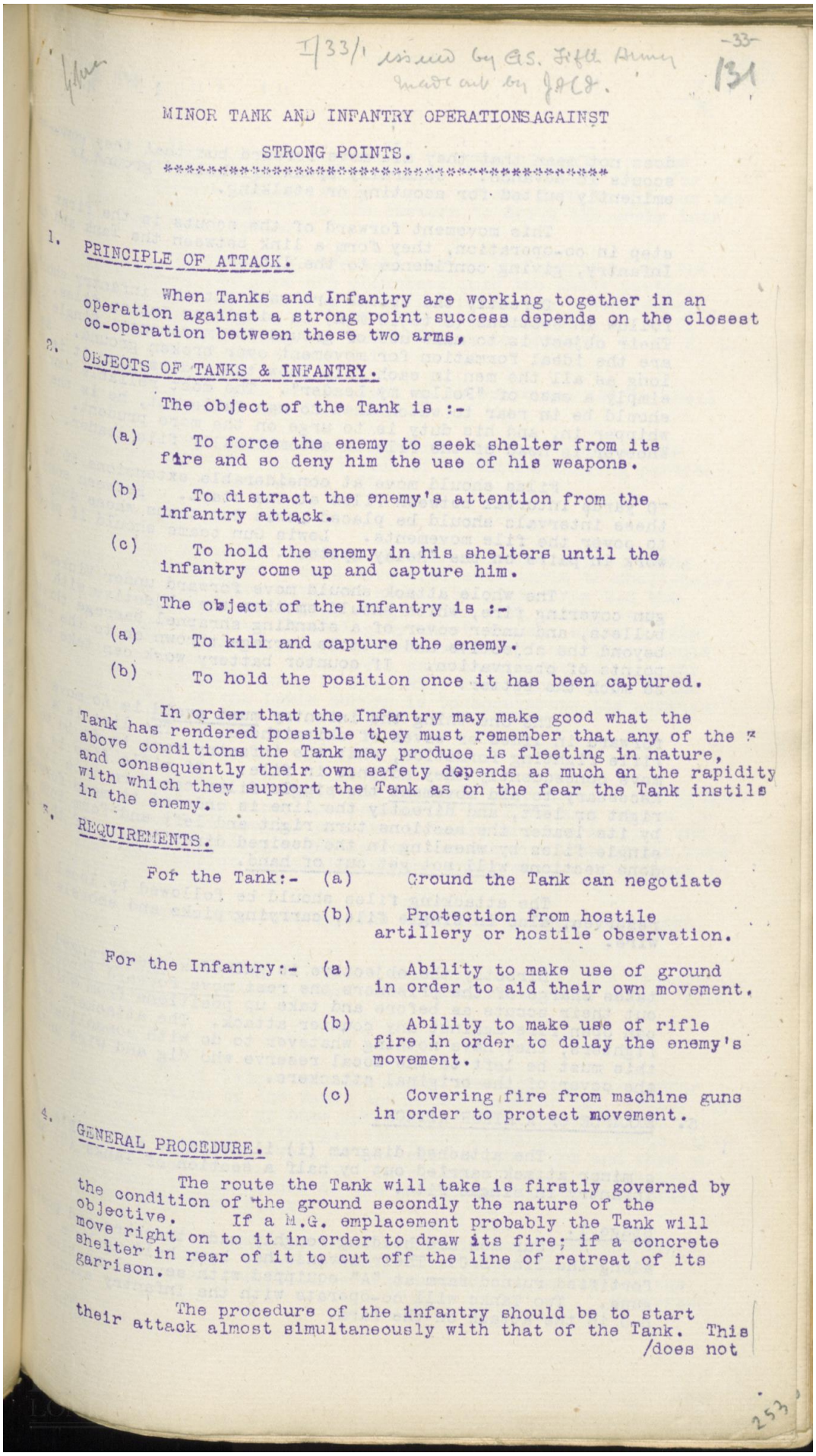

I/33/1 issued by GS. Fifth Army
made out by JAC8.

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MINOR TANK AND INFANTRY OPERATIONS AGAINST

STRONG POINTS.

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1. PRINCIPLE OF ATTACK.

When Tanks and Infantry are working together in an operation against a strong point success depends on the closest co-operation between these two arms,

2. OBJECTS OF TANKS & INFANTRY.

The object of the Tank is :-

(a) To force the enemy to seek shelter from its fire and so deny him the use of his weapons.

(b) To distract the enemy's attention from the infantry attack.

(c) To hold the enemy in his shelters until the infantry come up and capture him.

The object of the Infantry is :-

(a) To kill and capture the enemy.

(b) To hold the position once it has been captured.

In order that the Infantry may make good what the Tank has rendered possible they must remember that any of the above conditions the Tank may produce is fleeting in nature, and consequently their own safety depends as much on the rapidity with which they support the Tank as on the fear the Tank instils in the enemy.

3. REQUIREMENTS.

For the Tank:- (a) Ground the Tank can negotiate

(b) Protection from hostile artillery or hostile observation.

For the Infantry:- (a) Ability to make use of ground in order to aid their own movement.

(b) Ability to make use of rifle fire in order to delay the enemy's movement.

(c) Covering fire from machine guns in order to protect movement.

4. GENERAL PROCEDURE.

The route the Tank will take is firstly governed by the condition of the ground secondly the nature of the objective. If a M.G. emplacement probably the Tank will move right on to it in order to draw its fire; if a concrete shelter in rear of it to cut off the line of retreat of its garrison.

The procedure of the infantry should be to start their attack almost simultaneously with that of the Tank. This /does not

253

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does not mean that they all move forward but that they precede scouts in advance. Generally speaking shelled ground is eminently suited for scouting or stalking.

This movement forward of the scouts is the first step in co-operation, they form a link between the Tank and the Infantry, giving confidence to the latter.

Directly the scouts are well out the infantry should follow in sections (8 to 10 men) in single or Indian files. Their object is to make use of ground for movement. Single files are the ideal formation for movement over broken ground. As long as all the men in each file know their direction it is simply a case of "Follow my Leader". The most reliable man should be in rear to watch that no man falls out, he is the whipper in, and his duty is to urge on the more prudent. Whoever is head of the file is automatically file leader.

Files should move at considerable extensions 50 to 70 yards interval between files at the start. Between some of these intervals should be placed Lewis Gun teams whose duty is to cover the file movements. Lewis Gun teams should if possible work in pairs on the "Relay System".

The whole attack should move forward under Vickers gun covering fire, which should smother the objective with bullets, and under cover of a standing shrapnel barrage thrown beyond the objective and a smoke barrage thrown on to the enemy's points of observation. If counter battery work can take place so much the better.

The one thing the infantry must avoid is to move forward in lines or waves of skirmishers. The line is a rifle fighting formation, what the infantry want to do is to move consequently they advance in file. If rifle fire is necessary to aid movement the single files can form into line right or left, and directly the line is ordered to move forward by its leader the sections turn right and left and form into single files by wheeling in the desired direction. If this is done sections will not get out of hand.

The attacking files should be followed by local reserves, also in single file, carrying picks and shovels and wire.

Directly the objective is gained a pre-arranged party takes charge of the prisoners the rest move forward throwing out their scouts as before and take up positions from which they can open fire against any counter attack. The attackers are fighters, they have nothing whatever to do with consolidation, this must be left to the local reserve who dig and wire under the cover of the original attackers.

5. EXAMPLE OF A MINOR ATTACK.

The attached diagram (i) illustrates an example of a minor attack carried out by half a section of Tanks (?) and infantry in single file.

Stage 1.

Our men are holding roughly made trenches and posts along the line B-C. Their advance has been held up by a fortified ruined farm at "A" equipped with several machine guns. Two Tanks will co-operate with the Infantry along B-C in the attack on the farm.

/The Tanks

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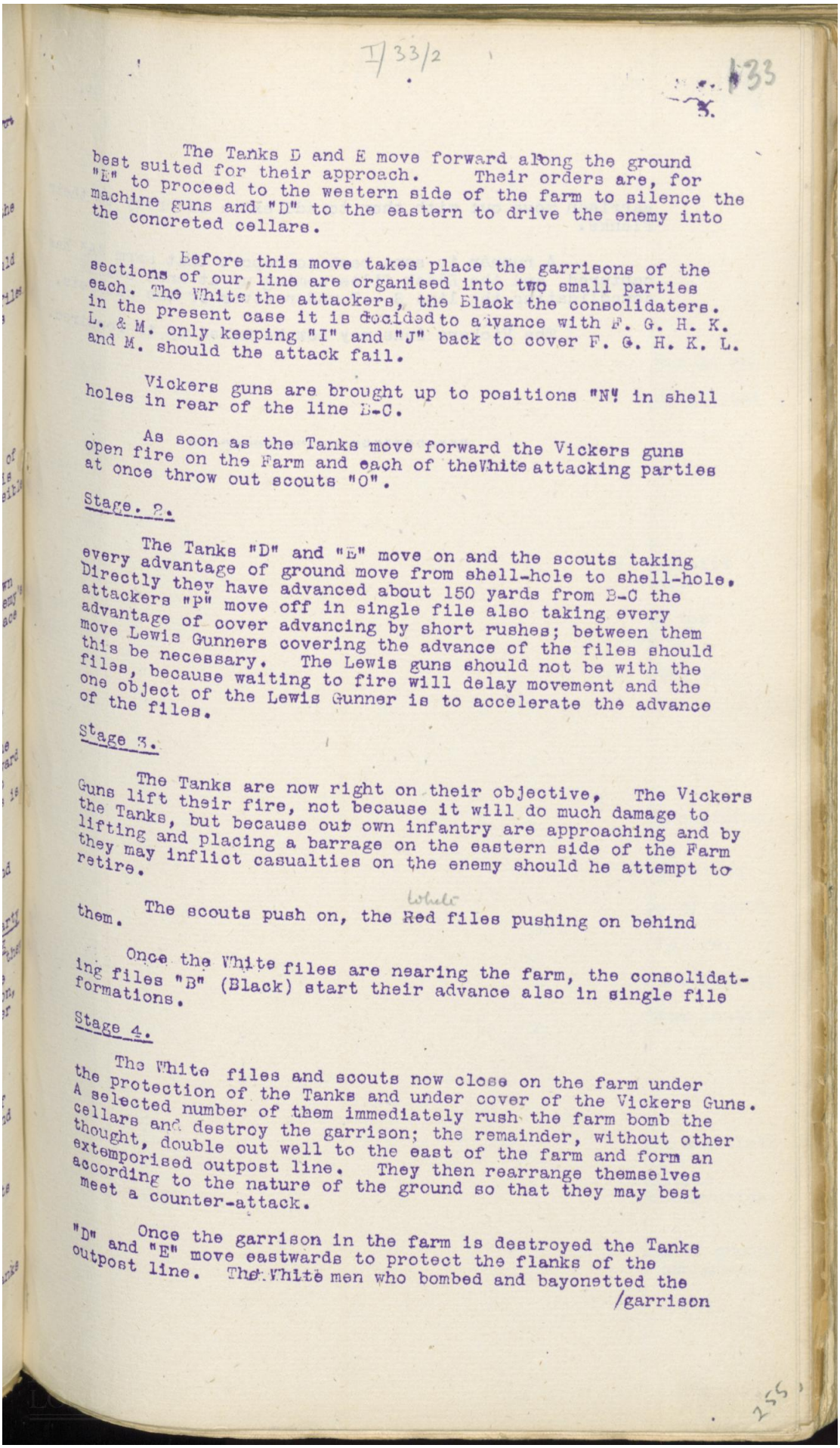

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3.

The Tanks D and E move forward along the ground best suited for their approach. Their orders are, for "E" to proceed to the western side of the farm to silence the machine guns and "D" to the eastern to drive the enemy into the concreted cellars.

Before this move takes place the garrisons of the sections of our line are organised into two small parties each. The White the attackers, the Black the consolidaters. in the present case it is decided to advance with F. G. H. K. L. & M. only keeping "I" and "J" back to cover F. G. H. K. L. and M. should the attack fail.

Vickers guns are brought up to positions "N" in shell holes in rear of the line B-C.

As soon as the Tanks move forward the Vickers guns open fire on the Farm and each of the White attacking parties at once throw out scouts "O".

Stage. 2.

The Tanks "D" and "E" move on and the scouts taking every advantage of ground move from shell-hole to shell-hole. Directly they have advanced about 150 yards from B-C the attackers "P" move off in single file also taking every advantage of cover advancing by short rushes; between them move Lewis Gunners covering the advance of the files should this be necessary. The Lewis guns should not be with the files, because waiting to fire will delay movement and the one object of the Lewis Gunner is to accelerate the advance of the files.

Stage 3.

The Tanks are now right on their objective, The Vickers Guns lift their fire, not because it will do much damage to the Tanks, but because our own infantry are approaching and by lifting and placing a barrage on the eastern side of the Farm they may inflict casualties on the enemy should he attempt to retire.

The White scouts push on, the Red files pushing on behind them.

Once the White files are nearing the farm, the consolidating files "B" (Black) start their advance also in single file formations.

Stage 4.

The White files and scouts now close on the farm under the protection of the Tanks and under cover of the Vickers Guns. A selected number of them immediately rush the farm bomb the cellars and destroy the garrison; the remainder, without other thought, double out well to the east of the farm and form an extemporised outpost line. They then rearrange themselves according to the nature of the ground so that they may best meet a counter-attack.

"D" and "E" Once the garrison in the farm is destroyed the Tanks move eastwards to protect the flanks of the outpost line. The White men who bombed and bayonetted the

/garrison

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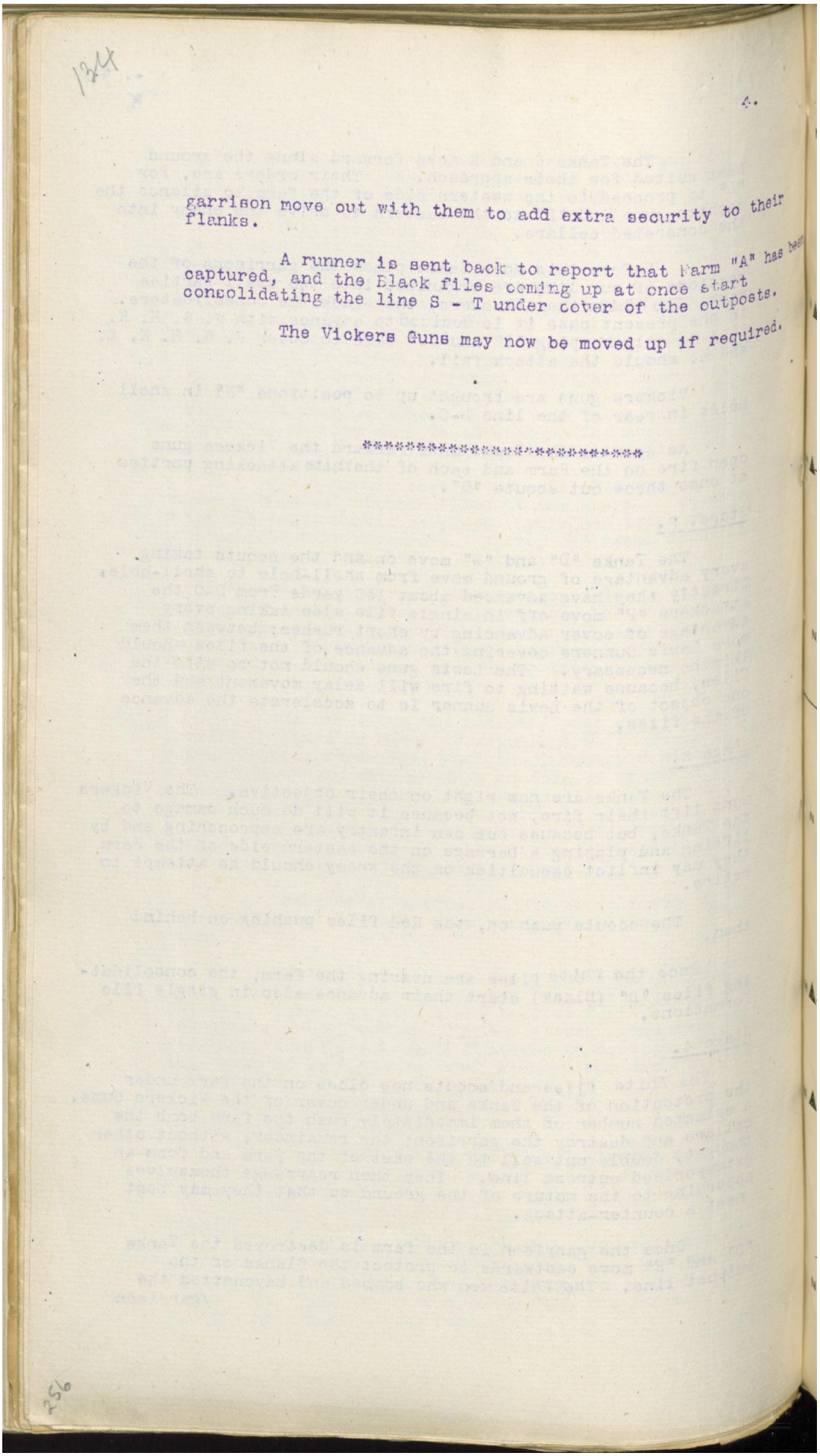

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4.

garrison move out with them to add extra security to their flanks.

A runner is sent back to report that Farm "A" has been captured, and the Black files coming up at once start consolidating the line S - T under cover of the outposts.

The Vickers Guns may now be moved up if required.

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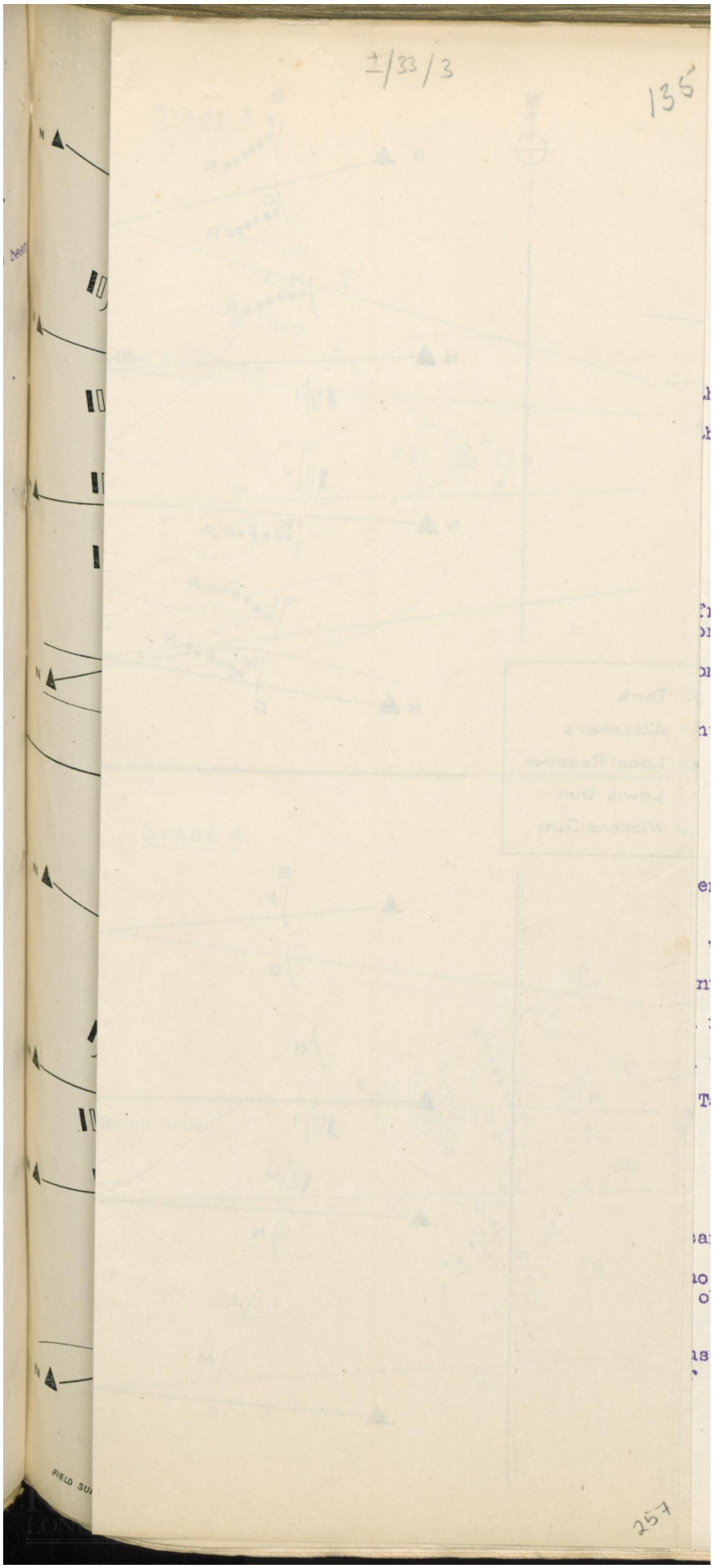
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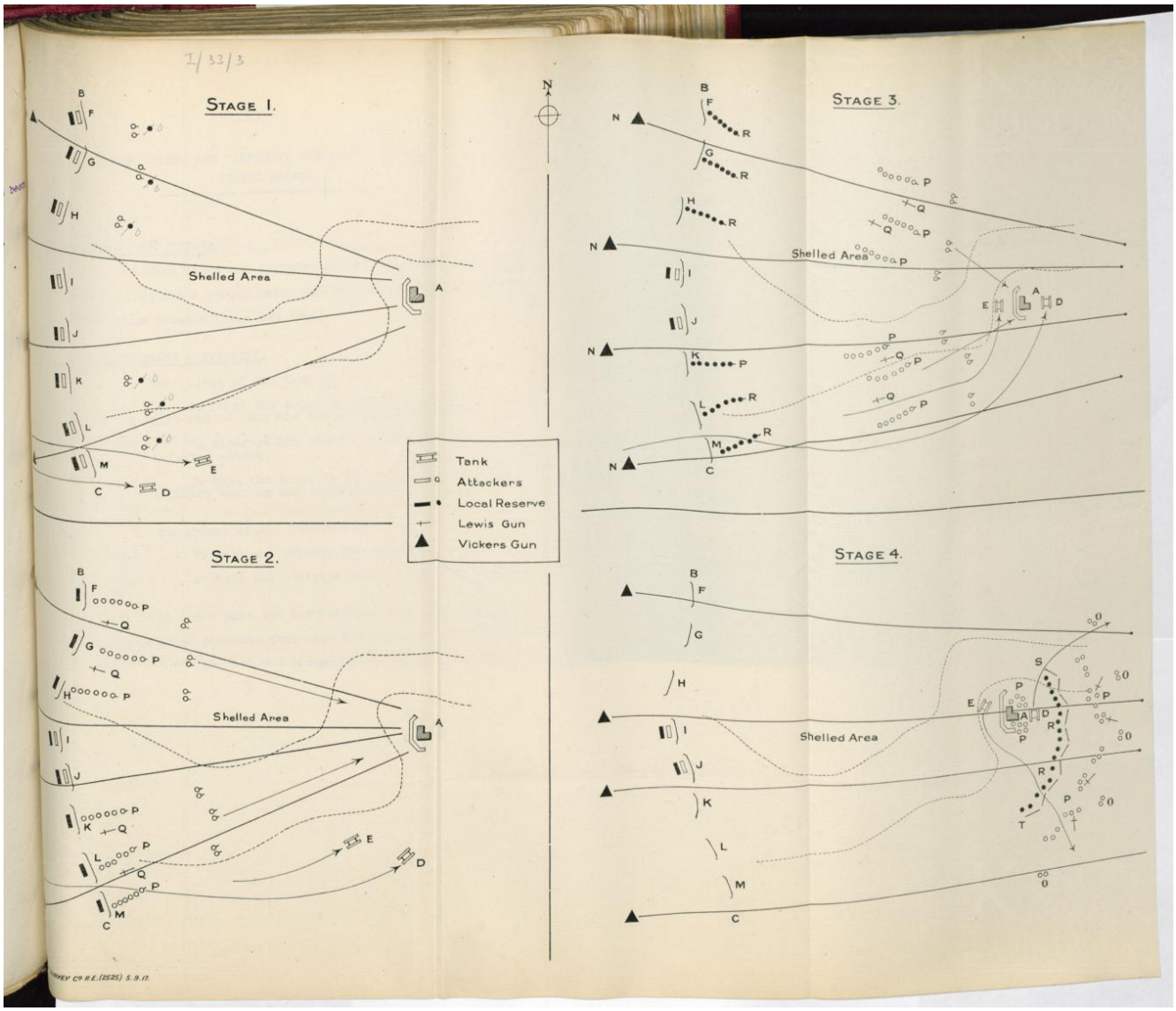
STAGE 1.
STAGE 2.
STAGE 3.
STAGE 4.
Shelled Area
Tank
Attackers
Local Reserve
Lewis Gun
Vickers Gun

I/33/4

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MINOR TANK AND INFANTRY OPERATIONS AGAINST STRONG POINTS.

(1) PRINCIPLE OF ATTACK.

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(b) To hold the position once it has been captured.

In order that the Infantry may make good what the Tank has rendered possible they must remember that any of the 3 above conditions the Tank may produce is fleeting in nature, and consequently their own safety depends as much on the rapidty with which they support the Tank as on the fear the Tank instils in the enemy.

(3) REQUIREMENTS.

For the Tank :- (a) Ground the Tank can negotiate

(b) Protection from hostile artillery or hostile observation.

For the Infantry :- (a) Ability to make use of ground in order to aid their own movement.

/ (b)

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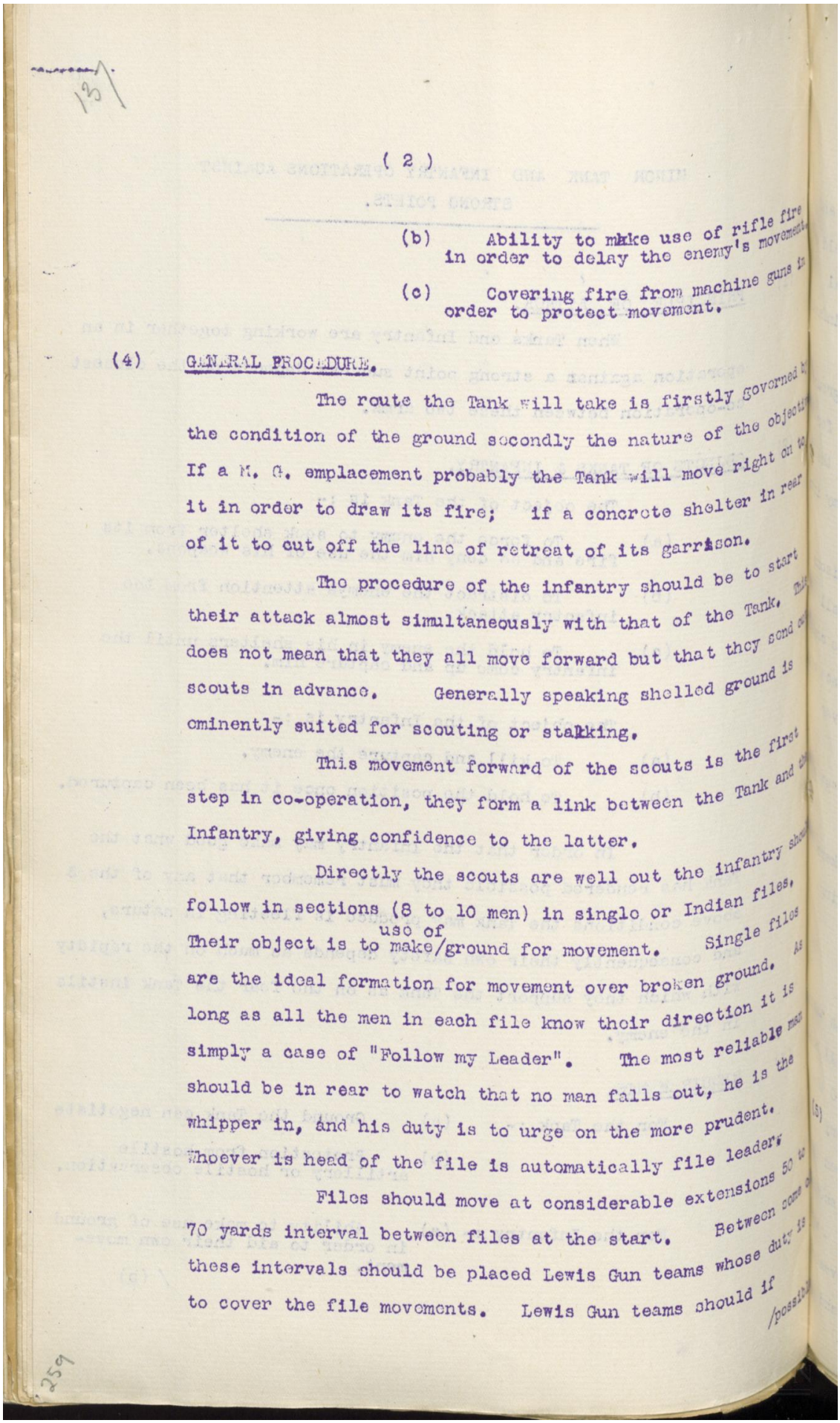

13/

(2)

(b) Ability to make use of rifle fire in order to delay the enemy's movement.

(c) Covering fire from machine guns in order to protect movement.

(4) GENERAL PROCEDURE.

The route the Tank will take is firstly governed by the condition of the ground secondly the nature of the objective. If a M. G. emplacement probably the Tank will move right on to it in order to draw its fire; if a concrete shelter in rear of it to cut off the line of retreat of its garrison.

The procedure of the infantry should be to start their attack almost simultaneously with that of the Tank. This does not mean that they all move forward but that they send out scouts in advance. Generally speaking shelled ground is eminently suited for scouting or stalking.

This movement forward of the scouts is the first step in co-operation, they form a link between the Tank and the Infantry, giving confidence to the latter.

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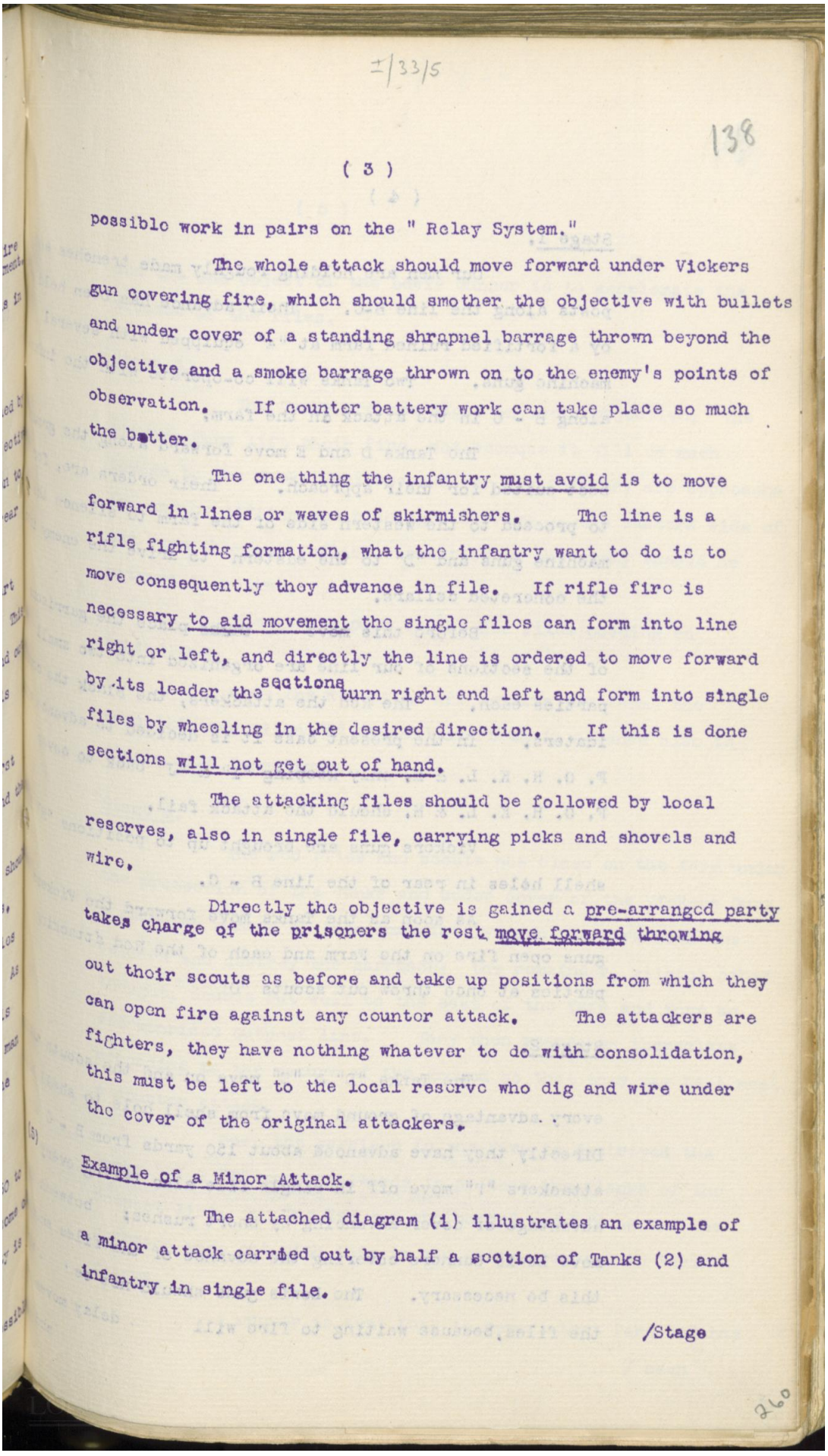

I/33/5

138

(3)

possible work in pairs on the " Relay System."

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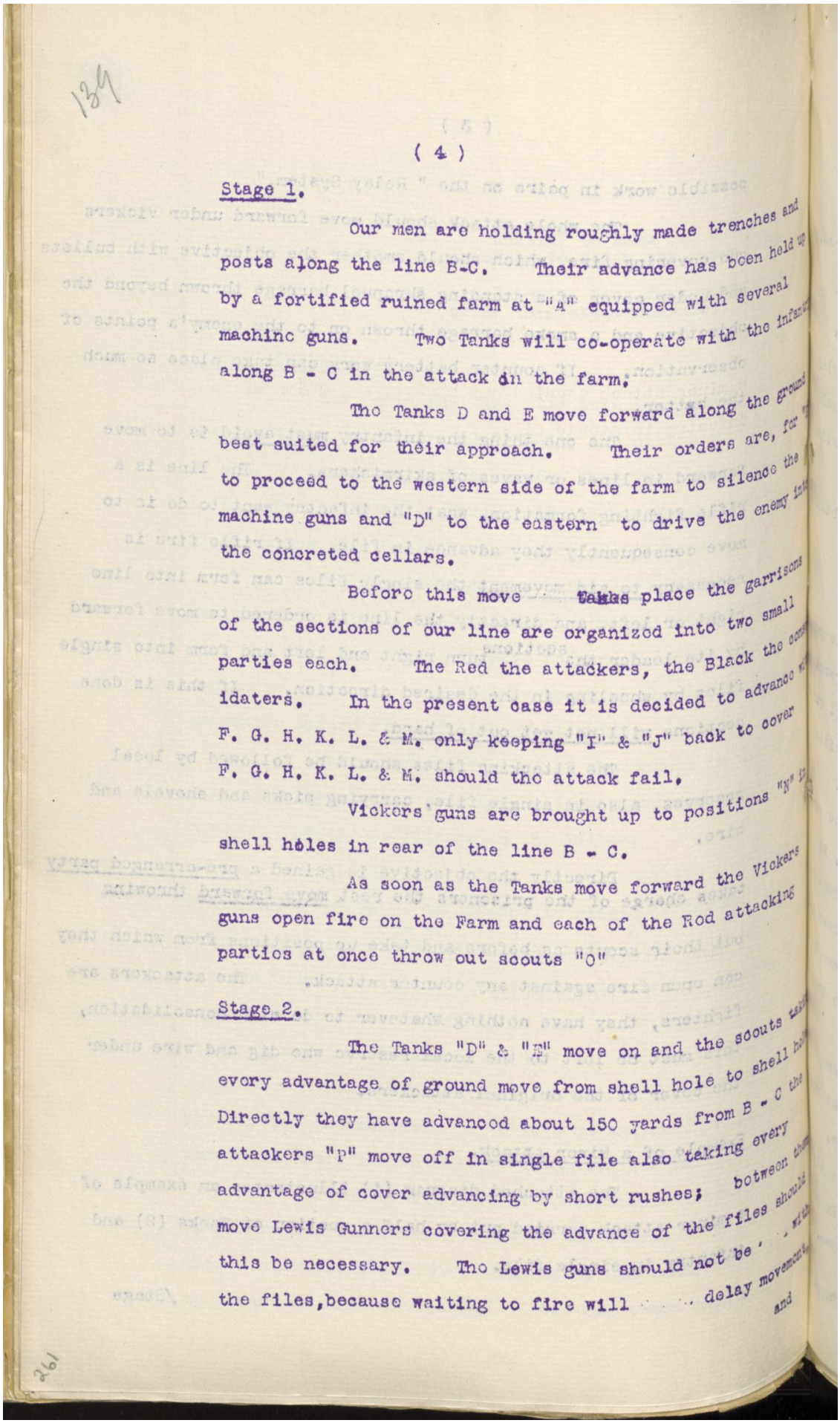
Example of a Minor Attack.

The attached diagram (i) illustrates an example of a minor attack carried out by half a section of Tanks (2) and infantry in single file.

/Stage

260



134

(4)

Stage 1.

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and the one object of the Lewis Gunner is to accelerate the advance of the files.

Stage 3.

The Tanks are now right on their objective. The Vickers Guns lift their fire, not because it will do much damage to the Tanks, but because our own infantry are approaching and by lifting and placing a barrage on the eastern side of the Farm they may inflict casualties on the enemy should he attempt to retire.

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Once the garrison in the farm is destroyed the Tanks "D" & "E" move eastwards to protect the flanks of the outpost line. The Red men who bombed and bayonetted the garrison move out with them to add extra security to their flanks.

A runner is sent back to report that Farm "A" has

/ been

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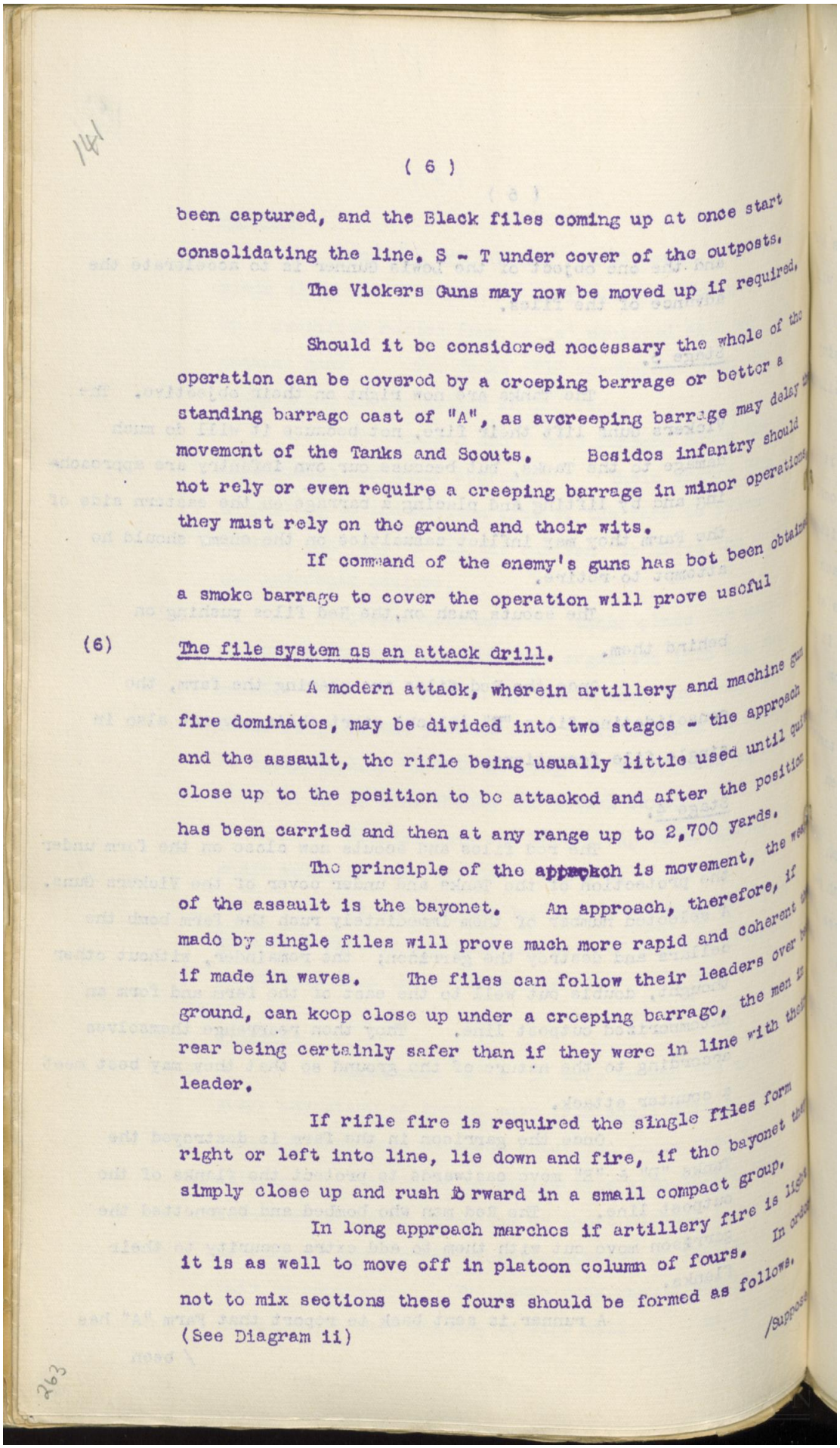

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(6)

been captured, and the Black files coming up at once start consolidating the line. S - T under cover of the outposts.

The Vickers Guns may now be moved up if required.

Should it be considered necessary the whole of the operation can be covered by a creeping barrage or better a standing barrage east of "A", as a creeping barrage may delay the movement of the Tanks and Scouts. Besides infantry should not rely or even require a creeping barrage in minor operations they must rely on the ground and their wits.

If command of the enemy's guns has bot been obtained a smoke barrage to cover the operation will prove useful

(6) The file system as an attack drill.

A modern attack, wherein artillery and machine gun fire dominates, may be divided into two stages - the approach and the assault, the rifle being usually little used until quite close up to the position to be attacked and after the position has been carried and then at any range up to 2,700 yards.

The principle of the approach is movement, the weapon of the assault is the bayonet. An approach, therefore, if made by single files will prove much more rapid and coherent than if made in waves. The files can follow their leaders over broken ground, can keep close up under a creeping barrage, the men in rear being certainly safer than if they were in line with their leader.

If rifle fire is required the single files form right or left into line, lie down and fire, if the bayonet then simply close up and rush forward in a small compact group.

In long approach marches if artillery fire is light it is as well to move off in platoon column of fours. In order not to mix sections these fours should be formed as follows. (See Diagram ii)

/Suppose

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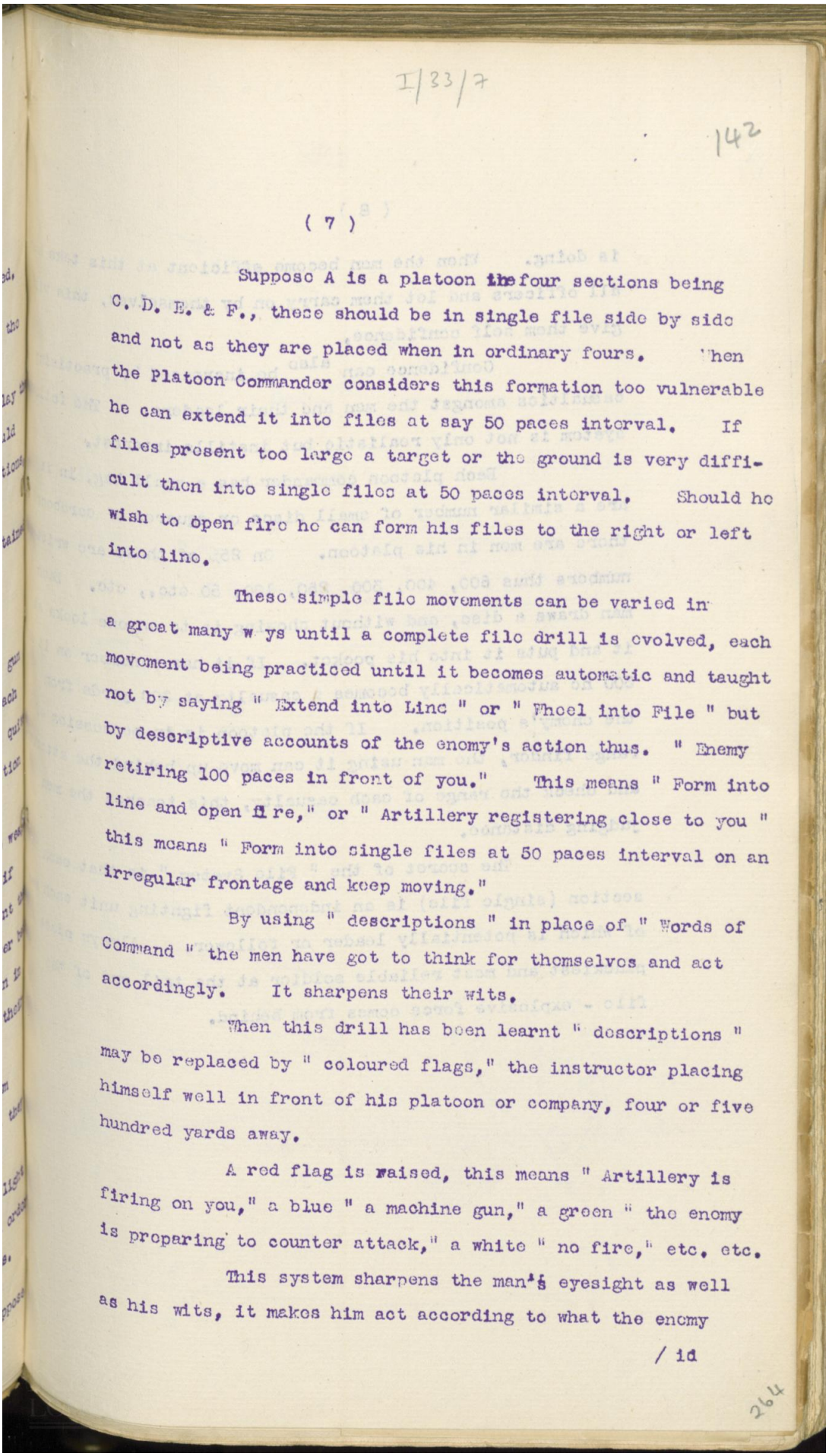

I/33/7

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(7)

Suppose A is a platoon the four sections being C. D. E. & F., these should be in single file side by side and not as they are placed when in ordinary fours. When the Platoon Commander considers this formation too vulnerable he can extend it into files at say 50 paces interval. If files present too large a target or the ground is very difficult then into single files at 50 paces interval. Should he wish to open fire he can form his files to the right or left into line.

These simple file movements can be varied in a great many ways until a complete file drill is evolved, each movement being practiced until it becomes automatic and taught not by saying " Extend into Line " or " Wheel into File " but by descriptive accounts of the enemy's action thus. " Enemy retiring 100 paces in front of you." This means " Form into line and open fire," or " Artillery registering close to you " this means " Form into single files at 50 paces interval on an irregular frontage and keep moving."

By using " descriptions " in place of " Words of Command " the men have got to think for themselves and act accordingly. It sharpens their wits.

When this drill has been learnt " descriptions " may be replaced by " coloured flags," the instructor placing himself well in front of his platoon or company, four or five hundred yards away.

A red flag is raised, this means " Artillery is firing on you," a blue " a machine gun," a green " the enemy is preparing to counter attack," a white " no fire," etc. etc.

This system sharpens the man's eyesight as well as his wits, it makes him act according to what the enemy

/ id

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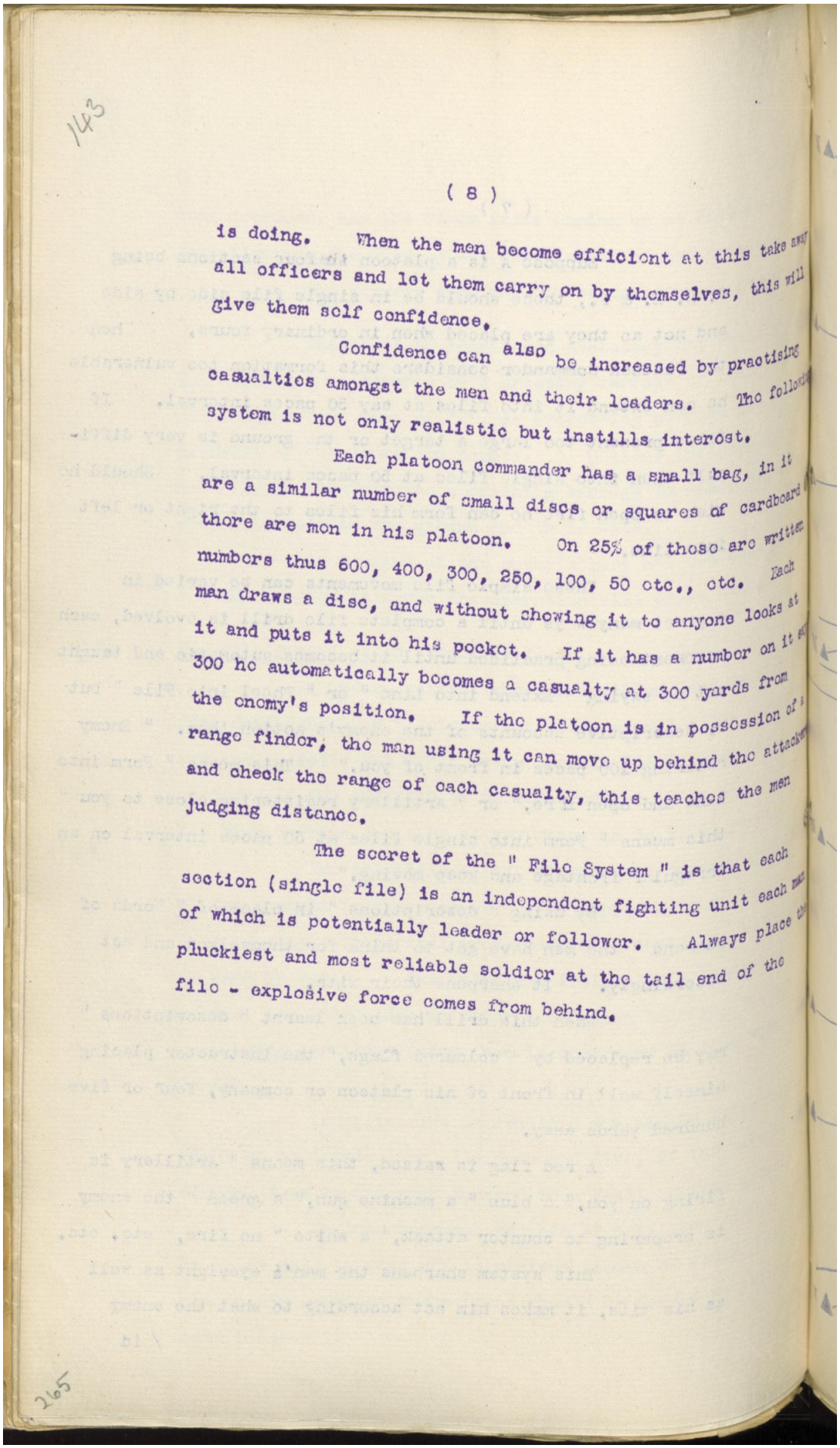

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(8)

is doing. When the men become efficient at this take away all officers and let them carry on by themselves, this will give them self confidence.

Confidence can also be increased by practising casualties amongst the men and their leaders. The following system is not only realistic but instills interest.

Each platoon commander has a small bag, in it are a similar number of small discs or squares of cardboard to there are men in his platoon. On 25% of these are written numbers thus 600, 400, 300, 250, 100, 50 etc., etc. Each man draws a disc, and without showing it to anyone looks at it and puts it into his pocket. If it has a number on it eg. 300 he automatically becomes a casualty at 300 yards from the enemy's position. If the platoon is in possession of a range finder, the man using it can move up behind the attacker and check the range of each casualty, this teaches the men judging distance.

The secret of the " File System " is that each section (single file) is an independent fighting unit each man of which is potentially leader or follower. Always place the pluckiest and most reliable soldier at the tail end of the file - explosive force comes from behind.

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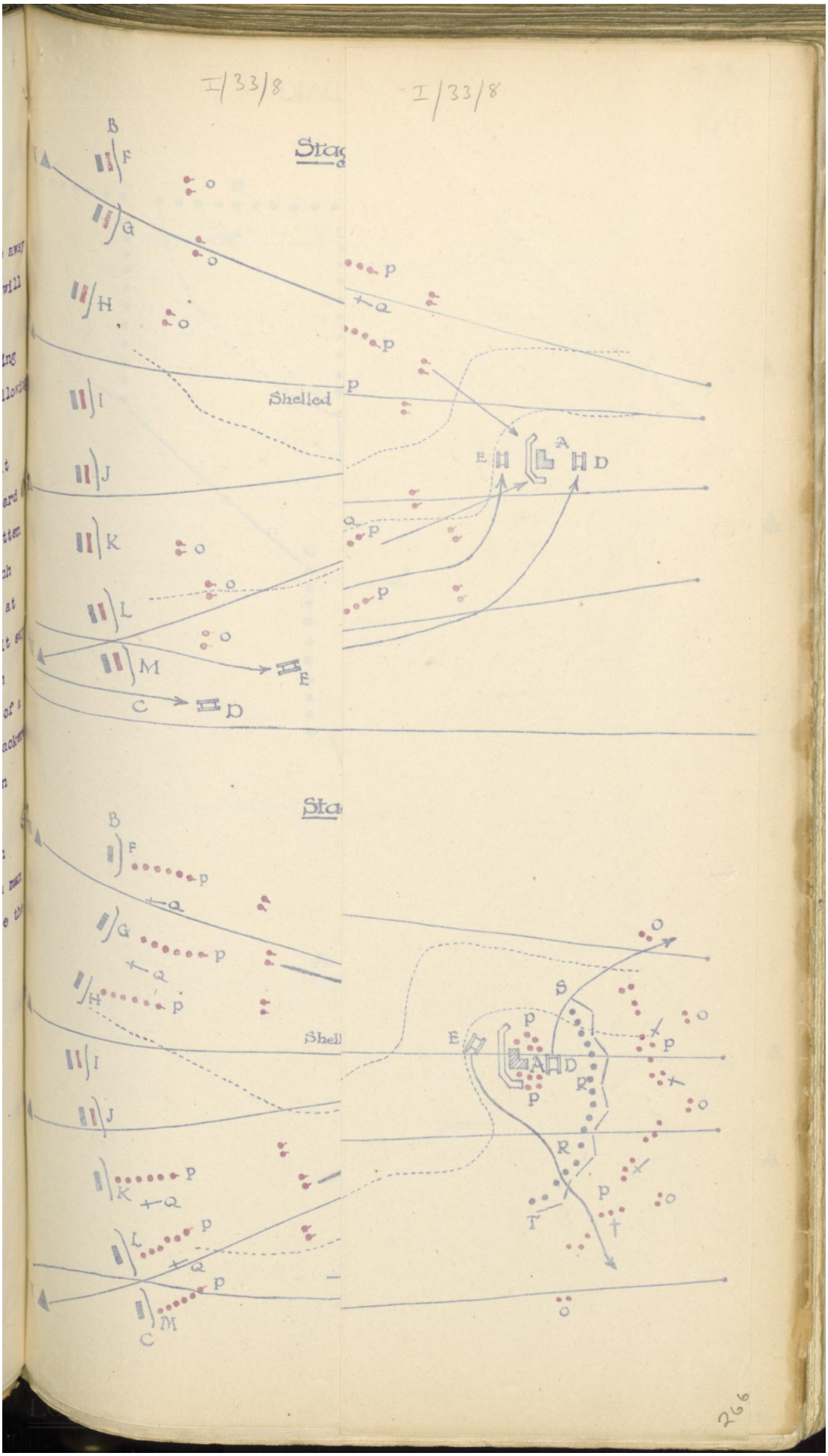
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I/33/8
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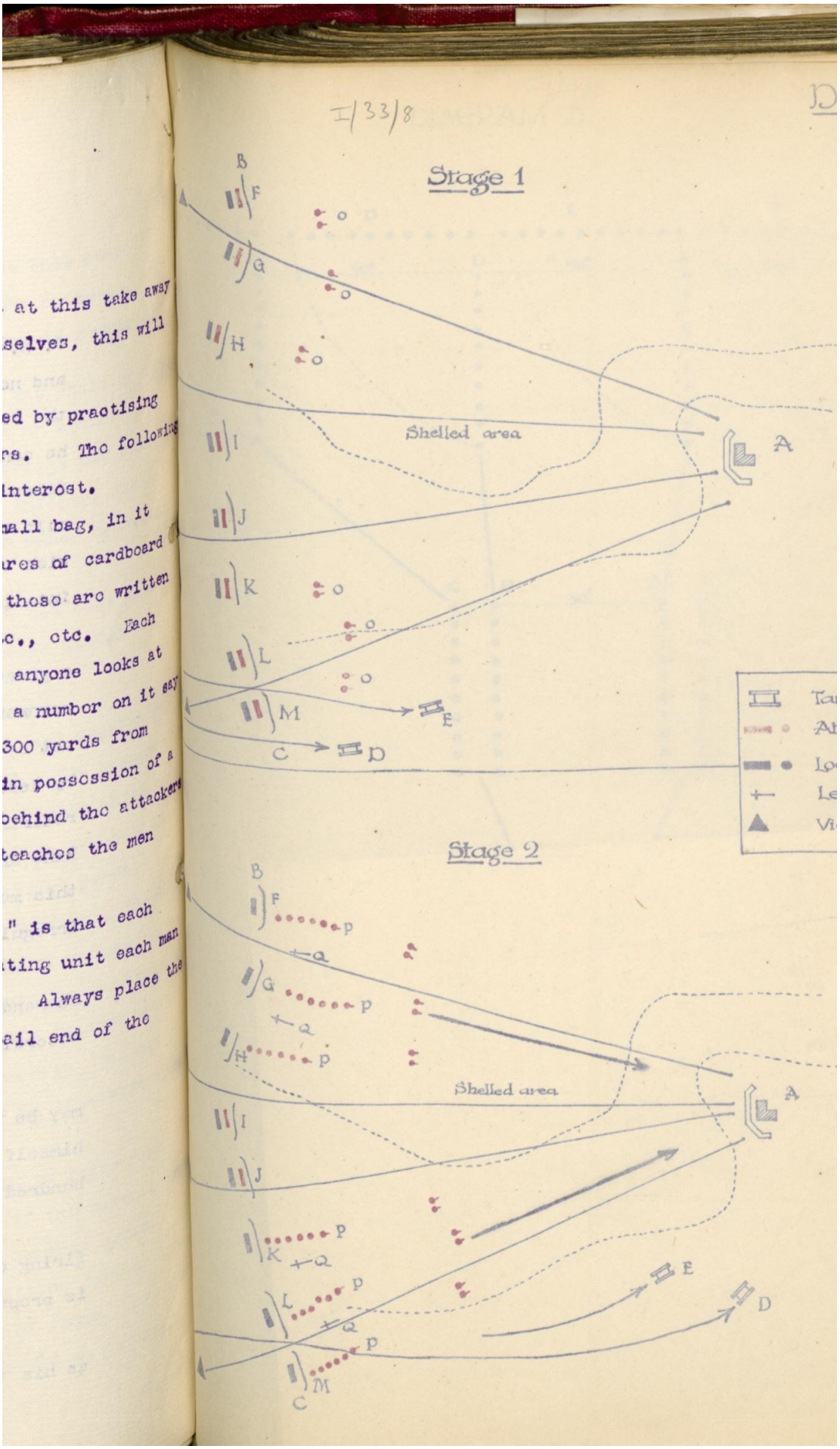

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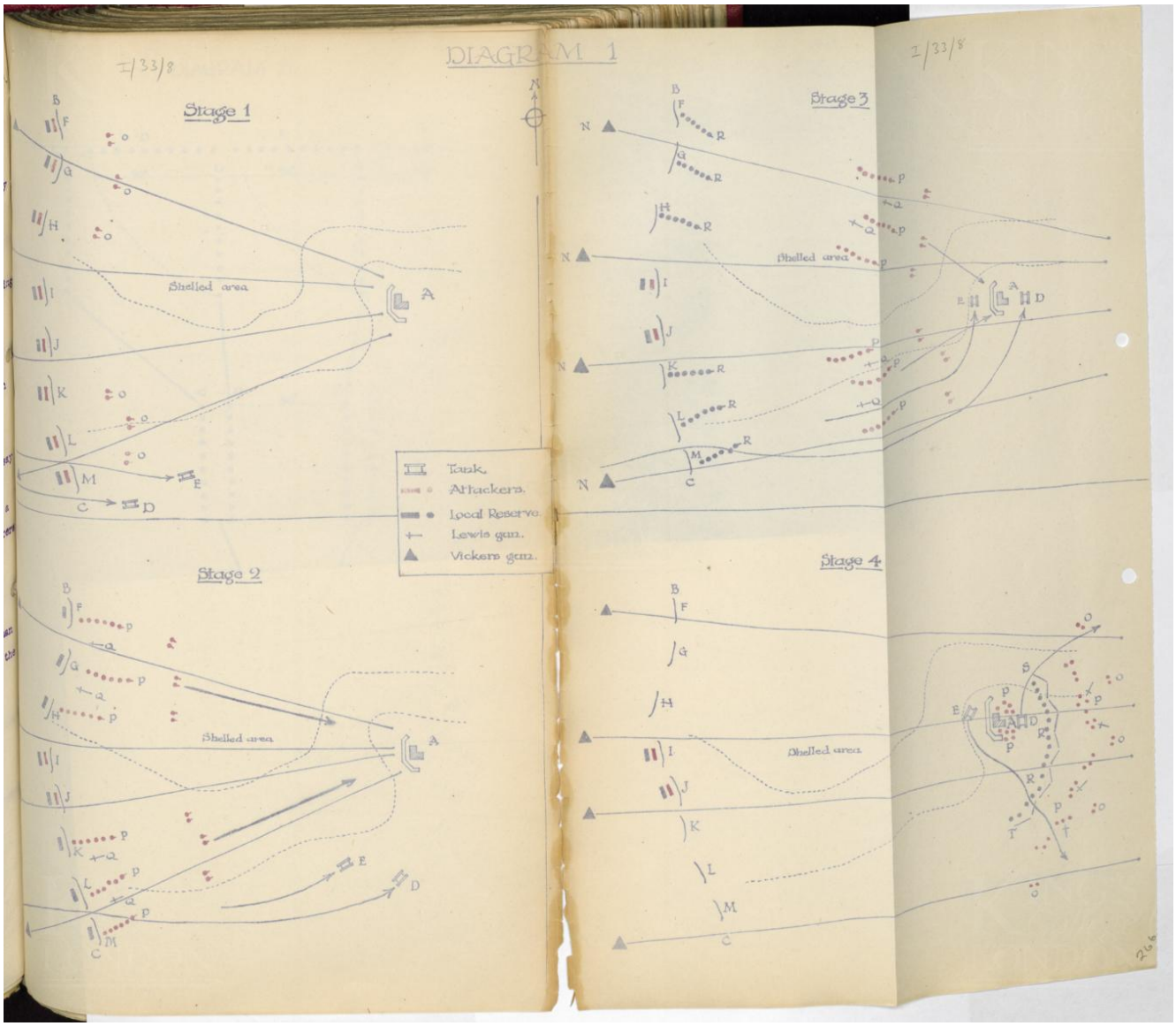
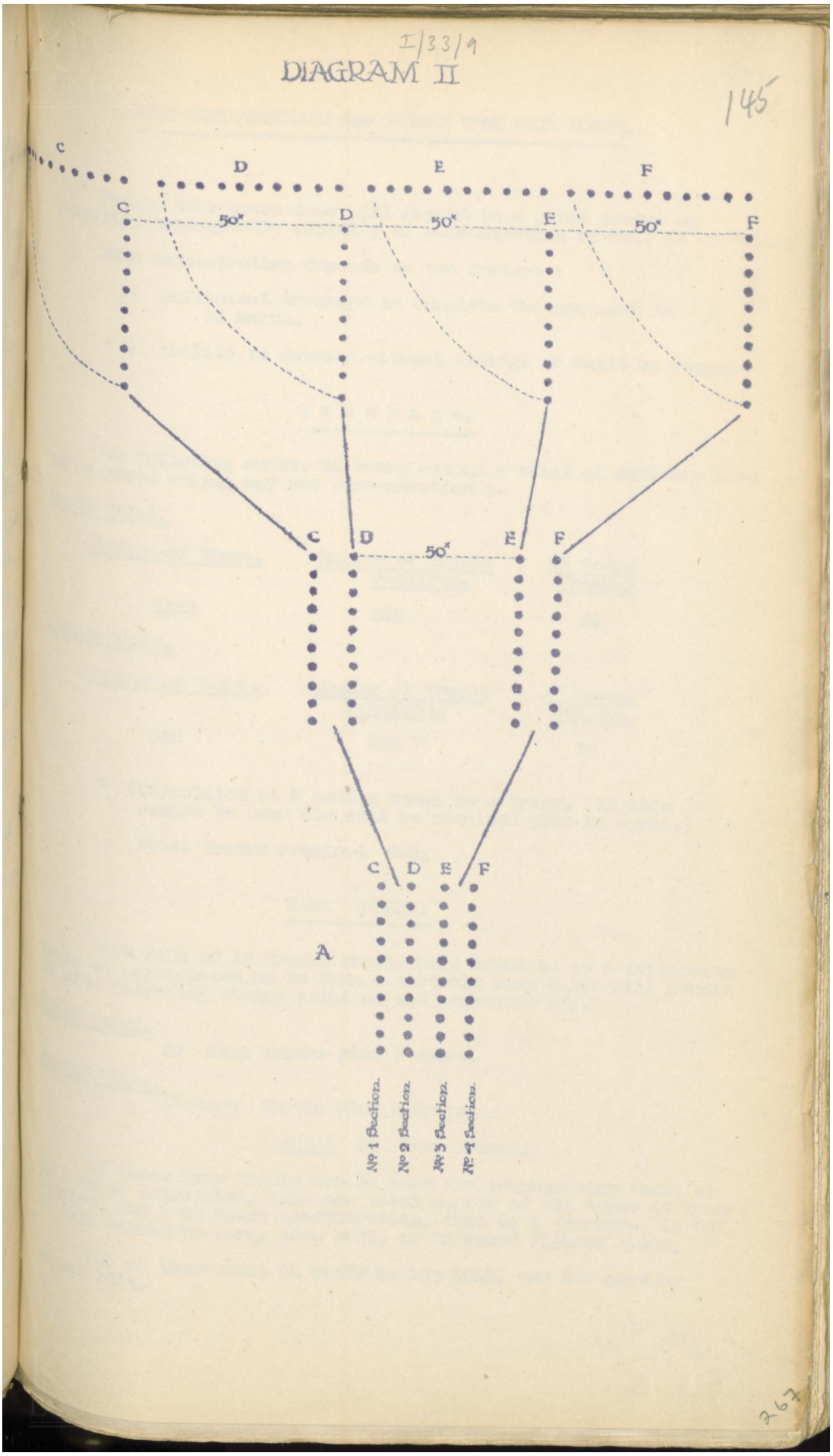


DIAGRAM 1
Stage 1
Stage 2
Stage 3
Stage 4
Shelled area
Tank.
Attackers.
Local Reserve.
Lewis gun.
Vickers gun.


I/33/9
DIAGRAM II
145
C
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E
F
50'
A
No 1 Section.
No 2 Section.
No 3 Section.
No 4 Section.
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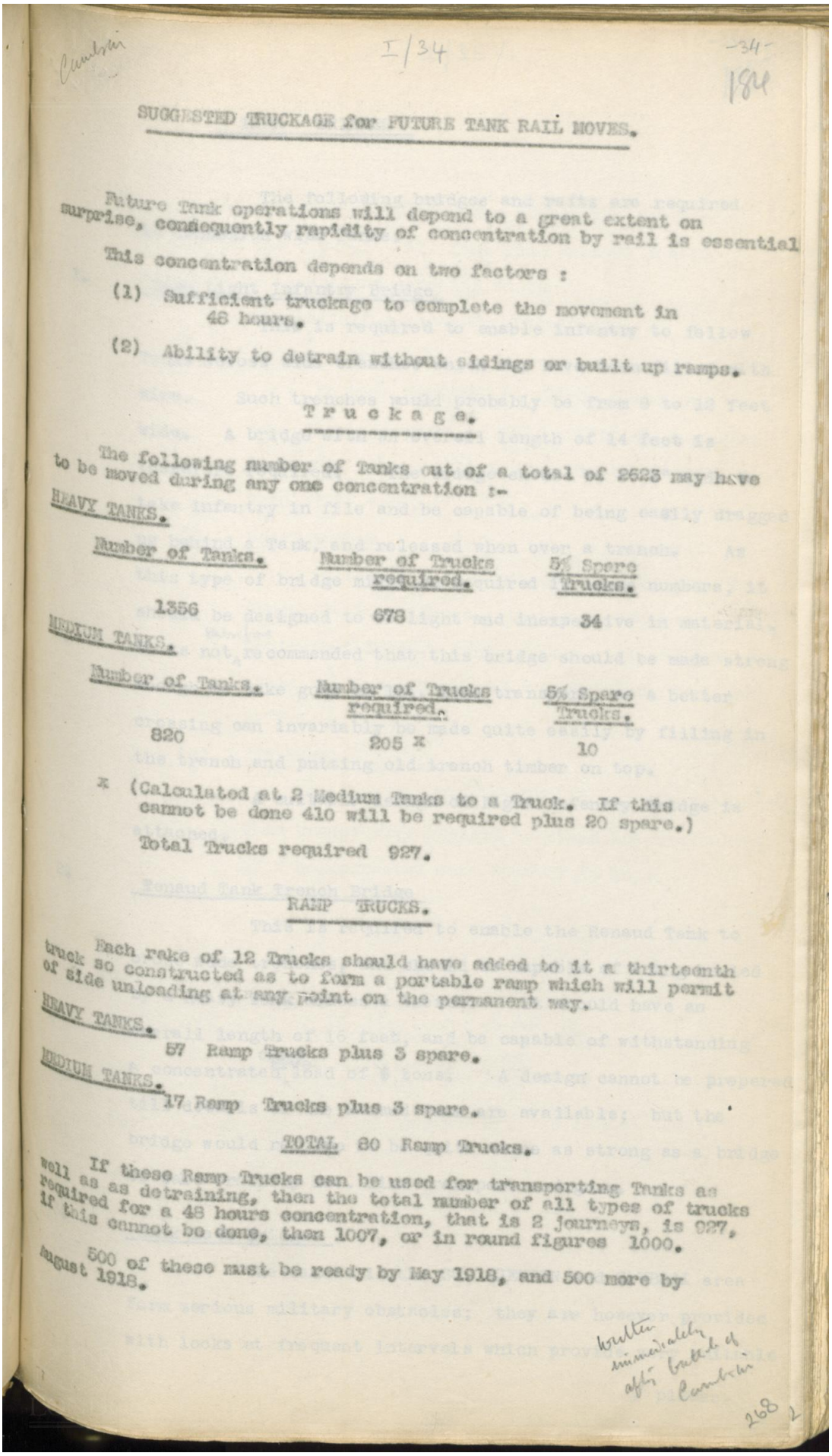

Cambrai

I/34

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SUGGESTED TRUCKAGE for FUTURE TANK RAIL MOVES.

Future Tank operations will depend to a great extent on surprise, consequently rapidity of concentration by rail is essential

This concentration depends on two factors :

(1) Sufficient truckage to complete the movement in 48 hours.

(2) Ability to detrain without sidings or built up ramps.

Truckage.

The following number of Tanks out of a total of 2623 may have to be moved during any one concentration :-

HEAVY TANKS.

Number of Tanks.	Number of Trucks required.	5% Spare Trucks.
1356	678	34

MEDIUM TANKS.

Number of Tanks.	Number of Trucks required.	5% Spare Trucks.
820	205 x	10

x (Calculated at 2 Medium Tanks to a Truck. If this cannot be done 410 will be required plus 20 spare.)

Total Trucks required 927.

RAMP TRUCKS.

Each rake of 12 Trucks should have added to it a thirteenth truck so constructed as to form a portable ramp which will permit of side unloading at any point on the permanent way.

HEAVY TANKS.

57 Ramp Trucks plus 3 spare.

MEDIUM TANKS.

17 Ramp Trucks plus 3 spare.

TOTAL 80 Ramp Trucks.

If these Ramp Trucks can be used for transporting Tanks as well as as detraining, then the total number of all types of trucks required for a 48 hours concentration, that is 2 journeys, is 927, if this cannot be done, then 1007, or in round figures 1000.

500 of these must be ready by May 1918, and 500 more by August 1918.

written immediately after battle of Cambrai

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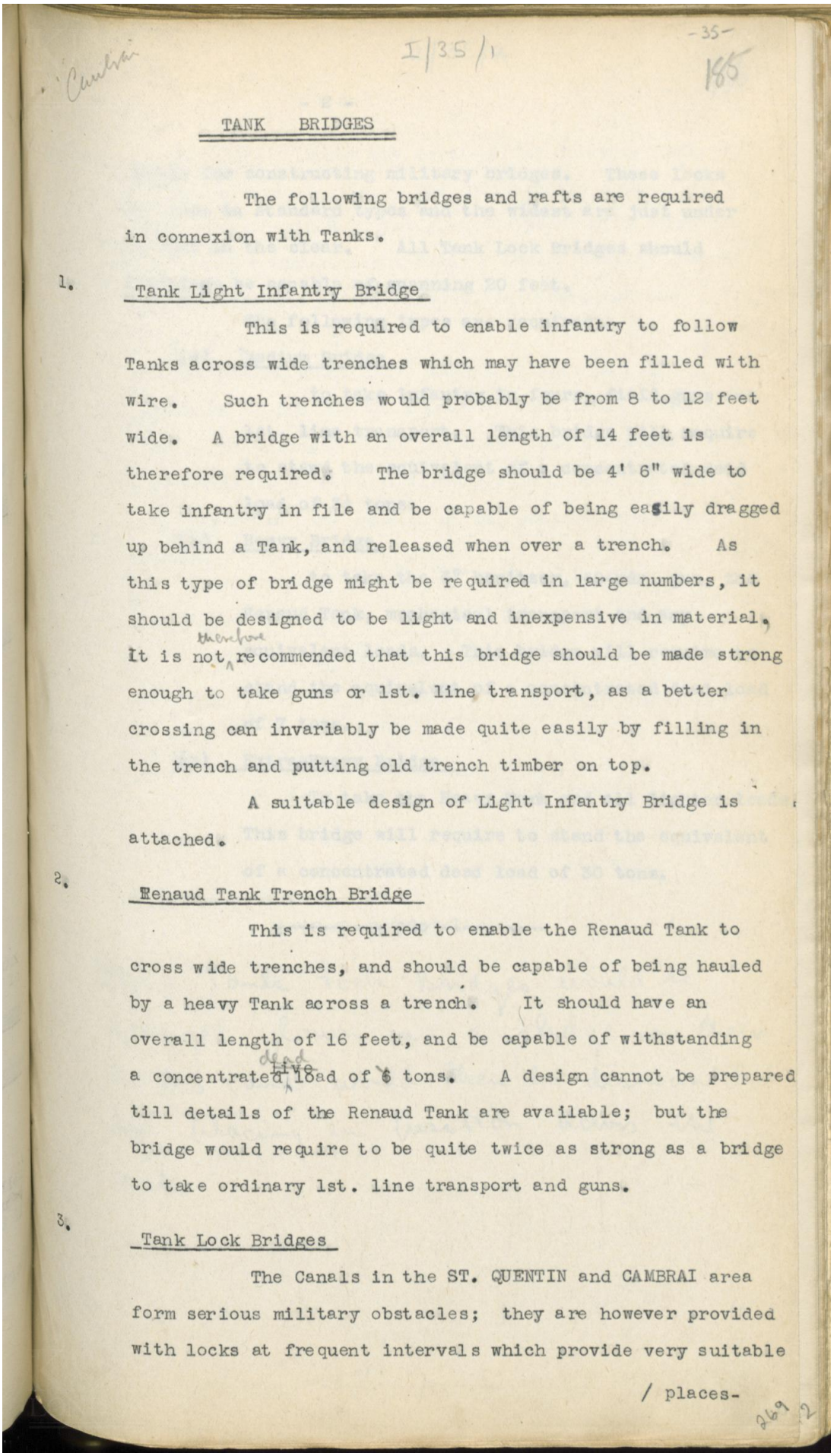

Cavalry

I/35/1

-35-

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TANK BRIDGES

The following bridges and rafts are required in connexion with Tanks.

1. Tank Light Infantry Bridge

This is required to enable infantry to follow Tanks across wide trenches which may have been filled with wire. Such trenches would probably be from 8 to 12 feet wide. A bridge with an overall length of 14 feet is therefore required. The bridge should be 4' 6" wide to take infantry in file and be capable of being easily dragged up behind a Tank, and released when over a trench. As this type of bridge might be required in large numbers, it should be designed to be light and inexpensive in material. It is not therefore recommended that this bridge should be made strong enough to take guns or 1st. line transport, as a better crossing can invariably be made quite easily by filling in the trench and putting old trench timber on top.

A suitable design of Light Infantry Bridge is attached.

2. Renaud Tank Trench Bridge

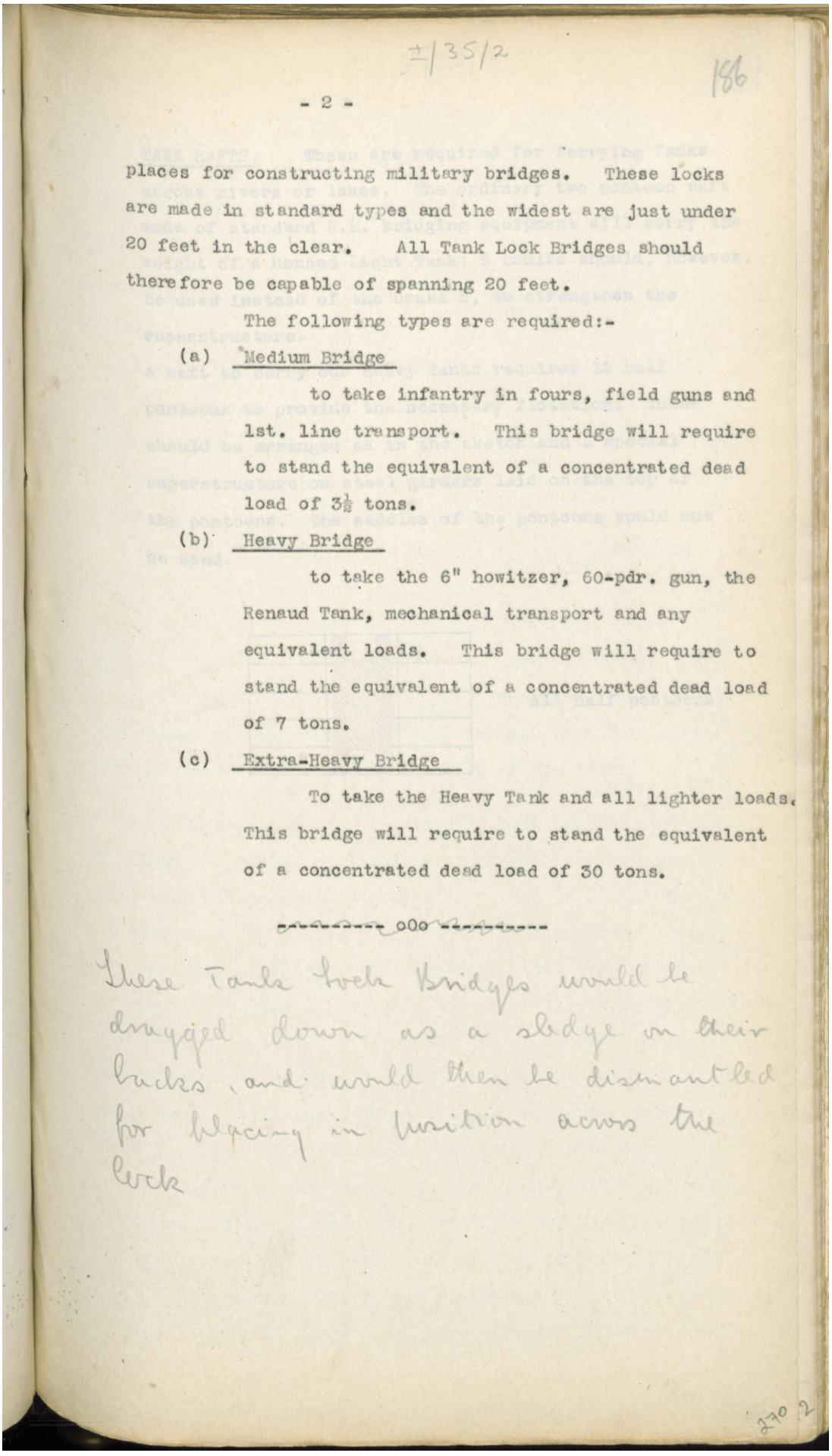
This is required to enable the Renaud Tank to cross wide trenches, and should be capable of being hauled by a heavy Tank across a trench. It should have an overall length of 16 feet, and be capable of withstanding a concentrated dead load of 6 tons. A design cannot be prepared till details of the Renaud Tank are available; but the bridge would require to be quite twice as strong as a bridge to take ordinary 1st. line transport and guns.

3. Tank Lock Bridges

The Canals in the ST. QUENTIN and CAMBRAI area form serious military obstacles; they are however provided with locks at frequent intervals which provide very suitable

/ places-

269 2



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places for constructing military bridges. These locks are made in standard types and the widest are just under 20 feet in the clear. All Tank Lock Bridges should therefore be capable of spanning 20 feet.

The following types are required:-

(a) Medium Bridge

to take infantry in fours, field guns and 1st. line transport. This bridge will require to stand the equivalent of a concentrated dead load of 3½ tons.

(b) Heavy Bridge

to take the 6" howitzer, 60-pdr. gun, the Renaud Tank, mechanical transport and any equivalent loads. This bridge will require to stand the equivalent of a concentrated dead load of 7 tons.

(c) Extra-Heavy Bridge

To take the Heavy Tank and all lighter loads. This bridge will require to stand the equivalent of a concentrated dead load of 30 tons.

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These Tank lock Bridges would be dragged down as a sledge on their backs, and would then be dismantled for placing in position across the lock

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King's College London The Serving Soldier

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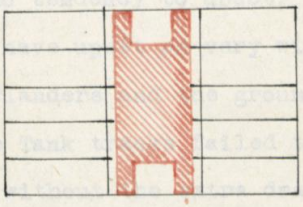
4. TANK RAFTS. These are required for ferrying Tanks across rivers or lakes. The ordinary two pontoon raft made of standard R.E. bridging equipment will carry the weight of a Renaud Light Tank; 9 baulks should, however, be used instead of the usual 5, to strengthen the superstructure.

A raft to carry our Heavy Tanks requires 15 half pontoons to provide the necessary flotation. These should be arranged as in the sketch and a special superstructure on steel girders laid on the top of the pontoons. The saddles of the pontoons would not be used.



All half pontoons.

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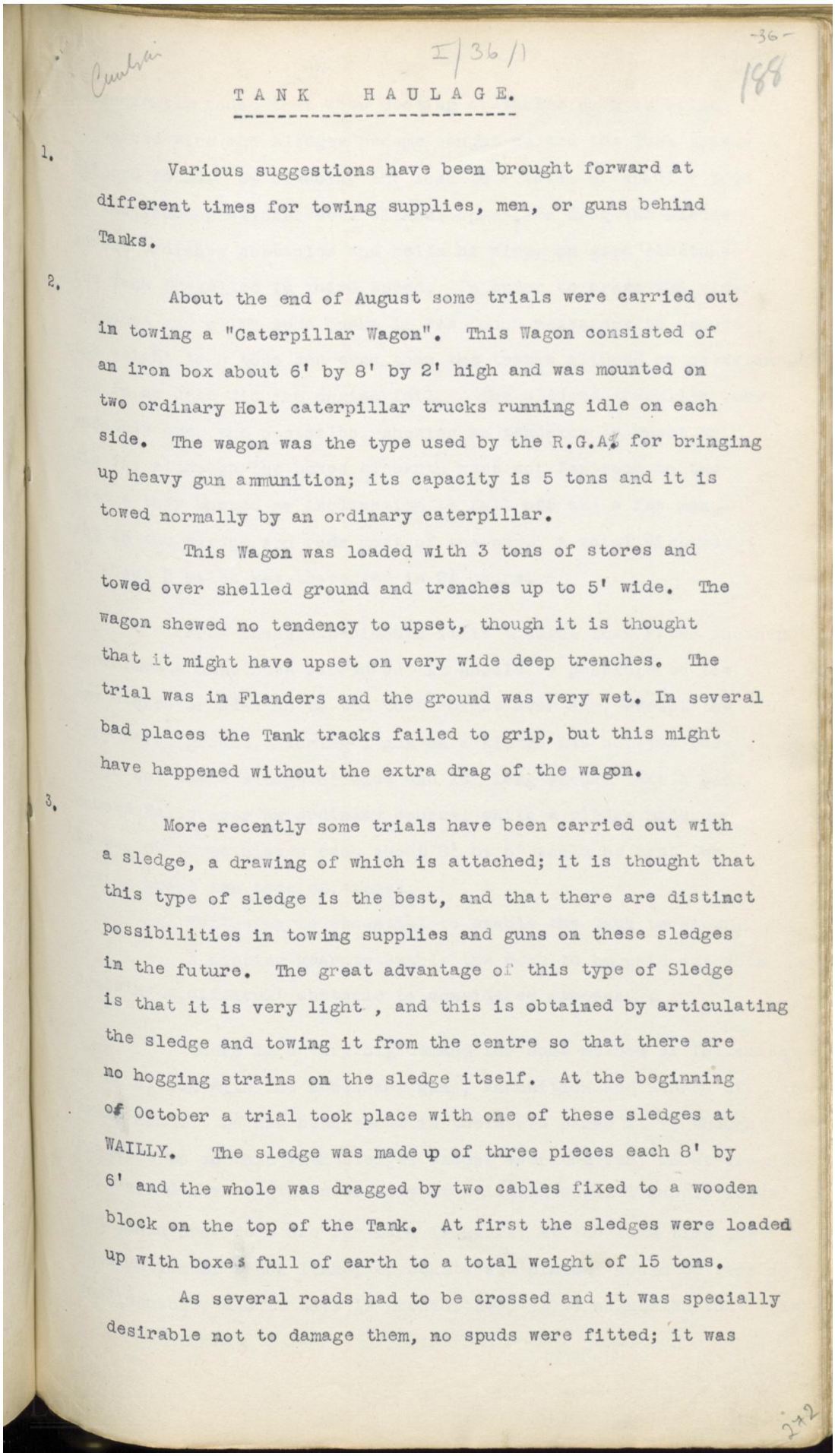

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TANK HAULAGE.

1. Various suggestions have been brought forward at different times for towing supplies, men, or guns behind Tanks.

2. About the end of August some trials were carried out in towing a "Caterpillar Wagon". This Wagon consisted of an iron box about 6' by 8' by 2' high and was mounted on two ordinary Holt caterpillar trucks running idle on each side. The wagon was the type used by the R.G.A. for bringing up heavy gun ammunition; its capacity is 5 tons and it is towed normally by an ordinary caterpillar.

This Wagon was loaded with 3 tons of stores and towed over shelled ground and trenches up to 5' wide. The wagon shewed no tendency to upset, though it is thought that it might have upset on very wide deep trenches. The trial was in Flanders and the ground was very wet. In several bad places the Tank tracks failed to grip, but this might have happened without the extra drag of the wagon.

3. More recently some trials have been carried out with a sledge, a drawing of which is attached; it is thought that this type of sledge is the best, and that there are distinct possibilities in towing supplies and guns on these sledges in the future. The great advantage of this type of Sledge is that it is very light , and this is obtained by articulating the sledge and towing it from the centre so that there are no hogging strains on the sledge itself. At the beginning of October a trial took place with one of these sledges at WAILLY. The sledge was made up of three pieces each 8' by 6' and the whole was dragged by two cables fixed to a wooden block on the top of the Tank. At first the sledges were loaded up with boxes full of earth to a total weight of 15 tons.

As several roads had to be crossed and it was specially desirable not to damage them, no spuds were fitted; it was

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consequently found that when meeting obstacles such as belts of barbed wire the sledges became caught up and the Tank tracks slipped round. By reducing the load to a total of about 7 tons it was found possible, even without spuds, to drag the sledge across ordinary obstacles and belts of wire; on good stretches the Tank travelled in third speed. In order to cross the wider trenches and climb some banks it was found necessary to reduce the weight to 5 tons and even then the tracks slipped on occasions, but in no case did the engine fail. The sledges travelled very smoothly over the obstacles, showing no tendency to upset or dig in; although the boxes of earth were not fastened to the sledge they showed no inclination to fall off, and a few men sat on the sledge and rode most of the way. A total distance of about 5 miles was traversed in 2½ hours.

4. From these experiments it is thought that after further experiments have been carried out it should be possible to tow any stores or guns up to ten tons weight over any, except the very worst ground. Towing a gun on a sledge has not yet been tried but ~~the~~ a sledge 8' wide and 14' long should take a gun successfully over an ordinary course; while a sledge made up in two or three pieces each about 8' by 6' would be best for towing about ten tons of stores.

Toptowing is essential to enable the Tank to steer.

A nipping gear to enable the rope to be paid out when crossing a difficult obstacle is considered necessary.

5. There is a very big demand for some method of following up an attack with the necessary guns, ammunition and stores of every kind. As has been shewn in the above paras it is thought possible to do this with sledges except over the very worst ground; this would obviate the necessity of building special Supply Tanks and would provide a use for Mark IV Tanks. At the same time the consumption of track links, sprockets and pinions would be very considerable, and if this is prohibitive, it is suggested that this

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problem of transportation behind a battle could be solved by using Tanks placed some 500 yards apart and hauling sledges from one to the other, using some type of commercial steam plough winding gear on top of the Tank for hauling the sledges by means of wire ropes. As the tank would be stationary there would be no wear on the transmission of the Tank.

If a certain number of Mark IV Tanks were fitted up with this apparatus they could follow up an attack, and could be transporting every type of supply, within half an hour of the capture of the objective. During day-light the Tanks could not work in view of the enemy, but could move guns and their ammunition to their forward positions, by night they could extend and haul up Infantry supplies and even men to any desired point.

It is suggested that it is worth while approaching some well known manufacturer of steam ploughing gear and obtaining his advice as to the best type of gear and the most suitable method of fixing it to a Tank, and experimenting with such Tanks. The views of Capt. Allen (2nd Brigade Workshop Officer) on this device are attached.

Great difficulty has been experienced each year with transortation in the forward area during the Autumn in the zone of operations;,it is during this period that the enemy's morale is lowest, and if this difficulty could be solved, considerable military success might be achieved.

In the present operations this difficulty of transportation has become very pronounced . The battle has largely become a problem, not of combat, but of transportation. We possess no Tank which could carry supplies over the ground in its present state, but if we possessed the suitable gear for winding in sledges with wire rope, we could undoubtedly get Tanks to their stations about 500 yards apart and by towing up guns and ammunition we would very materially assist the operations. There is no reason to suppose that we shall not

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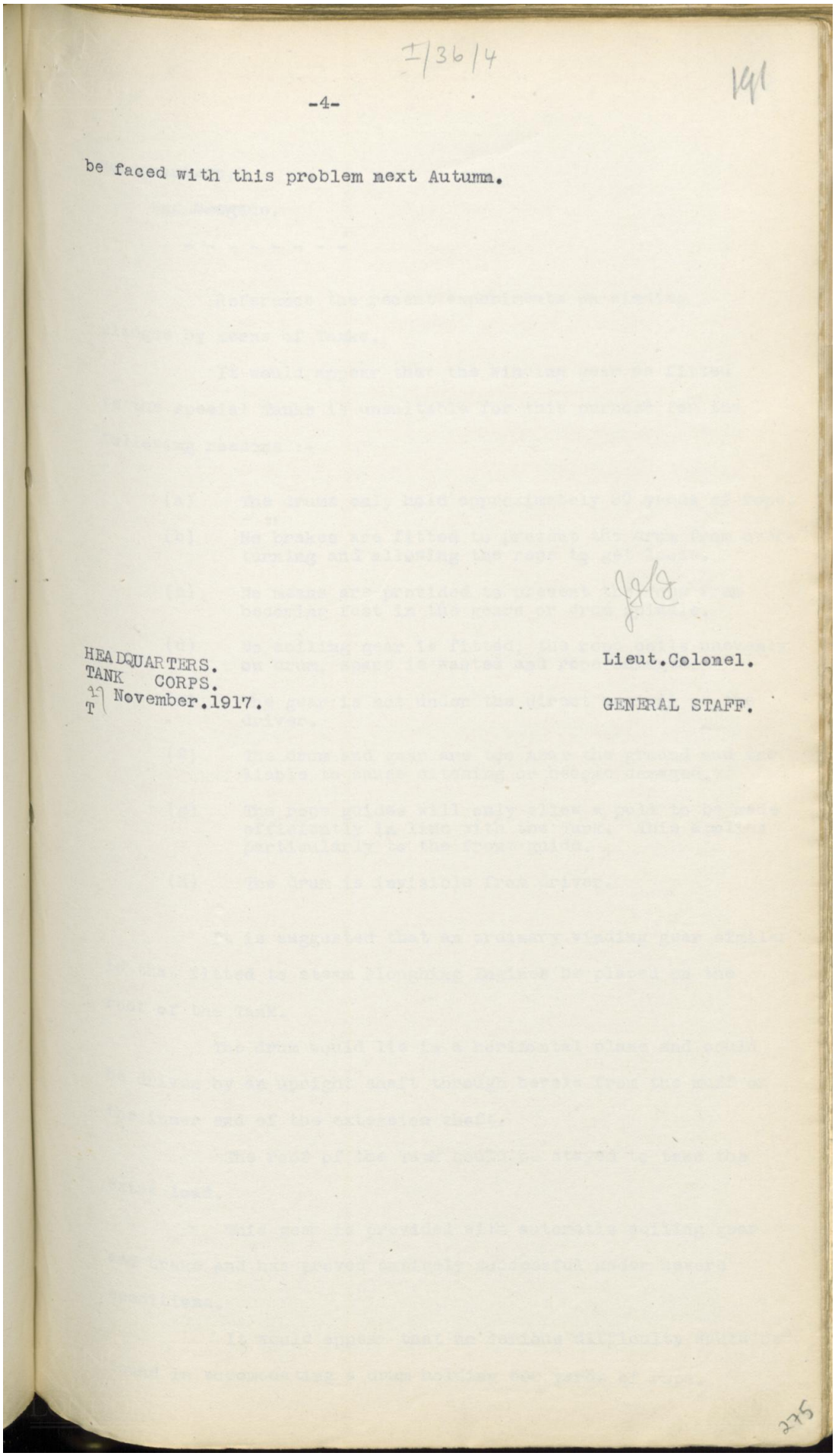

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be faced with this problem next Autumn.

HEADQUARTERS.
TANK CORPS.
T 19 November.1917.

Lieut.Colonel.

GENERAL STAFF.

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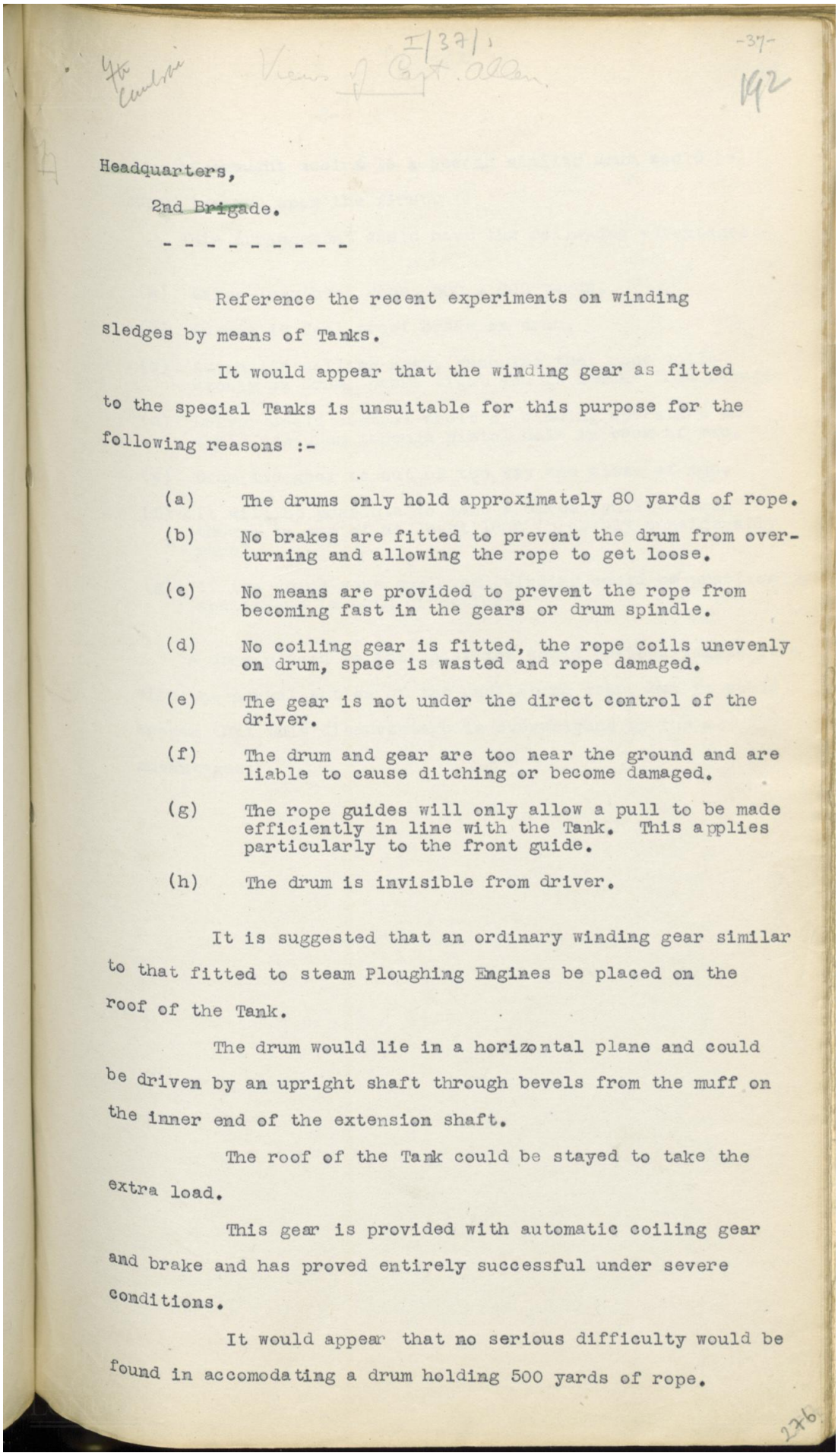

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Headquarters,

2nd Brigade.

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Reference the recent experiments on winding sledges by means of Tanks.

It would appear that the winding gear as fitted to the special Tanks is unsuitable for this purpose for the following reasons :-

(a) The drums only hold approximately 80 yards of rope.

(b) No brakes are fitted to prevent the drum from over-turning and allowing the rope to get loose.

(c) No means are provided to prevent the rope from becoming fast in the gears or drum spindle.

(d) No coiling gear is fitted, the rope coils unevenly on drum, space is wasted and rope damaged.

(e) The gear is not under the direct control of the driver.

(f) The drum and gear are too near the ground and are liable to cause ditching or become damaged.

(g) The rope guides will only allow a pull to be made efficiently in line with the Tank. This applies particularly to the front guide.

(h) The drum is invisible from driver.

It is suggested that an ordinary winding gear similar to that fitted to steam Ploughing Engines be placed on the roof of the Tank.

The drum would lie in a horizontal plane and could be driven by an upright shaft through bevels from the muff on the inner end of the extension shaft.

The roof of the Tank could be stayed to take the extra load.

This gear is provided with automatic coiling gear and brake and has proved entirely successful under severe conditions.

It would appear that no serious difficulty would be found in accomodating a drum holding 500 yards of rope.

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If thought desirable a second similar drum could be super imposed upon the first.

This arrangement would have the following advantages:-

(a) Large length of rope, 500 - 800 yards.

(b) Automatic fool proof brake on drum.

(c) Automatic coiling gear, ensuring that rope coils evenly on drum, packs tight and is immune from damage.

(d) Driver could control whole of winding operation and could see drum through pistol hole in back of cab.

(e) Drum and gear is out of the way and clear of mud.

(f) It will be possible to make a direct pull to drum through an arc of at least 180°. (probably considerably more).

(g) If two drums were employed, winding could be practically continuous in both directions.

A drum placed in this position would obviously interfere with the normal action of the unditching gear, but it would appear that this disadvantage is overweighed by the advantages.

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COLOURED LIGHT SHELLS.

Attached is a copy of a letter forwarded to Headquarters TANK CORPS, LONDON with reference to the use of Coloured Light Shells.

On the 28th January 1918 a copy of the attached letter was forwarded to G.H.Q. asking whether assistance could be given in this matter.

On the 31st January 1918 the above letter was answered under O.B. 416/3 of 29/1/18 directing that all applications for stores and equipment must be submitted to G.H.Q. and not direct to Headquarters, Tank Corps LONDON.

On the 8th February 1918 under G.H.Q. O.B./416/T.J.III we were informed that Star Shells for 6" Guns or Howitzers would shortly be available in France for trial.

Since February 1918 various telephone conversations have taken place on this matter but no shells have yet materialized as far as is known.

J.F.C.

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