To take a few trades which are usually classed as light work, and which are in most cases suitable for those who have compensated valvular lesions:

1. *Tailoring*.—As a rule, we are apt to associate this occupation with bad ventilation, but of course there is no reason why the ventilation should be bad, and during the past few years all factories have been greatly improved in this respect; still, owing to the very sedentary nature of the work, men easily feel the cold and want windows shut, so, to that extent, the ventilation is not such an easy problem. The work itself is in general light enough, the only heavy part being the ironing; the iron generally used weighs from 14 to 20 lb., and may sometimes weigh even as much as 30 lb. No doubt there is a great deal of knack in the use of these irons, so that the weight may not seem much to a man accustomed to the trade.

2. *Boot repairing* is another occupation which is not unreasonably classed as "light work," but here again the ordinary boot repairing known as "botching," as opposed to finer boot repairing, involves standing upright at the bench for long hours at a stretch, which of course puts a strain upon the circulation, and I have on several occasions met with men having compensated aortic lesions who had to give up this work owing to the long hours of standing required, though they might have done intrinsically harder work which did not happen to involve so much standing.

3. *Boot-making* is also classed as a "light occupation," and so it is; but it will be found unsuitable for most forms of heart disease, as it involves much use of the arms both in the hammering and wide stitching which nearly always puts a strain upon the heart; the posture of boot-makers is also bad for all kinds of chest complaints.

4. *Basket-making*.—This might seem eminently suitable for those suffering with minor affections of the heart, but this will not always be the case, for there is a great variety in basket-making, which differs much in different localities, and the making of a large basket involves a wide extension of the arms, and so puts an undue strain upon the heart.

5. *Leather Work*.—Many kinds of light leather work are well adapted for most forms of heart disease, where the patient can get about easily, but for such occupations a man should be fairly handy and intelligent. Often a trade which seems quite light, and indeed is so in a general way, may incidentally involve quite heavy work. Thus, for instance, portmanteau sewing would seem quite suitable for many cardiac cases, but unfortunately it frequently involves having to lift heavy weights, so that one has been obliged to knock off a man from such work, though superficially it might seem entirely suitable.

6. *Scavenging*.—Then, again, one has met with scavengers for a borough council who could quite well do ordinary sweeping, but the extra exertion involved by "squeegeeing" when it has been specially wet unfits them for the job and they have it give it up.

Motor Driving.—The occupation of chauffeur is suitable for many varieties of cardiac lesion, provided there is an automatic starter, otherwise the cranking of the car may be a severe strain; and quite recently I had under my care at the hospital a man whose cardiac symptoms first dated from an occasion when he was cranking his car and he felt the strain to be excessive; in his case the lesion was myocarditis of luetic origin, and for such a man the occupation of chauffeur is quite unsuitable, as there is always in a case of this kind danger of sudden death.

As a general rule, dusty occupations, at least for mitral cases, should be avoided, as they induce coughs and catarrhs, so favouring bronchial congestion, to which patients with a mitral lesion are particularly disposed. Similarly, in advising upon any occupation it is important to consider whether it will expose the patient specially to vicissitudes of weather and sudden changes of temperature.

On careful inquiry it will often be discovered, particularly in towns, that it is not so much the work which is trying the patient as the fact that he lives at the top of some model dwellings, so that at the end of a long day's work he has to ascend an interminable flight of stairs; then, again, the main trouble may be the long journey to work, the catching of omnibus or train, and not the work itself.

With a certain amount of care and trouble in the adjust-

ment of occupation much more work can be got out of quasi-derelict hearts, to the great advantage of the community and the not less benefit of the individual patient.

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CIVIL LESSONS OF THE WAR FOR THE TREATMENT OF FRACTURES OF THE SKULL.*

BY

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At first sight it would not seem that gunshot wounds of the head could teach us any lessons of use in dealing with the ordinary fractures of the vault in civil life. Certain points in the treatment of fractures of the vault—none of them really new—have, however, been firmly established by experience in the war. On such of these as appear to be of use in civil practice I wish to touch.

The advantages of total excision of scalp wounds before dealing with underlying fractures were so firmly established during the war that this procedure is likely to become a routine instead of an occasional step in operations upon civil compound fractures.

Early in the war Sargent introduced perforated metal tubes for dealing with the appallingly septic results of leaving head wounds to be operated on at the base. These tubes will, I think, find a really useful place in the drainage of cerebral abscesses; for it is often difficult to keep a rubber tube in position in the brain. To overcome this difficulty I successfully used a tracheotomy tube to drain a cerebellar abscess in a boy in the East London Children's Hospital. Now I should under similar circumstances use a Sargent's tube.

But I think that the most important point which has been fully established in connexion with the treatment of fractures of the vault is the efficient treatment of wounds of the great blood sinuses. Wounds of the superior longitudinal sinus are not, I fancy, very common in civil practice, but any depressed fracture in or near the middle line of the vertex may be complicated by such a wound.

In the summer of 1910 I operated on a depressed fracture in the mid-line of the vertex. The fracture, which was caused by a falling brick, had caught the upper ends of both Rolandic areas, and both legs were paralysed below the knees. On raising the depressed fragment I encountered that copious stream of haemorrhage which a large rent in the sinus produces. I controlled the bleeding by packing gauze between the sinus wall and the skull, and then sutured the rent. The case recovered and I was very pleased with myself, and decided that I knew how to deal with wounds of the superior longitudinal sinus. There my knowledge of wounds of the sinus remained until the Somme fighting. Then, having lost one case of torn sinus which I had sutured, I contented myself with packing the next one with gauze and leaving in the packing—as a matter of fact, this case recovered. But it was the last I packed, because another surgeon asked: "Why didn't you 'postage stamp' it?"

Haemostasis.

I had been familiar with Horsley's use of muscle grafts for arresting haemorrhage from cerebral vessels, but I did not know that it had been applied to torn sinuses, though this had, I understand, been done for some years before the war by Cushing, who, I believe, always uses a muscle graft cut from the calf for his "postage stamp." Short of assistance, as one often was in the war, I (and I fancy many other surgeons) tried cutting grafts from the aponeurosis of the scalp flaps. The graft should be cut about the size of a postage stamp, and as soon as cut placed over the rent and pressed over it by a gloved finger. This is better than gauze, as the graft is apt to stick to the gauze and come away with it. In twenty to thirty seconds the graft is usually securely stuck and all the haemorrhage

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has ceased. These fascial grafts are quite as good as muscle for wounds of the cranial surface of the sinus, which are the only ones likely to be met with in civil practice, and they have the advantage of being cut quickly and without leaving the field of operation. That these grafts stick extremely firmly I know from the examination of two fatal cases at *post mortem*.

If, however, the rent runs round the corner on to a cerebral surface of the sinus it is difficult to get fascial grafts to stick, and they usually require a reinforcing stitch which is not always easy to apply. In such cases a "plug" of muscle is the most satisfactory method of arresting haemorrhage, for the muscle graft with its power of causing rapid clotting holds more quickly. Where the sinus has been torn almost across, it is best to divide it completely and ligature it. This I have had to do twice (both times in the frontal region). One case I was able to watch for four weeks, and he showed no ill effects. The other was operated on in the Somme fighting, and was only watched for a few days before evacuation. He was apparently well then.

I think that all surgeons who did much head work in the war have abandoned plugging for wounds of the superior longitudinal sinus as uncertain and dangerous, owing to the risk of introducing sepsis later and because it entails too much haemorrhage before haemostasis is established. Moreover, bleeding is apt to start again when the gauze is removed. Another point which we learnt was to beware of all depressed fractures near the mid-line of the vertex, and to nibble away sufficient bone around the depression fully to expose the sinus before displacing any fragments likely to have penetrated it. It is no easy matter to stop bleeding from a sinus if the rent is not fully exposed. If bleeding has started before the sinus is fully exposed it is best to place a finger of the left hand on the bleeding point and nibble away bone until the dura is exposed all round that haemostatic finger before attempting to apply a graft.

In order to get at a rough idea of the frequency of this complication I have been through such statistics as I possess. They are the total number of gunshot wounds with fractures of the vault (whether the dura was penetrated or not) operated on in No. 12 Casualty Clearing Station between November, 1916, and November, 1917, and 47 cases operated on by myself in the Somme fighting. There were 614 gunshot wound fractures of the vault, with thirty wounds of the superior longitudinal sinus, or rather less than 5 per cent. superior longitudinal sinus injuries. Of these 30 cases 18 recovered and 12 died. Included in these figures are 11 cases personally operated on (7 recoveries and 4 deaths) out of 215 gunshot wound fractures of vault, or rather over 5 per cent. Probably the incidence of this complication in civil fractures is less than 5 per cent.; 2 per cent. to 3 per cent. would probably be nearer the truth. If this be so, I think that, apart from the opportunities given by the war, few surgeons can have had sufficient experience of wounds of the superior longitudinal sinus to become at home with them. That is why I have ventured to give the results of my experience in this field. I am convinced that any one who is prepared to tackle a depressed fracture should be familiar with the "postage-stamp" method of dealing with this emergency, for it is a complication which may easily cost the patient his life if the surgeon is not prompt and sure in his method of haemostasis. Armed with the knowledge of the "postage-stamp" method, the arrest of haemorrhage from a sinus is hardly ever a matter for anxiety.

Lumbar Puncture.

Lumbar puncture was amongst the procedures which aroused considerable interest during the war. As a means of diagnosis in gunshot wounds it is seldom if ever needed. Post-operative lumbar puncture was very useful for reducing cerebral hernia. It acts slowly, producing its maximum effect in about twenty-four hours. One drachm to three drachms was withdrawn according to the pressure, and the puncture was not done oftener than every forty-eight hours. Occasionally there was a marked recession in place of the hernia after one puncture, and for this reason puncture should not be employed until the hernia is at any rate moderately clean. Our treatment crystallized out to antiseptic lotions (usually Dakin's) till sepsis was well in hand; then lumbar puncture every second or third day till

the hernia was reduced, and then a plastic operation to cover the raw surface. Covering the raw surface with Thiersch grafts is not satisfactory, as it leaves a very poor scar.

Headache with a tense wound is relieved by lumbar puncture. But headache with a lowered pressure is made worse by lumbar puncture. Also if too much fluid is removed headache is caused by lumbar puncture. We had no success in treatment of meningitis by lumbar puncture where streptococci had been demonstrated in cerebro-spinal fluid.

Fits soon after operation occurred in about 5 to 10 per cent. of cases where the dura had been perforated. They were usually associated with high cerebro-spinal pressure and a bulging wound. When this was the case lumbar puncture usually relieved. These fits unless frequently recurring were (contrary to expectation) not of serious prognostic importance.

Anaesthetic.

The war proved without doubt that local anaesthesia can be satisfactorily used in even the most severe cases of fractured vault. It is very satisfactory in patients who are fully conscious. In those quite unconscious no anaesthetic is needed. The cases which show the restlessness of cerebral irritation need a general anaesthetic. Some surgeons used omnipon or morphine for this purpose and still considered that they were operating under local anaesthesia. I preferred to use open ether for such cases. Local anaesthesia (especially novocain and adrenalin) is very satisfactory, and might be used for most of such cases in civil practice. The adrenalin greatly diminishes the bleeding from the scalp flaps, and so saves a good deal of time and irritation.

CONCLUSIONS.

I would suggest that experience during the war has established:

1. The advantages of excision of scalp wounds.
2. The value of metal tubes for draining cerebral abscesses.
3. The ease with which sinus haemorrhage can be stopped by a "postage-stamp" graft.
4. That lumbar puncture is useful in certain complications of fractures of the skull.
5. The value of local anaesthetics in cranial surgery.

THE ETIOLOGY OF DIVERTICULITIS.

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THE very full description of diverticulitis given by Dr. Maxwell Telling in the *British Journal of Surgery* of January, 1917, called my attention at the time to what appeared to be a newly discovered disease, and the interesting discussion on the subject at a meeting of a subsection of the Royal Society of Medicine, and reported in the *BRITISH MEDICAL JOURNAL* of January 17th and 24th of this year, revived speculations as to the causes of this condition. The theories advanced on those occasions were largely based upon appearances found after death. I venture to think, however, that when we are able to collect the previous histories of a sufficient number of cases it will be found that the true causes will be more truly deduced from the living. Although the three cases which I have been able to observe ended in recovery, their clinical history and symptoms nevertheless have suggested some speculations upon the etiology of the disease. I think, in order to realize fully the causes and early stages, we have to consider the whole of the medical history before the appearance of the local lesions encountered at operation or in the *post-mortem* room; and in this history certain types of build and temperament appear to be strong predisposing elements.

In opening the discussion Dr. Telling assumed that the diverticulum is made first, congenitally or otherwise, and that, as is the case of the appendix, all inflammations are brought about by morbid septic activity developing in their