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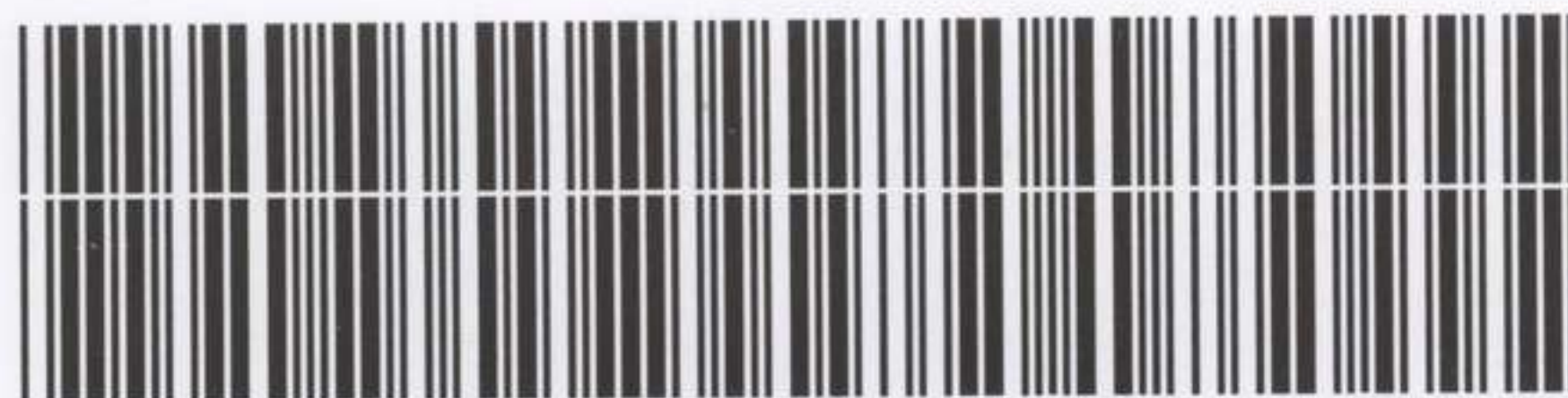
**Australian Imperial Force unit war diaries,
1914-18 War**

Engineers

Item number: 14/36/38

**Title: 1st Field Squadron, Australian
Engineers**

September 1917 - November 1918



AWM4-14/36/38

W A R D I A R Y .

1ST. FIELD SQUADRON AUSTRALIAN ENGINEERS

SEPTEMBER 1917 TO JUNE 1919.

SEPTEMBER 1917.

EL SHELLAL.
U.21.c.1.6.

Sept.
1st

- Prepared watering place for water camels - soak, two wooden troughs, pumps. Continued overhaul and placing in order of Camel Watering Area for Desert Mounted Corps. Inspected and effected minor repairs to troughs etc. in various Bde. areas. Miscellaneous:- Making crosses, repairing typewriter cover D.H.Q., dumbwaiter for D.H.Q. Exchanged unserviceable gear at R.E. Park, Belah.
2. Continued work on Desert Mounted Corps Camel Watering Area, also carried on with preparation of drinking water supply for three companies C.T.C., arranged transport of gear from Belah for this work. Minor repairs to water supply throughout Divisional Area. Overhauled, renewed and repainted targets on 1st A.L.H. Bde. Rifle Range. Lieut. G. H. Weedman evacuated to hospital.
3. Made targets for grouping range for R.H.A. on beach. Constructed bombing range and pit for 1st L.H. Bde. Completed erection of twentyseven troughs at Desert Mounted Corps Camel Water Area, thoroughly overhauled and relined same. Soak dug for 2nd Austn. M. Gun. Sqdn. Repaired targets at N.Z. M.R. Bde. Rifle Range. Minor repairs replacing and re-lining troughs in Divisional Area.
4. Continued re-lining of troughs in Divisional area and repairs to water supply gear, pumps, etc. Continued work at Drinking Water Area for C.T.C. Repairing targets at N.Z. M.R. Bde. Rifle Range.
5. Necessary repairs Divisional Watering Areas, cleaning out of soaks. New soak for 2nd L.H. Regt. for N.Z. M.R. Bde.
6. General maintenance of Divisional Watering Areas. Repairing and making new targets for 1st L.H. Bde. Range. Making office fittings, pigeonholes, covers for tables, etc., for Desert Mounted Corps - chairs and crosses for N.Z. M.R. Bde.
7. Further work at Desert Mounted Corps Camel Watering Area. Commenced open cut for soak 150' x 6', two wells 6' x 6' x 7'. Opened up for one well set. General work on Divisional Watering Areas, erection of further wooden troughs in N.Z. M.R. Bde. area. Erected Boxing Ring for 1st L.H. Bde. Tournament. Chairs and crosses made for N.Z. M.R. Bde. New pole made for G.S. wagon.
8. Completed work at Desert Mounted Corps Camel Watering Area with the exception of the erection of additional wooden troughs which were not obtainable. Second well set completed and placed, two shadufs erected. Total work in this locality was:- Complete overhaul, relining and re-erection on trestles of thirty one wooden troughs, cleaning out and extending open cut soak to about 450' x 6', overhaul of shadufs and erection of two additional ones, erection of two 6000 gal. drinking water reservoirs with frames and covers, three pumps and open cut soak, and the fencing in of this drinking water area. Repaired fanatis for 1st L.H. Bde. Re-erected two troughs in 2nd L.H. Bde. area.
9. Inspection and necessary repairs to Divisional Watering Areas. Made twelve folding stools. Erected one cook's shelter. Made one table. Made three stationery boxes for D.H.Q.

EL SHELLAL.
U.21.c.1-6.

- Sept.
10th Overhaul and replacing of unserviceable reservoir at 2nd L.H. Bde. Overhaul and relining of R.H.A. troughs. 1 officer and five O.R. to Khan Yunus to inspect pumping station, engines, force pumps, etc., as instruction.
- 11th Assisted in laying out of Sports Ground 1st A.L.H. Bde. Repaired fence and reservoir covers at L.H. Bde. Drinking Water Area. Making targets and erecting same at N.Z. M.R. Bde. Rifle Range. Replaced defective troughs and hose at Horse Water Areas. Five O.R. to Khan Yunus for special instruction at pumping station.
- 12th Fixed stage for Y.M.C.A. Further work on target N.Z.M.R. Bde. Rifle Range. 19 O.R. on musketry grouping. Made new upper toothplate for gag 7th M. Veterinary Section. Exchanged unserviceable equipment at R.E. Park, Belah. Five O.R. to Pumping Station, Khan Yunus, for special instruction.
- 13th Erected three more wooden troughs 2nd L.H. Bde. Water Area. Four O.R. to Ferry Post (I.R.E.M.) for special instruction in oil engines and pumping machinery. Five O.R. to Pumping Station, Khan Yunus, for special instruction.
- 14th Maintenance of Divisional Watering Areas. Fixed new life line and drum on beach, made one table. Squadron inspected by Corps Commander.
- 15th Further four wooden troughs erected at 2nd L.H. Bde. Watering Area. Repaired targets 2nd Bde. Rifle Range on beach. Making table and stools for N.Z.M.R. Bde. Repairing lamp for D.H.Q. Camp kettles for Signal Sqdn.
- 16th Inspection of and minor repairs to watering areas. Exchanged unserviceable material at R.E. Park, Belah.
While the Division was resting in reserve, the Squadron maintained the Drinking and Horse Watering Areas, carried out the work described above for Desert Mounted Corps - erected, or in a few cases re-erected, one hundred and one wooden troughs, fortytwo cook's shelters, maintained a guard at Dump, and carried out a considerable amount of miscellaneous work such as making camp furniture, etc.
- 17th O.C. "A" Group and detachment took over Kilo. 9 Watering Area. O.C. N.Z. Troop took over ABASAN Watering Area and squadron bivouac, and provided necessary guards.
- 18th Division moved from Reserve to Support Area (ABASAN). Details on Water Areas had taken over previous day. General camp arrangements made. Division watered before leaving Beach. Arrangements easily completed for afternoon watering to commence at 1400 in accordance with "Q" Branch timetable.
- 19th Lining wooden troughs for 1st L.H. Bde. "B" Troop less transport moved to Watering Place Kilo. 9 for work on 1st Bde. area. Cooks' shelters. Workshop and Farrier's shelters erected for Squadron.

EL SHELLAL. Sept. 20. Drew deep well pumps from Weli Sheikh Nuran R.E. Park. Commenced repair of hurdles in 1st L.H. Bde. area. N.C.O. reported to C.S.O.2. for inspection of Rifle Range and particulars of requirements. Made map board for "Q" Branch.

U.21.C.1.6. to 21. "B" and "D" Groups at Rifle Range for musketry. 7 N.Z. reinforcements arrived from Moascar, horses being sent for them to Rafa.

V.36.B.51. 22. Repairs and covering with matting of 218 hurdles in 1st L.H. Bde. area. Erection of 15 cook's shelters in 1st L.H. Bde. area. 3 Ablution benches made for 1st L.H. Bde. Clearing Station. 2 crosses made for 1st Bde. Material for this work had to be drawn from Weli Sheikh Nuran and Shellal.

27. Transport and supervision provided for clearing holes at ABASAN watering area and forming ground with stone and hard material. Practical field training in erection of deep well pump in a cistern at ABASAN. Screen round ablution area and three cookhouses erected in 2nd L.H. Bde. area. Made 14 hurdles for 2nd L.H. Bde. sports. Made table and four forms for Officers' Mess 6th L.H. Regt. Made three swinging targets and 51 small targets for Rifle Range.

27. Made two tool boxes, stretcher for N.Z.M.F.A. Repaired about 20 fanatis from ABASAN Water Area.

to 30. Made 14 rope ladders. Made instrument box for "Q" Branch. Three stools. Put down wire paths at Desert Mounted Corps H.Q. Made 15' x 15' portable shelter for "Q" Branch Descorps.

Authority from Australia existing for the formation of two Field Squadrons, and only five troops having been formed, it was decided to form another troop to be known as "D" Troop, 1st Field Squadron, and to be used for the present on mechanical work, under this squadron for administration, but receiving orders direct from C.R.E. Desert Mounted Corps. Instructions were accordingly issued to O.C. Anzac Base Details, Moascar, on 11th inst., that the troop was to be formed by Lieut. E. J. Howells, A.E. (from reinforcements). The first detachment of the Troop left Moascar on 15th inst., balance on 17th inst., proceeded to FERRY POST for collection of certain pumping sets complete with engines, and arrived at WELI SHEIKH NURAN on 27th inst - strength (full) 2 officers 37 O.R. (one other officer yet to be posted). State on arrival at NURAN 1 officer 37 O.R. Establishment is attached. Mobilization store table identical with that of a troop of this squadron, except that transport and horses are cut down (see attached). The little "D" Troop being that of the New Zealand Troop of this Squadron, the N.Z. Troop will in future be known as N.Z. Troop.

(Sgd.) A. Max Allen, Capt.

for Major Comdg.

ESTABLISHMENT OF "D" FIELD TROOP, 1ST FIELD SQUADRON.

As for a Field Troop forming part of a Mounted Division in Egypt, with the following provisional alterations:-

Personnel.

Troop Leader, Captain or Lieut.

Artificers, Nil in lieu of 3.

Grooms & batmen, 2 in lieu of 4.

Drivers for vehicle, 3 } in lieu of 24 ?
" " " spare 1 }

" camel (natives), 6.

Two riding horses for officers in lieu
of four - ten riding horses for other
ranks in lieu of 38.

6 draught horses for 1 L.G.S. wagon.

Group Officer Lieut. or 2nd Lieut.

Revised Establishment:-

Capt. or Lieut.	1
Lieut. or 2nd Lieut.	1
Sergeants	2
Corporals	2
2/Cpls.	3
L/Cpls.	3
Sappers	21
Drivers, grooms and batmen	6
Camel drivers	6
Officers' chargers	2
Riding horses	10
Light draught horses	6
Camels	12
Wagons, L.G.S.	1.

OCTOBER 1917.

<p>ABASAN, Syria, Jerusalem.</p>	<p>Oct. 1. to 19.</p>	<p>General watering arrangements for the Division. Minor miscellaneous work, details attached. Preparations and experiments for special work anticipated.</p>
<p>1/250,000.</p>	<p>20.</p>	<p>Squadron, including newly formed Mechanical Troop ("D" Troop) marched from ABASAN to GAMLI.</p>
<p>B.9.</p>	<p>21.</p>	<p>Joined Imperial Camel Brigade at ESANI.</p>
	<p>22.</p>	<p>Opened up water for I.C. Bde. at MALAAGA by digging sumps in the Wadi.</p>
	<p>22 & 23.</p>	<p>"B" Troop assisted by 10th Field Troop, R.E., opened up one well at GHALYUN, and dug one new well but supply was unsatisfactory. An abundant supply was located with divining rod within a few hundred yards; this was fully developed and storage tanks filled.</p>
	<p>Night 22/23.</p>	<p>Squadron less two troops marched to KHALASA. Two large wells here had been very successfully shot in by enemy - craters about 30' diameter, depth about 10' stone lining lower down badly shaken, engine houses, girders, engine block, precipitated in wells which were completely filled with the debris.</p>
		<p>Method employed by enemy appears to have been to sink four holes equidistant round the well about three feet back from the steining and about eight feet in depth in which the charges were placed.</p>
		<p>The method of clearing was as follows:- A working party of approximately 100 men for each well (from I.C. Bde.) commenced clearing crater of large boulders, commencing at the outer edge. Meanwhile the sappers erected at each well a heavy improvised derrick (10" spars) with specially made skip (capacity $\frac{1}{2}$ ton).</p>
	<p>27th.</p>	<p>On crater being cleaned, a false lining was fitted in the top of the well to strengthen the steining which was badly shaken even at this depth. All material in the well was then removed by derrick and skips, three skips were kept going night and day on each well, flares were used at night. The wells were cleared to a depth of thirty and thirtyeight feet respectively and then a four-foot box sunk in the bottom of the well. There was no horse water nearer than seven miles until water was struck in the wells. On each case a 5 H.P. "Lister" Engine and centrifugal pump was installed by the Mechanical Troop. Fifteen 8000 gal. canvas reservoirs were sunk in the ground and sandbagged.</p>
		<p>This work including filling reservoirs was completed by 27th and handed over to Australian Division on morning of 28th.</p>
		<p>N.Z. Troop then proceeded to MESSERIEH near ASLUJ and developed water in an unlined well 60' deep, using derrick and skips.</p>
	<p>Night 24/25.</p>	<p>Two troops proceeded BIR ASLUJ with 2nd A.L.H. Bde. and were joined by Squadron H.Q. on 26th.</p>
		<p>Four wells here had been similarly shot in, craters 25' to 31' diameter, depth about 8', and one so completely covered with debris of masonry that no estimate of dimensions or exact location of the well was possible. These were cleared to depths varying from 34' to 53'; the method follow</p>

ASLUJ.
Syria,
Jerusalem.
1/250,000.
G.12.

Night
24/25
(ctd.)

ed was similar to that at KHALASA. Shifts were working day and night in all cases.

Two other wells, one at ASLUJ Railway Station and one near Railway Viaduct (demolished by this Squadron in May last) were also cleaned out to depths of 42' and 35' respectively, a double acting hand deep well pump placed on one, and a "Lister" Engine and centrifugal pump erected on the other.

At BIR ASLUJ 5 H.P. "Lister" Engines and rotary pumps were installed in the two best wells and G.S. Lift and Force pumps connected in series were used on the others.

There was no water at ASLUJ for the Light Horse Brigade until the wells were opened up.

30th.

The Division watered in the ASLUJ area on 30th and pulled out that night for BEERSHEBA.

"A" TROOP

- MARAKEB. 1/10/17. "A" TROOP Moved Camp to Marakeb, dug sump and erected troughs for 1st Brigade.
2. Working on sumps and erecting troughs for 1st Brigade watering.
 3. Working on sumps and troughs and erecting reservoirs and pumps.
 4. Erecting fence round drinking water area, repairing troughs and reservoirs.
 5. Deepening sump at 1st Brigade Machine Gun Squadron watering area.
 - to Erecting reservoirs at 1st Brigade Watering Area (drinking water).
 11. Making rope ladders for Troop use and repairs to stool for Bde. Head Quarters.
 - Deepening a sump in Bde. Watering Area, making canvas covers for reservoirs.
 - Completed rope ladders and reservoir covers, erected troughs in Bde. area.
 - Repaired one of this troop's limbers. Made flares for use on projected operations.
 - Making canvas sheets and painting thereon signs for Aeroplane Reporting Stations.
 - Overhauling gear and making general preparations as far as possible for special work.
 12. 2 O.R. to Dump, Rafa, 1 O.R. to Squadron Head-Quarters, 15 O.R. to Sheik Nuran.
 - to Painting Aeroplane signs for Brigade, cleaning and repairing troughs.
 18. Musketry Instruction, carpenters repairing limbers, plumbers making flares.
 19. Moved from Marakeb to Abasan-el-Kebir to make final preparations for active operations.
 - Left 1 N.C.O. and Sapper at Marakeb to supervise watering arrangements for 1st L.H. Brigade.
 20. Drawing equipment from 1st L.H. Brigade dump, Rafa, to replace equipment left with Brigade.
 21. Troop moved from Abasan-el-Kebir to Gamli and joined up with Squadron Headquarters.
 22. Moved with Sqdn. Hd.Qrs. developing water Khalassa to Asluj. (See Squadn. Report.)
 - to
 - 31.
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"B" TROOP

- ABASAN. 1/10/17. 3 N.C.Os. and 6 O.R. proceeded to well Desert Corps, dismantled pump and fittings and tested canvas water buckets. 1 carpenter sharpened 4 saws.
2. 1 N.C.O. and 4 O.R. delivered material to 5th, 6th & 7th Light Horse Regiments. Erected high jump and pillow fight pole. Repaired table at officers Mess 6th L.H. 1 N.C.O. and 2 O.R. repaired G.S. Limber.
 3. 4 N.C.Os. and 12 Sappers attended instructional class on derrick (swinging). 4 O.R. making quick release shackle and alteration to canvas water buckets. Lieut. Steven left for Port Said Rest Camp.
 4. 1 N.C.O. and 2 O.R. with limber proceeded to Brigade to collect all Brigade reserve pumping gear. 1 O.R. proceeded to R.E. Park, Shellal, with N.Z. Limber to exchange 6 pumps, 2 suction and 1 delivery hose complete.
 5. 1 N.C.O. and 6 O.R. exchanged pumps (Mk. 5 in place of Mk. 4) at Abasan. Troop packed all gear & moved out for inspection at 2nd Brigade area.
 6. 2 N.C.Os. and 10 O.R. proceeded to Rifle Range. 1 N.C.O. and 1 G.S. limber proceeded to Kilo. No. 9 to collect ordinance stores.
 7. 1 N.C.O. and 1 O.R. proceeded to R.E. Park, Belah, to collect material. 1 N.C.O. and 1 G.S. limber to R.E. Park, Shellal, to exchange 15 G.S. pumps. 1 N.C.O. and 2 O.R. made targets for Machine Gun Squadrons. 1 O.R. made telephone table for 5th A.L.H. Regt. 1 chair repaired for B.H.Q.
 8. 2 O.R. altered rope ladders from 1'6" rungs to 1'. 2 O.R. making quick release swingle bar. 1 N.C.O. reported Q.Bch. D.H.Q. 1 G.S. limber. Reported to watering officer 0930 and 1300 for filling in around water troughs. 2 O.R. repaired table D.H.Q. 1 N.C.O. and 6 O.R. erected a 30' x 20' reservoir to replace 1 unserviceable at Abasan and fixed up drinking water cover.
 9. 1 N.C.O. & 3 O.R. completed reservoir at Abasan. 3 O.R. reported S.H.Q. for day's work at D.H.Q. 1 N.C.O. and 1 limber reported Watering Officer, Abasan, to complete filling in around water-troughs. 1 O.R. and half limber proceeded to R.E. Park, Belah, to draw material. 1 N.C.O. and 3 O.R. reported to Watering Officer for duty 1 week at Abasan Watering Area. 2 N.C.Os. and 6 O.R. erected Derrick and tested canvas water bucket at well near Des. Corps. 1 O.R. repaired stretcher bed for Major Danger, D.H.Q.
 10. 1 N.C.O. and 5 O.R. erected 1 30' x 20' reservoir at Abasan in place of one unserviceable. 3 O.R. reported S.H.Q. to assist erecting stage at D.H.Q. 3 O.R. assisted in respraying gas helmets at S.H.Q.
 11. Clearingup camp etc. 1 O.R. proceeded to cooking school, Ismailia.

ABASAN. 12 to 19. Preparing and experimenting with material for the stunt.
 20 to 31. Moved with Sqdn. Head Quarters developing water Khalassa to Asluj (see Squadron Report).

N.Z. TROOP.

- ABASAN. 1/10/17. 3 O.R. to R.E. Park, Belah, for timber and canvas. 4 O.R. making targets. 17 O.R. erecting pump at Abasan.
2. 1 O.R. on duty as Mounted Orderly for S.H.Q. 14 O.R. erecting pump at Abasan Water Area. 4 O.R. making targets.
3. 4 O.R. on guard water area. 2 O.R. with limber to B.H.Q. for Ordnance Stores. 4 O.R. making targets and chairs. 2 O.R. making rope ladders.
4. 1 O.R. on duty at S.H.Q. as mounted orderly. 3 O.R. with limber to Rafa to R.E. Park. 1 O.R. to Belah. 3 O.R. to Shellal with limber. 2 O.R. making rope ladders. 4 O.R. making chairs and targets.
5. 4 O.R. on Water Guard, Abasan. 4 O.R. making targets. 1 O.R. to Belah.
6. 1 O.R. reported to S.H.Q. as mounted orderly. 2 O.R. making canvas bags. 28 O.R. shooting practice at Range. 4 O.R. making tables and chairs.
7. 3 O.R. to Shiek Nuran with limber to Dump. 1 O.R. to Belah. 4 O.R. making limber boxes.
8. 9 O.R. at well, Abasan, testing new bucket apparatus. 3 O.R. with limber carting metal at water area, Abasan. 1 O.R. making flares. 4 O.R. Water Guard, Abasan. 1 O.R. orderly at S.H.Q. 4 carpentering, making stretcher and ? for new bucket.
9. 2 O.R. with limber to Sheik Nuran. 3 O.R. erecting stage for concert party. 10 O.R. at Abasan well testing water hoist. 3 O.R. carpentering - making stretchers and leg rests.
10. 1 O.R. to Sheik Nuran, 1 O.R. orderly S.H.Q. 3 O.R. erecting stage, 2 O.R. spraying gas helmets. 12 O.R. at Abasan well with limber. 4 O.R. making limber boxes.
11. 4 O.R. making tailboard for limber and foot rests. 1 O.R. making flares. 12 O.R. gas practice.
- 12-19. Repairing and experimenting with material for the coming stunt.
- 20-31. Moved with Squadron Head Quarters, developing water, Khalassa to Asluj (see Squadron report).
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NOVEMBER 1917.

BEERSHEBA,
Syria,
Jerusalem.

1/250,000
G.10.

Nov.1.

The Squadron worked for the month with Hdqrs. and two sappers per troop at D.H.Q., the remainder of A, B and N.Z. Troops detached to 1st A.L.H. Bde., 2nd A.L.H. Bde. and N.Z.M.R. Bde. respectively. Detailed diaries from the troops are herewith; the following work was carried out by Sqdn. H.Q. detachment:-

1. Developing water supply at Beersheba and withdrawing charges of dynamite, gelignite, and kindred explosives from the wells. Practically every well was mined, but the enemy apparently had insufficient time to fix the charges. Usual charge was a case of gelignite lowered down the well on a rope. Coaches and trucks in railway yard were also mined and prepared for electric ignition
2. Continued work. Commenced developing water at Bir Hassan el A'Atham.
3. Continued work at Bir Hassan el A'Atham - poor supply about 250 gals. per hr. - depth 80 feet - diameter 8 ft. Working party from D.A.C.
- 4 & 5. - ditto -
6. Developing Bir Salem Abu Irgeig in addition to A'Atham.
7. Moved into Beersheba and took over all water supply for Descorps.
8. 0230 trekked Beersheba to SHERIA via IRGEIG - reached SHERIA 0900 developing water in WADI - excellent supply at about two feet but very boggy.
9. Trekked BUREIR via AMIEDAT.
10. Trekked to Hill 331 East of MEDJEL. Trekked on to HAMAME.
11. Ran steam engine at mill working on deep well pump, also developed water at various wells in village.
12. At HAMAME - drew guncotton for demolition of railway north of LUDD.
13. Left HAMAME for ESDUD 0800 thence through MURRA to YEBNA, arriving 2200. Arranged watering at wells at ESDUD and erected troughs on WADI SUKERIER for watering en route of Divisional troops.
14. Left YEBNA 0730, trekked to ZERNUKUH with 1st L.H. Bde. then to KUBEIBE, arranging watering facilities in Orchards.
15. Left KUBEIBE 1430 for BIR SALEM. Watered horses using pumping plant erected for irrigation of German Orphanage.

YEBNA,
Syria,
Jerusalem.

Nov. 15
(ctd.)

Detachment proceeded to LUDD, picked up one officer and twelve men from "A" Troop and covered by screen (1 off. 18 O.R.) from 1st A.L.H. Bde., destroyed railway for about one mile, three miles North of LUDD.

1/250,000
F.2.

- 16) Watered Divisional Troops at Bir SALEM (about three miles West of RAMLEH). Erected signboards
- 21) in town of RAMLEH.
22. Moved into JAFFA, occupied billets in Jewish settlement. Made temporary arrangements for watering.
23. Took over Water Supply and van engine for village.
24. Detachment pushed out to JERISHEH, built bridge of boats over NAHR-EL-AUJA at mill - material on ground at 1900 - span 100 ft. - eight bays - saddle built in each boat - boats moored to chain cable forward and 3" rope aft - completed with six foot roadway for infantry in file at 0800 - Working party Engrs. 1 off. 1 W.O., 8 sappers, 1 officer 25 O.R. infantry. Locality sketch herewith.
26. Developed water supply on beach at JAFFA.
27. Reconnoitred roads - SELMEH - SARONA, SELMEH - IBN IBRAK.
28. Marked all roads in our sector, particularly YASUR, SARONA Road East of town of JAFFA in order to keep transport out of town.
29. Investigating water supply SELMEH, IBN IBRAK, SAKIA'
30. Investigating fumigating plants RAMLEH, RICHON, SARONA.

"A" TROOP.

- BEERSHEBA. 1/11/17. Moved with 1st L.H. Brigade to Beersheba and prepared watering arrangements pools in Wadi bed at Bir-el-Hamam.
2. Troop moved from Bir-el-Hamam and joined up with 1st L.H. Brigade at Beersheba and trekked with Brigade to Ain-Kohleh - unable to water Brigade.
 3. Trekked back with Brigade to ~~Ain~~ Beersheba. Cleaned out 2 wells $\frac{1}{2}$ mile east Beersheba on Wadi Saba - poor supply insufficient to water Brigade, reserved for drinking only. Erected troughs at wells A1. & A2 of Beersheba Groups.
 4. Trekked with 1st L.H. Brigade to Sharia.
 5. Trekked with Brigade to Ameidat.
 6. Developed and made watering arrangements for Brigade in Wadis Muleiha and Kuggaba.
 7. Located pumping plant at Ka Jemmama and made necessary repairs and watered 1st L.H. Brigade.
 8. Anzac D.H.Q., Aust. Divn. and part of Yeo. Divn. -
 9. Handed over plant in good running order to 20th Army Corps (9/11/17). Trekked from Kh Jemmama to El-Mej-del and located steam plant, put same in working order and connected to pumping plant
 10. (Babcock & Wilcox Blue Boiler - area 3' x 4' x 5' diam. 15' long, 40 lbs. per square inch. Engine English make horizontal single cylinder 25 H.P. 8" stroke 10" dia. cylinder (Belt drive) pump. Three throw Vertical Plunger with 4" cylinder 3" delivery. Well 78' deep 6'6" diam. depth of water 6'6". Yield 2,500 gals. per hour. 2 reservoirs 16' x 17' x 5'.
 11. Moved from El Mejdal and joined Brigade at Esdud. Moved to Beach and developed water for Brigade, dug 3 sumps.
 12. Brigade moved to Beach. Put down necessary water supply gear and watered Brigade.
 13. Developing water on Beach 2 miles west of Sidret-el-Haririyeh (Square C.19 Sheet 16 Palestine). Troop moved with Brigade on trek and camped at Yebnah. Sunk 3 sumps 30' x 10' x 3' (Lt. Weedman reported and took command from Lt. Bradberry of Troop).
 14. Troop moved with Brigade from Yebnah on trek to Khurbet Deiran. Watered Brigade at Main Colony Well. (Well 12 feet diam. 100 feet deep fitted with 3 throw vertical plunger pump driven (Belt drive) by a 12-15 H.P. Dentz Horizontal Suction Gas. Engine, 3" delivery - yield 2000 gallons per hour and well in orchard $\frac{1}{4}$ mile East of Main well. Well and Plant similar to Main well but engine in bad repair. 3" delivery yield 1500 gals. per hour.

"A" TROOP (continued)

- BEERSHEBA. 15/11/17. Watered Brigade in morning as per 14th inst. Moved with Brigade through Ramleh to Ludd, located main pumping plant - 12-15 H.P. Deutz Horizontal Suction Gas. Engine driving (Belt drive) 3 throw vertical plunger pump 4" delivery - yield 2500 gals. per hour. Well 12 feet diam. 92' deep. One officer and 12 O.R. reported to Captain Allen (H.Q. Troop) and moved out along Railway line for a distance of 3 miles north of Ludd and demolished 1 mile of Damascus to Jerusalem Railway line and returned to camp at Ludd.
16. Watered Brigade at Ludd and moved with Brigade to Safiriyeh and watered Brigade from 3 wells worked by wheel and endless bucket conveyer - yield of each well 700 gals. per hr. Well No.1 120 feet deep. No. 2 and No. 3 90 feet deep.
17. Located well with pumping plant at Beit Dejan. Well 105' feet deep fitted with 3 throw vertical plunger pump 6" delivery driven (belt drive) by 12-15 H.P. Rouston-Proctor Horizontal Suction Gas Engines - yield 4000 gals. per hour. Watered Brigade in 1½ hours.
- 18.)
19.)
20.) Watered Brigade at Beit Dejan, moved to Yasur and located 2 wells 80' deep fitted with endless bucket conveyor driven (belt drive) by 3½-5 H.P. Deutz Horizontal Suction Gas Engine Yield 1800 g.
21. Moved with Brigade back to Yebnah and camped - water supply poor.
22. Moved ahead of Brigade and developed sumps on beach 2 miles West of Sidvet-el-Hariviyeh (square C.19. Sheet 16 Palestine.)
23. Dug 3 sumps on beach each sump 30 x 10 x 4 and capable of carrying one 600 gal. trough. 6 sumps in all watering brigade in 2½ hours. Put down 2½ spear points for drinking water.
24. Repairs to Troop equipment and supervision of watering arrangements.
25. Troop supervising watering arrangements and repairs to equipment.
26. Lieut. Jones & ½ Troop moved to Ludd to prepare watering arrangements for 2nd L.H. Regt. ½ Troop on beach supervising watering arrangements for Brigade.
27. Lt. Weedman and ½ Troop moved ahead of Brigade to prepare watering arrangements at Ayan Kara. Located well 12' diam. 95' deep (85' to water). Pump 3 throw Ver. Plunger - Engine 12 B.H.P. Hornsby Engine Suction Gas. Both pump and engine in good order and repair. Concrete Res. 20,000 gals. Yield 1400 gals. per hr. Erected 4 troughs.
28. Supervising watering arrangements at Ayan Kara and Ludd. Carried out water reconnaissance at
29. Wady Houlin, Khurbet Surafend, and found watering areas as per attached Report.
30. Supervising watering arrangements at Ayan Kara and Ludd. As per instruction from B.H.Q. reported on facilities for erecting disinfecting plant at plant of wine distillery, Ayan Kara.

"B" TROOP.

- HORA. 1/11/17. Watered Brigade from pools in Wadi Hora (stormwater) 2 drinks.
2. Watered from pools - troughs erected every time. Marched out 1200 along Hebron road to point N.E. of Marruneh. Brigade watered out of pools using buckets.
3. Put 2 pumps in Wadi Salamah $\frac{1}{2}$ mile S.E. of Um Sirah. Made reconnaissance to point $\frac{3}{4}$ miles S.S.E. of Tor-el-Sadan - result negative. Country very rough and rocky tho' passable to vehicles in daylight.
- 4 & 5.. Watered Transport horses 1 drink a day at Maktuneh - small supply (see Well Report).
6. Marched into Tel-el-Saba, sent horses into Beersheba for water. Marched out 1730 towards Sheria. Broke G.S. wagon wheel - converted others to our use.
7. Reached vicinity Sheria 1200. Camped caves Amiadat -waterless day.
8. Marched to Tel-el-Nejile, running water in Wadi. Removed 530 slabs explosive from Railway Bridges. 1st bridge - 3 charges in each of 2 piers, facing, 2nd 2 charges in each of 2 piers facing - charges electrically connected and also fused with 5' instantaneous and 1 ordinary detonator. No battery visible. Austrian officer dead (shot rifle) at 2nd Bridge, wiring not completed there - caught in act.
9. Marched out from Nejile 1130 - camped near Burier.
10. Moved on to Ebdis - water very bad - erected and used Horn buckets, sent ropes and spare horn buckets to near Beit Duves, Beit Affe and Keratija - used also small pump (hand gear) on bore near siding on line N. of Es Suafir-el-Gharbiye - yield from latter approx. 200 gals. per hour. Marched out to Hamame.
- HAMAME. 11. Watered on beach at potholes and with water buckets.
12. Repaired to date 9 sand cart axles and 1 L. Gun stock for 5th L.H.
13. Moved to point South of Beit Duras on Railway line. Lt. Bradberry reported from "A" Troop.
14. Moved to Jilia. Watered Brigade at wells and springs Ain-el-Makenna.
15. Kezaze and Ain-el-Sejed (see well Report). 2 $\frac{1}{2}$ suction no good for 20' lift - perished.
16. Marched to Kubeibe watering at Deiran village. Distillery and well.
17. At point 2000 N. of Neby Kunda and at Zernaka. Moved to Ludd - broke 1 G.S. limber pole and replaced with folding pole.

- LUDD. 18/11/17. Watering Brigade at Town Plant Suction gas engine - procured olive oil for lubricant and charcoal for native Engine driver. Erected 5 troughs and water bottle apparatus. Pump lifts 3000 gals. per hr. reservoir holds 25,000 gals., iron tank on hill near Mosque 7000 gals. Arranged with Mudiv of Ludd to burn charcoal from stack of Turkish wood at railway station (collected in all 1 ton and terminated the arrangement.)
- & 19.
20. Detached Lt. Bradberry and 5 O.R. to orders by Col. Russell R.E. Descorps.
21. Marched to Yazur watering Brigade at plant belonging to and run by Wasif, an English speaking Syrian also using well, at point S.E. of 275 Dhahr Selme 1 mile, with suction gas plant and 8000 gallon reservoir (orchard on hill).
- 22 to 24. Procured charcoal and oil from Ludd - Lt. Bradberry came back from Junction Station to where horses had been sent. Put up notice boards on roads in vicinity of Yasur.
- 25 & 26. Moved to orchard 1 mile S.E of 275, watering whole Brigade - repaired belting 6 times.
27. Moved to Selme - being shelled out of previous camp and watering place - using plant and large reservoir on entral west side of village - plenty of room for troughs, using 2 regimental and 4 of troops also reservoirs and bottle filters. Got 3" to 2½" reducing sockets from Wagner, Jaffa, nipples 2½" from Goussoman, Jaffa leather belting arrived from Col. Russell.
28. To Ludd for charcoal and terminated arrangement - paid £1 cash for 1 ton received, also paid for olive oil. Receipt forwarded to S.O. through Brigade.
- SELMEH. 29-30. Making crossing over Wadi (in square Jaffa 1-63360-071.L.3.b.e.) 4' wider and rendering same safe. Securing chaff from Sarona. Some draught horses getting low - am giving them any extra feed obtained - also to any poor riding horses.
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N.Z. TROOP.

- BEERSHEBA. 1/11/17. Marched into Beersheba with Squadron at 0100 and camped for the night, assisting all day with pumping plants and erected 2 600 gallon troughs.
2. Moved out to El Malah and joined N.Z. Brigade, and made watering arrangements for watering same, at this place there are a group of small wells averaging about 3' in diameter and 28 feet in depth, about one half being lined. Improved three wells by deepening, others could not be improved as they were in solid limestone.
 3. Improved a fourth well at Malah and searched for water in Wadi but the yield was very small, only watered about 2 troops, no doubt after rain there would be a plentiful supply in the Wadi, at a depth of 5 or 6 feet.
 4. Watered the Brigade in morning. Lifted all material at 1300 and moved out at 1500 for Kuwelfeh, arriving there 2200 and camped for the night. The Irgeig Detachment joined up.
 5. Proceeded in a S.E. direction in search of water; found several empty cisterns and at 1100 found the well Khat Reit holding approx. 6000 gals. water. Observed the yield for some time while Australian troops were drawing water, which was not lowered. Notified the Bde. but they were unable to utilize as they were being relieved at 1700 and expected to proceed to Beersheba. About 3 troops of A.L.H. watered at this well and a part of our Bde. drew drinking water from same. During our search we captured an armed Turk and handed him over to A.P.M. Moved into Beersheba.
 6. At 1300 moved out from Beersheba for Jerwan, arriving there 2100 and camped for the night. Proceeded to deepen Ain Kohleh wells; the yield from one (at 1150 on Map 1/125,000) being only 100 gals. per hour and the other one only yielding approx. 300 gals. per hr. (Map 1/125,000 at A in AIN KOHLEH):
 7. During operations two enemy aeroplanes came over and machine gunned us, wounding 2 of the Bge. working party and one of our Sappers (Sap. Richie), also badly wounded 2 of our draught horses. Continued work on these wells until we were recalled at 1600 by Sqdn. to Beersheba - arrived Beersheba 2300.
 8. Moved out 0200 for Sharia with Sqdn. Arrived Sharia 1800 and camped.
 9. Moved out from Sharia with Sqdn. 0530. Sqdn. leaving at Kelkah to await orders.
 10. Moved from Kelkah at 1000 to join Sqdn. Arrived Nebil Mamim 2000 and put up hoisting gear on 200' well and watered Divisional H.Q. and our own horses also two troops Australian Division.
 11. moved out 1000 for Hamame - arrived Hamame 1530.

- HAMAME. 12/11/17. moved to beach W. of Hamame and dug 11 sumps for N.Z. Bde. Water plentiful and just at from 2' to 3' in depth sinking in sand.
13. watered Bde. on beach detachment. Lockington and 4 O.R. at pumping plant Hamame. moved out with Bde. at 1400, arrived KH SUKEIRIE 2200.
14. Moved with Bde. at 0800 watered in Wadi Thahhanat in large pools of fresh water without troughs in morning. 1500 erected 4 troughs and one reservoir and watered Bde. from pools in Wadi.
15. Watered Bde. in morning and lifted all material at 1300 and moved forward with Bde. to Richon, where we erected 4 troughs at 30,000 gallon reservoir in the Colony and watered the Bde.
- AYUNKARA. 16. Watered Bde. in colony at 1300. Moved one mile N.E. of Wine Factory and erected 4 troughs at Concrete Reservoir contains 30,000 gallons of water.
17. Watered Bde. at a reservoir and pumping plant. Has a 12 H.P. Hornsby Gas Engine with Tangy Suction Gas plant attached. The pump is triple plunger type, capacity 4,000 galls. per hour.
18. Watered the Brigade in morning. Lifted all material and equipment and moved forward with Brigade at 0930. Arrived at 1300. Erected 4 troughs and 1 reservoir in Wadi N.W. of Sarona, half mile N.W. also erected 4 Regimental troughs for Brigade and found pumping parties for the Brigade.
19. 1 Cpl. and 4 O.R. watered Brigade. Placed 1 Cpl. and 4 O.R. in the Wagner Foundry and proceeded to effect repairs to Brigade material. Secured charcoal for pumping plant.
20. Watered Brigade, erected C.M.R. troughs near their lines and put pumps in order. 1 Cpl. and 4 O.RS at Wagner Foundry on repairs to Brigade material.
21. Watered Brigade 1 Cpl. and 4 O.R. on duty assisting at Wagner's foundry attending Brigade affairs. Sign posts procured from Turkish stores 600 scantlin for sign posts ~~fx~~ secured from Greek store (gave receipt) 20/8 10" x 1" for sign boards. Completed 30 sign posts ready for painting.
22. Watered Brigade. 1 Cpl. and 4 O.R. attending brigade affairs Wagner fdy. 2 O.R. repairing water pipe at Jewish Hospital. 2 O.R. (fitters) effected repairs chaff-cutter and got same working and cutting chaff for Brigade. Paint secured from Wagner foundry and completed 6 sign posts.
23. 1 Cpl. and 4 O.R. watered Brigade. Completed 14 sign posts and erected 10 of same. 1 Cpl. at Wagner foundry attending brigade affairs. Erected posts and roped in fresh water reservoir area improving same by draining and gravelling.
24. 1 Cpl. and 4 men watering brigade. 1 Cpl. and 3 men at Wagner Foundry on brigade work, miscellaneous work in camp.
25. Improved watering area. 1 Cpl. and 3 men at work Wagner foundry. 1 O.R. repairing pump at C.M.R. watering area.

- AYUNKARA. 26/11/17. Packed up all equipment and stood to ready to move and moved camp $\frac{1}{2}$ mile S.W. Erected 4 troughs and watered Brigade.
27. 1 Cpl. and 4 O.R. repairing chaff cutter at Sarona Brewery. 1 Cpl. and 4 O.R. watered Brigade.
28. 4 O.R. cutting chaff for Brigade. 1 Cpl. and 4 O.R. watered Brigade. 2 O.R. effecting repairs at Canterbury M.R. watering area.
29. 4 O.R. cutting chaff for Brigade. 1 Cpl. and 4 O.R. watered brigade and improved watering area. 1 Cpl. and 2 O.R. at Wagner foundry on brigade work.
30. 4 O.R. cutting chaff for Brigade. 1 Cpl. and 3 O.R. erecting pumps and troughs at C.M.R. new watering area. 2 O.R. repairing pumping engine at C.M.R. water area. 1 Cpl. and 3 men at foundry on bde. work.
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HEADQUARTERS - DECEMBER 1917.

During the greater part of the month the Troops were attached to Brigades, and their separate diaries are herewith. The Squadron less necessary details for watering Brigades was concentrated on 31st for work on SULTAN BRIDGE. In addition to work carried out by troops, the following was done by a detachment at Squadron H.Q.

- | | | |
|---------|---------|---|
| JAFFA. | 1. | Running gas plant (suction) in Jewish Colony, Jaffa, for water supply for Divisional units. Horses watered at sump and bore on beach. |
| | 5. | made reconnaissance of water supply of village of Wadi HANEIN, and arranged for watering of 2nd A.L.H. Brigade. |
| | 7. | Trekking to RICHON, arranged for watering of Divisional units at town supply. |
| RICHON. | 8. | Running water supply. village of RICHON. Made urgent repairs to roads. |
| | 9. | Arranging to obtain stone for further road repairs and charcoal for town engine. |
| | 12. | breakdown of Pump, Town Supply. |
| | 13. | Local engineer working on pump, failed to make joints satisfactorily and it was necessary to take over work, take down joints and repack. |
| | 14. | Pump repaired - water opened up at AYUN KARA as an emergency measure if required. |
| | 15, 22 | Pumping plant satisfactory. made about fifty notice boards for streets and billets. |
| | 23. | Commenced extensive repairs to road RICHON - Wadi HANEIN. |
| | 24 & 25 | Continued road repairs. |
| ESDUD. | 26. | Trekking to ESDUD. |
| | 27. | Opened up watering area for 1180 horses. Divisional Troops. |
| | 28. | " " " " " " |
| YEBNA. | 31. | Squadron less necessary Brigade details pulled out for Tel-el-Sultan to build bridge. Camped the night at YEBNA. |

"A" FIELD TROOP - DECEMBER 1917.

Dec. 1917.

LUDD	1st to 6th	Erecting experimental fumigatory plant at Wine Distillery, RICHON. Lieut. Jones with detachment at LUDD watering 2nd A.L.H. Regt.
	7th	Lieut. Jones with detachment joined Troop at RICHON. Troop supervising watering arrangements for Brigade - RICHON.
RICHON.	8th to 13th.	Troop supervising watering arrangements for Brigade. General camp routine.
	14th	Lieut. Weedman and 3 O.R. surveying road from BEIT DEJAH to WADI HANEIN. Troop supervising watering arrangements for Brigade.
	16th, 17th.	Troop supervising watering arrangements for Brigade.
	18th.	Lieut. Weedman and 8 O.R. moved with Brigade to front line - point 265 ref. sheet 13 Palestine map. Square "O" 15 b.
	22nd.	Lieut. Weedman wounded left hip, flesh wound, remained on duty. Troop supervising watering arrangements for Brigade horse at RICHON.
	23rd.	Lieut. Weedman and 8 O.R. returned with Brigade to RICHON/ ^{from} front line. Troop supervising watering arrangements for Brigade.
	24, 25th	Troop supervising watering arrangements for Brigade.
ESDUD	26th.	Troop moved with Brigade from RICHON to ESDUD.
	27th.	Digging sumps for horse water and putting down spear point for drinking water for Brigade at Esdud.
	28-30th.	Supervising watering arrangements for Brigade, ESDUD.
	31st	Lieut. Weedman with detachment moved from ESDUD to YEBNA and camped for night. Lieut. Jones at Esdud supervising watering arrangements for Brigade.

"B" TROOP.

Dec. 1917

MOVED TO
WADI HANEIN.

1st Secured 2½ H.P. "OTTO" Engine (Petrol) in Jaffa from Immigration Sanitary Depot. Lt. Bradbury blew up aeroplane bomb (ours) with 1 slab guncotton - satisfactory. Secured 10 bags charcoal and 2 rotols olive oil from LUDD (4th).

6th Used water plant at "Brills" farm, Hornsby engine (kerosene). Used charcoal gas producer - triple pump app. 3000 gals. per hour - reservoir holds 60,000 gals. Used drain to near hedge then reservoir 2300 gals. sunk in ground from which we pumped through hedge into troughs and drinking water reservoir. 5 troughs in use also water bottle apparatus.

7, 8, 9th Wet days.

10th, 11th Fine and frost.
12th

12th. Went to SUKERIER by car to see Camping site A.D.M.S. A. & N.Z. Mtd. Div. water passed by Major Hornes.

SUKERIER.

13th. Moved to SUKERIER 4½ hrs. with troop and limbers. Erected 6 troughs and reservoir on water holes, good and fresh. BILHARZIA reported A.A.M.C. doctor, chlorination and all precautions. Developing water in limestone crust in WADI BED on square, sheet XVI. 1/63360 - 072, B.2. A.S.E. and 294° to NEBY YUNIS. Well sunk 6' x 4' - 6' to water, 2' water, fresh, 800 gals. per hour - if further developed, unlimited. Tested with spear point, water found at 3' in sand hills in squares, same map, 072.B.1.a.&c.&.7a. Spear point work. Water fresh, yield small owing to slow percolation through fine sand slightly mixed with soil. Could be opened out into sumps but would entail unnecessary labour in view of WADI development. N.Z. troop draw their water from another hole made by them 20' away from ours.

14th. Sent N.C.O. and limber to Junction Station for R.E. stores. Repairing horse clippers for 5th L.H. Draw from R.E. Park 3 pumps complete, 6 troughs, 15 standards, 520' lashing (not fathoms) 750 sand bags. Returned 3 pumps and 2 troughs. Made table for Generals' Mess.

16th. Erected reservoir for washing purposes, made road into wadi - re-erected sundry notice boards.

18th. Making 3rd class figure targets for Brigade.

19th. Erected 9 targets. Regiment commenced shooting 1200. Making targets for M.G.S. and completing 3 more for Brigade. All hands voted on conscription referendum. Sent limber to DEIR SINEID to draw R.E. stores.

20th. Sent limber to DEIR SINEID to draw 3 reservoirs one of which was given to N.Z. Troop. Sent limber to S.H.Qrs. RICHON for Ordnance stores, etc.

22nd. Party on road making and draining drinking water area.

SUKERIER. 1917.
23rd Dec. Carrying on as above.

24th Erecting targets for M.G.S. Clipping horses and re-arranging camp.

25th floods in Wadi necessitated removal of drinking water reservoirs, also washing water ditto.

26th Commenced sump for drinking water in sand hills.

27th handing over reserve pumping gear to regiments - repairing targets for regiment.

28th Developing drinking water.

29th Moving horse troughs to sandhills - carrying on development for horses.

30th Issued balance reserve pumping gear to regiments. Packed limbers in preparation for move to RUBIN. Clipping horses and making crosses and doing sundry carpentry jobs for Brigade and units of ditto.

31st Lt. Steven went to RUBIN, met Col. Russel, R.E., Descorps, and took section of wadi RUBIN at point selected by Col. Russel for brigade (trestle) 2' above the then high watermark. balance of troops marched out with field Squadron and camped for the night at YEBNA.

YEBNA.

HEADQUARTERS - JANUARY 1918.

TEL-ES-SULTAN.	1918 1st Jan.	The troops were mainly on detached duty, and their separate reports are herewith. The following work was also carried out under the immediate supervision of Squadron H.Q. Drawing timber for trestle bridge, to be erected under instructions of Lieut.-Col. R.E. Descorps at Tel-es-Sultan.
	2 & 3.	Proceeded with erection.
	4.	Completed for traffic on 5th, 13/13 ft. bays to carry infantry in fours, cavalry in $\frac{1}{2}$ sections and field guns.
	5 & 6.	Continued fixing brushwood along handrail and minor improvements.
	7.	Very big flood, river rose 10'5", portion of centre of bridge washed away.
	8.	Built temporary bridge with two 24' bays on a 11' x 11' pontoon at a narrow spot in river about 100 yds. east of 1st Bridge. Bridge carries infantry in fours, cavalry $\frac{1}{2}$ sections, G.S. Wagon loaded.
	10.	Directions received to build barrel pier bridge, adjustable, for any rise in the river, to carry camels only, old bridge to be dismantled. Proposal for pile bridge turned down, owing to lack of material.
	11 to 13.	Dismantling old bridge, designing and drawing barrels and preparing approaches for barrel pier bridge.
	14.	Built barrel pier bridge, span 92', in seven working hours.
	15 to the end of the month.	Small detachment improving bridge and approaches, making additional barrel piers, preparing material, and placing everything in readiness for extension of the bridge. Ramps were made (grade of 1 in 6) from high flood to summer level, shore bays 24' long on wheels were constructed. The piers were moored to steel wire ropes ropes stretched across up and down stream from bridge. The method of extension was to break bridge at the shore bays, draw each bay up the runways for required distance, tip by loading shore ends and place piers in position. Two new bays of superstructure, then to be placed. Additional work under supervision of Squadron H.Q. (Lieut. Campbell).
ESDUD.	5 to 11.	Watering arrangements of D.H.Q. and Divisional Troops at Esdud. Construction of 400 yds. of Drain on East end of railway line ESDUD Siding from Main Supply Dump to Wadi for purpose of draining water from Supply Dump Area. Dimensions of drain 8' wide at top, 3' at bottom, 4' deep. Working party 100 per day. Also construction 400 yds. drain West end of ESDUD. Siding running in a southerly direction. Dimensions 2' wide at top, 1' at bottom, 2' deep. Working party 100.

Jan. 1918.

RICHON (AYON KARA).

Detachment to Richon (Ayon Kara) to put in order RICHON Pumping Plant. Plant had been out of order 14 days. Spare parts obtained through Des. Corps from Jaffa, 2 men from D Troop to assist. Engine converted to benzine, pump overhauled and repaired. Whole in running order.

13th Detachment left in charge of Regt. 3. 12' wooden troughs and 1, 600 gal. canvas trough in wooden frame erected.

14th. Commenced construction of 18 chain road midway between village of Wadi HANEIN and Kilo. 293 Railway crossing. Necessary to remove mud and slosh to average depth of 18" for solid bottom. Two feet sand stone, core top, dressed with napped metal work much hampered by traffic. Working party about 120 E.L.C. daily. Limbers from Division up to about 15 per day maximum available, but more required as stone had to be drawn about 2 miles - about $\frac{3}{4}$ of work completed.

Pumping station immediately north of RICHON village overhauled and three wooden troughs erected, two men running plant for a Squadron of XXIst Corps Cavalry.

Constructed about thirty hurdles and wings for Divisional Sports.

"A" FIELD TROOP.

TEL-ES-SULTAN.	1918 Jan. 1st	Shifting camp site to TEL-ES-SULTAN - NAHR RUBIN. Limbers transporting bridging materials to site TEL-ES-SULTAN. Lieut. Jones and 13 O.R. water duties with Brigade, ESDUD.
NAHR RUBIN.	2 & 3	Erecting bridge, Lieut. Jones and 13 O.R. water duties at ESDUD.
ESDUD.	4.	4 O.R. reported to 2nd L.H. Regt. for duty in front line, NALIN. Lieut. Jones & 13 O.R. water duties with Brigade at ESDUD. Lieut. Weedman and 28 O.R. assisting in erection of the bridge over NAHR RUBIN.
	5.	4 O.R. marched out to report to 2nd L.H. Regt. for duty at front line. Lieut. Jones & 13 O.R. water duty with Brigade at ESDUD. Lieut. Weedman & 24 O.R. assisting in erection of bridge over NAHR RUBIN.
	6 & 7.	8 O.R. with 2nd L.H. Regt. duty front line. Lieut. Jones & 14 O.R. xxxxxxxxxxxxxxxx fixing bridge over NAHR RUBIN water duties with Bde. at ESDUD. Lieut. Weedman and 23 O.R. assisting in erection of bridge over NAHR RUBIN.
	8.	8 O.R. with 2nd L.H. Reg. duty front line. Lieut. Weedman & 3 O.R. marched out to report 2nd L.H. Reg. for duty front line. Lieut. Jones & 14 O.R. water duties with Brigade ESDUD
	9.	Lieut. Weedman & 11 O.R. with L.H. Regt. (2nd) roadmaking for wheeled transport to front line. Lieut. Jones and 14 O.R. with Brigade at ESDUD. 20 O.R. assisting in erection of bridge over NAHR RUBIN.
	10.	Lieut. Weedman and 11 O.R. with 2nd L.H. Reg. roadmaking for wheeled transport to front line. Lieut. Jones 14 O.R. with Bde. at ESDUD and 20 O.R. marched from TEL-ES-SULTAN to report to Lieut. Weedman in front line.
	11.	Lieut. Weedman and 17 O.R. with 2 L.H. Reg. roadmaking for wheeled transport to front line. KH. MIDIEH. 14 O.R. (Lieut. Weedman's party) returned to Ramlieh with wagons and lead horses. Lieut. Jones & 14 O.R. duty with Brigade, ESDUD.
DIRIAN.	12.	Lieut. Weedman and 17 O.R. with 2nd L.H. Reg. roadmaking at KH. MIDIEH for wheeled transport to front line. 14 O.R. camped at RAMLIEH with wagons and lead horses. Lt. Jones & 14 O.R. moved from ESDUD to DIRAN and prepared watering arrangements for 1st A.L.H. Bde.
	13.	Lieut. Weedman and 17 O.R. with 2nd L.H. Reg.
	14, 15, 16.	Roadmaking at KH. MIDIEH for wheeled transport to front line.
	17.	Lieut. Jones & 14 O.R. watering 1st A.L.H. Bde. at DIRIAN.
	18.	Lieut. Weedman & 17 O.R. with 2nd L.H. Reg. roadmaking at KH MIDIEH. Lieut. Jones & 14 O.R. moved with Brigade from DIRIAN to AYAN KARA & prepared watering arrangements for Brigade.

AYAN KARA. Jan. 1918.

19. Watering Brigade Ayan Kara. Laying 300 ft. piping from engine room to Brigade watering area.
20. Detachment from NALIN, rejoined Brigade detachment at Ayan Kara. Laying out and erecting camp, erecting 2, 2300 gallon reservoirs and 2, 600 gallon troughs.
21. Erecting 2, 30' x 30' canvas tanks, watering Brigade, Inverness Battery and D.A.C. Making targets for 1st Brigade.
22. Improving Bde. watering area. Laying out Ablution Area erected 1, 2300 gallon canvas reservoir.
23. Supervising Bde. watering. N.C.O. & 2 O.R. on guard, squadron Dump at Kilo. 295.
24. Selecting site for Rifle Range, erecting horse rail at B.H.Q.
25. Making targets, crosses and erecting camel troughs for Brigade.
26. Making jumping hurdles for Brigade sports - repairing and changing troughs for Brigade watering - making crosses (Brigade).
27. Making crosses and repairs to pumping plant and engine.
28. Making hurdles, crosses and tables. Changing camel trough.
29. Making crosses and carving inscriptions. Still making targets and improving ablution area.
30. Repairs to pipe line, carving inscriptions on crosses, building up troughs on Bde. watering area.
31. Making pigeon holes for Brigade post office, also table. Repairs to forge 2nd A.L.H. Reg. 2 O.R. quarrying stone for road making.

(Sgd.) J. H. Alexander,

Major,
R.E.

"B" FIELD TROOP.

- NAHR RUBIN. Jan. 1918.
1. Moved from ESDUD to NAHR RUBIN to assist in building bridge over Wadi near TEL-EL-SULTAN.
 2. Preparing approaches to bridge. Drivers and limbers carting timber from YEBNA siding to bridge site. Sappers assembling timber for various trestles.
 3. Drivers carting timbers. Sappers working on bridge.
 4. Sappers on bridge.
 5. Finishing bridge.
 6. Cleaning up round bridge. Weather very wet. Put two anchors on up stream side of bridge for safety on account of the rapid rising of the water.
 7. Part of bridge washed away, men employed in salving bridge.
 8. Construction of floating pontoon about 100 yds. up stream from broken bridge. Made from 12" x 2" timber and one 2300 gal. tank, size when completed 11' x 11". approximate bouyancy 6600 lbs.
 9. Completed floating bridge, others making the approaches to same, bridge to carry camels (loaded)
 10. Instruction in making barrel piers, taking section for barrel piers and others engaged in constructing movable shore bay on wheels.
 11. Sappers working on constructing barrel piers and remainder finishing movable shore bay.
 12. 1 officer 9 O.R. moved from Nahr Rubin to Wadi HANEIN. Rained very heavy towards afternoon. Erected 5 troughs for Brigade water supply.
 13. Completed arrangements for Brigade water supply. Others employed at Nahr Rubin.
 14. Working on road repairing between WADI HANEIN and DIRIAN, others overhauling gear (Regt.), others on Brigade.
 15. Road repairing. Men overhauling Engine for Div. Train Water Supply, others at Bridge.
 16. Road repairing men overhauling Engine for Div. Train Water Supply, repairing pump, others on Bridge.
 - 18-28. Party on bridge (barrel pier).
 29. Lieut. Sleven moved camp to Wadi HANEIN joining up with the rest of the Troop. Overhauling pumping plant.

Jan. 1918.

30. Lieut. Bradbury and 1 O.R. marched out to MOASCAR.
31. Sent Transport to help move dump from Kilo. 295 to site 400 yds. N.E. Party maintained at Suttan Bridge. 5 drivers, 5 O.R., 1 limber, 11 horses.

(Sgd.) J. H. Alexander, Major,
R.E.

HEADQUARTERS - FEBRUARY 1918.

AYON KARA.	Feb. 1918.	The separate diary of each Field Troop is forwarded herewith. The troops were generally attached to Brigades, either in standing camp or on active operations during the whole of the month. In addition to work carried out by troops, the following was done by a small detachment under the immediate direction of S.H.Q.
NAHR RUBIN Tel-es-Sultan.	1st.	<p>The running of the Town water supply plant at RICHON LE ZION (AYON KARA) for the civilian population and Divisional Troops. This plant has been run by the Squadron since the 7th Dec. 1917 and a description of it is attached (see Appendices).</p> <p>The maintenance of the Barrel Pier Bridge over the NAHR RUBIN at TEL-ES-SULTAN. This bridge which was extended during the floods in the river, was described in January War Diary. The normal length was 90'. The maximum rise of the river during February was 10', necessitating the extension of the bridge to 126'. The material for extension had been prepared on the ground and the necessary adjustment was made by the Squadron Sergeant Major and 2 N.C.Os. and 12 men from the 1st and 2nd A.L.H. Bde.</p> <p>The wheeled transport obtainable being inadequate to carry the equipment on the mobilisation store table, it was necessary to revise the latter. A conference of officers in charge of troops was held at S.H.Q. and load tables prepared for such equipment as could be carried, the balance to be placed on a Squadron Dump at Railhead. These proposals were forwarded to Divisional Headquarters on the 11th February and approved of by Desert Mounted Corps. A pack (horse) establishment was also prepared and submitted in accordance with instructions from D.H.Q. but the shortage of horses prevented its adoption. A portable cook's shelter was made for D.H.Q.</p> <p>On 15th Feb. Squadron H.Q. less Orderly Room staff, left RICHON (AYON KARA) and trekked to LATRON. On the 16th trekked to JERUSALEM.</p>
LATRON. JERUSALEM.	15th 16th	
BETHLEHEM.	17th	Examined and reported on watering area of SOLOMON'S POOLS near BETHLEHEM and arranged for watering there of 1st A.L.H. Bde. and N.Z.M.R. Bde.
IBN OBEID.	18th	Watering of N.Z.M.R. Bde. at SOLOMON'S POOLS taken over from N.Z. Troop by S.H.Q. detachment. N.Z. Troop moved to IBN OBEID to prepare watering arrangements from asterns for N.Z.M.R. and 1st A.L.H. Brigades.
ABU DIS.	19th	N.Z.M.R. Bde. watered in morning and H.Q. detachment lifted gear and joined Divisional Transport at Junction of roads to JERUSALEM from ABU DIS and from JERICHO.
JERICHO.	21st	Headquarters transport returned to JERUSALEM with Divisional Transport. Reconnoitred and reported on watering xxxxxxx prospects at NEBY MUSA. Reconnoitred and reported on WADI KELT, yield and facilities for watering.
NEBY MUSA.	22nd	Reconnoitred and reported on water supply of JERICHO. Reported on portable engine found at hospital, JERICHO. Trekked from JERICHO to JERUSALEM, arrived 0200 23rd.
WADY KELT.	25th	Trekked from JERUSALEM to about four miles East of RAMLEH.

1918.
RAMLEH. 26th Feb. Trekked to bivouac area RICHON-LE-ZION (AYON KARA).
27 & 28th Overhauling equipment and transport.

NOTES:- The wastage of personnel was practically NIL.
The horses suffered during the short "STUNT" to JERUSALEM & JERICO.
1st owing to rough stony country. 2nd owing to cold and wet. About 3% came back lame, mostly stone bruises.
In practically every case the horses were perfectly well again within a week, in as good condition as before these operations. There are a few aged horses that get into low condition very quickly, and only great care on the part of Farrier Sergeant NUGENT and the Farrier Corporals keep these horses serviceable. About 80% of the limbers required repairs after the bad roads; they are being taken in hand at once.
The equipment is complete and in good order and there is ample clothing, etc.

"A" FIELD TROOP - FEBRUARY 1918.

ZAKARIYA.	Feb. 1918.	1.	Watering 1st A.L.H. Brigade, Inverness Battery and Ammunition Column. Making notice boards for Brigade. Erecting one 30' x 30' canvas reservoir. 2 O.R. quarrying stone for roadmaking.			
		2.	Ditto also repairing pack saddle telephone wire rolls for 1st Signal Troop.			
BETHLEHEM.		3,4.	"	also making and carving crosses for Brigade. Making high jumps.		
		5.	"	also changing and repairing canvas troughs. Erecting one 2300 gal. canvas reservoir. Making 2 covers for reservoir. Repairs to deep well pump.		
ABU DIS.		6.	"	also making letter rack for Brigade post office. Repairs to oil engine.		
		7.	"	also packing deepwell pump.		
		8 to 12.	"	Miscellaneous work for Brigade, overhauling and repairs to R.E. stores. Running plant f. 1st A.L.H. Bde. and Div. Train.		
BIR-EL-MALAKI		13-15	"	also erecting 30' x 20' sheet for drinking water reservoir.		
		15-16	Detachment moved out to prepare watering arrangements for 1st A.L.H. Bde. wheeled transport at ZAKARIYA with Lt. Jones.			
		18.	Trekking from ZAKARIYA to Bethlehem and prepared watering for Bde.			
TALAT-ED-DUMM		19.	"	"	Bethlehem to Abu Dis, left detachment at Bethlehem watering details.	
		20.	"	"	Abu Dis to Bir-el-Malaki on watering.	
		21.	"	"	Bir-el-Malaki to Talat-ed-Dumm. " "	
RICHON (AYON KARA)		22-25.	"	"	Abu-Dis watered Div. Train, then on to Bethlehem. "	
		26.	"	back to RICHON.		
BIR LIFTON. IBN-OBEID.		16	Lieut. Weedman with troop trekked from Richon to Junction Station and prepared watering for Bde. Left 2 O.R. at Richon watering Bde. Details and 2 O.R. watering Div. Train.			
		17.	Trekking to ZAKARIYA			
		18.	"	from	"	to Bethlehem
MUNTAR		19.	"	"	BETHLEHEM to BIR LIFTAN, Ibn OBEID, there watered and on to MUNTAR " " "	
		20	"	"	MUNTAR to MGHT-ABU-TABK, located water in Wadi Sq.114 R.14.c. Sheet Palestine Binket.	

MGHT-ABU-TABK.	1918 20th Feb.	Trekked from MGHT-ABU-TABK to Wadi Jofel Zeken. (Storage 100,000 gals.					
		" " WADY Jofel ZEKEN to ERIHA, watered Brigade from running stream in Wadi-el-Kelt Reservoir at Tel-es-Sultan, storage 240,000 gals. water running through reservoir from aqueducts.					
WADI JOFEL ZEKEN.	23rd.	" " ERIHA to BETHLEHEM			and preparing water for Brigade.		
	25th.	" " BETHLEHEM to ZAKARIYA	"	"	"	"	"
ERIHA.	26th.	" " ZAKARIYA to JUNCTION STATION	"	"	"	"	"
	27th.	" " JUNCTION STATION to RICHON	"	"	"	"	"
	28th.	Overhauling water supply gear and cleaning up watering Area. 2 O.R. still on Div. Train watering.					
WADI EL KELT.							
JUNCTION STATION.							

"B" FIELD TROOP - FEBRUARY 1918.

Wadi Hanein.	Feb. 1918. from 1st	Carrying on with watering arrangements for Brigade. 1 officer and detachment detached as below. Continuing with road construction on section between Wadi Hanein and railway crossing at K.293, also commenced construction of 10 chains of Road at Wadi Hanein end of existing metal road, also constructed 500 yards drain east of Wadi Hanein to prevent flooding of road. Drain 4 ft. wide at top, 2 ft. at bottom, 3 ft. deep. An average of 130 E.L.C. were employed. Sundry work such as making crosses. Repaired G.S. wagon overhauling engine at Brigade Watering Area. Erecting and repairing tanks, troughs and reservoirs. Erecting hurdles for sports. Still on road construction as from the 1st, also opened up face for quarry baring about $\frac{1}{4}$ acre of good hard stone suitable for roadmaking. Made, ap painted and written more crosses and sign boards. Carried out watering arrangements for Div. Train and 2nd A.L.H. Bde.
	to	
	15th	
	to	
	23	
AYON KARA.	to 28	Continuation of road repairs, opening up and cleaning drains in ANZAC MOUNTED DIVISION area at Ayon Kara. 120 E.L.C. employed daily.
RAMLEH.	from 3rd	1 officer (Lieut. Steven) and detachment moved out to Ramleh for the night - 4th. Arrived at Nalin and took over work from Lieut. Lockington (N.Z. Field Troop). 5th Working party found by 7th A.L.H. neg. and working i/c of N.C.Os. and sappers on Dublin road - Midieh Grade - Sangars for different squadrons and M.G.S. detachment. Traced new length of sap (fire trench) For B Squadron - measured up cisterns and water supply generally plotted on plan (see appendices). Repairs to sandcart for Regiment. Blasting stone for Sangars and traverses and echelon shelters. Using explosives in trenches. Made reconnaissance with regimental Commander with view to putting line forward. Country suitable but no water in vicinity. Found in use in Nalin a 12 H.P. "Deulz" engine with gas producer using charcoal, also can use kerosine All in serviceable order, used for grinding "flour only". Made "trip" alarm for open space in Wadi. Successful. 25th. started new road to Shukbar and Sheblin, marked out to well at Sheblin and supervising constructing - roadway 12' clear mostly in Wadi bed and suitable transport guns and Ford cars. Placing notice boards on roads. Designed and supervising construction of fire trenches, communication saps, sangars, and bombing position.
NALIN		
MIDIEH.	to	
SHUKBAR.		
SHEBTIN.		
	28th.	Well or sump. Sheet 14, 1/63360 085'. Z.11.b.n. rough stone lined 3' to water 21'-6" of water 14' x 11'6" fresh. This is a soakage in the bed of the Wadi. Cistern. Z.11.a (same map) between Shiekh's Tomb and village S. of prickly pear hedge. 6'9" to water. 4'6" of water. 20' diameter. Fresh but polluted. Cistern. Y.30.a. N.E. on N. bank of Wadi. E. end of Olive Grove (same map) 8' to water, 1'3" of water, 16' diam. fresh. Particulars and plan of Nalin and water supply see appendix.

WAR DIARY
OF
S.H.Q. 1ST FIELD SQUADRON ENGRS.
FOR
FEBRUARY 1918.

LIST OF APPENDICES.

No.	Subject.
1.	Description of Pumping Station - Michon-le-Zion.
2.	Plan of " " " "
3.	List of Cisterns.
4.	Plan showing position of no. 3 (CISTERNS).

(Sgd.) J. H. Alexander,

major,
R.E.

PUMPING STATION AT RICHON-LE-ZION (AYON KARA).

It has 2 engines, one of which is out of order. The one out of order is a "TANGYE", 20 horse power engine run by kerosene. It works a Duplex pump which is also out of order. The engine in working order is a "KORTING" 30 H.P. suction gas engine, temporarily converted to benzine. A "BOSCH" semi-rotary low tension magneto is used for Ignition. A compressed air starter being used. The pump used with this engine is a double throw pump running at 17 revolutions per min. and pumping approximately 6000 gals. per hour.

The water is pumped into a small stone reservoir (capacity 3500 gals.) from the well which is 12' diam., 150' deep, dry, with an additional 10' bore for 2 suction pipes. The water is then pumped into 2 metal, cylindrical service reservoirs. Total capacity 45,000 gals. by a double cylinder force pump at 7,000 galls. per hour.

This engine also supplies the horse reservoir and bath house. The reservoir is stone, square, and has a capacity of 25,000 gals. approx.

The bath house has 5 baths, the water used is that which passes through the water jacket of the engine cylinder.

These baths are used by the troops in the vicinity.

W A R D I A R Y
OF
"B" TROOP, 1ST FIELD SQUADRON ENGINEERS
FOR
FEBRUARY 1918.

LIST OF APPENDICES.

CISTERNS.

JEMMAIN. 085Z.) 20.b.c &d. 27.a &c.
Sheet XIV.) 21.a & c.
26.a & b.

15/2/18.

Cistern No.	Depth to Water	Depth of Water	Diameter	Neck	Contents Gallons 15.2.18.	Remarks.
1	10'	4'	16'	5'	5025	
1a	9'0"	5'	16'	3'	6280	
2	12'	3'9"	20' x 16'	5'	6875	2 inlet holes spring small
3	13'	3'	18' x 12'	-	4050	
4	8'6"	7'9"	10'	6'	3692	
5	9'6"	1'4"	16' approx.	-	1675	
6	7'6"	5'6"	10'	7'	2698	
7	16'	5'	15'	6'6"	5515	
8	12'	4'7"	18'	5'	7156	
9	12'	8'	18'	9'	12712	
10	14'	5'7"	18'	-	8731	
11	11'6"	6'9"	16'	-	8470	
12	10'	1'6"	12'	-	1060	
13	8'9"	4'3"	12" x 6"	-	1912	
14	12"	3'	20' x 8'	-	3000	
15	10'	6'	20'	3'	11775	
16	14'6"	8"	16'	6'	848	
17	19'	1'	-	-	-	Not much good
18	12'6"	7'	20' x 12'	3'	10500	
19	12'	6'6"	15'	5'	7168	
20	5'8"	7'4"	10'	5'	3597	
21	9'6"	5'5"	10'	5'	2572	
22	14'	6"	16'	5'	625	
23	8'	6'	12'	6'	4237	
24	14'6"	2'3"	20'	3'	4415	

124,588 Galls. (minimum)

Particulars taken by Lieut. Stevens.
B. Field Troop, 1st Field Squadron Engrs. A.M.D.

HEADQUARTERS - MARCH 1918:

JERUSALEM.	March 1918.	Troops were attached to Brigades complete till the 18th when the right half of each troop reported to S.H.Q. at JERUSALEM, for preparation of material for demolition work.
AYON KARA.		The following was done by a small detachment at S.H.Q. Running and maintenance of town water supply plant, village of RICHON (AYON KARA). Maintenance (up to date of dismantling) of barrel pier bridge.
LUDD.	1st.	Overhauling equipment and obtaining renewals from A.R.R.E. LUDD.
	2nd.	Erected gallows and prepared trenches for bayonet fighting and gymnastic sergeants attached to Division.
	4th.	Commenced dismantling of Tel-es-SULTAN Barrel Pier Bridge.
	5th.	Continued dismantling of B.P. Bridge and returned material to R.E. Park, LUDD.
TEL-ES-SULTAN 6 & 7		Preparing schemes for Bridging of JORDAN River and demolition of HEDJAZ Railway.
	9th.	Commenced removal of Squadron Dump from Kilo. 295 to LUDD.
	10th.	Requirements worked out, and indents submitted for explosives for demolition of HEDJAZ Railway.
HEDJAG.	11th.	C.E. XXI Corps interviewed re handing over water supply at AYON KARA.
	12th.	Removed S.H.Q. camp from AYON KARA to RICHON EAST.
	13th.	Trekked from RICHON to LATRON.
LATRON.	14th.	" " LATRON to JERUSALEM, camped on the Mount of OLIVES. Raining and very cold.
	15th. & 17 & 18.	Raining all day:- 16th. Moved into billets at ENGLISH HOSPITAL, JERUSALEM, commenced preparation of explosives for demolition work. Sent to BIREH for gelignite.
TALAAAT-ED-DUMM.		Detachments of A, B and N.Z. Troop reported.
	19th.	Loading explosives. Left Jerusalem 1900, trekked down JERICHO ROAD to near TALAAAT-ED-DUMM.
	21 & 22nd.	Overhauling explosives - standing by. (JORDAN still in flood).
KASR HAIJLA.	23rd.	Left TALAAAT ED DUMM 1800, marched to KASR HAJLA (D Troop, DES. CORPS, constructed bridge over JORDAN.

TEL EL MUSLIM.	1918 24th March.	Crossed JORDAN 0800, trekked to TEL EL MUSLIM, arrived noon. Commenced march up Road 3 at 1800. Road impracticable for wheels. From about two miles along road sent back to MUSLIM for camels and transferred loads from $\frac{1}{2}$ limbers to camels. Followed Imperial Camel xxx Brigade up Road 3.
BIREH.		
AIN HEKR	25th.	Raining. Road so slippery as to be almost impracticable for camels. Continued trek through AIN HEKR.
	25-26th night	Marched to UMMAMUD great difficulty with Camel transport, road very bad. Raining and bitterly cold.
UMM AMUD.	26-27th night	At UMM AMUD - 27th. Moved on to AMMAN 0700. Stood by at Divisional H.Q. before AMMAN. Explosives on pack horses.
AMMAN.	28th.	0130. Lieut. Lockington and detachment covered by 2 squadrons 5th A.L.H. Regt. Demolished two Arch masonry bridge 16 ft. high, gap 25 feet. Charge 600 lbs. fired electrically.
SHUNET.	29th.	Attack continued. Stood by awaiting opportunity for further demolition work. Same on the 30th.
NIMRIN.	31st.	0100. Demolition party trekked to UMM AMUD, transferred unused explosives back to Camels from packhorses and rejoined Divisional H.Q. at AIN-ES-SIR. Detachments from B and N.Z. troops joined Brigades. Detachment A Troop proceeded down road, 4 acting as Camel Escort. Left AIN-ES-SIR 1500, trekked via Road 4 to SHUNET NIMRIN, arrived 2130 and bivouacked.

"A" FIELD TROOP - MARCH 1918.

RICHON.	1918. 1st March to 4th.	Supervising watering arrangements for Brigade at RICHON. Overhauling and repairs to Troop equipment. 2 O.R. supervising watering arrangements for Div. Train.
	5th.	Moved with Brigade from RICHON on trek to RAMLEH and arranged watering.
RAMLEH.	6th.	" " " " RAMLEH " " " ENAB " " " then on to BIDDA.
	7th.	" " " " BIDDA " " " BEITUNIA " " " for Brigade.
ENAB.	8th.	" " " " BEITUNIA " " BETIN " " " " "
BIDDA.	9th-11th.	Brigade watering under R.E. Field Company arrangements. Lieut. Jones & 9 O.R. with 1st A.L.H. Regt.
	12th.	Troop engaged on repairs to Transport wagons and overhauling troop equipment. Lieut. Jones and 9 O.R. with 1st A.L.H. Regt.
BEITUNIA.	13th.	Moved from BETIN to BETHLEHEM and prepared watering arrangements for Brigade, less one Regt. Battery R.H. A.D.A.C. and 1 Brigade Mountain Battery at MAR ELIAS and one Regt. Machine Gun Squadron less (less 2 sub sections) Field Amb. M.V.S. and B.H.Q. at Bethlehem. Lieut. Jones and 9 O.R. with 1st A.L.H. Regt.
BETIN.		
BETHLEHEM.	14th.	Watering Brigade at MAR ELIAS and BETHLEHEM. Lt. Jones with 1st A.L.H. Regt.
		<u>Separate Diary of Lieut. Jones and 9 O.R. attached to 1st A.L.H. Regt.</u>
MAR ELIAS.	8th.	Moved from BEITUNIA with detachment to water 1st Regt. A.L.H. at BEITIN from BEITIN to RUMMON and camped the night.
RUMMON.	9th.	Moved at 0400 with 1st Regt. to ET TAIYIBEH and watered 1st Regt. & Details and No. 10 Mountain Battery at Cistern in TAIYIBEH. Left 4 O.R. at TAIYIBEH to water Regimental transport and moved with rest of detachment to MUNTAR. Located water square S.15A Sheet XV. and watered Regt. and Machine Gun detachment.
ET TAIYIBEH. MUNTAR.	10th.	Shifted, 4 O.R. with troughs from TAIYIBEH to RUMMON and erected trough in square V.11.A. Sheet XVII to water regimental transport. Making pack road from Square S.27.D. Sheet XV. along Wadi DAREL JERIR to Square S.22.b. Sheet XV. Prospecting for fresh cisterns.
DARELJERIA.		
RUMMON.	11th.	Watered Regiment and details at Square V.11.a. Shifted trough to new cistern Square S.26.a. Sheet XV. Making road (pack) to watering area. Watering regimental transport at RUMMON.
	12th.	Watered Regiment and prospecting for fresh cisterns.

RUMMON.	13th.	Watered Regiment and prospecting for fresh cisterns. Located one in square S.4.a. Sheet XV. and arranged for Machine Gun Section to water with buckets.
	14th.	Making road from TIYIBEH to MUNTAR. Same on the 15th.
MUNTAR.	16th.	Moved with regiment to BEITIN and arranged watering for Regiment and details.
	17th.	Moved from BEITIN to BETHLEHEM and erected troughs at BEIT JALA for 1st Regt.
	18th.	Watering 1st Bde. at Bethlehem. 2 half limbers 8 horses 4 drivers. 10 O.R., 10 riding horses, to S.H.Q.
BETTIN.	19th.	Watering 1st Bde. and Auckland Regt. N.Z. Repairing water pumps at B.H.Q., packing limbers for move with Bde.
	21st.	" " " " " " On trek with Bde. at 1800.
BETHLEHEM.	22nd.	" " " at Tel-et-Dumm. Trekked with Bde. to NEBI MUSA.
	23rd.	" " " at Greek Convent.
BEIT JALA.	24th.	" " " and 1st and 2nd line 1st Bde. Camels at AIN HAJLA.
	25th.	Trekked with Bde. from AIN HAJLA to Square 27.O.Central, Sheet ES SALT. Watered Bde. at Wadi NIMRIN.
	26th.	Officer 2 O.R. prospecting for water.
TEL-ET-DUMM.	27th.	Improving water supply for Bde. in Wadi RALEM.
NEBI MUSA.	28th.	Watering 1st Reg. at VMN-ES-SHERT. 2 Reg. at Wadi RALEM. Inverness and Ayshire Batteries at JORDAN. Brigade Troop at JORDAN Square O.l.B.D. Sheet ES SALT.
AIN HAJLA.	29th.	Improved spring found on 25/3/18 in square O.b.c. sheet ES SALT and watered Ayshire and Inveeness Batteries A.303 Batteries.
	30th.	Improving spring and watered 2 Batteries. Brigade Troop - Welsh infantry and Transport. 1st Bde. Fld. Amb.
NIMRIN.	31st.	Improving water supply at spring, watering same as 30/3/18.

Continuing O.Cs. Report from the 14th.

WADI RALEM.	March 1918. 15th to 20th	Watering Bde. at BETHLEHEM and MAR ELIAS.
VMN-ES-SHERT	21st.	Watering one A.L.H. Regt., M.G.S., Field Amb., Vet. Sect., Sig. Troop and B.H.Q. Watered from 6" main, fed from low level aqueduct. Sheet XVII, 10033d. Placed 2 - 600 gallon canvas troughs in old existing stone troughing and fed direct from 6" main.
MAR ELIAS.		<u>Approaches.</u> Only one road existed and traffic required careful handling to prevent congestion. Having plenty of time in carrying out the watering parades. Total, numbering 1100 horses. Time taken to water 2½ hours.
KH-EL-MESHRAB.		<u>MAR ELIAS.</u> Watering one Regt., 1 Batty., R.H.A., 1 Bde. Mountain Batt. 1 Regt. N.Z.M.R. Bde. Watered from 2 stone cisterns fed from high level, aqueduct, sheet N. sq. 100 K.10.b. Put down 4, 600 gallon canvas troughs and 1 2300 canvas reservoir for men's drinking water. Good area for water system. Time for watering above units 2½ hours.
WADI-EL-KELT.		Lieut. Weedman and 6 sappers and 1 Troop from 2nd A.L.H. Regt. left Bethlehem at 1100 on the 17th-3-18 for Kh-el-Meshrab, Sheet 18, Square 113, 10.a. to carry out watering arrangements for A. & N.Z. Mounted Division.
ABU-UMM-DUMM.		Working in conjunction with the 522 Field Coy. R.E. arrangements were made to water one brigade and Divisional xxxxxx units at watering area of the 60th Infantry Div. and 2 Bdes. at water system on Wadi el Kelt. Owing to the disposition of Bde. camp area and the rough hilly country and no roads, xxxxxx a road was made from Square 13.b. along the Aub. which enabled horses to pass when in half sections.
KUSR HAJLEH	22nd.	Lt. Weedman and 12 O.R. with S.H.Q. preparing explosives and loads for demolition operations.
TEL ABU KUR.	23rd.	Lt. Weedman and demolition party with S.H.Q. moved from UMM DUMM to KUSR HAJLEH.
	24th.	Moved with S.H.Q. " " from KUSR HAJLEH to TEL ABU KUR (Sheet AMMAN Sq. 127 W. 25.d)
	25, 26th.	" " " " " on trek along No. 3 road through NAAUR to crossroads.
AIN ES SIR.	27th.	" from Cross roads.
	28-30th.	Demolition party standing to awaiting orders for action. Sq. 127.R.35.d.
WADI JERIA.	31st.	Lieut. Weedman and party escort camels loaded with explosives from Sq.127.R.35.d. through AIN ES SIR following track along Wadi Sir at Sq. V.11.b. and travelling to Wadi JERIA on to SHUNET NIMRIM.
SHUNET NIMRIM.		

"B" TROOP - MARCH 1918.

	1918	
WADI RUBIN.	1st March	I have to report that general routine work was carried out by this troop - 2nd A.L.H. Bde., and Divisional Train drinking and animal water supply was kept satisfactorily supplied.
LATRON.	to	Pumping plants and technical gear overhauled and repairs effected where necessary.
	11th.	On all occasions when time permitted field games such as football, cricket and foot racing were indulged in, to keep the men in a good standard of condition.
WADI HANEIN.	12th.	Acting on instructions from SHQ. through B.H.Q., 3 drivers with 6 horses and 1 G.S. Wagon were detailed to report to O.C. D. Troop Des. Corps. Engineers at Wadi RUBIN for duty until further notice.
JERUSALEM.	13th.	Acting under 2nd A.L.H. Bde. orders 2 officers and 41 O.R. marched out with Bde. at 0930 to LATRON. Technical gear was carried on 20 camels and 1 half limber. A detail of 1 N.C.O. and 3 men remained at WADI HANEIN to take charge of the watering of details of 2nd A.L.H. Bde. and N.Z. Bde.
AMMAN.	14th.	Remained at LATRON with Bde. on the 14th, repaired roadway on south side of LATRON watering area over wadi by building stone causeway over lengths of 4 inch metal casing at suitable point for horses to leave area after having watered at troughs. An Irish bridge was constructed at a suitable point for entrance to area; thus avoiding the necessity for troops watering to go on to the metal road on the North side of area and causing congestion and blockage of traffic, which had previously been the case.
	16th.	
	17th.	Continued march with Bde. to JERUSALEM, arrived camping area 1600 and supervised arrangements for watering Bde.
	18th.	Lieut. Campbell with 14 O.R. including 2 drivers with $\frac{1}{2}$ limber reported to S.H.Q. under instructions from C.O. through B.H.Q. and remained under direct command of C.O. Sqdn. with demolition party during the advance of AMMAN and to date of withdrawal 31st. Then receiving orders to join the Bde. The balance of the troop under Lieut. McGlaughlan remained with Bde. Lieut. McGlaughlan reports having attended to any watering arrangements that were required by Bde., which amounted to constructing a few small temporary dams when required where streams were running too narrow and fast for horses to drink properly. Watering arrangements were simplified throughout the operations by heavy but unwelcome rains. 1 N.C.O. and 2 men each carrying 4 slabs of guncotton and 4 each of primers, detonators and safety fuse, were detailed to report to B.H.Q. to act under orders of a Bde. officer in an attempt to cut enemy Railway line at an arranged point. The Troops withdrew with Bde. on the 31st, suffering 1 casualty during operations.
	to	
	31st.	

April 1918.

- 13th (ctd.) pickets, etc.). Left 2 sappers behind cutting out creek for motor launch, and helping to lay barbed wire ~~at~~ etc.
- 14th. O.C. and Capt. Allen visited the Dead Sea Post to lay out trenches, etc. We built a dummy canvas bridge 8 ft. wide, 120 ft. long made of hessian stitched to $1\frac{1}{2}$ cordage and stiffened with reeds underneath. We also cut tracks through the bush on either side of the River to the Bridge.
- 15th. Major Alexander motored to Jerusalem and by arrangement with 20th Army Corps flew all round our defences, bridges, etc., on the JORDAN River, in an R.E.8 aeroplane, to observe these defences as the enemy see them. Also to see what the dummy canvas bridge over the Jordan looked like. It was so good that he decided to erect another one, but wider and further south. The tracks leading to the first bridge were not clear enough as compared to those in actual use. The trenches in the Bridgehead which we had covered with light brushwood could not be observed at all, nor could the wire entanglement which was of single apron South African type.
- 16th. Went to select sight for 2nd dummy bridge and got the track cut to the sight. Also busy getting wire entanglement material forward to the AUJA front for the Imperial Camel Bde. Defences. The 20th Indian Infantry Bde. took over the Ghoraniyeh Bridgehead from the 1st A.L.H. Regt. Made the 2nd canvas bridge. Also making signboards, painting and lettering same.
- 17th. 8 motor lorries of defence material forward to the Imp. Camel Bde. on the AUJA front.
- 18th. Erected 2nd canvas dummy bridge. A $\frac{1}{4}$ hour after completion enemy aircraft came over and photographed all the bridges. .
- 19th. Reconnaissance in force against the Turks at SHUNET NIMRIN.
- 20th. Still on watering Division. Keeping in repair canvas troughs, and all pumping gear, etc.
- 21st. O.C. went to Richon to move Dump from Richon to LUDD and returned superfluous stores to Ordnance.
- 22nd & 23rd Removing dump, and cleaning harness, etc., repairing all gear, making signboards, etc.
- 24th. Col. Pearson, R.E., took over C.R.E. Des. Corps from Col. Russel.
- 25th. Lt. Campbell (O.C. B Troop, 1st F.S.E., ANZAC Mtd. Div.) left Jericho for 4 weeks leave in AUSTRALIA.

RICHON
(AYUN KARA)

LUDD,

LUDD. April 1918.
26th & 27th. Marked out tracks and numbered them to avoid congestion at the GHORANIYEH BRIDGEHEAD.
28th. We made "Heavy Pontoon" bridge over the Jordan to take 60 pounder guns and "Peerless" Motor Lorries (7½ tons).
29th. 60 pounder guns and motor lorries crossed pontoon bridge safely. The Turks shelled both banks of the river but did not succeed in hitting any of the Bridges.
30th. Busy getting defence stores down to bridgehead to extend outer wiring.

"A" FIELD TROOP - APRIL 1918.

April 1918.

SHUNET NIMRIN.	1st.	Mr. Weedman, O.C., Mr. Jones 2nd in command. Lt. Weedman with demolition party camped at SHUNET NIMRIN. Lt. Jones watered batteries, 2 Regt. Infantry (Welsh) and Brigade Troop at spring in O.6.c. Sheet Es Salt.
	2nd.	Lt. Weedman and party moved from SHUNET NIMRIN to JERICHO. Lt. Jones watering 3rd Regt., Bde. Troop and Details at Spring. Moved from spring to West bank of Jordan River with Bde.
JERICHO.	3rd & 4th.	Lt. Weedman camped near JERICHO with S.H.Q. Lt. Jones moved back with Bde. to WADI NIMRIN and erected troughs and watered 1st Bde. & 5th Regt. 2 O.R. reported Lt. Weedman from Bde. detachment, 4th Footbridge over Wadi NIMRIN for Bde., watered Bde. and Details.
WADI NIMRIN.	5th.	Lt. Weedman moved from JERICHO to GHORANIYEH to take charge of barrel pier bridge and foot bridge. Lt. Jones erected barbed wire for Brigade defences 1st, 2nd and 5th Regt.
GHORANIYEH.	6th.	Lt. Weedman maintaining bridges at GHORANIYEH, salving half limbered wagon G.S., 1st A.L.H. Field Ambulance from River JORDAN. Half limber submerged (with full load of valuable medical stores and surgical instruments) in 14 feet of water, with assistance of a party of men from Field Ambulance, detailed men to dive and find out position of wagon - (1) Whether wagon lay upright, or on its side. (2) Pole pointing up or down stream. (3) If on its side whether load faced bank or towards midstream. <u>RESULT:-</u> (1) Wagon laying on its side. (2) Pole pointing down stream. (3) Load facing midstream. (4) Wagon laying 20 feet from bank. <u>Nature of River Bank.</u> Steep and greasy, 5 ft. thickness of waterlogged timber. <u>Velocity of River.</u> 4 miles per hour. <u>Operations.</u> (1) Cleared waterlogged timber. (2) Placed anchor for 3" tackle 30 feet from bank. (3) Placed 3" tackle in position. (4) Fastened lines to top of wheel of wagon by man diving (time taken by diver to secure rope to wheel, 16 seconds). Same man secured line to end of pole. Strapped pole line on to main hauling line, pulled on main hauling line, then set 4 horse team to take steady strain; combined efforts landed limber high and dry with complete load salved. Time taken 1000 to 1600 - 6 hours.
UMM-EST-SHERT.	7th & 8th.	Lt. Jones. Bde. defences (barbed wire). Erected troughs for 1st Regt. and C.T.C. 1st Bde. Mr. Weedman and party maintaining bridges at GHORANIYE.
	7th - 10th.	Lt. Jones on Brigade defences - barbed wire.
	9th & 10th.	Lt. Weedman. Rise in river of 4 feet from 1200 on 9.4.18 to 0400 on 10.4.18. Continuous working during rise, raising Bridges. River started falling at 0900 on 10.4.18 at the rate of 3" per hour. Party in lowering and maintaining bridges.

ES SALT. April 1918.

11th. Lt. Jones. Brigade in action. Lifted all water gear and sent it to West bank of the Jordan under instructions from 1st Bde. 2 horses wounded.

11th/15th. Lt. Weedman maintaining bridges and framing barrel piers at GHORANIYE.
Lt. Jones. Pump and gear from west bank of Jordan and erected same on Bde. watering area.
Repairing barbed wire on 2nd Regt A.L.H. Posts. Transport carting timber for Bde. defences (barbed wire). Making crosses for Brigade.

16th/27th. Lt. Weedman. Maintaining and framing barrel piers, re-arranging and putting in new road-bearers to barrel pier bridge at Ghoraniyeh.

16th. Lt. Jones. Brigade defences (barbed wire) and trenches. Carpenter making crosses.
17th. " " " " and Artillery Observation Post. Carpenter making trench No. Bds.
18th. and painting and writing on same, same with crosses, also Artillery outpost.
19th. Under instructions from Bde. the Troop are assisting Indian Infantry to finish the defences.
Watering 1st Bde. N.Z. Bde. Indian Cavalry, Artillery and Details. Carpenter making and painting crosses for Brigade.
20th. Same as the 19th and also on Bridgehead defences. (Trenches and barbed wire.)
21st. Watering 1st Bde. and Indians. Carpenter and painter on crosses. Bridgehead defences.
and 22/27. (Machine gun trenches, fire trenches, and trip wire.)

27th. Lt. Weedman. Handed barrel pier bridge over to detachment of 519 Field Coy. R.E.s to maintain.

28th. Lt. Jones. Reported to B. Troop Engrs. 1st F.S.E. for Duty as O.C.
Lt. Weedman. Bridge detachment reported back to 1st Bde. A.L.H.

29th. " " Moved out from Ghoraniyeh with 1st Bde. A.L.H. on operations.

30th. Moved with Brigade from UMM-est-SHERT to ES SALT.

"B" FIELD TROOP - APRIL 1918.

WADI KELT.	April 1918.	
	1st.	Erected drinking water reservoir on bank of Wadi KELT 1 mile S.E. of JERICHO, which was only used for one day owing to water in the Wadi being condemned for drinking. There being no troops watering from Wadi below 2nd A.L.H. Bde., all horses were watered in the stream and no troughs were erected.
JERICHO.		
	2nd.	Lieut. Campbell proceeded to Tel-es-Sultan to investigate and report on the possibility of employing and refitting reservoirs without cutting off supply.
TEL-ES-SULTAN.		
	3rd.	Cleaned out reservoirs at Tel-Es-Sultan and placed 4 pumps under charge of 1 N.C.O. and 3 men for drinking water supply for the ANZAC MTD. DIV.
EL GHORANIYEH.		
	4th.	Lt. McGlaughlin and 10 O.R. proceeded to EL GHORANIYEH for defence work on bridgehead.
	5th/15th.	" " " " erected entanglements in front of sector of bridgehead held by the 5th A.L.H. Regt. approximately 4000 yds. of standard single apron fence was erected. Communication trenches and machine gun emplacements were also dug, under supervision of the detachment.
WADI AUJA.		
	16th.	Rejoined troop at Bde. camp about 1 mile north of Tel-Es-Sultan.
WADI NUEIAMEH.		
	17th.	Erected drinking water reservoir for 6th A.L.H. Regt on Wadi Auja. Horses of 6th A.L.H. Regt. and 7th A.L.H. Regt. watering from Wadi AUJA and horses of Bde. H.Q. and smaller units watering from Wadi NUEIAMEH. No troughs were erected on either wadi.
	18th.	Moved with Bde. into Bridgehead east of River JORDAN. Lt. McGlaughlin and 8 O.R. reported to O.C. "A" FIELD TROOP (Lieut. Weedman) to assist him in maintaining barrel pier bridge. Lt. Campbell and remainder of troop remained with Bde.
	19th & 20th.	Detachment on Bridge framing piers. Lt. Campbell and detachment returned with Bde. to camp sight nth. of TEL-ES-SULTAN.
	21st.	Lt. McGlaughlin and detachment relieved Lt. Lockington (N.Z. Field Troop), 1st F.S.E., on pontoon bridge (GHORANIYEH).
	21st/30th.	Maintaining pontoon bridge and improving approaches to same.

WAR DIARY
of
N.Z. FIELD TROOP, 1st F. S. ENGRS.
for
APRIL 1918.

LIST OF APPENDICES.

No.	Subject.
1.	Re Mine at EL GHORANIYEH Bridgehead.
2.	Sketch of mine at " "

N.Z. FIELD TROOP ENGRS. 1ST F. SQUADRON. (APPEN. 1.)

WAR DIARY. April.

Report re Mine at GHORANIYEH Bridgehead.

Took working party of 16 men from the "ALWAR" infantry, drew the necessary barbed wire and posts from Dump. Marked out fence around mine area. Coiled the electric leads and instantaneous fuse in S.A.A. box and sealed up with lid, and buried box 2 feet deep.

Erected two signboards marked "Dangerous". An Indian officer belonging to the ALWAR Inf. was duly informed by me as to the position of mine, etc., and the working party had the wiring well under way when I left at 1200.

HEADQUARTERS 1ST F.S.E. - MAY 1918.

May 1918.

1st.

In addition to the foregoing troop work the sappers on H.Q. have been doing the following work. Repairs to D.H.Q. office furniture, also about 50 notice boards in large writing in black on white canvas such as "Out of Bounds", "No road", etc. A large stone trough which was too dilapidated for use was repaired and used for watering D.H.Q. horses, thereby greatly saving wear and tear on canvas troughs. The trough is situated in Bethlehem directly behind the Div. H.Q. Billet which is a large stone house (French Carmelite Monastery).

to

10th.

The following work was carried out by 1 officer (Capt. ALLEN) and 3 O.R. on No. 1 water area, 1st A.L.H. Bde., Jerusalem-Hebron Road at spring (1/250,000 Syria-Jerusalem, K.5), approx. 3 miles towards Hebron from Solomon's Pools. The cistern from which water is now being pumped showed only as a small "pot hole". There was practically no supply. On opening it up a rock cut cistern was found, roughly circular, about 10 feet dia. It was cleaned out to about 15 ft. deep. The inlet was a rock cut tunnel coming from the main head of the gully. It was traced back for about 100 ft. At about 50 ft. from the cistern two other tunnels joined it, one from each side of the gully, all carrying water. The outlet had been a rock cut tunnel down the centre of the gully, apparently carrying the overflow to some subterranean system. The whole of the tunnels referred to appear to have been made by open cut up to 20 feet deep from the surface and 3 ft. or more into solid rock. The channel thus made was then roofed with stone, leaving it about 3 feet high and 2 feet wide on an average and the earth filled in. The bottom of the outlet was only about a foot above the bottom of the cistern as cleared, and in order to prevent soakage through the debris with which this channel was choked, it was blocked with masonry backed by rammed concrete for about 5 feet above the bottom of the cistern as cleared. The supply was then about 16,000 gallons a day. A. HAYWARD-TYLER pumping set was installed, sunk on the lower side of the cistern to give about twelve feet of suction, and delivering the water about eighty feet away to two canvas tanks giving a storage capacity of about 8,000 gallons each. The actual lift of the water totalled about twentyfive feet. The pumps did approximately 3200 gallons per hour. From the canvas tanks mentioned above a 3" syphon delivered the water to two 600 gallon canvas troughs and the washing water taps; the drinking was lead from the main delivery pipe to two 2300 gall. tanks where it was chlorinated and delivered to watercarts by a standpipe, and waterbottles through a set of small taps. It was ascertained by test in fairly cool weather that the requirements of a brigade are:- 8 gallons per horse per day; 5200 galls. per day taken away as drinking water; 2000 gall. per day used in the washing area. The whole occupied about 7 days but was greatly hampered by having to water two mounted regiments and find most of the drinking water for a Brigade within 24 hours of its commencement. The greatest number of skilled personnel employed (exclusive of drivers on the engine) was 1 officer and one N.C.O. and two sappers, practically all the work being done by parties from the 1st A.L.H. Bde. For the 1st part of the month we were camped in the Jericho area, Jordan Valley, with D.H.Q. (Sheet XVIII.113L.2.) While there were bombed heavily by enemy aircraft. No casualties. On the 10th we were relieved by "ONE" DIVISION. We lifted camp at 1500 on trek for Talat-ed-Dumm, where we arrived at 1900. We watered from the Wadi Kelt (500 ft. below).

On the 16th at 1800 struck camp and trekked via Jerusalem to Bethlehem, where we arrived at 0230 on the 17th. At 1300 on the 17th we again lifted camp, the O.C. and Orderly Rm.

TALAT-ED-DUMM.

BETHLEHEM.

SOLOMON'S POOLS.

10th.

16th.

MAY 1918.

16th.

staff, etc., to a billet in Bethlehem and Capt. Allen and 30 other ranks going to Solomon's Pools. This latter party watering from the "Pools" out of troughs. SOLOMON'S POOLS consist of 3 large reservoirs with stout rubble walls, internally buttressed. Numbering the Pools - from the Beersheba-Jerusalem Road, one, two and three. The 1st is 146 yds. x 75 yds. in area; the 2nd 160 yds. x 75 yds. in area. The 3rd, which shews the construction better, there not being so much water in it. The calculated amount of water in each of the pools or reservoirs will be given in the Appendix of next (June) month's War Diary. See Sketch of No. 3 Reservoir in Appendix.

31st.

"A" FIELD TROOP - MAY 1918.

ES SALT.	May 1918. 1st. to 4th.	Troop with Bde. at ES SALT; watered Bde. at WADI SHAIB. Men's drinking water from spring rising in Square U.32.a.50 ES SALT MAP. Watered Bde. from cisterns, Square K.6.b. and K.18.c. and 8 cisterns on line through Squares K.13.d. K.20, K.21 and K.22, Es Salt map.
WADI SHAIB.	5th. 6yh.	Moved with Bde. back to JORDAN valley and bivouacked near JERICO. Erected troughs for horse watering on Wadi NUEIAMEH (Ref. sheet 18, Palestine).
	7th. to	Half troop moved out to take over maintenance of barrel pier bridge and foot bridges at GHORANIYEH.
WADI NUEIAMEH.	8th.	Right half of troop with Bde. supervising watering arrangements. Repairs to Brigade office furniture. Demolished aerial torpedo bomb (dud) dropped by enemy on the 7th. A charge was used as follows. 1 slab of guncotton, wet; 1 primers guncotton dry, 1 No.8 detonator and 2 ft. safety fuse. Buried bomb 4 feet and placed 2 layers of loosely filled sandbags on top and stamped it down. <u>Effect of explosion.</u> Bomb completely demolished, nose of bomb drove through 3 feet of earth. <u>Danger zone.</u> Although the bomb was buried 4 feet below surface, splinters were observed to travel a distance of 75 yards.
GHORANIYEH.	9th.	Demolished second aerial torpedo bomb (dud) dropped by enemy on the morning of the 7th. <u>Charge used.</u> 1 slab guncotton, wet, 1 Primers guncotton, dry, 1 No.13 electric detonator electrically exploded. Buried bomb 2 feet below surface and placed 18 sandbags loosely filled. 2 sandbags high. <u>Effect of explosion.</u> Bomb completely demolished. <u>Danger zone.</u> 30 yards. Conclusion arrived at between the different danger zones of both bombs. (1) Bomb demolished on May 8th through being tamped and buried deeper gave greater resistance, showing that explosive used in bomb follows on the same line as guncotton. (2) Bomb demolished on May 9th not being tamped and only 2 feet of loose soil and loosely filled sandbags, placed all around bomb gave very little resistance, the bags when torn by effects of explosion seemed to smother and break the velocity of splinters from bomb.
TALAT-ED-DUMM.	10th.	Left half of Troop handed over Bridges at 1000 and reported back to Right half Troop with Bde. Moved with Brigade at 1300 from JORDAN Valley to TALAT-ED-DUMM.
WADI KELT.	11th to	Inspected watering arrangements (under supervision 35 Army Troop Co.) and found only sufficient water for one watering at top water post. Erected two canvas troughs and two G.S. L. & F.
SOLOMON'S POOLS.	15th.	Pumps at bottom water post, Wadi Kelt, and watered at bottom water post until the 13th May. Water storage made up at top water post. Watered Bde. at top water post from 13th to 15yh May. Repairs to Bde. office furniture.
BETHLEHEM.	16th.	With Bde. at Talat-ed-Dumm supervising watering arrangement. Moved from Talat-ed-Dummat 2300 on trek to Solomon's Pools, Bethlehem.
	17th.	Arrived at Solomon's Pools at 1100. Erected water gear 4 G.S. canvas trough and 1 G.S. canvas 2300 gall. reservoir. Watered Bde.

May 1918.

- 18th. Watering Brigade. Drawing "HAYWARD-TAYLOR" Set (Internal Combustion Engine and Pumps also necessary pipe fillings and transporting same to Solomon's Pools.
- 19th. Inspecting springs in Brigade area with a view to developing under instructions from G.O.C., 1st A.L.H. Brigade, Spring known as No. 1 watering area to be developed. Moved Hayward-Tyler set and plant from Solomon's Pools to No. 1 Watering Area and erected same by 1800, also one 30' x 30' canvas sheet erected for storage reservoir 8000 gallons.
- 20th. Moved Troop from Solomon's Pools to No. 2 Watering Area, situated one mile South of Brigade Area and commenced developing.
- 21st. Erected 2 30' x 30' canvas sheets for storage reservoirs 8000 gallons each. Built up engine and pump foundation in cave.
- 22nd. Erected 2 600 gall. G.S. canvas troughs and pumped water from bottom of cave with 2 G.S. Lift and Force Pumps, placing pumps with 4 feet lift and forcing water 50 ft. up grade of 40°.
- 23rd. Supervising watering arrangements. Took delivery of 2" Goulds Pyramid Pump (Plunger Force). Erecting Plant, started 2000, finished 0100, commenced pumping 0500.
- 24th to 31st. Cleaning out channel, supervising watering arrangements. Watering 1100 horses daily. For particulars of Developing Tests of Yield, Test of Pump and log table of Plant see Tables (in Appendix).

[illegible]

WAR DIARY
of
"A" TROOP 1ST FIELD SQUADRON ENGRS.
for
APRIL 1918.

LIST OF APPENDICES.

No.	Subject.
1.	Water located during recent operations.
2.	Report on roads travelled during recent operations.
3.	Sketch Plan of " " " " "
4.	Plan of Bridges and Tracks - GHORANIYEH SECTOR.

Water location during recent operation. See Sketch No. 3 appen.

ES SALT. Wadi SHAIB. Running stream, also spring, square J.32.
J.32. Cisterns, Circular, domed top with mouth 4 feet dia.,
finished level with ground and circular stone placed on
top of cistern mouth, with square inlet opening 2 feet
square.

LOCATION.

DESCRIPTION.

K.6.	Cistern No. 1.	12 ft. dia. 25 ft. deep holding 2000 gallons of water.
K.18.	" No. 2.	14 ft. dia. 20 ft. deep.
K.24b.	" No. 3.	12 ft. dia. 26 ft. deep.
K.21b.	" Nos. 4 & 7.	12 ft. dia. 22 ft. deep. No.4 1500 galls. No.7 1200 galls.
K.21a.	" Nos. 5 & 6.	14 ft. dia. 28 ft. deep.
K.22c .	" Nos. 8 & 9.	12 ft. dia. 25 ft. deep. No.8 1200 galls. No.9 2000 galls.
K.13c.	" No. 10.	12 ft. dia. 28 ft. deep, holding 800 gallons.
K.14.a.	" No.11.	30 ft. dia. 20 ft. deep, 800 gallons.

Note: No. 4 Cistern emptied during operation.

"B" FIELD TROOP.

MAY 1918.

WADI KELT.	May 1918. 1st/8th.	During this period Lt. Jones was in charge. Usual troop duties were carried out. Brigade watering was done in the WADI KELT.
JERICHO BRIDGE.	9th & 10th.	Lt. Jones evacuated to Hospital. Lt. Steven reported and took charge of the Troop. Moved troughs up WADI KELT above JERICHO BRIDGE and aqueduct. Natives in the hills dam up the stream, thereby interfering with water supply at troughs. Had to send sappers up every morning to break down these dams.
WADI NUEIAMEH.	11th.	Moved camp to "AUSTRALIAN DIVISION" AREA and erected troughs on Wadi NUEIAMEH on drain drinking water still being drawn from Tel-es-SULTAN.
TEL-ES-SULTAN.	12th.	Sent to Descorps Dump for material and GHORANIYEH for waste timber for repairing troughs. Inspected watering area of 6th A.L.H. Regt. at AUJAH satisfactory and finished crosses for 7th A.L.H. Regt.
	13th.	Making hut for Brigade General. Repairing pumps and troughs.
GHORANIYEH.	14th.	Removed 4 troughs from drain to main stream owing to operations of "Mosquito Gang". Shoeing horses. Drew 2 days emergency rations and one iron ration. Took summary of evidence, case JOYCE.
AUJA.	15th.	Horse shoeing proceeding now for several days, going through troop horses.
	16th.	Cut bushes away from vicinity of horse troughs.
AIN-EL-NUEIAMEH.	17th.	Dug up and detonated unexploded H.E. shell which fell 100 yds. from camp.
	18th.	Laid out Road 27 under instructions from 2nd Field Squadron (AUSTRALIAN MTD. DIV.). Repairing limbers and shoeing.
	19th.	Inspected Road 27 route with Capt. Brisbane (2nd F.S.) re AUJAH crossing. Parties from Brigade on this road. Sappers supervising.
	20th.	200 men from Brigade on road 27. On the 21st there were 300 O.R. on this road, working 0530 to 0800 and 1800 to 2000. Sappers supervising every day.
WADI ABEIDEH.	21st.	Moved camp to AIN-EL-NUEIAMEH. Erected 2 reservoirs for drinking water, covered same and put up waterbottle-filling apparatus. Erected 4 troughs for horses. Fenced in drinking water area, cleaned out aqueduct for distance of 100 yds. Fenced off small garden from troughs. 300 other ranks with proportion of officers working party on Road 27.

WADI ABEIDEH. May 1918.
23rd.

Sited trenched and wire at front line defence works:-

2 WILD	809 yds.	wiring	-	218 yds.	trenches.
1 WOOD	300 yds.	"	-	"	"
3 WANE	400 yds.	"	370 yds.	"	"
4 WART	910 yds.	"	140 yds.	"	"
5 WAX	1496 yds.	"	344 yds.	"	"

These totals, in addition to what was already done - "WOOD", the trenches were not touched and the lines of wiring were merely completed. "WILD", the 2 small pieces of trench were joined up. "WANE", new posts throughout. "WART", new wiring throughout, communications and new trench laid out. "WAX", communication to small trench and new fire positions and communication laid out.

24th. Supervised distribution of material. Parties on roads as usual. 100 O.R. digging WANE. 125 O.R. on roads, 3 squadrons wiring.

25th. On roads making watering area at aqueduct, changing pumps. 5 N.C.Os. or sappers one every ~~nigh~~ night from 1900 to 2200 wiring and digging supervision. Lt. Stocks i/c operations on Road 27 and all lateral roads between posts and branch roads feeding posts. Parties at times under shell fire. 1 horse killed on 27 at Square H.14.d. south. Shelling interfered with laying out work.

26th. Usual parties wiring and digging and road making under same Engineer supervisions. Same on the 27th.

28th. Same as 26th also prospected hills East of Wadi OBEIDEH for tracks suitable for packs. Dug and stone lined, holes in watercourse (waste aqueduct) for dipping water buckets - washing.

ROMAN ROAD. 29th. Laid out road 12' wide down Wadi OBEIDEH from road 27 to Roman Road. Party of 100 and 2 officers on this road at night, too dark to do good work. Dug pits for B.A.C. for hand and rifle grenades and erected Danger etc. notice boards. Making notice boards for Roads and works for the last 4 days.

WADI OBEID. 30th. Usual parties on works, wiring roads, inspecting sites for road from Wadi OBEIDEH northwards to Wadi OBEID through 6th A.L.H. camp. Cleaning out troughs.

AUJA BRIDGEHEAD. 31st. Refixing notice boards. Parties on works, etc. 7 men attached for duty from Brigade. Health of men not good. Horses fair. Under instructions from O.C. 2nd F.S.E. 2 men were detailed in case suddenly required, as our Quota of Party to maintain Barrel Pier Bridges at Auja Bridgehead. Probability of being required very remote.

WAR DIARY
OF
B TROOP, 1ST FIELD SQUADRON ENGINEERS.
FOR
APRIL 1918.

LIST OF APPENDICES.

No.	Subject.
	O.C's. Report on Recent Operations.
	Specimen Copies of Wires on Recent Operations received by B.F.T.

O. C.'S. REPORT ON RECENT OPERATIONS.

Summary of Events.

Place

Route.

From MAKHADET HAJLA to 127.Q.34.b. thence to MAKHADET HAJLA.
127.Q.30.c. O.7.A., thence to No.7 road from
UM ES SHERT to ES SALT. Through ES SALT along
metalled road to AIN HEMAR, Square O.29.a. and UM ES-SHERT.
b. then back along metalled road to Sq. J.32.b.
and down No. 4 Road to Sq. K.20.d. and .26b then
back along No. 4 road to Sq. K.8.d. and linked ES SALT.
up with No. 7 Road at H.30.d. and trekked back
along No. 7 rd. to C.35.a. then to O.H.C. down AIN HEMAR.
No.6 Rd. to EL GHORANIYEH Bridge, then to Bde.
area 113 L.25.c.

ES SALT.

AIN HEMAR.

Water.

The Troop watered the Bde. on April 28th at 127.S.c.3. from the Jordan River; a lift of 8 ft. is required here. The troop cleared away the undergrowth so that now 4 troughs and one réservoir can be erected with a good inlet and outlet for horses and watercarts. On the 30th the troop re-erected watering gear and watered Brigade from Jordan River at 127.Q.9.c. where the lift was 14 ft. to water level. Arriving at Es Salt the Brigade (1st) watered at 2nd Bde. A.L.H. troughs at square J.26.c. where there was a plentiful supply of running water but fit only for horses.

I prospected round and found a cistern containing approx. 3000 galls. in sq. J.15.b. which was chlorinated in the cistern and used by the 2nd Bde. A.L.H. to fill water bottles and fantasies. I also inspected the pool marked in Sq. J.15.d. and found a circular pond which appears to have been made, and measuring 100 feet dia. It is possible to water a Regiment at once at this place.

At AIN HEMAR there are several springs flowing strongly, from which it is possible to water horses direct. This water is clear and fit for troops.

At WADI SHAIB there is a strong running stream with several good approaches for horses. Also several springs from which drinking water can be drawn.

Bridges.

While on trek with 2nd Bde. A.L.H. we saw only 2 Bridges, one at H.26.c. used to carry the water away from Es Salt and one in Sq.A.27.c.a 14 ft. span single arch over the WADI SHAIB. Both Bridges in good repair, very little damage.

Roads.

The roads the Bde. used in good state of repair. Rd. No. 7 when nearing Es Salt is a bit steep and rough.

The metalled road from ES SALT to AIM HEMAR is quite good; appears to have been recently metalled.

SPECIMEN COPIES OF WIRES ON RECENT OPERATIONS RECEIVED BY
B. FIELD TROOP, 1ST F.S. ENGINEERS.

B.M. 393.

25th.

aaa.

Working parties tonight will be as under aaa 5th Regt. will supply 50 men as wiring parties of 25 each to WART and WAX, and 50 men to report to F.T. near B.H.Q. as road making party with all available tools. aaa 6th Regt. will supply 100 men under a Captn. to continue work on WANE with all available tools and 25 men for roadmaking to report to O.C. F. T. at old 5th H.Q. 7th R. will complete the wiring of WOOD post and if possible WILD, and will continue wiring WANE and will continue the digging on WILD WART and WAX particularly the latter. aaa. Wiring gang should consist of about 12 men. O.C. F.T. will detail sappers to show work and will endeavour to supplement and repair tools. aaa. It should be impressed on all ranks the necessity of getting this work done and if slow progress is made it will be necessary to work longer hours than the 3 usually done. aaa. All work at posts to commence at 1900, the road work may if desired commence an hour earlier. aaa. Reserve Squadron will tomorrow make proper sandbag recesses, and in communication trenches for all Trench stores. aaa. WANE post must be garrisoned by one troop after work is finished.

2nd A.L.H. Brigade.

B.M. -

298.

26.

aaa.

Working party tonight. aaa. For wiring WOOD 1 N.C.O. and 12 men. WILD 1 N.C.O. and 12 men WART 2 and 20 from 7th Regt. WAX 2 & 30 from 6th Regt. WANE 1 officer and 60 men from 5th Regt. aaa All available wire cutters to be brought and men selected who have some knowledge of wiring aaa For digging WILD 1 N.C.O. and 20 men from 7th Regt. WANE 2 officers and 70 men from 6th Regt. WART & WAX 1 N.C.O. and 20 men for each from 7th Regt. aaa Parties will be ready at posts mentioned by 1930 and O.C. F. Troop will detail sappers to show work. aaa For Road making 1 officer & 25 men from 6th Regt. to report at old 5th Night H.Q. and 50 men from 5 Regt. to report to Field Troop near B.H.Q. at 1900 aaa It is inadvisable that these should now commence work before 1930 aaa All available tools should be distributed evenly amongst parties, preference in picks being given to trench digging aaa THREE hours work required aaa O.C. parties will wire a report of work done by them to O.C. F.T. before 1200 the following day.

2nd A.L.H. Brigade.

B.M. 430.

30.

aaa.

Working parties tonight aaa WOOD 1 N.C.O. & 6 men WART 1 N.C.O. & 6 men WAX 1 officer & 25 men all from 6th Regt. aaa Digging. 1 officer & 20 men 6th Regt. on WANE aaa All these parties must report to officer in charge of the post to whom also the sapper showing the works will report aaa 5th Regt. will post all men, as tools are available on digging WILD, WART and WAX and as many men as possible improving lateral communications and tracks to the rear aaa 7th Regt. will supply 100 men and 3 officers to report to Field Troop for work on Road 32 at 1700. 6th Regt. and M.G.S. will continue improving their back road under direction C.O. 6th Regt. and will start work also at 1700 aaa Usual hours of work.

2nd A.L.H. Brigade.

N.Z. FIELD TROOP - MAY 1918.

TEL ES SULTAN.	May 1918. 1st to 5th.	Report shown with "April's" Diary.
	5th.	Erected 4 troughs on WADI KELT with 4 pumps for Bde. watering, also erected two pumps for fresh water at TEL ES SULTAN.
GHORANIYEH.	6th.	Watered Bde. and other units. At 1800 Lt. Lockington and 17 O.R. proceeded to GHORANIYEH to take over Bridges from R.Es.
	7th.	Relieved the 519th Coy. R.Es. of Pontoon and suspension bridge and advanced dump. Mr. Lang Watered Bde.
JERICHO.	8th.	Dismantled heavy pontoon bridge, making same into medium pontoon bridge, removed six pontoons and loaded same with baulks and chesses on to pontoon waggon. Had fatigue party of 40 O.R. from W.M.R. for this work. Time taken to convert bridge 3½ hours (also load wagons). <u>FRESH WATER.</u> On east bank of Jordan erected two 30' x 30' tarpaulins for drinking water for all troops in AREA, and placed pumps from 519th Coy. R.Es. on same, for this work had fatigue party of 100 Indians with 40 shovels and 20 picks. The tarpaulins were sunk in the ground and one set higher than the other, each tank holding approx. 9000 gals. The higher tank was filled from the river and the water allowed to stand in same for sediment to settle at bottom, and then the water to be syphoned to lower tank 5 feet beneath and chlorinated in same. Water then drawn to water carts, etc. Time occupied - 4 hrs.
	9th.	Maintained pontoon and footbridges and dump. Also had 5 O.R. assisting in dismantling barrel pier bridge which was being removed by Australian Mtd. Div. Engrs. Mr. Lange watered Brigade.
	10th.	At 1400 handed over pontoon and footbridges to Major Morgan (1st Division), B.E.F. and rejoined Bde. at JERICHO. Watered Bde.
	11th.	Watered Bde. Sent limber to GHORANIYEH to collect timber to construct bath for N.Z. Bde.
	12th.	Watered Bde. Completed shower bath which was constructed as follows:- 1, 600 gallon
	13th.	canvas trough set on stand of 3 sets of legs made of 5" x 4" timber and floored with 10 standards and 2" planking and having 6 showers worked by string with arm attached to circular valve. (See Sketch.)
TALAT-ED-DUMM.	14th.	Watered Brigade. <u>Shower Bath.</u> To dispose of refuse water from showers, dug a series of channels and enclosed in stones to allow of waste water soaking away and evaporating; no waste water reaching nearer than 25 yds. from Wadi.
	15th.	Watering Brigade.

16th. Watering Brigade; after evening watering lifted all water appliances and moved out with Bde.
at 1900, arriving at TALAT-ED-DUMM at 2030.

17th to 23rd. At TALAT-ED-DUMM watering Brigade at R.Es. troughs.

HEADQUARTERS - JUNE 1918.

BETHLEHEM. June 1918.
1st

The separate diaries of the Troops are forwarded herewith.

The Headquarters was located at BETHLEHEM (at D.H.Q.) till night 19th/20th, when it moved to Left Sector, JORDAN VALLEY (H.34.central).

SOLOMON'S POOLS.

to

While at BETHLEHEM the following was carried out in addition to work shown on Troop's diaries. Watering of Div. H.Q. from aqueduct in Bethlehem area. Div. Troops from Solomon's Pools. In the Jordan Valley, complete organisation of watering of Left Sector, the indenting for, drawing and distribution of all defence materials. General supervision of the whole of the communications and the work of two companies 2/32 Sikh Pioneers.

31st.

The horses generally stood the heat of the JORDAN VALLEY well and did not lose condition. There was little sickness amongst the men, but they were overworked owing to the UNIT being about 20% under strength.

"A" FIELD TROOP - JUNE 1918.

SOLOMON'S POOLS.	June 1918. 1st to 5th.	During this period the work consisted chiefly of watering the Bde., which was being carried out in 2 Areas known as No.1 and No.2 Area. Situated south of SOLOMON'S POOLS along the Hebron Road a distance of 4 and 5 miles respectively from the Pools.
TALAT-ED-DUMM.	6th.	Lifted plant at No. 2 area and handed over all surplus R.E. stores to Lieut. Lockington (N.Z. Field Troop). Plant and materials at No.1 Area taken over by Lieut. Steven of "B" Field Troop. Treked with Brigade to TALAT-ED-DUMM and bivouacked for the day of the 7th
WADI AUJA.	7th.	At TALAT-ED-DUMM, arrived at 0500 and trek again at 1900 for WADI AUJA.
	8th.	Erected 4 Troughs to water Bde. (in 5th Mtd. Bde. Area) on WADI AUJA at point Z.25.d. Pales tine Sheet XV.
	9th.	Moved to camp site Y.30.c. Sheet XV. and went over defences with O.C. 4th Field Troop.
ABU TELLUL.	10th.	Maxx Took over from O.C. 4 Field Troop all R.E. defence material and tools. Lifted troughs from 5th Bde. area and erected them in Y.30.d. Sheet XV. using power plant to pump from Wadi into two 2300 gallon reservoirs erected on raised platform, built of loose stones about 18" high and syphoning from the reservoir into troughs. Working on the 2nd line of defence. 4 officers and 88 O.R. of 8th A.L.H. Regt. employed digging on "ABU TELLUL" and "THE BLUFF".
THE BLUFF.		
MASKERAH.	11th to 15th.	Improving trenches and machine gun positions started by 4th A.L.H. Bde. on ABU TELLUL and THE BLUFF. One squadron of the 8th A.L.H. Regt. were employed nightly.
ZEISS POST.	16th.	Dismantled the two 2,300-gall. reservoirs and erected one 30' x 30' canvas sheet. Erected one trough for camels 50 yds. from horse watering area.
	17th.	Erected standard double apron wire fence west of "ZEISS" POST. One squadron of 2nd A.L.H. Regt. employed.
	18th.	Continued with wiring of ZEISS POST and started another fence in front of MASKERAH. One squadron of 2nd A.L.H. Bde. employed on each position.
	19th to	Continued with the work on the 2nd Line of Defence, "ABU TELLUL" and "THE BLUFF".

"B" FIELD TROOP - JUNE 1918.

ERIHA.	June 1918. 1st.	Troop still camped at ERIHA. Inspected all posts on FRONT LINE, co-ordinates in previous reports.
JERICHO.	2nd.	Making device of tibbin bands to protect plain wood pick handles from wear at a point where it comes in contact with pickhead. 3 given to 6th A.L.H. Bde. to test. Usual parties on works, i.e. 5 N.C.Os. or sappers supervising working parties, both wiring and digging, also over any road work in progress.
	4th.	Sent to JERICHO dump for R.E. stores.
JERUSALEM.	5th.	Straightening up area and preparing lists of material to be handed over.
LUDD.	6th.	Marched out after handing over to 3rd Fld. Troop. To TALAT-ED-DUMM with Bde, then to area near Solomon's Pools. Drew at TALAT-ED-DUMM on way up 4 canvas troughs all almost unserviceable, 2 new ones and 66 standards at Jerusalem - these to replace a like number handed over to 2nd F.S.E. at JERICHO area.
TALAT-ED DUMM.	7th.	Advance party arrived at No.1 area and erected troughs at sunrise, also drinking water reservoir. Brigade commenced watering at 0800.
	8th.	Do not intend to use No. 2 area. No.1 Area yields 16,000 gallons per 24 hours (by pumping time).
	9th.	Sent to A.P.R.E. Jerusalem to change troughs, etc., including 3 received from TALAT-ED-DUMM (C.R.E.). Total exchanged 6. Sandbagged troughs, stoned space around water-bottle taps.
	10th.	1 limber 6 horses and 4 O.R. sent to LUDD to remove Squadron Dump. Erected mess at B.H.Q. Re-erected and covered reservoirs. 2 officers, 2 Sgt. attended lecture by Capt. Kettle (Gas Officer). 1 O.R. duty re centrifugal pump to Jerusalem.
	11th.	Water divining. A good stream 54 yds. wide running N.E. underground (Jerusalem 100.G.29.a.2 1/63,360.
SOLOMON'S POOLS.	12th.	1 N.C.O. & 3 sappers stationed at SOLOMON'S POOLS, erected 4 troughs and pumps, 1 reservoir and 1 pump at this area. N.Z. Troop removed their gear.
	13th.	Built road in No. 2 Reservoir (Solomon's Pools) and put "Deulz" engine (Sarona) down, 30 O.R. from 6th Regt. A.L.H. working party. 1 N.C.O. & 8 O.R. at No. 1 Well. In forenoon drew engine and tank frame from No. 2 well site.
WADI NUEIAMEH.	14th.	WADI NUEIAMEH Setting engine and pump (German Pump). Party deepening No. 1 well. Yield No.1 well 12,100 gallons per 24 hours.

- WADI NUEIAMEH. June 1918.
- 15th. No working party reported for No.1 well this morning.
- 16th. Lt. Steven had a look at 4th Bde. watering area at Wadi ARRUB. German rotary pump requires 2,000 revs. p.m. for good service. (Lt. Steven to be Captain.)
- 18th. Capt. Steven went to LUDD camel Brigade camp to choose reinforcements. 5 secured.
- 19th. Lt. Stocks and party 15 O.R. gone to JERUSALEM on leave (1 day). Men inoculated for cholera.
- 20th. Camp duties. Made crank handle for Signal Troop. Cable laying apparatus received from Ordnance 6 wheels, repairing transport iron and wood work. 4 O.R. arrived from Jerusalem Reinforcement Camp, temporarily attached.
- 21st. Party hauled "Deulz" engine with pump stand etc. out of Solomon's No. 2 Pool and stacked with 20' x 30' tank and frames and piping in readiness to move. Handed over reservoir and 12 pickets 5'6" to 3rd Troop. Cleaning up camp. Troop, with Bde., moved to Talat-ed-Dumm Area. Left 1730 arrived 0200.
- 22nd. Left Talat-ed-Dumm area at 1330. Erected 3 troughs in Wadi NUEIAMEH at site chosen by Capt. Steven (who had gone ahead for this purpose). Camped for night 22-23 at Sheet 18 K.4.a.g.5. Capt. Steven left "B" Troop and reported S.H.Q.
- 23rd. Brigade watered in Wadi NUEIAMEH at troughs erected on the 22nd. Took over water supply gear in Sub-Section No. 2 from 5th F. Troop, consisting of 4 troughs, 2 reservoirs and length of 3" pipe (120'). Sent party and limber with pumps to report to 5th Field Troop at 1700 and changed all pumps. The party then took over the camp site of the 5th Fld. Troop at (Sheet XV. Z.26 central). Marched in with Troop, arriving 2145.
- 24th. Erected 2 troughs for 7th Regt. at (Z.26.d. Sheet XV). Existing Reservoir used by 5th Regt. at AUJA MELLAHAH JUNCTION was moved to new site where it leaked so badly that a new one had to be erected. This reservoir was laced to give height of 2'6" as ground was soft 5 ft. pickets could be driven deeper, there is less pressure strain on reservoir. 5th Regt. dug sump close to stream and placed suction hose foot valve in this draining clear water for drinking but brackish. This raised a discussion as to whether it was better to have the sump a draw direct from the muddy stream. It was decided in favour of latter.
- 25th. Sent round sappers and repaired all troughs. Printed and erected notice boards marking the different Brigade water areas, i.e. No.1 at AUJA MELLAHAH JUNCTION, No.2 at Z.26.d.central, No.3 at Y.30.b.(S.E.) of the Map Sheet XV. (1" - 1 mile).
- 26th. Visited watering arrangements of Batteries and suggested improvements. Sent $\frac{1}{2}$ limber to S.H.Q. to exchange unserviceable gear.
- 27th. Re-erected new trough for Somerset Battery at J.5.d.central; Sheet XV.

- 28th. Continued making "AUTHORISED CROSSING" notices for Wadi AUJA. No other timber being available used boxes from Canteen. Sent two sappers to supervise wiring on front line.
- 29th. Erected water trough (canvas) for "A" Batt. H.A.C. Moved and erected reed mess hut from SHEIK IBRAHIM to B.H.Q. near camp in Wadi AUJA.
- 30th. Moved Ayrshire Batty. horse troughs from S. to N. side of W. AUJA to avoid necessity of taking horses through the water.
-

N.Z. FIELD TROOP - JUNE 1918.

Finish of the May Diary from the 24th to 31st.

TALAT-ED-DUMM.	May 24th. to 27th.	At Talat-ed-Dumm, 1 N.C.O. and O.R. watering Brigade. 1 N.C.O. & 3 O.R. maintaining old road from JUNCTION to BRIDGE West of C.M.R. Sgt. McMillan and 1 O.R. reporting on WADI KELT.
WADI KELT.	28th.	Same as 24th to 27th, also inoculation for cholera.
BETHLEHEM.	29th.	Watered Brigade, maintained section of road, rendered report on Wadi KELT water supply to Desert Mounted Corps. Marched out to BETHLEHEM at 1930.
SOLOMON'S POOLS.	30th.	Arrived at Solomon's Pools at 0200, left detachment of 9 O.R. at Solomon's Pools to erect 3 troughs on the top pool to water A.M.R., M.F.A. and M.G. Squadron. Proceeded to No.1 Well to take over from 1st Bde. Fld. Troop and water remainder of N.Z. Bde. here, but the supply proved insufficient.
No. 1 WELL.	31st.	Searched for water in vicinity and found 3 large cisterns approximately 1½ miles S.E. of No.1 Well and containing approx. 200,000 gallons. Erected 2 troughs at these cisterns and C.M.R. commenced watering at same. C.M.R. had working party of 50 men improving road to cisterns. 3 O.R. with working party of 12 men developing well in C.M.A. bivouac area about 1 mile West of No. 1 Well.

	1st June.	The 1st A.L.H. Brigade continued to water at No.1 Well and as they consume practically the whole of the water W.M.R. had to water at the cisterns we located on the 31st of May. Erected third trough at cisterns for W.M.R. Working parties of 100 men from W.M.R. and 50 from C.M.R. improving road to cisterns. 3 O.R. with working party from Regiment developing well at C.M.R.
WADI ARRUB.	2nd.	All units here watering at cisterns, 50 men from C.M.R. improving road. C.M.R. working on well in their bivouac area. This well has not improved and having sunk 6 feet through soil which had fallen into it we ceased work. The well made about 100 galls. after standing 12 hours.
JERUSALEM.	3rd.	Proceeded to WADI ARRUB with 5 O.R. to view water supply and measure amount of pipe required to convey water from Spring to where it could be utilised in troughs. Distance 400 ft.
	4th.	Watered Brigade at cisterns, 5th the same.
	6th.	" " " " Limber carted piping for ARRUB water area from JERUSALEM.

June 1918.

JERUSALEM. 7th. Watered Bde. at cisterns, libmers gathered all 3" piping from No.1 and No.2 wells and carted same to ARRUB watering area. Connected up 400 feet of 3" piping to lead water from Spring to troughs across 6" main. Erected two troughs and connected two pumps one on each end of 3" piping to syphon water from spring into troughs. The fall for syphon being approx. 3 ft.

8th. Watered two Squadrons W.M.R. at Wadi ARRUB and C.M.R. at cisterns in the mornings with 1 Squadron W.M.R. After morning watering moved troughs from cisterns to No.2 Well where we erected one trough and linked two pumps together, pumping water from the well a depth of 35 feet into trough. C.M.R. and one Squadron W.M.R. watered here in evening. Erected at WADI ARRUB one large reservoir (7,000 galls.) which we removed from No.2 well, the syphon worked very well. Placed stop valve at trough end of syphon so that the flow could be regulated to the supply and cut out pumping party. Increased storage at the spring to hold 1000 galls. by removing debris from Well. Erected two more troughs (making four at this area) and placed troughs in pairs close together with join on the centre of each pair, thereby doing away with syphoning from one to the other.

LUDD. 9th. Watered W.M.R. and B.H.Q. at No.2 Well. The linked pumps worked very well and were quite easy on the pumpers, each pump having about 18 feet lift to do.

10th. Watered as on the 9th. Mr. Lange and Spr. Glover proceeded to dump at LUDD. The arrangement at Wadi ARRUB is as follows:-

(Sketch)

11th. Watered as on the 10th. G.O.C. inspected Troop. Sent horses to JERUSALEM for 2 repaired limbers. Moved drinking water pump from cistern to B.H.Q. to Wadi ARRUB water AREA. Erected staging in Y.M.C.A. marquee for concert party. The "DIETZ" engine of this troop arrived from LUDD drawn by 8 horses from Brigade.

12th. Watering as on the 11th. 2 fitters repairing troop engine. Lifted all watering gear at SOLOMON'S POOLS (replaced by 2nd A.L.H. Bde.). Dumped gear at Descorps rest camp leaving 2 O.R. in charge of same.

13th. After morning watering lifted all Troops watering gear from Wadi ARRUB and No.2 Well. Evening watering done at 2nd A.L.H. Bde. troughs at Solomon's Pools. Marched out with Bde. for Talat-ed-Dumm at 1730.

AIN DUK. 14th. At TALAT-ED-DUMM, Brigade watered at troughs. Moved out at 1730 with Bde.

15th. Arrived at K.4.d. Sheet XVII. 1/63,360. at 0030. Erected 3 troughs and watered Bde. by gravitation from Aqueduct. 5 O.R. marched out on detachment to A.M.R.

UPPER AUJA.	June 1918. 16th.	Watered Bde. Picked up water supply gear and moved out at 1800 to AIN DUK. Took over water and bivouac area and stores from 3rd Field Troop Australian Mtd. Div. at AIN DUK and UPPER AUJA area.
WADI KELT.	17th.	Watered Bde. with 4 troughs at AIN DUK and 2 troughs at UPPER AUJA area. Water very good and plentiful supply pumped from running stream. Obtained limber from 2nd Field Squadron AUST. DIV. 5 O.R. constructing shower bath with same. (Type the same as shown in sketch for N.Z. Fld. Trp. for the MAY DIARY 1918.) at AIN DUK.
	18th.	Watered Bde., constructing shower bath. 1, 600 gall. canvas trough on base of 2" planking set up 8' from ground on 3 trestles, water gravitates through 2½" suction pipe (hose) from aqueduct as required and shower operated by wooden arms and string opening and closing circular valves leading through roses of perforated tin, waste water lead into shingle bed and disposed of by soakage. Also erected 150' tie up line for horses and clothes lines.
	19th.	Watered Bde. erected trough and pumps near C.M.R. bivouac area for watering this Regt.
	20th.	Watered Bde. at AIN DUK and UPPER AUJA. Same 21st and 22nd. Dismantled shower bath previously
	23rd.	" " " " " " " " erected at WADI KELT and transported same to UPPER AUJA.
	24th.	Watered Bde. Erected bath at UPPER AUJA similar to one at AIN DUK except that water was pumped from stream into shower on bank. 1 officer and 4 O.R. supervising trench digging.
	25th to 30th.	Watered Bde. Made 6 signboards for Bde. bivouac and water area. 1 officer and 4 O.R. with working party of 100 men at front line digging trenching and wiring.

HEADQUARTERS - JULY 1918.

JERICHO. July 1918.
1st

(The separate diaries of the Troops are forwarded herewith.)

The Headquarters was located at JERICHO (at D.H.Q.)

While at Jericho the following was carried out in addition to work shown on Troop's diaries.

Made various Notice Boards.

Constructed two meat safes.

Altered construction of scoop obtained from C.R.E. for cleaning roads of dust. Overhauled water cart, also obtained from C.R.E. for watering roads. Selected and delivered timber for bridge at Auja.

Northern Bridge J.12.d.7.3. Overhauled 8 H.P. DEUTZ Engine.

Drew and handed over defence material to guides of 1st and 2nd Brigades.

Completed four notice boards.

- 2nd. Delivered two notice boards to Capt. Straker. Completed two notice boards (RAEBURN A. & B.) Replaced two troughs in D.A.C. watering area, H.35.c.45. Overhauled two pumps and straightened up area generally.
- 3rd. Party on cleaning road K.4.c.4.8 of dust with scoop and afterwards watering. Drew and loaded and handed over to guides defence material for Brigades. Delivered two meat safes to D.A.C.
- 4th. Made notice boards for posts, roads, etc. Constructing meat safes. Delivered defence material to Brigades as on previous day. Delivered notice boards (Raeburn A. & B) to 4th Bde.
- 5th. Dismantled, overhauled and re-erected watering gear at drinking water area H.34.c.55. Sapper Winfield and Sikhs on stone trough in Wadi H.34.d.52.
- 6th. Delivered Defence material to Brigades. Completed overhauling and straightening drinking water area. Drew camels and defence material and handed over to guides of Brigades as on previous day. N.Z. and 2nd Brigades took delivery of two meat safes each. Sikhs working on stone trough.
- 7th. L/Cpl. Tolley and Sapper Jeramsen on road with scoop cleaning dust (have ten natives working with them). Delivered defence material to Brigades as on previous day.
- 8th. L/Cpl. Tolley and Sapper Jeramsen cleaning dust off road with scoop. Delivered defence material to Brigades. Erecting plant for showers H.34.d.32. Erecting 30' x 30' reservoir at drinking water area.
- 9th. Completed erecting 30' x 30' reservoir at drinking water area. Erecting plant for showers. Delivered defence material to Brigades. L/Cpl. Tolley and Sapper Jeramsen cleaning dust off road with scoop.
- 10th. Completed erecting plant for showers. L/Cpl. Tolley and Sap. Jeramsen cleaning dust off road with scoop. Collected canvas tanks from drinking water area. Making notice boards. Defence material delivered to Brigades.

July 1918.

JERICHO. 11th. L/Cpl. Tolley and Sap. Jeramsen cleaning dust off road with scoop. Erected screens round showers, etc. Made notice boards. Carting stone for troughs. Defence material to Brigades.

12th. Dismantled and reconstructed culvert over stream in Wadi H.34.d.7.2.

13th. Made notice boards. Overhauling saddlery and technical gear. Defence material delivered to Bdes.

14th. Erected two troughs in Wadi to water portion of 3rd Bde. H.34.d.9.3.

15th. L/Cpl. Tolley and Sap. Jeramsen completed cleaning road of dust. Overhauling Headquarters limbers and wagons. Erecting wooden troughs at D.A.C. area H.35.c.4.5.

17th. Completed erecting wooden troughs at D.A.C. area. Exploded dud shelles. Delivered defence material to Brigades. Overhauled pumps.

19th. Two men with Lt. Lockington unloaded mine O.32.c.S.E.

JERUSALEM. 20/21st. Moved to Bethlehem.

22nd. Arranging camp.

23rd. Changed 8 wheels for A. Troop.

24th. Made and painted signboards and two crosses.

25th. Erected two pumps on drinking water area. 100.K.34.37. Upholstering cars for D.H.Q.

26th. Exchanged 1 trough - 1 length of canvas hose - 1 length of suction base at Signal School, Beit Jala. 100.K.19 & 6.8.

27th. Cleaning harness and saddlery.

28th. Drawing of Engineering Stores. Cleaning and repairing equipment. Also during whole of period 1/21 supervision of work on communications of two companies, 1/34 Sikh Pioneers.

Comment on scooping dust off and watering with water cart of road.

To obtain good results it was found that a great quantity of water was required whilst the scoop was not successful on account of the stones coming loose in the road bed and making the scoop rise, thereby leaving a lot of dust behind.

(Sgd.) A. Max Allen.
Major, Cmdg.

"A" FIELD TROOP - JULY 1918.

WADI AUJA.	July 1918. 1st to 15th.	During this period the sappers were employed chiefly on the supervision of Defences in No.3 Subsector held by the 1st A.L.H. Bde. Two Squadrons of the 1st L.H. Regt. were employed nightly on 1st line of defence, erecting standard single apron fence around the posts, completing a system of all round defence of each post, which proved very beneficial during the last engagement. One Squadron of the Wellington Reg. N.Z.M.R. Bde. employed nightly on 2nd Line of Defence, erecting wire entanglements. Deepening and improving fire trenches, digging communication trenches and building sangars and small bombing positions. Continued with the watering of all Troops in the 1st Bde. area which, in addition to the 1st A.L.H. Bde., were:- 11th Mountain Battery and ammunition column. A. & B. Battery, H.A.C. - Notts. Battery, 91st Heavy Battery, C/301st Battery, C/303rd Battery.
TALAT-ED DUMM.		
SOLOMON'S POOLS.		
ENAB.		
	15th.	Inspected defences to get an estimate of labour and material required to repair damage done by the enemy.
JERUSALEM.	16th.	Handed over all R.E. stores and material to Lieut. HARPER, O.C., 3rd field Troop Aust. field. Squadron. Lifted engine, pump and all water supply gear and left WADI AUJA at 1900 for TALAT ED-DUMM.
	17th.	Arrived at Bivouac Area Kilo. 19 at 0500. Bde. watering at area troughs.
	18th.	One N.C.O. and four men proceeded to camp site occupied by 5th Mounted Bde. about 6 miles south of Solomon's Pools, to take over area stores and prepare camp for Troop marching in.
	19th.	Left Bivouac Area Kilo. 19 and trekked with Bde.
	20th.	Arrived at new camp site at 0500, put down 2 L. & F. G.S. Pumps at reservoir for Drinking Water
	21st.	Making drains and soakage pits in drinking water area.
	22nd.	Making crossing over Jerusalem water pipe line into drinking water area.
	23rd.	Moved with Brigade to ENAB watering at JERUSALEM en route.
LATRON.	24th.	Left ENAB with Bde. at 1700 for Latron at 1900, arrived at LATRON at 2200.
	25th.	Left LATRON for WADI HANEIN in advance of Bde. to prepare watering arrangements. Notified later by Bde. Major that all arrangements for watering was being done by L. of C. Troops.
WADI HANEIN.	26th.	breakdown in plant run by L. of C. Troops. Erected 3 troughs and one 2300 gall. reservoir and watered Bde. All material left, erected as an Alternate area for Bde. in case of another break down.

27th to
31st.

Cleaning and repairing equipment. Drawing of R.E. stores.

(Sgd.) A. Max Allen.

Major Cmdg.

"B" TROOP. - JULY 1918.

- W. MELLAHAH. Jult 1918.
- 1st Constructed stone road crossing in WADI MELLAHAH at approx. Z.30.a.2.0. over small overflow from a salt spring. The ground became very treacherous when wagons passed over. Ample stone was found in WADI AUJA valley in J.5.
- WADI AUJA. 2nd. Laid 4 charges to 4 ammunition pits at Ayrshire Battery guns at about Z.20.d.central joining up in one circuit with about 400 yds. of cable. No means on hand for testing.
- 3rd. Inspected water area with S.C. as positions of Units are very altered it is now possible to reduce number of troughs from 8 to 6, this work is to be done forthwith.
- 4th. Reliefs having taken place and Units camping in more central areas, the watering of the Brigade is now being done from the 6 troughs. The conditions are satisfactory, although more work is thrown on some troughs than others owing to necessity of preventing excessive crossing of the AUJA WATER. Inspected communications between Road 19 and posts on EAST side of W. MELLAHAH. These are in bad condition. Wherever traffic crosses this Wadi, without a bridge, the ground gets cut up and becomes dangerous. Decided two stone culverts and a wood bridge of 3 12 foot bays are necessary.
- 5th. Improved cover on drinking water reservoir J.5.b.2.4. made branding irons for "B" Troop and "Bde. H.Q."
- 6th. Made 5 notice boards (wood frame and canvas) for M.G. Posts in front line. Returned W.S. reserve gear to 7th Regt., which it was found necessary to utilise previously owing to decentralisations of water areas. Branded all horses not already so branded.
- JERICHO. 7th. Decided to bridge W. MELLAHAH in Z.24.c.9.5. (Ref. 1/63360) clear span of 26" (bank to bank) . ground level to water line 4'9", from water line to stone bottom 8'10". The bottom, from tests, seems solid. Ordered timber for Bridge. Exchanged AYRSHIRE BATTERY trough which had been ripped by horses.
- 8th. Two wagons from Regiments went to JERICHO dump for bridge timber, brought about half of what required. Made and fitted some $\frac{3}{8}$ " bolts for G.S. Pumps.
- 9th. Marked out bridge site, above mentioned. Sent 2 Regt. wagons for remainder of timber.
- 10th. One N.C.O. and 10 men commenced work on bridge. Drove in 4 trestle legs with NORTON TUBE MONKEY (the two near WADI BANK 11 ft. and the two near E. bank 9 ft.) - further work required on these. Balance of timber arrived. Got boxes from canteen to make notice boards for posts in front line.
- 11th. As trestle legs on bridge at Z.24.c.9.5. have reached fairly solid bottom stopped driving. Had stone carted by 5th Regt. from small crossing at Z.18.c.2.5. Inspected electric charges at AYRSHIRE GUNS.

JERICHO. July 1918.

12th. Made stone culvert at Z.18.c.2.5. Continued work on Bridge.

13th. Bridge now ready to take traffic.

14th. Repaired stone bridge made by Indians over AUJA at J.5.a.2.1.

15th. Made and fixed at posts TURTLE, SANDELY and RINGDOVE on gate side notices "GATE" in 2 ft. letters. Made two acetylene lamps.

16th. Improved roadway leading to and from Bridge at Z.2. and C.9.5. Prospected for water in WADI OBEIDEH at J.8.d.6.8. - found indications.

17th. Put on party from Battery (Somerset) with N.C.O. and Sapper from Fld. Troop to develop water at above place; found sufficient to water the AYRSHIRE and Somerset Batteries.

18th. Watered at J.8.d.6.8, improved in volume. Moved canvas trough from J.5.a.1.1, erected at above place. The watering of the 2 Batteries reduced water in storage sump about 5", which filled again in about $\frac{1}{2}$ hour after pumping ceased. This gives no indication of the flower, as the water percolates through shingle at lower end very rapidly, practically compensating intake. Nine wooden troughs arrived. Received timber to complete bridge and make crosses.

19th. Erected 3 wooden troughs at J.8.d.6.8. for Somerset and AYRSHIRE batteries, completed bridge at Z.24.c.9.5. i.e. constructed wheel guides and completed railing to approach on West Bank. Commenced making crosses. Improved road 21 at Z.26.d.9.6, using gun cotton to break down ledges of rock running across road.

20th. Erected 3 wooden troughs for the Inverness Battery at Z.26.d.5.6. Made notice board "TENNANT" for this post.

21st & 22nd. Water arrangements passed by M.O. subject to a film of oil being maintained on surface of water in sump. This is being done. Completed 4 crosses.

23rd & 24th. Overhauled all water supply gear and repaired same. Replaced old trough for new one in No.2 watering area. Troughs in W. AUJA seem to rot very quickly.

25th. As the wiring of Ringdove was finished yesterday the sappers supervising are now available for other duties.

26th. Made careful inspection of all crossings and bridges in Wadis Auja and Mellahah in sub-section No.2. It is noticed that stone crossings or culverts need frequent attention and repair as the stones gradually get displaced by heavy traffic.

27th. Destroyed 250 unserviceable rifle grenades. Put these in two separate holes, 125 in each, with sandbags and exploded with one slab of guncotton on each. About 12 grenades in both cases

27th.
(ctd.) were not destroyed. Six grenades exploded within a minute of and after main discharge.

28th. Made preparations to move.

29th. Made two crosses for 5th Regt. for 2 O.R. killed yesterday. Handed over to incoming 7th Field Troop Officer. Marched out at 1930 and moved independently to K.17 Kericho-Jerusalem Road; arrived 2300.

30th. Erected drinking water reservoir at K.17 and water bottle filling apparatus. Owing to early watering on 29th and long march the allowance of water for this Area was barely sufficient for today.

31st. Repaired fanatis for 5th Regiment.

ERIHA.

(Sgd.) A. Max Allen.

Major Comdg.

N.Z. FIELD TROOP - JULY 1918.

AIN ED DUK.	1918. 1st July.	Watered Brigade at AIN DUK. Detonated "DUD" 6" shell in area, severed casing of same with 4 slabs of guncotton, but explosive in shell did not detonate. 1 officer and 4 O.R. on trench work and wire entanglements with 1st A.L.H. Bde. 5 O.R. with A.M.R. at Upper AUJA. Erected 2 troughs at W.M.R. area, repaired shower bath. Took up 2, 2300 gall. fresh water reservoirs damaged by shell fire and erected one new one.
UPPER AUJA.		
WADI NUEIAMEH.	2nd & 3rd.	3 O.R. P.S. Rest Camp. 1 officer 9 O.R. to Upper AUJA watering area, and wire entanglements.
	4th.	Took over D.H.Q. watering area and watering area in Wadi NUEIAMEH. Repairing and improving same. 1 officer and 3 O.R. erecting wire entanglements in N.Z. Bde. line, UPPER AUJA.
TEL ES SULTAN.	5th.	Dismantled 2 troughs and erected 2 new ones and 1 reservoir.
	6th.	Made branding iron for Vet. officer B.H.Q. Improving B.H.Q. watering area at AIN ED DUK.
TALAT ED DUMM.	7th & 8th.	Repairing water supply gear. Erecting B. wire entanglements, UPPER AUJA. Erected 1 Fresh Water Reservoir, 30' x 30'. One limber to D.C. Repair Shop for repairs.
	9th to 19th.	Keeping in repair troughs and reservoirs changing some where required. Drew technical gear from S.H.Q. Erecting B.W. entanglements, and making crosses. On the 19th dismantled water area at AIN ED DUK and cleaned up camp - detachment wiring on UPPER AUJA. Joined up troop. 3 limbers left to join up Div. Train at 1900 at Tel es Sultan and limber left there with Div. Train at 2130, arriving at Talat-ed-Dumm Camp at 0330 of the 20th. Troop left camp at AIN-ED-DUK at 1900 and joined Brigade at JERICHO at 2100, arriving at TALAT-ED-DUMM at 2400.
	20th to 25th.	At Talat ed Dumm. Lieut. Lockington and 1 O.R. to Desert Corps H.Q. for duty. Dismantled old trough and erected new one.
	26th to 31st.	Cleaning and repairing equipment. Drawing R.E. stores.

(Sgd.) A. Max Allen.

Major Comdg.

HEADQUARTERS - AUGUST 1918.

BETHLEHEM. August 1918.
1st.

TALAT-ED-DUMM.

SKETCHES OF THE
THREE BRIDGES
ARE IN THE
APPENDICES.

1st.

.to

20th.

22nd.

24th.

25th.

to

27th.

28th.

29th

to

31st.

In rest area BETHLEHEM. The following work was carried out. Making and writing on about 15 notice boards - black writing on white canvas, stretched on frames. 3 crosses made and painted white with black lettering. 4 targets 2' x 2' with 6" bulls-eye. 1 blackboard about 3' x 5'. 3 stools made and 4 repaired. 1 iron frame for securing tin (petrol) on footboard of car from D.H.Q. Erected 2 troughs also 2 tanks 2300 gallon with covers at No.1 Water Area, for use of Gloucester Regt. Yeoy. Preparing camp etc. for inspection by G.O.C. Making 1 box 4'6" x 1'6" x 1'3". Making 1 Terminal Box in hardwood for Signal Squadron. Making seat in motor lorry, repairing saddle wallets. Overhauling harness and saddlery and general clean up. Overhauling water supply gear and limbers, re-bottomed two of them.

Preparing for move. H.Q. moved to Kilo. 3.- Jerusalem-Jericho Road, on the 21st.

Moved from Kilo. 3 to Talat-ed-Dumm. 23rd moved on to old camp site N. of Jericho and took over from AUST. DIV. at 0900. 1 N.C.O. and 2 O.R. took over the erection of No.2 stone bridge over Wadi at Jericho B.6 1/40,000 H.29.d.8.8. Also 1 Sgt. took over No. 3 " " " " " " " " H.23.d.6.3. Took over engine and plant and supervised watering of Divisional units.

Erected 1 G.S. L. & F. Pump at wooden trough intended for camels only. Supplied 400 galls of water to each bridge and 1 load of sand to No.2 bridge, also 1 load stone to No.2 Bridge. The supply of stone, sand and water is kept up to the 3 bridges as required. No.1 Bridge being situated at Jericho B6 1/40,000 H.35.c.3.7.

Cleaning up and overhauling showers, putting two extra showers in. Supervised drawing and despatching material to 1st A.L.H. Bde. Drew cement from R.E. Park and delivered $\frac{1}{2}$ ton to each bridge. Constructing motor garage for D.H.Q.

Cleaned out sump near engine water supply. Cut and rethreaded 6 bolts. C. in C's. Parade Major Allen, C.O., 1st F.S.E., decorated M.C. Ribband and Corpl. Leslie, R., 17996, 1st F.S.E. decorated D.C.M.

Completed motor garage for D.H.Q. Making footboard for motor car D.H.Q. Owing to bridge work etc. our draught horses have had considerable extra work, drawing necessary material. Shortage of pick-helves has seriously held up defence and other work.

A. Sketch of the Motor Garage mentioned on the 29th will be given in next month's War Diary

Out of 32 men evacuated sick for the month, 13 were during the last week, in the Valley (Jordan). Fever in nearly every case being the cause.

"A" FIELD TROOP - AUGUST 1918.

WADI HANIEN.	August 1918. 1st to 16yh.	With the Brigade at Wadi HANIEN. As the watering arrangements were left in the hands of the 359th Coy. R.E. P.L. of C., there was very little work to do, so every advantage was taken to give the men as much rest as possible. The only work carried out while in that area consisted of making crosses for 3rd A.L.H. Regt. and erecting shower baths for the Bde. in the main watering area.
LATRON.	17th.	Moved with Bde. to LATRON. Watered at troughs in area known as No.2 Well, Latron.
ENAB.	18th.	Erected 2,300 gallon reservoir in same area for drinking water. Lifted reservoir and marched to ENAB.
	19th.	Moved with Bde. from ENAB at 1400. Watered and fed at Kilo. 1, Jerusalem-Jaffa road at 1700. Left kilo.1 at 1800 for Kilo. 3, Jerusalem-Jericho road, arrived at 2000 and bivouacked for the night.
TALAT-ED_DUMM.	20th.	Left Kilo. 3 at 0300, arriving at 0600 watering at troughs in Descorps Headquarters area. Kilo. 17. Received instructions from Staff Captain to erect a 30' x 30' reservoir to specifications submitted by C.R.E. Descorps, 18 men from Bde. completed work.
WADI AUJA.		
MADBEH.	21st.	Left Talat-ed-Dumm with Bde. at 0400 and marched to bivouac area 1 mile N. of Jericho. Erected 4 troughs at aqueduct running through the camp and watered the Bde. drinking water drawn from Reservoirs at Tel-es-Sultan.
ABU TELLUL.	22nd.	Lifted troughs and moved to camp site at Wadi Aujah and took over all area stores and defence material in Nos. 3 and 4 Sub-sectors. Jordan Valley defences from Lieut. Harper, 3rd Field Troop Aust. Div.
WASP POST.	23rd.	Erected 1, 600 gall. canvas trough and 7 L. & F. C.S. Pumps to water all units in Bde. area.
	24th.	Erected 230 yards of entanglement on No. 4 Post, Madhbeh. 50 men from 2nd Batt. B.W.1
	25th.	employed Blasting, in trenches on ABU TELLUL and "WASP" POST 58 men from 1st Batt. B.W.1 improving trenches and erecting entanglements on ABU TELLUL
MASKERA.	26th.	Sighted and marked out 900 yds. of wire on MASKERA. Party of 50 men from 1st Batt. B.W.1. continued with the improvement of trenches on AbuTellul and wiring of No.4 Post ABU TELLUL Left - Y.10.c.s.w. Damieh (C.6).
	27th.	20 men from 3rd L.H. Regt. making metallised approach to drinking water reservoir and watering around water troughs Damieh (B.6) Y.24.d.s.w. 50 men from 1st B.W.L. Batt. employed on wiring at MASKERAH and digging recesses for ammunition and stores on ABU TELLUL.

- 28th. Sited communication trenches to No.4 Post, ABU TELLUL, Left Y.10.d.n. 50 men from 1st Batt. B.W.I digging communication to Tellul Left, No.2. Y.10.central, and wiring at Maskerah.
- 29th. Pegged out 200 yds. of wire on The Bluff No.4.Y.5.d.central. 80 men 1st Batt. B.W.I. wiring at No.4, Bluff and Maskerah, and continued improving fire trenches on Tellul.
- 30th. 20 men from 2nd A.L.H. Regt. erecting entanglements on Wasp Post. 80 men of 1st Batt. B.W.I working as on the 29th.
- 31st. Sited communication trench to No.4 Post Y.5.d.s.w. The Bluff and traced out an additional fire trench. Two machine gun positions and communication trench on "Wasp Post". 40 men from 2nd A.L.H. Regt. employed on defences on "Wasp Post".

In addition to supervising all the work on defences, Sappers have been employed daily doing all the Blasting necessary.

"B" FIELD TROOP - AUGUST 1918.

WADI ARRUB.	August 1918.	
	1st	Paved area with stone round waterbottle filling area. Owing to careless use of this ground it had become boggy.
	2nd.	Built screen for latrines.
JERUSALEM.	3rd/5th.	Paved drinking water reservoir area with stones.
	6th.	Made track for Brig.-Gen's. motor, from road at Kilo.17 Jerusalem-Jericho Rd. for 500 yds. North to connect with 2nd Bde. H.Qrs. Working party from 2nd A.L.H. Bde. (20 men). Troop inoculated T.A.B.
	7th.	Relined one wooden water trough with canvas.
	8th.	All ranks instructed in the use of P.H. gas helmets. Sent forward party of sappers with limber carrying W.S. gear (to March with Train) to prewater arrangements at new Camp.
	9th.	Took up water supply gear erected by B. Troop at Kilo. 17, Jerusalem-Jericho Road, and moved out with Brigade at 1930. One other rank to cookery school.
	10th.	Arrived at new camp site near Wadi ARRUB, modified watering arrangements to suit the Bde.
	11th.	Made and erected notices for watering Area.
	12th.	Repaired Fanatis for the regiments (2nd Bde.)
	13th.	Detailed man to keep accurate check on washing water used by Bde.
	14th.	Repaired road leading from Main HEBRON Road to B.H.Q., making it suitable for motor cars. The road is metalled, but loose stones had collected on it.
	15th.	1 N.C.O. & 6 O.R. cleaning out drinking water reservoir and horse trough. Carpenters making tables. Repairing G.S. limber. 1 O.R. reported for duty to I.O.M., JERUSALEM.
	to	G.S. wagon sent to Ordnance for repairs. Overhauled G.S. pumps.
	17th.	Finished repairs to limber. Cleaning saddlery. 1 N.C.O. to Bde. Gas School. 18th cleaning camp up.
	19th.	Troop inspected by G.O.C. Lieut. Jones, J.W.R., rejoined Troop.
	20th.	Collected spare R.E. stores and handed over same to R.Es. at Kilo 19 J.S.W.

JERICHO.

- 21st. Repairs to horse trough, table (Orderly Room). Motor cycles for Bde. Sig. Troop, cable layer for B. Sig. Troop, and Fanatis for Bde. Horses to Jerusalem for G.S. wagon and limber.
- 23rd. Packed limbers, cleaning up camp area. Dismantled drinking water gear, moved with Bde. from Kilo 19 at 1600 to Kilo 3, Jerusalem-Jericho Road.
- 24th. Moved from Kilo 3 to TALAT-ED-DUMM and prepared water for Bde. Repaired troughs and approaches to same. Moved ahead of Bde. to Jericho.
- 25th. Erected 6 troughs at Jericho and watered Bde. at 0800 and 1600. Arranged for drinking water from TEL ES-SULTAN Spring. Dismantled Troops watering gear and moved to W. AUJAH and took over watering area from 7th F.T. R.E. 1 N.C.O. and 1 O.R. attached to 7th A.L.H. Regt. for water duty. 2 troughs (horse) 1,600 gall. for drinking.
- 26th. Dismantled all area stores and erected new ones, sandbagged 1 trough for M.G. Squad. Erecting shelters for troop carpenter, cook and saddler.
- 27th. Erected two 2,300 reservoirs for main drinking water area. (Bde. Group, 6th A.L.H. Regt. Machine Guns, 38th Batt. Royal Fusiliers and Artillery. Erected 1 2300 gall. reservoir for 5th A.L.H. Regt. and 32nd Mountain Battery. Reservoirs sandbagged. Erected water bottle filler on main drinking water area, also made road to reservoirs.
- 28th. Finished road into drinking water area and placed signboards "IN and OUT". Repaired 13 Fanatis for 38th Batt. Royal Fusiliers. Carpenters making crosses for Bde.
- 29th. 1 N.C.O. and 6 O.R. on AUJAH Bridges. 1 North, 2 South, 1 O.R. to C. in C's. inspection. G.S. wagon changing gear S.H.Q. Making dust covers for Reservoirs. 1 N.C.O. to 38th Batt. Royal Fusiliers i/c of working party draining mosquito swamp. Erecting 2300 gall. reservoir at "TOOL" Post for 38th Batt. Royal Fus. (Damieh-Jericho C. 6 1/40,000 32.2.1.3. Making level crossing over AUJAH. 1 N.C.O. 2 O.R. to S.H.Q. reporting for duty on AUSTRALIAN CLEARING STATION, JERICHO. Saddler repairing harness, etc. Repairing pump for Artillery in Wadi OBEIDEH.
- 30th.
- 31st.

N.Z. FIELD TROOP - AUGUST 1918.

TALAT-ED-DUMM.	July 1918.	26th.	Watered Bde. as usual and other units at TALAT-ED-DUMM. 2 O.R. to march to Bde. Major at SOLOMON'S POOLS to take over Bivouac Area, and make watering arrangements for Bde. moving up. All ranks cleaning up camp and dismantling water gear, etc. Moved out from Bivouac Area, TALAT-ED-DUMM, at 2030 and joined up Div. Train and proceeded to new camp site at Solomon's Pools, arriving there at 0600 on the 27th.
SOLOMON'S POOLS.	From 26th to 31st (omitted in previous month)	27th.	Took over watering area and equipment. Area stores etc. at Solomon's Pools from 7th Field Troop. Erected 6 troughs and drinking water plant. Built dam with sandbags at outlet below the Pool and erected trough. 8 O.R. marched in from Training Camp, Moascar, Ismailia. 1 limber to Jerusalem for troughs and other watering equipment.
		28th.	Improved watering area, also improved dam below Pool (below 2nd and above the 3rd Pool) and erected another trough for C.M.R. watering.
		29th.	Built road from Main Road above Pools (Jerusalem-Hebron Road) to troughs below No.2 Pool, for C.M.R. horses to come in, and prevent congestion on S.E. side of Pools. 6 O.R. engaged in erecting storage reservoir 30' x 30' above S.E. side of No.2 Pool excavating for and sandbagging same. 1 limber to S.H.Q. for material and goods.
		30th.	4 O.R. repairing troughs and roads. 7 O.R. on storage reservoir and connecting pipe system, between pumping plant and storage reservoir (see sketches attached to S.H.Q. Diary for this month - AUGUST.) 4 O.R. dismantling storage reservoir erected on N.W. side of No.3 Pool and getting same ready for transport to Kilo 19. 1 limber to JERUSALEM for equipment from "Jerusalem Dump" and shifted same to camp area Solomon's Pools. ½ limber to Ordnance for goods. 2 O.R. in charge of Jerusalem Dump, rejoined troop. 1 limber to Jerusalem for equipment from LUDD DUMP.
JERUSALEM.			
SOLOMON'S POOLS.			
		31st.	6 O.R. working in laying down of piping, etc., to storage reservoir. Improved road and dam at C.M.R. watering area and exchanged troughs. Cleaned out troughs in "Pools" area and repaired Pump.
LUDD.	August 1918.		
	1st.		6 O.R. engaged on and completed laying of pipe system to storage reservoir and limber to S.H.Q. for stakes and barbed wire for fencing off crops. A.M.R. Burnac Area, also for timber for troop work. 3 O.R. marched out on leave to ALEXANDRIA.
	2nd.		Inspection of Troop by Brig.-Gen. Meldrum. 5 O.R. excavating for drinking water near "Fort Roman" ? over old pipe supply to JERUSALEM and located 1½" pipe with running water. Developed same and got a running supply of practically 6000 gallons per 24 hours. Repaired and improved pipe system at storage reservoir. 1 N.C.O. and 2 men measured quantity of water in pools, giving estimated quantity of 1,000,000 each pool approx. Limber to Ordnance for stores.

August 1918.

AIN DUK.

- 3rd. Loaded 30' x 30' reservoir and frames (dismantled). 3 O.R. with working party from Bde. developed water located yesterday - excavated for reservoir and put down same, with pump, etc. All limbers to Bde. area for transport inspection by Major Loveridge, O.C. A. & N.Z. MTD. DIV. TRAIN
- 4th. Limber to ordnance for equipment. 1 officer 8 O.R. R.C. Church Parade. 2 O.R. fencing new drinking water reservoir. 2 O.R. cleaning out troughs. 4 O.R. setting stays on storage reservoir.
- 5th. 3 O.R. marched in from Detail Camp, Ismailia. 2 O.R. improving water area and cleaning out troughs. 1 limber and 1 N.C.O. to R.E. Park, Jerusalem, for equipment. 2 O.R. making crosses. Inspection by Div. Commander, Gen. Chaytor.
- 6th. 2 O.R. effecting general repairs to equipment. 2 O.R. cleaned out troughs and replaced damaged trough. Limber to Ordnance for limber wheels. 2 O.R. made new cover for fresh water reservoir.
- 7th. 1 other rank carving and painting crosses. 2 O.R. repairing roads and improving water area.
- 8th. General repairs to equipment. 3 O.R. dismantled 2 troughs between No.2 and No.3 Pools where No.2 Pool leaks and comes to the surface owing to water giving out, and re-erected one at No.2 Pool watering area. 1 O.R. assisting shoeing smith.
- 9th. 2 O.R. strengthening storage reservoir. 1 limber to Ordnance for limber wheels.
- 10th & 11. 2 O.R. general repairs to pumps, repairing equipment, and road top side of Pools (Jerusalem-Hebron Road). 9 O.R. marched in from Details, ISMAILIA, EGYPT. 12th 1 officer and 2 O.R. m. in from EGYPT.
- 13th/15th. Sent for R.E. stores. Exchanged trough. Brigade sports. Limber team to I.O.M. Jerusalem and brought back ½ limber on loan.
- 16th. Handed over Area stores at Water Area to Lieut. Alexander, S.H.Q. Cleaned out camp, dismantled and packed up troop's water supply equipment and marched out at 1530 with Brigade to Kilo. 3. (Jerusalem-Jericho Road).
- 17th. Marched out with Bde. from Kilo. 3 at 0300, arriving at Kilo 17 at 0630 and bivouacked.
- 18th. " " " " " " 17 at 0300 " north of Jericho at 0600. Put down "7" troughs and watered Bde.
- 19th. Picked up watering equipment and marched out at 1700 to AIN DUK AREA.
- 20th. Erected 1 trough at C.M.R. and took over 1 canvas trough and put down 2 pumps complete with same at A.M.R. At W.M.R. we took over 1 Area trough (canvas) and 1 wooden trough. Repaired canvas

August 1918.

- 20th (ctd.) and put back in good condition. At fresh water area we took over 1 2300 gall. reservoir and completed same with our own pump, hosing, etc. Also erected bottle filler.
- 21st. Formally took over area stores from 5th Field Troop. Improving watering facilities in all areas.
- 22nd. Repaired showerbath at W.M.R. Area.
- 23rd. Took over camping area from 5th Field Troop.
- 24th. Watered Bde. as usual. Improved drains from W.M.R. area.
- 25th. Limber to S.H.Q. for troughs and timber.
- 26th/28th. 5 O.R. on parade at presentation of riband by G.O.C. in C. 2 O.R. preparing parade ground for same. Drew 1 dummy horse from R.E. Park, Jericho.
- 29th. Moved drinking water reservoir at W.M.R. area to new site. (Jericho (B.6) H.26.d.6.7.)
- 30th. General repairs and watering Bde.
-

SQUADRON HEADQUARTERS - SEPTEMBER 1918.

<p>Camped Jericho B.6.</p>	Sept. 1918.	
	1st.	Cutting and threading bolts. Carted sand and water to No.2 Bridge - also No.3. Removed unserviceable reservoir and commenced to erect new one.
	2nd.	Carted stone and water to Nos. 2 & 3 Bridges. Completed reservoir at watering area. Drew 50 camels and handed over with R.E. stores to guides from N.Z. and 1st Bde. Repaired showers and made small notice-board for same.
	3rd.	Made iron straps for Bridge. Repaired limber and G.S. wagon. Threaded bolts.
	4th to 9th.	Repaired typewriter cover for D.H.Q. Carted water, stone and cement to bridges. Made notice boards - camouflaged tents - drew timber from TEL-ES-SULTAN. Repaired watering area fence. Erected cover over engine.
	10th.	Carted sand, cement, stone (& timber from R.E. Park, JERICHO) to Nos. 2 & 3 bridges. Made straps for handrails for No.2 Bridge. Made ice chest for D.H.Q. Officers' Mess - also petrol-tin clamp. Made notice boards.
	11th.	Erected shelter for Provost Corps, D.H.Q. Repaired seat for Officers' Mess. Overhauled and repaired pumps. Carted stone and water to bridges.
	12th.	Carted stone and water to bridges. 1 O.R. to R.E. Park and D.A.D.O.S. to repair tank and fanatis.
	13th.	Sand and stone to No.3 Bridge. Repaired showers. Overhauled limbers. 1 O.R. on road repairs (exchanged). $\frac{1}{2}$ limber at Workshop (repairs) JERICHO.
	14th.	Water and stones to No.3 Bridge. 1 O.R. to supervise loading of defence material and guide tractor to destination. 1 O.R. on road work. Limber, 4 horses and 2 drivers to N.Z. Troops for duty. Repairs to seat.
	15th.	Carted stone to No.3 bridge, water to No.2. Sent G.S. wagon to H.Q. 1st Battalion, B.W.I. Drew cement and explosives from R.E. Park. 2 O.R. on road work. 1 O.R. guiding tractor. Repairs to stationery box for A.D.M.S.
	16th.	Carted stone, water and cement to No.3 Bridge. Made notice-boards for N.Z. Troop. Sent G.S. wagon to JERICHO to collect timber and reinforcements.
	17th.	Sent G.S. wagon to R.E. Park to collect defence material. Carted sand and cement to No.3 Bridge. Repaired iron knees for bridge. Made map-screen for D.H.Q.
	18th.	Made iron brackets for D.H.Q. motors and 1 chest. Moved horse-lines to safe place on account of shell fire. Work interferred with from same cause.

Sept. 1918.

19th to
21st.

Made notice boards. Sent limbers to bridges to collect tools, also to R.E. Park for stores Overhauled limbers and watering gear. Cross for R.H.A.

22nd.

Loaded limbers and prepared to move.

23rd.

Left JERICHO and crossed the JORDAN, bivouacked ES SALT 2nd Ed. 1/63360. 127.Q.34.a.

24th.

On trek all day. Repaired roads between JERICHO and ES SALT. Camped near ES SALT. Sapper WALGERS to hospital. 127.J.27.c.

25th.

Made arrangements for drinking water and left ES SALT at 2130.

26th.

Arrived at AMMAN 0515. Moved on to Railway Station. Sap. JACKSON to Hospl.

27th.

Overhauled captured water supply and plant. Erected 3 pumps complete. Made and erected notice boards. Buried 5 dead horses and 1 N.Z. horse.

28th.

Made and erected notice boards at watering area. Collected captured explosives. Commenced erecting wooden trough. 2 O.R. on road repairs with Lt. BALE. 2 O.R. running captured water supply plant. Filled in latrines.

29th.

Completed and erected wooden trough at watering area. Made cross for D.H.Q. Repaired fence round camp. 1 O.R. on duty with C.O.. 3 O.R. repairing railway line. Collected remainder of captured explosives.

30th.

Procured buffers and draw-bars for locomotives. 2 O.R. on repairs to railway trolley. Loaded rails for repairs to line. Erected gun and pulled horse out of well. Fitted lamp brackets to motor car for D.H.Q.

JERICHO B.6. 1/40,000.

2000^x Road work consisting of soleing and metalling was completed under the supervision of Lt. BALE with E.L.C. location H.6.a. & Y.30.c; Y.30.a. & Y.24.C. on ROMAN Road. Lt. Stocks supervised soleing, metalling and rolling with oil and steam rollers section of New Motor Road from K.9.b.s.e. through 3.d., 3.b., 4.a. and H.34.d. in all 2700. Completed the erection of the 2 stone steel and wood bridges in squares H.29.d. (No.2) and H.23.d. No.3 and opened to all traffic. Sketches of these were forwarded with the diary for August.

NIMRIN B.7. & SALT C.7.
1st Ed.

On ES SALT & NIMRIN road at a point in Square M.22.a.6.1. the whole roadway on a steep side land was blown away by the Turks to an average depth of 15'. Party got to work under O.C. and light motor traffic was enabled to pass in 4 hours and all CHAYTOR'S Force transport got through from a time 1 hour later. Temporary repairs were completed 12 hours after commencement sufficient to enable heavy Mechanical transport to pass. On 29th at AMMAN Lt. Lockington, N.Z.E., commenced repairing captured locomotive engine.

"A" FIELD TROOP - SEPTEMBER 1918.

JERICHO B.6. September 1918.
1/40,000. 1st.

60 men from 2nd A.L.H. Regt. employed on WASP POST, erecting wire entanglements and digging new ~~fixes~~ fire trench. 30 men from 1st Battalion B.W.1 working on No.4 Post, THE BLUFF, digging communication trench and putting back-apron on existing wire fence. 20 men from 1st B.W.1 working on ABU TELLUL. Left No.1 Post improving communication trench, sappers supervising.

2nd 50 men from 2nd A.L.H. Regt. working on the defences on WASP POST. 50 men from 1st Bn.
to B.W.1 working on ABU TELLUL and THE BLUFF. 20 men from 3rd A.L.H. Regt. working on a
4th. Battle Headquarters and Signal Station on ABU TELLUL Left, sappers supervising.

5th. In addition to the usual parties working on the defences, 35 men from the 3rd A.L.H. Regt. were employed on the Battle Headquarters on ABU TELLUL.

6th. Shifted camp from site in WADI OBEIDEH, JERICHO (b.6), 1/40,000 H.4.d. to H.27.c.

7th. Erected 3 canvas troughs for use of 3rd A.L.H. Regt. and 1st Machine Gun Squadron on WADI NUEIAMEH.

8th. Lined wooden troughs in the Brigade area with canvas.

9th. Made 6 second class figure targets for the use of 2nd A.L.H. Regt.

10th. Dismantled 3 canvas and 1 wooden trough in 3rd A.L.H. Regt. area, and erected 2 canvas & 1 wooden trough and one 2300 gallon reservoir on their camp site in JERICHO 1/40,000 (B.6) H.33.c.

11th. Blacksmiths and carpenters busy on repairs to Transport.

12th. General Camp Routine and dubbing parade.

13th to Camp work and grazing. Making crosses and repairing fanatis for Brigade. Making notice-
19th. boards for roads in Brigade area. Repairing Transport. Dubbing saddlery.

20th. Making preparations for moving.

21st. Moved with Brigade to point Y.29.c. JERICHO (B.6) 1/40,000.

DAMIEH C.6
1/40,000. U.27.d.

22nd. Moved to KHIRBET FUSAIL. Brigade watered at two troughs erected by N.Z. Engineers on Aqueduct from AIN FUSAIL.

23rd. Moved with Brigade to ES SALT, taking two pumps and troughs complete and explosives on pack horses - wagons taking the main road through JERICHO and crossing the river at GHORANIYEH Bridge.

September 1918.

- 24th. Erected two troughs for Brigade on the WADI SHAIB at ES SALT. Moved to AIN HEMAR and prepared for the watering of the Brigade. AMMAN 3rd Ed. 1/63360. 142.0.30.c.n.w.
- 25th. Moved to AMMAN, bivouacking at the railway station. X.33.b.
- 26th. Erected 2 troughs and one drinking water reservoir on the WADI AMMAN about half a mile north of the Station.
- 27th. Repaired boiler on pumping plant at AMMAN Station.
- 28th. Brigade moved to junction of WADI AMMAN and WADI HAMMAM. Erected one L & F pump for drinking water, drawing the water direct from the spring. No troughs erected as it is a good stream and the Brigade being scattered along it a distance of five miles.
- 29th. Went to SAMRA, overhauled and got motor locomotive in working order. Motor loco. arrived at ZIRKA at 1800 and stayed the night. One truck with Turkish wounded and sick prisoners had to be left between SAMRA and ZIRKA.
- 30th. Motor loco. with one truck of Turkish wounded and sick prisoners arrived at AMMAN.
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"B" FIELD TROOP - SEPTEMBER 1918.

<p>Camp JERICHO B.6. 1/40,000 Z.24.c.8.6.</p>	<p>Sept. 1918.</p>	
	<p>1st</p>	<p>Cleaned out sump and repaired sandbag wall of same in WADI OBEIDEH, JERICHO, 3.B.10.7. This area is and has been in good order. Two sappers reported to 6th A.L.H. Regt. for duty at GHORANIYEH BridgeHead. Regiment watering at Q.2.D.8.3. (horses).</p>
	<p>2nd.</p>	<p>Overhauled and repaired troughs at JERICHO 5.B.3.4. AUJA-MELLANAH Junction. Repaired road crossing at JERICHO 4.B.9.8 which had become cut up, paving the ramp on either side with small stone. Put cover over drinking water reservoir for 38th Battalion near TOOL POST, X.34.Central (C.6), 2nd Ed.</p>
	<p>3rd.</p>	<p>Cleaned out and put cover on 5th Regt. drinking reservoir at J.12.A.8.7. Repaired 13 fanatis for 38th Battalion. Repaired limbers in anticipation of move.</p>
	<p>4th.</p>	<p>Painted and printed two crosses for 2nd M.Gs. Cleaned camp site at Z.28.c.8.6. and moved out at 1515. Arrived at N.5.A.2.5. at 2100, having proceeded on East bank of JORDAN from AUJA Bridge-head to GHORANIEH, thence S.W. to above place.</p>
	<p>5th to 6th.</p>	<p>Planned out and made new camp area. Commenced sandbag emplacements for 4 troughs at N.5.A.25, and drained out stagnant pools caused by Indian Cavalry washing at Spring HAJLAH in this area. Erected one trough for "B" Troop use.</p>
	<p>7th.</p>	<p>Put down watering area for 7th A.L.H. Regt at S.2.d.24 to use in conjunction with two Indian Inf. Battalions. Saddlery inspection.</p>
	<p>8th.</p>	<p>Finished sandbag emplacements for troughs. Repaired same for, and erected, two 2300 gal. reservoirs N.5.a.25.</p>
	<p>9th.</p>	<p>Put down troughs on emplacements finished on the 8th (four inall) and overhauled pumps. Erected one pump near camp site and hosed all troop horses. Raised trough emplacements (which had settled at higher end) one sandbag and cleaned out and re-erected the troughs. Cleaned out pipe line to N.5.B. central (which leads surplus water from spring to stone reservoirs at that point.) NOTE: During period erected 8 troughs, 4 reservoirs. Men detached: GHORANIEH Bridge, one N.C.O. 4 O.R. (these handed over 1500 on 9.9.18, re-turned to unit 1500 10.9.18. JERICHO, one N.C.O., 2 O.R.; 2 M.Gs. - one N.C.O. & 1 O.R. 6th A.L.H. - 2 O.R. 10.9.18.</p>
	<p>11th.</p>	<p>Overhauled pumps and dump equipment. Repaired fence round Watering Area No.1. Cleaned out aqueduct at AIN HAJLA. Rifle inspection.</p>
	<p>12th.</p>	<p>Dismantled troughs and cleaned out concrete reservoirs and made bathing pools for 5th A.L.H. Regt. One O.R. repairing fanatis at JERICHO R.E. Park. Replaced two reservoirs at No.1 Area.</p>

Sept. 1918.

- 13th. Erected pump and trough at No.2 Area. Repaired stove for Field Ambulance. 1 officer and 6 O.R. reported to S.H.Q. for duty swimming horses in JORDAN RIVER. INSPECTED GHORANIYEH Watering Areas.
- 14th. Made ice chest for Brigade H.Q. Overhauled pumps and hosing. Kit inspection.
- 15th. Erected 2 troughs and pumps on sandbag emplacements at No.5 Area, and one trough & pumps on sandbag emplacement at No.6 Area. Repaired pumps and hosing.
- 16th. Repairing troughs and pumps. Overhauling Regimental watering gear and fanatis. Repaired to aqueduct and pipe-line at No.1 Area. Made cross for 5th L.H. Regt. and table for No.3 A.I.F. Canteen. Examined all explosives and issued Regimental quotas.
- 18th.
- 19th. Shifted area stores dump to B.H.Q. dump at KUSR HAJLA also all spare Troop gear.
- 20th. Made 2 perch poles for 2 L.H.F.A. wagons. Repaired water bottle filling apparatus.
- 21st. Dismantled, cleaned and re-erected troughs and drinking reservoirs at No.1 Area N.5.A.95. Repaired 3 G.S. pumps and stone pipe (leading from AIN HAJLA to stone reservoirs N.5.B.20).
- 22nd. Received 3 mules from S.H.Q. Carted Area stores to Brigade dump at KUSR HAJLA.
- 23rd. Packed up and moved out at 0800 with one half hour's notice and arrived at Q.3 Central 1130. Moved at 1530 to P.21.c.4.3. with Bde. transport. 1 officer and 5 O.R. rejoined troop at Q.3. central. Watered transport from WADI NIMRIN. 5 O.R. went forward with 2nd B.H.Q.
- 24th. Left P.21.c.4.3. at 0700. Marched continuously along road and reached ES SALT at 1800.
- 25th. Moved at 0430 to SUWEILEH, arriving at 0900. Watered at existing stone trough. Lt. JONES went forward at 1200 to report to B.H.Q., AMMAN. Secured Watering Area at Y.12.A.central and camped there. Remainder of Troop moved at 1500 and arrived AMMAN at 2130 and camped with Brigade transport.
- 26th. Troop moved into 2nd Brigade water area at 0630 in Y.12.A.central. Erected drinking-water reservoir and water-bottle apparatus from aqueduct supplying mill. Repaired 200 yds. road in Y.12.a.central. Lt. JONES and 6 O.R. left with one squadron 5th Regt. to destroy portion of HEDJAZ railway line south of AMMAN. Damaged points at KISSIR station. Destroyed 1450 ft. of line at L.23 and 150 ft. of line at N.30.
- 27th. Erected 6 canvas troughs at AIN AMMAN (Y.16.B.9.8 and Y.17.A.central). Shifted drinking water reservoir from Y.11.D.3.1 to Y.16.B.8.8, obtaining very clear water from the AIN source. Besides 2nd Bde. N.Z., Artillery, Indian and other troops used this watering area.
- 28th. Shifted Camp from Y.17.B. central to Y.9.c.central.

- 29th. Surveyed and mapped out proposed new road running from watering area along N. bank of Wadi in westerly direction to Y.9.D.central, thence N. to Road No.4 to give 2nd Bde. access to Watering Area.
- 30th. Lt. STOCKS and 10 O.R., including 2 drivers with half limber were sent to SEIZA Station to overhaul locomotive engines. This party arrived 1930 and reported to N.Z. Bde. H.Q. Made two crosses for 5th A.L.H. Regt.
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N.Z. FIELD TROOP - SEPTEMBER 1918;

Sept. 1918.	
1st to 3rd.	Watered Brigade - 2 O.R. overhauling pumps. 1 officer & 3 O.R. wiring posts at AUJA with working party of 50.
4th.	One officer & 3 O.R. wiring. Eight O.R. with 16 horses carting material for Battle Posts from JERICHO to AUJA. Sgt. PETERSON on Road work with S.H.Q. JERICHO-AUJA Road and detached for duty.
5th.	Picked up water supply gear and moved to AUJA area. Took over area stores and water areas from "A" Troop. 1 O.R. detached for duty with W.M.R.
6th.	Put down water supply gear to water Bde. along AUJA. 2 O.R. placed on dump of R.E. material.
7th.	One O.R. detached for duty with C.M.R. 2 officers and 5 O.R. wiring posts with working parties. Lt. LOCKINGTON marched in.
8th. to 10th.	Shifted troughs at W.M.R. water area, placing them under cover from fire. Cleaned 8000 gal. reservoir at A.M.R area - repaired troughs.
11th/13th.	Lt. BALE and 2 O.R. detached for duty at S.H.Q. Carted water for E.L.C.
14th. & 15th.	Carted material for Battle Posts. 1 officer & 7 O.R. constructing Battle Posts on AUJA line. Constructing tracks along AUJA. Brought explosives from JERICHO.
16th/18th.	2 officers and 8 O.R. on Battle Posts with working parties. Constructing 30 x 30 reservoir at A.M.R. water area and 2300 gal. reservoir at B.W.1 water area. Continued work on Battle Posts and wiring. Brought signposts from S.H.Q.
19th/20th.	Brought troughs from S.H.Q. Handed over R.E. Dump to B.W.1 guard. Ready to move.
21st.	Picked up water supply gear and moved out at 1900 with Bde. Trekking to FUSSAIL and bivouacked.
22nd.	Put down 3 troughs at FUSSAIL and watered various units. 1 officer and 2 O.R. joined Bde. Remainder of troop with 1st Line Transport.
23rd.	Watered animals and supplied drinking water at FUSSAIL. Picked up gear at 1800 and moved to Obeideh.
24th.	Moved off with Transport at 0500 and trekked to NIMRIN.

September 1918.

- 25th. Moved off 0130 and trekked to HEMAR. Put down trough to water transport animals.
- 26th. Trekked to AMMAN. Joined Bde. and put down 4 troughs, supplied from running stream - also bottle filler and pump for carts supplied from spring.
- 27, 28th. Watered and pumped for Bde. Repairing locomotive at AMMAN Station. Made crosses.
- 29th. Picked up gear at 1500 and moved south with Brigade. 1 Officer and 5 O.R. remained at AMMAN repairing locomotive.
- 30th. 1 officer and 7 O.R. with $\frac{1}{2}$ limber and water supply gear moved off with Brigade at 0130 and trekked to EL KASTAL. Put down 2 troughs and watered Brigade. Remainder in bivouac with Transport.
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HEADQUARTERS - OCTOBER 1918.

October 1918.

- ZIZA. 1st. In addition to the following work by the 3 Troops (A, B and N.Z.) the following work was carried out by Headquarters.
Completed repairs to railway trolley. 1 N.C.O. and 4 O.R., including shoeing-smith assisting Lieut. Lockington on repairs to Engine (see sketch). O.C. & 1 O.R. supervising working party at drinking water area, drainage of well, etc. Loading rails on truck.
- SAMRA. 2nd. Lieut. Lockington and breakdown gang pulled out on train with repaired engine for ZIZA South, on the HEJAZ line. Break down on engine. Lieut. Bale and party salvaging engine etc. at ZIZA (went through by motor truck over demolished line at LEBBAN).
- MAFRAK. 3rd. 1 Sap. in charge of engine etc. at drinking water supply.. 1 Sap. driving motor truck. Lt. Bale and 2 O.R. on railway repairs.
- 4th. 4 Saps. assisting Lt. Lockington on locomotive and afterwards proceeding by rail to ZIZA, got through and brought train with shells, etc., back on the morning of the 6th. Lt. Lockington again returned to ZIZA with wood and water for Lt. BALE at LEBBAN and water for troops at ZIZA.
- 5th. A number of Saps. on repairs at railway sheds. Removed mine (wire cut previously) from water tower at Station.
- 6th & 7th. All available men on repairs at sheds. Fitting lamp bracket on D.H.Q. car, made 1 new perch pole (limber).
- 8th & 9th. Making motor and ordinary roads to Aerodrome flat. made 3 notice boards. 1 Sapper in charge of P. of W. party on road repairs, also 1 Sap. in charge of wood cutting for fuel.
- 10th. Erected tank at drinking water area for filling water bottles, and placed notice boards in position. Mr. Bale came in with train from Lebban via ZIZA. Lt. Lockington followed 3 hrs. later.
- 11th & 12th. Repairing G.S. pumps, cleaning up captured portable kitchen, 6 drivers assisting Lt. Bale on engine. Cutting and carting wood to pumping plant.
- 13th. 1 officer and 2 O.R. inspecting line northward 7 miles from AMMAN. All O.K. Lt. Lockington with repaired engine. Small train with escort, loading party and wireless set with engineer party moved out for MAFRAK. Six miles south of destination found 13 wagons on line that could not be pushed forward, so brought on back to SAMRA intending to return north again, but were ordered back by H.Q. Chaytor's Force.
- 14th/17th. Returned to AMMAN. Made 1 cross for 1st A.L.H. Bde., 1st Regt. Lieut. Bale with escort, loading party, and wireless set, the whole in charge of an Engineer Officer moved out to MAFRAK, reached destination, cleared line after 12 hours work and brought back on the 17th. 10 guns, numerous M.G., ½ truck of shell ammunition, 1 armoured motor truck and 1 motor truck: Wireless

- 14/17th
(ctd.) kept in touch throughout, moving or standing. The Bedouins put 3 obstructions on line.
- 18/19th. Collecting enemy shells and bombs. Trial demolition of shells not satisfactory. Heaps of 30, covered with German "Donarit" explosive (approx. 6 lbs. in weight) did not detonate all shells. Shells were stacked in layers (2 rows fuses interlocking in each layer, 3 layers to each heap doubling quantity of explosive on top. Gave slightly better results but still blew undetonated shells about. German exploder used, which on trial fused. British No.13 Bridge wire, though 100 ohms resistance, also fired 10 selected German detonators on telephone lead 430 long. Exploder failed to detonate more than 3 charges on series of 7 and 4. Using German detonators, though the 4th electric detonator when fired singly, fired successfully. Reason.- Bad manufacture and irregular resistance of bridge in detonator.
- Salving cases (to pack shells in) from Turkish AMMUNITION Dump. Emptied from cases and buried 12,050 stick grenades and hand bombs, 40 c/s small (15 lbs.) aerial bombs, 21 c/s detonators, (aerial bombs), 26 c/s detonators large aerial bombs, 36 large c/s cordite, removed and buried 45 c/s large (40 lb.) aerial bombs. 12 c/s aerial torpedoes, 2 c/s and quantity loose aerial bomb detonators and covered in a cave 43 c/s small aerial torpedo detonators.
- 20th & 21st Dismantled captured gun, repairing pumps and overhauling limbers. 1 N.C.O. and 2 Sappers supervising removal of captured enemy shells.
- 22nd/31st. Cleaned working engine at drinking water area. Running motor truck to 1st Bde. Destroying captured enemy shells and bombs. Made crosses for Sig. Squad. (1) D.H.Q. (1), 3rd Regt (1) and S.H.O (1). 5 men to hospital. Picked up troughs from watering area. Left 1 pump with 4 lengths of suction hose at AMMAN. Loaded oil engine etc. on to motor lorry. On the 28th the HEJAZ Flag raised at AMMAN.
- Sketch of AMMAN Viaduct on the Hejaz Railway attached to this month's diary. An attempt was made to destroy this Viaduct during operations in March 1918 but was unsuccessful.
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"A" FIELD TROOP: OCTOBER 1918.

October 1918.	
SAMRA.	1st. Repairing "Turkish" engine (locomotive) at SAMRA but found that boiler tubes blew out at 2 lb. pressure of steam, so abandoned it. Party working at ZERKA pumping station, repairing engine parts and getting steam up.
ZERKA.	2nd. Repairing another "Turkish" engine (locomotive) at SAMRA but found that tubes were unserviceable, this was also abandoned. Party working and getting steam up at ZERKA pumping station.
AMMAN.	3rd. Jacked a "Turkish" motor transport into position. Fixed and repaired steering gear on Turkish motor car. Same was towed into S.H.Q. at AMMAN. Portable motor workshop left for S.H.Q. Party working on pumping station at ZERKA but found waterpipes leading to overhead tank blocked. Abandoned.
	4th. Working on a "Bergmann" motor lorry but found faulty magneto and carborated cylinders. Also abandoned. One N.C.O. and 5 O.R. admitted to hospital.
	5th. Working on another "Bergmann" motor lorry, fitted a magneto, overhauled carburetter and brought same along road about one mile.
	6th. Brought "Bergmann" motor lorry into Field troop camp. Fitted gear belt in same and left for AMMAN at 1730.
	7th. General Camp Routine. The O.C. (Lieut. McGlaughlin, G.) taken ill and carried to Field Ambulance. Admitted and evacuated.
	8th. General camp routine. The Troop is now reduced to 21 (twenty-one) other ranks.
	9th/18th. General camp routine. 5 O.R. marched in on the 13th.
	19th/22nd. Making crosses for 1st A.L.H. Regt. Painting and lettering same.
	23rd/27th. Soldering fanatis and repairing same for Machine Gun Squadron.
	27th/31st. Overhauling troughs and reservoirs, cleaning up camp generally and general routine.

"B" FIELD TROOP - OCTOBER 1918.

October 1918.		
ZIZA.	1st.	Overhauled and cleaned troughs in watering area. Lieut. Stooks returned, arriving 1700, leaving party, less 4 sappers, at ZIZA to be taken charge of by an officer from H.Q.
	2nd.	Left AIN AMMAN, with Bde., arrived at SIR and erected drinking water reservoir. at 1400.
AIN AMMAN.	3rd.	Left SIR at 0800, arrived at SHUNET NIMRIN and erected drinking water reservoir. This reservoir with pickets, pump, 3 lengths of hose and water bottle filler apparatus, was carried from AMMAN by 2 Camels, lent by the 2nd A.L.H. Field Amb., on account of Brigade proceeding by No.4 Road, all wheels going by ES SALT road.
SIR.	4th.	Left P.21.b. Central at 0700 and moved independently to AIN HAJLAH, arrived 0945 and re-erected troughs and drinking water reservoirs, and watered Brigade on its arrival about 1200 at N.5.A.95 Damieh 1/40,000.
SUNET NIMRIN.	5th.	Collected and sent surplus area equipment to R.E. Dump, JERICHO.
	6th.	Packed all gear ready for move and cleaned camp.
	7th.	Left AIN HAJLAH 0630. Moved ahead of Bde. to Kilo 17, JERUSALEM-JERICHO ROAD, examined water supply gear and made arrangements for Bde. to water.
AMMAN.	8th.	Left Kilo 17 JERUSALEM -- JERICHO ROAD at 0500 and moved ahead of Bde. to area on NABLUS ROAD about 1½ miles N. of JERUSALEM, arrived 1000 and inspected water arrangements.
AIN HAJLAH.	9th.	Made 2 crosses.
JERICHO.	10th.	Painted crosses, sent 2 limbers for Ordnance stores to Bde., sent wagon detailed by Bde. to Jerusalem Railway Station. A large number of men have gone sick. Since arriving in Jerusalem they continue daily to be admitted to Field Ambulance and it is becoming difficult to carry on the work owing to shortage of numbers.
ENAB.	11th.	Troop left JERUSALEM and trekked, independently, of the Bde. Halted two hours at ENAB, arrived at LATRON 1700. Arranged watering for Bde.
WADI HANEIN.	12th.	Left LATRON at 1700, arrived Wadi HANIEN at 1100. Lieut. Jones went ahead with party of 5 O.R. arriving 1000 and inspected water troughs and engines.
	13th.	Took a hand with R.E's. and rectified troughs sufficiently to enable Bde. to water. Bde. arrived 12 noon.
	14th.	Assisted N.Z. Field Troop to erect 6 canvas troughs and lay 120 ft. of additional pipe line. Rifle inspection. Lieut. Jones went to Ludd and secured some salvaged material, timber, wire netting, etc.

October 1918.

- 15th. Sent wagons to LUDD to fetch material. Had working party of 90 men from Bde. and marked out and constructed roads through Brigade Camp Area. Took over water area from 359th Water Coy., this entails running three engines, as all expert drivers have been evacuated it was necessary to put on semi-trained men which means that one officer has to be in constant attendance. Saddlery inspection.
- 16th. Started construction of stretchers for Field Amb. work. Overhauled one engine, repaired several broken parts, repaired about a dozen joints in pipe line. Started to build two cook-houses.
- 17th. Continued making stretchers, completed 15. Laid 150 yds. wire road 9 ft. wide for Bde. cars from metal road to Brig.-General's quarters.
- 18th. Completed 10 more stretchers. Overhauled and repaired 7 latrine screens. Made and erected 4 "NO ROAD" signs.
- 19th. O.C. to LUDD to arrange to draw R.E. material. Repaired 10 fanatis. Fenced off and prepared ablution area. Built up sandbag rests and fixed 40 stretchers (as mentioned above). Screened off verandah of house where Field Amb. are quartered, for patients. During this period 1 N.C.O. and 4 men have been in attendance on cocks in watering area, to regulate flow and ensure smooth running. 1 N.C.O. and 1 O.R. have been constantly employed on the engines. In addition to 2nd A.L.H. Bde. and 18th Artillery Bde. and Div. Train watered at this area.
- 20th. Owing to shortage of men, took 2 away from Bde. watering area, leaving 1 N.C.O. and 2 O.R. to carry on. This made the task a very serious one. With carpenters (attached from Regt.) make latrine screens and shelters.
- 21st. One officer went with Bde. Major to choose site for rifle range. Continued work on latrine screens and shelters. Cleaned out Bde. water troughs. Marked out site for rifle range.
- 22nd. Cut a drain 200 ft. in length to carry water from Ablution area. One officer to obtain material for range.
- 23rd. Wagons sent to LUDD for material. Erected 10 latrine screens and 2 cook's shelters from Bde.
- 24th. Obtained some unserviceable water pipes from R.E. Water Coy., and constructed football grounds, one for each Regt., and one for B.H.Q. as goal posts. Made one cross; Commenced overhauling 4' x 4' targets drawn from R.E. Park. Overhauled 2 8000 gallon drinking water reservoirs and cleaned them out.

October 1918.

25th.

Started party of 50 men on rifle range, making 100 and 200 yds. mounds. Repairs to typewriter for 2nd A.L.H. Fld. Amb. Found it necessary to completely take it to pieces and make several new parts such as springs, levers, etc. Sent wagon to Richon (Ayon Kara) to pick up wire netting left there by the R.Es. to finish wire road for Bde. cars.

26th.

Started party of 100 men on range. Typewriter reassembled and put into working order again.

27th.

Reported that one deep well pump was leaking. Overhauled this pump, found one barrel leaking, the casting having been broken. Made a temporary packing of lead.

28th.

Completed 100 and 200 yds. mounds to range. Commenced 300 yds. mounds and the marker's pit. Making sign boards and various accessories for the sports ground. Got 2 engine drivers from the 7th Regt. A.L.H. Found it impossible owing to shortage of men to carry on otherwise. The shortage of mechanics is at present serious as all water in this area is raised from great depths. Continued work on range. Erected 14' x 10' stage for Y.M.C.A

29th to
31st.

Erected targets on range and finished markers pit and 300 yds. mounds. Marked out sports ground, made band stand. Made cricket pitches. One for Bde. and 1 for 7th Regt. Completed range, picked up ground on hill behind targets to smother strike of bullets finished by 0900. 31st. Repairs to roads, G.S. wagon and cycle.

N.Z. FIELD TROOP - OCTOBER 1918.

	October 1918.	
EL KASTAL.	1st.	Watered Bde. at EL KASTAL. Put down trough to water transport from cisterns at KISSIR. Bde. returned to this area at 2000.
	2nd.	Moved off at 1100 and trekked to HEMAR, put down trough to water transport. 3 O.R. with 2 limber detailed for duty with C.H.B.
	3rd.	Moved off at 0700 and trekked to ES SALT.
KISSIR.	4th.	" " " " " " " NIMRIN. Made sump here for fresh water.
	5th.	" " " 0700 " " " Kilo 4 north of JERICHO put down 4 troughs and watered Bde from running stream.
	6th.	Watered Bde. at Kilo 4, N. of Jericho. 2 limbers collected gear from dump at AUJAH.
ES SALT.	7th.	" "
	8th.	" " picked up water supply gear and moved off at 0900 with Bde. Trekked to TALAT-ED-DUMM.
HEMAR.	9th.	Moved off at 0700. Trekked to JERUSALEM and bivouacked.
	10th & 11th.	Bivouacked at JERUSALEM.
	12th.	Moved off at 1500 and trekked to LATRON via main road and bivouacked.
NIMRIN.	13th.	" " " 0900 " " " DEIRAN. Made camp adjoining water area laid down by 359 Water Coy.
	14th.	Laid down 6 canvas troughs and connected with piping to well and pumping plant.
JERICHO.	15th.	Improving connections and pipe line at water area. Watered Brigade.
	16th/19th.	" " " " " " " " " "
	20th.	Connecting troughs by 4" pipe line to well and pumping plant not in use. 2 O.R. overhauling engine and pumps.
TALAT ED DUMM.	21st.	Connected up with new pumping plant, flow insufficient to water Bde. quickly so discontinued using this plant. Used general supply pipes.
	22nd.	Put down iron troughs (four), also 4 canvas troughs, all connected to 4" pipe by cocks or taps.

LATRON.	Oct. 1918. 23rd to 26th.	1 officer and 3 O.R. with working party constructing rifle range for Bde.
	27th.	Limber and 3 O.R. with 3 G.S. wagons drew timber etc. from R.E. Park, LUDD, for targets and shelters.
	28th.	1 officer and 5 O.R. with working party on Range. Carted material for same. 3 O.R. repairing and recovering targets.
DEIRAN.	29th & 30th.	1 officer and 7 O.R. with working party on Range. Limber carting targets to same.
LUDD.	31st.	2 O.R. making discs for range (marking). Range completed. 8 swinging targets, set in sand-bagged trench.

A. AND N.Z. FIELD SQUADRON ENGINEERS.

OCTOBER 1918.

WAR DIARY.

APPENDICES.

1. Sketch of Hejaz Railway Viaduct, AMMAN.
2. Sketch of Gallery to above Viaduct.
3. Sketch of Engine (captured) showing damage, and how repaired.
Also description.

LOCOMOTIVE - BENT GIRDER PLATES.

The bent girderplates of the locomotive were straightened by the following method. The engine having been first packed front and rear to prevent any movement longitudinally, and firmly secured at the sides so that the weight might not be thrown laterally, thereby buckling the plates, it was then raised in front by means of jacks and the leading pair of wheels removed. A five-box 6' x 5' x 8" in depth (bottom covered with sand and boards lined with asbestos to prevent firing) was then inserted beneath the girder plates. Bellows were used to concentrate the heat on the bent parts, and as the plates became heated the total weight of the locomotive caused them to gradually resume their original positions. The straightening of the bends was well controlled by means of the two jacks in front, it being possible to at once lower either side to compensate for overheating, or to raise it in order to increase and prolong the strain. The operation was a complete success and the time occupied by the process was twenty hours.

Prior to the employment of the above method, another method was tried. The fore-end of the locomotive was raised by jacks and when at a sufficient elevation and severely chocked. By means of the jacks the engine was then raised a further two inches and a Tumbler inserted.

The bent plates were then heated by means of forges and blowers, the jacks removed and the Tumbler made to collapse by means of a long pole struck sharply by means of a heavy hammer. On the fore-end coming down heavily upon the chocks the entire weight of the locomotive was thrown upon the heated bent plates, tending to partly straighten out the bend of the plates. The process promised success but in order to completely eliminate every possibility of failure, it was deemed advisable to employ in its place a method whereby the pressure applied to the heated bends (and the consequent strain) would be constant and capable of regulation and control.

NOTE: On account of the very inferior quality of the coal, wood fuel was on all occasions used. The tools and appliances at hand were quite inadequate for the work undertaken.

Sketch Attached.

HEADQUARTERS - NOVEMBER 1918.

AMMAN.	November 1918.	
	1st.	Struck camp and moved from AMMAN at 0800. Arrived at ES SALT at 1800.
	2nd.	Left ES SALT at 0745, arrived at NIMRIN 1400, erected reservoir and trough and 2 pumps.
	3rd.	Picked up watering gear and left NIMRIN 0800. Arrived Kilo 17 (Talat ed Dumm) at 1600. Handed over R.E. Park, JERICHO, to representative from P.L. of C. and obtained receipt.
ES SALT.	4th.	Rested at Kilo 17. 5th Left Kilo 17 0800. Arrived Kilo 1 opposite Reinforcement Camp, Jerusalem, at 1430.
	6th.	Left Kilo 1, 0800, arrived Latron 1400. 7th left LATRON 0800, arrived RICHON 1300.
	8th.	Arranging Camp. 9th Removing remainder of DUMP from LUDD to BIR SALEM. Overhauling watering gear.
NIMRIN.	10th.	Replacing troughs at watering area, RICHON. 11th & 12th overhauling watering gear.
	13th/15th.	Arranging camp, drawing material, etc. Repairs to Officers Mess D.H.Q.
TALAT-ED-DUMM.	16th/20th.	Overhauling and repairing technical equipment, harness, saddlery and transport vehicles.
	21st/26th.	Cleaning troughs at Watering Area, RICHON, laying out race-course for Div. Races. Making and erecting notice boards for D.H.Q. Ploughing furrows round race course for a border.
JERICHO.	27th/30th.	Dismantling stove for D.H.Q. and sent it to JAFFA and erected. Made 1 table for M.O. 5' x 2' x 6"; preparing for Corps Commander's inspection.
KILO. 1.		
LATRON.		
RICHON.		
LUDD.		
BIR SALEM.		
JAFFA.		

"A" FIELD TROOP - NOVEMBER 1918.

AMMAN.	Nov. 1918. 1st.	Troop trekked from AMMAN to ES SALT with 1st A.L.H. Bde.
ES SALT.	2nd.	" " " ES SALT to SHUNET NIMRIN; erected 3 troughs for Bde. watering.
	3rd.	" " " SHUNET NIMRIN to TALAT-ED-DUMM after dismantling 3 troughs.
SHUNET-NIMRIN.	4th.	Remained at TALAT-ED-DUMM. 5th Trekking to Jerusalem. 6th Trekking to LATRON. 7th to RICHON. Took over Pumping Plant and watered Brigade. Worked on plant from 1600 to 0300; repairing feed pipe on engine and filling reservoirs for watering on the 8th.
TALAT-ED-DUMM.	8th.	Pumping plant running 3 hours. Refilled reservoirs. Arranged Camp Area.
	9th.	Dismantled, overhauled and readjusted valves on engine at pumping plant. Plant running 5 hours.
JERUSALEM.	10th.	1 trough erected to replace damaged one. Rebuilt portion of reservoir site at Watering Area.
	11th.	Overhauled and repairing feed pipe on engine. Filled reservoirs (3). General Camp Routine.
LATRON.	12th.	Made 2 notice boards (MOTOR ROAD ONLY) for B.H.Q. 1 table made for Troop O.C.
	13th.	Two reservoirs at Watering Area strengthened with sandbag anchorages. General cleaning up of Plant.
RICHON.	14th.	Made and painted 1 cross for 3rd A.L.H. Bde.
	15th.	Limber to R.E. Park, LUDD, for timber. Walls of reservoirs at Watering Area strengthened. Pumping Plant running well.
	16th.	Erected cook's shelter for troop Cook. Repairs to table for B.H.Q.. Maintenance of pumps and troughs.
	17th.	Erected Farrier's workshop for troop Cook. Repairs to cooking utensils for B.H.Q.
	18th.	Making 4 crosses for Inverness Battery, R.H.A. Repairs to shelter for 1st Regt. H.Q. 1 N.C.O. supervised the cleaning and re-erecting of troughs at Bde. watering area.
	19th/25th.	Continued work on crosses for Inv. Battery, R.H.A., and an additional 3 for 3rd A.L.H. Regt. finished on the 25th. Making for 1st Bde. Sports, pegs for marking out area and hurdles (5). General camp routine. Pumping Plant running satisfactorily.
	26th.	Supervised working party in cleaning water troughs. Finished dispatch box for Bde. Orderly Room.

- 27th. Printing on crosses (commenced on the 18th). Making oven for troop cookhouse.
- 28/30th. Reservoir erected at Bde. Watering Area for washing purposes. Making desk and pigeon holes for Bde. Canteen. Completed 7 crosses. Prepared for inspection and Official Photograph (taken on the 30th) at B.H.Q. Maintenance of pumps and troughs. Pumping plant in good order.
-

"B" FIELD TROOP - NOVEMBER 1918.

Nov. 1918.

- 1st Overhauled, cleaned and re-erected two iron horse troughs. made two cricket pitches, painted one cross. made and erected a number of plates for rifle range. had four carpenters from 2nd Bde. L.H. cutting salved timber for cookhouses, there being (through sickness) too few tradesmen left in the troop for this work.
- AYUN KARA. 2nd. rrepared work for making enclosures on sports ground.
- 3rd/4th. Overhauled and cleaned an oil engine. Put new set of clack valves on one deep well 3-throw pump. Laid out ground for athletic sports. Commenced making blackboard, jumping stand, number plates and notice boards for sports ground.
- 5th/6th. finished items for sports ground and carted same to positions and erected, arranged water area at AYON KARA for 1st A.L.H. bde. commenced work of erecting two 30' x30' reservoirs and 1 30' x 20'. Lifted and relaid 600 ft. of 3" pipe line. Overhauled and cleaned one kerosene engine for same area.
- 7th. Completed work commenced on the 6th and erected six 600 gall. troughs, canvas. finished this area and ready for use on the 8th. Watered 1st A.L.H. Bde. in 2nd Bde. watering area on the aft of the 7th.
- 8th. made two crosses for Ayr. battery. made forms and tables for 6th L.H. Regt. Tables and 2 acetylene lamps repaired for 7th regt. cleaned saddlery and harness.
- 9th & 10th. Laid out ground for 2nd Bde. Horse Races. Commenced making signboards and number plates for same.
- 11th. Painted signboards and number plates and made flagpoles and blackboard for racing ground. Commenced 2 crosses for 6th A.L.H. Regt. Erected stage for visiting concert party. Completed course and erected signboard, etc., including totalisator.
- 12th. Closed down one engine supplying 2nd Bde. Water Area. Now draw all water from Tewfic Bay. This area is now watering the following. One regt. 2nd A.L.H. Bde., N.Z.M.R. Bde. less one Regt., 18th Bde. R.H.A. less one battery and B.A.C. Div. Train less one Coy. At conclusion of meeting salved movable gear.
- LUDD. 13th & 14th. Continued work of cutting timber and erecting cookhouses for 6th A.L.H. Regt. made crosses for Div. Train.
- 15th. Enlarged and rearranged stage erected on the 11th, made flag pole for 7th M.G.S.
- 16th/18th. fixed new buckets and new bearings on deep well three throw pumps. 17th. Completed 5 crosses for 6th Regt. The sports ground not being used owing to so many competitors having gone on 1914 furlough, the fixtures were dismantled and salved on the 17th. four Sappers have been

- Nov. 1918.
16th/18th
(ctd.) continuously engaged on Water Area. Transport has been in constant use carting gear for Sports Bde. Ordnance Canteen etc.
- 19th. returned material used on sports and racing grounds to R.E. dump, LUDD, and selected, while there, timber for N.Z. targets. took up one canvas trough at 2nd Bde. watering area and erected 2 iron troughs. Only iron troughs are now being used to this area; they are 9'9" long and 2 ft. wide, holding 100 gallons each and are arranged in threes, end to end, and prove very satisfactory for a standing camp. Got working party of 9 men from 6th Regt. and did up Rifle Range. Examined 2 motor cycles with a view to repairing.
- 21st/26th. commenced making sidecar for motor cycle, body made out of 1" dead fixed on frame made from high wire pickets of "L" Section. spliced and brazed back fork which was snapped; made splint for 2nd Bde. field Amb. out of $\frac{3}{8}$ " round iron.
- 27th. Continued work on first and overhauled second cycle. prepared timber for troop workshop; prepared and painted material for fence around graves of the 6th A.L.H. Regt. killed in this area.
- 28th. Erected workshop, wooden frame with "lean to" roof 30' x 12' with 30' x 30' unserviceable reservoir sheet stretched over to form roof and two sides.
- 29th. finished workshop and arranged engine gear inside and fitted bench.
- 30th. cleaned camp, painted side car, repaired cooker for B.H.Q. made 12" x 12" x 12" box for Bde. H.Q.
-

N.Z. FIELD TROOP - NOVEMBER 1918.

LUDD.	Nov. 1918. 1st to 4th.	Rifle range constructed for Bde. (N.Z.), handed over. Firing commenced, 4 O.R. making crosses. Watering Bde.
	5th.	10 O.R. employed with Lieut. Jones ("B" Troop, 1st F.S.E.) on watering area for 1st A.L.H. Bde. Limber carting pumping gear for same. 4 O.R. erected stage at N.Z. Bde. Y.M.C.A.
WADI HANEIN.	6th to 8th.	8 O.R. on 1st A.L.H. Bde. water area. 4 O.R. making crosses. Exercising horses.
	9th.	1 limber carting material from S.H.Q. dump at LUDD.
	10th.	Exchanged 4 horses with C.M. Rifles and drew 2 riding horses to complete. 1 C.R. to R.E.
	11th.	Park, LUDD, for materials. 1 officer (Lieut. Lange) on leave to Egypt. 7 troopers att.
	13th.	for duty retd. to their Regts.
	14th.	Heavy rain caused flood in WADI HANEIN, necessitated removing of 4 iron troughs on watering area to higher ground. Lieut. Lockington rejoined troop from hospital.
	15th to 17th.	General camp routine and watering arrangements. 17th. Lieut. Lockington on leave to Egypt.
	18th.	6 O.R. putting R. Range in order. 4 O.R. making targets. 1 limber to LUDD for timber.
	19th.	3 O.R. marched in from and 3 O.R. marched out to S.H.Q.
	20th/23rd.	Erected 4'6" square revolving targets and completed range up to 500 yds., also miniature range and 12 targets for revolver shooting for N.Z. Bde. shooting match. 23rd. Mr. Lange retd. from leave to Egypt. making crosses. Half limber to range with covering for targets.
	24th/30th.	4 O.R. making crossing. Limber to S.H.Q. dump for equipment. Erected Stadium at W.M.R. Limber and 1 N.C.O. to LUDD for timber, etc. Cleaning up saddlery, camp, etc. for Corps Commander's inspection.

WAR DIARY APPENDIX FOR NOVEMBER, 1918.

NARRATIVE OF ENGINEER WORK CARRIED OUT BY A.N.Z. FIELD SQUADRON,
1ST SEPTEMBER TO 15th NOVEMBER, 1918.

JORDAN VALLEY.

On the 1st September the distribution of the Squadron was as follows:-

Squadron H.Q. at D.H.Q.	1/40,000 Jericho B6	H34 B S W.
"A" Troop attached 1st L.H. Bde.		Y28 D
"B" Troop " 2nd L.H. Bde.		Z28 C
"N.Z." Troop " N.Z.M.R. Bde.		H27 C

There were also small detachments on the Jordan bridges but these were relieved by 35th Coy. (A.T.) on the 9th.

The Division was holding the Left Sector Jordan Valley defences.

The principal work on hand was:-

a. The maintenance of watering arrangements for the Division and attached troops.

b. Provision of Technical assistance on strengthening of Jordan Valley Defences.

c. Improvement of communications.

The most of the necessary watering arrangements had been made, but required considerable maintenance.

The work on defences was being pushed forward energetically, working parties of about 150 men per night being employed with Engineer personnel of about two officers and ten other ranks supervising.

Communications were being improved but some difficulty was being experienced owing to shortage of labour.

On 4th consequent on the G.O.C. Anzac Mounted Division taking command of the whole of the Jordan Valley Defences B.G.C. 2nd L.H. Bde. took command of the right sector and O.C. "B" Troop became responsible for the whole of the Engineer work in that sector.

On 5th 1st L.H. Bde. moved into reserve on the Wadi Nueiamah and N.Z.M.R. Bde. moved on to Wadi Auja. B.G.C. N.Z.M.R. Bde. taking command of the Left Sector and O.C. N.Z. Troop becoming responsible for Engineer work in the Sector. The Brigades did not exactly exchange bivouac areas and a considerable amount of modification of the watering areas became necessary.

It was anticipated that the first move of the Division would be in a Northly direction and the improvement of the main road Jericho-Auja-Khirbet Fusial now became of special importance. Work on this had already been commenced under the immediate direction of the C.R.E. Desert Mounted Corps, and a considerable amount of soleing had been laid. The bridge over the Wadi Nueiamah at H35c and the two bridges immediately North of this, commenced by the second Field Squadron, Australian Mounted Division, were practically now completed by this unit but the approaches on two of them were scarcely commenced.

The road from Wadi Nueiamah to Gravelly Ridge (H 11 d N.E.) was rather badly cut up, and from this point to the Auja was in such a bad state as to be impossible for mechanical transport.

From Wadi Auja to Khirbet Fusial no work had been done. On Sept. 5th a detachment of 300 E.L.C. with donkey transport was made available and was put on the sector Gravelly Ridge (see above) to Auja. Supervision of one officer and two N.C.Os. was provided. The work was pushed on with but the removal of all donkeys except 100 within forty-eight hours of its commencement threw it back somewhat. A tractor and three trucks provided by "Q" Branch Anzacs assisted but was not so convenient as the donkeys.

The 35th A.T. Co. R.E. (P.C. of C.) being short of officers, supervision was provided for the blinding and rolling of the sector Jericho-Nueiamah and as the number of E.L.C. (2 Coys. less 300 men) needed on this work decreased they were employed on the approaches to the bridges mentioned above and in the improvement of the sector Nueiamah-Gravelly Ridge the metalling of which was not possible in the time.

The road North of the Auja across Maskerah was put in order, working at night.

As result of this work the whole of the road was in good order when the troops moved north on 21st Sept.

Meanwhile work on defences had continued and a battle headquarters built at the Abu Tellul left:-

Strong 12' x 12' dugout with good observation. Bursting course of light railway rails and stones, independently supported aircusion of

XXXXXXXXXXXXXXXXXXXX

2'6" earth on a course of heavy rails. The whole very strongly framed.

Splinter proof Signal office for D.H.Q.

✱ Splinter proof for Artillery Headquarters.

A road practicable for motor traffic was constructed up to it from the Auja Crossing and continued as a pack track to Musallabeh.

On the formation of Chaytor's Force on 16th Sept. the following units (almost equal to the fighting strength of a nine battalion Infantry Division) became dependent on this squadron for technical assistance and a large amount of miscellaneous work on water supply, defences, carpentry, signwriting, etc. was added to that already coming in from our own Division.

A/263 Battery R.F.A.

89th Indian Mounted Battery Bde.

95)

102)

103) Sections A.A. Guns.

195 Heavy Battery.

2 Sections captured Turk 75 mm.

1 " " " 5-9.

1st Battalion B.W.I.

2nd " "

38th Battalion Royal Fusiliers.

39th " " "

20th Indian Infantry Bde.

26th Machine Gun Squadron.

The distribution of all defence material was organised through this office and the R.E. Dump at Jericho was staffed and controlled from here.

On 21st Sept. N.Z. M.R. Bde. commenced the advance Northly, followed on the 22nd by 1st L.H. Bde. "N.Z." Troop and "A" Troop, accompanied brigades and a temporary water point was made at Khirbet Fusial water being drawn from an aqueduct fed by the Ain Fusial.

EASTERLY ADVANCE.

On the 23rd Sept. the general Easterly advance commenced. A detachment accompanied each mounted brigade with packs carrying explosives, water gear, and tools for road work. The transport followed 20th Indian Infantry Bde. up the main Jericho-Es Salt road.

At 0215 24th Sept. the Squadron 6th L.H. Regt. doing screen for the infantry reported road demolished at about six miles up the road from Jimrin and a detachment immediately went forward to examine and report on the damage.

The road had been cut along an almost precipitous cliff. It was blown out to a depth of about fifteen feet and the hole and badly shaken ground extended for about seventy five feet. It was necessary to clear the badly shaken ground, put in a temporary retaining wall and then roll in big "plums" of rock, ramming all well.

Good work was done here by both maharattas and sikhs under their own officers with Engineer supervision. The work was commenced after dawn and completed at 0850. The only troop in any way delayed were the actual working party. No delay to transport was caused.

The force then moved on to Amman, water points being established at Es Salt (drinking and horse water from an aqueduct fed by the Wadi Shaib), Am Hemif (drinking water and horse water from spring), Suweileh (drinking water from springs, existing stone trough used for horses).

On the 25th Sept. advanced fighting troops entered Amman. An enemy force of about 6000 was advancing from the south with three railway trains of ammunition and supplies. A detachment of "B" Troop accompanied by a squadron of 5th L.H. Regt. and in accordance with orders made two series of breaks in the line a little north of Lebban Station, one covering 150 ft. and the other 1450 ft.

On 26th Sept. H.Q. Chaytor's Force moved into Amman.

AMMAN

Drinking water for the forces was obtained from springs and the railway station plant, necessary modifications being made. Horse water was from troughs filled from the running stream (too badly contaminated for drinking water). Access roads were cleared and constructed where necessary. The steam pumping plant at Amman Railway Station was overhauled, injector repaired and the plant run continuously till Chaytor's Force left Amman.

The area was reconnoitred for Engineer stores and the mines about one ton of explosives mostly set charges was collected from the

railway station including the electrically connected mine from the water tower the leads of which had been cut by "A" Troop on arrival.

On 28th "A" Troop accompanied 1st L.H. Bde. to junction of Wadi Amman and Wadi Hamman, it was noticed here that the viaduct demolished by N.Z. Troop on the first attack on Amman was still only repaired temporarily. The gap had been narrowed as much as possible by adding to the bank and the reduced gap filled with temporary crib piers of sleepers, dogged.

On 30th a railway motor truck captured at Samra was repaired and brought in and a hand trolley was repaired at Amman; these were used to examine line etc. Detachment was sent to Ziza to examine and overhaul captured engines and rolling stock.

October---The repair of the damaged engine (German) found in the running shed Amman was completed. Work worthy of special mention was done on this by Lieut. Lockington, N.Z.E. details attached. In addition to the main repairs shown on sketch the flanges on the main steam pipe at the joint with the chest were badly cracked and a heavy collar had to be shrunk on each, the buffers both back and front were completely smashed and had to be replaced with wooden ones sheathed with $\frac{1}{4}$ " plate.

On completion of the work on 4th Oct. the engine was run to Ziza, temporary repairs having been made to the rails damaged by "B" Troop. The curves on this line were exceptionally sharp and the grades very heavy. A train of ammunition and war material was brought back on the 6th. On 7th the train returned to Ziza with wood and water for the engine being overhauled there, this was the only one of the three captured at Ziza which was reasonably serviceable. On 10th both engines returned with trains. On 13th a train was run towards Mafrak. The line was found blocked about six miles south of that place by thirteen trucks; these were pulled back to Samra thence to Amman.

On 16th an expedition was run to Mafrak and brought back ten guns and much other war material including one armoured motor truck and one ordinary motor truck. Bedouine placed three obstructions on the line but no accident occurred. Wireless rigged on the train kept constant touch both moving and standing. Some rolling stock was left at Mafrak as the many damaged trucks there involved too much work in clearing the line. On 24th another train was run to Samra. This completed the bringing in of all arms, ammunition, ordnance stores and supplies between Ziza and Mafrak.

The difficulty in connection with all train arrangements was shortage of food and water; the coal found at Amman was practically useless and though large supplies of wood were obtained it was very rough and the gang of thirty prisoners employed in splitting made slow progress. It was not practicable to run any water tower but Amman and every engine that left for a trip had to take three tenders (or their equivalent) of wood and water to cover the return journey and emergencies. Numerous small repairs had to be carried out such as tightening leaky tubes and renewing packing.

Other work carried out at Amman was:- One motor workshop and one motor lorry, jacked onto the road, repaired and brought in.

Supervision provided for handling of explosives, ammunition, etc; captured at Amman and salvaged by rail. Ordnance Dept. refused to handle explosives or shells which had been unpacked from cases on account of the risk of them being fused. The following were disposed of by detonation or were buried:-

12050	Stick Grenades
36	Vases cordite
45	" 40 lb. aerial bombs
40	" 15 lb. " "
21	" detonators (aerial bombs)
26	" " (large aerial bombs)
12	" aerial torpedoes
42	" & a quantity loose aerial bomb detonators
43	" small aerial torpedo detonators

About 2000 rounds gun and howitzer ammunition.

Some experimental work was done with German electrical gear. The exploder was found very good (fused British standard bridge through 100 ohms) much lighter than our own and more convenient to operate, captured detonators were found very uneven.

The armoured truck from Mafrak was repaired and among other trips took G.O.C. and staff to Zerka. This truck seated about

fourteen persons, was fitted with two machine guns and looped all round, dual drive, four speeds forward and four reverse, electric starting and lighting. The Accumulators were damaged beyond repair, but the engine, after overhauling, was quite satisfactory and was considerably used by us.

On D.H.Q. moving to the hills east of the Wadi Amman a motor road had to be constructed up out of the valley. Turkish prisoners were used as labour.

On 28th the Hedjaz flag was raised in Amman.

On 1st November H.Q. Chaytor's Force marched out.

During the month the squadron had become so weak that it was only with great difficulty that work was carried on. For week ending 13th October seventy men were evacuated, for week ending 20th October thirty-one, or one half the strength of the unit in a fortnight.

RETURN TREK

On 2nd October "N.Z." Troop had accompanied N.Z.M.R. Bde. on return trek and "B" Troop accompanied 2nd L.H. Bde. It was necessary to make all watering arrangements en route as far as Jericho. On arrival here the Bde. areas were salvaged and surplus gear returned to R.E. Dump. For the remainder of the return trek to Richon area existing watering areas were used, necessary modification being made. The Brigades arrived at the Richon area on 13th.

Chaytor's force ceased to exist 3rd November 1918. Jericho R.E. Dump was handed over to 35th A.T. Coy. for P.L. of C.

Anzac D.H.Q. and 1st L.H. Bde. less one regiment reached Richon area 7th November.

RICHON AREA

On arrival the Wadi Mamein area was taken over by "B" Troop and with the assistance of "N.Z." Troop the three engines were run, necessary modifications of the area were made to water two Brigades.

Forty stretchers were made for Field Ambulance and a house altered to serve as a hospital, the sick rate being still very high.

On arrival of 1st L.H. Bde. their old watering place South West of Richon Village was renovated, engine overhauled and the water point re-established.

Supervision was provided for the construction of two Rifle Ranges and two Sports Grounds.

(Sgd.) J. W. Rule Jones, Lieut I.
Commanding
A. & N.Z. Field Sqn.

----- APPENDICES -----

1. Statement of wastage and reinforcements.
2. Diagram showing main repairs to captured Engine No. 1 and description of same.
3.
 - a. Photograph of captured engine No. 1.
 - b. Photograph of captured armoured motor truck.
 - c. Photograph of captured motor truck No. 1.
 - d. Photograph of No. 1 Bridge Jericho-Aujah Road, similar in design to Nos. 2 and 3.
 - e. Photograph of partly repaired break in Jericho-Es Salt Road. The whole of the road in the foreground had been demolished.

RICHON AREA.

December 1918.

From 1st to 18th inst. the Field Troops were camped at the watering area throughout the Division. "A" Field Troop at watering area of 1st Bde. (A.L.H.) & 18th R.H.A. Bde. "B" " " & N.Z. Field Troop at water point at Wadi Hanein where 2nd A.L.H. Bde. and N.Z.

N O V E M B E R.

W A R

D I A R Y

APPENDIX I.

Statement of Wastage and Reinforcements

A. & N.Z. Field Squadron Engineers Wastage

Week ending	Evacuated	Died
8. 9. 18.	4	-
15. 9. 18.	8	-
22. 9. 18.	9	-
29. 9. 18.	11	-
6. 10. 18.	5	-
13. 10. 18.	70	1
20. 10. 18.	31	4
27. 10. 18.	18	3
3. 11. 18.	9 & 2 officers	-
10. 11. 18.	7	1

To Moascar to await embarkation	3	8. 11. 18.
To Des. Corps Rest Camp Jerusalem	2	8. 9. 18.
from Field Ambulance		
To Moascar	1	22. 9. 18.
To Officers Cadet Battalion	1	3. 11. 18.

REINFORCEMENTS RECEIVED.

Week ending	From Details	From Field Ambulance
8. 9. 18.	8	2
15. 9. 18.	14	3
22. 9. 18.	12	6
29. 9. 18.	9	-
6. 10. 18.	2	-
13. 10. 18.	-	-
20. 10. 18.	9	3
27. 10. 18.	39	4
3. 11. 18.	23	1
10. 11. 18.	17	1 officer

From Descorps Rest Camp Jerusalem	1	15. 9. 18.
From Officers Cadet Battalion	1	3. 11. 18.
