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ON THE VAGINAL, OR DEEP BURSÆ MUCOSÆ.

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MY former paper¹ had for its object an examination into the nature of the superficial or subcutaneous bursæ, to show in what respect they differ from all other structures, and more especially from the deep or profound bursæ. My present object is to consider the nature of the deep bursæ. By deep bursæ mucosæ, I mean the synovial membranes, usually vaginiform, interposed between two or more tendons, between tendon and bone, or between tendon and ligament, for the manifest purposes of protecting the structures from the injurious effects of friction, and of facilitating motion.

In the upper extremity, where we have chiefly to deal with morbid conditions of these bursæ, the synovial membrane extends downwards as far as the distal insertion of the tendons, and upwards for some distance beyond the fibrous sheath. Each tendon is covered by a reflexion of this vascular membrane, and is loosely attached in the whole, or in part, of its course, to the walls of the canal, by a fold similar to the mesentery, and called meso-tendon. These folds limit the movements of the tendons in a slight degree: they may be torn by some violent movement, and are occasionally the seat of disease.

ANATOMICAL ARRANGEMENT. Upon the dorsal surface of the wrist, there are distinct sheaths,—1. For the extensor carpi ulnaris; 2. For the extensor minimi digiti; 3. For the extensor communis digitorum and the indicator; 4. For the extensor secundi internodii pollicis; 5. For the two radial extensors; and, 6. For the extensores ossis metacarpi et primi internodii pollicis. Any one or more of these sheaths may become distended, and assume the characters of a bursal swelling. There are also five or six thecal sheaths on the palmar surface, and these are the most frequent seat of enlargement. Enlargement of the bursæ in this situation is a most formidable disease.

¹ LONDON JOURNAL OF MEDICINE, January 1851.

The sheaths of the extensor ossis metacarpi, and of the extensor primi internodii pollicis, and of the extensor carpi radialis longior and brevior, merit special anatomical notice, as they are often affected with morbid changes. The two first, free in their fibrous sheaths, but covered by the same visceral layer of synovial membrane, can only be partially separated; and there are some anatomists who regard the two tendons as divisions of one and the same muscle. The two extensors of the radial side of the wrist are likewise retained in apposition by a common visceral layer of membrane, as far down as their point of separation to their respective insertions. The synovial membrane there leaves the extensor carpi radialis brevior, being continued only over the extensor longior. Throughout their whole course a meso-tendon attaches them to the posterior wall of the sheath.

Along the anterior or palmar surface of the wrist and forearm we have two sets of bursæ; some small, and often overlooked, others of considerable size. The palmaris longus and brevis are each enveloped in loose areolar tissue, abounding in thick serous secretion; and it is easy to comprehend how such a structure would become converted into a complete synovial sac under favourable circumstances. About three months ago, I removed from the hand of a working-man a thick walled cyst, lying between the integument and the palmar fascia, and containing a sort of synovia. It had doubtless been originally a bursa, thickened by the constant pressure of the hand upon the hard iron handle of an immense hammer. The patient described it as originally a small elastic swelling, situated under a part of the hand where the skin had for a long time been very much thickened; as the tumour increased in size, it pained the hand, and, interfering then with his work, made him anxious for its removal.

The tendon of the flexor carpi ulnaris has a large and well-marked synovial sheath, especially loose and sac-like, near its insertion in the pisiform bone.

Finally, there are the general synovial bursæ, which invest the tendons of the flexor muscles of the fingers, and of which many different anatomical descriptions have been given. Fourcroy and Bichat affirm, that there is but one synovial bursa at the level of the carpus. Velpeau and Cruveilhier describe two, one common to the flexor tendons of the fingers; the other proper to the long flexor of the thumb. Monro, Koch, and Bourguery, enumerate a much greater number of bursæ in the anterior region of the wrist.

Some of the deep bursæ communicate directly with the joints. The bursa beneath the crureus muscle belongs to this order, likewise the large bursa below the iliacus and psoas; its frequent communication with the hip-joint is well known. On the other hand, there are some which greatly resemble the cellular bursæ in various stages of transformation towards the perfectly developed bursæ. Of this kind is the extended bursal arrangement around the tendon of the plantaris muscle; another, equally remarkable, is between the middle tendon of the omohyoideus and the sterno-mastoid; and a third interposes between the long abductor and extensors of the thumb on the one hand, and the radial extensors on the other.

These structures resemble in many respects the serous membranes, and are yet more closely allied to the synovial, with which, as I have

said, they are not uncommonly continuous. Upon their free surface we find a stratum of epithelium, supported by a basement membrane, and under this is a layer of blood-vessels, which may be filled with injection in a part rendered soft by partial decomposition. The blood-vessels form a net-work many layers thick. No one would suspect the existence of such a number of arterial and venous capillary tubes, from the examination of this structure in its normal condition after death. In many situations are found vascular fringes, first noticed by Havers in the joints, and described by him as the source of secretion of the synovia. They are found along the thecæ of tendons, and in some of the bursæ in the neighbourhood of the knee, and are composed of loops of vessels. Although we may not be able to prove experimentally what tissue secretes, and what absorbs the oily fluid contained in these sacs, yet we may infer, that both processes go on most actively wherever the blood-vessels are most numerous. The vascular part of the bursa seems to cease where the membrane is firmly attached to a bone, as along the phalanges of the fingers.

SYMPTOMS AND PATHOLOGY OF ENLARGED VAGINAL BURSÆ. In using the terms *superficial* and *deep*, I allude, of course, to the primary connexions of these structures, and in no way to the situations which they may subsequently acquire. A collection of fluid, either in the large theca of the flexor tendons of the forearm, or in a sac connected with this membrane, may make its way towards the surface so as to elevate the skin like the pointing of an abscess, and to render it thin and discoloured; and yet we must include this under the head of deep bursæ. The same remark may be applied to the bursa in the neighbourhood of the knee-joint, connected with the tendon of the semimembranosus muscle, which frequently becomes enlarged and projects into the popliteal space.

The clear albuminous fluid, secreted in the healthy state by these structures, undergoes various modifications by inflammatory action. At first it becomes thinner and more sparing than natural, and the part, when examined, communicates to the fingers a crackling sensation. Then it may be more abundant, and cause distension of the sac, attended by severe pain. If this affection be deeply seated, and beyond the reach of surgery, it gives rise to very considerable suffering, and excites symptoms which are not readily understood. If, for example, it occur in the bursa of the tendon of the psoas and iliacus muscles, it may be readily mistaken for incipient disease of the hip-joint. In course of time, the fluid of an inflamed bursal sac entirely loses its oily nature, becomes serous and watery, and is frequently of a yellow, or even reddish-brown hue, from admixture of blood.

But there are sometimes found, especially in the synovial theca of the flexor tendons of the wrist, numerous hard fibro-cartilaginous bodies, like millet seeds, floating loose in the distended sac. They have been improperly called hydatids, but are, in truth, growths from the vascular fringe of the membrane, projecting inwards towards the cavity, and covered by epithelium. As they increase in size, the pedicle connecting them with the membrane is eventually broken by the friction of the parts contained within. We have instances of similar bodies becoming loose in the cavity of a synovial sac, in certain rheumatic affections of joints. The enlarged bursa is not uncommonly

loculated, or divided into partitions by septa or bands. In general, however, the compartments readily communicate one with another.

The most frequent seat of enlargement is the synovial sheath, which invests the flexor muscles of the fingers, and extends from the forearm under the annular ligament to the palm of the hand. When distended by fluid, it produces a considerable elevation, which is often constricted and divided into two parts by the annular ligament of the wrist. The walls, when laid open, are found to be thicker than natural; the lining membrane is rough; the fluid contained within is opaque, yellow, or yellowish-brown, and thick, and it frequently contains those small bodies above-mentioned, which are smooth externally, and often hollow; some, however, are solid, of fibro-cartilaginous structure, and resemble grains of rice in general appearance. The cyst, when minutely examined, is generally found thickened and of fibrous structure; externally it is connected to the parts around by loose areolar tissue. Internally it presents a velvety or roughened appearance, and there proceed from it numerous fringes, of which some are pedunculated. Embedded in these fringes are sometimes those hard white bodies, which are frequently found free in the sac; some of them are elongated and seed-shaped, others flattened and triangular, or round. The smaller are generally solid; the larger contain a cavity. These bodies were described by Dupuytren as hydatids; and the term "hydatiform" has been applied to the bursal swellings about the wrist, under the idea that such parasites were the cause of the enlargement of the sac, and of the collection of fluid. Deviations, both in the quantity and in the consistence of the synovial secretion, may produce a peculiar condition of these fibro-serous canals, which yield upon pressure a crepitating or crackling sensation. This sound may be heard in whatever region of the body fibro-serous grooves naturally exist. It is commonly heard in the region of the shoulder-joint, where it is connected with a morbid condition of the sheath of the long tendon of the biceps flexor cubiti. M. Poultaïn relates a case, in which these symptoms gave rise to the notion of fracture; and in the *Lancet* for 1836, 1837, the late Mr. Wallace of Dublin mentions a case, where an affection of this kind, in the extensor tendons of the thumb of a young woman, had been mistaken for fracture. The same sound has been heard about the tendons of the hamstring, and behind the internal malleolus in the sheaths of the flexor muscles of the foot; behind the external malleolus, along the course of the tendons of the peronci muscles and those upon the instep, and in other parts.

Although violence is often assigned as the cause of this affection, its origin, in the greater number of cases, is obscure. It is more likely to depend upon the influence of some constantly acting source of irritation than on any sudden injury, and the symptoms which usher it in support this view. At times, indeed, there is at the commencement acute pain, which, however, gradually subsides when the part is at rest, and is excited only upon movement. But more commonly there is little or no pain felt by the patient, until he makes a greater effort than usual, when the attention is for the first time directed to the part. Upon awaking in the morning, the part is stiff, but the stiffness goes off after a little exercise. There is rarely either heat or redness;

the latter is generally secondary, and referable to accidental rubbing and friction. There is always some amount of swelling, the form of which depends upon the natural connexions of the part affected. If the disease occur in the sheath of the extensores ossis metacarpi and primi internodii pollicis, the tumour extends obliquely across the lower part of the forearm, from the ulnar to the radial side. If it affects the radial extensors, the swelling, wider below than above, passes over the inferior and outer part of the broad extremity of the radius. Any anatomist can tell in what groove this affection is situated, by making the patient move under his direction the different muscles of the forearm. In severe cases, the stiffness of the limb, the sensation of weakness, and the pain upon movement, are so considerable, that a man is unable to follow his employment; and, in the higher ranks of society, accomplishments, such as instrumental music, which require great freedom of movement, have to be suspended, or, indeed, entirely given up.

The manner in which these tumours shew themselves, is as obscure as their etiology. Sometimes a peculiar creeping sensation is experienced down the fingers, wrist, and forearm; at other times there is stiffness, weakness, and difficulty of movement. In other cases, it is the tumour which first attracts the patient's attention; and the symptoms above related are felt only at intervals, and after any greater exertion than usual. The shape of the swelling, as it affects the large bursa mucosa surrounding the flexor tendons of the fingers, is variable; sometimes it commences in the palm of the hand, at other times in the lower part of the forearm; and in both instances it soon becomes bound down by the annular ligament. Indolent, and painless upon pressure; fluctuating, and presenting irregular projections, it appears as a bilobed mass, upon which the fingers have an involuntary tendency to close. If the contents be steadily and forcibly squeezed downwards towards the hand, a movement may be communicated to the fingers, along whose thecæ the fluid is pushed. And during this examination, when the fluid is pressed backwards and forwards from one end to the other of the enlarged sac, a peculiar *frottement* is felt, upon which Dupuytren laid great stress as a diagnostic symptom.

The pain and sensation of weakness produced by such a tumour is so great, that the limb soon becomes useless; the fingers are permanently bent, and any attempt to extend them excites a dragging sensation along the entire cyst.

Cases occur, when the tumour is large, in which the ulnar artery and the superficial palmar arch are raised upon the swelling; the radial artery, too, may be separated from the bone, before it turns under the styloid process of the radius. The integument of the palm of the hand becomes thin from want of use, loses its transverse markings and lines; it is elevated into a soft, smooth, compressible swelling, extending, in severer cases, along the flexor surface of the fingers. Continued position of the fingers in this abnormal state, leads to permanent changes in their articulating surfaces, and in the ligaments which unite the bones one to another; hence it arises that in old cases, where the flexion has existed for a considerable time, the evacuation of the cyst, or the cure of the bursal enlargement, does not restore the mobility of the fingers.

DIAGNOSIS of these tumours is not at all times so easy as many surgeons have affirmed. If situated on the palmar surface of the wrist, the bursa is recognised as a fluctuating bilobed mass, the shape depending upon the size of the sac, and the constriction of the annular ligament. But the contents may be of such consistence, that there will be no fluctuation. But the crepitation to which I have before alluded, produced by the passage of the fluid containing the hard grain-like bodies from one compartment to another of a sac, through a narrow orifice, may be taken as characteristic of the nature of the tumour, in connexion with the constriction produced by the annular ligament.

M. Robert, however, has recorded the following case of fatty tumour of the hand, resembling, in many of its physical signs, the affection which we are now describing. [*Annales de Thérapeutique*, tome ii.]

A young man, aged 27, a butcher, was admitted into the hospital, with a tumour of the size of half an orange, situated upon the ulnar side of the palm of the right hand. It was subcutaneous, soft, and elastic, giving a peculiar crackling sensation upon pressure, and lying in front of the flexor tendons: it was trilobed, and deeply grooved. The fingers were slightly flexed upon it. The patient had noticed it first when about twelve years of age. It remained stationary till three years ago, when it suddenly increased in size. After an exploratory puncture, a crucial incision was made, and the skin was reflected back, when a tumour was exposed, composed of two portions set one within the other; the inferior flat, but deeply hollowed in the middle; the other portion of a cylindrical form, lodged in the hollow of the preceding. The second portion was moveable upon the first; and the friction thus produced, communicated to the hand the "crepitating sensation" above referred to.

An important point of diagnosis, rendered more valuable by accurate modern research, is derived from the consideration of the natural connexions of the bursal sac affected by disease. The origin of the tumour, its inclination rather towards the ulnar than the radial side, the effect produced upon the fingers, the free movements of the thumb,—these are points which indicate that the disease originates in the bursa of the general flexor tendons. The circumscribed swelling of the radial side of the hand, the weak condition of the thumb, the inability on the part of the patient to bring it into firm apposition with the rest of the hand, pronounce the bursal affections to be limited to the tendon of the flexor longus pollicis.

PROGNOSIS. Many years may elapse before these tumours acquire any great magnitude. Slow in their growth; often painless; obscure in their origin; they pass unheeded, especially among those whose occupations require neither the exercise of great strength, nor the application of great delicacy of touch. Ultimately, after years of enlargement, they become stationary, but they do not disappear; at least, there is no satisfactory case of the kind upon record. All, then, that we can expect nature to effect, after the establishment of the disease, is the arrest of the further enlargement of the tumour.

As regards the serious nature of these affections, those tumours confined to a single finger, often limited in extent, are less to be feared than those in the palm of the hand, involving the entire bursa, and

requiring the performance of an operation, which, though simple as regards execution, may be followed by dangerous symptoms.

TREATMENT. It is customary, in the chronic cases, to employ counter-irritants, such as blisters, irritating ointments, etc. The emplastrum ammoniaci cum hydrargyro, spread upon leather, may be applied to the limb, and secured by a firm bandage; the whole to be worn for several weeks. If the fingers are stiff, friction of the limb and passive motion may be resorted to, when the swelling has in great measure disappeared, and the fluid is nearly absorbed. The arm may be soaked and rubbed in a warm arm-bath daily. When the limb is immersed in a heated fluid, much greater force may be used with impunity, than under the ordinary circumstances.

The operations which have been recommended for the cure of these synovial tumours are the following:—Extirpation; incision, either simple or combined with irritation of the surface of the cyst; subcutaneous puncture; and iodine injections.

As regards extirpation, it is extremely difficult, on account of the extent of the connexions of the sac.

I have generally contented myself with making an incision longitudinally through the most prominent part of the swelling, and evacuating the contents. Some amount of inflammation usually supervenes; and the cavity becomes obliterated in the usual manner. But there is a risk of the inflammation proving very severe, and extending along the muscles of the forearm, attended with a high degree of fever and constitutional disturbance. Death has ensued from such an attack; and in other cases, in which the inflammation has been subdued by active treatment, the mobility of the fingers has been permanently impaired.

CASE. Maria Hughes, aged 63, thought that she had run a splinter, about nine years ago, into the skin over the palmar surface of the first bone of the right fore-finger. A swelling of the size of a small nut soon afterwards appeared, and continued slowly to increase to a tumour of considerable size, extending from the first bone of the finger along the metacarpal bone. The swelling was very tense, projecting into the palm of the hand, but well defined, and not reaching beyond the palmar region of the fore-finger; the thumb and middle finger were free, and the dorsal surface of the fore-finger was natural. The motion of the fore-finger only was impeded. In August 1850, I made a free incision into the extremity of the swelling over the first phalanx of the finger, and evacuated a wineglassful and a half of concretions of a lozenge shape and size. After evacuating the cyst completely, I placed a compress over the part, and used firm pressure; but severe constitutional symptoms, almost threatening the life of the patient, ensued; the pressure was obliged to be removed, and warm poultices applied. An abscess formed at the other extremity of the swelling, and another at the dorsal surface of the finger. Both were freely opened, and a good deal of pus evacuated. The opening at each extremity of the swelling discharged freely; and after three months the walls of the sac united. At the present time there is a slight thickening in the course of the sheath, and the second and third phalanges are bent backwards. She has but little motion yet of the finger. Mr. Toynbee analysed the bodies which were evacuated from the cyst for me. He says: "The bodies which you sent me consist of gelatinous matter,

enclosed in a very delicate membranous capsule. Upon microscopic examination, this matter is found to be composed of a homogeneous jelly-looking substance, without the presence of any corpuscles or nuclei. I have frequently examined the gelatinous matter removed from enlarged bursæ at the back of the wrist; and I have found it to have the same composition as the bodies you sent me."

The use of the seton may lead to results difficult of management, and even dangerous to life. The following case, recorded in the *Leçons Orales* of Dupuytren, shows how a fatal result may follow its employment.

CASE. A carpenter, aged 35, received (Dec. 1812) a sprain in the right wrist, which healed in a short time without trouble. About two or three months afterwards, he remarked a small tumour in the palm of the hand below the annular ligament, and soon afterwards a second above the ligament: they were at first very small, and but little troublesome. They impeded at first the free exercise of the hand, and afterwards prevented its motion altogether. Being unable to continue at his trade, he consulted M. Dupuytren, June 7th, 1814. From its position, the nature of the tumour was suspected; and examination rendered the point clear. The following day, an incision was made into both tumours, and a multitude of little white bodies immediately escaped. The aponeuroses of the hand and of the forearm were liberated by means of a blunt-pointed bistoury, that there might be no constriction in the event of inflammation. A seton was introduced to inflame the walls of the cyst; and a poultice was then applied to moderate any inflammation that might arise. Severe pain supervened on the evening of the operation. It increased, accompanied with great swelling, on the second, third, and fourth days; a greyish fluid, mixed with flakes of lymph, flowed from the wound. The seton was removed the fifth day. The inflammation extended to the arm, and to the axilla; and constitutional symptoms of the most distressing kind arose on the eighth day; some gangrenous aponeurotic structures were divided. An abscess, which had formed between the first and second metacarpal bones, was opened. Compression expelled a quantity of pus, which had formed sinuses the whole length of the forearm and hand. On the tenth and eleventh days, there were shiverings, with convulsive action of the jaws, lasting about ten minutes. The pus was extremely fetid. There was general weakness, which resisted the most powerful tonics; and death ensued on the fifteenth day from the operation.

This case made a great impression upon Dupuytren, who for the future changed his mode of operation. In place of a simple opening in the most prominent part of the tumour, he made large incisions; and substituted for the seton a piece of lint interposed between the edges of the wound, to prevent their union. Mr. Syme of Edinburgh, impressed with the same fear of constriction in these cases, has recommended the preliminary division of the annular ligament, as was suggested a long time ago by Warner. Mr. Syme has published a successful case in the *Edinburgh Monthly Journal* for October 1844.

Professor Gerdy has successfully practised the subcutaneous incision; and such an operation has much to recommend it, as there is not that fear of the severe inflammation which often attends the exposure of the cyst. The operation should be combined with pressure;

still, though less dangerous, it is also less sure than incision, and there are many cases in which it is impracticable.

Iodine injections have been recommended by Velpeau in the treatment of these bursal enlargements, but many objections have been raised against the practice, on account of the chance of severe inflammatory disturbance. I am inclined, however, to recommend this plan for adoption.

M. Chassaignac has related a case in the *Gazette des Hôpitaux*, in which, after having evacuated the fluid, he injected through a canula, first some warm water to clean out the cyst, and next some tincture of iodine. The cyst was then emptied, moderate pressure upon the walls was exerted by means of a compress, and the opening made by the trochar was properly secured. Some inflammation supervened; but it yielded to treatment, and the case terminated favourably.

An analysis of the cases in which this treatment has been tried is decidedly favourable to the practice, although I am not quite prepared to agree with Michon, that there is less chance of inflammation than of relapse and the re-collection of the fluid. An attack of inflammation of the hand is always a serious matter, often so impairing its movements, as no subsequent endeavours on the part either of the patient or of the surgeon may be able to rectify.

Professor Bouley has demonstrated the superiority of iodine injections over other means of exciting inflammation, and he has succeeded thus in dispersing tumours of large size, without danger or inconvenience. If therefore simple puncture or incision should fail in the first instance, I recommend this practice as far preferable to the introduction of setons and other foreign bodies.

It must not be supposed that the surgeon has effected all his task by the evacuation of the fluid and the obliteration of the cyst. There remains for him to restore the mobility of the fingers, long since become stiff, semi-flexed, and in great part useless. For this purpose he must recommend exercise, passive motion, baths, etc., and by perseverance the hand may again be brought into a useful state.

It is singular that this affection of the bursa of the flexor muscles of the forearm and hand should be rare in the corresponding structure in the lower extremity, more especially considering how the foot is compressed in tight boots, and exposed to constant violence and injury. A case, however, of the kind is related in the *Medical Times*, July 13, 1850. A young lady, aged 20, of slight frame, but in the enjoyment of very good health, consulted Mr. Stanley for a painful swelling of the right foot and ankle. Five years previously, she had been greatly fatigued by a walk of extreme length, and she arrived home much exhausted, but was sufficiently recovered in a few days to go about as usual. From that time, however, the right foot and ankle were weak and painful, and swelled upon her taking the least exertion. About two years ago the swelling became permanent, and the ankle, which was easy when at rest, was so painful when she attempted to walk, that she was obliged permanently to keep the horizontal posture. Every variety of treatment had been adopted without avail; the swelling about the joint increased until the integuments gave way, and there formed an ulcer, whence flowed a thin sero-purulent fluid. There was a large swelling between the tendo Achillis and the os calcis, extending down to the

sole of the foot; part of the swelling was firm, part was elastic, as if containing fluid; the integuments covering it were thinned and livid, and had given way in one spot, exposing a fungous-looking mass of granulations: the movement in the joint was perfect. The limb was removed, and the morbid change was found to be limited to the synovial thecæ, which surround and accompany the tendons of the *tibialis posticus* and the *flexor communis digitorum* muscles to the sole of the foot. It was therefore strictly circumscribed and surrounded by healthy structures. The thecæ were thickened: their usual bright synovial surface was converted into a dull, uneven velvety structure, from which was produced a soft growth composed of cystoblasts, and a small quantity of delicate fibrous tissue. This growth made its way upwards between the posterior surface of the tibia and the *tendo Achillis*, and downwards into the sole of the foot, between the *flexor brevis digitorum* and the *flexor accessorius* muscles, both of which were quite healthy. The flexor tendons were unaltered in structure, but were surrounded by the soft growths above described, and by a large quantity of morbid synovial secretion, which seemed to be contained in more cavities than one; for behind the malleoli it was of pale straw colour, and somewhat stringy, whilst in the sole of the foot it was of watery consistence, of red colour from admixture of blood, and contained coagula.

I cannot conclude this paper without strongly recommending those who desire further information on the subject to consult the thesis of M. Michon,¹ to which I am indebted for many of the preceding details.

ON THE INTRODUCTION OF SOLUTIONS OF LEAD INTO THE BLADDER, FOR THE DECOMPOSITION OF PHOSPHATIC CALCULI.

By S. ELLIOTT HOSKINS, M.D., F.R.S.

IN a paper which the Royal Society did me the honour of publishing,² some account was given of the decomposition of Phosphatic Calculi, by solutions of certain salts of lead, so dilute as to admit of their retention by the living bladder, without irritation or inconvenience.

The adaptation of the principle of double decomposition to the disintegration of vesical calculus, is in strict accordance with chemical usage: it supplies a class of agents, more energetic as regards the concretion, and less injurious to the organ in which it is contained, than any of the uncombined solvents hitherto employed. The *solvent*, no matter how dilute, can only be tolerated for a minute or two at

¹ Des Tumeurs Synoviales de la Partie Inférieure de l'Avant-Bras, de la Face palmaire du Poignet et de la Main. Thèse présentée au concours pour une Chaire de Clinique Chirurgicale. Par L. M. Michon. Paris: 1851.

² Philosophical Transactions, Part 1, 1843.