

well together, then they grow loose because the compression diminishes the volume of the muscles, and as soon as this diminution commences the upper fragment is drawn upwards by the quadriceps. If you employ an immovable bandage do not forget to place a posterior splint between its layers and keep the foot elevated.

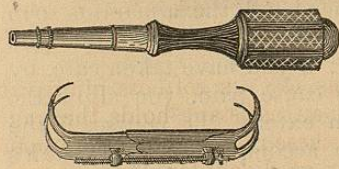
I give the preference to open uniting apparatuses, that is to say, to those which leaving the patella uncovered enable us to see if the separation is corrected or not, if the skin is excoriated, and to modify the situation of the pieces according to the results of this examination. These apparatuses are of recent invention, and will meet the indication of bringing the fragments together. But I establish a distinction between those which have to be made by a workman, and those which the surgeon can easily make himself.

In the large cities this distinction is of little use, since we can easily obtain the things we need; but it is not so in the country. Of course if fractures of the patella were frequent we might always have at our disposal one or the other of the uniting instruments which I am about to mention. But these fractures are rare; a busy practitioner will hardly see two a year, many will not see more than one or two in three years. Now it would always happen, if you kept the instrument on hand, that it would be rusty and would not work when you had need of it. Undoubtedly the remedy would be easy, for you would always have the time to have it repaired, or even to have a new one made during the fifteen or twenty days of the inflammatory period; but what is the use of having this trouble if these manufactured apparatuses do not give any better results than those which you make yourself? And that is just what happens.

I. Among the uniting instruments I will mention Malgaigne's hooks, the modification in their use proposed by M. U. Trélat, Vallette's instrument, and Fontan's.

1st. Malgaigne's hooks (Fig. 12) which I now show you, and which it is sufficient to see to understand, are composed of two pieces

Fig. 12.



which can be moved along one another by means of a screw. Each piece ends in two hooks which are implanted above and below the fragments, traversing the tendon of the quadriceps and the ligamentum patellæ. After having been properly implanted, the two pieces are brought nearer by means of the screw and thus the fragments are held together. If the patient suffers too much it is loosened; if, after a few days, separation is reproduced, it is again tightened.

If I intended to advise you to use this instrument I should enter into longer details upon the manner of applying it, upon the difficulty of properly implanting the upper hooks, upon the considerable effort which is needed to do so, upon the pain of the first hours, upon the tolerance which is afterwards established, upon the possibility of phlegmonous and consecutive lymphangitis, of which I have had an

example, and even upon that of an arthritis, like the one which I find reported in the *Union Médicale*.¹

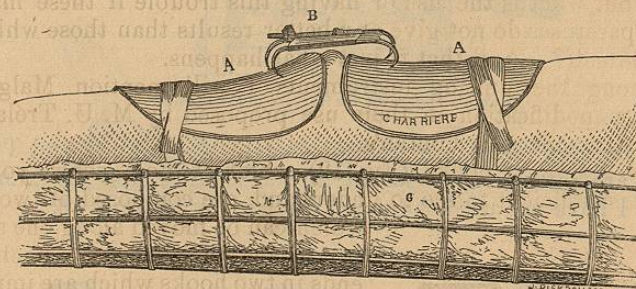
But I do not dwell upon it for two reasons.

First, the hooks, as applied by Malgaigne, because they traverse the skin offered many disadvantages, and were very disagreeable to the patients; they could not remain in place long enough for the consolidation to take place. They were applied on the fifteenth or twentieth day, and had to be removed by the fiftieth, and often sooner, because they held no longer; now at this period, as I have told you, the intermediate substance is not solid except in very exceptional cases. Consequently this gives the patient pain and annoyance without any profit.

Secondly, if you wish to use the hooks, you can now do so without traversing the skin, thus suppressing most of the disadvantages of Malgaigne's original method. For this we use Prof. Trélat's modifications.

2d. *M. U. Trélat's Method*.²—Dip in boiling water two pieces of gutta-percha five inches long, two and a half inches wide at one end and one and a quarter at the other. Apply one of them above, the other below the patella, modelling them exactly upon the anterior and lateral faces of the limb and upon the patella while the leg is completely extended. Then apply compresses dipped in cold water to

Fig. 13.



Trélat's apparatus for fracture of the patella.

harden the gutta-percha, and when it has lost its softness plunge it into a basin of cold water. Then while an assistant holds the fragments together, the surgeon places one of these pieces above the upper fragment, and fastens it there with a strip of diachylon long enough to go thrice around the limb. The same is done for the lower fragment. It only remains to implant the hooks in each of these plates without going through to the skin, and to screw together the two pieces of the instrument, thus bringing together the two pieces of the patella near to one another.

It cannot be denied that this modification is ingenious, but is it

¹ *Union Médicale*, 18 December, 1871.

² Trélat, Note sur le Traitement des Fractures de la Rotule par un Nouvel Appareil (*Bulletin Thérapeutique*, 1862, tome lxiii. p. 447).