SECRET

DEPARTMENT OF NATIONAL DEFENCE

HQS 7346-2 FD 137 (Trg 1)

Ottawa, Ontario,

14 Aug 44.

Air Mail (where applicable)

GOC-in-C Atlantic Command,
Halifax, N.S.

GOC-in-C Pacific Command,
Vancouver, B.C.

District Offrs Commanding,
All Military Districts.

Comd.,
Camp Borden, Ont.

Comd.,
Petawawa Military Camp,
Petawawa, Ont.

Commandant,
Royal Military College,
Kingston, Ontario.

CANADIAN OPERATIONS - MEDITERRANEAN AREA
Extracts from War Diaries and Memoranda (Series 22)

1. I am directed to forward herewith for your infm and retention a copy of the m/n.

2. These extracts are forwarded for general infm only and opinions stated are not be to considered as necessarily expressions of official doctrine.

3. A full distribution list of these documents is shown on the reverse side of this letter and I am to state that no increase in this circulation can be made. Should insufficient copies be allotted to allow for complete distribution as you desire, it is suggested that a copy could be circulated by you.

(M.P. Johnston)
Lieut.-Colonel, G.S.,
for Chief of the General Staff.

DISTRIBUTION

GOC-in-C Atlantic Command	5 copies
GOC-in-C Pacific Command	5 copies
DCsC MDs, 1, 2, 3, 4, 5, 6, 7, 10, 12, 13	2 copies each
Comd, Petawawa	2 copies
Comd, Camp Borden	2 copies
GOC 6 Cdn Div	6 copies
Comd, 1 Trg Bde Gp	10 copies
Comd, RMC	5 copies
Transit Camp	1 copy
Basic Trg Centres	1 copy each
Comd, 01 OTC	2 copies
Comd, A34 STC	1 copy
Comd, A33 CASTE	5 copies
Comd, A27 CRTC	2 copies
Comds, A1, A2, and A3 CATCs	3 copies each
Comd, A23 C&AAATC	3 copies
Comds, A5 and A6 CITCs	3 copies
Comd, A7 CSTC	3 copies
Comd, A11 CMOTC	3 copies
Comds, A10, A12, A13, A14, A15, A16, A29, A30 CITCs	3 copies
Comds, A19 and A20 CASOTCs	3 copies
Comd, A22 CAMCTC	2 copies
Comd, A21 COCTC	3 copies
Comd, A32 Cdn Pro C TC	2 copies
Comd, A35 C Para TC	1 copy
Comd, A36 C Radar TC	1 copy
Comd, S1 Cdn Coast & AA Arty School	1 copy
Comd, S2 CAS	1 copy
Comd, S3 CSAS	1 copy
Comd, S4 CSAS	1 copy
Comd, S16 Combined Ops School	1 copy
Comd, S17 Cdn School of Inf	2 copies
Comd, S18 Cdn BD School	1 copy

CANADIAN OPERATIONS IN THE MEDITERRANEAN AREA

MAY, 1944

EXTRACTS FROM WAR DIARIES AND MEMORANDA

(SERIES 22)

1. ARMOURED CORPS

(a) 1 CDN ARMD BDE (Extracts from War Diary, April 1944).

7 Apr - The Bde Major called at 2 Cdn Lt Fd Amb and at "A" Sqn 25 TDR. He infmd the sqn that the Bde would accept tks as stowed by Corps i.e. 32 rounds H.E., 8 smoke, and 45 APHE. The number of rounds carried has been cut to 85 as the addition of armour around these bins has decreased the available space.

8 Apr - At VENAFRO, 13 Corps Commander, Lt-Gen S.C. KIRKMAN, CBE, MC, formerly commander of the 50th Division in AFRICA, addressed a large representation of offrs from the Corps and drawn from all services. His address was on infantry-tank co-operation. A short synopsis of his address follows:

1. The weather in this part of ITALY is likely to produce two consecutive rainy days at any time until the end of MAY.

2. The "Shock" effect produced by the use of armour has not succeeded since ROMMEL'S attack on our posns at EL ALAMEIN.

3. In view of the large number of rivers, each constituting a tank obstacle, in the land to our front, all tanks must be prepared and expect to co-operate with infantry.

4. Tanks should not be given "impossible" tasks.

5. Although it is likely that tks will be forced to participate primarily in close co-operation with infantry, they must be prepared to assume an exploitation role.

6. Infantry and tanks must assist one another - tks advancing on MGs and small arms, infantry on anti-tank guns.

7. Armour must be given a high priority of the available artillery support - mainly to neutralize anti-tank guns.

8. Within the next month it is reasonable to expect that all tanks in 13 Corps will be fitted with a No.38 or 18 set.

9. The Commander stressed the difficulty in communicating between tks and inf.

10. Many of the failures in wireless were due to poor maintenance of batteries, loose connections, etc.

11. As there would soon be six Armd Bdes in this area it is likely that each inf division will have an Armd Bde u/c for future operations.

12. Tanks should only be used in towns and villages in the close support roles. When fighting in towns they should be divided into sectors and each sector must be properly cleaned prior to moving to another sector. Maps and air photographs must be available.

13. As a general principle tanks and infantry must advance along the same axis. Main problems if two axes are used is communication.

14. The main duty of tanks once the objective is reached is to assume an anti-tank role until the correct weapons are brought up.

15. Tanks are of great assistance to the infantry when mopping up. Their presence is most detrimental to enemy moral.

16. Infantry must concentrate their trg on opposed river crossings. The far bank and the surrounding area must be completely dominated and troops must be detailed to mop up around the bridge site. If boats are used they must be guided by a rope secured to each bank. An officer of the rank of Major, or Senior, must be detailed to control traffic at all river crossings.

17. An approx grid will be printed on air photos. All references given from the photos will be preceded by "Photo Ref".

18. Commanders are asked to study the German Mobile Pill Box in as much detail as possible.

19. Attention was drawn to the light scale of transport.

20. The Corps Commander said to remember the simple things:-

(i) Start Lines must be well marked

(ii) Routes to an assembly area must be well marked

(iii) Start lines should be under cover

(iv) Plenty of time must be allowed for orders, etc., especially in relation to artillery barrages and concentrations. Advance must be slow in order that infantry do not "lose the barrage".

(v) Mopping up is usually harder and takes longer than is anticipated.

(vi) There should be as little movement as possible on the objective.

(b) 5 CDN ARMD RGMT (8 N.B.H.): Extract from Account of Operations, 24 - 31 May 44, given to Hist offr, 5 Cdn Armd Div, by Lieut-Col. G.L. Robinson, O.C.

(During this period this unit crossed the Melfa and advanced under command C.B. Highrs to Ceprano and subsequently reverted under command 5 Cdn Armd Bde and advanced onwards to the region of Ceccano.)

GENERAL REMARKS AND LESSONS LEARNED.

1. It is most desirable that an armd regt moving into an attack have more than one route on which to travel and that they should have the exclusive use of these routes.

2. This was not good tank country. The latter part of the operation could have been conducted more quickly and more efficiently by Inf.

3. We were constantly coming on unexpected obstacles. I had Air Photographs but did not have Stereoscopic pairs and consequently they were of little assistance in judging the degree of obstacle caused by streams, gullies, etc.

4. Smoke could have been used to better advantage. I'm afraid many of us forgot we had smoke.

5. Fire and movement are still the things, but it is very difficult to keep control in this close country.

6. Most of our casualties were caused when troops were outside their tanks. It is essential that tank men as well as Infantrymen be impressed with the importance of slit trenches.

7. It is absolutely essential for tks to carry Compo Rations, Ordinary rations cannot be cooked. I understand that in future we are to receive the hard portion of the fresh ration issue. This consists of M and V, Bully and biscuit which is quite inadequate for a long operation.

8. Most of our opposition was caused by small pockets of Germans who would stay and fight it out until physically driven off the ground. It is necessary to be thoroughly aggressive and one must not sit back and shoot it out with them.

9. We found it almost impossible to get infn on flanking formations. We were often afraid to shoot as we did not know where the troops on our flanks were. Because of this we missed excellent opportunities of killing Germans.

10. We found the Sqn Net more satisfactory than the Regtl Net. REAR LINK tanks only were on the Regtl Net.

11. All Crew Comds agreed that it was necessary to have your head sticking out of the turret. It is true that you may get it shot off, but if you have it inside you are so blind that there is much more danger from enemy Tanks or A/tk fire.

12. I had the COMD SET and REAR LINK SET to Bde both in my tank. My adjt rode with me and worked the REAR LINK SET. This system was extremely satisfactory.

13. We normally had insufficient time between "O" Groups and the beginning of the action of tying things up between tanks and Inf. I feel that 6 hrs is the minimum required.

14. Fitters cannot get up and do work at night as we were taught in our training, as no light can be shown and the night concentration areas are normally under shell and mortar fire. The solution would seem to be for a small composite group of fitters and electricians to ride in "A 1" Ech and for tanks needing work to be left on the centre line where the fitters can stop off and work on them during daylight.

15. We had two recovery tanks on our Regtl Net and on the whole tank recovery worked very well.

16. When communications are bad "A 1" Ech (Petrol and Amn) must be up with "F" Ech.

17. MEDICALS. None of our casualties passed through our own RAP. Our MO who has a carrier, White Scout car, and two jeeps, moved on the centre line. However, it was the Honeys of the Recce tp who normally were the first to find the casualties and they dropped off at the first Red Cross flag that they came upon. This normally belonged to the Inf.

18. REPLACEMENTS. Many of the replacement tanks sent up broke down before they ever got into battle.

19. A small pool of spare crews should be carried in "A 1" Ech, for immediate replacement. Throughout the operation if anything were farther back than "A 1" Ech, one had to expect to wait anything up to 24 hours for it.

20. If a tank is a casualty, but not burned out three members of the crew should stay with the tank and the other two go to the centre line to guide the recovery tanks to it. If this is not done recovery will be delayed or the equipment in the tank will be pilfered and the tank rendered useless.

21. We found Scissors Bridges most useful for the crossing of small obstacles of which we encountered a great many.

22. The .5 in the Honeys of the Recce tp is extremely useful. Those on top of the turret in the Sherman and the .30 in the hull were never used.

23. The S.P. and Jeep guns worked well. They both have good cross-country performance and can get up when all else is blocked on the congested roads.

24. Motorcycles were very useful. Dingos were not much used. Honeys were quite invaluable for a shuttle service between the regt and the Echs.

25. Tanks should be in perfect condition before an operation commences as maintenance during an operation is next to impossible.

26. It is an excellent idea to poop off a couple of H.E. into all houses as they appear. This may be a little hard on the civilian population but if it is not done one does not live very long.

2. ARTILLERY

(a) HQ., RCA, 1 CDN INF DIV (Extracts from War Diary, Apr 44)

Report by 54 Cdn LAA Bty on Ground Shooting with 40-mm AA Equipment.

1. DIRECT FIRE:

Considerable ground target engagements using direct fire procedure were carried out during the period December to February.

The disadvantage of this method is that the gun can readily be seen from the target area causing enemy counter fire. This means that:

(a) The guns could only be used singly.
(b) They could only remain in action for a very short period.

2. INDIRECT FIRE:

Scales for the hand wheels with graduations down to five minutes were constructed. During the period March to April a number of ground engagements were carried out using the indirect fire procedure. Six guns were used in order to give a high volume of fire.

3. ACCURACY OF INDIRECT FIRE

The gun proved to be very accurate. Variations in line being almost non-existent. The depth of the 50% zone at 5,000 yds is 120 yds. With good firm platforms it was found that auto-fire was approximately of the same accuracy as single shot.

4. EFFECTS OF ATMOSPHERIC CONDITIONS

The meteor conditions do not greatly change the ballistics because only a small part of the available trajectory is used in ground shooting.

5. EFFECT

Estimate 15 foot radius for the killing range of the shell. The targets were engaged with six guns at auto-fire blanketing an area 100 by 200 yds with 150 rds in 15 seconds. The neutralizing effect was excellent and the lethal effects must be considerable against troops in the open or under light cover.

6. TYPES OF TASKS RECOMMENDED

(a) Neutralizing Tasks:

On one shoot one troop was used to neutralize a M/G. area 300 by 100 yds for a period of ten minutes during a daylight raid put on by our troops. The rate of fire was one round per gun every three seconds. Shortly after the beginning of the task the area was clouded with dust and smoke and there was no firing from this area during the allotted time.

(b) Harassing Tasks:

Targets were taken from air photographs in depths from 1,000 to 2,500 yds from our F.D.Ds. and were usually Company and Battalion HQ areas. Engagements were made at first or last light in order to catch more personnel in the open.

(c) Opportunity Targets:

None appeared during any of the engagements due to the short time the guns were in action on each shoot. If some guns were left in permanent action the engagement of such targets would be feasible.

7. METHODS OF RANGING

(a) On the neutralizing tasks the guns were ranged on the targets themselves.

(b) On most of the harassing tasks ranging was done on a datum point, then all the guns switched on the targets in turn in order to effect the maximum surprise.

(c) On one harassing shoot predicted fire was used. The Survey Bty surveyed in the pivot gun and gave an accurate line to the troop aiming point.

8. PROTECTION

(a) Gun pits were dug in all cases.

(b) All positions were covered and had covered approaches.

(c) All positions were 2,500 to 3,000 yds in rear of our F.D.L's.

(d) The guns were cleared from the position anywhere from 15 to 40 minutes after the opening ranging rounds.

Note: It must be borne in mind that during daylight hours Bofors tracer cannot be seen until it is well past the observer. In all of the indirect fire engagements there was no answering enemy fire.

9. LIMITATIONS OF THE GUN

(a) Very flat trajectory i.e. at 4,000 yds the T.E. is 3 degrees 32 mins.

(b) Maximum range for ground bursts - 5,500 yds. Ranges of 5,600 to 5,700 yds can be used if 25 - 40% air bursts are allowed.

(c) A very sensitive fuse will cause a high percentage of premature air bursts if firing is done during a rain storm.

3. ENGINEERS

(a) EXTRACTS FROM "HISTORY OF THE ROYAL CANADIAN ENGINEERS, 1 CDN CORPS: Operations in Italy, May - June 1944".

(I) Lessons from the Hitler Line operations.

The breaching of the HITLER LINE brought out the following points:

(i) Spr parties detailed to sp a bn in a set-piece attack against prepared enemy defence must be given definite tasks such as "Gap this minefd at point X" or "Destroy this pillbox at point B".

(ii) Once battle is joined control of the spr parties is lost. Pl offrs travelling with Bn H.Q. in some cases lost contact for many hrs with their detachments.

(iii) SNAKES could have been used in the attack to save lives and tks.

(II) Lessons learned during the operations generally.

In conclusion the following is a summary of the lessons learned:-

1. Changes of plan are necessary and must be accepted during battle but the C.E. and Cs.R.E. must be infm as far in adv as possible so that organization of engr work and deployment of mech eqpt can be made in time to carry out the plan.

2. As stated earlier, definite tasks must be given to spr assault parties sp inf in an attack against a prepared position such as the ADOLF HITLER LINE.

3. Mine clearance parties and bulldozers can NOT be expected to work in front of the leading tps without a covering party, the strength of which will be determined by the tac situation. However, to be of use spr parties and their mech eqpt must be kept well fwd.

4. Two fd sqns are not sufficient for an Armd Div - the armour goes across country necessitating a tactical route - in addition to a maint route. The two sqns are soon committed, leaving no reserves.

5. Br and stores dumps must be kept well fwd and should be sited in front of any obstacle which is liable to cause delay in fwd delivery such as a river crossing.

6. Mine lifting and br drills must not be allowed to slip during ops or lives and time will be lost.

7. Traffic congestion is a major obstacle and energetic action must be taken to prevent it. Light scales of vehs in fwd areas should be used.

8. Close spr liaison must be maintained from fd coy levels up with Provost.

9. Priority on rds must be given to br lorries and mech eqpt when required and the priority ensured by Pro outriders.

4. SIGNALS

(a) 1 CDN DIV SIGNALS (EXTRACTS FROM WAR DIARY, MAY 1944)

1 Cdn Inf Bde - Signal Instruction No.1

COMMUNICATION - MORTARS.

1. The successful operation of a Counter Mortar Office at Brigade level depends on speedy line communication between Bde HQ, and the 3" mortar posns at Bns. In order that the C.M.O. may pass fire orders to the Bn mortar posns, the following instructions will be followed when the Counter Mortar organization is working.

(a) A direct line will be laid from the Bn exchange to the mortar posn. This line will be called "Mortar Posn" on the Bn swbd and all swbd operators must know that mortar fire orders are to be put through to this line.

(b) Procedure. To pass fire orders to all Bns the ACMO will call the Bde swbd operator and say "All Battalions, Mortar Target"! The Bde operator will put the call through to any Bn whose line is not busy at the time. When the Bn exchange answers the ACMO will say "Mortar Tgt", and the operator will put the call through to the mortar posn, and the ACMO will pass his fire orders. While the ACMO is doing this, the Bde operator will clear the line to the other Bns, using as his authority to interrupt communication the phrase "Mortar Target, will you clear the line, please?" He will then put the ACMO through to the other Bn mortar posns as the ACMO finishes with the first Bn.

(c) If the ACMO wishes to pass fire orders to only one of the Bn mortars he will use the phrase "Hastings (say), Mortar Target!" The Bde operator will then put him through to the Bn required.

2. Mortar fire orders will take priority over all other calls. The fire orders will be short, (example:-"Target C5, 5 rounds fire"), and the interruption in normal communications will not be great.

3. It is the responsibility of all Signal Officers concerned to see that swbd operators are trained to handle these calls quickly and efficiently.

5. INFANTRY AND MOTOR BATTALIONS.

(a) CAPE BRETON HIGHLANDERS: Extract from report on operations, 24 - 30 MAY, 1944.

COMMENTS AND LESSONS LEARNED.

1. The tactical methods employed were sound and the advisability of when in the pursuit advancing on a wide front clearly demonstrated. When tanks and infantry are infiltrated through and behind the enemy posts he gives himself up easily.

2. The policy of placing sappers under command leading battalions for the improvement and construction of roads behind the battalion is not feasible. A forward commander cannot look over his shoulder and has no communication with the sappers.

3. The marking of routes is of vital importance and Provost should move immediately behind the leading infantry companies.

4. The Battalion's own supporting arms, i.e.,3" mortars, M.M.Gs, and on occasions 4.2 mortars were seldom used in the advance. More use could be made of these but with the number of guns that were always at our disposal, it was quicker and more effective to use Artillery, the reason for this being the time taken to put the mortars in action and to range in before firing for effect. During this time the enemy would be able to getaway with very small loss to himself, while Artillery regimental shots were brought down accurately on predicted targets in approximately three minutes. More use could have been made of smoke particularly on the higher level, i.e., smoking off the high ground on our right flank during the day of the 27th when the Hun was obviously using it to direct his Artillery.

WEAPONS AND EQUIPMENT

1. Weapons were satisfactory and the advantage of men being as lightly burdened with equipment as possible to suit the particular battle was most evident. The old vehicles which we inherited from the 7th Armoured Division are not dependable. A prodigious amount of maintenance. and repair had been done to them and is continually being done but it is never certain how many will get from "A" to "B".

ADMINISTRATION

Due to the speed of the advance it was often impossible for necessary supplies and equipment to be brought up. In order to correct this it is felt that more Provost Control and proper priorities would assist.

INTERCOMMUNICATION

Wireless communications worked exceptionally well at all times. It is felt however that line should be laid at all times and particularly to leading battalions of the brigade crossing obstacles over which wireless vehicles cannot be taken, a wire-laying party from Brigade must accompany battalion TAC Headquarters. The 38 set did not prove satisfactory due to the fact that jarring puts them off frequency. This it is felt could be overcome by better operating.

(b) WESTMINSTER REGIMENT (Motor). (Extract from Account given to Hist Offr, 5 Cdn Armd Div, by I.C., Westmr R. and revised by Lieut.-Col. G.C. Corbould, O.C.)

(This unit played an important part in establishing the bridgehead across the Melfa and subsequently advanced into the Ceprano area, two coys being under command B.C.D.)

LESSONS

1. The success of the MELFA crossing was due largely to boldness and speed as it caught the enemy off balance.

2. It is essential that a special traffic control be laid on for an armoured break-through and that the columns breaking through be ensured priority.

3. A suitable type of vehicle with good cross-country performance must be provided for towing anti-tank guns. The portee is practically useless.

4. Each man carried a 75 grenade to which was affixed a detonator and a short piece of safety fuze. These were used to assist them digging slit trenches and it is felt sure that a large number of casual were avoided by the speed in which the troops got under ground.

5. It is felt that Motor Companies should not be placed under command of armoured Sqns but rather should be in support, or the armoured Sqn in support of the Motor Coy. In these cases the motor company would have one set on the Battalion net and another set on the Regimental or Sqn net. It is felt that had this been the case during the advance on POFI B Coy could have let the Bn Comd in on the picture and the town could have been captured by 1000 hrs. As it was information did not get back.

6. ARMY SERVICE CORPS

(a) 3 CDN INF BDE COY, R.C.A.S.C. (Extracts from War Diary, May 1944.)

21 May: Supply Point opened at 0800 hrs and several Units were waiting to draw a[illegible] that time and came in steadily from then until noon. Stragglers arrived during the early afternoon but all Units had been through by 1600 hrs. 21,355 rations were issued through out the day to Div Troops and 3 Brigade giving them 2 days' rations. To-morrow the other two Brigades will draw 2 days' rations. This is a very satisfactory arrangement as it means that only ⅓ the number of lorries pass through the point each day and each Brigade draws 2 days' rations at one time.

28 May: A movie "Silver Skates" was shown nearby by the Auxiliary Services but as usual the generator broke down about half way through the picture. It seems unfortunate that in many instances movies put on by Auxiliary Services can not be completed due to faulty equipment. It is the opinion of a great many that better equipment could and should be sent up past the Holding Units for a change.

.....

APPENDIX 15.

H.Q., R.C.A.S.C.
1 Cdn Div.

OBSERVATIONS (T.C.Vs.)
3 C.I.B. Coy - 21 & 22 Apr 44.

1. The following observations are forwarded with a view to avoiding some of the more common errors in future troop carrying assignments.

(a) Platoon Officer in charge of T.C.Vs. were not consulted regarding the loading of vehicles. In one case where advice was offered, this was disregarded and the result was serious.

(b) Tarpaulins were torn and cab roofs bashed in by the troops being carried in the lorry.

(c) Careful survey should be made prior to move, and the number of vehicles actually required, both for T.C.Vs. and baggage carrying purposes, demanded.

(d) Infantry Company Commander in one case, on a prior move, was not in the picture to the extent he should have been.

(e) Dress when laid down by Brigade should be rigidly adhered to by all concerned.

2. The following suggestions are respectfully submitted in the hope of correcting the above faults.

(a) That the A.S.C. Platoon Officer should be allowed to attend the Battalion O Group, where he would be given the opportunity of discussing loading with the Battalion Transport Officer.

(b) & (c) It is felt that both (b & c) are synonymous in that careful loading would greatly alleviate fault (b). Eighteen men, at the most, with skeleton equipment form a complete load for a 3 tonner. For a long trip, to arrive fighting fit, fifteen should be used as a figure. It is understood that twnety-nine men were loaded in some lorries, and if this is the case, it is remarkable that any tarpaulin, structure or body is left on the lorry at all. The writer feels that in the case quoted, the men being transported cannot be blamed for torn tarps or cab roofs being pushed in through men sitting on them. The number loaded would adequately explain the fault as it was really an eleven or fourteen men overflow.

(d) In the case quoted one Coy Comd actually disembussed his men and told the A.S.C. Sgt in charge the move was completed. Fortunately, before the Sgt moved off the officer was corrected as at the time the Unit was 30 to 50 miles from the destination. No serious result occurred, but it could be termed a near miss. It is emphasized that this occurred on a prior move.

(e) Drivers from this Formation were informed very definitely what would consitute proper dress and what would not. This was taken from Brigade Orders. It is felt that our drivers obeyed very well, but it is hard to explain to them why they cannot adopt a more free and easy dress, on their own initiative, when they see others doing so.

3. The observations outlined above are not meant as criticisms by any means. They are forwarded with the hope that in the future, we, as an A.S.C. Company, will be able to accomplish a better job than the last and at the same time preserve the equipment issued to us, in a better condition.

4. The manner and dispatch displayed by the Infantry in returning our vehicles to Coy lines was little short of miraculous and leaves nothing to be desired. They are to be heartily commended in this phase.

7. MEDICALS

(a) No. 2 F.T.U., R.C.A.M.C. (Extracts from War Diary, May, 1944)

31 May - There was a discussion between O.C. this unit and O.C. No. 1 Cdn Research Lab on the laboratory investigation of post-operative cases. The conclusion was reached that there was room for improvement in this field, especially in the case of burns, but also in other cases. On many occasions where casualtios had already had strenuous treatment, only examination would provide sound basis for further treatment, with blood or blood products. In the case of burns especially, it was of the utmost importance that certain simple laboratory investigations be carried out. Specifically, haemoglobin, haemato crit, & proteins. It was felt that this investi-

gation was rather beyond the ability of the ordinary technician of an F.D.S. or C.C.S., although he could very easily be trained. It was felt that a more qualified technician should be available for these investigations, and that he should have constant practice in his work. It was felt that the field transfusion officer was the logical person to interpret the laboratory findings and advise on post-operative treatment as far as intravenous therapy was concerned.

This conception of the role of an F.T.U. would demand from an O.C. an F.T.U. a considerable experience in laboratory procedure, and would require some modification in the establishment of an F.T.U. In order to test the practibility of the above conceptions, it was arranged that No. 1 Cdn Research Lab supply this unit with the fundamental means for carrying out essential lab procedures. It was decided that the following determinations should be within the scope of this experiment:

1. Haemoglobin 2. Haematocrit
3. Plasma protein 4. Icterus index.

REPORT ON ACTIVITIES FOR MONTH OF MAY 44

Number of transfusions given: 76

Amount of intravenous fluids used:

Whole blood	- 76	pints.
Plasma	- 94	"
Crystalloids	- 13	"
	183	"

Average blood and plasma per casualty: 2.3 pints.

Remarks:

While the above figures includes all casualties passing through the resuscitation ward, the treatment of about 30 more cases was supervised by this unit on one day (23 May) when it was found impossible to accommodate all admissions requiring resuscitation in the ward assigned for that purpose. At one time during the early afternoon, in addition to 11 cases in being treated in resusc., there were 20 cases undergoing active treatment in other wards. Many of these were fit for evacuation after treatment of their shock, others were sent for surgery without actually passing through the resuac ward. On this day, 23, generally the most severe cases, were treated by this unit in a 12 hour period.

2. From 23 May until the end of the month, No. 1 Cdn Research Lab (was attached) to the F.D. Sc. with which this unit worked. The Lab team, in addition to carrying out investigations on shock, co-operated extremely well in carrying out certain lab investigations of a more or less routine nature on certain post-op cases. These included determination of the blood proteins, haemoglobin, and haematocrit readings by the relatively simple copper sulphate method, and blood bilirubin. It was felt that especially in the case of burns this was of very great assistance in treating these cases. In one case at least, knowledge of the blood status probably saved the life of the patient, who had been severely burned. In other cases, the choice of intravenous therapy was able to be made on more certain grounds than has often been the case in the past.

In view of the demonstration of the practibility of these simple lab investigations, it is felt that their use should be greatly extended. It appears to be undersigned that the role of an F.T.U. should be enlarged to include this type of investigation, and place the treatment of certain post-op cases on a more solid foundation than has been in the past. The reasons for this belief are as follows:

a) An O.C. a F.T.U. should be more conversant with the biochemistry of blood than the average medical officer of an F.D.S., where most of the advanced surgery is performed.

b) While a transfusion officer will probably be engaged full time in the resuse ward during the early stages after the opening of an advanced surgical centre, after the initial 24 hrs or so he should be able to devote more time to consideration of post-op problems. The F.D.S. should be able to provide relief for general supervision of active resuscitation in that case.

c) The establishment of an F.T.U. might be increased by the addition of an orderly who would be trained in the lab technic, as well as being employed in the resuse ward during active periods. It is felt that this would be preferable to having all F.D.S. technicians trained and made responsible, as they are usually kept quite busy doing more routine work, and would not be able to have sufficiently constant practice to make them really skilled.

d) An F.T.U. is usually attached to an F.D.S. when this lab work would be required, and by providing it with the necessary duplication of equipment. This equipment might prove to be rather more extensive than first impressions suggest.

e) With the co-operation of No. 1 Cdn Research Lab the u/s proposes to try and work out a feasible solution of the problem, at least as far as equipment and reagents are concerned.

3. In the light of past experience, it was felt that the addition of one more orderly would enable an F.T.U. to carry out its duties much more efficiently than only 2 orderlies. In all but the most abnormal, the extra orderly enables an F.T.U. to take complete charge of resuse for the 24 hr. period. The D.D.M.S. 1 Cdn Corps agreed to this, and the orderly chosen arrived about 36 hrs later.

4. REFRIGERATOR

This has been a source of grief for several weeks, and only on rare occasions has it functioned properly.

The u/s is heartily of the opinion that the refrigeration equipment of an F.T.U. should be investigated by an authority on the subject, with the view of obtaining a more efficient, more reliable, and more compact type of plant.

5. SUPPLIES

These have been very well handled, and there has been excellent liaison on the part of the advanced blood bank. Possibly the question of supplies might be made easier if individual F.T.Us. were informed of the estimate of the number of casualties by the medical services before an action started.; this applied in particular to the quantity of whole blood it should ensure having on hand.

6. Use of blood products in Advanced Medical Units.

The use of plasma appears to be increasing, and quite a number of cases were admitted to resuse ward who had had plasma forward, usually with a drip continued in the ambulance car. On several occasions the bottle had been finished before arrival at the adv surgical centre, but the needle had not been removed. It is felt that either extra bottles should be supplied to ensure a continuation of the drip for the whole journey, or orderlies be instructed to remove the needle when the bottle is finished.

Whole blood has been requested on several occasions by Field Ambulances. In view of storage difficulties, and the fact that plasma is considered an adequate life-saving measure, it is felt that definite instructions should be given banning the use of whole blood ahead of an Adv Surgical Centre, where it will be available with an F.T.U.

(b) 2 LT FD AMB, R.C.A.M.C. (Extract from War Diary, May 1944).

MEDICAL ARRANGEMENTS

BATTLE OF THE LIRI VALLEY

GENERAL PLAN

2 Cdn Lt Fd Amb was under command of A.D.M.S. 8 Ind Div. A single route of evacuation from the level of a field A.D.S. to base hospital installations was arranged. One central A.D.S. cleared all sections to a main M.D.S. From the Battle M.D.S. casualties were cleared to a Field C.C.S., or to a Clearing Post at CAPUA to be sorted, - Cdn Ind Brit N.Z. casualties to respective General Hospitals. Ambulance cars from the sections were off-loaded at the forward A.D.S., and returned to the sections. M.D.S. of units were used, one as a battle M.D.S. and the others in reserve holding casual sick.

1 CDN ARMD BDE PLAN

One section was attached to each Armd Regiment. Three points were recognized, namely:

1. The R.M.O.
2. The Car Post of the Field Amb Section.
3. The Section of Field Ambulance.

Locations:

The R.M.O. was, as a rule at the regiment TAC HQ. The section complete, generally with forward elements of A Echelon of regiment. The Car Post where required as far forward of sections as was practical.

Movement forward developed as follows: When the R.M.O. moved forward, his RAP site immediately became a Car Post In some cases, only a stretcher-jeep could be used, in others light ambulance cars were sent up. When the R.M.O. moved forward a second time, his second RAP site became the Car Post and the section moved forward to his first RAP location. In many cases it was obvious that a Car Post would be unnecessary, so where possible, the section moved complete to the RAP location. The responsibility of siting the section was that of the section commander in close liaison with the regiment commander in order to make the most use of forward information and with du respect to the OPS arrangements.

Section Scales

In view of the fact that there might be times when the services of a section forward would be required but the situation would not allow either or both light ambulance cars and section lorry forward, a light scale and an assault scale were decided upon. Both were designed to carry on for short periods. The M.D.S. of this ambulance was used to hold casual sick and minor battle casualties of the brigade.

Distribution of Duties

O.C. 2 Cdn Lt Fd Amb was located at Rear Bde H.Q. for the period of operations.

2 i/c was at unit HQ in charge of administration.
M.O. i/c at M.D.S. with unit H.Q.
M.O. sections - with sections.

The Operation

Sections were attached as follows:

"A" section with 14 C.A.H.

"B" section with 12 C.A.H.

"C" section with 11 C.A.H.

"D" section with 6th Lancers.

In the case of A, B & C sections, the sections at first followed closely with A-1 Echelons of respective units. This was found in every case to be too far back to be of most value to the regiment. It was then decided to follow the TAC RHQ as closely as possible. This involved the greater use of Car posts and light or assault scale sections which however proved practical. The 6th Lancers were in a diversionary role and the section was returned to reserve - held at Rear Bde H.Q. after three days. Later, it was necessary to replace "C" section with 11 C.A.H., with D section, as C had a bad two days and the officer in charge had suffered minor blast injuries.

Replacement of the R.M.O. 14 C.A.H. was required. "A" section M.O. went forward to the regiment, "D" section M.O. took over "A" section and the L.O. 2 Ech gave authority to T.O.S. the Training Increment officer who went up to "D" section. The R.M.O. was replaced in 15 minutes, "D" section M.O. replaced in two hours.

Clearing to forward A.D.S. made for very short hauls by section ambulance cars which resulted in more cars forward and a thorough knowledge of route by drivers. Maps were found practically useless around the RAPIDO and the traffic route diagrams were substituted for ambulance car drivers.

The single-line evacuation worked well and all Cdn casualties reached a Cdn C.C.S., General Hospital or Special Hospital in remarkable short time. Consequent pooling of M.A.C. cars again provided maximum number of cars forward.

By following the plan of using previous sites of R.A.Ps. both ambulance and regimental personnel were, in most cases, quite familiar with locations.

Location of O.C. at Rear Bde H.Q. made for closer liaison with D.A. & Q.M.C. and A.D.M.S. 8th Indian Div and tighter control of sections.

The location of the M.D.S., some distance in the rear of Rear Bde H.Q. resulted in the services of this part of the unit being lost to the Bde to a great degree.

First aid training in the Bde is obviously of the highest order and in a great many cases casualties required no revision of dressings or splints when they first reached an M.O. Coagulants were used in some burns but these ointments are being replaced by sulpha ointment in all kits. It would appear that a wet shell or first field dressing is the ideal first aid treatment of burns.

Distribution and types of casualties evacuated by sections shown in Appx "B".

In certain cases former German dug-outs were used by sections. These were mostly booby-trapped; as a result of a recent co[illegible]se given by our own M.C.O.[illegible] these were neutralized by section personnel.

In some cases the section M.O. felt that more or earlier information should have been supplied by the Regiment. This was obviously an oversight.

OBSERVATIONS

1. Single line of evacuation through to base speeded up evacuation, returned Cdns to Cdn installations and made more cars available forward.

2. Traces and or 1:25000 scale maps are necessary for Amb car drivers.

3. Sections should be sited in relation to R.H.Q. rather than A-1 Echelons.

4. M.D.S. must be sited at least as far forward as Rear Bde H.Q. to be of full value to formation.

5. Assault and Light scale for sections proved most useful and practical.

6. Regiments should supply as much information as possible to Section M.O.

7. Standard plan for forward moves of sections and car posts as a routine is recommended.

8. O.C. located at Rear Bde H.Q. made for closer liaison and control.

9. Training Increment officer is desirable to supply immediate replacement of M.O. casualties.

10. All coagulant burn ointments are to be withdrawn. First aid training for burn treatment to be limited to wet shell or field dressing.

11. The problem of R/T communication between Section O.O. or Unit H.Q. presents itself and is under consideration by Brigade Signals.

APPENDIX "A"

ASSAULT SCALE FOR SECTION

Equipment	Battle box containing instruments, anaesthetics, sedatives and narcotics. Box of shell dressings - 100. Stove. Entrenching tools. Extra stretchers and blankets.
Personnel	1 M.O. 1 Driver 1 Cpl (Clerk) 1 Nursing Orderly 1 D.R.
Transport	1 Jeep-ambulance 1 Motorcycle

LIGHT SCALE

Assault scale plus the following:
Shell dressings - 400.
All splints.
All blood.
Light cooking equipment.
All stretchers.

Personnel	Sgt. Cook.
Transport	Additional light cars if situation allows.

APPENDIX "B"

	1 C.A.B.	Cdn	Br	Ind	POL
Head	5	2	7	-	-
Chest	7	3	3	2	2
Abdomen	-	5	w(3?)	-	1
Buttocks	-	3	1	1	1
Upper Extremities	12	7	12	1	1
Lower Extremities	17	9	11	3	3
Multiple	7	-	29	28	1
Burns	6	6	2	-	-
Exhaustion	9	4	18	-	-
Sick	48	4	22	-	-
Total	111	43	108	35	8
				Total	305