menced. It is possible the patient's future menstrual experiences may throw some light on this subject.

It only remains for me to say a few words about a more rare and more complicated class of cases of menstrual retention—I mean those in which the whole or a portion of the utero-vaginal canal is divided into two parts by a septum or otherwise, and where one side only is occluded. If the unilateral occlusion is at the vaginal orifice, there is formed a puzzling tumour known as a unilateral hæmatocolpos; if at the os uteri, the tumour is a unilateral hæmatometra. I had an instance of this latter condition under my care a few years ago, and published an account of it, together with an abstract of all the cases I could find recorded, in the *Transactions* of the American Gynecological Society, vol. xviii, for 1893, p. 434, to which I must refer those of you who are specially interested in the question.

NOTE.

[1] The details of one of these cases will be found in the *Medical Chronicle* for October, 1887.

DESCRIPTION OF AMBULANCE FOR THE MOUNTED SERVICE.

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THE military history of this and other countries shows that, when any new evolution of tactics or war material takes place, we have had the utility of the cavalry arm called in question, but it has always been found that that force enters upon new and more responsible duties. The institution of the cavalry manœuvres in 1890 marked the beginning of the cavalry renaissance, but since the introduction of the magazine rifle, and even since the beginning of the Boer war in October, the supreme importance of the mounted services in modern warfare has been finally established. We see a whole British army, largely owing to its insufficient mobility, checkmated at various points, and the situation cannot be altered until a large mounted force is sent to its relief. It has now been decided to organise a total force of 20,000 regular and irregular cavalry, yeomanry and mounted infantry. With such an enormous addition of mounted men we are naturally led to inquire how the existing medical arrangements will suit such an altered state of things. We are met at once by the fact that the great alterations in the medical regulations which have been made in the past few years in the interests of the infantry have not been adapted to the requirements of cavalry or horse artillery. "The ambulance arrangements for cavalry in war are practically non-existent" (Surgeon-General Evatt).

We have the same medical organisation (and that a dismounted one) for both the infantry and cavalry divisions, and if this system has been condemned by cavalry commanders in the past, how much more will it now prove itself unsuited to such a large, rapidly advancing, widely extending, and rapidly retiring force of mounted men called on constantly to fight (mostly on foot) at great distances from the main body.

When a British army corps takes the field it has attached to its divisions, for the care of its wounded, the bearer companies of the Army Medical Corps. These are entirely non-regimental, and quite distinct from the ambulance detachment in each regiment called regimental stretcher bearers. These bearer companies on foot have to keep up with the cavalry or infantry divisions to which they belong, notwithstanding the widely different conditions under which they act.

The existing medical arrangements of a dismounted bearer company with a cavalry division in the field have been condemned by experienced cavalry commanders, and army surgeons, notably by the late Major-General Sir Herbert Stewart, who, from his experience in Egypt, described the system as "absolutely unsuitable." In a memorandum which he presented to Lord Morley's Committee in 1883 (the Army Hospital Services Inquiry Committee), he suggested the establishment of a mounted bearer company to accompany cavalry, similar to one he improvised in Egypt, and which had done excellent service. Lord Morley's Committee unanimously recommended "that in the medical organisation of cavalry brigades in the field provision be made for mounted bearer companies." No attempt has yet been made to carry out this recommendation; neither in the medical regulations nor in the new Manual of the Army Medical Corps do we find any reference to the subject.

The names of many distinguished officers could be mentioned who have had experience in numerous instances where the wounded were unattended to for hours, and where the movements of troops were hindered. Among them Sir Drury Lowe, who writes:

> I have often heard (Sir) Herbert Stewart say how terribly he was hampered by not having his wounded readily transported.

General Lord Ralph Kerr, late Commandant at the Curragh, states that:

> Cavalry must be sadly crippled when they have only the present organisation to look after their wounded.

Surgeon-General Evatt described how in Egypt he was sent back to the infantry square when toiling with his bearer company on foot miles behind the cavalry force to which he was attached; the wonder was they were not cut to pieces by the enemy. The late Surgeon-General Wolseley was of opinion that no greater boon could be conferred on the cavalry than the suggestion of some efficient way of carrying their sick and wounded.

While on humane grounds alone some new organisation should be established, it has been remarked, especially in savage countries, how the daring of the soldier is increased by knowing that help is at hand. When a soldier is wounded, he is in excruciating pain if a nerve is injured, and faint from the shock and loss of blood; he is in dreadful uncertainty and apprehension as to whether his hurt is mortal or slight. He is tired, cold, hungry, and thirsty, and, after lying many hours unattended, he is haunted with the idea that he has been forgotten or will not be found, and that he will die before relief comes.

Still more serious are the surgical objections. The antiseptic system of dressing wounds has revolutionised civil and military surgery. The epidemics of erysipelas, blood poisoning, and hospital gangrene, which killed hundreds in every campaign, are no longer seen where it can be carried out. But, as Esmarch says: "It is a necessity that the patient should have a dressing applied, and that he is brought to the dressing station to be further treated as soon as possible."

In the Bosnia and Herzegovina war of occupation by Austria in 1878, the writer saw hospitals crowded to excess; there was not a single epidemic of erysipelas or other hospital disease, as in every case a "first dressing" had been immediately applied, and, indeed, sometimes remained on untouched until complete healing resulted.

If it is a necessity for the best results of the antiseptic system in war, not only for the wounded soldier himself, but also for the other wounded amongst whom he is placed, to have an immediate dressing applied, it is equally necessary, in order to diminish the mortality, to have operations carried out, especially in joint injuries and amputations, at the earliest possible moment. Pirogoff[1] narrates how Reyher, in the Bulgarian war, found the mortality rise from 10 to 61 per cent. by the delay of a few hours in joint injuries, and from 18 per cent. to 35 per cent. with gunshot fractures. That in fact the brilliant results of antiseptic surgery cannot be obtained unless it is applied within two or three hours, as it will be found the highest rates of mortality correspond with those seen when ordinary dressings are used. Von Bergmann, in the Russo-Turkish war, showed how important an early application of an antiseptic tampon is in the further progress of the wound. Mac Cormac insists on the importance of treating all joint and gunshot fractures at once antiseptically at the dressing station. Fischer, the greatest German writer on military surgery, lays down that antiseptics must be applied early, and that a greater force of doctors and dressers must be at the dressing station to carry the treatment out fully. The greatest danger to the wounded soldier, then, lies between the fighting line and the field hospital, and it is there that medical aid should be least defective.

Chenu[2] states, in his report of the Crimean war, that we had after every fight 5 or 6 per cent. dying from hæmorrhage, many from trivial wounds. Ledran puts the percentage a little higher. It is evident that many lives would be saved if a sufficiently large staff was stationed immediately behind the fighting line. Fitzgerald states that in the Franco-German year he specially noted the terribly increasing

mortality when the amputations had been delayed more than two or three hours after the receipt of the injury, all died if there was a delay of over eight hours.

It follows from these considerations, tactical, humanitarian, and surgical, that the bearer company should be mounted, and able to follow a mounted force everywhere. It should have conveyances for transporting men sitting or lying down (every fourth wounded soldier requires to be kept flat) either in a regular or improvised manner, and it should have sufficient surgical appliances, as a surgeon without his appliances and dressings is like a battery without ammunition.

To provide an efficient medical service for the mounted forces the following points are suggested:

1. The addition of a second surgeon to all cavalry regiments in the field. For surgical and physical reasons this is necessary.

2. That the regimental ambulance detachment of a cavalry regiment be specially trained and equipped for its duties in improvising rough dressings and means of transport, mounting and dismounting wounded, etc.

3. That a certain proportion of cacolets and litters should be carried in the regimental transport for transporting the sick and wounded sitting and lying down. That these be improved, made lighter and more comfortable, and that they be carried on properly-trained horses.

4. That the detachment be annually inspected by the Inspector-General of Cavalry.

5. That a mounted bearer company be formed to act with mounted infantry companies or cavalry divisions.

6. That where wheeled transport is unsuitable or insufficient for the wounded of an infantry division, the mounted infantry horses specially trained be used to carry cacolets and litters after a great battle. De Préval[3] stated that 750 men with these can do the work of 15,000 stretcher bearers.

7. That experienced surgeons and assistants (with suitable transport and sufficient dressings) be always close in rear of the fighting line in greater numbers to carry out at once the demands of the antiseptic system.

Proposals for the mounted services artillery, cavalry, and mounted infantry may be considered under two heads:

I. Regimental medical aid—that is, that given by the regimental stretcher bearers.

II. Non-regimental medical aid—that is, that given by a mounted bearer company attached to a cavalry division.

PROPOSED MEDICAL AID FOR A CAVALRY REGIMENT.

Personnel.

2 surgeons.
1 hospital sergeant from the Army Medical Corps, who would also be a trumpeter to guide wounded to medical aid.
4 trained bearers per battery, squadron, or company, each carrying a canvas water bottle, pattern as used by Victorian Mounted Rifles, portable stretcher and straw splints, field tourniquets.
1 corporal from the regiment in charge of surgical panniers during an action.
1 private from regiment as orderly, carrying field medical companion, surgical bags, and water bottle.

SPECIAL TRAINING.

In addition to the ordinary training of infantry stretcher bearers, these bearers should be taught to:

1. Dismount wounded from horseback.
2. Improvise rough first dressings (including the manufacture of straw into splints, mats, etc., as also of other substances not naturally suited for such purposes. Application of plaster-of-paris bandages, etc.).
3. Improvise means of transport by horseback or otherwise, and by utilising country carts.
4. Signal (simple code) by flag and lantern.

Materiel.

A light ambulance cart able to follow cavalry everywhere, carryimg small portable cooking or heating stove for wounded.
4 pairs cacolets, with pack saddles complete.
1 pair litters, with pack saddles complete.
4 field stretchers, one altered to carry a man on horseback lengthwise, fixed to a pack saddle by a special contrivance.
4 portable jointed wooden stretchers (own pattern).
4 pairs of clamps for sword stretchers (Naismith's pattern).
Pair of surgical saddle bags or pair of surgical panniers (with pack saddle), chiefly with antiseptic dressings, which can be made into an operating or dressing table, upright transverses fitted to iron frame-work of pack saddle to carry field stretcher in an emergency
2 field medical companions.
4 leather buckets for splints each containing portable McIntyre and jointed long splint, straw splints (straw, twigs, or coarse grass can be had everywhere, is light, clean, and rigid—mats and splints can be quickly made in any quantity).
4 surgical haversacks.
4 canvas buckets for fetching water.
2 leather wallets, containing hammer, long knife for cutting leather, leather punch (assorted sizes) wire nippers, wire pliers, small hand saw in case.
1 tent (surgery) without pole in the centre, whistles for surgeons and non-commissioned officers.
Handflags.
Leather belts for horses standing by themselves. Horses should be trained to stand with their heads slightly turned towards the saddle. The belt keeps them in this position, and it can be instantly applied.
Hobbles are most useful, but heavy; knee haltering is preferable.
Tourniquets carried by bearers, and worn by them as braces,
Revolver. Each man should carry a revolver.

The cacolets at present in use for mule mountain equipments should have the arm-rest jointed where it joins the back, so that it can swing outwards; at present they are unsuitable for high mules and horses, and difficult to load on that account. They might be more comfortable and, like the litters, might be improved by cyclist makers. Horses that step short should be chosen to carry litters and cacolets.

The value of cacolets and litters has been differently estimated, but in consequence of the reports of the excellent work of these contrivances by the French in clearing their wounded off the field in the Crimea, a Board of experienced medical officers convened by the Principal Medical Officer there, reported greatly in favour of their general applicability to the circumstances of warfare.

Surgical haversacks should be carried behind the flap of the saddle in an oblong rigid leather case; when required they should be carried over the shoulder, one belt going over the left shoulder, the other round the waist, thus preventing the haversacks from falling forward when bending down.

PROPOSALS FOR EACH MOUNTED BEARER COMPANY OF A CAVALRY DIVISION.

Personnel.

4 medical officers
1 quartermaster
1 sergeant-major
1 quartermaster-sergeant compounder
4 sergeants
1 trumpeter
4 corporals
4 privates as servants
2 cooks for wounded
2 cooks for company
8 waggon orderlies
8 tipcart orderlies
4 litter orderlies
8 cacolet orderlies (each rides on one horse and leads another)
16 privates
70 men, 56 horses
1 waterman
Batmen not included

The bearers to be trained like the regimental stretcher bearers, and highly exercised in improvising rough first dressings, splints, transport, etc., utilising straw, hay, twigs, wire, wood, leather, reins, etc. Also specially trained in the application of plaster-of-paris for transporting wounded great distances over rough and unsuitable roads. Constant exercise in improvising is necessary, as when few tools are carried for such a service the usefulness and mobility of the force must be enormously increased.

Materiel and Equipment.

Waggons, carts, etc. (see Regulations for Medical Services, Part I).
Waggons should be much lighter, some with two horses. All stores, etc., to be made suitable for pack transport.
Sixteen pairs cacolets (altered like those for the Regimental Aid) with pack saddles complete to fit horses.
Four pairs litters with pack saddles complele to fit horses.
One pair surgical saddle bags or one pair field medical and surgical panniers with pack saddles. All panniers convertible into operating or dressing tables.
One pair surgical saddle bags or one pair surgical panniers, specially for antiseptic dressing.
One field companion and pair water panniers.
Slade-Wallace saws.
Lanterns and flags.
Revolvers for each man.
Sixteen surgical haversacks and canvas water bottles to be carried attached to the saddle.
Four safety bicycles to relieve orderlies in suitable countries, and which can be converted into wheeled stretchers—a great saving of men and horses.
Two field fracture boxes.
Tools in leather wallets for improvising (see Regimental Medical Aid).
Tourniquets carried by bearers and worn by them as braces.
Leather belts or knee halters or
Hobbles for horses standing alone.
Whistles.

REFERENCES.

1 *Krieg's Sanitätswesen*, p. 429. 2 *Rapport au Conseil de Santé*, p. 704. 3 French delegate to Geneva Convention, Chenu, *supra*, p. 694.