

fever or any acute disease ; or by the absence of nervous power or influence : thus a case is recorded where a patient had a fracture of the arm and leg, and also an injury to the back inducing paraplegia, the arm readily united, but no union of the bones of the leg took place. Pregnancy and lactation are also recorded as exciting or predisposing causes of non union. Of course there are innumerable grades of "non-union," in very many the want of complete repair is very slight, and it is difficult to find out that it exists at all, except by the feelings of the patient, who refers mostly to weakness or want of confidence, at other times a very limited extent of motion is observable by a careful examination of the parts. Now it is particularly in cases of this character where the insertion of a seton becomes of great utility ; in fact, very few cases are recorded where perfect union has not attended this simple operation. It is by no means of a formidable character, a scalpel and strong packing needle are the only instruments required, and usually the transit of the needle armed with a good sized skein of cotton or silk thread is performed without much difficulty ; the only nicety required is to make out as accurately as possible the direction of the fracture and then pass your needle in its axis, avoiding the neighbourhood of any large vessel which might by any accident be wounded, and thus causing much trouble and annoyance. I have kept these setons "in situ" for four weeks, ultimately with perfect success, but a few days only will occasionally be quite sufficient to effect the desired result, as we have lately seen in the General Hospital in this city, where a very large amount of inflammation was induced, and as a precautionary measure the seton was withdrawn. I fully expected it would be necessary to re-introduce it, but I was agreeably disappointed, the case was one of fracture of the tibia and fibula, and presented itself ten months after the accident ; he left the hospital perfectly well. We are told that a less severe operation with the seton is just as effectual, namely, to pass it through the soft parts only, close to the fracture ; as to its success I cannot speak authoritatively, as I never have tried it, I should however, much prefer the orthodox old fashioned plan.

The treatment I have just alluded to is that recommended after weeks and perhaps months have elapsed from the receipt of the injury, without the

result being satisfactory. In more recent cases where nature does not appear to be as busy as she should, rubbing the ends of the bones together, external application of iodine, blistering, &c., have all been used with greater or less effect ; subsequently scarifying the ends of the bones by subcutaneous incisions or pegging with ivory pegs as recommended by Deiffenbach, and finally the seton treatment above alluded to. These various plans have sole reference to the absence of any constitutional taint, to which want of union may be attributed. Debility particularly has to be combated by tonics, generous diet, and possibly stimulants, particularly in those cases where the patients had been in the habit of indulging. Dr. Fergusson relates a case of fractured thigh, in which no callus was formed until a reasonable quantity of whiskey was ordered. Sir B. Brodie relates similar cases. The muriate and phosphate of lime may be administered internally. Mercury, where a syphilitic taint is suspected ; in fact Mr. Barnsby Cooper records a case where union finally took place after failure with seton, in which he had administered mercury even to ptyalism. Continuing extreme mobility of parts, after fracture has existed for 12 or 18 months leads us to diagnose either the existence of a false joint or simply union by those ligamentous bands of which we have previously spoken, and which in either case renders a limb comparatively useless. All other measures having thus far failed of success, our last resource is resection, cutting down on the fracture, sawing off a thin slice of each end and splicing them together as it were ; of course these operations are severe and not unattended with danger, and therefore should only be resorted to when absolutely necessary.

In this way I resected the humerus with complete success some 30 years ago, and as I have notes of the case I shall presently trespass on your patience by reading them. In the meantime I will allude to two cases, which were resected at the General Hospital, of non-union of fractures of the femur ; the late Dr. Beaubien did the operations with the assistance of the staff. They were unfortunately both failures, and I attribute this circumstance to some of the muscular tissues becoming entangled as it were between the new surfaces of the bones and thus preventing complete apposition. In any future attempt of a somewhat similar character, I should recommend very strongly a