

of the liver pattern. The gall-bladder contained two ounces of straw-coloured bile; there were no calculi; the mucosa showed some pin-point hæmorrhages; bile duct was patent.

The spleen was moderately enlarged and very soft in consistence, red in colour; the cut surface was very soft and of "strawberry jam" appearance. Weight eight ounces.

Respiratory system: There were hæmorrhagic patches over the lower third of each lung, with some scattered ones at other areas. There were adhesions at the left apex, and slight emphysema at the right apex: On palpation, the lungs felt heavier and more resistant than normal. They were crepitant in bulk. The cut surfaces showed the lower halves of both lungs to be red to purple in colour, the bronchioles containing some purulent material. The upper areas were less involved, but definite areas existed. The left mid zone showed some organizing blood clot and areas of collapse.

*Comments on the Case.*—The chief point of interest in this case is the demonstration, post mortem, of the successful role of the great omentum in combating an acute abdominal condition. This is comparable to the common experience in the surgery of the acute abdomen, when the omentum is discovered at operation to be wrapped round the appendix, thus preventing a general peritonitis.

The number of complications occurring in this one case of typhoid fever must be somewhat unusual.

I have to thank Lieutenant-Colonel E. Phillips, D.S.O., M.C., M.B., R.A.M.C., Commanding British Military Hospital, Jhansi, and Colonel S. G. S. Haughton, C.I.E., O.B.E., M.D., Assistant Director of Medical Services, Meerut District, and Delhi Independent Brigade Area, Eastern Command, India, for their permission to send these notes for publication.

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### Echoes of the Past.

#### WAR EXPERIENCES OF A TERRITORIAL MEDICAL OFFICER.

BY MAJOR-GENERAL SIR RICHARD LUCE, K.C.M.G., C.B., M.B., F.R.C.S.

(Continued from page 134.)

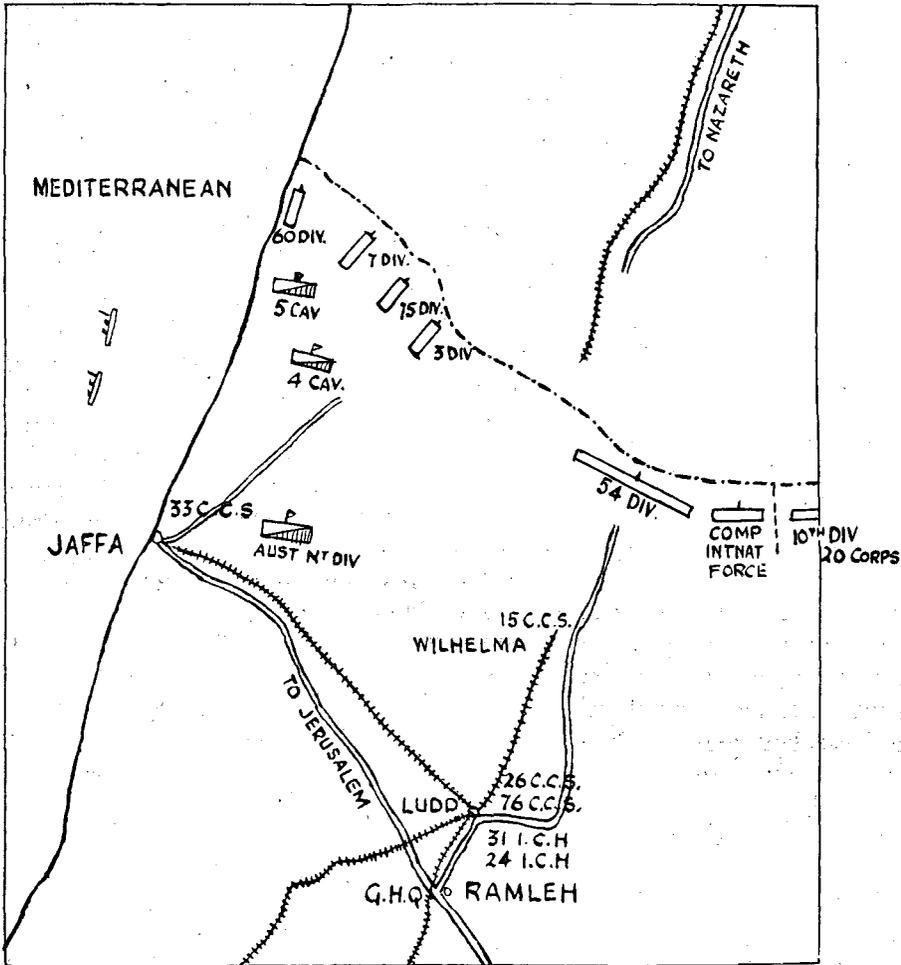
#### CHAPTER XXVII.—THE GREAT ADVANCE.

It is not necessary to give more than an outline of the scheme for the great attack of the 21st and the Desert Mounted Corps on the Turkish lines on September 19. The four divisions of the 21st Corps were strengthened by the addition of the 60th Division from the 20th Corps and by the French Contingent.

The attack was entrusted to Lieutenant-General Sir Edward Bulfin commanding the 21st Corps. The whole corps was massed across the

Plain of Sharon in the following order from right to left: French Contingent, 54th Division, 3rd Division, 75th Division, 7th Division, 60th Division. Three of the four divisions of the Desert Mounted Corps, under Lieutenant-General Sir Harry Chauvel, were secretly assembled

POSITION OF 21ST CORPS, SEPTEMBER 18, 1918.



and carefully hidden in the forest of orange groves around Ludd and Jaffa, behind the left flank of the 21st Corps.

The defence of the Jordan Valley was entrusted to Major-General Sir Edward Chaytor, commanding the Anzac Mounted Division, who had under his command in addition to his own division a brigade of Imperial Service Indian Infantry and a composite brigade of Jews and British West Indians, a sufficiently curious combination.

The plan of operation was, after a hurricane bombardment from the twenty batteries of artillery at dawn, to attack along the whole line. Once the Turks were driven out of their positions the three left divisions were to break through and advance rapidly, with the 60th, on the coast, leading, so as to head off the retreating Turks from the sea and leave a gap. In this they were to be assisted by a flank fire from two torpedo-boat destroyers. The whole body of cavalry would then push through the gap past the left flank of the 60th Division, riding on straight northwards until they had passed the main body of the retreating Turks. Then they would turn inland and cross the Mount Carmel range, which shuts off the plain of Sharon from the Plain of Esdraelon, by a westerly pass. They were to cut the railway at Afule which is the junction where the Turkish line from Ludd joined the Haifa-Damascus railway, and after sending a detachment to seize Nazareth, the Turkish Army Headquarters, were to await the arrival of the retreating Turks and cut them off as they debouched into the plain. Their route of retreat would be by a more easterly pass at Jenin through which the railway and the strategic road forming the Turkish Line of Communication crosses the mountains. Part of the cavalry at the same time was to push on eastwards up the Plain of Esdraelon, past Samaria and Nablus, in order to prevent the Turks from retreating down into the Jordan Valley along the railway towards Beisan.

The attack by the 20th Corps, under Sir Philip Chetwode, in the Judæan hills was, as has already been mentioned, to be withheld until the successful result of the 21st Corps attack was assured.

The medical arrangements for the operation involved no great change in the disposition of hospital units. No. 15 Casualty Clearing Hospital was held in readiness but not opened until the morning of the 19th after the battle was commenced. It was placed at Wilhelma on the railway line about ten miles north of Ludd, almost the furthest point to which the railway had then reached. No. 33 Combined Casualty Clearing Hospital was at Jaffa, about ten miles behind the left flank of our old line. These two units were to receive all the casualties in the first instance from the field ambulances and pass them on by train and motor ambulance to the four clearing hospitals at Ludd.

Jaffa was connected with Ludd at this time by a light Decauville railway only, the Turks having removed the rails of the Jaffa-Jerusalem railway between these places and used them elsewhere. The rolling stock on the Decauville railway consisted of open trucks and was only suitable for the evacuation of sick or lightly wounded. All serious cases had to be brought the nine miles in motor ambulances by road. There was a good railway siding up to the clearing hospitals at Ludd which enabled the hospital trains to be loaded from them rapidly. The railway from Ludd to Jerusalem was available for hospital trains and brought down casualties collected in the Jerusalem clearing hospitals from the 20th Corps front and from the Jordan Valley.

All the details of the scheme for medical evacuation from the front in this operation had been most carefully and skilfully worked out by Col. E. P. Sewell, D.D.M.S. of the 21st Corps.

During the operations the weather remained fine so that the roads North which were merely earth tracks were good going for motor ambulances at this time.

We were all awakened at 4.30 a.m. on the morning of the 19th by the sound of the furious bombardment. Early in the forenoon news came through of the success of the attack and that this had been obtained without very heavy losses.

In the afternoon I motored out to the 15th Casualty Clearing Hospital at Wilhelma and found them hard at work though the casualties were not coming in very fast. By 4 p.m. 250 wounded had arrived. On the afternoon of the next day, the 20th, I went further up the line visiting the field ambulances of the 54th and 75th Divisions. The former were already practically clear. Neither of these divisions was engaged in the pursuit of the Turks but the field ambulances of the latter had been strung out along the main route of evacuation.

One of the 75th Field Ambulances commanded by Lieutenant-Colonel Lelean was open at Kalkilieh, about twenty miles north of Ludd, and acted as a collecting and transfer post. At the time of my visit it was up to its eyes in work. During the next ten days this unit passed over 5,000 British, Indians and prisoners of war, sick and wounded, through its books. The total wounded reported for the whole Force by the 20th was 1,762 British and Indians and 741 prisoners of war, so that the losses could not be considered very heavy considering the magnitude of the operation and the result achieved.

Every part of the scheme had gone like clockwork. The cavalry reached the plain of Esdraelon without opposition, took Nazareth, almost capturing the Turkish and German Headquarters' staff, and intercepted the retreating Turks at Jenin who surrendered wholesale almost without resistance.

The attack of the 20th Corps had also, after hard fighting, been quite successful and the Turks retreating from this front through Nablus were also caught by the cavalry and Air Force on the road towards Beisan and suffered terribly.

On the 21st I visited the 33rd Casualty Clearing Hospital at Jaffa. They had received a good many casualties during the early part of the fighting, but as the battle had quickly rolled away from the coastal area their work was already practically finished. On my way back I visited the casualty clearing hospital at Wilhelma again and the four at Ludd. Everything was working smoothly and the disposal of the wounded well in hand.

The same day I had an interview at G.H.Q. with the Egyptian Premier, Rushdi Pasha, hoping to interest him in the status of the native

Egyptian medical officers belonging to the Egyptian Government Service, who were serving with the Egyptian Expeditionary Force and who had a grievance in that they were losing the time so spent as it did not count towards promotion. He was a courteous old man and spoke English fairly well. He promised to do his best to get the grievance remedied, but whether this was ever done after the War I do not know. This interview was, of course, some time before the disloyalty and insurrection came to a head in Egypt in which the native medical profession took a full part and into which Rushdi himself was drawn.

(To be continued.)

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### Current Literature.

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GILCREAS, F. W. & DAVIS, W. S. Investigation of the Amylase and Phosphatase Tests as an Indication of Pasteurization. Reprinted from *Ann. Proc. Internat. Ass. Milk Sanitarians*. 1936. 15-32, 1 diagram & 1 coloured pl. [Abstract by the authors.]

Methods for the measurement of the progressive inactivation of enzymes naturally present in fresh milk by heating the product to the time and temperature of pasteurization, were studied with a view to establishing a simple, accurate laboratory test for the control of pasteurization.

The method based on the destruction of amylase was found, in general, to differentiate unheated from heated milk, but it did not distinguish even major variations in treatment. The amylase content varies with the breed, diet and period of lactation of the cow, and occasionally fresh milk was examined which contained so little amylase that it reacted in the test as though heated.

The test based upon the inactivation of phosphatase as developed by Kay and Graham (*Journ. Dairy Research*, 1936, v. 6, 191-203) was also investigated. If the sample is adequately buffered and incubated overnight at 37° C., the enzyme hydrolyses an added phenylphosphoric ester, liberating phenol, which is readily detected quantitatively by the use of Folin's reagent. The blue colour produced by small quantities of phenol lends itself readily to comparison with permanent standards prepared from inorganic solutions; this mode of reading was therefore developed and substituted for the tintometer used by the authors of the test. In this modification of the original procedure the relation of milligrams of phenol per 0.5 millilitre of the sample examined, to time of holding at 143° F. or to per cent of added raw milk has also been established. Variations of five minutes or greater in the heating time were readily distinguished and the addition of as small a quantity as 0.1 per cent of raw milk gave a result indicative of incomplete pasteurization. Variations in temperature were also easily detected. The technique proved equally satisfactory in deter-