The tube is of silver, the wire of iron. Thus there is established (with the artery) a small galvanic circle, which promotes the prompt and firm coagulation of the blood in the artery, and the disengagement of the wire. This I regard as a circumstance of great importance in the

modus of its action. I should remark that the tube can also be removed by simply twisting it with the thumb and finger. The tube should be of length sufficient to project half an inch or so from the lips of the closed wound.

This apparatus is applied with much more ease than is a ligature, as there are no knots to tie, nor any necessity for the assistant to carry his hand around the forceps, which is often disengaged thereby.

Why should not this supersede acupressure? It possesses all its advantages, and does not involve the necessity for wounding the parts anew. I have not yet tried it in the treatment of aneurism, but shall do so on the first occasion. It will be necessary then to carry the wire around the artery, and then to pass the two ends through the tube. The galvanic influence will here be very important in promoting the formation of a firm coagulum.

ON A NEW APPARATUS TO OBTAIN ALTERNATING AND ELASTIC COMPRESSION OF ARTERIES.

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HAVING had occasion lately to describe and discuss the different compressors proposed by Velpeau, Michon, Broca, B. Anger, Mathieu, etc., to obtain continuous or intermittent compression of aneurismatic arteries, I was struck with the numerous complications of their mechanism and the difficulties of their application. These compressors are not equally applicable to all limbs, nor do they fit all individuals; and it is only when a surgeon has at his disposal the resources of great hospitals, that he can use them for the poorer classes of society. I then thought of devising an apparatus that should be simple, cheap, and easy to make up in all circumstances. My experiments led me to the compressor I am about to describe, with which it will be easy to obtain alternating and elastic compression of all arteries accessible to indirect compression.

Let the part of the limb which is to be submitted to compression be surrounded with a layer of wadding or a flannel roller, and then with two or three rollers stiffened with dextrine, or, still better, with silicate of potassa. Any solidifiable mixture which stiffens properly would do as well. The limb is thus enclosed, but not compressed, in an immovable apparatus exactly moulded upon it. When the bandage is stiff, the course of the artery should be delineated on its surface; and along the line thus traced, two oval traps, of the size of common compress-pads, should be cut. These pads are to be made of cork, from two to three inches thick, according to the depth which their action is intended to reach. Placed alternately on the course of the artery, and separated from the skin by the layer of wadding or the flannel, they are fixed with an India-rubber roller, of which the turns, as they are added one above the other, increase at will the compression of the artery without compressing the limb, protected as it is by the bandage. Inside the stiff-

ened bandage may be inserted, if thought fit, the wooden wedge with which B. Anger endeavours to prevent the artery from escaping from the compressive action applied. It might as well be applied outside the bandage before it is stiffened, and when this is depressed and sufficiently hard it should be taken away.

To judge of the comparative value of this apparatus, I shall state in a few words the conditions which a good compress must fulfil.

1. The limb should be well secured to prevent the compressive pads from being deranged. It is evident that an apparatus enveloping completely the limb, and moulded upon it, will be in better conditions of fixity than counter-pressure pads, or even than padded splints.

2. The counter-pressure must bear on a large surface to avoid pain. An apparatus moulded on the limb is more likely to obtain this result than padded splints, and particularly more so than counter-pressure pads.

3. The compression must be energetic at will, and alternating. It will be made as powerful as may be required, while it retains all its elasticity, by multiplying the turns of the India-rubber roller which passes over the pads.

4. The compression must be continuous and alternating, to prevent the same point of the skin over the artery from bearing all the compressive effort. The compressive action is made to bear on one pad or the other at will; and even more than two pads might be used if it were thought fit.

While all other apparatus extant require immobility of the limb, this one does not; and the surgeon is not needed to fix and tighten the pads, it being impossible for them to become placed by the side of the artery outside the traps cut out to receive them.

I have made several experiments with this apparatus, and have obtained the following results.

First Experiment.—The apparatus was fixed over the arm of a stout subject, slightly oedematous. Two traps were cut out over the course of the humeral artery, two inches apart. One compressive pad was put over the superior trap, and fixed with four rather tight turns of the elastic strap. The subclavian artery was then injected. On dissection, the humeral artery and its branches were found much distended above the compressed point. The artery was flattened under the pad, and contained a ribbon-shaped piece of the injected matter. Below it was round again, but much less distended and voluminous than above. The radial and ulnar were indifferently injected. The injection had passed under the compressor. I expected this, considering the force with which injections are habitually pushed, the proximity of the cannula, and the elastic nature of the compression, which had borne on the artery, since it was found flattened.

Second Experiment.—The apparatus being set as above, the two compressive pads were fixed over the course of the artery by four or five not very tight turns of the elastic band. The injection was pushed with force into the subclavian artery. On dissection, the humeral artery was found much distended above the first pad, it is much less so between the two compressors; below the second the injection was very incomplete. Injected matter was found only in the superior parts of the radial and ulnar arteries; while the deep humeral and its anastomoses with the recurrent arteries were injected.

Thinking that these results were satisfactory, I applied my compressor on a very strong young man, from the anterior edge of the armpit to half an inch above the elbow-joint.

Third Experiment.—When the apparatus was hardened, and the traps cut out on the course of the artery, I applied alternately the pads on the humeral, fixing them with the elastic strap moderately tight. At each turn of the strap, the radial pulse weakened. After the third turn, the pulse was reduced to a mere thrilling. After the fourth, no pulsation was to be felt. The man declared that he felt no pain at all.

Fourth Experiment.—Four turns of the strap were applied on the upper pad. The compression was kept up for an hour, without occasioning any pain. The radial pulse was not felt for the time.

Fifth Experiment.—The man undergoing these experiments was requested to put his arm in motion in all manners. He lifted his bed, etc. The compression was still constantly effective; but a great venous congestion was denoted by the hue of the skin.

Sixth Experiment.—The different compressors to be had at the Museum of Surgical Instruments of the Faculty of Strasbourg were tried on the same individual. He found them all more painful, and much preferred the first one used.

I am thus entitled to think that all surgeons who will be pleased to use my compressive apparatus will find it sufficiently effective; and all must acknowledge its simplicity, the facility of its application, and, above all, its extreme cheapness. With regard to the India-rubber strap which I have used, it is vulcanised, and about two inches broad. It comes from Galante, manufacturer of India-rubber articles, in Paris.