four apart from pregnancy. In most of the cases it is described as being accompanied with a copious discharge; and in some this is said to have been gonorrhœal. Breisky¹⁰ justifies the inclusion of this disease among inflammatory affections, on the ground of the invariable accompaniments of swelling and hypersecretion. On the other hand, in the opinion of Dr. Matthews Duncan, the disease is "probably not an inflammation."¹¹ In Gervis's case every sign of inflammation is described as absent. In my own there was certainly not gonorrhœa. In some cases the vesicles were present over the whole vagina and cervix uteri, in some limited to the upper part of the vagina, in one limited to the cervix uteri. They are described by Dr. Duncan as purplish, by Braun as pale-yellow, by others as steel-grey or blackish. The last mentioned description best applies to my case, and it is the colour shown in Chénevère's excellent plate. In some cases the vesicles contained gas only, no fluid at all, as in Gervis's, Nücke's, and my own. In Braun's case they contained pus. The little pop with which the vesicles burst is quite characteristic and peculiar. In some cases the cysts have been found to have an epithelial lining, in others not. Dr. Matthews Duncan¹² says that "the gas is displaceable, and gives an emphysematous feeling." It was not so in my case, nor in Gervis's, and in some of the other cases the descriptions given do not convey to me this idea.

As to its pathology, it appears to me that Schroeder's view is probably correct—viz., that it results from decomposition of secretion retained in vaginal follicles. Granular vaginitis, in which the vagina is studded with papules, which there is good reason to think are inflamed follicles, is not very uncommon. In these cases there is no accumulation of fluid large enough to give the impression of a cyst. But, exceptionally, such follicles may suppurate. I have published a case¹³ in which the vagina contained pustules as well as papules. In Braun's case the vesicles contained pus as well as gas. Exceptionally also the secretion of the follicle may decompose and produce gas; and the next stage, I imagine, is the rupture of the follicle and escape of the gas, and restoration to the normal condition. The presence of the gas cysts seems to be only a temporary condition. In some cases they disappeared after delivery, possibly being, as Zweifel suggests, squashed by the passage of the child's head. In others, as in Gervis's and mine, they were pricked, and returned no more. But from this point of view Chénevère's case is the most important, showing as it does spontaneous decline, recrudescence, and finally disappearance of the morbid condition. If Chénevère's case be taken as showing the natural history of the disease (and we have no other observed for so long), it can hardly be placed among new growths; we must regard it as an inflammatory affection. The name given to the disease by Winckel, "colpo-hyperplasia cystica," is a very long one, and does not distinguish gas cysts from cysts of other kinds. I do not think the term "emphysematous vaginitis" is a happy one, for I agree with Dr. Gervis that the morbid change does not represent any form of subcutaneous emphysema; but I cannot suggest a better.

Harley-street, W.

ON DEPARTURE FROM THE NORMAL LENGTH OF BONES FOLLOWING INJURIES AND DISEASES OF THE EPIPHYSIAL LINE.

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THE conditions met with are necessarily shortening and elongation; but that any alteration in the length of bone is inevitable many recorded instances abundantly disprove.

Shortening.—It is foreign to the purpose of this article to review the stages in the pathological processes by which asymmetry in length of bone is produced. A consideration, however, of the ultimate results prompts me to the conclusion that the cases may be aptly arranged in two categories—those of partial, and those of complete shortening.

Under the term "partial" I would group those instances of shortened bones in which the exciting cause, generally of an inflammatory nature, is of such limited intensity and duration as to interfere with the normal rate of growth for a time only. When the cause is entirely removed, the epiphysial lines resume their normal activity. A further factor, difficult of estimation in its effects, is the functional inactivity of the limb while it is idle, during the progress and regress of the lesion. In striking contrast to this partial shortening stands that condition of "complete" shortening due to injuries and diseases of the epiphysial line which arrests entirely its growing power, and leaves the limb inordinately stunted and dwarfed; graphically expressed by a patient when he stated that his "arm never afterwards grew anything." The more common causes are, traumatic separation of the epiphyses without complications, traumatic separation attended by suppuration and necrosis, acute inflammatory processes in the neighbourhood of the epiphysial line; lastly, operations on the ends of young bones, especially excisions.

Shortening following traumatic separation of the epiphyses without complications.—Mr. Hutchinson, writing on this subject, remarks, "No bone shows more arrest of development and atrophy after injury to the epiphysial line than does the humerus, especially if its upper epiphysis is affected." On account of the want of determination of the rate of growth of bones at various ages, it is difficult in view of the definition of "partial" shortening given above to state precisely its exact limits, but I certainly think that in the case of the humerus the disparity should not exceed one inch to one inch and a half. The following two cases recorded by Hamilton are instances of partial shortening. J. S—, aged sixteen, fell down a flight of steps, striking his back and arm near the shoulder, causing a separation of the upper epiphysis of the humerus. At first it was thought that dislocation of the shoulder had occurred, but Hamilton was able to disprove this. Nine weeks afterwards good union had occurred, and there was shortening of one inch.¹ A. F—, aged twelve, fell from a tree, striking her left shoulder, causing diastasis of the upper epiphysis of the humerus. After several months, motion was almost perfect, but the humerus was found to be shortened half an inch.² More striking are the instances of complete shortening. Mr. Bryant³ gives this account of a case, the chief details of which are as follows:—A. D—, aged thirty, received an injury from a fall on the right shoulder when a few months old, but of the exact nature of the injury there was no distinct evidence. The accident was not followed by any suppuration or exfoliation of bone, but by stiffness of the joint and arrest of growth of the right arm. When seen, the right humerus was five inches shorter than its fellow. Dr. P. Vogt⁴ writes of a young man, aged twenty, whose left humerus was shortened about five inches in consequence of a displacement of the upper epiphysis of the humerus when ten years old. From that time the upper arm entirely ceased to grow in length. In the forty-fifth volume of the *Medical and Chirurgical Transactions*, Sir George Humphry notes the case of a woman, aged seventy whose right upper limb had been paralysed since infancy. She had been told it was natural at birth, but had been injured at the shoulder when she was six months old. Movements of the arm were much impaired, and the right humerus was three inches shorter than the left. Another instance of a young lady, aged twenty-five, came under the writer's observation. The right humerus was three inches and a half shorter than the left. The nurse lifted her up by the right hand when three years old, and something was heard to give way at the shoulder. The injury was diagnosed at the time as diastasis of the upper epiphysis of the humerus. In the case of parallel bones, a shortening of one inch or less is attended with serious deformity, especially in the forearm. Mr. Hutchinson has recorded two cases of separation of the lower radial epiphysis, in which the growth of the bone had been arrested while the ulna had continued its normal increase, in one case projecting three-quarters of an inch below the radius, and in another an inch and a half, with great abduction of the hand. In the *Illustrated Medical News* of Nov. 17th, 1888, Mr. Hutchinson figures a case of extreme adduction of the hand due to dwarfing of the ulna, following an injury to the carpal extremity of the ulna in boyhood. I have not been able to find a case of stunted growth of either

¹⁰ Billroth und Lücke, *Deutsche Chir.*

¹¹ *Clinical Lectures*, fourth edition, p. 181.

¹² *Obstetrical Journal*, July, 1879, p. 219.

¹ Hamilton: *Fractures and Dislocations*, p. 231.

² *New York Medical Journal*, 1875, vol. xxi., p. 139.

³ *Guy's Hospital Reports*, 1862, p. 253.

⁴ *Archiv für Klin. Chir.*, Band. xx.

tibia or fibula following diastasis. In other positions where separation occurs, complete shortening appears not to be met with. There are many doubtful cases of diastasis of the upper end of the femur, in one of which the shortening is stated to have been one inch and a half. At the lower end of the femur this particular injury was in no case followed by more than an inch and a half; and in the majority, on careful measurement, both limbs were found equal some weeks afterwards.

Traumatic separation of the epiphyses with suppuration and necrosis.—Professor Sir George Humphry records an instance of "partial" shortening in the Medical and Chirurgical Transactions, vol. xlv., p. 291. "A boy aged three years was injured at the upper epiphysis of the right humerus by his father lifting him up to kiss him. Suppuration slowly followed. The abscess burst and healed spontaneously in about a year, leaving a deeply indented cicatrix. The movements of the joint were recovered, and the lad had free use of the limb, but the right humerus is much shorter than the left. He is now nine years old, and the difference between the two arms is still one inch, showing that although the growth was impeded during the progress of the disease, yet it had proceeded as well as in the opposite limb since the wound had healed." This case illustrates extremely well the class of injury included in the term "partial shortening." Instances of complete shortening are happily rare. Mr. Birkett notes the following instance in the Guy's Hospital Reports, 1862, p. 252, of a woman aged twenty-five, whose right humerus measured seven inches and the left thirteen. About two inches below the right acromion process there was a single slight depression with a cicatrix of the skin. No bone had been removed, nor had any fragments been exfoliated. Unfortunately in this extreme case of six inches of shortening there is some doubt as to whether a separation of the epiphysis had occurred. In the *Brit. Med. Jour.*, 1885, vol. ii., p. 700, Mr. Hutchinson speaks of a boy aged sixteen who, when eighteen months old, received an injury to the upper part of the left arm. "Now the difference in length between the left and right humeri is four inches." There is also arrest of growth of the scapula and clavicle on the same side. One other instance, Shearer's case in the *Brit. Med. Jour.*, 1885, vol. ii., p. 780, is that of a weaver aged fifty-three, whose right humerus was four inches shorter than the left. At the age of two he had a fracture in the joint of the right humerus. This was, according to tradition, not properly set and the arm "never afterwards grew anything." Suppuration followed the injury, but there is no history of any segment of bone being detached. A prominence could be felt on the bone beneath the lower fibres of the deltoid, and Shearer thought it was hardly improbable that it was due to any marked displacement of the fragments. It is well known that in diastasis of the ends of the bones sometimes a sleeve of periosteum is torn off the shaft, and remains attached to the epiphysis. If the nature of the injury be not promptly recognised, and as promptly and efficiently treated, lamentable results on the growth of the limb are but too likely to occur.

Shortening after acute inflammation in the neighbourhood of the epiphysal line, such as acute epiphysitis, and acute necrosis of the ends of the shaft.—Sir G. Humphry has collected several instances in his article on the subject in the forty-fifth volume of the Medical and Chirurgical Transactions. One, a lad aged fifteen, had shortening to the extent of three inches and a half of the right femur after some injury to the lower end, attended with exfoliation of bone. Another, a man aged fifty, had shortening of three inches of the right leg, due to disease of the upper part of the tibia, followed by exfoliation of bone. The femur was an inch and the tibia two inches less in length than their fellows. A third case by the same author showed seven inches and nine lines deficiency in length of the right leg, due to disease of the upper end of the right tibia when six years old. Mr. Howard Marsh, in his work on "Diseases of the Bones and Joints," narrates the case of a young woman, aged twenty, who had suffered from acute arthritis of the shoulder-joint when an infant, and the humerus was now five inches shorter than the other, and another of a girl aged nine, whose left leg was three inches shorter than the right, due to acute arthritis of the ankle when four months old. Cases of acute arthritis are now generally accepted to be really acute epiphysitis. Further cases in point might be multiplied, but the evidence of grave deformity following inflammatory lesions of the growing lines is so convincing that it is unnecessary to mention them.

Shortening following operations on the ends of the bones, especially excision.—Sir G. Humphry, summing up the results from an analysis of eighteen cases of excision of the knee, found that in eight the growth of the limb operated on had maintained its proper rate, although in one of them two inches and a half of bone were removed. In the remaining ten cases the growth of the bone was more or less completely arrested. In six of these the epiphysal lines were probably interfered with or cut away in all. In contrast with the favourable results in eight of Sir G. Humphry's cases, Mr. H. Smith cites an instance of a boy who, six years before the date of his communication to the *Medical Times and Gazette* (1861, vol. ii., p. 11), underwent an excision of the knee. At the time of operation an inch and three quarters of bone were removed, and shortly afterwards the limb was two inches and a quarter shorter, and six years later growth had been arrested to the extent of five inches. Elongation merits, I think, discussion in another article.

Finsbury-circus, E.C.

ON THE TREATMENT OF SYPHILIS, ESPECIALLY OF THE NERVOUS SYSTEM, BY THE SUB- CUTANEOUS INJECTION OF PER- CHLORIDE OF MERCURY.

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It is often so important to bring a patient rapidly under the influence of mercury, especially if he is suffering from syphilis of the nervous system—for irreparable damage may quickly be done to it,—that I thought the result of the use of several hundred subcutaneous injections of perchloride of mercury might be advantageously placed on record. Calomel baths and mercurial inunctions are rapid in their effect, but subcutaneous injection is much less trouble, an exact dose can be much more easily attained, and the patient is affected even more quickly, that, unless there are strong disadvantages, it seems, *a priori*, to be the best method of giving mercury for syphilis. It is of course impossible absolutely to prove this, because cases of syphilis differ greatly in their response to remedies. It has always been urged against this manner of giving mercury that it produces hard painful swellings which are liable to suppurate, and for this reason the method is rarely used; but by giving the injections in the way about to be described I have always succeeded in avoiding these complications. I am indebted to Dr. MacCall Anderson's "Specific Nervous Diseases" for it.

The part selected for the injection is preferably the gluteal region, and if the patient is liable to bedsores, rather to its outer and upper part, for then he will not lie on the spot at which the injection has been made. If this region should be, from sores or any other reason, unavailable, or if many injections have been made into both gluteal regions, the outer and front part of the thighs and the biceps of the arm are suitable places. The needle of the injection syringe is plunged deeply into the muscles, and an eighth of a grain of hydrochlorate of morphine is injected. The syringe is then detached from the needle, which is left in the muscles, and an eighth of a grain of perchloride of mercury is injected through the needle. The solution of perchloride of mercury is made by dissolving the salt in distilled water. The strength of the solution used may conveniently be a grain to the fluid drachm; then eight minims contain fully an eighth of a grain. I have repeatedly asked the patients if they object to this method of treatment, and none of them have done so. They say the injection is not very painful, and they do not mind the slight induration which occasionally results, and which passes off in a few days. Generally there is no induration, but if there should be, the site of injection must be shifted. I have always given one injection every evening, and have desisted for a few days whenever the patient has shown any signs of salivation. At first, before and after giving the injection, I used to apply a piece of ice to diminish the sensibility of the part, as recommended by Dr. MacCall Anderson; but I soon gave this up, as I found it unnecessary. My house-physicians—Messrs. J. P. Pendlebury, J. M. Gil, M.B., and J. Fawcett, M.B.—