the eyes; and these become instructive in proportion as they may be referred to known morbid conditions, of the internal organs. In most instances they are not in themselves conclusive, but they are especially valuable in arresting attention at first sight, and in guiding the practitioner to the employment of the senses of touch and hearing, which may give him a more intimate acquaintance with the condition of the internal parts.

(*To be continued.*)

[This paper will be continued in the succeeding numbers. We take this opportunity to contradict a report which has been current, that Dr. Williams is connected with this Journal. Except as a contributor of the articles to which his name is attached, Dr. Williams neither has nor ever had any share or cognizance in its composition. EDITORS.]

ON THE SUBCUTANEOUS BURSÆ: THEIR ANATOMY, PATHOLOGY, AND TREATMENT.

By WILLIAM COULSON, Esq., F.R.C.S.E., Surgeon to the Magdalen, and Consulting Surgeon to the German, Hospitals.

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It has been remarked, that the anatomy of the lymphatic system was discovered by fragments, the thoracic duct by one observer, the lacteals by another, and the common absorbents by a third; nor was it till after the lapse of ages from the discovery of the first fragment, that a Mascagni appeared, who gave to the disjointed parts the character of unity and of system. The same remark applies to the organs of which I propose to speak.

To Winslow and Albinus may be traced the first notice of certain shut sacs, to which the name of Bursæ Mucosæ has been given, situated beneath certain muscles, or between the tendons and the bones, or between tendons; communicating occasionally with important joints, and formed of a membrane analogous to, if not identical with, the synovial sacs or membranes of the joints. After a time, these Bursæ attracted more notice, and began to be viewed as a distinct system. The second Monro described many not previously observed, and Sömmering followed, who discovered and described many more. The inaugural dissertation of Kosch appeared in 1782; in which he clearly points out the deep Bursæ, shewing that they are sometimes absent, sometimes small, and sometimes double, with bilocular cavities, which might or might not communicate; but, from confounding the deep and superficial systems, his observations are deficient in that order which alone can form the basis of future correct and profitable research. He was also aware of the existence of many of the Subcutaneous Bursæ; but he knew them not as a system, which they really are; he considered them as composed of cellular tissue, and essentially of the same structure as the vaginal Bursæ, and those of tendons and muscles; and he happily remarks, that these superficial Bursæ are not wholly foreign to the subject which he discussed; thus intimating a suspicion of a difference existing, which he did not then clearly comprehend. He knew the patellar and anconal Bursæ, and those

over the distal extremities of the metacarpal bones. In addition to these, which I shall call the system of the deep Bursæ, another system has, of late years, been described, called Subcutaneous Bursæ. It is the history of this system which forms the subject of this memoir.

HISTORY. Beclard, in his *Additions à l'Anatomie Générale par Bichat*, published in 1821, makes mention of some of these Bursæ, calling them subcutaneous; but he does not seem to regard them as a system; on the contrary, he constantly confounds them with the deeper Bursæ. At last, in 1825, Schreger published his excellent monograph, *De Bursis Subcutaneis*, in which he unfolds the nature, extent, and situation of these organs, and insists on their being received as one system, distinct from all others. Until this view be clearly comprehended, the pathology of these organs must ever remain obscure, and the treatment of their diseased conditions imperfect.

These Subcutaneous Bursæ are situated in various parts of the body, immediately beneath the integuments, of which they are an appendage. They are connected with, and belong to, the subcutaneous cellular adipose membrane, being in no instance continuous with the deep Bursæ, or with the tendons, muscles, or bones, which they protect. The structures composing them are, first, the capsule itself; secondly, certain filaments traversing it; thirdly, folds, or septa, being reduplications of the inner membrane, and these may be either partial or complete; and fourthly, small adipose corpuscular fringes. There is, also, the peculiar fluid secreted by the interior of the sac. In respect of their being shut sacs, intended to facilitate motion and to protect opposing surfaces, and as regards also the fluid they secrete, these Bursæ have analogies, no doubt, with the deeper Bursæ. In the more perfect synovial capsule of the knee-joint, for example, we not only find a shut sac, but septa forming the alar ligaments; being clearly analogous to the septa of the Subcutaneous Bursæ. Nor does the analogy stop here, seeing that we find the alar ligament so fully developed in some animals, as to divide the knee-joint into two cavities—thus converting it from an unilocular into a bilocular sac: this happens in many of the superficial Bursæ. The Subcutaneous Bursæ vary somewhat in form, and even, perhaps, a little in their structure. In the axilla, for example, where they have, probably, the simplest form, they resemble the cells of a bee-hive piled on each other. In the order of simplicity of structure, those of the groin follow. The mode of formation of these Bursæ in the foetal state illustrates, I think, their varieties in the adult. For we find, sometimes, that the cellular tissue, in no way modified, takes the place of a properly developed Bursa; and this is exactly what happens up to the fifth month of foetal life. At other times, in the adult, we find them small, but perfect; shewing that their development has been arrested. Even the anconal Bursa, viewed by Schreger as the most perfect, has been found, by other anatomists, small, contracted, or scarcely perceptible. Pathological changes also, by altering the condition of these Bursæ, reduce them to the tissue, out of which they were formed. Sometimes the interior is filled with a serous fluid, and the walls of the sac are thin, and almost pellucid; at other times they become soft, flaccid, porous, and reticulated, and lose their cohesion,—clearly indicating a retrogression to their primitive condition.

The fluid secreted by, and contained within, these Subcutaneous Bursæ, is held by chemists to be an aqueous solution of albumen, combined with saline matters. The epithelium, common to all true articular synovial membranes, cannot be discovered, even with the aid of the microscope, in the lining membrane of these Bursæ.¹

It would seem that, prior to the second month of foetal life, these Bursæ are open. A remark applicable to the entire system I now describe, is, that in youth the capsule is thin and pellucid; as age advances, the Bursæ become opaque and yellowish. Blood-vessels abound on the exterior of the sac. The inner surface of the dermoid segment resembles a serous membrane; the opposing surface, on the contrary, has a synovial appearance; that is, it is soft, pulpy, and as if covered with glistening elevations. But if these two surfaces differ, as has been alleged by Schreger, their secretions may also differ, giving a more complex character to the fluid than was at first supposed.

The Subcutaneous Bursa with which surgeons are most familiar, is the one situated over the patella. This Bursa, which may be called the patellar, is of a globular, or rather oval shape, the base being usually limited by the extent of the bone. The walls of the sac, in contact in the healthy state, are bedewed by a fluid analogous to what we find in the ordinary cellular tissue of the body, performing, no doubt, the function of synovia; like that fluid, as has been already mentioned, it is an aqueous solution of albumen, combined with saline matters.

The patellar Bursa belongs essentially to the superficial or subcutaneous system: it is exterior to the crural aponeurosis; and microscopic research, so much improved and extended of late years, merely confirms the accurate conceptions of Schreger. The epithelium investing the inner surface of the articular synovial membranes, is not found in the interior of this or of any other Bursa. The peculiar glistening fibres already described are found to stretch across at various points, forming septa or partitions, more or less complete. In many persons, two Bursæ, and even three, have been observed developed over one patella, perfectly distinct from each other. This duplication or triplification of the Bursæ is not confined to the patellar Bursæ, but extends as well to others. My friend Mr. Ireland brought me, some time ago, a patient with a Bursa of the size of a marble, situated over the right os magnum, which the patient wished to have removed. I dissected it entire, so that it rolled on the table: in three or four months afterwards, another Bursa, as large as the one which had been previously removed, made its appearance in the same situation. Thus may be traced to an imperfect knowledge of the anatomy of these organs, the theory of accidental Bursæ. When a second Bursa appears after the removal of the first, it is simply the enlargement of a second, coeval with the first, and observed then only for the first time by the surgeon.

In the popliteal space, we usually find three Subcutaneous Bursæ,—an external, internal, and middle. The history of these is curious:

¹ Mr. Toynbee examined for me some fresh fluid, which I removed from a carpal bursa. He says: "The gelatinous matter from the bursa consists of a transparent, viscid, semi-fluid substance, interspersed through which are rounded and ovoid cells, containing granular matter, and having one or two transparent nuclei attached to their inner surface."

with similar relations to all the others, they yet present, when enlarged, certain peculiarities. Both surfaces against which the enlarged Bursa presses being comparatively soft and yielding, the swelling does not assume the distinct globular form which those situated over bones exhibit. A case of this kind came under my notice a few months ago. A young woman, æt. 32, applied to me in July last, with a swelling in the right popliteal space, situated principally in the centre of the ham, and of the size of an orange, though more compressed. It was moveable, free from any pulsatory movement, and, when firmly pressed, gave an elastic feel to the fingers. The integuments were very little changed in colour, and the swelling was free from pain. I entertained no doubt of its nature, and punctured it by means of a grooved needle, when an ounce and a half of a white gelatinous fluid, much resembling the vitreous humour, escaped; a compress was applied over the part, strips of soap plaster over this, and a bandage tightly over the whole. On removing the pressure at the end of a week, a re-accumulation of the fluid had taken place. The swelling was again punctured, and the fluid, which was much less than on the previous occasion, allowed to escape. The pressure was applied in the same way as before, and removed from time to time. No fresh accumulation took place, and at the end of two months she was quite cured. Schreger has described this Bursa, but has given no drawing of it; he does not seem to have met with it in a diseased condition.

There is usually a distinct Bursa over each malleolus; but the external malleolar Bursa is the one most liable to be enlarged or distended with fluid. At one time it was thought, that in club-foot an accidental bursa was formed, to protect the integument at the point of greatest pressure; but this notion has been distinctly refuted. A Subcutaneous Bursa, occasionally of considerable size, very generally exists over the distal extremity of the metatarsal bone of the great toe, close to the joint, and the term bunion has been applied to it when inflamed or thickened. Subcutaneous Bursæ are met with over the trochanter major and tuberosity of the ischium, in the groins, and in connexion with the lower part of the superficial fascia of the abdomen.

Bursæ of this kind exist also, as has been already mentioned, in the axillæ, and over the condyles of the humerus. An enlarged Bursa over the inner condyle of the humerus came under my notice. C. W., æt. 18, applied to me on the 18th August, with a swelling over and a little above the inner condyle. As the patient, a few days before, was stooping to raise something heavy from the floor, he first felt pain in the part, and shortly afterwards discovered a slight swelling. At first, it was like a small indurated gland, but it gradually increased to the size of a walnut. It was unattended with pain, and gave, on pressure, an elastic indistinct fluctuating feel. On the 3rd September, I punctured it, and there exuded about a tablespoonful of transparent gelatinous fluid. Firm pressure was applied, and removed from time to time, and the swelling has not returned.

The Bursa which we may call anconal, as situated over the olecranon, is well known, and is often enlarged. There is also one over the distal extremities of the radius and ulna, and one on the carpus, corresponding to the surface of the os magnum, which is often enlarged. A girl, 13 years of age, applied to me on the 7th September, with a swelling like

a large marble, which had existed six months, and was situated on the posterior surface of the right carpus, over the *os magnum*. I punctured it with a grooved needle, evacuated a teaspoonful of white vitreous looking fluid. Pressure was applied over the part, and renewed every week for three times. The patient is now quite well.

That Bursæ in this situation may sometimes acquire considerable size, is shown by the following case. E. F., æt. 30, applied to me on November 15th, on account of a large Bursa over the *os magnum*, and a little to the radial side of it. About eight years ago it first arose, from her husband pressing this part of her hand very hard with his knuckles,—to use her own expression, by “his knuckling her”. Immediately after this a swelling commenced, and at the end of a twelvemonth it had attained the size of a walnut. It was then punctured, and near two teaspoonfuls of fluid were evacuated. No pressure was applied; the swelling disappeared, until two years ago, since which time it gradually increased, till it reached the present size. The swelling prevented her from turning her hand back, and from wringing clothes. There was a great feeling of weakness in the joint, and occasional pain in and about the swelling, especially after exertion. On November 18th, I punctured it with a needle. As the case is still under treatment, I am unable to give the result: I feel no doubt, however, of its permanent dispersion.

There is a large Bursa over the first joint of the thumb, and others, often double, over the first and second joints of the fingers. That Bursæ exist in other parts of the body, I have no reason to doubt; one is not unfrequently found under the integuments, at the angle of the jaw; and others, extremely minute, and rarely demonstrable, are said to exist under the integuments of the back, corresponding to the spinous processes of the fifth, sixth, and seventh cervical vertebræ. More extended pathological inquiries may enable us still to discover others; for it is by their accidental enlargement that the presence of some of them has become known to surgeons.

SYMPTOMS AND DIAGNOSIS OF ENLARGED BURSÆ. A correct knowledge of the situation, volume, form, and position of the superficial or Subcutaneous Bursæ, will, on most occasions, enable the surgeon to appreciate the character of a tumour due to an increased secretion of the fluid in the interior of these sacs, to a thickening of their walls, or to an inflammatory action set up around or within their tissues. The symptom which naturally first attracts attention, is the existence of an oval, colourless, elevated swelling, in an unusual situation. Should the surgeon happen to be ignorant of the previous existence there of an original Bursal apparatus, for the protection of the integuments and for facilitating motion, he is at first lost in conjectures as to what the swelling may be. This has often happened. But, aware of the existence of the superficial Bursæ, and of the localities which they constantly occupy, the first glance at the case not unfrequently reveals to him all he requires to know. I need not therefore dwell on this symptom, remarking merely, that the tumour may be small or large, moveable, colourless, or deeply inflamed; or occasionally ulcerated on its surface, and discharging pus and serous looking fluids; or, by long neglect and the influence of time, it may appear as a firm unyielding tumour, without fluctuation or elasticity.

Even when uncomplicated, the enlarged Bursæ occasionally, though not uniformly, give rise to symptoms meriting attention in a history of these affections. A certain amount of inconvenience is often felt, varying in intensity with the volume, situation, and condition of the swelling. The enlarged anconal Bursa, for example, may attain a considerable size, and yet give rise to no more inconvenience than a slight sense of weakness after fatigue; even the patellar Bursa may be enlarged without proving troublesome to the patient. But in others, and these, perhaps, form the majority, it is otherwise. Those in the hand, especially the carpal, cause a great sense of weakness; they are unseemly, and the deformity becomes so unpleasant to the patient, as to induce him to request the removal of the swelling at all risks. In like manner, those over the malleoli deform the foot, and cause other inconveniences. Much lameness often accompanies the enlarged patellar Bursa; whilst the enlargement of the Bursa over the first joint of the great toe, produces not unfrequently the most intense suffering. Inflammation and suppuration follow; and death has been known to supervene from such a course, when injudiciously interfered with by the surgeon. Generally speaking, then, the symptoms indicating the presence of an enlarged Bursa are sufficiently well marked to lead to a correct diagnosis.

A knowledge of the course of the tendons will enable the surgeon to discriminate between an enlargement of a superficial Bursa, from that more troublesome and dangerous affection, the enlargement of the deep or profound; and he will regulate his treatment accordingly. Of these I do not speak at present, confining my remarks wholly to the system of the superficial Bursæ. These swellings, then, interfere with the free use of the limbs in which they happen to occur. The integuments may inflame and suppurate, and in this condition the case may for the first instance be brought to the surgeon. If neglected now, they cause intense suffering. The cause of the pain is not uniformly the same. In the enlarged Bursa over the great toe, for example, considerable pressure may be endured, provided a corn has not happened to be induced by that pressure over the enlarged Bursa. When this happens, the pain becomes intolerable, and is seemingly disproportioned, if I may say so, to the other symptoms and appearances; but it is well to know this, for the partial removal of the corn by the knife will often give immediate and great relief. A very usual symptom is a tingling sensation running down the limb, often attended with tenderness on pressure.

The position of the enlarged popliteal Bursa necessitates a careful diagnosis; it may be mistaken for abscess, or for other still more dangerous affections. It is sufficient merely to caution the surgeon on this point.

The detection of enlarged Bursæ in the axilla, and in the groins, and the discriminating them from other diseases, will occasionally require great attention on the part of the surgeon.

Enlargements of the superficial Bursæ have frequently, no doubt, been confounded with encysted tumours; their sequelæ also present difficulties in the way of a correct diagnosis, to be overcome only by a careful observation and history of the case.

Enlarged Bursæ may be either simply enlarged, or the enlargement may be accompanied with inflammation and all its usual appearances.

Erysipelas may arise in the course of the disease ; or at least, cedema of the superficial fascia or cellular layer, in which the Bursæ are situated.

PATHOLOGY. The morbid anatomy of this system of organs has not been made the subject of any extensive researches. What has been observed amounts to this : the contained fluid, which in health merely bedews the surfaces of the sac, increases in quantity and alters more or less in quality. Originally, perhaps, more complex than chemists suppose (such at least seems to have been the opinion of Schreger), it may undergo further changes, as a result of chronic or acute inflammation. At times, the fluid resembles the outer layer of the crystalline lens, or the vitreous humours ; that is, it partakes more of the character of a semi-solid than of a liquid ; at other times, it is much more fluid, or it is more serous, obviously less abounding in albumen.

The semi-fluid substance has sometimes a yellowish appearance, at other times a reddish hue ; sometimes it is very fluid, of a dark, dirty colour, the product, no doubt, of an inflammatory action. The sac may be wholly obliterated, or its walls so greatly thickened and condensed as to represent a solid tumour ; or the enlarged Bursæ may shew a dropsical character, with softening of the inner membrane, perforations, and enlargement of the traversing tendinous cords. The absence of many of these Bursæ may depend, no doubt, on their obliteration in early years from blows, pressure, or other accidental violence.

The morbid appearances found in connexion with the enlarged Bursa of the great toe, have little or no reference to the smaller Bursa itself, but to the deformity caused by the simultaneous displacement of the metatarsal and digital bones of the toe. Nevertheless, when, by a separation or spreading out of the distal end of the metatarsal bones, the head or extremity of the first metatarsal bone becomes so prominent on the inner side of the foot as to be mistaken for an osseous tumour, the integuments passing over it become much attenuated in those cases where the deformity occurs in the adult. If congenital, or occurring in early years, no such attenuation happens. The Bursa itself, on dissection, presents a variety of morbid appearances, according to the progress made by the displacement of the metatarsal bone, and of the phalanges of the toe. The ligaments also undergo changes, but I cannot say that I have ever observed the formation of accidental Bursæ amongst their fibres. Fungous growths have been seen growing from the inner surface of enlarged Bursæ ; and ill-conditioned sores are also sometimes present, depending partly on the nature of the surfaces affected, and partly on the constitution of the patient.

CAUSES. A variety of causes likely to produce enlargement and subsequent disease of the superficial Bursæ, have been stated by systematic writers. Unfortunately, however, by confounding these organs with the deep Bursæ and synovial sheaths of tendons, or by a meagreness of detail, many otherwise interesting observations have failed to improve our knowledge of the disease. The formation of accidental Bursæ I have shewn to be, in every instance, doubtful, whether on the prominent part of the spine in deformities of this column, or in any other part of the body. The inflammation and enlargement of the Bursæ over the great toe, happen how it will, is merely an enlargement of a Bursa already existing there, and not a new formation.

Enlarged Bursæ are frequently ascribed to severe pressure, sudden or long-continued, to blows, or other external violence ; and to such a cause, no doubt, many cases may be traced. At other times, Bursæ enlarge wholly independent of any such causes. It has been usual to speak of the enlarged patellar Bursa as "the housemaid's knee," of the enlarged anconal bursæ as "the miner's elbow," etc. ; but many cases of enlargement of the Bursæ cannot be so explained. Thus, then, they not unfrequently originate without any assignable cause. It has been said that corns and bunions (diseases very opposite in their nature, though, strangely enough, associated in surgical works), and enlarged Bursæ, ganglions, and tumours, are much more numerous in the rich than the poor ; of this, however, I have my doubts. The mechanical causes assigned for the production of the enlarged Bursa over the great toe, and for the deformity of the foot, so frequently preceding re-enlargements of the Bursa, and giving rise to it, can be distinctly refuted. I allude more especially to the theory, that such deformities and diseases are caused by tight shoes.

It merits notice, that those who stand out most for the efficacy of mechanical causes in the production of such diseases, have uniformly avoided offering any explanation of the circumstance,—that the disease I have just alluded to (enlarged Bursa in the deformed foot), appears first not unfrequently in one foot, and is even confined to that foot, be it right or left ; but if a rigid shoe were the producing cause, both feet ought clearly to be affected simultaneously. Again, when enlarged Bursæ occur, which cannot be traced to any mechanical injury, it not unfrequently happens that they occur at once in both limbs ; this need not surprise us, as the laws of symmetry go far to explain the occurrence. Some have carried the idea of the production of enlarged Bursæ by accidental causes so far, as to include under the same category the actual formation of the healthy sacs, creating the system whose nature I now describe. They have also found Bursæ in situations where I cannot say I have ever observed them ; namely, around corns, and between these semi-horny productions, and the true skin : but no such productions exist so far as my observations go, nor are they required to explain the intense suffering arising from pressure over a corn. The wedge-shaped body is at that moment slowly, but surely, growing inwards, piercing the true skin, and tearing its delicate structures asunder. Take off the pressure, or remove the offending wedge, and the pain ceases.

TREATMENT. It has been shown that many of the Subcutaneous Bursæ of the body are occasionally wholly absent, or, in other words, never were present. In this sense, then, they are not essential structures, at least, not in these persons. But it has also, I think, been proved that such Bursæ, when enlarged, may be obliterated by pressure, or the same result may be effected by pressure and puncture combined ; or by inflammation, suppuration, granulation, and consequent adhesion of surfaces ; or lastly, when, losing their original character, they have attained, by means of fibrinous deposits, the appearance and nature of a solid tumour, they may be extirpated by the knife, and so altogether removed. These considerations, aided by a sound anatomy and physiology, which we owe chiefly to Schreger, have led me to the adoption of a simple mode of treatment, applicable to most, if not to all cases, of enlarged Bursæ.

Let me first suppose, that a case of enlarged Bursa, unaccompanied with any other affection, no matter where placed, presents itself; that of the great toe need form no exception; an enlargement of the natural patellar, anconal, or malleolar Bursæ; the question arises, how is it to be treated? Abundance of evidence exists to shew, that the treatment by rest and pressure, simple friction, blistering, friction with mercurial ointment, iodine, etc., all but uniformly fail in effecting a permanent cure.

When these fail, recourse is had to a puncture, which, made with a lancet, amounts generally to a short incision; or an incision, more or less extensive, is made into the enlarged Bursa, the contents evacuated, and pressure applied. This method, no doubt, succeeds; but it is unnecessarily severe, and is not unattended with danger, even in the uncomplicated class of cases. But it not unfrequently happens, that before the surgeon has seen the case, inflammation of the integuments, and of the superficial fascia in which the Bursa lies, has set in, with more or less severity. Now, in such cases, the modes of treatment alluded to are clearly inapplicable, and have occasionally been attended with very serious results.

Mr. Key, in an excellent memoir on ganglia or bunion, distinctly refers to a case, in which death happened from the incautious interference of the surgeon. He is speaking of the enlarged Bursa on the great toe, which complaint, when complicated with the peculiar deformity I have already spoken of, he calls bunion. "I have known", he says, "gangrene of the foot and death ensue from opening an inflamed and suppurating bunion; and in three cases, exfoliation of the bones, with a most tedious and painful suppuration of the surrounding structures". He condemns all interference in such cases, in which opinion I coincide, although maintaining very different views, as to the nature of the affection, from those of the distinguished surgeon whom I have just quoted.

The mode of treatment which I prefer to all others, is simply puncturing of the enlarged Bursa with a grooved needle, such as is used for exploring tumours and swellings of doubtful character. After the evacuation of the contents, pressure is applied, by means of soap-plaster and bandage; this is renewed from time to time, and puncture of the sac repeated if necessary. The result is uniformly a permanent and safe cure. If to this we add the almost painless nature of the operation, we have in this mode of treatment all that is satisfactory to patient and surgeon.

When the enlarged Bursa becomes seriously inflamed, we should endeavour, by rest and other means, to subdue the inflammation: nevertheless, a puncture such as I have described may be practised, even in these cases, with advantage to the patient.

In a case of anconal Bursa, accompanied by high inflammation, I punctured the swelling with a grooved needle; pressure was employed; no bad results followed, and the patient recovered. Miss M., æt. 50, applied to me, October 18th, with an enlargement of the Bursa over the right olecranon, the skin being highly inflamed. The inflammation had existed for ten days, and became so severe as to compel her to seek advice. I punctured it, and two teaspoonfuls of dirty looking serous fluid came out; pressure was applied, and at the tenth day she recovered.

Sometimes the integuments over the Bursa ulcerate, and under these circumstances, pressure may also be employed, as in cases of simple puncture. In cases of long standing, when the enlarged sac has put on the appearance of a sarcomatous tumour, excision is no doubt the remedy, having a due regard to the integuments. The mode of treatment by the seton has been strongly recommended by many good surgeons, and I have myself adopted it with success; but a more enlarged experience has convinced me that this mode of treatment, besides being a tedious and unnecessary process, is not on all occasions unattended with danger. I think it only applicable to those cases where the question arises as to their destruction by the seton, or removal by the knife.

The following interesting cases were communicated to me by my friend, Mr. Cocks, of Hatfield, who has kindly permitted me to publish them.

"I had", says Mr. C., "for several years, an enlarged Bursa on the second joint of the left thumb, produced by a blow on the fore part of the saddle, in checking the bridle of my horse. It became as large as a pea, and was rather annoying and unsightly; I punctured it with a lancet, when a pinkish crystalline mass came from it; pressure was applied, and it healed. It soon grew again, and again, and the same operation was repeated. But, tired of this plan, after opening it, I rubbed the inside with a camel's-hair brush, dipped in a solution of nitras argenti (4 grs. to 3j of water). In a few days, it suppurated; the lining membrane sloughed away; it soon healed, and has been so for more than a year. The next case was under my son. A servant girl, from London, had a very large Bursa on the left outer ankle, just below the end of the fibula, stretching across the dorsum of the foot, about two inches long, and at least an inch wide. She had applied to several medical men in town, all of whom advised 'nothing to be done'. It was opened by my son; solution of nitrate of silver was injected into it, and pressure by compress and bandage applied. In a few days, the greater part of the sac was obliterated; the fluid (which in this was limpid) collected in the non-adhering portion. The same treatment was applied to this part, which was followed by considerable swelling of the foot and leg. The inflamed leg was treated with cold saturnine lotion; but a warm poultice was applied to the tumour, in order to bring on suppuration as soon as possible. The case went on favourably; and in three weeks she was able to go about quite well".

No cases of enlarged Bursæ have attracted more attention than that of the great toe; when painful and enlarged, it is difficult to treat, for reasons I have partly explained. So much confusion prevails in surgical works, as to the true nature of the proper method of treatment of this troublesome Bursa, when enlarged and inflamed, that I may hope to be excused, if I again direct attention to it. The Bursa situated on this part may become enlarged and painful, like any other superficial Bursa, and require, for its relief and cure, the treatment I have recommended. But that which, in a peculiar manner, complicates the pathology of this enlarged Bursa, is the accidental deformity, caused by a projection inwards of the digital extremity of the first metatarsal bone. The phalanges of the great toe itself turn outwards to such an extent as to over-

lap, or pass under, those of the second,—a deformity, in fact, amounting to all but complete dislocation. As the metatarsal bone recedes more and more from the second, the digital extremity seems to enlarge, causing a remarkable prominence inwards of this part of the foot.

In the mean time, as the deformity increases, the bursa is placed, daily, under pressure, more and more severe; the same shoe no longer fits the form of the foot, now much broader in the distal extremity of the metatarsal region; the Bursa enlarges, and becomes extremely painful. A succession of Bursæ form on the same spot; they open, and perhaps suppurate: and cases are stated to have occurred in which the joint itself has been laid open, and caustic applied to the inner projecting portion of the metatarsal bone, as if it were of morbid growth.

The disease, then, in its most aggravated form, that is when complicated with this deformity, consists, simply, in an inflamed Bursa, generally produced by pressure, with a partial dislocation of the great toe, mainly dependent on a displacement inwards of the digital end of the metatarsal bone. As these two affections are quite distinct, though often confounded, I need not here inquire as to the causes giving rise to the deformity. It will be sufficient to observe, that tight shoes, or rather shoes no longer fitting the altered form of the foot, however they may give rise to an enlargement of the Bursa, in no case produce the deformity; for it is now universally admitted that the deformity is most frequently congenital, or comes on in very early life; that it occurs in hundreds who never wore shoes, or boots, and that, even when present, it does not necessarily give rise to enlarged Bursæ. The cases which most frequently came before the surgeon, occur in persons who get the deformity after the meridian of life. The deformity takes place as a result of the weakening of those structures binding together the metatarsal bones; the larger one recedes from the second, and the muscular forces, acting on the great toe, assist in adding to the deformity, by causing it to approach the others. The treatment of such complex cases is exceedingly difficult. It is here that rest, in the recumbent posture, becomes absolutely necessary; the inflammation must be subdued, or allowed to subside. Should a corn have formed on the enlarged Bursa, it had better be cautiously pared down, as the skin has probably become much thinner over the Bursa. When the foot has become tranquil, other questions arise as to the treatment, chiefly bearing on the form of the shoe; a boot, properly made of very soft leather, such as is worn in France, may be used without aggravating the complaint. Shoes, I apprehend, are bad, as they necessitate a somewhat tight ligature over the instep; this causes intense pain immediately below it, or nearer to the toe. In time the integuments may and do become accustomed to the form of the foot, and the Bursa no longer enlarges. This, I think, is the ordinary course of events, even in cases, by no means unfrequent, where the deformity has proceeded to its greatest extent. When the deformity is natural to the person, the Bursæ do not naturally enlarge, and therefore give little or no trouble.