in this view two other good observers coincided. No other indication

of syphilis was detected, unless the laryngeal hyperæmia should be considered as such. Under tonic remedies, including small doses of opium, which were administered for the first nine days, no improvement took place; on the 21st the ulcers were deeper and more sloughy. Pot. iod. was then given, at first in gr. v. doses, increased soon to gr. x. By October 5 some, but not much, improvement had taken place. She was now ordered Plummer's pill, gr. v. ter die, and on the 12th ung. rubrum mitius as a dressing to the sores. The report on the 19th is that the ulcers are healing well; on November 2 they were just well. The pills had been taken up to October 26. From October 12 to 26 she took ferri et quin. citrat gr. xx. ter die, and for five days previous strychniæ gr. 1-20 ter die. All this time the voice continued soundless or whispering; once only, when the sister pricked her accidentally, she spoke out loud. From October 26 to November 16 I tried assafœtidæ gr. x. in pil. ij. 2dis horis for six days; then ferri sulphas gr. x.—xx. ter die for seven days; then atropia gr. 1-100, acid nitrici *m*j., aq. ℥ss. ter die for the rest of the time, with a nightly aperient of podophyllin gr. j., aloes gr. ij., ext. hyoscy. gr. j. ft. pil. The ulcers were now well, but the aphonia remained provokingly persistent, though in addition to the above means faradisation had been pretty thoroughly employed externally, and also, though less effectually, internally with Dr Mackenzie's electrode. I do not think the instrument was brought fairly in contact with the vocal cords, but probably with the transverse arytenoid and crico-arytenoid post. muscles. I now returned to the strychnia in the same dose as before, with *m*ij. acid. nit. In five days her voice was so much improved that it was quite audible ten yards off, and it continued as good, or even improved, until her discharge on December 1. The ulcers remained well. Her voice remained quite good until February 27, when she lost it again. I saw her on March 1, looking rosy and well, but aphonic. Strychnia was ordered again.

Remarks.—Three features of this case deserve some comment—(1) the ulcers, (2) the aphonia, (3) the general condition. That the ulcers were syphilitic is rendered very probable by the circumstance that they healed under the employment of mercurials locally and internally, but proved refractory to other medication. They were of tertiary character, and it is noteworthy that no other indications of syphilis seem to have existed, and that she had not the aspect of syphilitic cachexia. I do not think it was impossible that the syphilis was hereditary, having regard to the patient's bearing and character, and her good behaviour while in the hospital; but it is more probable that it was acquired in the usual way, as there had been thick yellow discharge on two or three occasions previously. The genitals examined by the ward sister presented no obvious signs of former lesion. The aphonia was, I believe, such as is usually termed hysterical, and depended essentially on a functional paralysis of the nerves and muscles concerned in phonation. Had it been the result of chronic syphilitic laryngitis there would have been more evident lesion in the larynx, and some decided improvement would have been effected by the mercurials. Though no apparent improvement ensued from the first administration of strychnia or from other tonics and electricity, I do not think they were useless. They contributed to amend the nutrition of the nerve and muscles, and so prepared the way for recovery. We are often too apt to attribute a result to the last agent employed, without taking into account those which have preceded it. No doubt some will regard the recovery as spontaneous, but as far as I could discover, no other agencies than medicinal were at work; and hysterical aphonia is apt to be very persistent, if some measures are not employed to break the spell. Besides, strychnia is quite a rational remedy for states of functional paralysis. That the patient's *morale* was good, and that defective volition had no more to do with the aphonia than with the ulcers, I fully believe. The general condition was one of evident depression; a

feeble miserable pulse, with a cold, dull red skin, told of a languid circulation, which imperfectly ministered to the needs of the nervous system especially, and rendered it prone to lapse into functional paresis. Like enough, also, her circumstances in a poor country village were not of the most cheerful or invigorating kind. Add to this the existence of syphilitic taint, however contracted, as a further impairment of vitality, and we have probably enough to account for aphonia, or any other nerve disorder. That in this condition, and with tertiary ulcers, mercury should prove successful, while pot. iod. failed, is an exception to the accepted rule, but not, I think, a very rare one.—*Medical Times and Gazette.*

Action of Morphia Injected Subcutaneously.

One thousand experiments were made upon himself by M. Chouppe. He found that morphine injected in a painful spot developes its anæsthetic action in two to two and a half minutes earlier than when injected at a distance. Pain ceased sooner after direct than after general application. A direct proof of the local action of the drug was derived from the employment of concentrated solutions. While an injection of distilled water and a weak solution of morphia (1-150) caused sharp pains at the point of insertion, strong solutions (1-50 or 1-130) cause no perceptible pains. Therefore it is better to inject at the seat of pain and to use concentrated solutions- We can corroborate M. Chouppe on this point.—*The Doctor.*

Retroversion.

Dr. Aveling records in the *Obstetrical Journal* the following anecdote: The postural treatment of retroversion consists in lying or reclining upon the sides, or, still better, upon the face. Prostration also is an admirable attitude. A remarkable anecdote in support of this is told of a lady suffering from retroversion, who made her complaint the subject of prayer, and was surprised to find it answered only whilst she was upon her knees. All pain ceased during the devotional act—that is, when she unconsciously adopted the proper postural treatment.—*The Doctor.*

MIDWIFERY.

Case of Double Monstrosity: Maternal Impression. By C. ROBERT THOMPSON, M.R.C.S., Eng.

On November 18th, 1874, I was called to assist Dr. Bourns of Oxted in a case of difficult labour. I found that the patient, who had borne several children without misadventure, had had labour-pains, more or less for two days; that six hours before my visit, the head had been delivered by forceps, having been within reach, and making no progress for some hours previously; and that all the effort and power that had been applied had been insufficient to deliver the body. The woman was tired and full of apprehension, but her condition otherwise was not unfavorable. On placing my hand on the abdomen, I was led from the size of the womb, to pronounce at once that there were twins A large head and shoulders protruded from the vagina, much decomposed, livid, and with cuticle peeling off at a touch. On carrying my left hand along the child's back in the hollow of the sacrum, I felt a small foot and leg packed down between the pelvic brim and the child's pelvis; and my impression was, that the case was one of locked twin, the obstruction to delivery arising from the lower extremity of the second child having descended below the pelvis of the first. I tried to push up this leg, but unsuccessfully. Taking a firm hold of the shoulders, and using all the force of which I was capable, I could not move the child in the slightest degree. I now extended the arms above the head, wrapped them in a towel, to give a firm hold, and, whilst using powerful traction, made an effort to rotate the trunk. This was successful in moving the body, and by continuing the force, the lower part of the body was brought down. The leg which I had felt proved to be a supernumerary limb attached to the scrotum of the child; and, by continuing my manipulations, I was soon able to bring down the breech and two proper legs of the child. But, now it was evident that a second body sprang from the abdomen of the first;

and by a little further forcible traction, the delivery was completed. The child had one pelvis, with two well formed lower extremities and a third smaller one attached to the sacrum, forming a tripod. Male genital organs and rectum were apparently perfect; there were a single cord and umbilicus. From the level of the umbilicus there were two distinct trunks, each with perfectly formed upper extremities and heads, well nourished and of full size. Plate 83 in Dr. Ramsbotham's *Obstetric Medicine* gives a fair idea of the monster, if a third leg be added. It was remarkable that the body of the second part was pink, and looked as though it were viable, whilst that first extruded was livid and decomposed. The cord did not pulsate; the placenta was removed without difficulty, and the uterus contracted well. When the delivery was accomplished, during which nothing had been said to give the woman a hint of what she had brought forth, I told her that she would do well, but had got a dead child, adding that it was deformed. She replied: "I thought it would not be all right; for I was frightened, at Limpsfield fair, by two men outside a show, who kept hugging each other closely and posturing. I was frightened by them, but could not keep my eyes off them." This fair happened when she was about three months pregnant. Any one who has Ramsbotham's *Midwifery* will see at once that the figure in plate 83 resembles exactly two men hugging in a wrestling match. The mysterious subject of maternal impression has been so well handled in two good papers in the Journal of February 6th, that I will add no more.—*British Medical Journal.*

CANADA
Medical and Surgical Journal.

MONTREAL, MAY, 1875.

THE MONTREAL GENERAL HOSPITAL.

Last year the Governing Board of the Montreal General Hospital in appointing three Physicians to fill repectively the offices of House Surgeon, Assistant House Surgeon, and Apothecary, determined that those positions should be held for one year only, but that promotion should be the rule, that is to say: a man entering as Apothecary should at the end of the first year receive the appointment of Assistant, and at the end of the second year that of House Surgeon. This appears to be a very excellent arrangement as hitherto the office of House Surgeon has been retained at the convenience of the occupant, which was to a certain extent unfair, if the Montreal General Hospital was to be viewed in the light of an educational institution.

The present arrangement is highly advantageous, as each year there will go forth, to enter on the earnest and responsible duties of a physician and surgeon, one man at least who has had practical experience in the compounding and dispensing of drugs, and also in the actual charge of the sick during the absence of the attending medical officer. We sincerely trust that this arrangement will be carried out in good faith by the Committee, as any further change would be unfair to the gentleman who this year was obliged, in consequence of the above named arrangement, to resign his official position. That he performed the duties well and satisfactorily is proved when we state that on the eve of his retirement, his fellow officers, the Steward, Matron, Nurses and Orderlies of the house assembled and presented him with an address accompanied by a massive gold chain, to which was attached a gold coin, with the following inscription engraved thereon: "Presented as a token of esteem

to Clarence J. H. Chipman, M.D., by the officers and employees of the Montreal General Hospital on the occasion of his retirement as House Surgeon, April 1875."

We congratulate Dr. Chipman on this evidence of the esteem in which he was held by those under him, and as one of the attending Medical staff to the hospital, we can only add that we fully endorse the good opinion thus expressed, and hope that Dr. Chipman's future career may be full of brilliancy and usefulness.

THE VIVISECTION CONTROVERSY.

A storm has been raging during the past few months in scientific and philanthropic circles on the question of the vivisectionists. Much unnecessary abuse has been indulged on the side of the members of various societies for the prevention of cruelty to animals both on this side of the Atlantic and abroad. That these societies do a vast amount of good is undeniable but in carrying out their objects there is no necessity in giving way to prejudice or fanaticism.

Most men shrink from giving unnecessary pain to living animals, but in conducting research by vivisection the operator must abandon all feeling in the matter. In considering this subject it must be remembered that the experiments are not without aim. They are not conducted simply and only as a *passe temps*, an object is to be attained in each instance, and that object the acquisition of knowledge, to be applied in the alleviation of human suffering. In performing experiments on living animals the physiologist follows out the most humane method at his disposal, the animal is placed under the influence of an anæsthetic, so that physical suffering is spared but even without the use of such means, where it is judged to be injurious to the success of the experiment, we cannot think that such an experiment should be abandoned on that account, if the end justifies the means. There are without doubt many problems in science the solution of which can alone be determined by experiments on living beings. The satisfactory solution of these

problems must confer lasting benefit on the human family as such discoveries tend to relieve suffering or avert the ravages of disease.

The surgeon conceives the possibility of performing some surgical operation, (not hitherto performed,) but before submitting his patient to the risk of a doubtful operation, he experiments on a living animal. This he does purely in the interests of suffering humanity and with a view of curing some malady which has baffled his skill under other treatment. The medical jurist or toxicologist experiments on living animals to prove the action of certain poisonous substances with a view to the detection of crime or the saving of life by the administration of a proper antidote Again, it may be desirable to ascertain the living functions of certain organs. How can this knowledge be obtained without experiment on a living animal. The vivisector can not employ one of his own kind for the purposes of research so that he turns to a living animal belonging to some other species. In the whole controversy, if controversy it can be called, there is, on the side of those who condemn vivisection an expression of excessive harshness almost amounting to rankling hate, at what they regard as the horrible and unnecessary cruelty of the experimentalists. On the side of the vivisectionists there is silence, firm and persistent. The opponents not only decry these acts, but endeavour by moral suasion to improve the perceptions of those who perpetrate them, indeed they go a step farther and would legislate against vivisection and check it by the lash and other inflictions, so that the looker on becomes bewildered, and wonders whether the dark ages are dawning once more on the world. As an illustration we copy the following amusing story from the *British and Foreign Medico Chrurgical Review* for April.

A lady who is ardently opposed to vivisection, and who would like to have the letter V branded on the right hand of every vivisectionist, was about to have a dinner party of ladies and gentlemen of her own opinion. The night preceeding this great occasion she ordered of her intelligent fishmonger a crimped skate, and in the afternoon of the important day was astounded by the announcement of the cook that the fishmonger, Mr. Donald (his further name we have pledged ourselves not to divulge], had failed to send in the fish. In dudgeon our philanthropic lady, whose impulses were always ahead of her

reason, whipped on her bonnet and away to the man of the marble slab and cold-blooded viands. She found him putting the finishing touch to the skate, and, having first rated her experimentalist for his delay, went on, "peppery like," as Donald noted, to find fault with his work. Donald, of course laid the delay on the market, and as to the fault in the crimping he urged that if he couldn't get the animals until they had hardly a drop of life in their bodies, how could they be expected to crimp like real live ones? The lady, convinced by Donald's arguments, or fearing further delay, calmed down, and, begging the fish might be sent round immediately, was about to leave the shop, when her eye caught sight of a small moving object on the side counter. "Why, Mr. Donald," she exclaimed, "what is this: it is moving like a watch?" "That, madam," replies Donald, "is the heart of the skate; i'ts laid aside for a medical gentleman, wha' studies the heart, to see how long it will just throb." The effect on the lady was electrical. "A vivisectionist!" she almost screamed, "and you, Donald, minister to his barbarities?" Donald stood aghast; he expected next moment to hear the request that he might send in his bill. But a new light seemed to fill his visitor's face; she spoke persuasively, yet decidedly, "Donald," she asked, "who is this wretch? We may now establish a case," Donald was on guard; he was between Scilla and Charybdis, for the doctor was as good a customer as the philanthropic lady; but he was equal to the occasion. "Madam," he replied, "I ken neathing o' the gentleman mair than he's student-like, grave and serious. When he ca's to-day for the heart, if I dinna mind his name and address, I'll e'en ask him." "Do, Mr. Donald, pray do," she answered, and seeing a hansom cab passing the door hailed it instanter. Donald went to open the folding doors of the vehicle for her and heard the conversation with the cab man. "Drive me quickly to the R.S.P.C.A." "To the Arispiciary," says the driver, spelling it to himself. Then down into the cab, "Is it the new resterong at 'Ighbury, mum?"

"No, it's the animal place; take me, take me to Mr. Colam!"

Cabby, who thought he now saw his way,—down again into the cab. "At the Zoo, mum, I suppose."

"The Zoo! No, though I believe that's a bad place enough. Jermyn Street."

And away as fast as a wearied horse,—keeping a hasty lady from friends expected at dinner,—could speed under influence of jerk of rein and cut of whip, away she sped.

Meanwhile, Donald, surmising that his shop might by-and-by be under uncomfortable surveillence, picked up the still beating skate's heart, put it into a gallipot, and away himself with it to his patron the doctor. Could he see the doctor for just a second? He could, and was shewn straight into the study. The man of science was busy fitting up a reoscope when Donald entered.

"I brought ye, sir, the skate's heart; it seemed to me to be stopping a wee, so I brought it mysel'." "Thank you much," answered the doctor, taking his treasure and watching the motion. "It is a strange phenomenon."

"Mair strange than ye yerself ken, doctor," said Donald, with a knowing look.

"All God's works are, Mr. Donald," was the solemn reply of the philosopher. "Thank you again, and good day."

And Donald, thinking he had done enough, withdrew. He had saved his patron from being possibly followed by a detective, which was what he wanted.

Whether the lady carried out her mission of mercy to the R.S.P.C.A. we cannot tell; but certain it is that at her select party, after she had carved up and feasted her visitors upon the animal that had been beflayed and vivisected for her, and had laid a little fault respecting the deficient crispness of the animal on the fishmonger, she explained generally, with tears in her eyes, that she was on the actual track of a wretch who for the pursuit of science cut out the heart itself of living animals, and pursued his researches for hours afterwards on the quivering flesh.