

hospitals of Europe, and in 1897, with many improvements in the technique, it was universally practised in the lying-in hospitals all over the world.

The following is a description of the preparation of a case of curettage in 1897 :—

For cleaning the vagina, laundry soap and a 10 per cent solution of creolin, or a $1\frac{1}{2}$ per cent lysol solution, with a long handled (sterilized) brush will suffice.

By pushing the brush in and out, turning it, scrubbing here and there, the vagina may be rendered aseptic. While engaged in using the brush, irrigation into the vagina may also be made.

The cleansing should be as thorough as possible, going over and over the field time and again. The vaginal canal should be scrubbed in this way whenever an operation is being performed upon or through it. In septic cases especially must it be thorough.

I think it is rather interesting to compare the above with the present-day methods, and to see what a tremendous advance has been made in aseptic midwifery and gynæcology.

Echoes of the Past.

WAR EXPERIENCES OF A TERRITORIAL MEDICAL OFFICER.

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(Continued from p. 59).

CHAPTER XXV.—PREPARATIONS FOR THE FINAL ADVANCE.

As the summer advanced and the reorganization of the divisions approached completion, it was obvious that we were working up for another offensive. New roads had been made to the less accessible parts of the line. A Decauville railway was run out from Jerusalem to Ramallah. The new troops were practised in the attack of positions by a series of well thought out and carefully rehearsed raids. The medical organization for evacuation from the front line was revised. The field ambulance transport was overhauled and the long-expected mule litters were added to their establishment. Our new Indian field ambulances were practised in field work and collection of wounded.

It was soon seen that the rôle of the 20th Corps in the great operation would be a subsidiary one, though the fact was carefully kept secret from all but the heads of departments. Deception of the enemy as to the part of the line on which the attack would be made was the most important factor in General Allenby's scheme. All through the long months after the capture of Jerusalem the idea of hoodwinking them on this point was ever

before him. The retention of troops in the almost impossible Jordan Valley, the two raids across the Jordan into Moab, all had the primary object of diverting the enemy's attention to this flank. And there is no doubt that he fully succeeded in deceiving them. To the last they had no idea where the main attack would be, though they knew of course that it was coming somewhere. The wonderful concentration of troops on the maritime plain between the hills and the sea was a complete surprise. Their most recent intelligence reports and maps, captured at Nazareth after the advance, gave no hint of any knowledge of it.

In the scheme, the 20th Corps were to hand over their best fighting division, the 60th, to the 21st Corps. Our own attack was to be a subsidiary one. Our rôle was to hold the enemy to their positions on the



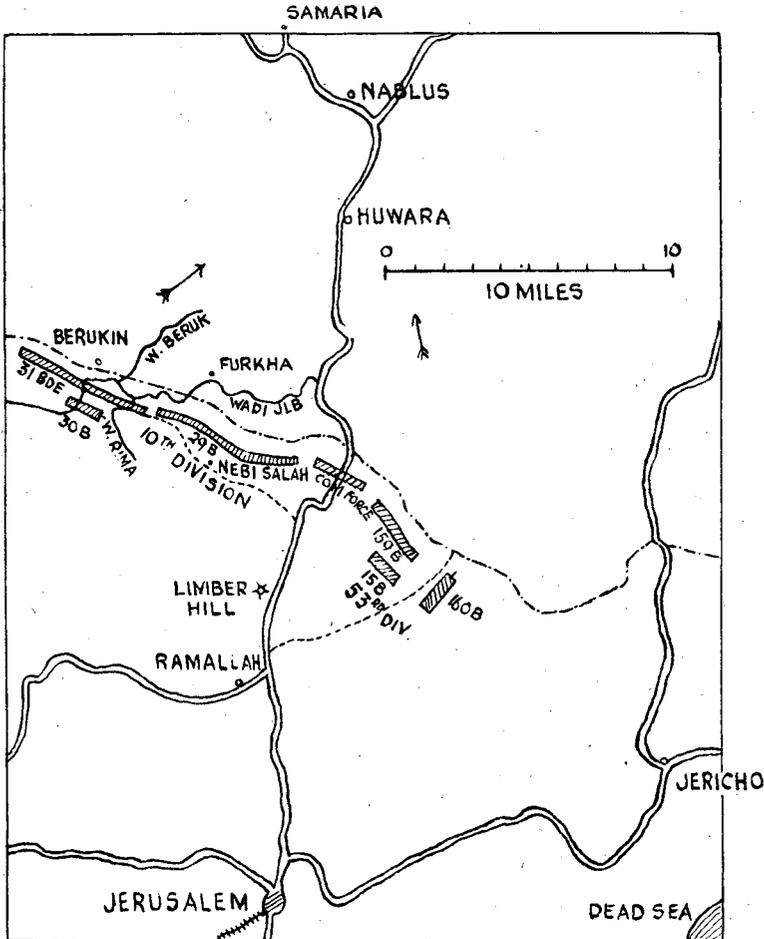
Practising with mule litter, Judean Hills.

hills and to advance our line in conformity with the movement on our left. Our plans were none the less worked out in the utmost detail. The scheme involved a converging attack from the extreme flanks by the two remaining divisions, the 53rd and 10th, while the centre was held by a composite independent retaining force.

The 53rd Division was on the right and the 10th on the left. Both had strong enemy positions in front of them and each was to concentrate behind its outer flank, leaving the intervening space weakly held by the composite force. The attack was to be launched simultaneously by the two divisions, after the attack by the 21st Corps had started in the plain. After taking the positions immediately in front of them they were to advance, converging towards the Nablus Road which was to be struck about six miles on, when a direct advance was to be made on Nablus.

The Jerusalem—Nablus road was the only permanent one crossing the two lines. It occupied almost the middle of the Corps position. The roads out to the flanks of the divisions were new military roads, roughly and recently made, and for the most part in bad condition. They only went up to our position and had no continuity with any similar track on the Turkish side.

POSITION OF 20TH CORPS, SEPTEMBER 18, 1918.



The nature of the operation made the business of evacuation of the wounded a very difficult one.

It was evident that as the attack developed there would have to be a change in the route of evacuation. At first it would be by the tracks leading out to the flanks of our position, but as the two attacking forces converged the line of evacuation would be shortened by making use of the

central permanent road running through the two lines. The country beyond the flanks was little known. It was extremely rough and hilly and broken by deep wadis running down east and west to the Jordan plain on the one hand and the maritime plain on the other. On the left flank the attack would be made over ground previously held by the right flank of the 21st Corps. So strict were the instructions as to secrecy that Directors were forbidden to take even their immediate assistants into their confidence. Any investigation of routes and reconnaissance necessary in the early stages had to be made personally and alone.

One such reconnaissance may be referred to. Our front line roughly coincided with a deep wadi running west, known in its upper part as the Wadi Jib, and further down as the Wadi Balut. It starts at the Nablus—Jerusalem road, which is practically on the water parting. At its upper end our front line positions were to the north of the wadi but there was a part of the line opposite the left half of the 10th Division, where they were behind the wadi, and in direct view from the Turkish positions, especially from the prominent village of Furkah. The position on the extreme right flank of 21st Corps, held at this time by the 75th Division,¹ was again in front of the wadi. Our extreme left post was at Nebi Saleh and between this and the 75th right post at Berukin there was a gap. The attack of the 10th Division would pass through Berukin and the only possible route of advance and of subsequent evacuation was by a tributary of the Wadi Jib called the Wadi Rima, running into it from the south, then along the Wadi Jib to the west for about a quarter of a mile, as far as the Wadi Beruk opening into the main wadi from the north. The two miles down the Wadi Rima were well under cover, but the quarter mile of the main wadi was quite open to view from Furkah and from the more forward Turkish posts. It was essential to discover if this route could be used by motor and horse ambulances during the operation. One very hot afternoon, therefore, I set off to explore the route, leaving my car at the top of the Wadi Rima. It was quite simple until one got to the opening into the main wadi. There one was confronted with a double risk, firstly that of being spotted from the enemy's positions and secondly, as one emerged into the territory of the 21st Corps with whom there was little or no communication, that of being taken for a spy coming apparently from the Turkish side. However, all went well and by creeping along under cover of what scrub there was, I escaped observation and when I came out into the part of the wadi belonging to the 21st Corps, no notice was taken of me by anyone. Having made all the investigations I wanted and having proved the practicability of the route for our purpose, I returned the way I had come, to my car.

To serve the 20th Corps in this operation there were four Casualty

¹ Before the actual operation the 75th Division was moved nearer the coast.

Clearing Stations, three in Jerusalem and one, the 74th, on the Nablus Road at Limber Hill, about twelve miles north of Jerusalem. With this was also an Egyptian hospital, available also for prisoners of war.

It was arranged that the wounded should pass through the 74th Casualty Clearing Station and thence to Jerusalem. Medical cases were to be held up during the operation and sent to divisional retention hospitals which had for some time been established at Ramallah for the care of minor cases of sickness, staffed by personnel from field ambulances of the respective divisions.

For each division there would be two successive routes of evacuation. Firstly, through main dressing stations placed close behind the extreme flanks on the roads leading out to the flanks. Secondly, through main dressing stations to be formed on the Nablus Road as far forward as might be convenient. For this purpose one section of a field ambulance from each division was kept on the Nablus Road behind the centre of the line, ready to advance as soon as the road was open for them and the convergence of the divisions had made this the more direct route for evacuation.

In the case of the 10th Division an arrangement was also worked out for the evacuation of lightly wounded cases by the route which had previously been used by the 21st Corps for the evacuation of the casualties from their extreme flank, direct to Ludd. They had a light railway running up from Ludd into the hills, to within five miles of the point of junction of the two corps. It was, therefore, a much shorter route to railhead than round by Jerusalem, but its use involved diversion of part of their transport by the field ambulances on that flank which in the event proved too much for them. Only about sixty cases were sent down that way as it was found that the journey from the advanced dressing station to the head of the light railway and back took five hours. Advanced dressing station parties and bearers were to accompany the attacking brigades to be employed at the most suitable spots to be selected by the Divisional A.D.S.M.S.

The light railway from Jerusalem to Ramallah, just completed, was to be used for evacuation of walking cases direct to Jerusalem without passing through the 74th Casualty Clearing Station. To superintend the loading of the trains at Ramallah a small detachment was detailed with tentage and equipment for housing and feeding parties before they were dispatched.

The Divisional A.D.S.M.S. were made responsible for the evacuation of casualties as far as the main dressing stations; the Corps D.D.M.S. for evacuation from the main dressing stations to the casualty clearing stations in Jerusalem, where they were taken over by the A.D.M.S. Line of Communications. The D.D.M.S. also took over temporary control of the divisional retention hospitals for medical cases at Ramallah.

A special operating unit consisting of two medical officers, one of whom was a surgical specialist, was attached to the Corps for the operation and was detailed to the main dressing station of the 10th Division at Nebi Saleh on the left flank.

As the country in front was unsuitable for motor ambulances, only six Ford cars were placed at the disposal of the divisions, the whole of the rest of the motor ambulances were administered by the D.D.M.S. for evacuation from the main dressing station to the casualty clearing stations. Communication between the D.D.M.S. and the A.D.M.S. and between the A.D.S.M.S. and their field ambulances was maintained by motor cyclists, two being attached to the former and one to each of the latter. Reports were sent by the divisions to the D.D.M.S. every six hours.

The distances were very great. Nebi Saleh was about ten miles from Ramallah and the first objective of the 10th Division was at least five miles further. The distance to the right flank was not quite so great, but the country was even more difficult than that on the left.

Careful instructions were given to ensure promptitude in getting away serious cases and to prevent delay in the use of motor ambulances, also as regards the methods of sanitation to be employed during the advance. Corps headquarters was to move from Jerusalem to Ramallah on the day of the commencement of the operation.

The great event was fixed for September 18. Our hopes were high. The health of our troops was good, and their morale at the highest pitch, while it was known that those of the enemy were both at low ebb. Desertion had been increasingly frequent and everything pointed to discord between the Turks and their German advisers. Much work was done in every department to bring the scheme of operations to perfection as the appointed day approached.

On the 17th, while visiting the 53rd Division to discuss final details with the A.D.M.S., I received a telephone message from Corps Headquarters that I was to report forthwith to General Headquarters at Ramleh, no explanation being given.

It is not difficult to image the state of mind that I was in by the time I reached Corps Headquarters at Jerusalem. Doubt as to whether I was in for trouble or the reverse, disappointment at not being able to see the fruition of our carefully worked out plans for the morrow, sadness at leaving the staff with which I had served since its formation, and a Chief whom we had all learned to love and honour, brought about a mixture of feelings difficult to describe. When I arrived I found that I was temporarily to take over the duties of Director of Medical Services to the whole Force.

I packed up my immediate necessities and started off post haste to Ramleh, leaving my servant to follow with the remainder of my baggage.

CHAPTER XXVI.—DIRECTOR OF MEDICAL SERVICES.

The next few days passed like a whirlwind. The great advance, so long looked forward to, started before dawn of September 19. All the medical arrangements had been completed by my predecessor before handing over. I was free, therefore, to start picking up the multitudinous threads of my new work.

The medical staff at Army Headquarters consisted of :—

Director of Medical Services.

Colonel Westropp White—Deputy Director for Indian troops.

Lieutenant-Colonel Bagshawe—Assistant Director, Chief Staff Officer.

Lieutenant-Colonel Angus—Deputy Assistant Director, Sanitation.

Major Bird—Deputy Assistant Director, Personnel.

Lieutenant-Colonel Heron—Deputy Assistant Director, Egyptian Hospitals.

Captain Houston—Chief Clerk.

There was also a medical officer in charge of the Headquarters' camp.

Each of the three Army Corps had a D.D.M.S. with whom the D.M.S. dealt directly on medical matters.

For the Line of Communication, which included at this time Jaffa, Ramleh and Jerusalem and extended back as far as the Suez Canal, there was an A.D.M.S.—Lieutenant-Colonel Abraham.

West of the Canal, the Force in Egypt was under a separate Command with Colonel Knaggs as its A.D.M.S. Alexandria was a subordinate Command under the G.O.C. Force in Egypt and had an A.D.M.S.—Colonel Beach.

Belonging to the Egyptian Expeditionary Force and under control of the D.M.S. there were at this time ten British General Hospitals; one Australian and five Indian. The nominal war establishment of a British or Australian General Hospital—as in other theatres of war—was one thousand and forty beds, the odd forty being for officers; that of an Indian General Hospital was five hundred, but at the time of the advance almost all the hospitals had been largely expanded and several of the British ones were able to take two thousand at a pinch.

The three British General Hospitals at Alexandria were :—

No. 17 in the Victoria College, at Sidi Bishi.

No. 19 in the Deaconess German Hospital.

No. 21 in the barracks at Ras el Tin.

No. 15, which had been the first general hospital sent out early in 1915, and which had occupied the Abbassia secondary schools, had recently been closed down when the British troops were being reduced. The Indian hospitals were also largely above establishment.

There were five British hospitals at Cairo :—

The Citadel already referred to.

No. 27 in the police barracks at Abbassia.

No. 31 in the Main Barracks, Abbassia.

No. 71, formerly the Red Cross Hospital, in the boys' school at Gizeh, and Nazrieh Hospital, later on numbered 88, with the inception of which in the summer of 1915 I had been so largely interested.

The Australian General Hospital, known as No. 14, was located in the extensive new workshops belonging to the Suez Canal Company on the eastern bank of the Canal Docks at Port Said. It was a magnificent site,

open to the harbour on the west and to the Mediterranean on the north. The buildings, which were new, lent themselves well to adaptation as hospital wards.

Of the Indian General Hospitals, one was at Masaid near el Arish, one at Kantara, one at Cairo in the New Barracks at Abbassia, one at Suez, and the fifth, known as No. 5, was divided into three portions, each expanded to the size of a full general hospital. Its headquarters was at Suez and the other sections at Alexandria and Kantara respectively.

Of stationary hospitals there were six British, two Australian and two Indian. Each of these was equipped for four hundred beds. Two British, Nos. 47 and 48, at Gaza; two, Nos. 24 and 44, at Kantara; No. 26 at Ismailia, and No. 36 at Suez. One of the Australian Stationary Hospitals was at Moascar, near Ismailia, the other in Cairo. One Indian Stationary Hospital was at Gaza, the other, No. 137, was at Suez.

The casualty clearing hospitals were of three types—"British" (which retained the name Clearing Station), "Indian" and "Combined." Of the British there were five, Nos. 26 and 76, at Ludd; No. 74 at Limber Hill, twelve miles north of Jerusalem; Nos. 65 and 66 (formerly the 54th Divisional Casualty Clearing Stations) in Jerusalem. The two Indian Clearing Hospitals, Nos. 31 and 24, were both at Ludd. Of the four "Combined," for which a special local establishment had been drawn up so that they could take either British or Indian patients, No. 33 was at Jaffa, No. 15 at Wilhelma, immediately behind the main point of the attack, Nos. 32 and 34 at Jerusalem.

The casualty clearing stations were nominally equipped to take two hundred patients, but several of them had had their establishment brought up to four hundred at this time.

The hospitals and clearing hospitals east of the Canal, including those at Port Said, Ismailia and Suez, were under the administration of the A.D.M.S. Lines of Communication. An exception was made in the case of No. 74 Casualty Clearing Station at Limber Hill which was under the D.D.M.S. 20th Corps as it was so far forward. Those in and around Cairo were directly under the A.D.M.S. of the Force in Egypt. Those at Alexandria under the A.D.M.S., Alexandria.

Extensive arrangements had been made for the medical care of the large body of Egyptians employed either in the Egyptian Labour Corps, in the Camel Transport Corps or as drivers in the Army Service Corps.

In this organization there were three classes of hospitals. Stationary hospitals, detention hospitals, and a small unit called a reception hospital which could be moved about with any party of Labour Corps. All the Egyptian hospitals were under the administration of the A.D.M.S. Egyptian Hospitals, Lieutenant-Colonel Heron. The Egyptian hospitals were largely used during the great advance to augment the Prisoner of War Hospitals, of which there were five situated respectively at Cairo, Kantara, Ludd, Suez and Alexandria. There were besides, special officers'

hospitals at Cairo and Alexandria. The former was in the Sirdarieh, the official residence of the Sirdar of the Egyptian Army, which was lent by Sir Reginald Wingate who at this time held the dual office of High Commissioner and Sirdar of the Egyptian Army. That at Alexandria was in the old military hospital on the point at Ras el Tin which has already been referred to. There was an infectious hospital in the Austrian Civil Hospital in Cairo, a mental hospital—also in Cairo—and a special hospital for the treatment of orthopædic cases at Helouan, ten miles from Cairo, where there was a Zander Institute. There was a hospital for Nursing Sisters at Abbassia and convalescent hospitals in the Boulac Palace at Cairo and in the Khedive's Palace at Montaza, about eight miles from Alexandria, while at Cairo and Alexandria there were large convalescent depôts through which patients were returned to duty.

The total hospital accommodation for British and Indians, apart from field ambulances, was well over twenty thousand.

There was a huge medical store depôt at Alexandria from which stores were sent not only to Egypt and Palestine, but also to Salonica.

A Sanitary Section was attached to each division, and three or four others worked on the lines of communication. The divisional ones were generally with their divisions, but at times they were taken under the direct control of the D.D.M.S. of the Corps and used as he thought best. They were thus sometimes divisional and sometimes corps units.

Nine hospital trains were specially fitted for the conveyance of European patients and two others for the use of Egyptians. Six of these were employed on the east side of the canal. Most of the hospital trains had been constructed in Egypt out of local rolling stock by the Egyptian State Railway, but two or three were sent out complete from England. They were well appointed and very comfortable. Although a swing bridge of boats was constructed across the Suez Canal at Kantara in connexion with the railway to permit the passage of trains, it was never used for through traffic or the conveyance of patients. All patients brought down the line were admitted *en route* to one or other of the hospitals at Kantara and reloaded into hospital trains on the west side of the canal. The hospital trains on the east side of the canal were controlled by the A.D.M.S. Lines of Communication, those in Egypt by the D.A.D.M.S., G.H.Q., 2nd Echelon, stationed at Cairo.

All the hospital ships in the Mediterranean, about twelve in number, including those serving Salonika and the Dardanelles, were nominally under the control of the D.M.S., Egyptian Expeditionary Force, and all those plying between India and Suez. There was, however, at this time so much interference with the movements of the ships by other authorities, working direct through the War Office and Admiralty at Home, that the control, except of those detailed for evacuation of our own patients, had practically passed out of our hands, though we were constantly being called to account if any delays in evacuation occurred from the other

theatres of war. The details of the movements of the ships was another of the duties of the D.A.D.M.S., 2nd Echelon, who worked in close conjunction with the Principal Naval Transport Officer (Pinto) whose office was also in Cairo. The disposal of hospital ships and hospital trains involved constant telephonic communication between my office at G.H.Q. and the D.A.D.M.S. at Cairo.

Generally speaking, telephonic communication was exceedingly good both with Cairo and throughout the whole Force, but in time of stress and in bad weather it was sometimes difficult. Under favourable conditions we could telephone to Alexandria direct from G.H.Q., a distance of well over three hundred miles, but often in times of emergency it was tedious and rather trying to the temper.

The Allied Detachments, French and Italian, made themselves entirely responsible for the medical care of their own people, both as regards the field and base hospital accommodation. We never interfered in any way. All they asked of us was the use of our hospital trains. These detachments were never very large and their medical administration seemed to work quite smoothly. My own personal relations with their medical services was confined to a very cordial friendship with the officers of one of the French field ambulances, which began at Deir el Belah in the summer of 1917 when I was D.D.M.S. of East Force and which was renewed from time to time afterwards—once at Jerusalem and once again shortly after the big advance when I visited their station on the western fringe of the Judæan hills, the Allied Detachments having taken an active part by an attack on that section of the Turkish position.

(To be continued.)

Current Literature.

WELLS, W. F., & WELLS, Mildred W. **Air-borne Infection. Sanitary Control.** *J. Amer. Med. Ass.* 1936, v. 107, 1698-703; 1805-9, 5 figs [27 refs.]

This communication epitomizes much of the remarkable work done on the subject of air-borne infection by the first-mentioned author. The air as a vehicle of infection, although dominant in the minds of early workers, has gradually come to be almost disregarded in this respect by modern public health workers, but W. F. Wells, by the invention of an instrument for the exploration of controlled atmospheres, and the development of a technique for producing bacterial suspensions in these, has brought the whole subject into prominence again. Two forms of transmission of infection through the air are recognized. Droplet infection proper, as described by Flügge, applies to droplets larger than 0.1 millimetre in diameter, but these are rapidly removed from the air by gravity before they