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ORIGINAL COMMUNICATIONS.

ART. L.—*Cephalhæmatoma, or Abscessus sanguinolentus capitis neonatorum, or Thrombus neonatorum, or Haematoma subpericranicum, or Ecchymosis infrapericranica: by* GEORGE NIEMEIER, M.D., *of Niagara, C. W., Fellow of the Royal College of Physicians of the University of Goettingen, Hanover, Germany.*

Ætiologia.—I believe the times are past when cephalœmatoma was thought to originate in severe confinement, from the pressure of the head against the orificium uteri, considering the uterus almost as a compressorium, or by long standing of the head in the pelvis, and pressure against the bones, &c. I say those times are past. The cephalhœmatoma has been observed after the easiest confinements, even in presentation of the os coccygis. Pathological anatomy has to come forward and tells us the cause. Let us turn to the osteogenie of the bones of the cranium. Tabula interna, or vitrea, is formed first; it is as fine as the finest letter paper; therefore I call it "*pagina interna.*" Above this pagina interna is formed "*substantia cavernosa,*" not yet to be called diploë, because this substance is not yet doubly incrusted,—it is only the future diploë. This substantia cavernosa has a great many fine blood vessels, all enveloped in *sulcis medullaribus.* I call these vasa capillaria "*canales diploetici.*" As soon as the tabula externa is formed, these canals lie between pagina interna and externa, and only then the substantia cavernosa receives the name of diploë. This tabula externa is formed regularly during the intrauterine life; but here commences the malformation: nature degenerates—the formation of this tabula

externa remains unformed—vasa diploëtica are yet nuda, nondum obtecta pagina externa. These very thin blood-vessels burst (osteorrhagia—rhexis vasorum), and the extravasated blood distends the pericranium into a fluctuating tumour, in such a manner, until it reaches the tabula externa. If you open the cephalhœmatoma you will find, underneath the general integuments, the galea aponeurotica and pericranium filled with liquid blood and coagulum; microscopical examination shows you arterial and venous blood mixed. All around the tumour there is an elevated wall, terminating where the malformation of tabula externa stops, because it cannot extend farther; it has to stop where canales diploëtici are incrusted by tabula externa. Cephalhœmatoma, with regular formation of tabula externa, is impossible. I call this elevated wall surrounding the whole tumour "*circumferentia vallata*," which is caused at first by coagulated blood on the internal surface of the pericranium; this wall I call "*circumferentia vallata sanguinolenta.*" Secondly, by the ceasing of the tabula externa; this I call "*circumferentia vallata ossea.*" In the circle of this circumferentia vallata is the field for vasa diploëtica nuda, nondum obtecta pagina interna.

Diagnosis.—The cephalhœmatoma is a tumour, varying in its diameter from 1 to 3½ inches, most frequently found on the os bregmatis, but never on the tuber either of the os bregmatis or frontis, neither on the fontinelles, nor on the cartilago suturarum. It is of a round or oblong form, almost resembling a kidney, without pulsation, with distinct fluctuation. It cannot be pressed back in the calvaria, or you would perforate with force the substantia cavernosa and pagina interna. You feel round the basis of the tumour a hard ring or wall, neither rough nor sharp.

Prognosis.—If the child is otherwise perfectly healthy, and if the physician understands the case and acts accordingly, the child in most cases will do well.

Analogy and differences.—Craniomeningospongiosis or fungus tumour of dura mater and cranium, as well as tumor cysticus, are never morbi congeniti. In the common caput succedaneum (hæmatoma subaponeuroticum) the formation of the scull is complete, therefore no surrounding wall. You can bring your finger between the swelling and the bone. Neither fluctuation nor pulsation.

Encephalocele (encephalohernos, hernia cerebri,) is, to use Cooper's words, a soft, smooth, round tumour, with pulsation; yields and disappears under pressure, because there is an entire deficiency in the formation of the skull.

neither tabula interna, nor diploë, nor tabula externa, are formed; resembling spina bifida.

Be it understood: I call *spina bifida*, or *schisma vertebrarum*, or *hemirhachis*, a malformation, where the arcus vertebrarum is not formed, but failing. This hemirhachis can exist without any dropsy of the spinal marrow. If there is a hemirhachis and hydrorhachis together, I call it *hydrohemirhachis*. Finally, there can exist between the last vertebra (lumborum) and the first vertebra (ossis sacri) a simple *hydrorhachis*, without malformation of the bones, because the space between these two arcus is large enough for the tumour.

Hydrencephalocele, (hydrencephalohernos, hydrocele cerebri,) resembling hydrorhachis. All the diameters of the skull are considerably larger; there is fluctuation, though the water accumulated into a tumour preventing the feeling of pulsation.

Therapia.—The best is the application of cold water, vinegar and whisky, on the tumour for some time. If no resorption of the extravasated blood takes place, or if the swelling after some time does not get visibly smaller by the washings, then do not hesitate, but open the tumour by a small incision with the lancet, or what is far better, with a very fine trocar (punctió subcutanea). When the tumour is neither resorbed nor opened, there follows a suppurative inflammation and caries or necrosis of the cranium; caries proceeds deeper, causes an ichorous effusion on the internal surface of the tabula interna, with loosening of the dura mater, and at last caries of the cranium in its whole thickness. The child will die from exhaustion, pyæmia or meningitis, because the doctor did not understand the case, and obstinately refused to—open the tumour.

I have observed the cephalhœmatoma six times.

February 7th.—I attended a lady during her confinement who had not borne any children for the last seven years, but had had three children previously, one of them with a curvature of the spine, the other two rather pale and sickly looking (scrophulous). She herself is of a tall, slender figure, without any apparent sickness, though her brother is in the last stage of consumption. She felt the first labour pains in the evening at 7 o'clock, and the child, a strong girl, was born in the first presentation of the vertex, six hours afterwards. As soon as I examined the woman, I felt the swelling, and was rather astonished to feel, after such a short time, what I supposed to be caput succedaneum. I did not examine the child after its birth; but in about a week afterwards I was sent for, with the remark that the child's swelling did not

yet disappear, but was getting larger daily. Upon examination I found at once the nature of the tumour (of the size of a pigeon's egg,) and had the satisfaction of removing it completely in about two and a half weeks, by ice-cold applications of two parts of whisky and one part of water. In the meantime the failing tabula externa and diploë were formed, and the wall; the former barrier between tabula externa and interna is felt no more. The child is getting along very well.

The first case I attended I recommended puncture with the trocar. Another physician, who was called in after me, opened the tumour with the knife, imagining there was water in it; but, making too deep an incision, perforated diploë tabula interna and brain. There came liquid blood and brain, as I was informed afterwards, and the child was dead in a few hours. In the second case, I punctured with a fine trocar, but the swelling being on the occiput, the child was very restless for some days, being obliged to lie on it; and after about a fortnight, the tumour coming back, I had to puncture again. After that I used the cold applications; the swelling did not return—the child did very well—and the tabula externa was completely formed.—Since that time I have had the satisfaction of noticing in four cases I have attended that the swelling quite disappeared in from two to three weeks, by the use of those applications; that the cranium was completely formed, and that none of the children died. But I would not have hesitated a moment to make use of the puncture again, if a resorption had not taken place.

REMARKS BY THE EDITOR.

The subject of cephalhœmatoma has lately attracted considerable attention in Germany and France. M. Vallein has published an essay on this subject in his *Clinique des Malades des Enfants*,—Paris, 1838,—which will be found a clear and suitable exposition of this matter, and is illustrated with coloured drawings. We have to thank our correspondent for calling our attention to this subject; for although his description is clothed, after the manner of his country, in many learned terms and a profusion of Latin nomenclature, it still contains considerable good sense and practical observation.

The true nature of this complaint (cephalhœmatoma) en-

dently consists in the extravasation of blood in the head of the new-born child. It is said that the extravasated blood may have its seat in the subaponeurotic texture, in the scalp,—subpericraneal, under the pericranium, or rather, we believe, in the vessels of the diploë,—or submenigeal, the apoplexei des enfants nouveau nés, in the membranes of the brain, or in the brain itself.

The first variety of these accidents must be familiar to every accoucheur; for but very few children are born, after severe labours, without some degree of extravasation of the blood into the scalp. In some instances the blood may be simply effused into the areolar tissue, leaving a dark ecchymosed spot of more or less extent upon the head; and this may be slowly absorbed without producing any inconvenience to the infant. In other instances a tumour may occur, similar in character to those which form upon the head after a severe blow. The long-continued pressure and severe contusion often produced by the labour pains, may have ruptured a blood vessel, and have broken up the areolar tissue; blood is poured out in considerable quantity; it distends the structures, and forms a large collection, not only in the areolar tissue, but also between the scalp and occipito-frontalis tendon. In all probability, the areolar tissue is separated up by the violence of the injury, and the blood is poured out into it; while the blood, arrested in the areolar tissue of the circumference, forms it into a circumscribed tumour. The tenseness of this tumour will in all probability depend upon the rapidity with which the blood is driven into it, and which may be influenced by the size of the vessel. At first there is a feeling of elasticity rather than of fluctuation; soon, however, the blood separates into clot and serum, and then fluctuation becomes much more distinct. In the circumference of the tumour we find a hard rising ring, composed of coagulated blood, while the centre is soft, yielding, and fluctuating, consisting chiefly of serum. Should we now examine the tumour for the first time, the feeling may suggest the idea of a fracture, with depression of the bone. You may dispel this deception by pressing firmly on the soft and yielding centre; the bone

may be reached through the serum. The hard rim of swelling at the circumference will be found upon examination to be at a higher level than the surface of the skull, while the clot itself may be displaced by a little management, and the sound bone observed below, thus clearly marking the true condition of the parts.

Treatment consists in the employment of discutient lotions, and especially that formed of the muriate of ammonia is particularly beneficial. Should the serum be absorbed, and inflammatory action occur in the tumour, the softening of the clot and the development of the pus corpuscle will be the result. It will then be necessary to make a timely opening so as to evacuate the contents, preventing injury to the bone or the extension of inflammatory action to the brain.

The submenigeal variety of these extravasations of blood may have their seat in the sac of the arachnoid membrane, in the pia mater, or in the substance of the brain. When it happens in the sac of the arachnoid, the extravasation may be limited to the neighborhood of the cerebellum, while in other instances it may cover a considerable portion of the hemispheres of the brain, and even pass down by the side of the spinal cord. It may occur in the structure of the pia mater, dipping down among the convolutions, when it is generally far more limited than in the former case.—Or it may occasionally happen in the substance or in the ventricles of the brain.

When we find a new-born infant presenting great lividity of the head and face, observe that the heart beats feebly and that the pulsations are at longer intervals, that the pulsations of the cord have entirely ceased, we can plainly observe that congestion exists within the head. Should the child make an effort at respiration, breathe irregularly, imperfectly, at long intervals, while the pulsations of the heart grow feebler and fewer until they entirely cease, then we shall have reason to fear death from extravasation of blood within the skull. Often, as these symptoms are progressing, we shall observe the infant's fists clenched, the

thumb turned inwards,—spasmodic twitches about the face, which sometimes progress to actual convulsions. In these cases it generally has happened that the head of the infant has been submitted to long and continuous pressure while passing the bones of the pelvis. The tumid scalp and livid face of the still-born child plainly indicate the extreme congestion to which the vessels of the head have been submitted. The change of circulation and the establishment of the new functions of respiration—should any impediment occur to its development—may cause the blood to flow with difficulty in the new and unaccustomed channels, and under these circumstances death will not unfrequently occur during such transition.

We need hardly say that the indication to be fulfilled in these cases is to unload the vessels of the brain; by dividing the umbelical cord we may allow the flow of blood to occur to the amount of half an ounce or more, and when we find that the colour of the child's countenance changes, we shall be convinced that the end has been attained.—The employment of a warm bath, so as to determine the blood to the body and extremities, while we apply cold water to the head; but if these means do not quickly relieve the oppressed brain, and respiration fails to be established notwithstanding the flow of blood, we may rationally conclude that the condition of insensibility is dependent upon the rupture of a blood vessel and internal hœmorrhage. Still, however, we should not hesitate to attempt artificial respiration, hoping that the causes which impeded the establishment of the new function may be but of a temporary character, and possible to be overcome by perseverance in such means.

The subpericraneal variety, which our correspondent has so learnedly illustrated, generally occurs in the form of a tumour, which will not be observed until some day or two after birth, at which time it generally attains its greatest volume. We may now generally find a sense of fluctuation in it, although it is very tense and elastic. The coverings of the tumour present their natural colour in consequence of having its seat below the tendon of the occipito-frontalis.

There is not the ecchymosis and discolouration of the first variety, nor is there any appearance of œdema. After a time the tumour is observed to be surrounded by a rim of bony matter of considerable elevation. This raised and resisting margin of bone leads to the impression that a circle of the cranial bone is deficient, and such really is the case to a certain extent; in most cases, however, it is only the external table and diploë, while in some cases this deficiency may actually implicate the tabula vitrea, when we shall have the cerebral pulse as a sufficiently diagnostic mark. Under these circumstances it is possible we may mistake this complaint for one of congenital hernia of the brain. It may be observed that this tumour always occurs over the bone,—commonly one of the centres of ossification of the parietal are the seat of it. It is never witnessed in the line of the sutures, or in the location of the frontinelles; hence a mark that serves to distinguish it from congenital hernia of the brain.

In the two varieties of hœmorrhage occurring in the fœtal head at the time of birth, the seat of which we have already indicated, the sources of the effusion were sufficiently obvious; but in this variety of cephalhœmatoma which our correspondent has described, there has long existed considerable obscurity; and we shall find that it is only by considering the nature and character of the formation of the bones of the skull, and their positive condition at the time of birth, that we shall arrive at a satisfactory conclusion upon this subject. The flat bones of the skull, for the most part, appear to be formed by the deposition of the earthy salts in the white fibrous element. The structure of the dura mater and the periosteum are of this character, and between these structures the first processes of ossification occur. In the first stages of development the presence of cartilage is not plainly demonstrated in this location, but we have a far more considerable amount of vascular capillaries than can be observed in simple fibrous membrane. Without doubt, these capillary vessels yield the materials for calcification by transudation through their coats. After a time the internal table is formed by the deposition of the bony material upon the

inner layers of the fibrous structure. In process of time these parts are separated by the increased development of the fibrous elements. When such division happens it is not by rupture of the fibrous elements, but by simple separation of their fibres; and these also become calcified, so that at last each capillary vessel is enclosed in a bony tube that simulates and perform the functions of the Haversean canal, although it is not exactly formed in the same manner. These Haversean canals are a part of the great system for carrying nutritive material to each of the structures of the body,—in this instance appropriated and directed by the lacunæ and canaliculi—the true nutritive apparatus of the bone. As the formation of diploë progresses, the calcification of the outer table of the skull is accomplished; but at the time of birth the condition of external and internal tables with the diploë are only developed at the original points of ossification, or in their immediate circumference; in the rest of the new formed bone the diploë and outer tables of the skull are deficient, and scarcely more than the capillary vessels are to be observed.

During labour the bones of the head are compressed and irritated by the action of the os uteri and the propulsive powers of the uterus directing it against the bones of the pelvis, so that hœmorrhage in the several varieties, as above described, may result. A blood vessel gives way—in this instance a capillary vessel situated in the diploë, now in process of development. This may be completely or partially surrounded by the deposit of earthy salts, in fact in a situation somewhat similar to the nutritious artery of bone when it occurs upon the surface,—partly within and partly without a bony canal; so that when it may happen to be divided there is no power of retraction, hence a loss of those natural hœmostatic influences that should operate upon the vessel and stop the bleeding. Under these circumstances, when once the rupture has occurred, the hæmorrhage still continues to distend the structure of the new formed bone. The effused blood causes irritation of the capillary vessels in the neighbourhood of the part; an increased supply of serum is given out by the hyperœmic conditions of the capillary vessels; this causes the recently deposited calcareous matter to be dissolved and removed;

the fibrous element itself is softened and may likewise be dissolved,—at all events it will yield to the hœmorrhagic influence of the patulous capillary; if not dissolved, yielding it will be compressed, so that by degrees we shall find a cavity filled with blood. This process may continue until the tumour becomes of considerable size, and has removed, by absorption in its immediate neighborhood, all traces of external table and diploë, and will occasionally even extend its influence to the internal table,—such, however, is not very common. Cephalhœmatoma has been declared by Dr. West to originate from blood effused between the tabula vitrea and the dura mater; which, however, we think extremely doubtful: for although blood effused in that position might possibly destroy the inner table of the skull, the disease could not advance to the form of a tumour in so short a period of time as is indicated by the symptoms of the complaint we have been describing. Hœmorrhage in such a situation may be the immediate result of such an accident, but it takes a long period to soften and dissolve the bone that has been deposited in the three divisions of the skull now lying above it; besides, the chances are that before this condition could be arrived at, inflammatory action would have indicated itself, and the disease would have extended to the membranes of the brain, and would have produced the symptoms of this condition. For these reasons we are inclined to think that this tumour seldom or never results from the rupture of a blood vessel between the skull and dura mater. In the adult, the effusion between the skull and dura mater would give rise to evident symptoms of compression of the brain, but in the infant the facility of distention of the parts within the skull does not afford the same precise indications. With these facts before us we are bound to believe that the tumour arises from the rupture of a capillary vessel partially surrounded with bone, in all probability located in the diploë, which in some rare instances may cause the absorption and removal of the inner table of the skull, as well as the external. The tumour may progress until it contains from eight to ten ounces of blood. After the hœmorrhagic action has continued for a certain time, the firm union of the fibrous

element at the circumference bounds the extent of the tumour and prevents its further expansion; and now the changes which are witnessed in it are similar to those exhibited by collections of blood in other parts of the body, the separation into clot and serum may be observed. It is, however, a somewhat slower process in these cases than in those in which the ruptured vessel has been speedily closed, and the bleeding is arrested by the natural hœmostatic influences. The blood remains unchanged a much longer period when live blood continues to be poured into the cavity; but at last, when the hœmorrhagic influence is arrested, the changes above mentioned slowly progress. In many of these cases, after the first changes have occurred in the blood, the serum may be slowly absorbed, the clot dissolved, and even this may also be removed and the complaint cured by nature. It always happens, however, that this is a very slow process, and that as this progresses the efforts at repair may develope themselves, so that we find bony matter, instead of being further removed, to be deposited in the fibrous element that now constitutes the coverings of the tumour; and these ossific deposits may be observed particularly around the edge of the tumour, or even extending over the surface in striæ or dots; nay, this process of ossification may increase as the fluid is absorbed—may first cover the tumour and then obliterate its cavity, leaving a considerable elevation upon the surface of the bone. At any period of time prior to an attack of inflammatory action, should we examine the tumour we shall find that the scalp and tendon of the occipito-frontalis are comparatively healthy, save that they have experienced a certain degree of distension; the pericranium may be observed thickened, but its external surface will be found smooth and polished; it appears to be lined with a membrane, which, without doubt, is the distended and compressed fibrous element of the original bone. This, in some cases, appears to be of a filamentous or flocculent character,-and evidently constitutes the living membrane of a cystic tumour, which is now the true nature of the disease, and bears a great similarity to *spina ventosa*, as it was called by the older authors. Should the processes of

nature not be sufficient to remove the serum of the blood, ulceration may occur and leave an ugly sore; or, should inflammatory action, from a blow, injury, or injudicious surgical treatment, be indicated, the production of the pus corpuscle may be the result; and this inflammatory action may spread to the brain or to the scalp, when redness, heat and pain may be evinced by this last-named structure, or necrosis of the bone, and destructive caries may happen, ending in the death of the patient.

The principles of treatment which our correspondent has indicated are undoubtedly the most safe and correct that can be instituted in this disease—at all events, prior to the advent of inflammatory action and the formation of matter; should this happen, a necessity will surely occur for the free incisions advocated by the French writers. When matter has formed, the sooner it gets a free exit the better, and under these circumstances we should not hesitate to give immediate exit to the contents of the tumour, and, by supporting the strength of the infant, hope that nature would accomplish a cure.

ART. LI.—*Estimated comparison in Normal and Abnormal Anatomy: or data for the prosecution of morbid investigation; by* Dr. GOTTLIEB GLUGE, *Prof. of Physiology and Pathological Anatomy in the University of Bruxelles; member of the Royal Academy of Science of Bruxelles, &c. Translated from the German, by* JOSEPH LEIDY, Esq., M.D., *Philadelphia.*

TABLE III.—DISEASES OF THE KIDNEY.
Minimum weight, 35 grammes; maximum weight, 250 grammes.

CASE.	I. Obs. 24.	II. Obs. 25.	III. Obs. 26.	IV. Obs. 27.	V. Obs. 28.	VI. Obs. 29.	VII. Obs. 30.	VIII. Obs. 31.	IX. Obs. 32.	X. Obs. 33.	XI. Obs. 34	XII. Obs. 35.
	Stearosis	Stearosis	Atrophy after inflam.	Stearosis		Stearosis		Stearosis		Atrophy and hypertr.	Stearosi	Stearosis
Age	40	10	28	45	33	30	10	26	53	66	61	10
Sex	male	female	female	female		male	male	male	male	female	male	male
Size	1,m 000	1,300	.....	1,500	.....	1,580	....	....	1,600	1,120	1,600	.....
Weight of right kidney	80	.....	70	.....	.....	.....	.....	.....	120	.....	120	216
Weight of left kidney	80	250	70	200	233	250	{35 sic. 200	220	120	{230 35 sic.	120	.....
Length of right kidney	0, m 160	0, 140	0, 080	0, 155	0, 123	0, 110	0, 070	.....	0, 090	0, 057	0, 100	0, 144
Breadth of right kidney	0, 051	0, 060	0, 040	0, 060	0, 050	0, 070	0, 050	.....	0, 040	0, 022	0, 042	0, 075
Circumference of the right kidney	0,120	0,160	0,105	0,150	0,160	0,180	.....	.....	.....	0,090	0,140	....
Thickness of the cortical substance	{0, 005 0, 010}	0,010	0, 005	0, 021	0, 000	0, 010	0, 002	.....	0, 004	0, 002	0, 007	0, 015
Thickness of the medullary substance	0, 010	0, 020	0, 015	0, 011	0, 021	0, 020	0, 010	.....	0, 018	0, 007	0, 018	{0, 018 0, 02
Length of left kidney	0, 100	.....	.....	....	....	....	.....	.....	.....	0, 120	.....	.....
Breadth of left kidney	0, 50	.....	.....	.....	.....	.....	.....	.....	.....	0, 040	.....	.....
Circumference of left kidney	100	.....	....	.....	.....	.....	.....	.....	.....	0,180	.....	.....
Thickness of the cortical substance	{0, 007 0,009}	...	....	.....	.....	.....	.....	.....	.....	0,010	.....	.....
Thickness of the medullary substance	1,017	.....	.....	.....	.....	.....	.....	.....	.....	0.020	.....	.....
Weight of spleen	250	200	.....	.....	.....	.....	.....	.....	350	80	950	.....
Weight of liver	1150	1700	.....	.....	1500	1600	.....	.....	2000	1200	600	.....
Weight of Heart	350	380	.....	.....	.....	210	.....	.....	620	80	....	.....
Weight of Brain	.....	1300	.....	.....	.....	.....	.....	.....	1400	1200	.....	....

OBSERVATIONS TO THE TABLES UPON THE DISEASES OF THE KIDNEYS AND LIVER.

Diseases of the Kidney.

OBSERVATION 24.—Stearosis of the kidneys. Albumen in the urine. Pneumonia. Œdema. Hydrothorax.—Ascites. The kidneys were yellowish, granulated, with much fat in the tubuli uriniferi. The calices of both kidneys had the anomalous arrangement of opening into three ureters, instead of a common pelvis, which united into a common trunk an inch below the hilum renale. Much albumen in the urine. The heart softened, fatty, with atheroma of the mitral valve. Double pneumonia. A few calcified tubercles at the apex of the left lung. Weight of the right one, 1000 grammes; of the left, 1050 grammes.—Liver not fatty. The disease continued during three and a half months, and originated suddenly after taking cold.

OBSERVATION 25.—Bright's disease, of the inflammatory form. Meningitis, with softening of the brain from pus.—Insufficiency of the mitral valve. Fatty liver. Stearosis of the pancreas.

A young woman, nineteen years of age, after catching cold, had been sick four months. Œdema of the extremities, and much albumen in the urine. For fourteen days had symptoms of meningitis.

The surface of the brain was normal, but the lateral ventricles were filled with pus and serum. Corpora-striata, thalami nervorum opticorum, and septum pellucidum very much softened. The softened portions were colored, varying normally and greenish; in the latter positions presenting accumulations of pus, and in the former pus-corpuscles, mixed with fragments of destroyed nerve-tubules. Lungs healthy. Insufficiency of the mitral valve, with soft vegetations upon its free borders. Substance of the heart normal. Mucous membrane of the stomach strongly injected—everywhere softened to liquefaction. The kidneys externally not granulated in appearance, from which the membrana propria was easily torn away. The cortical substance in section presented a yellow appearance mingled with gray, and contained small abcesses; was throughout mixed with pus and inflammation corpuscles, whilst the tubuli uriniferi contained only a few oil globules; the Malpighian-corpuscles were bloodless, and the red medullary substance was normal.

For the first time, and so far as I can recollect, nowhere mentioned, I found the following case of degeneration of the pancreas.

In some lobules, about twelve in number, were found milk-white spots, from one to two mil. in diameter, which

contrasted remarkably with the yellowish glandular substance. The spots were but lightly elevated, and consisted of the terminal vesicles of the gland, distended with fat, in which the epithelial cells were distinct, but not their nuclei. The fat formed within the vesicles a cohering milk-white mass, like an emulsion, which only formed drops after its escape.

Observation 26.—Softening of the brain. Stearosis.

Observation 27.—Endometritis purulenta. Granulations on the neck of the uterus. Pus in the fallopian tubes. Stearosis of the kidneys. Œdema. Ascites. Hydrothoras Albuminous urine. Œdema of the brain and lungs.

The aorta was filled with liquid blood. Liver granular, fatty. Mucous membrane of the stomach injected, at some places softened. The cortical substance of the kidneys was granulated, yellowish, and the Malpighian bodies were bloodless. The tubuli urinferi were full of fat, without epithelia. Medullary substance red, with little fat in its tubuli.—Arteria and vena renalis not closed. The inner surface of the somewhat enlarged uterus was filled with soft caseous, not adhering mass, which consisted of pus-corpuscles, and exudation granules. The orifice of the uterus was beset with soft granulations about the size of peas, which were connected to the lining membrane; the substance of the uterus being healthy. The granulations consisted of fusiform fibres, pus-corpuscles and vessels. The fallopian tubes were dilated and distended with a thick caseous pus, and their mucous membrane was velvetty, and the muscular coat thickened.

Observation 28.—Œdema. Ascites.

Observation 29.—Stearosis of the kidneys. Œdema Ascites.

Albuminous urine. Non-inflammatory engorgement of the lungs. Cortical substance of the kidneys yellowish, granulated; the tubuli and Malpighian bodies full of fat; medullary substance red. Liver fat, soft to liquefaction. Spleen so firm that it was readily sliced into thin lamella of a red flesh color.

Observation 30.—See the history of the case in observation 38. Pyœmia.

Observation 31.—Stearosis of the kidneys. Albuminous urine. Hydrothorax. Ascites. Œdema, with gangrenous erysipelas. Œdema of the lungs.

Blood of a syruppy consistence. Kidneys yellow, smooth; the cortical substance with little blood; medullary substance red. The entire kidney softened to liquefaction. In the calices and pelvis of the right kidney, some calculous matter. Liver fatty.

Observation 32.—General dropsy. Albuminous urine. Sudden death from apoplexy. Effusion of blood within the pons varolii, which latter yet formed a thin rind upon the coagulum. Atheroma of the dilated basilar artery. Lateral ventricles dilated with bloody serum. Kidneys anemic.—Liver filled with blood not fatty. The cortical substance had upon it hard yellowish granulations; the tubuli uriniferi were filled with a consistent yellowish, granular substance; the Malpighian bodies were bloodless, and the medullary substance was red in color.

Observation 34.—Stearosis of the kidneys. Hydrothorax. Ascites. Œdema.

Albuminous urine. Fat in the tubuli uriniferi. Old adhesions of the pericardium. Atheroma and calcareous lamellæ in the aorta. Splenization of the lungs. Liver fatty, with a nutmeg-like appearance of the surface.

Observation 35.—Stearosis of the kidneys. Ascites. Œdema. Albuminous urine.

The cortical substance of the kidneys soft and pale, with anemic yellowish spots; medullary substance pale red; and the Malpighian bodies bloodless. Tubuli uriniferi filled with fat, but less in those of the medullary than of the cortical substance. Spleen firm, hard, red, with a deposit of fibrine, which in some places was even organized to fine fibrillæ, mixed with fat granules. There were also in the spleen some gray masses, about the size of a pea, which consisted of fat.

TABLE IV.—Diseases of the Liver.

Maximum weight, 4630 grammes.

CASE.	I. Obs. 36.	II. Obs. 37.	III. Obs. 38.	IV. Obs. 38.	V. Obs. 40.
	Simple hyper.	Stearosis.	Stearosis.	Stearosis.	Inflammation.
Age	50 yrs.	57 yrs.	50 yrs.	47 yrs.	64 yrs.
Sex	male.	male.	male.*	female†	female.*
Size	1. m. 600	1, 600			
Weight of liver	1750 gram.	1350	1650	2450	4630
Depth of right lobe	0, m. 170	1, 150		0, 300	
Depth of left lobe	0, 150	0, 100		0, 200	
Length of the liver	0, 240	0, 232		0, 252	
Circumference of right lobe	0, 400	0 250	480	0, 550	
Circumference of left lobe	0, 310	0, 370	300	0, 200	
Diameter of acini	0,001-0, 012	0, 004		0, 001	
Diameter of portal vein		0, 018			
Diameter of hepatic duct		0, 005			
Diameter of cystic duct		0, 004			
Diameter of the ductus com. choled.		0, 008			
Diameter of the vena cava ascendens	0, 009	0, 020			
Diameter of the hepatic artery	0, 006	0, 010			
Weight of spleen	300	230			
Weight of right kidney	150	300			
Weight of left kidney	150				
Weight of right lung	800	.....			
Weight of left lung	1250	.....			
Weight of heart	400	400			
Weight of brain	1440	1350			

* The same case as in No. X. of the table of the Diseases of the Heart. † Ditto No. II.
‡ Parallel condition of Stearosis and inflammation of the liver.

OBSERVATIONS TO THE DISEASES OF THE LIVER.

OBSERVATION 36.—Intemperate. Cirrhosis of authors; a simple form of hypertrophy. Pneumonia.

Arachnoid thickened; lateral ventricles of the brain dilated with serum; substance of the brain trough. Right side of the heart covered with much fat. Lungs with slight adhesions to the ribs; the right hyperæmic, the left in the condition of gray hepatization. Mucous membrane of the stomach pale and softened. Spleen softened. Liver brown yellow, appearing granular on the external surface. The granulations were from 1-12 mil. in diameter; some rounded, but most of them had elongated square bases; and a few were elliptical and somewhat pointed. The capsule of Glisson was readily torn off from them. The interspaces of the granulations were from $\frac{1}{4}$ to 1 mil. broad, and their blood-vessels were readily injected, more especially the vena portarum, which permitted the finest branches to be filled, and which contained a few blood coagula in the larger branches only. The hepatic cells measured $\frac{1}{33}$ by $\frac{1}{50}$ mil. and contained only a few fat granules. The same granular structure was observable in the section of the liver. No abnormal deposit existed within the cells or acini in this case. Bile normal. No dropsy.

OBSERVATION 37.—Stearosis of the liver and kidneys.—Hæmorrhage of the lungs. Softening of the brain.

A working man, thirty-seven years of age, was engaged in his occupation to within five days of his death, which took place after some hours' residence in St. John's Hospital, Autopsy, Jan. 25. 1848.

The brain was so softened that the fingers passed into its substance with slight pressure, and the membranes were easily separable, but the arachnoid was somewhat thickened. Atheroma in the arteries of the brain. The lungs at the borders were emphysematous; the upper and middle lobes of the right one were devoid of air and softened, and when incised blood poured out which had been extravasated into the organ. Heart covered with much fat, and in all four cavities was black blood of a syrup-like consistence. The spleen, which was double the normal size, contained the same kind of blood. The liver was granular and yellowish upon the surface, and in section; the granulations were not entirely globular, but polygonal or oblong, and were projecting, and from 1 to 3 mil. high. The interspaces between them were from $\frac{1}{4}$ to $\frac{1}{2}$ mil. wide. The hepatic artery, being injected with yellowish size, and the vena porta with green, both passed into the interspaces of

the lobuli, and rarely the green passed into the centre of the latter. The capsule of Glisson was not thickened. The hepatic cells were filled with fat. The right lobe of the liver was less developed than the left. The cortical substance of the softened kidneys was yellowish, and their tubuli uriniferi filled with fat.

ART. LII.—*The Hip-joint—Considerations on its injuries and diseases, deduced from the Anatomy, by* S. J. STRATFORD, M.R.C.S., Eng., Toronto; *continued from No.* 7.

ACCIDENTS OF THE HIP-JOINT.—INTRODUCTION.

In our endeavours to describe the several diseases to which the hip-joint is especially liable, it has been our principal aim to deduce, from an intimate knowledge of the minute anatomical structure of each particular tissue, the various symptoms that may serve to distinguish one disease from the other. The success of our effort may not be particularly striking; still we trust that this comparatively unexplored route may have truly afforded data that shall logically demonstrate the truth of the axiom which we have endeavoured to established—viz: that from an intimate knowledge of the nutritive apparatus of the several tissues in a state of health, shall we alone be able to derive clear and intelligible ideas of the symptoms and influences which are presented in an abnormal condition. Hence, instead of indiscriminately classing all these complaints as a *morbus coxarius*, a condition involving the same general result, and anticipating the common termination—either death or deformity—we have hoped to seize the very first symptoms of each disease, and by applying an appropriate treatment, desire to arrest the complaint ere it has progressed to a condition in which all and every tissue shall be confounded in one general confusion of disease.

We have failed to offer any observation upon cancer of the hip-joint; not that the articulation is totally exempt from this disease, but that when it does happen it is generally only in a secondary manner; and that the complaint is more dependent on constitutional influence than upon local degeneration—therefore, we shall pass it for the present.

Having then carefully considered the anatomy, physiology and diseases of the hip-joint, we shall now be better

able to understand the great variety of accidents to which this articulation is liable—to appreciate the nature of the symptoms, and to recognize the changes to which it is submitted, while we learn from the only true source of surgical knowledge the means by which we may cure or relieve them.

From a previous anatomical description, we have learned that the Coxo-femoral articulation is a ball and socket joint of the most perfect character,—strengthened by firm and elastic ligaments, and surrounded by the most powerful muscles—so that upon casual view it might seem almost impossible to produce dislocation or separation of the bones from their natural position. Such, indeed, is the perfect character of this union, that all our power exercised upon the dead body in a direct line will far rather tear the muscles than lacerate the ligament, or disarticulate the bones; that after the muscles have been removed, without cutting the capsular ligament it has been found insufficient to remove the head of the femur from the cotyloid cavity—if such is the case, how great must be the force, and how peculiar its application, that can produce these accidents in the living subject. It is the perfect consideration of this force, and the mode in which it is applied, that we shall be enabled clearly to diagnose the nature of the accident; and afterwards, by just and scientific data thus declared, to afford relief in each individual case.

From what we have here shewn, it is clear that the power which can produce luxation of the hip-joint must be indirect, it must act upon the shaft of the bone as upon a lever, and by a twist, place the body and the thigh at such an angle, that the bones of the pelvis, or the margin of the cotyloid cavity, shall act as the fulcrum, to draw out the head of the femur from its deep and accurately-fitting cavity—this force continued will tear the tough capsular ligament; and the powerful action of the muscles now operating with spasmodic violence, will draw the bone in the several directions in which we find it, as the result of these accidents. Should the application of the force be direct as upon the trochanter major, the head of the bone is driven down into the socket—according to the amount of force, this accident will produce either inflammation of the hip-joint, or fracture of the femur, generally extending through the trochanters; the neck of the bone acting like a wedge, splitting them up—or probably the head of the bone is driven deep into the cavity of the pelvis, through an opening made in the bottom of the cotyloid cavity. Was the application of the

force in a line directly across the neck of the femur, such as by a fall upon the feet from a great height, or by an inadvertent slip, in which the weight of the body comes upon the oblique neck of the thigh bone—then, especially in old people, we expect to find a fracture of the neck of the thigh bone within the capsular ligament. From these facts we can see how necessary it is to study the direction of the force which has caused the injury, as by it we can go far to establish the nature of the accident which has happened. These minute considerations will also assist us to distinguish even the variety of the dislocation that has been produced; for each kind will naturally and necessarily follow the nature and application of this force.—Thus, for example, if the application of this force came indirectly upon the joint, so that when the foot slips the limb glides under the body, and is kept extended by the powerful action of the muscles; the whole weight of the body, often greatly increased by an adventitious load, rests upon the extended limb, and drawing upon the ligaments in this most unfavourable direction, the outer ankle still slides upon the ground, the joint can bend no more—it is arrested by the ledge of the cotyloid cavity or bones of the pelvis, so that the bone now starts from its socket, overleaping its cartilaginous border, and tearing the firm ligaments; when this is accomplished the bone is drawn by the actions of the muscles and is lodged either on the back of the ilium or in sciatic notch. Again, should the application of this indirect force be in a different direction; should the body, being in the erect position, receive a weight too great for the power of its muscles to support; the foot firmly planted upon the ground slides outwards upon the inner ankle—the limb becomes a long lever, which operating upon the bones of the pelvis as upon a fulcrum, bursts up the joint, and forces the head of the bone through the weakest part of the capsular ligament, and rests it in the thyroid hole or places it in the groin.

Thus a true application of the forces which act upon the hip-joint not only lead us to form a just comprehension of the accident, whether it be fracture or dislocation; but also, with a due consideration of the action of the powerful muscles which surround and give strength to the articulation, teaches us the reason of the abnormal position of the bone after the accident has occurred, and will fully confirm a true diagnosis of its character. It is from a perfect knowledge of the individual action of the muscles, which are intended to perform the several motions of the joint in a normal condition of the parts, that we can calculate the deleterious influences

that they exercise when retracting or binding the bones in their false position—it will show to us those that are rendered powerless by the change, or those that are morbidly irritated, act spasmodically upon the bone, so that its power of motion is at once abridged or totally abnegated. So also this knowledge will teach us the application of the force to be used in the reduction of the dislocation: it will show the direction in which it should be used, and the power with which it can be judiciously applied. The true secret in the replacement of the bone into its socket does not depend so much upon the force which we use as upon the mode and direction in which it is employed, and upon the proper relaxation of those muscles which are spasmodically influenced by the change of position. We would advocate as a rule of practice that the true mode to reduce any dislocation is exactly to reverse the mode and application of the force which caused the injury: thus, in dislocation of the hip-joint, we replace the limb in a position similar to that which existed immediately prior to the rupture of the capsular ligament and the removal of the head of the bone from the cotyloid cavity.—We then apply our force, so as exactly to retrace each step and movement of the bone which placed the head of the femur in its abnormal position; and this, as a matter of necessity, will duly relax all those muscles that are now abnormally called into action and involuntarily acted upon. By these means we employ the same powerful lever which caused the removal of the head of the bone from its socket, to produce its return to its proper position, so that we can with great facility, and without the inordinate application of a force that often does great harm, present the head of the bone to the opening in the capsular ligament, and place it in the most favourable position to be returned into the articulating cavity. We flatter ourselves that this truth, which we desire forcibly to impress upon our readers, will be fully exemplified during the consideration of the reduction of each variety of dislocation, when we shall endeavour to show that we have but to replace the limb in the above-mentioned position to relax all those powerful muscles which are now in spasmodic action—thus removing one of the most influential obstacles to the reduction; and, by employing the extended limb as a lever we shall be able to reduce each variety of these dislocations of the hip-joint even in most powerful subjects—often not to be accomplished by direct force—with an ease and facility incomprehensible to one who has not reflected upon this subject, or who after years of practice has began to despise the teachings of

anatomy, and to forget the simpler principles deduced from its considerations; and while he calculates to replace the head of the bone in the cotyloid cavity by main force, will but too plainly demonstrate the truth of that axiom, that if "knowledge is power," he is sadly lacking in its attributes; for, from want of it, he will put a fellow creature under the operation of the pulley, producing more pain and distress than is caused by the injury itself.

DISLOCATIONS OF THE FEMUR.

It is usual in works upon surgery to describe four varieties of dislocation of the femur, as the effect of accidents to which the cox-femoral articulation is liable. Without doubt, these dislocations are subject to considerable variation. It must be remembered that the thigh-bone has great facility of movement in every direction, so that the precise position of the thigh and the body at the time of accident, and the direction of the operating force that causes the injury, will often produce a slight change in the position of each dislocated limb. Several of these conditions have by some surgeons been described as distinct variations of dislocation of the hip-joint; but if we shall thoroughly study the most common kinds of these accidents, we shall readily be able to appreciate any slight differences that may occur; and if we shall truly understand the principles that should guide us in the reduction of the dislocation, we shall not be at a loss to apply our force correctly under any circumstances, so as to accomplish the reduction of the dislocation with great facility. The four varieties of dislocation that we mean to describe are—1st, upon the dorsum of the ilium; 2nd, into the thyroid hole; 3rd, into sciatic notch; 4th, upon the crest of the pubes.

DISLOCATION OF THE FEMUR UPON THE DORSUM OF THE ILIUM.

The dislocation of the head of the thigh bone upwards and backwards would appear to be the variety of these kinds of accidents to which the hip-joint is most liable. The points absolutely required to produce this displacement of the bone, is that the thigh and the body must be bent at an angle—an angle whereby the trochanter minor and upper part of the shaft of the bone shall rest upon the ramus of the pubes, the limb being flexed and violently adducted; the head of the thigh bone is forcibly drawn upwards from its socket; should application of the force continue and increase, the capsular ligament will be torn, the head of the thigh bone extruded from the cotyloid cavity and guided by the action of the muscles, and the continued operation of the

same force, it will be placed upon the dorsum of the ilium. Such a condition of things is not unfrequently produced by any overwhelming weight that resting on the body, the thigh slips under it and is bent to the greatest possible extent; the compressing power still continuing and acting upon the extremity of the lever, the head of the bone is removed from its cavity and forced upwards between the gluteus minimus and pyriformis muscles, resting between the gluteus medius and the dorsum ilii. It matters little whether the body or the limb be the fixed point, the action of the force upon the hip-joint amounts to precisely the same result, and will be attended with the same consequences. In its new position upon the dorsum of the ilium, the head of the bone is firmly held and bound down, by the action of the muscles, so that all power of motion is entirely prevented, and the least attempt to move it is attended with excruciating pain. The muscles which confine the head of the bone in this unnatural position, are the series which are inserted into the root of the trochanter major and the intertrochanteric line; in their normal action they rotate the limb outwards: the distance between their origin and insertion being now considerably increased, they continue in powerful spasmodic action, and bind the thigh bone firmly down upon the pelvis, producing an inversion of the toe, and perfectly preventing the possibility of the least evertion of the limb—consequently in their abnormal operation they cause an influence precisely the reverse to that which is their characteristic operation in health. Let us examine the individual action of these muscles in their abnormal condition, and we shall be able to appreciate the influence they exert upon the different variety of dislocations which the accidents of the hip-joint will present to us.

As soon as the head of the thigh bone is removed from the cotyloid cavity, and is placed upon the dorsum of the ilium, the shaft of the bone is raised above its original level, and the trochanter major is thrown forwards—the pyriformis muscle, which arises from the pelvis in a line higher than its insertion in the true condition of the parts, will now be put upon the stretch from the advanced position of the trochanter major; but from the elevation, the gain will be nearly equivalent to the loss of distance—consequently the change of position, although it will somewhat extend the muscular fibres, will certainly not call them into powerful action. So far we must look upon this condition as a mechanical influence; but under other circumstances we must allow the influence of certain, and in some cases a very consider-

able amount of nervous power, which will produce inordinate spasmodic action in these muscles, consequent upon the irritation the part experiences from such change of position. In all these cases a due appreciation of both these influences must always enter into our considerations, when noticing the variety of dislocation. The gemelli and obturator internus muscles proceeding from the same region, but at a lower level, will, as soon as the bone reaches its abnormal position, be placed greatly upon the stretch, especially the inferior germellus; consequently, their continuous and powerful contraction will serve to bind the head and neck of the femur down upon the ilium, and prevent the toe from being everted. The quadratus femoris arising from the lowest point of the ischium, and inserted into the intertrochanteric line, now that the bone is raised and advanced forwards, must suffer most of all these muscles, and seldom escapes being torn through during the production of the dislocation; indeed, should it so escape, it must play a most powerful part in fixing the bone in its unnatural position. The obturator externus muscle undoubtedly proceeds from the fore part of the pelvis, and the advanced position of the shaft of the femur approximates closely to its origin; but as the tendon winds round the neck of the thigh bone to gain the trochanteric fossa, under these circumstances the plane of its insertion is somewhat above that of its origin, but the inversion of the foot and rotation of the bone is the principal cause of the its extension —for no sooner is the bone raised, rotated inwards, and powerfully adducted, than the fibres of this muscle are put greatly upon the stretch—indeed, they must frequently be torn during the application of the violence necessary to produce dislocation. Was not this actually the case during the accident; according to the old method of reduction, by means of the pulley and forcible retraction, I believe its laceration can scarcely avoid being accomplished under that operation. When not torn across, its action in the new position serves powerfully to confine the bone to the haunch and advance the knee forwards, flexing it upon the body. The pectineus muscle, proceeding from the anterior part of the pelvis and inserted below the trochanter minor, will have its points of origin and insertion greatly approximated; consequently its fibres will be relaxed, and this muscle will become inoperative upon the bone in its false position.

The action of the psoas magnus and iliacus internus muscles, which are in some degree antagonistic to those

already described, will also be influenced by the abnormal position of the femur. These muscles arise within the pelvis, and are inserted into the lesser trochanter; in the normal state of the parts they serve to rotate the limb outwards and to flex the thigh upon the body; in all cases these muscles date the direction of their power from the point of their reflection over the edge of the pelvis. So that when the thigh bone is raised and rotated inwards, the trochanter minor passes backwards, and is elevated considerably above its natural position — consequently the fibres of these muscles are upon the stretch, and would serve to counteract the influence of the muscles already described, was it not that the neck of the thigh bone acts as an impediment to the eversion of the limb. The rotary power of these muscles is completely lost, while their increased and spasmodic action serves the more forcibly to bind the thigh bone down upon the pelvis and causes it powerfully to flex the thigh upon the body and to preserve it in this abnormal position.

The third series of muscles that particularly act upon the hip-joint are the three gluteii; all of these for the most part arise in a plane superior to their insertion — from a large segment of a small circle—may serve, when the individual fibres act, to rotate the limb in every direction, and particularly to draw it backwards; they will, for the most part, have their origin and insertion greatly approximated, so that their fibres will become relaxed and the muscles comparatively lose all power.

From these facts, we mean in our next issue to indicate the symptoms, and to demonstrate the diagnostic signs of dislocation of the femur backwards and upwards.

(*To be continued.*)

BOOKS RECEIVED FOR REVIEW.

On Rheumatism, Rheumatic Gout and Sciatica; their Pathology, Symptoms and Treatment: by Henry Wm. Fuller, M.D., Cantab. Fellow of the Royal College of Physicians, London; assistant Physician to St. George's Hospital, &c. &c. New York: Samuel S. & William Wood, 261 Pearl Street, 1854. H. Rowsell: Toronto.

In our next number we propose to review this most practical work.

REVIEW.

HOMŒOPATHY: ITS TENETS AND TENDENCIES, BY J. SIMPSON, M.D., F.R.S.E., *Prof. of Midwifery in the University of Edinburg.* LINDSAY & BLACKISTON, Philadelphia: H. ROWSELL, Toronto.

HOMŒOPATHY FAIRLY REPRESENTED: In reply to DR. SIMPSON'S "HOMŒOPATHY MISREPRESENTED." BY WM. HENDERSON, M.D., *Professor of General Pathology in the University of Edinburg, &c.*:—LINDSAY & BLACKISTON, Philadelphia: H. ROWSELL, Toronto.

In the two works before us we have the practice and principles of Homœopathy most strenuously attacked and defended. Should any of our readers desire to understand and fairly estimate the merits of this popular medical delusion, we would recommend them to study the facts and arguments set forth by the learned combatants. It may be observed that both the disputants are Professors in the University of Edinburgh; and it has greatly surprised us to find that it should be necessary, in modern Athens, in the nineteenth century, for Dr. Simpson to expend his time and employ his abilities in the contradiction of so illogical a sophism,—the "baseless fabric of a vision,"—that has presumed to include the whole science of medicine in a single sentence—similia similibus curantur—absurd in its pretensions and untrue in its facts; while our astonishment is in no wise diminished to observe that Dr. Henderson, the Professor of Pathology in the same renowned school of medicine, should be the defender of such a medical absurdity. The principles of pathology require the most logical exactness, and the greatest exemption from theory, of the whole range of medical science: consequently we confess that we could have but little confidence in the teachings of a mind given over to so great a delusion as appears to be the case with Professor Henderson. If a truthful man does his duty to his class, he must demonstrate the simple facts of his science, which, contrasted with the absurd dogmas he now ventures to defend, are as diametrically opposed as light and darkness—as truth and error. Pathological science is, for the most part, based upon demonstrative evidence, while homœopathy rests simply upon a single presumed fact—that like cures like. Even this is only a presumed fact, and will not bear a close investigation, as has been clearly shown by Dr. Simpson. We would not, however, advise any medical man to rest satisfied with our declamations, but coolly and dispassionately to read the books and judge for himself.

EDITORIAL DEPARTMENT.

INCORPORATION OF THE MEDICAL PROFESSION.

Niagara, C.W., 27th March, 1854.

My Dear Sir,

I have read with much interest the letter to Dr. Rolph in your last No., on the Incorporation of our Profession. It is a subject to which I have given a good deal of attention; and although my views differ somewhat from yours, I feel sure that you will not object to hear them.

I believe that the great majority of our brethren in Upper Canada would cordially agree with you, that our Profession does not occupy that position in public estimation to which it is justly entitled—they moreover believe that Incorporation would not only raise their social *status*, but that it would increase their usefulness, and render their profession a sure means of attaining an honorable independence.

Admitting then, that Medical Incorporation is desirable; how is it most likely to be attained? It can only be obtained by our *united* action.

The influence that the members of our Profession throughout Canada could individually bring to bear upon the election of members of Parliament is surely very great. Once get a scheme of Incorporation that will be acceptable to them, and that influence would be very cheerfully exerted in its favour; and pledges would be exacted from candidates, that their best endeavours would be used to carry an act for that purpose.

Is it possible to attain to this much-desired unanimity of action, the want of which has hitherto rendered all our efforts abortive? It will be well for us to consider whether the interests of all the members of our profession are identical; and if not, in what they differ. And, finally, whether a scheme of Incorporation may not be very advantageous and acceptable to those of our brethren who reside in Toronto, and at the same time be very distasteful to the mass of the profession scattered throughout the country.

In all the plans that have been proposed for the Incorporation of the Medical Profession, some allusion has been made to the fact that the Legal Profession is already incorporated; and it appears that the supposed analogy between these two professions, with reference to incorporation, has led to a very serious misconception.

The higher Courts of Law and Equity must necessarily be established in some fixed spot, and the capital of a country is generally considered to be the most proper place for the purpose. Cases brought before these courts being generally appeals from courts of inferior jurisprudence, require for their management the very highest talent that is available; and it follows as a matter of course that those occupying the highest position in the Legal Profession are certain to be found among the residents of the capital; and when the Legal Profession came to be incorporated, they would naturally be selected to preside over it, in its corporate capacity.

It is quite otherwise with the Medical Profession. The practitioner residing in the most distant part of Canada will perhaps be unwilling to concede any superiority in professional standing or attainments to his brethren in Toronto, thinking possibly that his own practice may be quite as extensive and his opportunities of observing disease, and acquiring experience, quite as great as those of the metropolitan practitioner, where the work is divided among so many. And he would look with distrust, if not with aversion, upon any proposal to confer advantages on the Toronto practitioner in which he could not fully participate.

Any scheme therefore that would appear to tend towards *centralization*—or that would favor the establishing of institutions of merely *local* benefit, such as Libraries and Museums, will not be likely to be received with much favour by the country practitioner. Of what use will a Museum in Toronto be to me? asks a practitioner in Chatham. How am I to get books from the Library? asks another in Bytown. And yet it has been proposed to apply the funds contributed by those gentlemen to establish institutions, which they will no doubt think, to them at least, perfectly useless. Again: another asks, how he is to be benefitted by those *Medical Schools* in Toronto, which by their competition have so reduced the cost of medical education that the profession is in imminent danger of being quite overstocked. These are probably very selfish views, and it may not be prudent in any one openly to avow them; but it must be borne in mind that the Incorporation of the Profession cannot be carried into effect without receiving the good-will of many who hold these views. We must not conceal from ourselves that, while the establishing of a good Medical School in Toronto is greatly to the advantage of Canada in general, and to that of the practitioners in Toronto in particular, it by no means follows that it will

be considered equally to their advantage by those already engaged in practice. They will perhaps think that the more facilities there are afforded to a student in Toronto, the less likely are pupils to study under practitioners in the country—and any medical man who knows what country practice in Canada is, knows also the advantages to be derived from the services of a zealous and attentive student.

I should be trespassing too much on your space, if I were to enter fully upon the details of such a plan of incorporation as I think would probably be accepted and supported by the united action of the Profession in West Canada. In one respect it would differ from the one suggested by you to Dr. Rolph—it would be essentially *representative* and without any reference to seniority. Instead of the present Board, appointed by the Governor, I would propose that the affairs of the profession should be managed by a Board, or Council, elected by those whose interests are to be protected—in fact, by the practitioners themselves. Let us suppose, for instance, that, from among the licensed practitioners residing in each parliamentary division or constituency in Upper Canada, one be elected annually or otherwise by his professional brethren, to represent their interests at a General Council, or Board, to assemble once, twice, or oftener in a year at Toronto: that the Council so constituted should be empowered to make its own by-laws for the transaction of its business; to establish the curriculum of study; to appoint some of its members to examine candidates; to investigate and verify the documents brought forward by others as claims to be admitted to practice without examination; to cause the registration of all duly qualified practitioners; to interdict and prosecute all such as practice without legal qualification; to suspend or totally to annul the license of any convicted of disgraceful conduct; to establish a legal tariff of fees; and finally, to regulate all those matters that concern the welfare of the profession. These acts to become law upon receiving the sanction of the Governor in Council. Such are the heads of an act that would probably be acceptable to an immense majority of the profession. And if a bill embodying these were brought forward, and their influence brought to bear upon the next parliamentary elections, there need be little fear but that it would very speedily become law.

I am, dear sir,

Yours very truly,

D. CAMPBELL, M.D., Edin.

To S. J. STRATFORD, Esq.,
Editor U. C. Med. Jour., Toronto.

We have great pleasure in inserting Dr. Campbell's communication upon the subject of the incorporation of the Medical Profession, and we commend an attentive perusal of it to all our readers. Many of the suggestions made by Dr. Campbell, although differing somewhat from our own ideas, are worthy of attentive consideration, and as our only desire is the good and respectability of the Medical Profession, we should cheerfully leave all these points to their decision; but, at the same time, it may be well fully and carefully to canvas them all before any action is taken upon the subject.

With regard to the elective character of the Council of the College of Physicians and Surgeons, which might have its advantages in a popular point of view, and offer encouragement to the most active and enterprizing amongst us; but as they are not always the most scientific and experienced that obtain the popular voice, we think that it would be fairest to the great body of the Medical Practitioners, that age and standing on the lists of the Profession should carry an appropriate weight; for when a man has proved himself fully qualified to become a member of the College, he should not be lightly deprived of his just rights, or be despoiled of his share of professional honors, either through popular or ministerial favouritism. We believe that it would be a source of certain degradation to the Medical Profession, still to keep it an arena for popular strife or party distinctions; all of which are surely inconsistent with the staid wisdom and disinterested judgment that should guide and direct the proceedings of a learned body. We cannot see that any really substantial objection can be urged against the form of proceedings we have suggested—that is, taking the members according to their standing upon the list; it must then be obvious, that all in their turn will share the honors of the Profession; and that of the senior twenty or twenty-five members that constitute the Council of the College, time will give each member a share in the administrative department of the College. Such are the principal reasons that we urge against the elective character of the Council; but we must again say that the

general views of the Profession must be listened to on this subject; and, at the sacrifice of minor points, we shall hope that the watchword will be perfect *union* in this matter of the incorporation; for it is only by union, strenuous, and complete in some definite plan, that the interests of the public or the benefits and respectability of the Medical Profession can be placed in some more advantageous position than they at present stand in.

Regarding the benefits of a Museum and Library attached to the College, Dr. Campbell does not think that they will advantage the Profession to the extent that we anticipated. Our idea is, that Dr. Campbell does not look sufficiently far a-head in this matter, that upon the accomplishment of the railroads now in process of construction, most of the Medical Practitioners will be within a very few hours' run of Toronto, can have books sent with facility and despatch, as well to Chatham as to Bytown; and consequently, will be as able as the Toronto practitioners to benefit by this arrangement—hence we think that Dr. Campbell's objections fall to the ground. Respecting the Museum, it will have an immense influence in encouraging a taste among the Medical Practitioners for the pursuit of Comparative and Pathological Anatomy, and will be a stimulus to all parties in the investigation of disease; while it will cause the members to vie with each other in the prosecution of these studies, and encourage them to record their observation and experience for the benefit of the Profession and the good of mankind; it would give an energy and *esprit du corps* to the Profession in the Province, which is greatly lacking at the present moment—and teach them to think less of their own advantages than of the public good. It is not to be reasonably expected that the Medical Practitioners of Canada West should be able to establish a respectable Museum and tolerable Library without public assistance; but when it is considered that the Medical Profession are justly entitled to a share of that munificent grant for educational purposes, now amounting to nearly half a million of pounds, made to the Toronto University, we see no reason why they should not claim a share of

those funds for the purposes which we have mentioned; especially as they were expressly intended for the advancement of science generally, and of the science of medicine in part. It must be plain to all that a continuous education is absolutely necessary in the Medical Profession; every practitioner must study, if he would not degenerate into a quack, hence we must clearly see the necessity of the establishment of a Library and Museum; and for this reason it is that we suggest a sum sufficient for these purposes should be granted to the College of Physicians and Surgeons of Canada West as soon as it is incorporated; and moreover, that it is absolute nonsense to give the said College a name without affording it a location. So that a sum of money sufficient for all these purposes should be granted out of the University fund to the aforesaid College, so as at once to place the Medical Profession in the condition of respectability and influence its importance demands. As such a measure would be required to be introduced by a Cabinet Minister, we would earnestly press upon Dr. Rolph—and we hope to be supported by the general voice of the Profession—not to lose the present opportunity to do that justice to the Medical Profession which we doubt not it must be his sincere desire to accomplish.

Among other points of vast importance is a new movement and recommendation that has emanated from some of the Professors of Trinity College, to the effect that the present Medical Board be cancelled, and that a paid examining board be established at University College Toronto, out of the late Professors in the Medical department of Toronto University, and that this board shall be the Licensing Board of the Medical Profession in this Province; while the students of Trinity College will be admitted to practice Medicine and Surgery simply upon the degree given them at the said Medical School without any further examination.*

This is certainly a knowing movement on the part of the Professors of Trinity College to secure to themselves the

* We have the authority of Dr Bovell for making these statements, given to us before Drs. Grant and Clark at the Toronto Hospital, for the especial use of the Journal.

complete command of the Medical Profession of Canada West. They know full well that there is no Medical School attached to University College, and that all the parties the examining board would be required to examine for the future would in all probability be but a few stray students from the United States. Truly we should look upon this arrangement as a bribe to sell the Medical Profession into the hands of Trinity College: most surely it would have the effect of turning all the Medical Students into their school; and after a time, of giving them the whole influence of the Profession. For, should it so happen that the degree of the Medical department of Trinity College is to exempt the Medical Student of that School from examination before the Medical Board of the Province, they might, if they pleased, sell their degree low enough to absorb all the Medical Students of Canada.

It is now openly declared by some of the Professors of Trinity College, that they are opposed to the Incorporation of the Medical Profession.* They confess that they have completely changed the principles which they once so strenuously advocated;† that they now have but faint hopes of securing the influence of the Profession by such means. But now they are looking farther a-head, for they plainly foresee that if they can get the Medical Students into their hands, the power and influence of the Medical Profession of Canada West is still within their grasp. In the name of the whole Profession we solemnly protest against this selfish movement, and hope that the Medical Profession of Canada West will, without delay, call upon the Government to take some steps in this matter; or, if not, to give the Profession an Act of Incorporation that shall prevent the whole body of Medical practitioners from being placed at the foot either of Trinity or University Colleges. We go for the complete freedom and emancipation of the Medical Profession from any such oppression, and maintain that they have as just a right to regulate their own affairs as any other trade or profession in Canada.

* Dr. Bovell at the same time and place as mentioned above.
† See previous numbers of the *Medical Journal*

We find that our neighbours in the United States are alive to the continuous education of the Medical Profession, and are exerting themselves to afford opportunity to the general practitioner of "*keeping up*" in the medical literature of the day, by the formation of the "Medico-Chirurgical College of Philadelphia," the objects of whose constitution are declared to be, "the dissemination of medical knowledge, the defence of the rights and the preservation of the repute and dignity of the Medical Profession." To this institution is to be attached a Library, and a Cabinet or Museum; and, as it may be some encouragement to our Legislators to know that we are on the right track, and that such means are necessary to the improvement of medical science, in which we all are likely to have an interest at some period or other of our lives, we think that we cannot do better than to place the objects expected to be gained before our readers, especially as we see no reason why the Profession in Canada West should not possess similar advantages.

"1. One of the objects contemplated by this College is, to effect the foundation, in the City of Philadelphia, of an extensive and permanent "*Medical Library and Cabinet.*"

"2. As medical and other scientific gentlemen constantly resort, from all parts of the Union, and likewise from foreign countries, to this ancient *seat of the medical sciences of America*, for the purpose of studying and investigating into different departments of professional knowledge, it has appeared to the members of the Medico-Chirurgical College, that this time-honored city is eminently and peculiarly adapted to be a great and useful *depository* of all works and specimens pertaining to the study of medicine.

"3. Arrangements are now in progress by which it is intended gradually to accomplish this design.

"4. The books to be thus preserved, and held available for research, shall relate not only to medicine, but to all the natural sciences.

"5. The cabinet shall consist of Anatomical, Physiological, Pathological and other specimens, illustrative of the organs of man, both in health and disease.

"6. With a view of promoting so excellent a plan, the undersigned have been authorized by their constituents respectfully to solicit donations of books, periodicals, pre-

parations, &c., from a generous community, and from the friends of science in every State, place and country.

"7. Articles thus bestowed will be most thankfully received, and labelled with the donor's name."

It is certain that a Medical Library and Museum is in process of formation at the medical department of Trinity College, but this is comparatively a private enterprize; there are similar advantages connected with University College Toronto, the medical books of which were purchased and continue to be purchased with public money. They were especially intended for the encouragement of medical learning; but this Library is completely closed from the Medical Profession—hence it can be of little avail in the improvement of the medical practitioner; and unless some means of encouragement be rendered in the formation of a public Medical Library, it cannot be expected that the practitioners of Canada West can keep pace with the times, or be able to render to suffering humanity the full complement of professional advantage, which is to be obtained in other States of this continent more favourably situated.

We have received a communication from Dr. Marsden of Quebec, complaining of the want of a Title-page and Index to the last volume of the *Upper Canada Journal*, which he says the subscribers have a right to claim from the former publishers of the *Journal*. We have communicated the circumstance to the late proprietor, but have not yet received an answer. All we can say is, that we shall be ever ready to do all in our power to remedy the deficiency.

SELECTED MATTER.

A COURSE OF LECTURES ON ORGANIC CHEMISTRY.

Delivered in the Laboratory of the Royal Institution of Great Britain, by Dr. A. W. Hofmann, F.R.S., Professor of the Royal College of Chemistry.

LECTURE VII.

GENTLEMEN—

In the short account which I gave you in the last lecture of Cyanogen and its compounds, I have repeatedly mentioned the beautifully crystallized salt which bears the commercial name of yellow prussiate of potash. I have stated that this compound may be viewed as a double salt of cyanide of potassium and cyanide of iron, one equivalent of the latter to two of the former, as indicated by the formula 2 K Cy, Fe Cy. This view is supported by the manner in which the salt is formed. Cyanide of potassium, when added to a solution of Fe O, SO3 produces blue cyanide of iron. This substance, with an excess of the cyanide, affords a yellow solution, yielding, on evaporation, the yellow compound. You will see directly that the deportment of this compound becomes more intelligible if a somewhat different mode of viewing it be adopted. If it were an ordinary double salt, we should expect to see the iron indicated by the common reagents for this metal, such as sulphide of ammonium or carbonate of potassa. I hold in my hand crystals of a true double salt of sesquichloride of iron and chloride of potassium.—The solution of this yields, with sulphide of ammonium, a black precipitate, and with carbonate of potassa it is precipitated as the well-known red sesquioxide of iron. But a solution of the yellow prussiate is not affected in the slightest degree by these reagents. This deportment shows that the iron in this substance must be in a peculiar state of combination, different from that in which it exists in ordinary saline compounds.

The extraordinary manner in which iron is present in the yellow prussiate, together with the general behaviour of this salt, have induced chemists to assume in this compound the existence of a peculiar molecular group, which contains the iron and the whole of its cyanogen associated, as a new organic radical, to which the term ferrocyanogen has been applied. This radical, which is composed of one equivalent of iron and three of cyanogen, is invested with the characters of cyanogen itself: like cyanogen, it is capable of combining with the metals and with hydrogen, but the combinations take place in more complicated proportions. While we find cyanide of potassium to consist of equal equivalents of cyanogen and potassium, we find in ferrocyanide of potassium two equivalents of the metal to one of the radical. On account of the frequent occurrence of ferrocyanogen compounds, it has been found advisable to adopt a special symbol for the radical. The symbol selected is Cfy = Fe Cy3; accordingly we now no longer express the composition of the yellow prussiate by the formula 2 K Cy, Fe Cy, but by the simpler term K2 Cfy, which represents the salt in the light of a binary compound, analogous to chloride, bromide, iodide or cyanide of potassium.—On adding solution of copper, silver or lead to ferrocyanide of potassium, the potassium is replaced by copper, silver and lead, salts of a perfectly analogous compound, viz., Cu2 Cfy — Ag2 Cfy — Pb2 Cfy, being produced. Salts of a similar formation are obtained from almost all the metals, and the iron salt, (which I shall mention directly more in detail), like the copper salt, has a very characteristic colour, and is frequently produced for the purpose of testing for this metal. In some cases only half the quantity of potassium is

replaced by the other metal. On adding chloride of calcium or barium, for instance, to a solution of ferrocyanide of potassium, crystalline precipitates are formed, containing respectively $\left.\begin{matrix}K\\Ca\end{matrix}\right\}$ Cfy and $\left.\begin{matrix}K\\Ba\end{matrix}\right\}$ Cfy. The existence of such a series of salts leads to the question whether a peculiar acid may not exist in these compounds, just as we obtain hydrochloric, H Br, and hydrocyanic acids from the chlorides, bromides or cyanides. Now, this acid actually can be obtained. It is called hydroferrocyanic acid, *i. e.*, ferrocyanide of potassium, in which the potassium is replaced by an equivalent of hydrogen: and it is formed under exactly the same circumstances as those in which HCl. H Br and hydrocyanic acids are generated—by passing a current of H S. through water in which ferrocyanide of silver or of lead is suspended, when the metals become sulphides, and hydroferrocyanic acid remains in solution; on evaporating the solution the acid crystallizes. A more ready method of making this acid consists in decomposing ferrocyanide of potassium by means of concentrated HCl. acid, and shaking the mixture with ether, in which hydroferrocyanic acid is insoluble. The solution solidifies instantly into a crystalline mass.

Among the most interesting compounds of hydroferrocyanic acid are those which this acid forms with iron. On adding ferrocyanide of potassium to a solution of protoxide of iron, a whitish blue precipitate is obtained, the composition of which corresponds to the potassium compound. On exposure to the air, this compound gradually assumes a deep blue colour, which is more readily produced by oxidizing agents, such as chlorine or nitric acid.—This deep blue compound is sesquiferrocyanide of iron, better known under the name of Prussian blue.

This beautiful compound is instantaneously precipitated on pouring sesquichloride of iron into a solution of ferrocyanide of potassium. The formation of this blue precipitate enables the chemist to ascertain the presence of a salt of sesquioxide of iron on the one hand, and of ferrocyanogen on the other. I have just told you that this compound is produced by adding an excess of cyanide of potassium to a solution of protoxide of iron, until the cyanide of iron is re-dissolved. Here is still the test glass in which I performed this solution. The blue precipitate which is produced on adding sesquichloride of iron convinces you that in this reaction ferrocyanide of potassium is actually generated.

The formation and the composition of Prussian blue claims our attention for a moment. In decomposing ferrocyanide of potassium by sesquichloride of iron, the whole amount of potassium of the former has to be converted into chloride of potassium by the chlorine of the latter. It is therefore necessary to employ such quantities of the two compounds as contain an equal number respectively of potassium and chlorine equivalents. Three equivalents of ferrocyanide of potassium contain six equivalents of potassium; the corresponding number of chlorine equivalents is present in two equivalents of sesquichloride of iron: accordingly, Prussian blue must contain the ferrocyanogen of three equivalents of ferrocyanide, and the iron of two equivalents of the sesquichloride.

The formation and composition of Prussian blue will become more intelligible by glancing at the subjoined diagram:—

$Fe_2\ Cl_3$	$K_2\ Cfy$		K Cl	
+	$K_2\ Cfy$	=	K Cl	+ $Fe_2\ Cfy$
$Fe_2\ Cl_3$			K Cl	
	$K_2\ Cfy$		K Cl	$F2_2\ Cfy$
			K Cl	
				Cfy
Two equivalents of sesquichloride of iron.	Three equivalents of ferrocyanide of potassium.		Six equivalents of chloride of potass.	One equivalent of Prussian blue.

Prussian blue is not easily affected by acids. In hydrochloric and SO^3 acids

it is quite insoluble. Oxalic acid dissolves it, and the blue solution thus obtained is sometimes employed as an ink. The alkalies, on the other hand, decompose Prussian blue with the greatest facility; the blue powder is readily converted into brown sesquioxide, ferrocyanide of potassium being regenerated.

Prussian blue is very extensively employed in dyeing and printing. In dyeing, this substance is generally produced upon the fibres of the cloth; for this purpose the cloth is "mordantized," as it is called by the dyer—that is, it is impregnated with a solution of sesquioxide of iron, more or less concentrated according to the shade of blue which is required. The cloth thus prepared is immersed into a solution containing equal parts of ferrocyanide of potassium and SO_3, dissolved in from 50 to 60 parts of water, and gently heated. The blue colour appears almost immediately. In this manner either the whole cloth may be dyed uniformly blue, or we may produce a blue pattern on a light ground, or even patterns of a different blue, if the cloth has been printed with mordants of different degrees of concentration.—In the case of blue patterns being printed on colored grounds, great attention has to be paid to the selection of the colour, which must not be affected by the acid solution of the ferrocyanide of potassium. For the purpose of illustration, I have printed an iron mordant upon red and upon orange yellow cloth. In order not to injure the red, the dyeing solution has to be used in a very dilute state. The orange, however, does not stand even this dilute solution; the orange becomes of a dirty brown, whereby the pattern is entirely spoiled.

There is still another mode of dyeing by ferrocyanide of potassium, to which I must briefly call your attention. In the preceding lecture I exhibited to you the preparation of dilute hydrocyanic acid. This compound was produced by the action of acids upon ferrocyanide of potassium. In this preparation there remains in the retort a light blue powder, generally considered as cyanide of iron, but which has a more complicated composition.—This substance, like the blue precipitate produced by ferrocyanide of potassium in solutions of salts of the protoxide of iron, assumes a deep blue colour when exposed to the air, or when treated with oxydizing agents. These reactions are involved in the production of what is called "blue vaporise."

In order to dye by this process, the cloth is printed with a mixture of tartaric acid and ferrocyanide of potassium. Even at the common temperature a slight decomposition takes place, and the printed portions assume a light blue colour. The decomposition is completed by the action of steam. For this purpose the cloth is placed between flannel, and submitted for about a quarter of an hour to the action of steam. By this process the pattern becomes only slightly darker; but on treating the cloth subsequently with a solution of chromate of potassa, the pattern assumes a magnificent blue colour. Prussian blue is, as I have just now stated, readily changed by the action of alkalies, which convert it into sesquioxide of iron, a soluble potassium salt being re-produced. This deportment is likewise frequently made use of by the printer in producing white patterns upon a blue ground. The following experiment will illustrate this application:—

A piece of woollen cloth is covered with a layer of common starch paste, with which some caustic potassa has been mixed. It is covered with a paper into which a pattern is cut. By pressing upon this paper a piece of calico dyed with Prussian blue, the pattern appears yellow, owing to the formation of the sesquioxide of iron. If the calico now be carefully washed, in order to remove the ferrocyanide of potassium which has been reproduced, the iron may be easily dissolved from the cloth by steeping it in hydrochloric acid and washing it again, when the pattern will be found perfectly white.

Ferrocyanide of potassium furnishes to the chemist a great many substances of considerable scientific interest, some of which are becoming, moreover, of a daily increasing importance in the arts and manufactures. I will mention to you briefly one or two.

If a current of chlorine gas be passed through a solution of ferrocyanide of potassium, a chemical decomposition becomes at once manifest by the

change of colour, the solution turning to a deep brown. On evaporating this solution, a splendid ruby-red salt is deposited, which the dyers call the red prussiate of potash. The process which gives rise to the formation of this compound is very simple. This salt is generated by the coalescence of two equivalents of ferrocyanide of potassium from which the chlorine removes one equivalent of potassium. A glance at the subjoined formula will facilitate the conception of this change.

$$\left.\begin{matrix} K \\ K \end{matrix}\right\} Cfy \quad \left.\begin{matrix} K \\ K \end{matrix}\right\} Cfy \quad + \quad Cl \quad = \quad \left.\begin{matrix} K \\ K \\ K \end{matrix}\right\} Cfy \quad + \quad K\,Cl.$$

Hence the composition of this red salt is expressed by the formula $K_3\,Cfy_2$.

It presents, again, all the characters of a binary substance, and chemists consider it as a combination of three equivalents of potassium with a molecular group containing the elements of two equivalents of ferrocyanogen; in short, with another compound radical of a still more complicated character, to which the name of "ferricyanogen" has been given. By precipitating this salt with metallic solutions we obtain a series of salts in which the potassium is replaced successively by various metals—lead, silver, &c.,—and by submitting one of these salts to the action of sulphuretted hydrogen, we lastly replace the metal by hydrogen, and obtain the acid corresponding to the series, viz., hydroferricyanic acid.

Potassium salt.....	$K_3\ Cfy_2$
Lead salt	$Pb_3\ Cfy_2$
Silver salt	$Ag_3\ Cfy_2$
Hydrogen or acid	$H_3\ Cfy_2$

In all these compounds, two of ferrocyanogen (*i. e.* one of ferricyanogen) are united with three equivalents of the metal.

The iron salt, again, is one of the most interesting compounds of this series. This is obtained by precipitating the solution of ferricyanide of potassium by means of a protosalt of iron, when a deep blue precipitate takes place, which you might believe to be Prussian blue, but which in reality is a compound belonging to the above series, and represented by the formula $Fe_3\ Cfy_2$, while Prussian blue has the composition $Fe_4\ Cfy_3$.

The ready formation of this precipitate distinguishes the ferricyanide from the ferrocyanide, which, as you recollect, gives a light blue precipitate: but the distinction becomes even more marked when it is observed that salts of the sesquioxide of iron are not affected in the slightest degree by the red prussiate of potash, while with the yellow prussiate they furnish Prussian blue. The blue colour furnished by ferricyanide of potassium is likewise made use of in the arts. It is known by the commercial term of "Turnbull's blue." When the ferricyanide is to be used in calico printing, the cloth mordantized with sesquioxide of iron has to be previously treated with a reducing agent, capable of converting the sesquioxide into the protoxide of iron. You observe that the brown specimens of calico which I previously dyed with the yellow prussiate are not altered by the solution of the red salt. If, however, the cloth, having been sprinkled with a solution of protochloride of tin, (which deprives the sesquioxide of iron of part of its oxygen), be introduced into the solution, every part acted upon by the tin salt assumes at once a deep blue colour.

There remains just time enough to say a word or two regarding another series of compounds, which are closely related to those before mentioned. I allude to the salts discovered some time ago by Dr. Playfair, and described by this chemist under the name of "nitro prussides." They are formed by the action of nitric acid upon both ferrocyanides and ferricyanides Their formation will be best understood by comparing their composition with that of the ferricyanides. Suppose ferrocyanide of potassium is acted upon by nitric acid, a powerful action takes place, with copious disengagements of red fumes, which always indicate a process of oxidation. The solution now

contains a great variety of substances, among others a considerable quantity of common nitre, from which the nitro-prussiate of potassium is separated by a series of operations. The composition of ferricyanide of potassium is $K_3 Cfy_2$, or if we replaced the symbol of ferrocyanogen by its value $K_3 Fe_2 Cy_6$. The new potassium salt has the formula $K_2 Fe_2 \begin{cases} Cy_5 \\ NO \end{cases}$

From this it appears that the nitric acid has abstracted one equivalent of potassium and one equivalent of cyanogen, whose place is now occupied by an equivalent of laughing gas—*i. e.* of nitric acid which has lost four equivalents of oxygen.

The nitro-prussides are remarkable for the facility with which they crystallize, as is obvious from this beautiful series of compounds, for which I am indebted to Professor Playfair.

The finest salt of the series is sodium salt, which crystallizes in ruby-coloured rhombs.

The nitro-prussides have not yet received any application in the arts.—They furnish, however, an exceedingly delicate test for soluble sulphides, with which they strike a most beautiful violet tint. It was this violet tint, which had been occasionally observed when the liquid obtained by boiling Prussian blue with nitric acid was saturated with ammonia and sulphide of ammonia, that led to a more minute examination of this reaction, and to the discovery of nitro-prussides.

ANEURISMAL TUMOURS UPON THE EAR SUCCESSFULLY TREATED BY THE DELIGATION OF BOTH CAROTIDS.

Dr. Mussey reports a case (*Am. Jour. Med. Sci.*) of ligature of both carotids for aneurismal tumors occurring upon the ear. The patient was aged 19, and had from childhood a cutaneous nævus in front of the left ear: about eight years since small elevations of the integument were observed at the points where the tumors arose, having a perceptible pulsation after exercise. They gradually increased in size, and at the time of the operation one occupied the cavity of the concha, rising above the level of the antitragus, and another covering the tragus, and extending some way anterior to it, was as large as a middling-sized nutmeg. There was also a globular tumor of the same character beneath the ear and between the mastoid process and ramus of the jaw, having the size of an Isabella grape. The most promising course of treatment was thought to be the ligation of one or both carotids. The success of Mr. Traver's case in 1809, in which the primitive carotid was tied for "aneurism by anastamosis of the orbit;" of Mr. Dalrymple's case in 1813; and Dr. J. M. Warren's case in 1846, where both carotids were tied for a vascular tumor of the mouth, face, and neck, gave a reasonable hope of success in this case. Accordingly, on the 18th of Nov. the left carotid was tied, and the pulsation in the tumor ceased immediately. No unfavorable symptom occurred, and on the twelfth day he was allowed to sit up, when indistinctness in the left eye was complained of; this gradually passed off. The tumor diminished in size; the entire success of the operation was doubtful, and in four weeks the operator tied the right carotid. In both instances the ligature was applied just below the crossing of the omohyoid muscle. One ligature came away in sixteen days, the other in twenty. The tumors now subsided more rapidly, and subsequently the application of the collodion seemed to assist in their reduction. In seven weeks scarcely a vestige of the tumors remained, and in three months the cure was complete.

ON DISEASES OF THE SPINE.

By Samuel Solly, Esq., F.R.S.

[The diseases to which Mr. Solly particularly alludes commence in the ligaments of the spine, either from cold or by direct injuries, as a blow or fall. The first case is from the notes of Mr. Blake. The patient had worked at a gas factory, and was admitted into St. Thomas's Hospital, Oct. 26. 1832.]

"Exposed much to heat and cold, but enjoyed good health till fourteen weeks ago. About that time noticed a severe catching pain in the right loin upon attempting to lift the iron scoop used in his employment; lasted about two days; was under treatment and got better. Subsequently the body became covered with a thick rash, with formication over the arms, trunk, and front of the legs, but without loss of power. Had diarrhœa and pain in the abdomen: was under treatment six weeks, and recovered. Returned to work on a Monday, but not being strong enough to keep on, did not return again till the following Friday, but obliged to give up after two night's work, on account of weakness. Remained at home for about a fortnight; at the expiration of that time, while walking, had a severe pain in the back just between the shoulders. The same night, this pain in the back continuing, he noticed a severe tingling in the left shoulder and along the side of the arm and fore-arm, followed by numbness. Applied a mustard poultice to the back and forearm; found afterwards that he had very little use in the arm, and no relief from pain; was cupped, and applied a liniment, but without any beneficial result; also tried continuous poultices for a fortnight, without relief. Cannot rest upon the shoulder without pain and uneasiness."

The deduction which I make from this history is, that, in the first instance, this man was attacked with rheumatic inflammation of the ligaments of the lower cervical portion of the spine, extending from thence to the theca vertebralis, accompanied by some effusion on the cord. The severe catching pain in the right arm, on attempting to move his scoop is not characteristic of simple rheumatic affection of the muscles. This pain is followed by a severe tingling down the arm. Now, I need only remind you of what takes place if you strike the ulna nerve, as it runs over the inner condyle of the humerus, or, in ordinary language, the funny-bone. The tingling is succeeded by numbness; in other words, the nerve which was first only irritated, is now compressed and partially paralyzed. I dare say that most of you know the sensation of numbness which results if you go to sleep in your chair, overdone by your nocturnal studies, with one leg crossed over the other. When you awake, you find your leg still asleep: it is numbed from the pressure of the popliteal nerve on one side by the knee of the other leg. But to return to the case.

Oct. 28. Treatment: Hydr. iodidi gr. i. ter die; moxa to side of spine.

Nov. 6. Mouth a little affected; pain and uneasiness less on lying on right side; still continues on the left shoulder. Pil. bis in die.

8th. Gums very tender. Pil. omitted.

11th. Much better. Only complains of numbness along forearm and two first fingers.

13th. All pain and uneasiness left him.

Dec. 4th. Cured.

If this man had not been actively treated, both before his admission by Sir Else, who kindly sent the man up here, and had not this, too, been followed up by complete salivation, he would have had ultimately more confirmed disease of the cord, and, in all probability, entire paralysis. Under the continued use of mercury, and steady counter-irritation, the effusion has been absorbed, and the poor fellow restored to health.

[Although in our large hospitals we frequently meet with cases in which the lower half is paralyzed from fractured vertebræ from a fall from some considerable height, in which state the patient lingers rarely above some days, we

do not often find in such institutions cases of slighter injury, perhaps little attended to, but which may be the first step to serious consequences in after life. Mr. Solly records an interesting case of this kind.]

The subject of it was a fine young man about 23 years of age. About two years and a half previous to his consulting me (on the 4th September, 1852), he fell from a height of sixteen or seventeen feet, with his back flat on a hard gravel walk. He was stunned at the time, though he did not strike his head directly. He received immediately the best advice, was bled from the arm, and leeched over the left hip He was very sore, and had severe headaches for some days afterwards, and was not able to walk until seven or eight weeks had elapsed from the time of the injury. He was then examined by several medical men and pronounced sound. After this he went abroad, and lived rather freely. Just ten months before he consulted me, he began to suffer from involuntary seminal emissions, accompanied with great feeling of weakness in the back. About two months after these first appeared he remembers finding a swelling on the left side of the loins; but this inconvenienced him so little, that he did not even mention it to his medical attendant, who treated him for dyspepsia, ordering him plenty of horse and pedestrian exercise, with tonics: but he continued to get worse, and was obliged to return to England. On his arrival, he applied to an eminent surgeon, who treated him for the spermatorrhœa with the caustic catheter. He remained under his treatment for two months, but without improvement, when his father brought him to me. From the history which I elicited by a careful cross-examination, I came to the conclusion that the spermatorrhœa had a spinal, not generative origin. On stripping him I found an elongated swelling, about four inches in length, on the left side of the lumbar vertebræ. It did not fluctuate, but it was elastic.

On rapping the spine in this situation he suffered a distinct, though not severe, thrilling pain, shooting from the spine down the legs, with some numbness. He now stated that he occasionally suffered from the same kind of pain when walking or riding, and from the motion of a railway carriage. He also complained of a feeling of weakness in both legs, but more especially in the right. I was also informed that he slightly dragged that leg in walking, and that he could not balance himself naturally. His countenance was anxious, and he looked out of health. The nocturnal emissions were occurring frequently, without erection or pleasurable sensations. I found spermatozoa in his urine, on examination under the microscope

Putting all these facts together, I came to the conclusion, that the spine had been injured by the blow from his fall about two years and a half previously. I was rather afraid, from the swelling of the mass of the erector spinæ muscles, that an abscess was forming in that situation, and that the disease was not limited to the ligaments. Nevertheless I had great hopes that it was not so serious as that, inasmuch as he bore firm pressure and rapping on the spine too well for there to be much serious disease of the bones; but I had no doubt of there being chronic inflammation, with some deposit of the ligaments of the vertebræ, and also of the theca vertebralis.

With this view of the pathology of the case, I ordered him to be confined to the house, and almost entirely to the sofa, to have a large moxa made over the swelling, to take quinine, in doses of two grains ter in die, in the infusion of roses, with sulphate of magnesia. To remain quietly in the country; scarcely move off the sofa; on no account to ride, either on horseback or in any kind of carriage, railway, or otherwise; to have meat but not to take any wine or beer.

On the 24th of September I changed this to the carbonate of iron in ten grain doses, with pil. aloes c. myrrh. at night.

On the 22d October, 1852, about six weeks from his consulting me, I received the following from his medical attendant in the country:

"I am glad to say the ——V. T., is going on as favorably as when you saw him. The issue discharges well. He has not any numbness on tapping

the spine, or any disagreeable sensation. He has had several seminal emissions, but they have been attended with natural feelings, and have not left him in the weak, nervous state as when they occurred some months ago. When I saw him yesterday, he complained of being weaker in the right leg than in the left, but not in any pain."

From this date he gradually and steadily improved—the issue was healed on the 4th of December, and now (January, 1853) is quite restored to health, the swelling has been entirely absorbed, and on both sides the loins are exactly the same size and shape. The nocturnal emissions have ceased; the urine is free from spermatozoa.

Feb. 7. He has all the appearance of health, and though still nervous about a relapse, he has no single sign indicating it.

He can bear any tapping on the spine from the top to the bottom. He has been out with his gun several hours during the day, and feels no weakness or unnatural sensation in the lower extremities.

The result of this case is highly satisfactory, and it must encourage you to pursue a similar plan of treatment in a case in which the pathology is similar; for I do not exaggerate when I say, that, if this disease had been further neglected, it must have terminated in complete paralysis of the lower extremities.

You must not confound this class of cases with another, and that of a wholly different origin, and in which the pathological condition is likewise different. I refer to a form of paraplegia, which comes on so insidiously that the sad victim of it is almost lost before he is aware that his health is seriously deranged. The disease is unaccompanied with pain, and it generally occurs to those whose attention is so drawn from themselves by active mental exertion that they often pay no attention to the first symptoms of disease, regarding them as trivial and unimportant. The cases we have just been analyzing had both an inflammatory origin; the cases to which I now direct your attention, are, I believe, anæmic from the first; they are cases of permanent spinal exhaustion, and you will see, therefore, the importance of a correct diagnosis, as the treatment which in the one case would cure your patient, in the other would aggravate his malady.

The disease commences with slight numbness of the lower extremities; this is followed by some loss of power; there is no pain in the spinal region at all; when you examine them, you may rap the spine from the neck to the rump, and the patient does not shrink. You may apply the hot sponge, but this elicits no evidence of disease of the vertebral column.

The history will assist you if you strike the right key. You find no evidence of your patient having ever received any injury to the spine. He cannot account for it at all. If, however, you ask him whether he has had much sexual intercourse, he will say, if he is honest, yes; but more probably he will not acknowledge to it immediately, but when you tax him directly with not having been satisfied with the caresses and charms of one siren but that two claimed him for their own, and that his animal pride would not allow him to stint them, he will generally acknowledge to the truth of the soft impeachment. If, on the other hand, he says indignantly that he never had connexion with a woman in his life, it is almost certain that he is the victim of that dread delusion—masturbation.

In the treatment of these cases you must avoid all antiphlogistic measures, for they only do harm. The first thing is to stop the exciting cause, and this is often, strange as it may seem, the most difficult part of your task.

I have known men of sound sense on all other matters, men whose judgment is of the greatest value to their client, such slaves to the venereal appetite and their own ideas of pleasure, that they would submit to any plan of treatment that you like to propose, yet would not abstain from copulation, or give up their ordinary exercise and mental employment. I remember once saying to a patient, who consulted me for this malady, and whom I found perfectly deaf to all my advice on this point, "The best thing that could happen to you would be to be pitched out of your phaeton, and to have a

bad compound fracture of the leg, which would confine you to your bed and back for at least two months.' Now, it did so happen, that this gentleman met with an accident, though unfortunately for him not so serious as to confine him for more than a month or six weeks: but even this *did* him so much good, and he rose so much better, that he forgot all his good resolutions, pursued the same course again, and is now perfectly, and I fear irrevocably, paraplegic.

Unless these cases are treated very early, you can do little or nothing with them.

Rest, bodily, mentally, and erotically, is the most important point; and if your patient will not submit to rest, entire rest, you had much better take your leave without prescribing; for all the medicine in the Pharmacopœia will do no good without the rest.

As regards the medicine, I have found, and it was first mentioned to me by my kind friend Sir Benjamin Brodie, small doses of the tinct. lyttæ, ten to fifteen drops, with from two to four grains of the sulphate of zinc, the best. A generous, but not a stimulating diet, must be advised.—*Med. Times and Gazette, April* 30, 1853, *p.* 439

SURGERY.—MEMOIR ON OSTEO-MYELITIS, BY M. CHASSAIGNAC.

[Translated by the Editor of the P. M. & S. Journal from the French—Commission Flourens Velpau Lallemande.

Inflammation of the medullary system of the long bones in man has been but imperfectly studied.

Reynaud has spoken of it in connection with amputations, as the result of opening the medullary canal, and finds it difficult to distinguish, in these cases, between osteo-myelitis and purulent infection.

The difference between inflammation of the medullary tissue after amputations, and that which takes place in an entire bone, was first pointed out by M. Flourens, in his beautiful work on the development of the bones, read to the Academy in October, 1841. What have all those done who have repeated the experiment of Troja? They commenced by sawing the bone across, then introducing the stilet into the medullary canal, destroying all the internal membrane. M. Flourens, on the contrary, desiring to preserve the bone entire, was led to make an opening into a long bone, in order to introduce destructive agents into the medullary canal; by this means he arrived at the much more certain knowledge of the production of bones after the mortification of the living membrane. In taking for the basis of our description cases of Osteo-myelitis, quite unconnected with amputations, we have attempted to do for human pathology what the above learned academician has done for experimental pathology.

The following is a resume of the facts contained in our memoir this day, presented to the academy:

1st. Osteo-Myelitis invariably and promptly accompanies acute suppurative pereostitis and diffuse phlegmon.

2d. In suppurating Osteo-Myelitis, the separation of the internal membrane from the bone invariably takes place.

3d. The extension of Osteo-Myelitis, from one section of a limb to that which is immediately above, is accomplished by the perforation of the intervening cartilages and the synovial membrane.

4th. Cartilaginous perforations, in Osteo-Myelitis, differ from each other, according as we examine them, in the tipping or inter-articular cartilages. In the former the perforation is canaliculated, in the latter it resembles a hole made by nippers.

5th. Osteo-Myelitis always accompanies purulent arthritis, the articulations are generally attacked from below upwards

6th. Purulent arthritis, caused by Osteo-Myelitis, is seldom established before the 12th day of the disease. The following conclusions relate to the diagnosis: 1st. a hard and painful swelling, terminating abruptly at the end of the limb, is a pathognomonic character of the disease. 2d. The sub-aponeurotic pus, in Osteo-Myelitis, is always mixed with oil globules. 3d. The differences between Osteo-Myelitis and sub-periostial abscess, are the following:

A. In sub-periostial abscess fluctuation precedes tumefaction; in Osteo-Myelitis it is the reverse.

B. The painful swelling which accompanies Osteo-Myelitis terminates suddenly in a hard margin, just at the point where the disease in the bone ceases.

C. Osteo-Myelitis is accompanied with diffuse phlegmon, and with suppurative periostitis. Sub-periostial abscess neither indicates medullary suppuration of the bone, nor purulent infiltration of the limb.

D. Osteo-Myelitis extends upwards along a bone, from the base of the limb Acute sub-periostial abscess generally remains stationary.

4th. The different characters of Osteo-Myelitis and of diffuse phlegmon, are: 1st. The nature of the swelling. 2d. Presence of oil globules in the pus.

The following are the conclusions in reference to treatment:

1st. In Osteo-Myelitis incisions are both diagnostic and therapeutic; if the affection is doubtful, the incisions should penetrate the enveloping aponeurosis only; if pus is found under this they should be extended to the bone.

2d. In Osteo-Myelitis, amputation is the only chance of cure

3d. Amputation should be resorted to as soon as the diagnosis is made out.

4th. The operation should be performed by the flap method.

5th. The place of election is the first well joint above the diseased bone.

6th. Contra-indications are unhealthy suppuration, the disease extended to several members, and general typhoid poison.—*Philadelphia Medical and Surgical Journal*

ON WOUNDS OF THE INTESTINES.

By G. J. Guthrie, Esq., F.R.S.

When an incised wound in the intestine is not supposed to exceed a third of an inch in length, no interference should take place; for the nature and extent of the injury cannot always be ascertained without the committal of a greater mischief than the injury itself When the wound in the external parts has been made by an instrument not larger than one-third, or from that to half an inch in width, no attempt to probe or to meddle with the wound, for the purpose of examining the intestine, should be permitted. When the external wound has been made by a somewhat broader and longer instrument, it does not necessarily follow that the intestine should be wounded to an equal extent; unless it protrude, or the contents of the bowels be discharged through the wound, the surgeon will not be warranted in enlarging the wound, in the first instance, to see what mischief has been done. It may be argued that a wound four inches long has been proved to be oftentimes as little dangerous as a wound one inch in length, yet most people would prefer having the smaller wound, unless it could be believed that the intestine was injured to a considerable extent. Few surgeons even then would like to enlarge the wound, to ascertain the fact, unless some considerable bleeding, or a discharge of fæcal matter, pointed out the necessity for such an operation.

If the first two or three hours have passed away, and the pain, and firm but not tympanitic swelling in the belly, as well as the discharge from the

wound, indicate the commencement of effusion from the bowel, or an extravasation of blood, an enlargement of the opening alone can save the life of the patient. The external wound should be enlarged, the effused matter sponged up with a soft moist sponge, and the bowel or artery secured by suture. When a penetrating wound, which may have injured the intestine, has been closed by suture, and does not do well, increasing symptoms of the inflammation of the abdominal cavity being accompanied by general tenderness of that part, with a decided swelling underneath the wound, it is a point in surgery, which a surgeon should contemplate in all its bearings. The proceeding is simple, little dangerous, and under such circumstances can do no harm.

When the wounded bowel protrudes, or the external opening is sufficiently large to enable the surgeon to see or feel the injury by the introduction of his finger, there should be no difficulty as to the mode of proceeding. A puncture or cut, which is filled up by the mucous coat, so as to be apparently impervious to air, does not demand a ligature.

An opening which does not appear to be so well filled up as to prevent air and fluids from passing through it, as such wound cannot usually be less than two lines in length, should be treated by suture. When the opening is small, a tenaculum may be pushed through both the cut edges, and a small silk ligature passed around, below the tenaculum, so as to include the opening in a circle, a mode of proceeding I have adopted with success in wounds of the internal jugular vein, without impairing its continuity; or the opening may be closed by one, two, or more continuous stitches, made with a very fine needle and silk thread, cut off in both methods close to the bowel, the removal of which from the immediate vicinity of the external wound is little to be apprehended under favourable circumstances. The threads or suture will be carried into the cavity of the bowel, as has been already stated, if the person survive; and the external part of the wounded bowel will either adhere to the abdominal peritoneum, or to one or other of the neighbouring parts.

When the intestine is more largely injured, in a longitudinal or transverse direction, or is completely divided as far as, or beyond the mesentery, the continuous suture is absolutely necessary.

When the abdomen is penetrated, and considerable bleeding takes place, it is necessary to look for the wounded vessel. When the hemorrhage comes from one of the mesenteric arteries, or from the epigastric, the wound is to be enlarged until the bleeding artery is exposed, when ligatures are to be placed on its divided ends, if they both bleed. I have seen the epigastric artery tied several times with success.

A Portuguese caçador on piquet was wounded at the second siege of Badajos, in a sally made by some French cavalry. He had three or four trifling cuts on the head and shoulders, and one across the lower part of the belly on the right side. He bled profusely, and when brought to me had lost a considerable quantity of blood, which came through a small wound made by the point of a sabre. This wound I enlarged until the wounded but undivided artery became visible: upon this two ligatures were placed, and the external wound was sewed up. The peritoneum was opened to a small extent, but the bowel did not protrude, and the patient (not being an Englishman, and not therefore so liable to inflammation) recovered after being sent to Elvas.

A soldier of the same regiment cut down at the same time, died as he was brought into camp, having been severely wounded in the chest and the abdomen. He is said to have died of hemorrhage, from a wound in the belly, two inches in length, made by one of the long pointed swords of the French dragoons. I had the curiosity to enlarge the wound, and found one of the small intestines had been cut half across, another part injured, and that the blood had come from an artery which had been opened by the point of the sword in going through the mesentery, which wound had caused his death.

The recollection of these and of other nearly similar cases causes me to say that when hemorrhage takes place from within the abdomen the wound

should be enlarged; and that if an artery in the mesentery, or in any other place which can be got at, should be found bleeding, a very fine silk ligature should be placed, if possible, on each side of its divided extremities, and cut off close to the knot, the external wound being afterwards accurately closed. This is a point of practice to which future attention is directed.

When a musket ball penetrates the cavity of the belly, it may pass across in any direction without injuring the intestines or solid viscera. It usually does injure one or the other, and it has been known to lodge without doing much mischief. The symptoms are generally indicated by the parts injured, although in all the general depression and anxiety are remarkable; their continuance marks the extent if not the nature of the mischief.—*Lancet, April* 20, 1853, *p.* 399.

ARTIFICIAL DILATATION OF THE OS UTERI.

By Dr. T. E. Rawson.

[Although Dr. Rawson is no advocate for meddlesome interference in cases of labor, he gives the following example of the value of artificial dilatation of the os uteri:]

A few years ago, I was sent for on the Tuesday morning to attend Mrs. B., living about six miles from my home. She was a rather stout person, of dark complexion, had been married about twelve months, and was *fifty years of age*. She had, moreover, lost one leg, and this was her *first child*. On my arrival, I was making an examination, I found the pelvis well formed and roomy, but the os uteri was *rigid and firmly closed*. Her pains, which were strong, recurred about every seven or ten minutes. After staying several hours, without observing any relaxation of the os uteri, I left her, but was summoned to her again the same night. I found matters precisely in the same state, but she had become impatient and dispirited. I bled her in the arm in a full stream to syncope, hoping by this means to induce relaxation of the os uteri, but without effect. Her bowels were relieved by castor oil, and the next morning I gave her a full dose of opium and left her. In the evening of Wednesday I visited her again. The pains had not diminished in force or frequency, but the os uteri had not as yet given way in the least. She had, however, become much more hopeful and cheerful, as I had before assured her there was no danger, and that it was a mere question of time and patience. She had had short intervals of sleep between the pains, and her appetite had much improved. I now gave her repeated doses of tartarized antimony, keeping up a constant nausea, but still without any relaxing effect on the os uteri. On the Thursday morning I had her placed in a warm bath, but to no purpose. I therefore ordered her to continue the nauseating doses of antimony, and again left her till the evening. I then found her still in the same general condition, hopeful, and without any symptoms of exhaustion. The pains were still strong and regular; no change in the os uteri.

What was to be done? I resolved on trying the effect of artificial dilatation. After some time, and with considerable difficulty, I succeeded in introducing the point of the index finger through the os uteri, then two fingers, and subsequently all the fingers and thumb conically disposed. By patient perseverance I gradually dilated the os uteri to the size of a crown piece; I then left her for the night, and on Friday morning, found the membranes and head slightly protruding through the os. I then ruptured the membranes and gradually increased the dilatation, slipping the os uteri back to the broadest part of the head. No further progress was made during Friday, though the pains continued unabated in force and frequency. During Saturday, I gave her frequently repeated doses of ergot of rye, which had some effect in increasing the expulsive efforts of the uterus, but by Sunday the head of the fœtus had only reached the brim of the pelvis. After some

little further progress had been made in the second stage I applied the long forceps and slowly removed a large, healthy, and living child, on Monday morning. The mother made a rapid recovery, after one of the most tedious labours on record, having lasted about 150 hours!

I think it will be admitted that in this case artificial dilatation of the os uteri was not only justifiable, but was the only alternative under the circumstances. This instructive case proves how little *mere tediousness* constitutes an element of danger in labour. Probably the bleeding and the other antiphlogistic means prevented any febrile or inflammatory action. This case also exemplifies the great powers of endurance of nature, when there are no special mechanical impediments. The pains never diminished in force from the beginning; the pulse retained its fulness, and the system its general powers to the last, except during the action of the antimony. She was more cheerful and hopeful, and enjoyed a better appetite on the last day than on the first.

I have met with some few cases where the os uteri, only partially dilated, has been carried down even through the os externum; in such instances there can be no doubt of the propriety of artificial dilatation.—*Lancet, July* 23, 1853, *p.* 86.

ALUMINUM.

A scientific discovery of vast practical interest is reported in the last *Comte Rendu* of the Academy of Sciences at Paris. It is no less than the extraction of a metal aluminum from common clay. Sir Humphrey Davy long since suggested that the clays might be made to yield metals, and now M. Wohler has shewn the feasibility of his suggestion. He states that by treating clay with the chlouret of sodium, heating the compound to a red heat in a porcelain crucible, the chlouret of aluminum is disengaged and there remains a mass of pure metal or aluminum. This metal is as white as silver, is malleable and ductile, may be hardened by hammering, like iron, does not change in damp or dry air, does not oxydize when cast, is not affected by either hot or cold water, and does not dissolve in ordinary acids. As it is widely dispersed throughout nature, is fusible and ductile, while it is lighter than glass, a pure white metal not blackening in the air, it must suggest sooner or later the most important applications in the arts. The discoverer is about to institute a series of experiments on all the argillaceous or clayey substances, with a hope of obtaining similar results.
