J. G., aged 18, was admitted into the infirmary on August 23rd, 1878, with an ununited fracture of the left thigh. The following particulars were obtained from him. At the age of twelve, he broke his right thigh, and some years afterwards the fracture was repeated; in both instances uniting in the normal time. Both forearms had been broken, each three times, but he was unable to remember at what date. When very young, he broke his left thigh, which united and remained so till three years ago, when it was again broken, and this time did not unite till the expiration of a year. In a few months subsequently, it loosened again, but reunited shortly afterwards. Six months ago, it again broke, and it had remained ununited till his admission. Beyond this, he had never had any illness of importance. He had two sisters and two brothers; of the latter, one broke his arm and leg at the same time from a severe machinery accident. His father broke his thigh once. His grandfather broke his thigh several times, and was a cripple through the frequency of the fractures; he is said to have died from cancer.

The boy was somewhat stout, but flabby, pale, and very dull in intellect. There had been a fracture of the right thigh, which was firmly united. There was no evidence of fracture in the upper extremities. In the left femur, there had been a fracture a little above the middle; the fragments overlapped one another; no movement could be obtained between them, but the attempt gave rise to great pain; as far as could be made out, there was no bony union. As there was great wasting of the muscles of that limb, galvanism was resorted to, from which he seemed much improved, and was sent to a convalescent home.

On September 2nd, 1879, he was readmitted to the infirmary, with the left thigh again broken, and, so far as could be made out, in the same place. He stated that, while at the home, he was obliged to use crutches, but could put his foot to the ground. He was treated with long splint, weight-extension, and a gum and chalk bandage over the seat of fracture. He was discharged with the fractured bone quite firm.

R. G., aged 17, cousin to the above, was admitted on August 2nd, 1879, with fracture of the left femur. He stated that, ten years ago, he broke his left thigh; six years ago, his forearm (probably Colles's fracture); and three years ago, his forearm, about the middle. He had three brothers; two of these had had four fractures each, the other had had eight. His only living sister had been exempt from any. He had four other sisters, one of whom had three fractures. His father had had two fractures. Most of these occurred from slight accidents. The patient himself had enlarged submaxillary glands, but otherwise seemed quite healthy. The fracture united firmly.

In this family, the grandfather was an invalid from numerous fractures. He had three sons: one had one fracture; and of his children, one had thirteen and another two. His next son had two fractures; and of his children, one had four, another four, another eight, another four, and one that died three. The third son and two daughters had no fractures, nor had their descendants, as far as could be made out.

This case shows an hereditary tendency more decidedly than any case I have been able to find, and also very strikingly the early age at which it commences, the eldest in the latter case being only seventeen. Several other cases of fragilitas ossium are on record: thus Holmes, in his *System of Surgery*, quotes from Gibson (*Institute of Surgery*, vol. i) a youth of nineteen who had twenty-four fractures; and from Esquirol (*Practical Treatise on Fractures*) another with as many as two hundred. Earle (*St. Bartholomew's Hospital Reports*) records a case of eight fractures in a child of ten years; and Fleming (*Edinburgh Medical Journal*, vol. viii) fifty-three between the age of one and a half years and twenty-four. In all of these cases, union took place rapidly. Stanley (*Diseases of Bones*), however, quotes a case of five fractures, with subsequent yielding of callus, and the patient had to be discharged incurable. Savory also mentions a case in which yielding of the callus took place. In all of these cases, only one member of the family was subject to the disease in question; but there are a few on record in which it seems to have been hereditary. Thus Arnott (*Medical Gazette*, June 1833) mentions a case of a child, fourteen years old, who had thirty-one fractures; and her sister, six years old, with nine. Jones of Louisiana (*BRITISH MEDICAL JOURNAL*, January 1870) records a case of a mulatto that had fifty fractures, with a cousin affected in the same way; and Stanley (*Diseases of Bones*) quotes Dr. Pauli of Leipzig, with a case that ran through three generations, but no particulars are given.

This disease seems to be quite apart from the more malignant one generally termed "mollities ossium"; for, while the latter occurs almost without exception after puberty, the former has in nearly every instance begun before that age, and often very early in life. In mollities ossium, too, the fracture rarely united; while, in fragilitas ossium, non-union is the exception—in fact (as Holmes has pointed out) it very often occurs more readily than is normal. Another form of tendency to fracture has been shown to occur in asylums; but here there has been a marked

wasting of the bone tissue, and union is very rare. As regards the case I have given, there was no cause for the predisposition that I could find. Fractures were common in the Huddersfield district: thus, in twelve months, there were one hundred and thirty-three fractures attended at the infirmary, against fourteen dislocations, or 9.5 to 1.

AN ACCOUNT OF THE MICROSCOPICAL APPEARANCES IN A CASE OF ATHETOSIS.

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SOME excellent microscopical drawings of the affected parts of the brain in the third case described in my recent paper (June 12th, p. 884), were made for me by my friend Mr. Marsh, of the Lincoln County Asylum. On examining them with No. 7 Hartnack, the chief changes noticed were, 1, great increase in the number of vessels; 2, distension of many of these vessels; 3, extensive infiltration of the tissue with leucocytes, especially in the perivascular sheaths of the vessels.

These changes were seen especially in the grey matter of the right inferior parietal lobule and first temporo-sphenoidal convolution. Examination of this part showed great infiltration of the white and especially the grey matter with leucocytes. The perivascular sheaths of all the vessels presented these bodies, which in some places formed a single layer, in others many layers, being in such quantity as to compress the vessel they surrounded. Generally they were rounded, but, where subjected to pressure, they assumed an oval or angular appearance. In several places, the vessels were much distended, and their sheaths filled with leucocytes, while further on the walls were absolutely crammed with these bodies, exerting pressure on the vessel, and reducing its lumen considerably. In two places, the leucocytes had escaped into the surrounding tissue. Here and there they were collected into dense masses, forming so-called "miliary abscesses". Very often the leucocytes were in such numbers as to entirely obscure the vessel, so that its course and distribution could only be seen by the direction taken by them. Many of the vessels contained clot, and in a few cases mixed with it were rounded bodies, which stained with carmine, showing their recent character. In some of the vessels, the blood-corpuscles had undergone a granular change, and in two specimens the clot appeared dark in the centre, the surrounding portions shading off gradually. In one vessel, the clot presented curved pressure-lines, with their long axes across the vessel, described by Dr. Gowers as being due to exposure to pressure by the blood-current. Many of the vessels were surrounded by spaces. The nerve-cells generally were unaltered. The grey matter of the left inferior parietal lobule and first temporo-sphenoidal convolution, and that of the left occipital convolution, showed excess of leucocytes, but no great excess of vessels. A few of these presented perivascular sheaths filled with leucocytes. In order to be certain as to the amount of change present, these sections were examined side by side with some from a man killed by an accident. The appearances described are very similar to those present in the medulla from a case of hydrophobia, exhibited a few years ago by Dr. Gowers at the Pathological Society. That the changes should be most marked in the right side of the brain, is no more than might be expected from the symptoms existing during the life of the patient.

EXPERIMENTS ON LIVING ANIMALS.—The report from the inspectors of the number of experiments performed on living animals during the year 1879 under licences granted under the Act 39 and 40 Vic., cap. 77, distinguishing painless from painful experiments, issued last week, shows that the total number of experiments performed under the licences and certificates was about 270. Dr. Busk says: "The number of experiments in which there is reason to believe that any material suffering was caused appears, from the statements received from the operators themselves, and from my own consideration of the nature and probable effects, as regards the production of pain, of the experiments under the certificates to have been about twenty-five. Of these, fifteen were cases in which disease followed the inoculation of infectious matter, but in which no painful operation was performed; and ten were experiments upon as many frogs, in which an incision of the skin was required for the introduction beneath it of a medical substance. In none of the other experiments under these certificates, as I am assured by the experimenters, was any appreciable suffering inflicted. As in all other experiments except those done under the above certificates, the whole proceeding is conducted whilst the animal is in an unconscious condition; no pain is inflicted if the provisions of the Act are duly observed, and this there is no reason to suppose is not in all cases carefully attended to."