recovery of the muscle would have been a matter of at least many months.

I publish the case partly for its general interest, as showing vicarious muscular supply after nerve injuries, and partly for its special interest, as showing what may be expected in favourable cases in the way of recovery of function in cases of atrophy of the deltoid.

REFERENCES.

¹ Létéviant, *Traité des Sections Nerveuses*, Paris, 1873. ² *Ibid.* Phénomènes physiologiques et pathologiques consécutifs à la Section des Nerfs principaux du Bras, *Lyon Méd.*, No. 21-22, 1869. Virchow-Hirsch, *Jahresbericht*, 1869, Bd. 2, pp. 291, u. 321.

CASE OF ACUTE RACHITIC CURVATURE OF TIBIÆ BACKWARDS.

[WITH SPECIAL PLATE.]

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As regards the rachitic changes in the lower limbs, although the enlargements of the upper end of the tibia and the lower end of the femur occur next in order of frequency to the lower end of the former bone, we do not find the upper end of the tibia nearly so often bent as its lower extremity. While it is very rare to meet with such a condition as the present one of acute yielding of the bone directly backwards below the line of junction of its upper epiphysis, we sometimes find the upper end of the shaft projecting somewhat backwards and outwards at a point just below the tuberosities. Indeed among the numerous casts of rachitic deformities in the museum of the City Orthopædic Hospital there is no example which at all approaches it in severity.

The girl (E. G.), who was aged 17 years on admission, but looked no more than 12, had had somewhat severe rickets during infancy. Her father and mother were quite healthy, and her three brothers, residing in the United States of America, older than herself, had no affection of any kind. She did not attempt to walk until 2 years of age, and at the age of 3 it was noticed that her legs began to be crooked, and she was treated for rickets in a New York hospital. An apparatus was fitted to the spine, but no splints were applied to the legs, as she was told the condition of these would get better of itself in time. After her arrival in England her mother took her at the age of 8 to the Evelina Hospital for the bending inwards of the knees, but no splints were applied during the twelve months she attended there. The patient then came to this hospital under the care of my late colleague, Mr. E. J. Chance, who applied first of all straight wooden splints to the lower extremities, and then for the last three years steel mechanical appliances.

The patient then came under my charge, and it was clear that although the steel supports had effected much in correcting the valgus condition of the knees, they did not seem to have benefited the unusual curves of the legs which were now presented, and had up to this time been progressive. The bend at the upper end of each tibia was at the lower level of the tubercle, and presented an appearance not unlike dislocation of the knee. The rest of the bone in each limb appeared quite normal, with the exception that the lower end, like the other long bones of the limbs, was still a little bulky. The femora were much curved anteriorly, but the shafts of the bones of the upper limbs were quite normal. I therefore decided to perform osteotomy on the tibiæ at the point of curvature, which was done on the right side on July, 1897. The tibia and fibula were carefully and gradually divided—the former from within outwards, the latter from without inwards—with an Adams's saw, and their diaphyses forcibly bent backwards, bringing them into a straight line with their upper epiphyses. The limb was then placed on a double inclined plane, to maintain the bones in their normal relations, and prevent pressure on the tibial vessels. Firm consolidation took place in the flexed position, and in order to allow the new bone filling the gap in the divided diaphyses to become quite solid, the limb was kept in this position for two months. At the end of this time extension of the knee was commenced, and carried out gradually to its fullest extent, with an excellent result, as presented by the condition of the

patient when shown to the Hunterian Society in December, 1897.¹

The skiagraphs of the two limbs afforded an interesting comparison of the tibiæ before and after correction of the deformity by osteotomy. The epiphysal lines of the femora and tibiæ were seen to be unaltered from their normal direction. The bones of the left leg were subsequently divided in a similar manner, with an almost equal result. After the correction of the tibial curves the valgus position of the knees became more noticeable. To remedy this, as well as the anterior curvature of the femora, it is proposed to perform infracondyloid osteotomy of each femur.

UNILATERAL RETINAL CHANGES IN CEREBRAL HÆMORRHAGE, EMBOLISM, AND THROMBOSIS.*

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It is well known that in a large number of cases of cerebral hæmorrhage, ophthalmoscopic examination reveals albuminuric retinitis in each eye. It is also well known that in cases of cerebral embolism associated with ulcerative endocarditis, hæmorrhages and white patches may sometimes be found in each retina on ophthalmoscopic examination. Occasionally embolism of the central artery of the retina, with its characteristic ophthalmoscopic appearances, may be associated with cerebral embolism; but such an association is exceedingly rare. In patients suffering from arterio-sclerosis minute changes may be found in the retinal vessels—general or localised narrowing of the arteries, white lines along the sides of the arteries, localised narrowing of the veins, localised varicose dilatations, etc., and of course these may be present when cerebral hæmorrhage occurs. Other rarer retinal changes have occasionally been found in cerebral hæmorrhage and softening.

But apart from the changes just mentioned, I have observed two others in certain severe cases of cerebral hæmorrhage, embolism, and thrombosis, namely, retinal hæmorrhages or dilatation of the retinal vessels in the eye of the same side as the brain lesion, whilst the opposite retina has not presented either of these changes.

The following are brief abstracts of my notes on the ophthalmoscopic examination in 13 severe cases of cerebral hæmorrhage, embolism, or thrombosis. In 12 of the cases the examination was made shortly before death; in one case death did not occur for some time afterwards. The cases were all in-patients at the Manchester Royal Infirmary, and to the kindness of the medical staff I am indebted for permission to record the observations which I have made on patients under their care.

CASE I.—Right-sided hemiplegia. Necropsy: Cerebral hæmorrhage in basal ganglia of left side. Ophthalmoscopic examination during life revealed three large hæmorrhages close to optic disc on the side of brain lesion (left). See Fig. 1. In the opposite retina no hæmorrhages present.

CASE II.—Right-sided hemiplegia. Necropsy: Cerebral hæmorrhage in the basal ganglia of left side. Ophthalmoscopic examination revealed a large hæmorrhage covering a portion of the optic disc on the side of the brain lesion (left). See Fig. 2. The opposite retina presented no changes.

CASE III.—Left-sided hemiplegia. Necropsy: Cerebral hæmorrhage into right basal ganglia. Ophthalmoscopic examination revealed a large retinal hæmorrhage obscuring a portion of the optic disc on the side of the brain lesion (right). See Fig. 3. The opposite retina presented no hæmorrhages.

CASE IV.—Right-sided hemiplegia. Necropsy: Cerebral hæmorrhage into left basal ganglia. Ophthalmoscopic examination revealed several retinal hæmorrhages in the upper half of the retina on the same side as the brain lesion (left). The opposite retina presented no hæmorrhages.

CASE V.—Left-sided hemiplegia of sudden onset; coma; signs of granular kidney; albuminuric retinitis in both eyes; fatal termination no necropsy.

CASE VI.—Right-sided hemiplegia; fundi normal. Post-mortem examination revealed hæmorrhage into the left basal ganglia.

CASE VII.—Right-sided hemiplegia; no retinal hæmorrhage or other changes. Post-mortem examination revealed hæmorrhage into the left basal ganglia.

CASE VIII.—Right-sided hemiplegia; albuminuric retinitis in each eye. Post-mortem examination revealed cerebral hæmorrhage into the left basal ganglia.

¹ BRITISH MEDICAL JOURNAL, December 25th, 1897, p. 1859.

* Communicated at a meeting of the Manchester Medical Society.