find that, in some cases of severe throbbing headache, no remedy affords so much relief as the continuous application of a sponge wrung out of hot water to the forehead and temple while the head is kept somewhat raised. The warmth relaxes the superficial arteries: there is, consequently, a partial diversion of blood from the internal carotids through the external carotids to their branches beneath the skin. In some cases, headache is relieved by immersing the hands or the feet in warm water. The arteries are relaxed, and blood is thus diverted from the head. On the other hand, the effect of putting the feet and legs in cold water is to cause "a determination of blood to the head"; and we find that the headache of anæmia and exhaustion is best relieved by keeping the head low while cold is applied to the forehead and temples. Thus, the superficial vessels being contracted by the cold, more blood is diverted through the intracranial arteries to the anæmic brain.

Dry cupping acts in a somewhat similar way to hot fomentations. It draws an abundance of blood through the arteries into the subcutaneous capillaries, which, when the cups are removed, returns through the veins to the heart. In order that dry cupping may be most effectual, each cup should be removed as soon as the vessels beneath are well filled, and then it should be reapplied. The object is first to draw the blood through the arteries into the capillaries; then to allow it quickly to return by the veins; and not to keep it stagnating in the capillaries, which will happen if the glass be retained long on one spot. Another point is not to draw the blood into the skin with sufficient force to cause extravasation, the effect of which will be to impede the circulation through the skin, and so to divert more blood into the inflamed tissues beneath. The sole object of dry cupping, be it remembered, is not to irritate the skin, but to draw blood rapidly from the arteries, and as rapidly to transmit it through the capillaries to the veins, in its backward course to the heart.

Cold applications are employed not merely to subdue inflammation of the skin, where they act by contracting the vessels, and so lessening the afflux of blood to the inflamed tissues; but I am told that it is now a common practice in Germany to apply ice to the chest in cases of pericarditis. What is to be said of this practice? In my judgment, the practice is attended with much risk. The continuous application of cold to the surface of course causes contraction of the subcutaneous arteries. The secondary results of this may be diverse in different cases. Through the nervous system there may be a sympathetic contraction of distant arteries. The arteries of the left hand may be thus excited to contract while the right hand is immersed in iced water. Thus pulmonary hæmorrhage may sometimes be arrested through the sympathetic contraction of the minute arteries of the lung, excited by the application of cold to the surface of the chest; and a vulgar remedy for epistaxis is a cold iron key applied to the skin of the back. On the other hand, the contraction of the superficial vessels under the influence of cold may drive more blood into deeper and distant parts. Thus, when the inmate of a Turkish bath is rendered faint in consequence of the large afflux of blood to the overheated skin, and a correspondingly deficient supply to the brain, a cold douche contracts the cutaneous vessels; then instantly the brain gets a larger supply of blood, and the feeling of faintness is removed. A temporary removal to the cooling-room has the same restorative influence; the cutaneous vessels contract, and more blood is diverted to the brain. So the six lights of a gas chandelier may have been burning steadily, without noise or smoke; but if now three burners are suddenly turned off, the other three, receiving an increased pressure of gas, will often begin to whistle and smoke. The same hydraulic and pneumatic principles are applicable to all these phenomena; and a consideration of these facts suggests that the application of cold to the surface, in cases of inflammation of the deeper tissues, is a remedy of doubtful and possibly of dangerous tendency.

Counterirritants.—In my judgment, a very common mistake is that of applying strong counterirritants, so as to inflame the skin, in the early stage of acute inflammation of the viscera or their investing membranes. The result is, that another inflammation, with its attendant pain and febrile excitement, is added to the primary disease. The discomfort resulting from this may be so great that the patient will think less of his original malady, which may, nevertheless, have been aggravated by the cutaneous inflammation. It should be borne in mind, that the circulation through the vessels of an inflamed part is more or less impeded, more or less stagnant. If, then, in a case of acute pleurisy or pericarditis, we excite inflammation in the skin over the chest, the result is the opposite to that which is brought about by local bleeding, by dry cupping, and by hot fomentations; for, whereas by these means we divert blood from the deeper tissues to the surface, the effect of an inflamed patch of skin is, through the arterial connexions, to throw back the blood upon the parts beneath. In applying irritants to the skin in the early stage of acute internal inflammation, care should be taken not to allow the effect to pass beyond the stage of active engorgement of the

vessels; it should stop short of capillary stasis and inflammation. I have already said that local bleeding has been supposed to operate only as a form of counterirritation. It would be nearer the truth to affirm that the so-called counterirritants act after the manner of local bleeding, by diverting blood from the inflamed parts beneath. Vesication by means of cantharides may sometimes be useful, by the depletory serous effusion from the vessels.

Let me now gather up into a few sentences the general principles which I have endeavoured to establish.

The object of blood-letting is to lessen hyperæmia of certain parts of the vascular system.

Venesection is adapted for lessening engorgement of the venous system, which is usually a result of an impeded circulation through the lungs and left heart. When there are manifest signs of engorgement of the veins and obstruction in the lungs, a feeble arterial pulse does not contraindicate venesection; and there is no inconsistency in combining the practice of venesection with the administration of stimulants.

Local bleeding, by leeches or by cupping, is useful in many cases of inflammation. The bleeding acts by diverting blood through the superficial arteries from the deeper arteries which supply the inflamed parts.

Warm baths, fomentations, poultices, and dry cupping, act in an analogous way to local bleeding, but without actually removing the blood from the system.

Cold contracts the vessels to which it is immediately applied. The result of this may be a sympathetic contraction of distant and deeper vessels, or a driving in of blood to deeper parts. Cold to the surface, therefore, is an uncertain remedy in cases of internal inflammation.

The application of strong irritants, so as to inflame the skin, in the early stage of acute internal inflammations, is a distressing and often a mischievous practice.

As a general rule, in cases of inflammation, those local remedies are the most efficacious which are the most painless, and which quicken in the greatest degree the cutaneous circulation.

TREATMENT OF FRACTURED CLAVICLE BY A CROSS-SHAPED SPLINT.

By G. GREWCOCK, Esq., Nottingham.

FRACTURED clavicle, when the fracture is oblique and there is much displacement, occasions much trouble to keep the fragments in proper apposition. When the ordinary figure-of-8 bandage is applied loosely, it is of no use; and when it is put on with the tightness necessary to replace the fragments, it very frequently excoriates the skin, and, by slipping forwards, which is often the case, the bandage presses on the dorsal end of the fractured bone, and, by pressing this downwards, exactly opposes the indications for which it has been adopted. In fact, so dissatisfied have some surgeons become with the figure-of-8 bandage, that it has been in many cases discarded; and one of the most important indications of the accident—namely, to keep the shoulder well back—has been omitted. A plan has lately come into use of keeping the patient in bed two or three weeks, a method which is extremely distasteful to the patient, and is equally unsurgical and unreasonable.

Now, in briefly considering the nature of the accident, the deformities attending it, and the obstacles to be overcome to keep the bones in proper contact for union, are the following. 1. The outer fragment, by the weight of the arm, is carried downwards. 2. By the strong muscles passing from the cheek to the arm and shoulder, the outer fragment is carried directly forwards and inwards. We have thus three indications to fulfil: by raising the arm, the displacement of the outer fragment downwards is prevented; by the pad in the axilla, it is brought outwards; and by bringing back the shoulder, the opposition of the pectoral muscles is counteracted.

The plan of treating this accident which I wish to bring under notice is not entirely new, as I find, from some old books on Fractures, that a modification of it, by the upper straight splint, was used two hundred years ago. A simple cross-shaped splint fulfils perfectly all the three indications of the accident, without the disadvantages of the figure-of-8 bandage. The manner in which it is applied is extremely simple. The shoulders, having been well brought back, are fastened to the extremities of the splint by means of a bandage passing under the axilla and over the shoulder, thus effectually overcoming the resistance of the thoracic muscles. A small pad is placed in the axilla, and the bandage, passed over the arm and fastened behind to the splint, keeps the pad in its place.

I have treated several cases by this method, and found it give greater ease to the patient than the figure-of-8 bandage, and fulfil perfectly all the indications necessary for the successful treatment of the accident.