promise a tolerable certainty of success. Should it fail, amputation then becomes necessary ; but by the failure, the chance of the patient’s ultimate recovery is very much diminished. The cases for resection, therefore, should be carefully selected. The general health must not have been much impaired ; the soft parts must not be extensively af­fected ; the disease must be almost entirely limited to the articulating surfaces ; the joint must be such that the bones can be reached easily, and without the risk of wounding parts of great importance ; and the patient must be of that age and constitution most favourable to the reparation of injury. The articulating extremities of the bones are ex­posed by free incisions, planned according to the circum­stances of the case, and the diseased portions are removed by suitable saws, or by cutting pliers. The soft parts are then replaced, and the cavity treated as a suppurating wound, the intention being that it should heal by healthy granula­tions from the bottom. In patients tolerably advanced in life, it is well to keep the maimed joint in perfect quiet, and in the position most favourable to the subsequent use of the member, in order that the cure may be by ligamen­tous anchylosis, otherwise the limb will prove weak and not much available, and disease will be liable to return. But in young persons of healthy constitution, motion of the part is encouraged during the cure, with every prospect of the new articulation becoming both free and strong. The elbow-joint is the one to which the operation is most appli­cable. In the shoulder-joint it sometimes is expedient, also in the carpus and tarsus; but in the knee and hip joints experience loudly forbids its performance.@@1

When however all milder means have failed, and resec­tion is inapplicable, amputation must not be deferred until the disease has grown riotous in its progress, and the ge­neral health has been seriously impaired. When the sur­geon is satisfied that amputation has become absolutely ne­cessary,—that nothing else can save life,—the sooner it is performed, the greater is the chance that this severe re­medy will not fail in its issue ; and it is consolatory to re­flect that modern improvement has greatly mitigated its horrors, and increased the probability of its success. It is performed more rapidly, more skilfully, and the suffering is infinitely less both during and after the operation. The tedious dissection of a limb, called the “ circular method,” has now given place to the “ flap-operation” by transfixion ; the only valid objection that can be brought against which is, that perhaps a greater surface of wound is made ; but this is much more than counterbalanced by the many be­nefits which it otherwise insures. The operation is more rapid, and less painful ; the cut surface is smooth and re­gular ; adhesion, or union by the first intention, is much more frequent ; whether union be by the first or second intention, the cure is more speedily completed ; the end of the bone is infinitely better covered, and the stump conse­quently more useful ; and if the flaps have been skilfully formed, there will be no exfoliation of the end of the bone protruding through ulcerated integuments, and no forma­tion of excruciating neuromata in the cut extremities of the nerves, rendering a renewal of operation necessary for final cure. The manipulations of the flap-operation are simple and well known, so need not be here detailed ; but some rules necessary for its dexterous accomplishment are not always sufficiently attended to. The first regards trans­fixion ; and it is, that after the first flap has been formed, the knife should not be again entered close to the top of the wound, but about an inch below, as thus cross-cutting of the integument is avoided. Another is, that in sawing the bone, the surgeon must not trust the distal portion of the limb entirely to an assistant, but, grasping it in bis left hand, must himself regulate its support, and so avoid splin­tering the bone. Pressure to command the bleeding need not be severe, but must be true. As was formerly stated, the tourniquet is seldom if ever used when the fingers of an assistant can be obtained who is cool, steady, and well con­versant with the course of the vessels. The pressure thus obtained is not applied until the instant the incisions are commenced, and then only on one point ; the limb conse­quently is not gorged with blood, as it would have been by the ordinary tourniquet : less blood therefore is lost, and besides, the flaps are much more easily retracted from the bone. When skilful assistants cannot be obtained, or when it is probable that many vessels will require ligature, and that consequently pressure must be long continued, a strong metallic spring may be used, each extremity terminating in a pad, one placed over the course of the vessel,, the other resting on the opposite part of the limb : the assistant pre­serves its just application, and regulates its pressure, and the risk is avoided of his fingers giving way from cramp or fatigue. When the surgeon, from want of other means, is compelled to use the ordinary screw-tourniquet, its princi­pal pressure should never be applied until the moment be­fore incision ; and as soon as the larger vessels have been secured, the whole apparatus should be removed, as thus the loss of much blood by regurgitation, and particularly from veins, will be avoided. The arterial orifices are se­cured by ligature, according to the method already men­tioned ; and should the venous trunks continue to pour out their contents, notwithstanding the removal of all constriction of the limb, pressure by the fingers of an assistant, though for only a short time, usually suffices to arrest the hæmorrhage. The wound is treated according to the principle of delay formerly explained ; and thus adhesion is not only favoured, to the saving of time and pain, but the occurrence of secondary bleeding is also made much more improbable ; for no warm coagulum is bound up in the wound, to act as a sponge, and encourage escape of blood from all the untied vessels; and even when it does take place, the bleeding point is much more easily secured than when the stump is bound up tight and close from the first. Should the stump bleed seriously, six, eight, ten, twelve, or fifteen days after the operation, in consequence of sloughing or some other un­healthy action having supervened, the ununited wound is to be laid open, all coagula removed, and direct pressure applied. But should this fail, the surgeon ought instantly to secure the trunk of the vessel whose branches are at fault, at some distance above the stump—in amputation below' the knee, tying the femoral, for example—at the same time support­ing the stump by bandage. This practice has been found almost invariably successful.

Amputation is also less frequently resorted to in cases of severe injury than formerly. In fractures, skilful and care­ful management preserves many a limb useful and but little out of shape, which before would have been considered too seriously injured to retain its vitality. Nor are compound luxations regarded with the same dread. In compound dislocation of the ankle-joint, for example, with protrusion of the bones, instead of at once amputating the limb, the dislocation is reduced, the protruding portions of bone hav­ing been removed in whole or in part, if so injured as to render that proceeding necessary ; the limb is retained in a favourable position, and in a state of complete rest ; the wound is treated by the simple soothing plan ; undue excite­ment is warded off or held in subjection by the usual means; if abscesses form, they are early evacuated ; the parts are uniformly and gently supported ; the surgeon’s *medical ac­quirements* are kept constantly, on the alert ; and thus, in very many cases, the limb is retained, with the injured joint,

@@@1 Fur further information on resection of joints, see Mr Syme's excellent treatise on this subject.