REMARKS

ON THE

PATHOLOGY OF MOLLITIES OSSIUM.

WITH CASES.

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READ JUNE 25TH, 1844.

My attention has been lately called to this rare disease, in consequence of being so fortunate as to have the opportunity, in two cases, of tracing its progress during life, and examining the morbid appearances after death. There are many such cases on record, notwithstanding the rarity of their occurrence. But there is considerable difference of opinion as to the real nature of the disease. Dr. Kilian,* who is, I believe, one of the latest writers on this subject, states that the disease presents itself under two very distinct forms. "In the one, the bones generally, but especially the bones of the pelvis, present a dirty brownish grey colour, not transparent where thin, and

* Beiträge zu einer genaueren Kenntniss der allgemeinen Knochenerweichung der Frauen und ihres Einflusses auf das Becken; von H. F. Kilian. Bonn, 1829.—P. 24.

flexible like wax. In the second, the bones present a dazzling whiteness, and a light transparent open texture. The first kind of bones do not dry clean, but remain greasy. The second dry quickly, and give no greasy feel."

The disease which I have had an opportunity of observing differs from that described by Dr. Kilian: but I believe it is the usual form in which softening of the bones presents itself in the adult. I would suggest that it should be distinguished by the title, *osteo malacia rubra et fragilis*, from the colour which the bones invariably exhibit in their interior, and the fact that they usually break, and seldom bend as in rickets. The two adjectives appear advisable, as the redness in the interior, according to the observation of Mons. Guerin, exists in the early stages of rickets, while the liability to fracture is not characteristic of this disease alone.

In the Encyclopædia of Medicine, under the head "Rickets," Dr. Cummin has treated of mollities ossium, calling it the rickets of adults; and Mr. Curling, in the 20th volume of the Transactions of this Society, has described the disease as merely a form of atrophy of bone. Humbly believing that rickets, whether occurring in the child or the adult, is a disease essentially different from mollities ossium, and that the latter is one dependent on a specific action of the blood-vessels of the bone, and not a mere atrophy, it will be my endeavour to show the distinction between them. It is however but justice to Dr. Cummin and Mr. Curling to say that they

have both given an admirable and minute account of this disease, and that it is in his title only that the former has confounded it with rickets, and the latter has given very full, though not to my mind satisfactory reasons for regarding the disease "in every respect a premature decay of the osseous system."* Before entering into my own hypothesis regarding the nature of this disease, I will proceed to relate two cases which have lately come under my notice, the facts of which will I am sure prove interesting to the Fellows of this Society, even if they differ from me in my explanation of them.

The first instance I have to relate did not come under my notice until after the death of the patient. I have spared no pains to seek out her previous history. Most of these details have already appeared in print, but being unaccompanied by any drawing, they were necessarily deprived of much of their value. The progress of the disease was so insidious, that its real nature was not apparent until a short time previous to her death. To Dr. Conolly and Dr. Davey, of Hanwell, Mr. Hunter Temple, of Islington, Mr. Dutton, of York-street, Bryanstone-square, and Mr. Lambert, of St. Luke's Hospital, my thanks are due for all the particulars of her case, which I now bring before the Society.

C. S., a young woman aged twenty-nine, born of healthy parents, both of whom are now living and well, the mother aged sixty-one, the father sixty-six.

* Med.-Chir. Trans. vol. xx. p. 370.

She lost one sister at the age of twenty-one, of apoplexy, and a brother at the age of thirty-eight, of diseased liver, and some affection of the head.

The subject of the present case enjoyed a good state of health up to the age of sixteen, was well developed and inclined to be corpulent, her mental faculties were remarkably acute, and at the early age of sixteen she held the situation of governess in the family of a colonel in the army. Soon after the age of nineteen she had an attack of scarlet fever, and from this period her health declined, and about two or three years afterwards, from a very slight cause, the clavicle was fractured, and never united again. She now complained of violent pains in her back, and began to stoop, and could not support herself in the upright posture for any length of time. A whitish sediment in the urine was observed, with a frequent desire to void it, which was occasionally attended with pain. The spine began to yield about the age of twenty-four or twenty-five; at this time she had paralysis of the right hand, which took place suddenly, and lasted about fourteen days. She had no medical advice. A visit to Gravesend was proposed by her friends, but in crossing King William-street she fell down and struck her knee against the curb stone. For this accident she was admitted as an out-patient at the Western Dispensary, and continued so about six months; she derived benefit from bathing the knee with salt water, and the limb was restored sufficiently to enable her to walk. After this she kept a day-school, but became

nervous and desponding. Her friends remarked great difference in her manner, her disposition seemed changed from an open and amiable temper, to one of restlessness and suspicion. They became fearful that she was going out of her mind. She still however continued to conduct her school with her usual attention and care.

In May 1839 being exposed to damp, she had an attack of acute rheumatism, when she was placed under the care of Mr. Dutton, of York-street, Bryanstone-square.

She was confined to her bed for six weeks, but during the course of her disease she complained very much of pain over the head, but particularly at the posterior part. She was occasionally violently delirious. At the approach of convalescence, mania set in, and during its existence she attempted to commit suicide.

In August 1839 she was removed to St. Luke's Hospital. At this period her general health was better than it had been for some time, and her appetite was good, but the catamenia had ceased for about three months. She was much deformed about the hips and shoulders, but not in her extremities.

Her mother reports that she was able to walk for about six months after her admission into the hospital. Though suffering a good deal of pain, her mind was improving, and hopes were entertained of her speedy and total recovery, when she slipped

down, and suffered much at the time, but there was no fracture, and the injury was considered of so slight a nature, that the surgeon of the institution was not consulted about it. But from this time the mother states she was not able to stand alone; she was carried, or pushed herself from place to place on her haunches, and though she frequently screamed violently as if in pain, she had no fit, nor did she lose her senses: she was not unruly, nor at all maniacal, but worked with her needle in her usual quiet manner. The progress of the disease affecting the condition of the lower extremities was evidently the sole cause of her inability to walk. The head was now first observed by her mother to be enlarged, and the eyes to project, caused no doubt by the thickening of the walls of the orbits. After remaining at St. Luke's thirteen months, she was discharged incurable, but not paralytic: on this point I took care to assure myself particularly. From this hospital she went to the Marylebone Infirmary, where she remained five weeks, from thence she was removed to the Islington Infirmary, where she remained two months, but I have not been able to gain any particulars of importance regarding her condition in these institutions. She was then sent to the Lunatic Asylum at Hoxton for six weeks, was again received into the Islington Infirmary, from whence she was sent to Hanwell, on the 11th of April 1842.

At the time she was received into this asylum she was much emaciated, and enfeebled, with loss of

power in her lower extremities; and two or three months before her death, the bones of the extremities were observed to lose their natural direction, and become curved: subsequently, fractures took place from the slightest causes. She suffered excruciating pain during the whole time she was in the asylum, which she referred to her bones; she did not suffer from spasm of the muscles, as many of these cases do, and the urine, during the whole time she was at Hanwell, was clear and natural. Her appetite was good, and all the functions duly performed, with the exception of the catamenia. Large doses of morphia and other sedatives were administered, to procure sleep and relieve pain. Her mental aberration was extremely slight. Her sufferings were terminated by death on the 28th October 1842.

Post-mortem examination of the body.—Hanwell, October 29th.—Height, measured after death, four feet two inches—great emaciation. Head large in proportion to the size of the body; chest very much deformed, pinched up, and projecting anteriorly,—very narrow from side to side; the ribs appeared widened, the pelvis extremely narrow. Spine curved forwards almost at a right angle in the upper dorsal and cervical regions. Both clavicles broken and bent at an acute angle. Head of one humerus swollen, shaft of the left, broken and bent; radius and ulna slightly swollen, the right radius broken, the lower extremities enlarged at the epiphyses; ossa femora on both sides broken, that on the right side in one

place, that on the left in two; the fractured portions were held together by the periosteum, but there was no attempt at union, no appearance of callus; tibia and fibula on both limbs bent; all the bones of the extremities could be fractured with the slightest force—by merely pressing them between the finger and thumb, they gave way and cracked like a thin-shelled walnut. A longitudinal and transverse section of the long bones showed that the osseous structure of the bone was nearly absorbed, a mere shell being left. The interior was filled with a dark grumous matter, varying in colour from that of dark blood to a reddish light liver colour. I could not detect any pus globules in it under the microscope. The bones of the vertebral column and ribs were similarly affected; cranium very much thickened, and at least half an inch in diameter, so very soft as to be easily cut with a knife, and very vascular; the two tables were confounded, and the diploë obliterated. Thin slices of the cranium, under the microscope, showed that a considerable alteration had taken place in its ultimate structure. The laminated structure of the outer and inner tables was extensively absorbed. The Haversian canals enormously dilated, and the osseous corpuscles diminished in quantity. Joints all healthy; cartilages perfectly natural. Weight of brain 2lbs. $5\frac{1}{2}\frac{3}{3}$; arachnoid membrane milky and slightly thickened. The brain as well as the viscera of the chest and abdomen were perfectly healthy.

Chemical analysis of the bone by Dr. Leeson:—

Medulla.	
Animal matter	24·78
Phosphate and carbonate of lime .	1·83
Water	73·39
	100·00
Bone.	
Animal matter	18·75
Phosphate and carbonate of lime .	29·17
Water	52·08
	100·00

October 2, 1843.—I visited another well-marked case of this formidable disease in company with Dr. Borland, of Trinity Square.

The patient was a female—Sarah Newbury. I found her sitting up in bed, her countenance very cheerful, and, excepting its extreme emaciation, not unhealthy. Her mind was active, and all her answers to my questions clear and intelligent. She is thirty-nine years of age, and has been married nine years and a half to a strong healthy man in the police force; has never had any children. Her height at the time of her marriage was about five feet five inches and a half; her general figure slight. She was born in Dorsetshire, but was in service for fourteen years in London, as a housemaid, previous to her marriage. She was always able to do her work with ease. Her general health has been good, though, she says, she was never particularly strong

or robust, and has been subject to sick headaches: she has been always regular at the monthly periods, but has suffered both before and after marriage from the white discharge. She considers that her strength has been failing her for about three years, but not more than that time. In May 1840, that is, about three years and a half ago, she was seized with a violent pain in her back when she was stooping, and after that she had a strange sensation down her right leg, as if a pea were rolling up and down. She does not remember any other circumstance relating to her general health until June 1841, when she had rheumatic pains in her limbs, but never any true rheumatic fever; never any swelling of the joints; from this time she constantly suffered from what she considered rheumatic pains, and was so feeble on her feet, that in February 1842 she had a fall, which, in fact, she says, she had been expecting every day, when her left thigh was much bruised, but she did not feel anything give way; but in consequence of the bruises she was confined to her room. After this she occasionally suffered a *great* deal of pain in her limbs, which, she says, seemed to be in her bones, and she was not able to walk unless on her left leg, and with assistance, dragging the right after her. In the April following, that is, about two months after the accident, when her husband was lifting her from the fireplace to carry her to bed, she says she suddenly felt the most excruciating pain, just as if her thighs were being broken into a thousand pieces; and her husband

told me that he felt her thighs give way, and that they were suddenly drawn up; and from this time she has been entirely confined to her bed. She says that the muscles of her arms were now painful and swollen, but by rubbing them with oils she relieved them.

Her present condition, October 2nd, 1843.—I do not perceive anything abnormal in the appearance of the bones of the head or face. The countenance is emaciated. There is a lateral curvature of the spine; in the dorsal region the convexity is to the right, the concavity to the left. In the centre of the lumbar region, the spine curves forwards, the inferior vertebræ with the upper portion of the sacrum projecting backwards. The lower portion with the coccyx turns suddenly forwards, forming almost an acute angle.*

On the left side the ribs project backwards to their anatomical angles; from that point they are bent directly forwards, forming an acute angle, which projects posteriorly, looking at first sight like the spinous processes of the vertebræ in a very thin person; the side of the thorax from the angles being flattened or slightly concave, and the lateral diameter of the chest much diminished in consequence. This latter deformity has evidently been produced by her lying altogether on the left side, either on a pillow or on her arm.

The clavicles have both been fractured and re-united, and are bent at a right angle in the centre.

* See Plate VI. fig. 2.

The bones of the arm and hand are all natural. I could not examine very accurately the ilia, but I perceived that they were evidently folded inwards. Both thigh bones are broken. The lower portion of the left is twisted round, so that the patella faces inwards, as represented in the drawing.* The right thigh is bent completely at an acute angle in the centre. The lower portion turned outwards. The tibia and fibula of both legs, and the rest of the bones, appear quite healthy.

I now made her an out-patient of St. Thomas's Hospital, for she refused to come into the house, and I prescribed for her a simple bitter infusion, as her appetite was failing. This, however, she refused to take; and I received a letter from her a few days afterwards, forbidding my visiting her any more. I mention this to account for my losing sight of the case until the 12th of April 1844, when her husband called on me to request that I would admit her into the hospital, which I did on the following Tuesday.

April 15th, 1844.—Present condition.—The disease has been progressing, though not very rapidly.

The countenance is rather more emaciated, and both maxillæ appear narrowed from side to side. The alveolar cavities of the superior incisor teeth are softened, allowing them to protrude forwards, and she is not able to bite with them. The right humerus has given way in the centre, and the arm lies perfectly useless on the bed. It cannot be moved without giving her great pain. The radius

* See Plate VI. fig. 1.

and ulna are not apparently altered, but the metacarpal bones and phalanges are quite soft. The whole hand is rather swollen and puffy, and its natural appearance changed.

The thorax is much narrower. On the left side there is a depression about the circumference of an orange, the centre of which is occupied by the fifth rib—about an inch and a half from its junction with its cartilage; in this depression the action of the heart can be distinctly seen and felt. Its sounds are natural. I think that the spine is rather more curved than when I saw it in October. I do not perceive any particular alteration in the lower extremities; though it is most probable that the right thigh bone has become more flexible, as, previous to her removal to the hospital, the foot was drawn completely over the head—the same position as represented in the case of Madame Supiot. She complains of the heat, and likes to have very little clothing, as much produces a sense of suffocation; she perspires very freely. I inquired of the sister whether she ever shows any particular desire for salt, as has occurred in similar cases; but I learn that she does not.

April 15th.—On her admission she was allowed wine and arrow-root, a mutton chop, and a pint of porter daily, and was also ordered the infusion of orange-peel, a rhubarb pill when necessary, and an opiate at night, if required.

20th.—On this day she died suddenly, without any circumstance having occurred during her stay

in the hospital that I considered worthy of note, as illustrating the pathology of the case. I procured some of her urine, which was found, on examination, to contain a large quantity of phosphate of lime. Mr. Heisch, who examined it, says, "Between three and four times the quantity of healthy urine."

She was too suspicious and irritable to let me venture to take any blood, even in the smallest quantity, during her life. As, however, it was perfectly liquid after death, I had no trouble in procuring some for examination under the microscope; but it did not exhibit any unnatural appearance. Dr. Rees kindly analysed a portion of it; but he informs me he detected nothing abnormal. The immediate cause of her death appears to have been asphyxia. Mr. B. Travers saw her in her last moments, and he says, the labouring condition of the respiratory organs was very painful to witness. She took a little wine about twenty minutes past six, when the sister noticed some difficulty of breathing, and the patient stated she thought she was sinking; she then became purple, and struggled some little time before she expired.

April 21st.—*Post-mortem examination 15 hours after death.*—Thermometer 60° Fahr.—10 A.M.—General appearance of the body: great emaciation, integuments of the head and face and upper part of the neck, livid. As regards the state of the limbs, in addition to what has been reported during life, it was found that the radius and ulna on the right side had given way about the middle, and that the

metacarpal bones and phalanges of the same hand were all flexible. On the left side, all the bones of the upper extremity appeared in their natural condition, inasmuch as their form was not altered; but on testing their strength, they yielded to a very slight force; and they might be bent in almost any direction, the laminated shell breaking off short. In the lower extremities the tibia and fibula of the left side yielded about two inches from the knee joint; below this point they were firm. Those on the right side resisted pressure; and though they were not so heavy or hard as in a healthy subject, the disease had evidently made very little, if any, progress in them.

Head.—Calvarium very soft; dura mater excessively adherent, and, when torn off, innumerable vessels poured forth their blood in large quantity. The under surface of the calvarium was more vascular than I scarcely ever remember to have seen it, and all the vessels were full of dark blood.

Some serous effusion within the cavity of the arachnoid.

The brain was healthy throughout; the hemispherical ganglion was natural in appearance, neither pale nor dark-coloured.

Thorax.—This cavity was so much diminished in its transverse lateral diameter, that a skewer passed from one side to the other, through the intercostal space between the fifth and sixth ribs, gave only four inches. On the right side there was a general depression of all the ribs; but on the left, the fourth,

fifth and sixth ribs were especially bent inwards, immediately over the heart. It was in this hollow that the heart could be seen pulsating during life. The serous membranes of the heart and lungs were all healthy.

The right lung was compressed to about one-fourth of its natural size, presenting the appearance which it does when hydrothorax is present, for it was excessively congested, and almost impervious to air, very much consolidated, but not from any inflammatory effusion. The left lung was also diminished in size, but to not more than half the extent of the right; it was likewise much congested. The heart was natural, and full of blood.

Abdomen.— Intestines tympanitic, venous congestion of the liver; spleen, small and rather sanguine; pancreas, healthy.

The lacteals were distended with chyle, which presented the ordinary granular appearance of this fluid.

The thoracic duct was almost empty, the fluid which it contained consisted of granular matter similar to that of the lacteals, and also some chyle globules, which were of the usual character. Different parts of the sympathetic nerve were examined, but they presented nothing unusual in their appearance.

The left kidney contained a calculus of considerable size, which, on examination, was found to consist solely of phosphate of lime.

Female organs healthy.

Sections of the bones.—The bones of the skull were not thickened, they were very vascular and soft, though by no means so much so as in the first case; they contained, in small quantity, the same kind of red substance which was observed in the former case. Their sections exhibited a similar open, reticulated texture as that in the skull in the first patient.

A section of the radius exhibited very beautifully the progress of this disease; at both extremities there was merely an unnatural degree of vascularity, though the vessels forming it were not very red. The head of the bone was more injected than the lower end of it; at the lower part of the upper third, the cancellated structure had been partially absorbed, and its place occupied by the red grumous matter. So little of the earthy matter had been removed, that the bone retained nearly all its natural firmness.

Sections.—The *Sternum.*—Externally this bone did not seem much altered in firmness: it was not at all altered in form, but internally the disease had advanced rapidly; absorption of the earthy matter having taken place in patches, and the red substance occupied its place. The appearance it exhibited has been very beautifully represented by Mr. Kearney.*

Ribs.—It was evident from the external form of these bones, that they were extensively diseased;

* See Plate VII.

only one was divided, which was interesting from its showing the disease in various stages of development.

Spine.—The same appearance in these bones as in the rest.

Thigh bones.—The right one alone was divided, and in this the disease had made such progress in the centre of it, that the whole of the osseous matter had been removed, and nothing but periosteum and membranous matter left; while at the upper part of the lower third of the bone the red matter was abundant, exhibiting various hues, from a deep Modena red to a bright scarlet crimson, the osseous laminated shell remaining, but almost as thin as a wafer; then towards the condyles a portion of the bone was nearly of its natural colour, only yellower and softer, from an abundance of fatty deposit. The extremity of the bone, to the extent of about one-third of an inch, was of a bright red colour, contrasting beautifully with the clear healthy colour of the cartilage.* This redness was evidently the effect of inflammatory injection of the vessels. I represented it at the time, and shall be happy to show the drawing to any one interested in the subject.

A section of the head, neck, and upper third, exhibited to a certain extent the same appearance as a corresponding section in the case of Caroline

* See Plate VIII. fig. 2, *a*.

Stephens. There was, however, a difference of considerable interest in a pathological point of view, in illustration of the course of the disease.

The cells which contained the red matter were distinct throughout the section, but in some of them this matter had become entirely absorbed; a transparent serum occupied its place. The head of the bone was completely hollow, and filled with serum; there were two other smaller cavities at the lower portion of this part of the bone, filled in the same manner.*

The red matter I examined carefully under the microscope, with my friend Mr. Birkett, of Guy's, who has drawn up the following report of his observations:—

"From the cellular spaces of the cranial bones a soft reddish gelatinous solid could be removed. It mingled readily with water, rendering the fluid turbid. In it I could see cells with nuclei of two kinds; the first round, and clearly exhibiting a nucleus and nucleolus; they were, however, few in number, and certainly could not be said to compose the mass of the solid, which apparently contained a delicate fibre of fatty matter. The second kind were very clear, their edge being remarkably distinct, and the clear *oval* outline enclosing *one* bright *central* nucleus, *rarely two, never more.* There was a tendency to elongate into the caudate cells, but this appearance was very rare. Many other cells of

* See Plate VIII. fig. 1.

irregular figure and shape, some with, others without, central nuclei, existed.

"Large cavities existed in the body of the vertebræ, filled with a dull, oily reddish matter, and which contained a great number of cells, having an irregular outline, and some a very distinct nucleus, rendered more distinct by dilute acetic acid. I could find no distinctly caudate cell, as in the cranial bones; and the identity of these cells with pus globules (for they appeared larger than pus globules commonly are), or the commonly called nucleated cells of malignant disease, was difficult to determine: in the femur I saw nothing but fat cells and blood discs."

"The red coloured matter in the bones," says Mr. G. Rainey, of St. Thomas's Hospital, who also examined it, "consists of a multitude of roundish bodies, about the size of the blood corpuscles, each of the bodies being filled with a minutely granular substance. Besides these bodies, it contained also fat globules, but no regular fat vesicles, and it appeared to be wholly destitute of any fibrous or cellular structure."

Mr. Simon, of King's College, examined portions of the bones, and thus expressed himself in a note to me on this subject:—"My examination was not at all satisfactory as to the ultimate nature of the disease. There was great excess of the natural fatty matter, and disproportion of the medullary cells to the substance of the bone; in parts there was apparently extravasation of blood, which may have arisen from violence. I was unable to discover

any new cell formation, at least any mature one; cytoblasts were exceedingly plentiful, so as to suggest the probability that some such formation was in progress, but nothing further, with the exception of some two or three apparently detached young fat cells. Decidedly there was no show of growing cartilage."

I find that mollities ossium is not confined to the human species; for I have learnt from Mr. Spooner, the professor of anatomy at the Veterinary College, that a year or two ago they had some hounds there belonging to Lord Middleton, the bones of whose skeletons were softened, the disease attacking one bone after another. No medicines seemed to have any effect in controlling the disease. A *post-mortem* examination of the bones exhibited the same morbid appearance I have described as occurring in the human subject—the deposit of the red matter, and great vascularity of the cancellated and laminated structure of the bone. Mr. Spooner was not able to discover any cause for the disease.

It would appear from the following facts, for which I am indebted to Mr. Hodgson, of Birmingham, that the disease is sometimes confined to a single bone. I give the case in Mr. Hodgson's own words:—"The patient was about thirty years of age; the leg was much bent, the integuments much thickened and ulcerated, causing so much annoyance and injury to the general health, that it was thought right to amputate the limb: no other bones were affected. The tibia and fibula appeared to be formed

of a very loose cancellated structure, the external or lamellated structure being extremely thin and friable. The cancellated structure was filled with a soft red material, resembling that which is found in fœtal bones. I remember another case in which it was supposed that the same disease existed in the femur, and not in any other bone, of a man about fifty years of age. It had been in this state many years, and after it became so, it had once been fractured with very little violence. The bone was very much thickened and bent; it did not appear to be a case of necrosis; an instrument was contrived for this patient, by which the weight of that side was transferred to the leg from the pelvis, so as to protect the femur from pressure, and with this contrivance the man was able to walk and follow his employment."

With regard to the causes of this disease, it appears to me that we are at present quite in the dark. Nor can it be pretended that the two cases now brought before the Society throw any light upon the subject. Mons. Kilian asserts that the most common exciting cause is violent cold, produced by getting wet through, especially during menstruation, or the presence of the lochia; he also enumerates sudden fright, grief, misery, and poverty. The most severe cases, he says, occurred in women confined in damp prisons. He considers that genuine *osteo malacia* is confined to females, and the cases on record of the disease in the male are only *similar*, not *identical*; he says it never appears earlier than

puberty; is distinguished from rickets in its seat; its peculiar seat is in the bones of the pelvis; that it commences there, and spreads from that point. On the contrary, rickets commence in the bones of the head. He always found it begin with violent pains in the loins, and on the whole posterior surface of the pelvis. The pains are like those of rheumatism or gout; and although it is not a disease of infancy or childhood, neither is it confined to adolescence or the middle periods of life.

Mr. Curling has related a case occurring in a woman seventy-one years of age; and Otto, the famous pathologist of Breslau, states that there is a preparation of the disease in the Anatomical Museum of Bonn, the subject of which was eighty years of age at the time of her death.

Neither is it confined to the profligate or dissolute, for we find it occurring, as in both the cases just related, in females of irreproachable character, so that we cannot consider the poison of syphilis as an agent in its production.

Mons. Sailliant, in a case which he brought before the Faculty of Physic in Paris, in 1792, calls the disease Medullary Gout. Indeed, rheumatism has frequently been considered as giving rise to it, and there are more grounds for this supposition than perhaps any other hypothesis which has been advanced.

All the cases have been accompanied with severe pains in the limbs, and many of them preceded by severe rheumatic attacks.

I am, however, more inclined to the belief that though, in its acute stage, the symptoms which it exhibits are similar to rheumatism, that they are not the result of the same pathological condition. Meischer,* whose admirable work on healthy and diseased bones is well known, considers it established that the earthy parts of the bone after being absorbed, are excreted with the urine, in which they deposit a white sediment,—cretaceous—and soluble in acids. This, he thinks, is dependent on an acid diathesis, as exhibited in acid eructations, vomiting, and sweats, by which acid the neutral salts of the bone are commuted.

In many of the cases there would appear to be some connection between this disease and scurvy.

In the case related by Mr. Gooch and Dr. Pringle to the Royal Society in 1753, we read, " that the winter after the patient broke her leg, she had symptoms of scurvy, and bled much at the gums." In the case of Madame Supiot, the gums swelled much, and were separated from the teeth, allowing them to fall out.

In the case of Sarah Newbury, the last which came under my notice, there was no bleeding of the gums, but the teeth became loose in consequence of the softening of the maxillæ. I think it is not improbable, that what have been considered symptoms of scurvy, have arisen from the same cause. Mr. Thompson attributed mollities ossium to the venereal

* De Inflammatione ossium eorumque anatome generali. Frid. Meischer. Berolini. 1836. p. 79.

disease, and administered mercury for it, but without any benefit.

I feel that I should be trespassing too long on the valuable time of the Society, if I entered more fully into the opinions of others on this subject. I will therefore merely state that after a careful consideration of all the facts, but especially by comparing the appearances after death, with the symptoms during life of this awful disease, I am led to believe that it is of an inflammatory character. That it commences with a morbid action of the blood-vessels, which gives rise to that severe pain in the limbs, invariably attendant on this disease, but more especially in its commencement, and exhibits itself after death by an arterial redness of the part. The absorbent vessels are at the same time unnaturally excited, and the earthy matter of the bone is absorbed and thrown out by the kidneys in the urine, which excretion is sometimes so abundant, as we have seen in the last case, that it clogs up the calices and pelvis of the kidney, and forms there a solid calculus.

The important fact of the excretion of the phosphate of lime had not been previously established. Earthy deposits in the urine have been almost always observed in these cases, but their chemical character has never before been minutely stated. The place of the phosphate of lime in the bones is supplied by that morbid secretion of red grumous matter which has been so universally found in this disease, and which was so abundant in both the

cases just related. The microscopic examination of this matter, showing cell development in its various stages, confirms my impression that it is an adventitious morbid product, and not simply the fatty matter of the bone altered by the effusion of blood into it.

I think that the enormous hypertrophy of the bones of the skull in the first case I have related, as also in that of Madame Supiot, demonstrates that it is an active disease, and not a mere atrophy. Indeed, the inordinate vascularity of the bones of the skull, though unaccompanied by increase of thickness, in the second case, proves nearly as much; and I have no doubt, if this patient had not died so suddenly, but had survived another twelve months, that a similar thickening of the skull would have taken place. It is interesting, in relation to the pathology of the brain, to observe the effect of this disease of its solid covering in the person of Stephens. I allude to the derangement of intellect. Whereas in the latter instance the mind remained perfect to the last, where the skull was not altered in its dimensions.

In these cases, as in all others which are minutely recorded, the patient suffers when the disease is in an incipient stage, not merely from severe pains in the limbs, but also from general want of power; and this debility is not the consequence of the bones having given way, and therefore being no longer physically capable of performing their office, as levers for locomotion, but we must regard it as one of those beautiful instances of that warning

sympathy which takes place between organs anatomically distinct, but physiologically united. Disease has invaded the bones, their structure is becoming gradually altered, but long before the solid matter has been removed, the muscles tremble in the performance of their duty, and the patient feels that his limbs are becoming weak and powerless, and is afraid to walk, lest he should fall and injure himself.

In reference to the treatment of this awful malady, I have very little, from personal experience, to offer to the notice of the Society, as in the first case the patient was never under my care—and in the last, only for a few days immediately preceding her death. The most interesting and complete case as regards treatment of the disease during life, is detailed by Mr. Howship, in the second volume of the Edinburgh Medico-Chirurgical Transactions for 1826. In this, the disease lasted nearly six years, but during its progress the patient was so much benefitted by sea air and sea bathing, that Mr. Howship says—"I feel convinced that had the patient remained twelve or eighteen months at the sea side, she would have returned home perfectly cured." Mons. Kilian states that he has never succeeded in curing the disease, but he has seen cases recover when the patients have been removed to dry dwellings, and have had good nourishing food. From these details I should not hesitate to pursue, if it were possible, a similar plan of treatment.

Fig: 1.

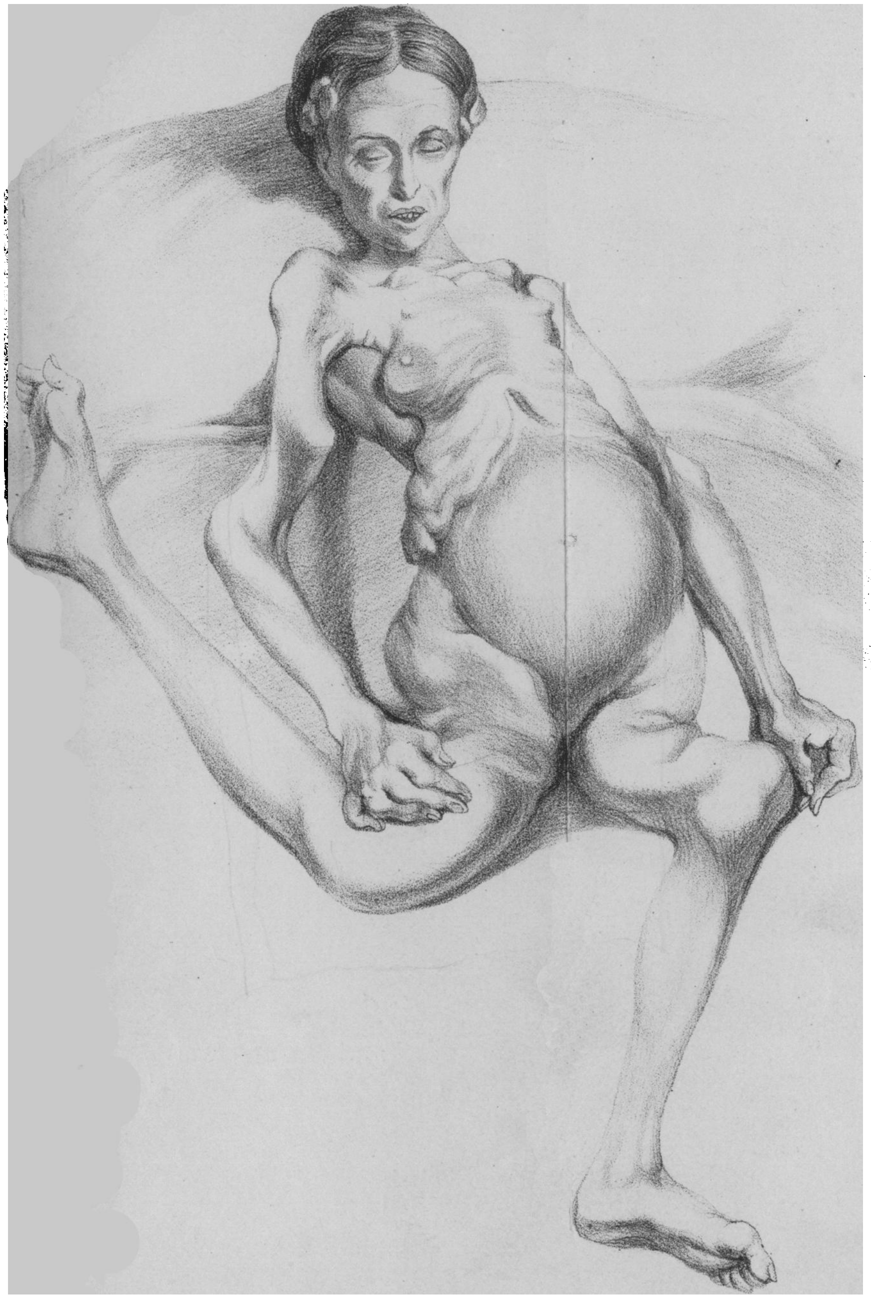
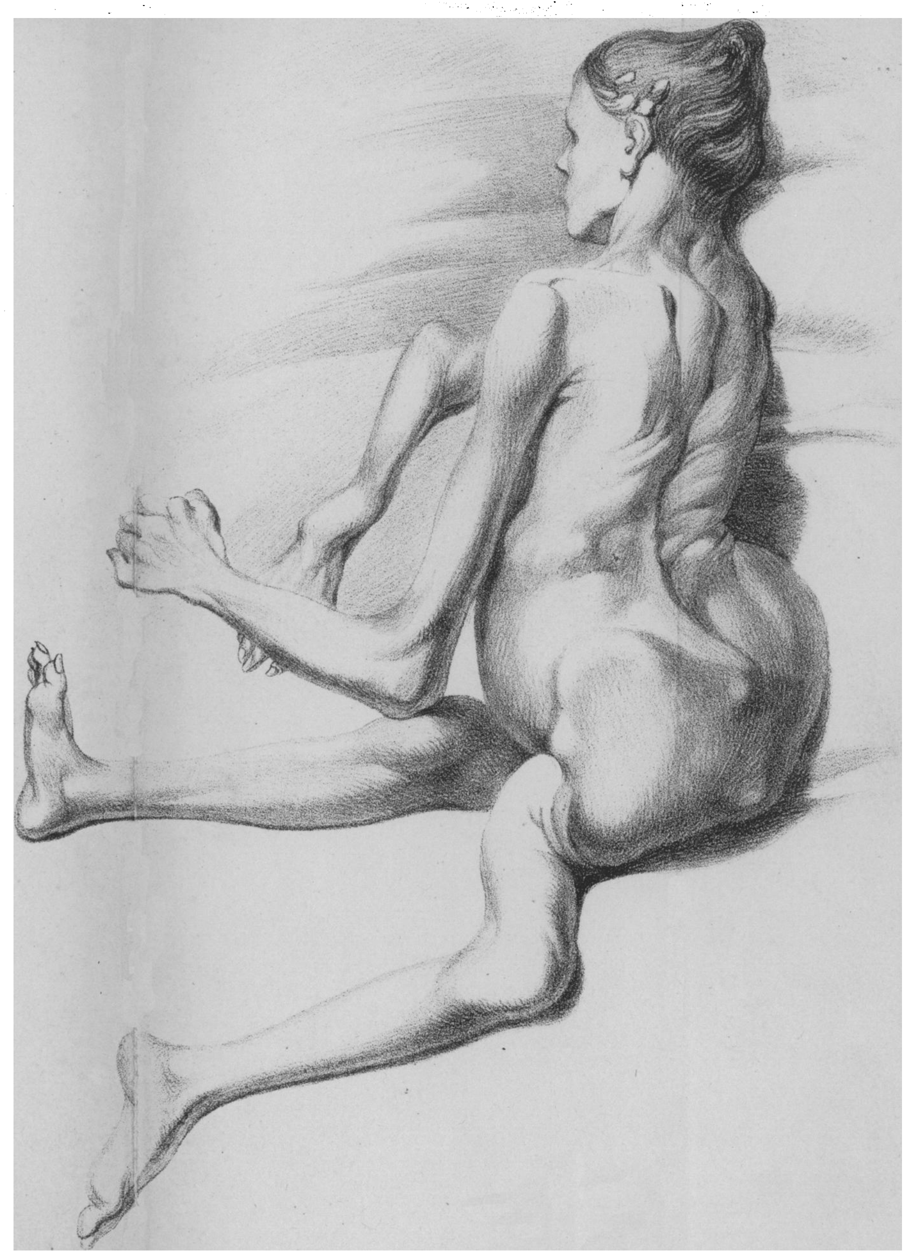


Fig: 2.



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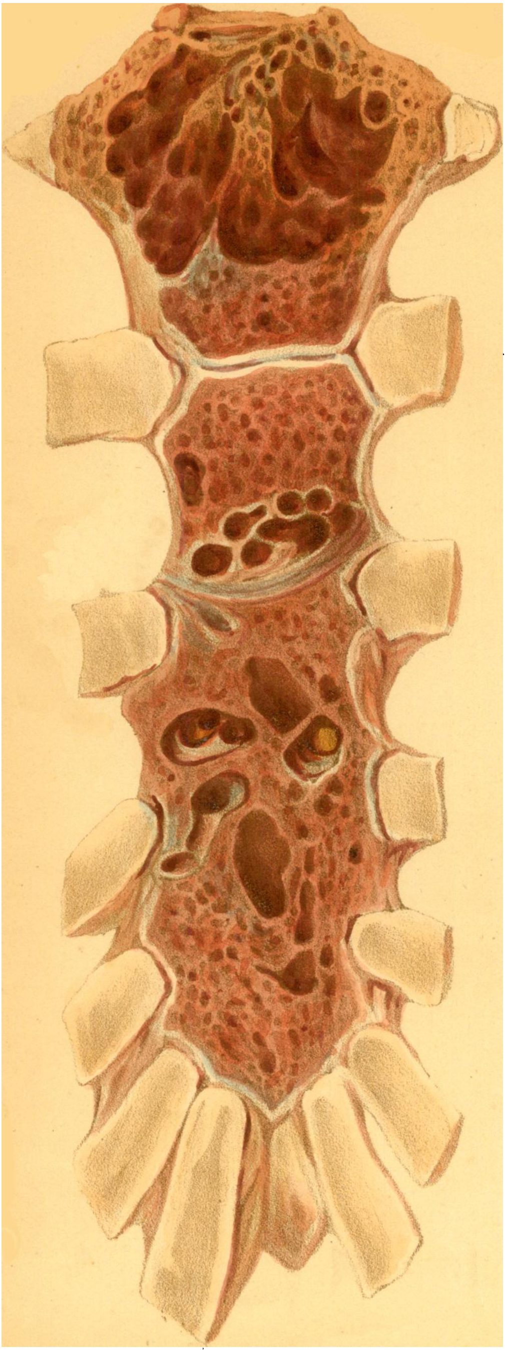

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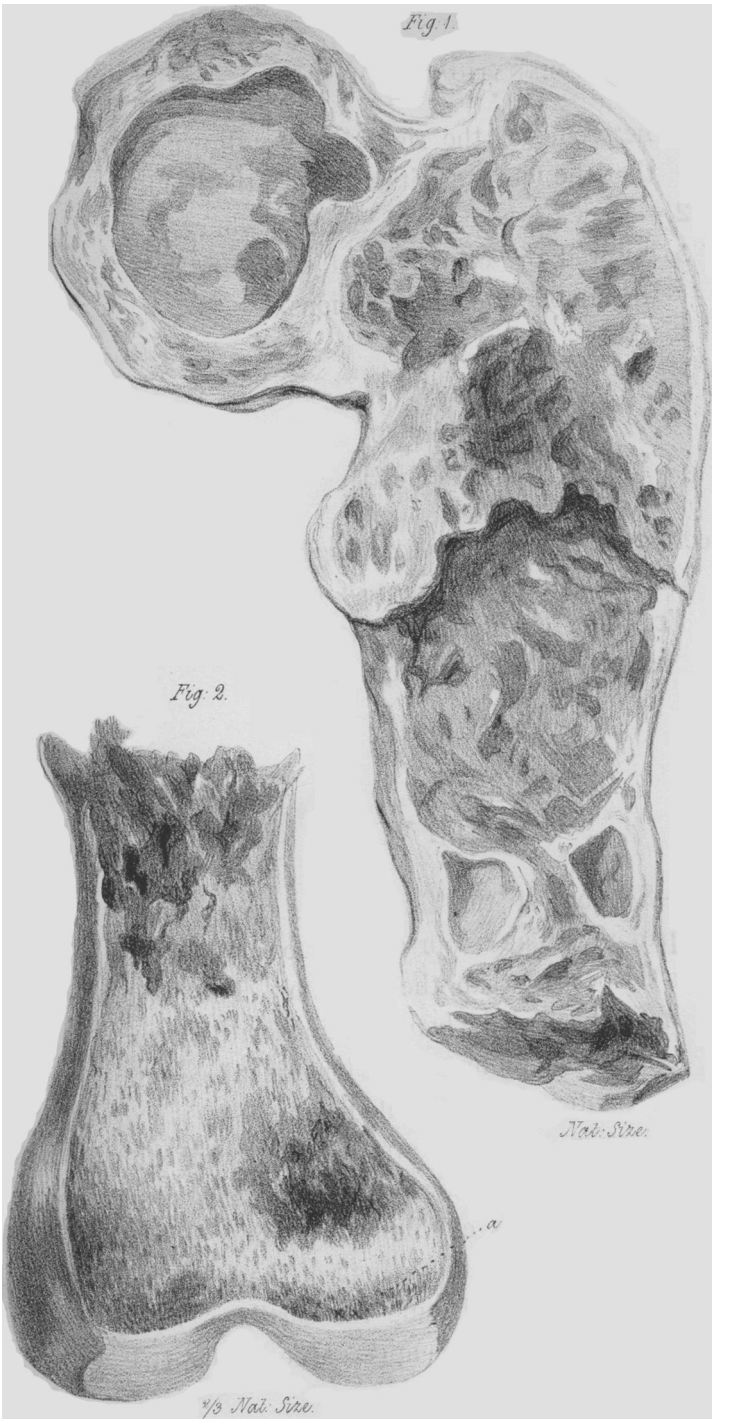

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