French have termed it, produces a stimulus to the respiratory nervous system. We know that in the case of the arteries different stimuli produce different effects; cold inducing reflex arterial contraction, while heat occasions, equally through the nervous system, a relaxation. According to this view, then, the necessity for circulation, if I may so press myself, is a stimulus to dilatation which, when sufficiently urgent, overpowers the stimulus to contraction occasioned by the diminution of pressure upon the vessels in the elevated position. And, as a matter of fact, we find that the after-blush is greater the longer the time during which circulation has been arrested, although without anything to indicate nervous paralysis. In complete harmony with this view is the phenomena observed in a limb after ligature of its main artery. When the femoral is tied for popliteal aneurism, the first effect upon the foot is pallor and coolness; but, after the lapse of some hours, the converse condition of abnormal redness and heat supervenes. Here there is certainly no interference with the nerves; but the usual supply of blood is in the first instance notably diminished; and, as a consequence of this, long before there has been any possibility of organic increase in the vessels, the anastomosing branches become so much dilated as to more than compensate for the obstruction of the principal source of supply. This effect can only be brought about through the nervous system; and the most natural explanation seems to be that deficient circulation in a part continued for a considerable time comes to operate as a stimulus to arterial relaxation.

I have now to mention an experiment which anyone may easily perform upon himself, but which, though extremely simple, is not on that account the less instructive. But first let me state the considerations that led me to it. If the contraction of the arteries of an elevated limb were really the result of an action of a particular part of the nervous system, it might be expected that, on the cessation of the stimulus that evoked it, an unusual relaxation would ensue, corresponding with a period of repose of the nervous apparatus concerned; and that this would be more marked the greater and more protracted had been the effort. Supposing, then, that the hand were raised after the circulation had been brought into full activity by brisk exercise, with the heart working powerfully and the arteries generally in a state of considerable dilatation, if, in spite of these unusual obstacles to arterial contraction, pallor of the limb should result from the elevated position, it might be anticipated that, when the hand was again lowered, it would not only resume its former redness, but acquire for a while a deeper tint than the other, which had been kept dependent throughout. My first trial of this kind was made just after I had been walking with great haste to catch a train, when my heart was beating with unusual vigour, and my hands of florid colour. Having raised my left hand, I saw it become, within half a minute, very pale, and on putting it down after it had been a minute in that position, I observed it grow, within a quarter of a minute, much deeper in arterially red tint than the right, a difference which gradually passed off, so that, in the course of one minute and three-quarters, the hands were again of equal colour. Two minutes later, I repeated the experiment, and this time kept the left hand raised for two minutes, and then, on lowering it, found it to become in ten seconds much redder than the other, which had been suspended the whole time; and, just as might have been expected after the more protracted action of the nervous apparatus, the repose was longer in duration, so that, even after two minutes and twenty seconds, when I was obliged to start for the train, the left hand was still slightly the redder of the two. Now such a result as this was entirely contrary to what could be explained as a consequence of mere hydrostatic laws. If the arteries had been simply emptied in the elevated position by the force of gravity, all that could have resulted on restoring the limb to the dependent posture would have been a return more or less rapidly to the previous condition of vascular fulness. And it is an interesting fact that the veins, though comparatively thin-walled, and much more readily distensible than the arteries, do not at once recover their former size when the elevated limb is lowered, but remain for a while markedly less turgid than those of the other hand, even when, through arterial dilatation, the colour of the skin is not only more florid but manifestly darker. Hence this apparently trivial experiment, if duly considered, seems to me of itself sufficient to prove the truth of the doctrine for which I am contending.

But what may perhaps be regarded as the most conclusive piece of evidence in its favour remains to be related.

[To be concluded.]

Presentation.—Mr. R. Richardson has been presented with a handsome silver salver and tea and coffee service, upon the twenty-fifth anniversary of his residence in Rhayader, in recognition of his public and professional services.

Remarks on Forciblyer Pressure and the Use of Pressure-Forceps in Surgery.

By T. Spencer Wells, F.R.C.S., Surgeon to the Queen's Household; Consulting Surgeon to the Samaritan Hospital.

In the British Medical Journal of January 10th, 1874, among valuable reports from metropolitan hospitals on the use of torsion in surgical operations, the following passage may be found, reprinted exactly as it stands at page 47, except that I have underlined three sentences, namely, "temporary stoppage of bleeding vessels during operations"; "the bleeding vessel is forcibly compressed, and its coats squeezed or almost crushed together"; and "simple compression with the torsion-forceps is sufficient".

"Mr. Spencer Wells (Samaritan Hospital) has introduced a kind of artery and torsion forceps, which very conveniently replace the old spring artery-forceps of Liston, and the bull-dogs used for the temporary stoppage of bleeding vessels during operations, while they are the most readily applied of any of the varieties of torsion-forceps met with in the shops. They are represented in this sketch, and were first made for Mr. Wells by Krohne and Seesemann. The grasping and holding extremity is roughened by rather deeply cut transverse teeth, so that the bleeding vessel is forcibly compressed, and its coats squeezed or almost crushed together. This is alone often sufficient to stop the bleeding without any torsion, especially if the instrument be left on the vessel for a minute or more. But if the vessel be large, then two or more rotations may be added. Instead of the spring-catch, the fasten-
ing is effected by a Mathieu’s catch in the handles. This is quite as easily fixed and opened as the spring, and is much less likely to get out of order. The instrument is made of steel, but is coated with nickel, which prevents any rusting after use. Mr. Spencer Wells, as is well known, trusts to the clamp for securing the pedicle in ovariotomy whenever it can be applied without too much pull on the uterus or broad ligament. Where the pedicle is very short or broad, he either uses the cautery, the ligature, or the érasuer. He has never trusted to torsion alone, though occasionally securing one or more vessels in this way. With the bleeding vessels in the ovary he uses a small instrument, the torsion to torsion when the vessels are distinct; but when oozing surfaces rather than separate vessels are seen, he uses ligatures of fine pure silk, cutting off the ends short and returning them. He prefers this silk to catgut.

With bleeding vessels in the abdominal wall, torsion, or simple compression with the torsion-forceps, is sufficient.”

This passage proves that before 1874 I had employed forcipressure, not only for the temporary arrest of bleeding during surgical operations, but had designed forceps for the express purpose of so squeezing or crushing the coats of the bleeding vessel together, as permanently to stop bleeding from vessels of moderate size. I draw attention to the date of this paragraph because, in 1875, MM. Deny and Exchaquet, in a monograph entitled De la Forcepresse, ou de l’Application des Pinces à l’Hémostase Chirurgicale, while admitting that many surgeons have used spring forceps of various forms for the temporary suppression of bleeding during operations, claim for M. Péan the merit of introducing forcipressure into surgical practice as a mode of permanently closing open vessels by simple compression, not “simple pressure, but rather a sort of constriction, which the instrument employed by M. Péan effects upon the coats of the vessel”. - Preface of M.M. Deny and Exchaquet.

This claim in favour of M. Péan was very soon called in question by M. Koebelé, who published, in 1877, a very interesting work, entitled “De l’Hémostase Définitive par Compression Excessive”. He speaks of pressure forceps as “mes pinces hémostasiques”, acting by strong compression so as to dry up — deuschhe — the compressed tissues, and rapidly effecting permanent stoppage of bleeding — hémostase définitive — thus almost entirely suppressing the use of ligatures. He says that, before 1867, this use of forcipressure had never been utilised as a rapid method of permanently closing bleeding vessels — “comme méthode rapide d’hémostase définitive”. He asserts that, in 1867, he inaugurated this “méthode d’hémostase par compression excessive”, that the use of his forceps dates from 1865, but that he had not used it until 1867, except as a means of temporary compression before applying ligatures.

I do not wish to enter into this discussion between MM. Koebelé and Péan, nor to prove that I had preceded both of them by many years in the use of forcipressure. My chief object is to bring more prominently before the profession the many and great uses of this simple and rapid mode of stopping bleeding, and describing what I believe to be the best form of pressure-forceps hitherto constructed.

I can hardly recollect when I first began to use forceps instead of the fingers of an assistant for temporarily stopping bleeding during operations; but I believe I learned it from Mr. Bowman before he left King’s College. I had often admired in the private and hospital practice of Sir William Fergusson the ready way in which Mr. Henry Smith and the late Mr. Price would instantly stop a spouting vessel by the finger, and tie it at a glance from the great operator. But I well remember seeing Mr. Bowman extirpate a very large tumour from the neck, and quietly put a “bull-dog” upon every considerable vessel as he divided it. This must have been in 1854, because when I went to the Crimea in 1855, I took with me a “bull-dog” with me, and after my return in 1856, I never went to any serious operation without several of different sizes. I used them in all my earlier cases of ovariotomy (beginning in 1858) for stopping any vessel which bled in the abdominal wall divided in the first incision. Referring to the fourth edition of Fergusson’s Practical Surgery, published in 1857, I find at page 42 a drawing of these “bull-dogs”; and an allusion to a plan which I used sometimes to adopt of putting a ligature on and tying with only one knot, so as to crush the vessel, and then remove the ligature. This crushing of a bleeding vessel I had practised not only from the well-known lesson of torn arteries not bleeding like those cleanly divided, and from the érasurer, but from what I had heard of the experiments of the late Mr. Webber, formerly of Yarmouth and Norwich. This surgeon, about 1856 to 1858, made many efforts to introduce into practice in the metropolitan hospitals what he called “anti-ligature forceps”. Mr. Ferguson, of Giltspur Street, who made the instruments, has sent me the four specimens represented above of the different kind of teeth used in the forceps of Mr. Webber.

The only published account of these forceps I have been able to find is in the Medical Circular in 1858 and 1859, Mr. Webber there stating that he had used them for more than four years. Mr. Ferguson does not remember when he first made the instruments. I only allude to them now as a proof that the use of forceps as a means of permanently suppressing hemorrhage had occupied the attention of English surgeons long before M. Koebelé’s inauguration in 1867. I cannot remember precisely when I began to find that the “bull-dogs”, used at first only as a means of temporary compression, were sufficient to permanently close vessels of moderate size; but, in 1853, I began to increase the size of the “bull-dogs”, and to attach long pieces of silver or iron wire to them, so that when used on omental vessels, or on bleeding vessels from torn adhesions on the inner surface of the abdominal wall, they should not be forgotten or lost. Then, as torsion came into more general use, and various forms of torsion-forceps were contrived, I arrived at the form of instruments described above in the reprint of the article published in 1874. Mr. Krohne tells me that he made the first of these forceps for me early in 1872.

The next two drawings show the instruments, first of Péan, and
next of Koeberlé. They differ in the "catch", or mode of fixing the handles together; and in the joint—Koeberlé's being hinged, while Péan's blades can be separated for easier and more complete cleansing. Péan has a great number made straight, of different lengths, and others curved or angular. But they all, like Koeberlé's, have the great disadvantage of an open space between the blades, which admits of entanglement of one instrument with another, or of the passage of omentum or other structures. This was a fault in my own earlier instruments. It has been completely corrected in the later instruments made for me by Mr. Hawksley, without at all lessening the compressing power exerted on the vessel. In October 1878, Mr. Hawksley carefully tested the compressing power of different forceps when opened by a piece of leather one millimètre thick between the jaws of the forceps, and covering about four teeth from the points. The following table gives the result, as well as the force required to be exerted by the hand in closing the handles or fastening the catch or catches under each condition.

<table>
<thead>
<tr>
<th>Forceps</th>
<th>First catch</th>
<th>Second catch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Koeberlé</td>
<td>8</td>
<td>3½</td>
</tr>
<tr>
<td>Péan</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>S. Wells (old)</td>
<td>22½</td>
<td>--</td>
</tr>
<tr>
<td>Ditto (new)</td>
<td>12</td>
<td>22½</td>
</tr>
</tbody>
</table>

It may be seen that in my old instrument there is only one catch. And in my new one, the second catch only exerts the same power as the first catch of the old instrument. But this is six or seven times greater than the second catch in Koeberlé's—and nearly double that of Péan's. When only the first catch in Koeberlé's instrument is closed, the points are separated about half a centimètre, so that they only compress anything more than that thickness. I have used all these instruments, but find them much less handy than my own, in which the handles meet without leaving any opening between them. The rings do not admit the thumb and finger too far; and the end which compresses the vessel is so bevelled, that, if it be desirable to apply a

ligature, the silk will easily slip over the forceps, and not tie them together. Thus my instrument is not only useful in forcipressure and in torsion, but enables the surgeon to dispense with any other kind of artery-forceps, if he wish to apply a ligature.

[To be continued.]

LOCAL EMPYEMA: ITS DIAGNOSIS AND TREATMENT.*

BY SAMUEL WILKS, M.D., F.R.S.,
Physician to Guy's Hospital, and Lecturer on Medicine in its Medical School.

HAVING been requested to introduce some subject to your notice, it would not have been difficult to choose a case from our wards presenting some peculiar features of interest; but I thought it better, in a society established for mutual instruction, to select a topic of practical and every-day importance. Now, diseases of the chest, being most rife, are those which of necessity most concern us; and, for my own part, amongst the numberless affections of the lungs and their appendages which, during the last two or three years, have presented the most difficult problems of treatment, have been localised pleuritic effusions, or empyemata. The cases are common enough to have come before all members of the Association; and I judge, therefore, every one must have experienced some of my difficulties. If, however, any one have come here to learn the best method of their treatment, he will be disappointed. I may as well say, I do not come prepared to advance any special plan, but rather hope to learn something from members to help me out of my own difficulties.

As regards the nature of these cases: in a complete effusion of serum, the disease may come on insidiously, and the patient never seek advice

* Read before the South London District of the Metropolitan Counties Branch.