At present our elder patient is taking a preparation of pituitary gland. The younger is on arsenic, which we propose to push. I am bound to say that though I hope for permanent benefit from these measures, I am very far from expecting it.

THE OSSEOUS SYSTEM IN THE INSANE.

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FRACTURE IN THE INSANE.

It would appear, by reference to the Blue Book of the English Commissioners for 1896, that 7,182 persons died in all the institutions for the insane in England and Wales, there being 13 deaths from diseases of joints and bones, and 11 from fracture or dislocation. In 1897 the figures are respectively 6,783, 15, and 13. The textbooks in lunacy have very little to say on the matter, and likewise, surgical works bring to light nothing on diseases of the bones peculiar to the insane. However, Mr. Bryant, in his *Practice of Surgery*, states "that fractured ribs in the insane generally arise from direct violence," Dr. Mickle, in his work on *General Paralysis*, remarks on the bone condition in insanity; and he is supported by the late Dr. Sankey in his *Lectures on Mental Diseases*. Both these observers are agreed that "the weight of a blow on the chest may be very considerable, and be interrupted by the erection of the intercostal and other muscles of the thoracic walls." In remarking upon these cases of general paralysis, Dr. Sankey says "that the dulness of sensibility, which is remarkable in this mental affection, might really be the foundation of the fractures of the ribs in the insane." The pugilistic attitude presents a powerful thoracic arch to receive a blow, but if the nervous system is blunted, as in general paralysis, this arch would appear to be frequently thrown off its guard; there being no resistance, a fracture under these circumstances would seem to be inevitable. Virchow and Eberth respectively, in 1856 and 1878, have expressed their views "on synostosis of base of skull in connection with cretins and idiots." Again, the French observers, Parrot and Charcot, claim our most thoughtful attention when we discuss the osseous system. Elsewhere on the Continent, in America, and in our own country, will be found several authorities dealing with osseous affections, whose writings are of considerable importance. Yet we are aware how much we have to unravel, how much we have to explain away, and how many more physiological facts pathologists require before they assert dogmatically the nature of this or that osseous affection. In the Pathological Society's *Transactions* Mr. Arbuthnot Lane declares "that examining the bones of a large number of bodies, I find that, taking the ribs as the criterion of density, the strength of the bones bears a direct proportion to the dentition of the patient." He remarks in the same *Transactions* (vol. xxxv) "that in the edentulous the ribs can usually be cut with great ease with a scalpel." He says, "I do not mean altogether to regard it as cause and effect, but when once the teeth are lost the osseous system degenerates even more rapidly." Mr. Arthur Durham, in *Guy's Hospital Reports* (vol. x) alludes to the fact that "bone is among the least highly vitalised of the tissues, and certainly the least highly vitalised of all in connection with which a comparatively abundant vascular supply is ready to promote absorption, and in other ways to assist destruction as well as repair."

I have purposely, for the interest of this paper, examined many pieces of bone in acid solutions. In these experiments I have satisfied myself that in the condition called "rickets" the bones are in a very low stage of vitalisation; that portions of rickety osteal tissue readily part with their inorganic material, leaving a soft, spongy, mass otherwise intact. It would seem that the animal and earthy matters were only mechanically united, as if, physico-chemically, the metabolic processes were out of the regular course; nay, that the origin of this was due to a faulty pabulum supplying the osseous system, which could be easily remedied by dietetic treatment. Moreover, should there be, for instance, a scrofulous or syphilitic diathesis, a complication arises which materially alters the course and treatment of the disease.

DIET AND BONE CHANGES.

We know that the chemistry of this ill-nutrition in rickets is as yet undetermined by physiologists. Many cases of rickets, as we are aware, do not readily respond to suitable feeding, and undoubtedly are complicated by inherited disease. As a comparison with rickets, we shall find that the ordinary domestic fowl may be used as an example of dietetic error. The hen that lays soft eggs is in a similar condition to the rachitic subject; the supply and demand are disproportionate, the pabulum is faulty, and the sexual function correspondingly deranged. Directly the dietetic error is remedied the bird ceases to lay soft eggs, the fibrous envelopes of the eggs assuming their normal hardened condition. Besides, although it is stated in Mr. A. Durham's article, it has never been proved that "hens having a deficiency of lime containing nourishment either lay soft eggs without chalky shells or they produce them at the expense of their own proper osseous systems." Those who are poultry fanciers, and, further, those who have studied the subject scientifically do not support this statement. Mr. Bland Sutton informs me that birds do not get mollities ossium, and that bone softenings of any kind are in birds very rare. Again, I disagree in part with obstetricians who lay stress on the association of mollities ossium and the pregnant state. Does the fetus require such a supply of lime salts from the mother that would materially affect her osseous system? Have we, likewise, a complete account of all cases of osteomalacia, or a sufficient number of reported instances of recovery after the operation of oophorectomy to make us sanguine on this operative measure? I believe that British obstetricians have had a limited experience of this disease, since it is recorded as being rare outside the Rhine valley. Should surgical measures be indicated, it does appear to me that induction of miscarriage is preferable to spaying,

OSTEOPOROSIS.

At this juncture I beg to recall to your memory the series of osseous specimens which fill the shelves of many hospital museums. These are representative of hyperostosis, osteoporosis, mollities ossium, osteitis deformans, syphilitic thickening, and erosion, etc. In my own possession are two examples of the described "pan" of the general paralytic, and likewise a typical preparation of Charcot's affection of bone. I have also before me several recently-removed ribs from different subjects obtained from the post-mortem room of Guy's Hospital. It is obvious that the breaking strain of each "hoop" is different. Further, an artificially decalcified rib, of a healthy consistence, crushes in the hand like a piece of india-rubber tubing, returning again to its form without loss of continuity when the pressure is removed. Anatomically, the thoracic bones are unique in their construction; a rib has several planes besides that of its own curvature; the reticular tissue, too, is in excess of the compact layer, and there is no central channelling. Moreover, the vascular supply is arranged in accordance with the architecture of the bone, and the rib, being in a constant state of motion, is at a disadvantage when the nervous system is blunted. Thus we shall perceive that it is not unusual to hear of the occurrence of fracture of the ribs in the insane apart from injudicious handling by the attendants. When we review the systems of the economy and the cachexiæ associated with diseases of these systems, we shall not wonder if we are told that the thoracic walls in the insane are liable to fragilitas ossium. That diseases of a certain type, in which the blood is materially altered in composition, encourage ill-nutrition of bone is manifest. In Fig. 3 is shown part of a child's skull, that of an Arab, which is markedly porous. The beautiful superimposed arrangement of the diploë tissue is well depicted in Fig. 1, and is a section corresponding to A (Fig. 3) over the parietal eminence. This arrangement of the columns of bone is clearly a design of Nature as a provision to protect the soft organ of the brain, and in rickets it appears to be an extravagant morbid process although salutary for the time being. The perverted nutrition of this portion of a rickety skull is universally distributed and all the sutures are effaced. The owner of the calvarium must have suffered seriously during life from arrest of development. This, a typical example of a growing skull, indicates a morbid state of the organism, and is worthy of our careful inspection.

Fig. 1.—Section of child's left parietal eminence, columnar cancellous tissue superimposed on diploë. Natural size. Compare with Fig. 3, from which it is taken.

Fig. 2.—Section of healthy diploë of young man. Natural size.

Fig. 3.—Profile of rachitic pan of child; section left parietal eminence and posterior part of right parietal bone; A, A, A, openings on the surface, of the tubular columns; osteoporosis so-called.

Fig. 4.—The keel-shaped and flattened pan of a general paralytic, view from behind.

Fig. 5.—Section of frontal eminence, natural size, general paralytic; pan excessively hypertrophied, diploë and tables.

Fig. 6.—The skeleton of Madame Supiot; the historical case of mollities ossium; drawn from *Bromfield's Chirurgical Observations*, 1775. Slightly reduced in size for the convenience of the JOURNAL.

Fig. 7.—Madame Supiot during life. Slightly reduced in size for the convenience of the JOURNAL.

The superstructure engages the most exposed situations—namely, the frontal and parietal eminences. We shall note in specimens of bones that where there is a sponge-like appearance on the surface (see Fig. 3, A A A) there is invariably a columnar upheaval of the cancellous tissue beneath (see Fig. 1). This ricketty child's skull is an excellent example. But whether the sutures which are so completely effaced in the specimen could ever have been opened up again is questionable. However, there is no reason why the provisional scaffolding (see Fig. 1) should not have become absorbed, as in similar cases of rickets, for daily we are surrounded in hospitals with square-shaped heads (Fig. 3), which we believe in adult life assume a natural contour. This state of affairs would appear to correspond to that condition of resolution which occurs with the provisional callus of a fracture. *Ceteris paribus*, it is not difficult to believe that even the obliterated sutures of the subject of the illustration might have reappeared when the morbid processes had ceased, since it is an undeveloped calvarium. These types of juvenile heads are nowadays considered by pathologists as purely rachitic, and not as formerly associated with the virus of syphilis. Various mammals, as stated by Mr. Bland Sutton, have shown this osteoporotic condition of the bones.

It is only of recent years that pathologists have grasped these landmarks of disease, some observers still holding the opinion that this excessive osteoporotic condition of the skull is rare in the human subject. I am inclined to believe that it is not so rare, for rickets is not a fatal disease, and by adult age the normal architecture would, physiologically, assert itself. M. Paul Gervais has described a remarkable skull similar to Fig. 3. The scrutineers of the Pathological Society are agreed that my specimen is an example of rickets, remarking, however, that it is rare. In using the term osteoporosis we must not look upon it as a separate disease, but merely a pathological condition of bones occurring in rickets.

In studying Fig. 3, which is very correctly drawn, attention should be directed to the square-shape appearance, which we know in the living child is a point in rickets; it is that of a child about 6 to 7 years of age. If we consider for a moment the growth of the skull, and that part of the brain corresponding to the frontal and parietal eminences, we shall readily perceive the reason why there is squareness in the ricketty skull. That it is brought about by a horizontal and vertical arrangement of the columns of the cancellous tissue is well shown in Figs. 1 and 3. The sectional drawing shows very prettily the new columnar cancellous tissue superimposed on the original bone, the lower parts with its tables being well defined; the whole figure is correct to size of the specimen, and the openings of the tubular columns are satisfactorily produced in Fig. 3 A A A.

THE SKULL IN GENERAL PARALYSIS.

My next illustration is Fig. 4, the view of the pan of a general paralytic seen from behind. We have it on the authority of Dr. Mickle, who states in his work on *General Paralysis*, p. 278, "that the brain pan in general paralysis is usually flattened from left temporal to right parietal region." The drawing faithfully delineates the flatness, and the pan is the better example of two I possess. The one I depict is firm, dense, and elastic as it rebounds on the ground; besides, it breaks with a short fracture when a piece has been detained in acid solution. Its compactness (see Fig. 5, a section correct to size, and taken posterior to the frontal eminences) is evidently the result of a closer aggregation of the constructive elements of its composition, due to a pathological change. Comparing this specimen with a similar portion of a healthy "pan," and subjected to the same acid medium, it is clear that the latter has a normal flexibility, and that it does not snap, but maintains its shape and pliancy. Thus it will be conceived that the regular physico-chemical processes are disturbed—nay, that considerable change has arisen in the organisation of the bone. A piece of the thickened general paralytic skull resists substantially the acid solution, and, although it has been subjected to a prolonged stay in the fluid medium it is only just yielding. It would seem that the reduction of the earthy matter of the bone was replaced by a large preponderance of disorganised animal matter. That the gelatine of bone has become so altered in nature proves that a distinct pathological entity exists. We have, then, evidence of a very destructive transi-

tion in general paralysis, which affects the osseous system in its morbid cyclical changes. However, it is remarkable what resistance animal life offers to the invasion of disease; for while one part of a general paralytic's organism is losing ground, another part is putting on fat; not only so, but the irregularity and uncertainty of repair in general paralysis are marvellous, the digestive apparatus remaining good to the last. On examining the calvarium (Fig. 4) more closely, and although not seen in the drawing, we shall learn that it is $\frac{1}{2}$ inch in thickness (Fig. 5); the two tables are $\frac{1}{4}$ inch respectively, and the diploë tissue $\frac{3}{4}$ inch. The sagittal suture is intact and the lambdoidal likewise, except for about 1 inch, where obliteration is noticeable. The pan has a keel-shape appearance, but not so marked as in my other specimen, and a vertical section reveals the irregularity of the inner surface of the pan. The thickness of the skull is more marked over the four eminences. The general rarefaction will be noticed, and, not least, the worm-eaten appearance, the irregularity, the erased sutures, and the inordinate engraving of the grooves; all the inner surface of the pan exhibit these conditions. The whole "cap," as I have said, rebounds on the ground, and resists a sharp blow from a hammer. Microscopically there is a considerable change in the appearance of the Clopton-Havers system. The arrangement of this structure is apparently in a transition stage, and where spaces are seen in the osteal tissue they have become preternaturally dilated; the lacunæ show this very distinctly, but the canaliculi are invisible in this specimen, which is from a skull of distant date. Another microscopical section has a curious lamination, with a turning over of the plates at the ends of the section like yellow elastic twists.

A second example of the carinate or keel-shaped skull I have not depicted, but its thickness is only just above the normal measurement. The grooving for the meningeal vessels is considerably above the average, and there is thinning of the bony walls, corresponding to the depressions produced by the Pacchionian bodies. The flattening on the left side of the skull is marked, and the shape of the whole pan resembles the bottom of a ship. Externally, obliteration is beginning in the posterior part of the sagittal suture; internally, there is entire effacement of the serrations. Another pan in my possession, which belonged to the late Mr. John Hilton, the author of *Rest and Pain*, differs from a general paralytic calvarium since it is more uniformly thickened, and is not altered in shape. There is a pan in the Guy's museum of a woman who subsequently to excision of the breast for cancer developed acute mania. There are irregular bony excrescences on the inner surface of the frontal bone corresponding to the eminences, but the meningeal grooving is not excessive. Two similar calvaria are on the same shelf as the previous one, but they are considerably more thickened, and the history in the curator's register is not noteworthy. However, 1669(20) in the same hospital museum is labelled "Osteoporosis of the skull," and in the history of the case reported by the late Dr. Hilton Fagge, it is remarkable that for 14 years pains were experienced in the bones; again, it is stated that there was immobility of the chest, brittleness of the ribs, and breathing was difficult at the last; a psammona was found of dura mater. The other parts of the osseous system appear to have been neglected, which might have confirmed the history of the case. Another "pan" of a youth about 17 is curiously square shape, and bulges equally and rather extravagantly in the parietal and occipital regions. The frontal portion is out of proportion, being very narrow in comparison to the rest of the skull. It is of normal thickness (see Fig. 2), a section from behind the frontal eminences; the sutures on the inside are all effaced, but on the outside they are visibly delineated. The posterior fontanelle is very irregularly ossified, and there is marked flattening in this site, and, coupled with the excessive parietal bulging, the evidence of late closing and rickets is established. Although a cured case of rickets the return to normal architecture in this pan has not been accomplished. It would have been interesting to have studied the mental peculiarities of the individual if such osseous changes do in the ordinary way affect the mental character. Whatever provisional classification we may establish in our minds with regard to these pathological processes, the following two pans will convince us of the irregularity of morbid changes in the

system from specific causes. Mr. Stonham, of Westminster Hospital, was kind enough to lend me them from the museum. Each pan is $1\frac{1}{2}$ inch thick, and this measurement is generally distributed; the necrotic, worm-eaten patches, here and there distributed on the external surfaces of both pans, are typical of syphilis. In comparing these dense calvaria, which are completely without sutures or fissures of any kind, with healthy skullcaps, their pathological significance compared relatively to one another at once becomes evident. They are not porous like ricketty skulls, but are dense and vary in weight, being pathologically altered in structure. Most of this class of thickened skulls can be seen on the shelves of the hospital museums; some are oily or greasy to the touch, their histories are incomplete, and they are labelled as hyperostosis. It would seem that a great many of them were museum curiosities of a former age when syphilis was rampant and more in evidence than in these days of enlightened science.

The pans which I have just described are the thickest that I have handled from any museum. There are many other examples of osseous changes from other parts of the skeleton, but they are relative, and would unnecessarily lengthen this paper. However, specimen 1067 (20), Guy's museum, of bodies of dorsal vertebrae, sternum, clavicle, etc., is classified as mollities ossium, but it would appear to be better recognised as Charcot's affection, as the articular surfaces are gradually eroding, and besides, there is not a history of aneurysm; the bones are fragile and light, and one piece of the body of a vertebra is eaten away as if rats had been gnawing there. It is a liquid specimen in redistilled methylated spirit, and the respective pieces of bone all wear the same appearance.

HYPEROSTOSIS.

The late Mr. Arthur Durham, in the *Guy's Hospital Reports*, vol. x, very critically discusses hyperostosis, but he does not unravel the pathological problem. Neither can Sir James Paget or Mr. Hutchinson give us a clear elucidation of the pathological nature of these anomalous osseous lesions. I am aware, too, that more modern authorities dispute the views of these older teachers; but have they anything further to add in explanation of what was known twenty years ago?

Dr. Mickle repeats Mr. A. Durham's views "that the nervous system has distinct influence in producing ill-nutrition of bone." His work on *General Paralysis* is an index of research, and is familiar to most of us.

The series of skullcaps which fill the shelves of many museums, and which are at times associated more or less with hyperostosis in bones from the skeleton in general, you will find can be divided into at least two sets:

(a) Those of a spongy, light, and brick-like consistence, of which my illustration (Fig. 3) is a good example.

(b) Those that are dense and to which the term "sclerosis" may be applied, of which the general paralytic pan (Figs. 4 and 5) is a type.

Both divisions show invariably much irregularity; there is an increase in the markings, sometimes a dilatation or a diminution of the foramina, and frequently an exaggeration of the grooves supporting the vascular system. These pathological specimens cannot be common nowadays, and would appear to be as exceptional in some *post-mortem* rooms as the large stones formerly removed from the urinary bladder. That age has altered them, and that their history is often doubtful—some having been displaced from churchyards, and not a few from dissecting rooms—would confirm our views that they have somewhat changed since they were first deposited in mother earth. Many, and I believe that those having a dry, porous, sponge-like appearance have assumed that coralline condition by exposure to the weather, the soft organic material having been removed by disintegration. For instance, the Arab pan, Fig. 3, has been lying on a movable sandy heap off the island of Lamoo, Zanzibar littoral, since 1805. I removed it myself from these quarters nine years ago, amidst a host of skeletons which appeared as one approached the littoral as white specks. The white coralline appearance of these bones is undoubtedly due to a dry sandy soil in a tropical climate, and it would appear that under these climatic conditions osseous matter soon becomes bleached, and is readily pulverised into a white powder. On the contrary, churchyard bones are usually discoloured brown by exposure to moisture and earth, and possibly from the

iron in the soil and interstices of the bones. It will be interesting for us to know that a Sultan from Omah in Arabia landed at this "Shella Point" Lamoo, and fought a battle, slaughtering a tribe then existing; and it is known that at this date—1805—the dominion of Zanzibar became established. The bones of the vanquished have been lying on this spot ever since. Two friends kindly assisted me in examining this sandy littoral, and, out of a great many human skeletons, the Arab ricketty-pan (Fig. 3) was the only pathological specimen we could find. I would add, too, of the many skulls we examined, some of which we took away with us, and the rest no doubt are still lying there, were not thickened in any way, but averaged $\frac{1}{2}$ -inch. We displaced several camel's jaws and a few species of "rodent" in this sandy churchyard of the East. Do these variously-thickened skulls that we have surveyed produce cerebral alienation; are they frequently associated with insanity; are any of them a consequence of mental aberration; or are they ever congenital? Is the asylum physician familiarly acquainted with their existence? These questions we may well ask when we consider "the correlation of sciences in psychiatric and neurological research." From what I can learn, both in and out of the psychological world, there is a difference of opinion. Some observers state "that flattening on one side of the skull, and these are not all alienists, obliteration of sutures and irregularities of the inner table, do not indicate a morbid state of the brain." Yet is not this condition of things a precursor of brain affection of which there may be many expressions? Scarbo' gives the statistics of Fournier, 91 per cent., Erb, 88 per cent., Gowers, 70 per cent., regarding the frequency of syphilis in locomotor ataxia; so he says: "Not all the cases of general paralysis are syphilitic, for general paralysis is probably a collective term for several different morbid processes; it will, perhaps, in time, be possible to distinguish those due to syphilis as constituting a disease distinct both clinically and pathologically from the rest." Thus, in considering the relation of syphilis to tabes and general paralysis, we should also bear it in mind when we discuss affections of the osseous system.

That the Pacchionian bodies, which are "sieves," may become enormously enlarged, eating away the inner table and not causing cerebral disturbance, I cannot believe. We know what in some temperaments the irritation of a tooth, a plug of cerumen, or an aural polypus, etc., will encourage peripherally; and these cerebral disturbances, such as convulsive or epileptiform seizures, are relieved or cured after the offending body is removed. We are prepared to admit that skulls are not always well proportioned, and may cause no serious, if any, brain affection. But are we ready to admit that thickened skulls are not uncommon? It is quite feasible, too, that those who are in the habit of carrying heavy weights on their heads, such as dock men and the natives of some tropical climes, may incite hypertrophy of the calvarium. This may likewise become pathological if the poison of syphilis is already in the system of the subject. We are justified, then, in asking ourselves the question, Are not these thickened heads frequently indicative, in our own country more particularly, of serious morbid changes?

MOLLITIES OSSIIUM.

I seek for your indulgence ere I touch on mollities ossium. This morbid revolution of the osseous system has been described by some observers in psychology as a peculiar affection of the ribs of some insane people. Whether they use it as an expression or as significant of the true disease, I think it hardly worth our while disputing. That there is an element of truth in the statement that "the ribs of the general paralytic are susceptible of fracture cannot be disputed." We wish, also, to be chary of contradicting opinions unless we can give sound reason that the ribs of the general paralytic are not pathologically weak. At all events, if you are agreed that the bones of general paralytics are liable to become softened, the responsibilities of the asylum physician become doubly increased, for the law invariably indicts a bad business in this matter. There is a difference of opinion amongst psychologists as to the occurrence of softening of the ribs in the insane. However, perhaps this condition is not familiarly recognised in the deadhouse. I am not aware, either, that the osseous system is as closely scrutinised in the *post-mortem*

room as other parts of the body. With regard to fractures of the ribs, many asylum surgeons are opposed to their frequency; in fact, not a few deny their frequency altogether, and remark that "they are not peculiar to general paralytics." Nay, several well-known medical superintendents, replying to questions I have put to them, say "that fractures in their respective institutions are uncommon."

Formerly, there was an affection of the bones which was more often in evidence than nowadays. I am not aware that there is a similar case on record to that of Madame Supiot. This general disorder of the osseous system, "mollities ossium" was typically brought before the profession in Great Britain by William Bromfield in 1773. The case is recorded by him in *Chirurgical Observations and Cases*, vol. ii. He was surgeon to the Royal Family of that period, and to St. George's Hospital. The history of the case is well recorded, but is not voluminous, and there are two excellent plates by Vitalba, a sculptor of that time. I have carefully drawn them, but reduced the drawings slightly to get them in the pages of the JOURNAL (Figs. 6 and 7). One shows the woman as she was in the skeleton; the other the attitude she assumed in the living state. Every bone of the body appears softened, twisted, and perverted, except the skull, which probably, though not mentioned, was similar in architecture to that of the Arab pan (Fig. 3). Another point worthy of mention is that the patient was almost continuously in a sweat, or had a dew on her skin. She conceived twice, and on another occasion when she became pregnant it ended in a miscarriage. The urine is reported as being frequently surcharged with the salts that make bone. Little else beyond a good classical description of her daily existence is recorded. It would, indeed, have been interesting had the unaided eye of the epoch in which Madame Supiot lived been assisted by the modern instruments of research. As it was not so, no minute structure of her osseous system has been chronicled. Dr. Lazarus-Barlow, of Cambridge and St. George's Hospital, informs me that no part of Madame Supiot's skeleton is at St. George's or any British museum. A part is in the Musée Dupuytren. Bromfield is referred to in Beyland, *Die Rachitis*. Bromfield's account of Madame Supiot in *Chirurgical Observations and Cases*, is an abstract from Morand, *Histoire de l'Académie des Sciences*, pp. 114 and 541. It is clear, too, that Madame Supiot was not in London at any time; I have this on the authority of Mr. Shattock, the Pathological Curator of the Royal College of Surgeons of England. Morand's figure is that which is copied into Billroth's *Surgical Pathology*. If one considers the many theories that have been promulgated with regard to the cause of this disorder, and when we compare a disease like scrofula with this malady, we are tempted to say that in our age they are both rare affections. My view of mollities ossium is that not unlike rickets and scrofula it may occasionally arise from gross dietetic errors. Rickets is obviously a disease of growth, while mollities ossium appears to be more frequently one of decay. To support my theory, Mr. Bromfield states "that Madame Supiot, for some time before she was seized with her disorder usually ate a pound or a pound and a half of common salt in a week without any vehicle, the which custom she continued for two years." Dr. Nansen, the traveller, and other explorers, confirm the professional opinion that ill-nutrition frequently arises from errors of diet.

A case of mollities ossium was published in the BRITISH MEDICAL JOURNAL of October 30th, 1897. One physical sign so typical of this affection was recorded, namely, "a look so short and squat," but the deep-seated pain in the bones, which has been variously spoken of as "rheumatic," is not mentioned; the woman is said, however, to have groaned at the last hour of her life. Dr. H. M. Lyman, of Chicago, exhaustively describes the microscopical appearances in this case, and in the synopsis you will see that there was extensive milary tuberculosis, with a gastric ulcer. I believe atrophy of bones, changes strictly senile, and the real affection of Charcot, if more often sought for in the *post-mortem* room, would attract our attention.

CHRONIC ABSCESS OF BONE.

Beyond the ordinary affections of the osseous system that I have described briefly, and which tend to fragilitas ossium,

we must not forget chronic abscess of bone, first described by Sir Benjamin Brodie. Cancer and tubercle must also be weighed in the balance. In fact, any lowering of the vitality of the subject would strike us as a factor when we consider the etiology of fractures. These morbid states that I have mentioned are sufficiently clear to explain softness, pulpiness, and thinness of the compact layer in the ribs of the insane. It would seem, too, that healthy bones are liable to give way under irregular, trivial, and indirect causes. As one example we mention a case of the ribs giving way during sexual intercourse; besides, we have heard of sneezing and violent coughing causing indirectly a fracture of the ribs. I have myself at the Brompton Cancer Hospital found the ribs of some subjects at *post-mortem* examination susceptible of incision. These experiences must be familiar to many others. That asylum medical officers hold different views on the matter is not remarkable, for are we not all in the profession liable to the error of selecting our cases?

THE BREAKING STRAIN OF BONE.

When we consider the breaking strain of a rib we have to associate the names of Drs. Mercier and Campbell. These gentlemen brought before the notice of the Psychological Association their experiences, and in 1895 read a paper on the subject before that Society. They have very ingeniously contrived a simple apparatus for testing the breaking strain of a rib; I refer you to their paper in the *Journal of Mental Science*, April, 1895. I believe other asylum physicians have performed similar experiments, but have not recorded their observations. Drs. Mercier and Campbell put to us the following question: "What are the forms of insanity which are accompanied by a low breaking strain of the ribs?" This, it seems to me, is difficult to answer, for is there a standard of excellence even in health? The hoops of the thorax must vary considerably in breaking strain at all times of life, whether we examine them under sane or insane conditions. Not only have we to consider the "diathesis," but also the athletic powers and previous occupation of the subject to compare with another. Moreover, we have to contend with delicate arches of trabeculae and columns of bone which could only be worked out proportionately and in sectional areas in the mechanical problem.

The organ of the Psychological Association, the *Journal of Mental Science*, has from time to time registered instances of bone softening in the ribs of the insane. The year 1871 was a memorable one for this condition, since at the Carmarthen Asylum there were 20 deaths, of which 7 were examples of bone softening; 2 of these are recorded as ordinary senile changes, 4 as suffering from dementia, and 1 puerperal mania. All the subjects were beyond 50 years of age except two, who were 70 and 36; 5 are stated to be males and 4 females. In ten of the necropsies the bony walls of the chest are stated to be moderately healthy. Softness of the ribs, the ability to cut them freely with a knife, want of crepitation, and inability to detect fracture during life is reported. There is no record of the *post-mortem* examinations being completed.

This is a point, then, which I should urge—namely, a more complete examination of the whole of the osseous system in these inquiries; for why are a lunatic's ribs more diseased than the other bones of his body? Dr. Christian, writing in another issue of the *Journal of Mental Science* (January, 1886) on the Alleged Fragility of the Ribs of General Paralytics, is opposed to the idea that they are more susceptible to fracture. He gives 250 cases, and says: "I can assure you, gentlemen, I have not come across a single example of fracture among them."

This reminds me forcibly of an experience I had when at a children's hospital some years ago. Our cases of tracheotomy were not always successful, although performed skillfully; we did not select them either. But in visiting other children's hospitals I found they were remarkably fortunate in their recoveries. Perhaps the operations were selected, and possibly the nurses were more accomplished in the use of the feather and paid more attention to the toilette of these trying cases. I can quote others who hold the same opinion as Dr. Christian, and there are many who hold contrary views.

In conclusion, I beg to thank Dr. Lauriston Shaw, Curator of Guy's Hospital Museum, for allowing me to borrow many

valuable specimens, although the sketches I have made for this paper are preparations of my own. Had I been able to expend more time and observation in examining these various pathological bones, in performing elaborate qualitative and quantitative chemical observations upon them, and in applying the microscope to more recent specimens, I might have claimed the privilege of being original. So far, I can only excuse myself by the plea that I possess several pathological bones which have urged me, as a psychologist, to comment upon them. I leave others to further the pathology of these interesting anomalous diseases of the osseous system—as interesting, perhaps, though not so astounding or as marvellous to the impatient psychologist as the recent theory of Dr. Van Giesen, of America, “that the nerve cell is like a tiny octopus with retractile and expansive arms.”

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A CASE OF SCISSORS LEGS.

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THE case described in the following note, and illustrated by photographs, came under my notice for the first time in April, 1898, and again in July, 1898. I think it worthy of publication as a remarkable example of the rare pathological condition described by Mr. Clement Lucas in 1870, and of which a few cases have since been recorded.

The patient, J. D., aged 16 years, an undersized, somewhat delicate-looking boy, gave a history of having been all right in every way until four years ago, when he states that he hurt his right hip while tobogganing. No medical man was consulted, however, nor did the boy give up his ordinary work on a farm; so that I regard his statement as unreliable.

When I last saw him his condition was as follows: The right lower limb was an inch and a quarter shorter than the left, and the foot everted to some extent, but I was unable to satisfy myself of the existence of any dislocation of the hip-joint. The power of flexion and extension was perfect, but the limb was constantly in a position of adduction, and could not be abducted by any amount of force. The left hip could be fully flexed and extended, but could be very slightly abducted; not at all when he stood up, and only to the extent of uncrossing the legs when he lay down. The gait was very remarkable, a rolling motion of the trunk from side to side, followed by the rapid movement of each limb alternately swinging from behind to a position in front of its fellow, the foot markedly everted, locomotion being thus rendered painful and very slow. There was no further morbid condition to be made out, no scars, nor other evidences of joint disease.

The photographs show the position of the limbs better than I can describe them; and while the shortening of the right limb is puzzling, owing to the unsatisfactory history, the strange position and gait appear to be due to loss of power

of abduction of both limbs, from whatever cause brought about.

I may add that the boy's condition was much worse on the second occasion than the first time I saw him, and the account given to me was that he was getting rapidly worse.

MEMORANDA:

MEDICAL, SURGICAL, OBSTETRICAL, THERAPEUTICAL, PATHOLOGICAL, Etc.

SCARLATINA IN AN INFANT.

Apropos of the case of “Measles in an Infant,” reported in the *BRITISH MEDICAL JOURNAL* of October 1st, p. 987, I can quote the following case:

Mrs. F., aged 39, was at the end of her fifth pregnancy, when all her children but one took scarlatina. She nursed them herself. Mrs. F. had had scarlatina when a child.

When she felt the first symptoms of labour she went to Lyons, some two miles from her country place, to avoid the contagion for the child. She was delivered there of a fine girl on January 2nd, 1866. The second day the child had sore throat, with much fever, and Mrs. F. said to Professor X., her attendant, “I am afraid baby is going to take scarlatina.” This Professor X. would not admit, saying it was impossible, no case existing in the neighbourhood, and the baby not having been exposed to the contagion. However, the baby developed a strong eruption of scarlatina, and died on the third day.

This case seems to me interesting, for it shows, I believe, the possibility of an infectious disease traversing the mother's organism without apparently affecting it, and affecting the organism of the fœtus.

Geneva.

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