ILLUSTRATIONS
TO
ACCOMPANY
NOTES ON THE INTERPRETATION
OF AEROPLANE PHOTOGRAPHS

SERIES A

GENERAL STAFF

OVERSIZE
940
.44
N911
SUPPL. 1
c.1

Ia/12828.

ILLUSTRATIONS TO ACCOMPANY

NOTES ON THE INTERPRETATION OF AEROPLANE PHOTOGRAPHS.

Series A.

Issued by the General Staff.

A.P. & S.S.

OVERSIZE
940.44
N911
Suppl.1
c.1

ILLUSTRATIONS TO ACCOMPANY NOTES ON THE INTERPRETATION OF AEROPLANE PHOTOGRAPHS.

SERIES A.

LIST OF PLATES.

(NOTE. The title of each plate refers only to the particular feature which it is desired to illustrate. Many similar features occur on other plates, but have not necessarily been annotated on the diagrams.)

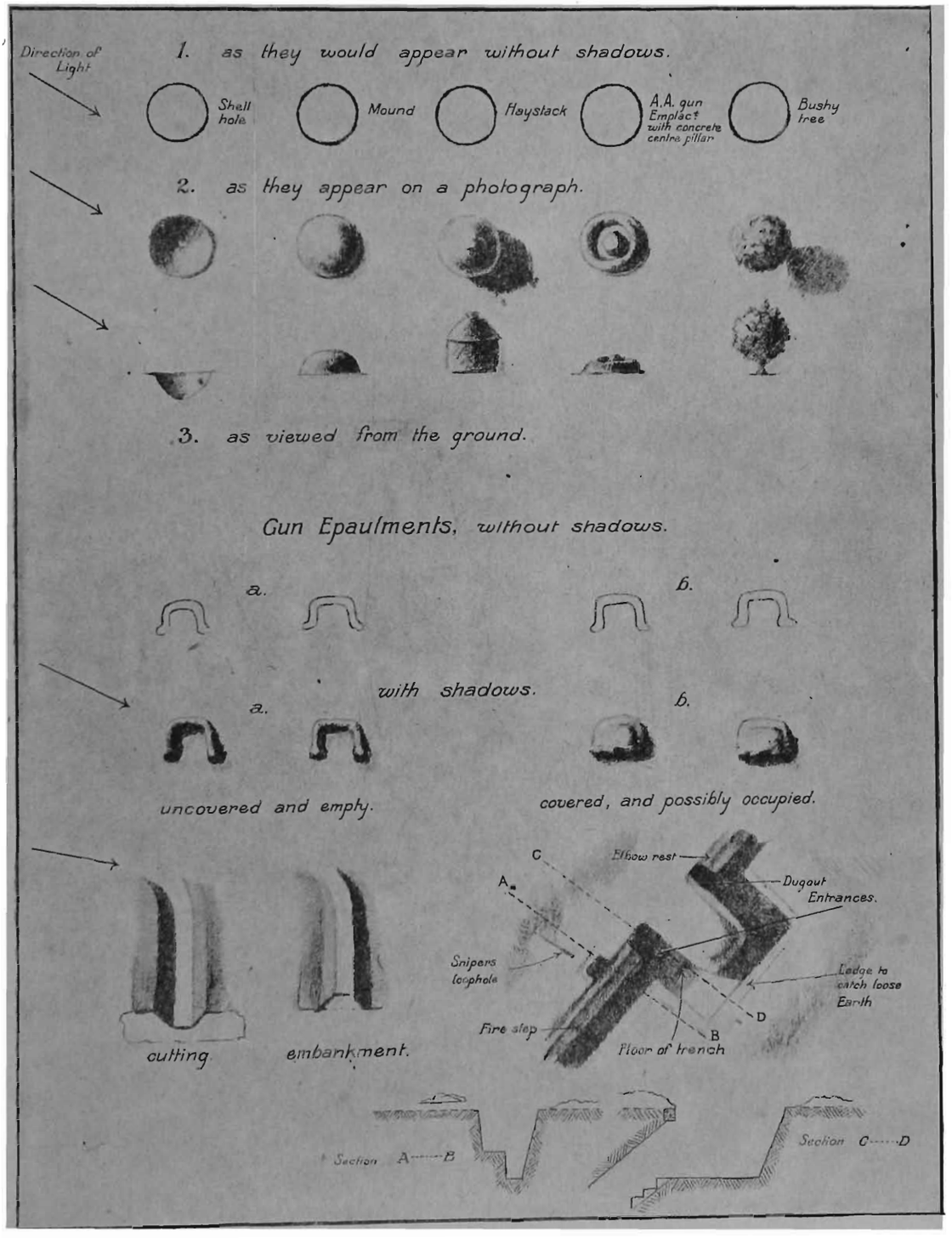
	Plate	
	1	Conventional signs for use on aeroplane photographs.
	2	Shadow diagrams.
	3	Shadow diagrams.
	4	Good photographs for beginners.
	5	Photographs correctly and incorrectly marked.
	6	New photograph showing alteration in detail of an old cadastral plan.
	7	Method of transferring detail rapidly and accurately from a photograph to a map.
	8	Model of a typical trench mortar emplacement.
	9	Machine gun emplacements.
	10	Machine gun emplacements.
	11	Trench mortar emplacements.
	12	Oblique photographs showing machine gun and trench mortar emplacements.
Normal Types of Battery Emplacement.	13	Battery in houses.
		Batteries in a wood.
	14	Battery in open country.
		Battery in cottage ruins.
	15	Howitzer pits in an orchard.
		Trench emplacements.
	16	Trench emplacement. Battery dug into a road bank.
		Guns firing under camouflage.
	17	Dummy emplacement.
		Anti-aircraft emplacement.
	18	Dummy emplacements.
Abnormal Types of Battery Emplacement.	19	Howitzer battery dug in.
		Emplacement tunnelled under a railway embankment.
		"A pieces."
	20	Heavy gun position.
	21	"Aeroplane" emplacements.
		Heavy howitzer pits.
		Emplacement under construction.
	22	Guns firing.
		Blast marks in snow.
	23	Normal gauge railway.
		Light railway.
	24	Trench tramway.
		0·60 m. light railway. Tracks.
	25	Buried cables.
	26	Air lines.
	27	Dug-outs.
	28	Mine shafts.
	29	Fortified craters.
		Typical strong point.
	30	Breastworks.
		Advanced listening posts. Tracks.
	31	Observation posts.
	32	Preparation against attack.
	33	Indications of a raid or an attack.
Trench Construction during a Battle.	34	Bombing. Blocks.
	35	Linking up shell holes.
	36	Trench before and after capture.
	37	Advanced post. Tracks.
	38	Tracks.
	39	Tank traps.
	40	Typical close country.
	41	Tracks.
		Important supply centre.
	42	Supply centre.
		Hostile aerodrome.
	43	Bombing raids.
	44	Oblique and vertical photographs of the same area.
	45	Stereoscopic viewer.
	46	Stereoscopic slides.

CONVENTIONAL SIGNS FOR USE ON AEROPLANE PHOTOS.

Meaning.	Sign.	Instructions.
Machine Gun	M.G.	
Trench Mortar	⊙	
Dugout	▭	
Observation Post	O.P.	
Wire Entanglements	× ×	Crosses widely spaced shown in front of line of wire
Gap or path in wire	⌒	A thin line drawn parallel to actual track.
Dump	△	
Battery	⊢	Drawn in front of and parallel to position.
Battery A.A	⊘	
Listening Post.	L.P.	
Buried Cable	—·—	Drawn at intervals alongside the line, just clear of it.
Overhead Cable	—•—•—	
Tramway	—+—+—	
Probable Tank Traps	◇	
New Work	NEW	

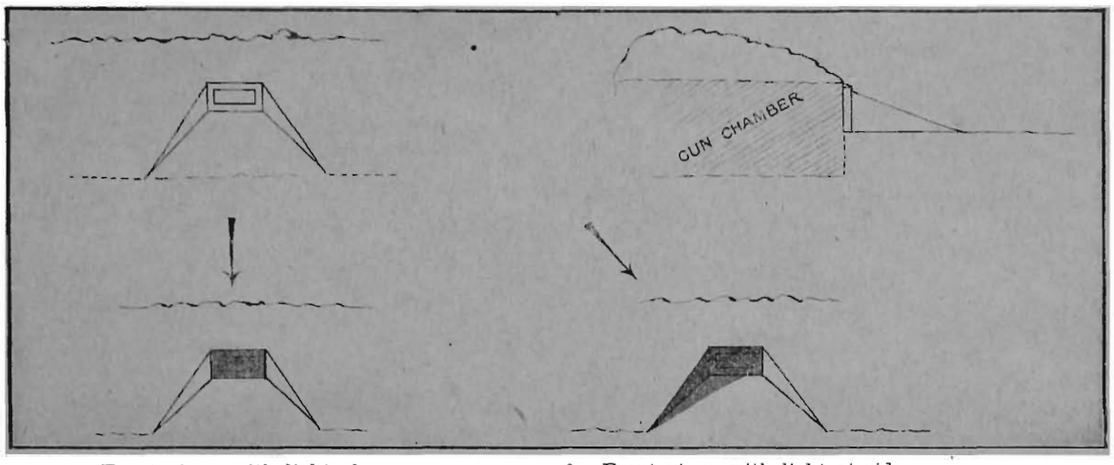
NOTE - The sign to be written clear of the object on the photo, with a detached arrow pointing to it, (when necessary.)

DIAGRAM ILLUSTRATING THE RECONSTRUCTION, FROM THEIR SHADOWS, OF FIVE CIRCULAR OBJECTS SEEN VERTICALLY FROM ABOVE.



MACHINE GUN EMPLACEMENT.

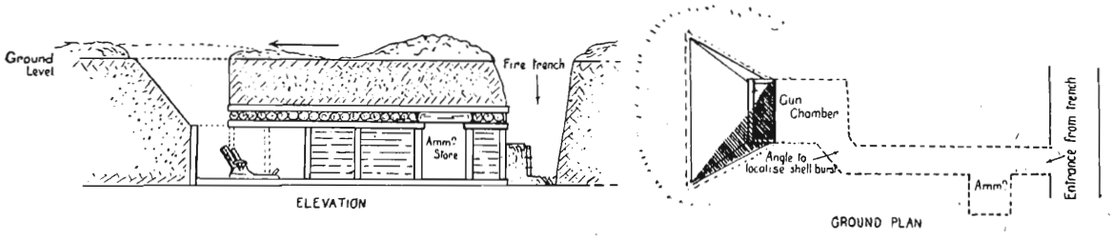
1. Front and side view, without shadows.



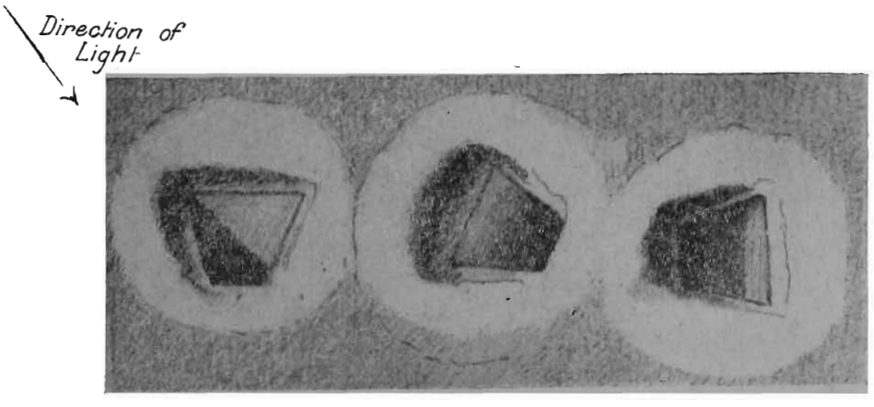
2. Front view, with light above.

3. Front view, with light at side.

DIAGRAM SHOWING PLAN OF CONSTRUCTION, HEAD COVER AND METHOD OF STORING AMMUNITION, FROM CAPTURED EMPLACEMENTS NEAR FRICOURT.



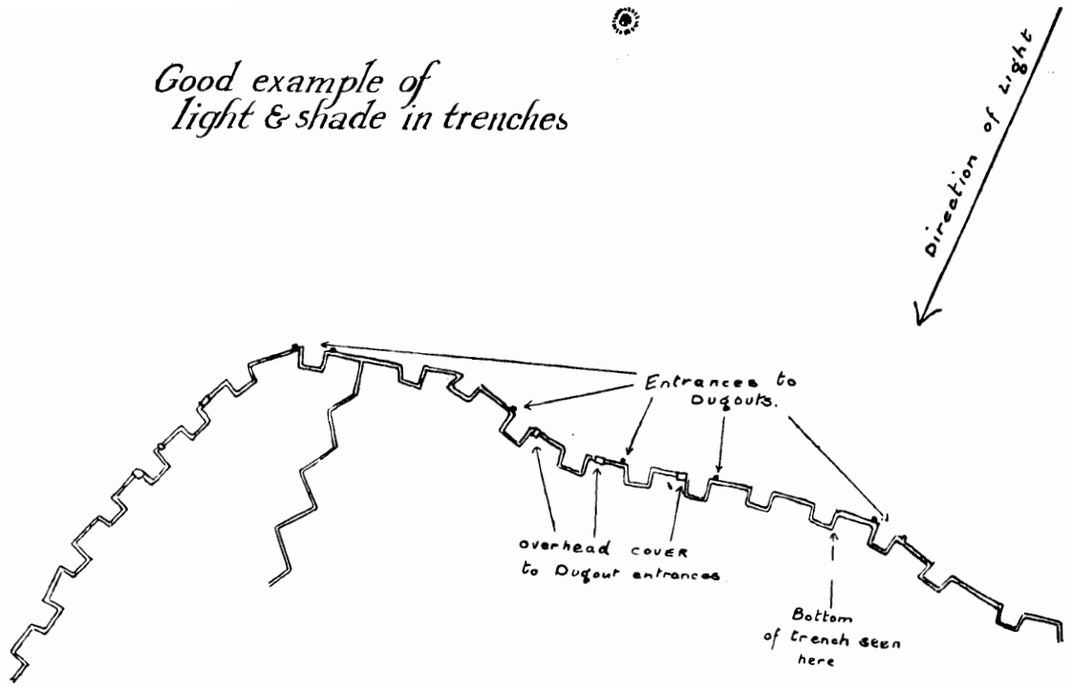
TRENCH MORTAR EMPLACEMENTS, SHOWING DIFFERENCE IN APPEARANCE ACCORDING TO DIRECTION OF LIGHT.

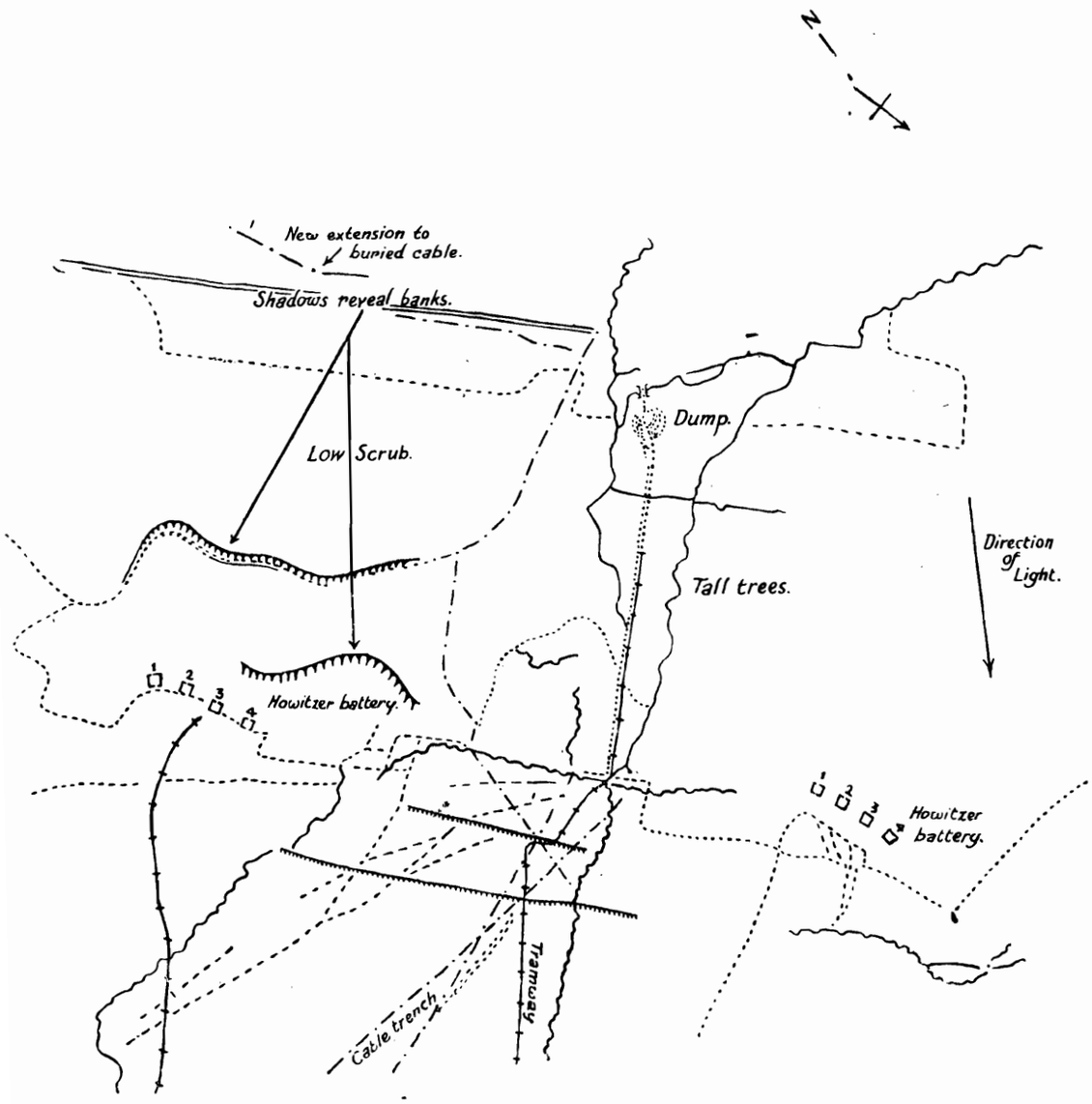


GOOD PHOTOGRAPHS FOR BEGINNERS.

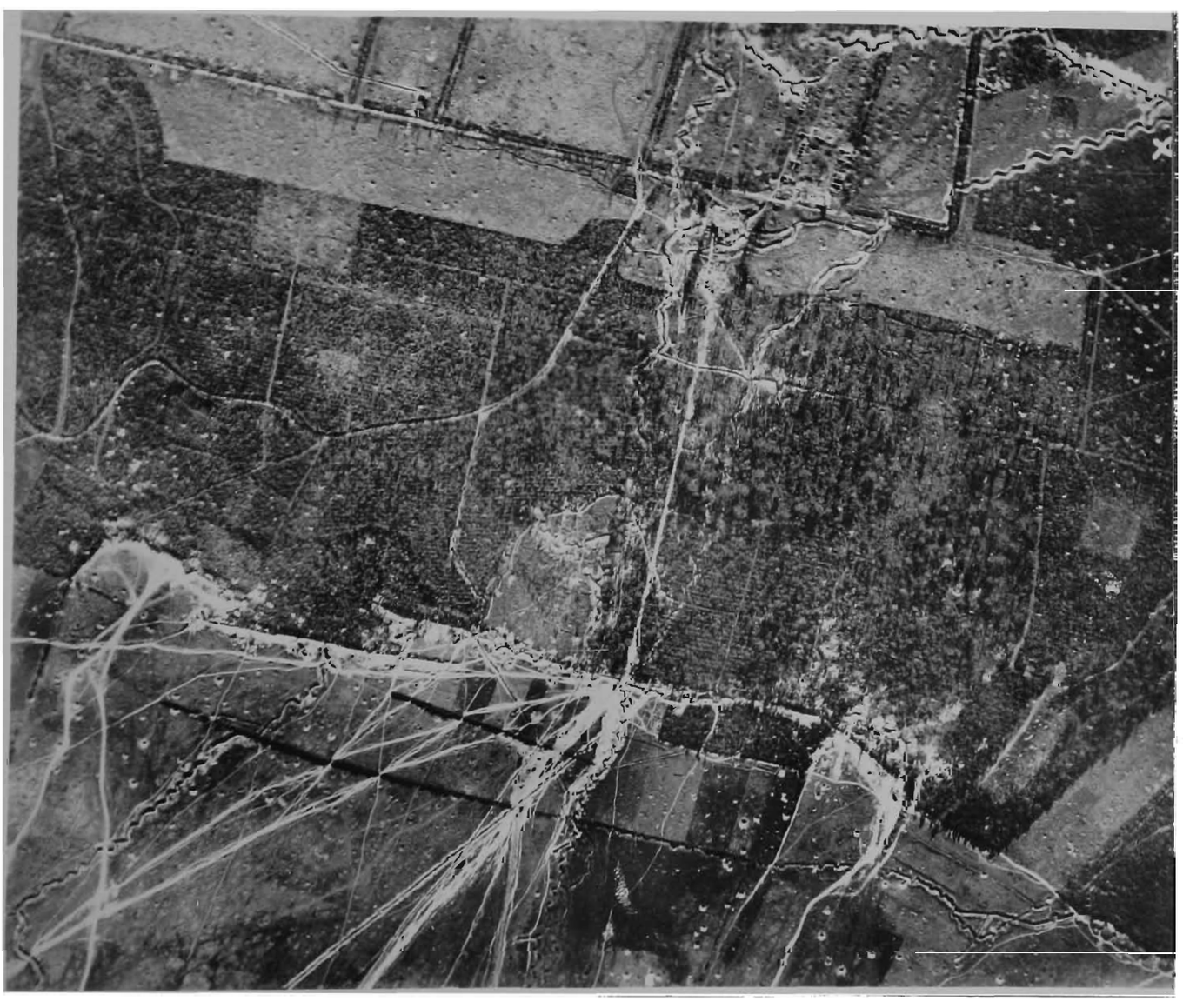
AREA :—River Ancre to River Somme.
La Bassée Canal to River Scarpe.

Good example of light & shade in trenches



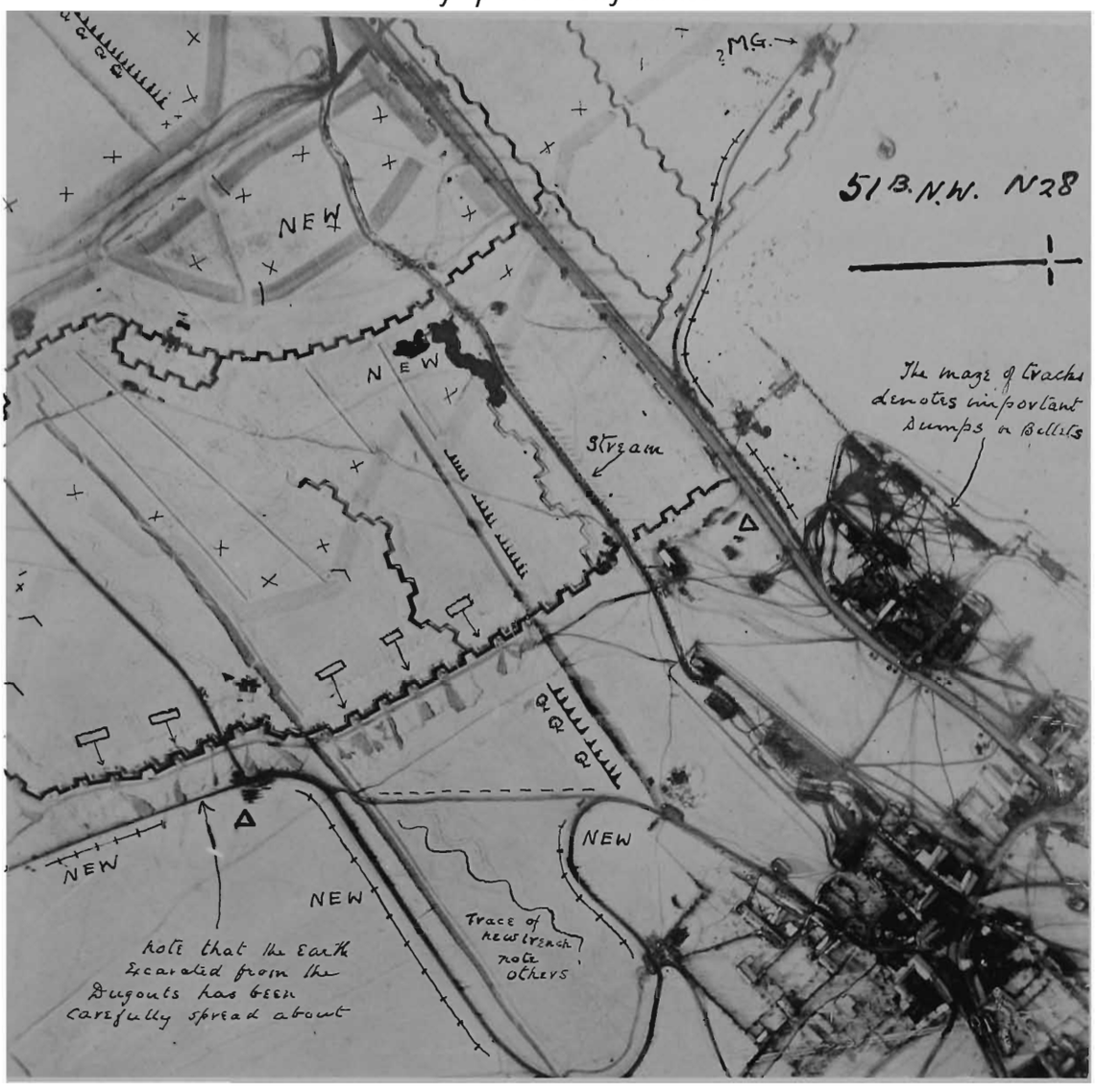



Direction of Light
Entrances to Dugouts

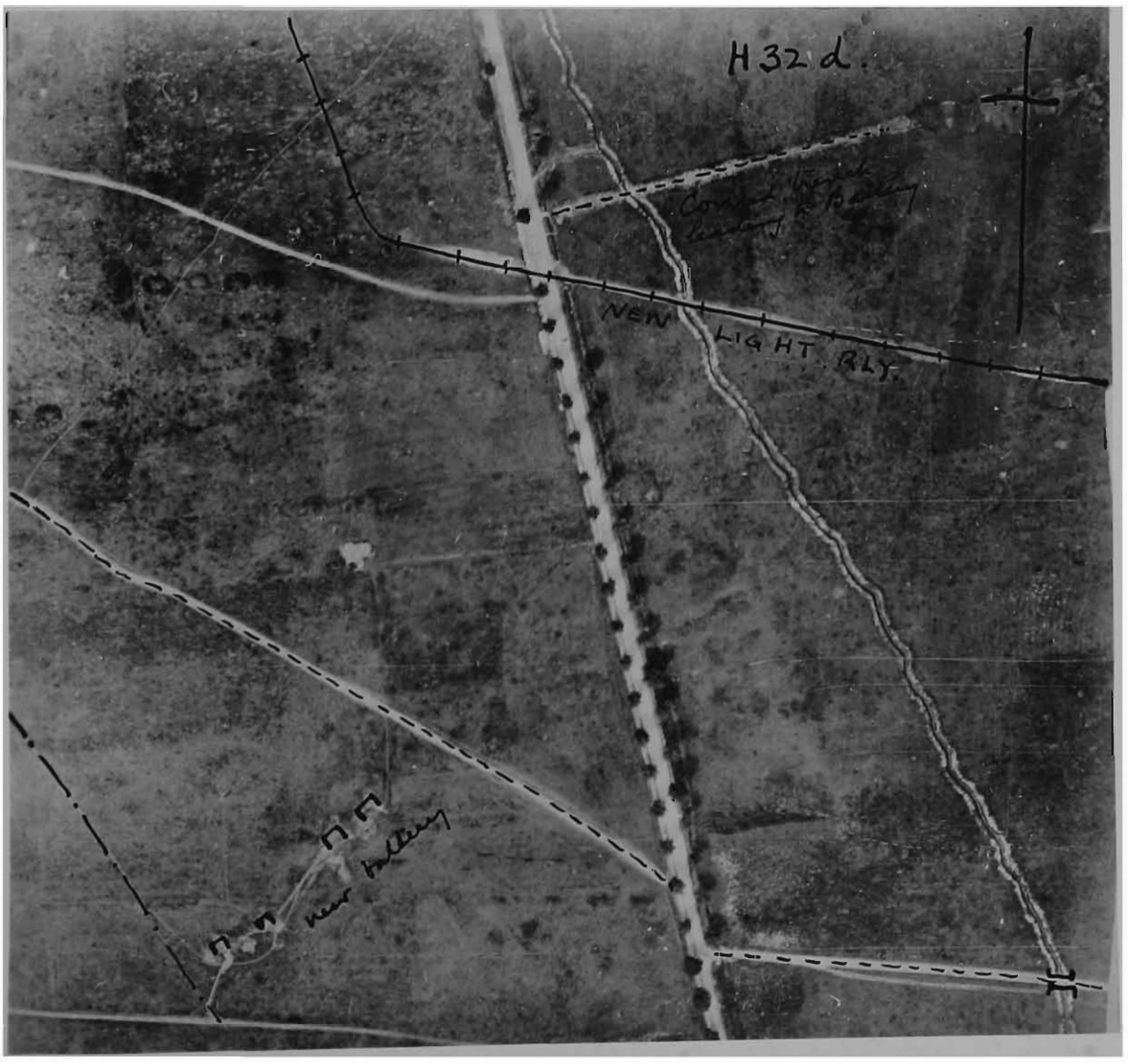


PHOTOGRAPHS CORRECTLY AND INCORRECTLY MARKED.

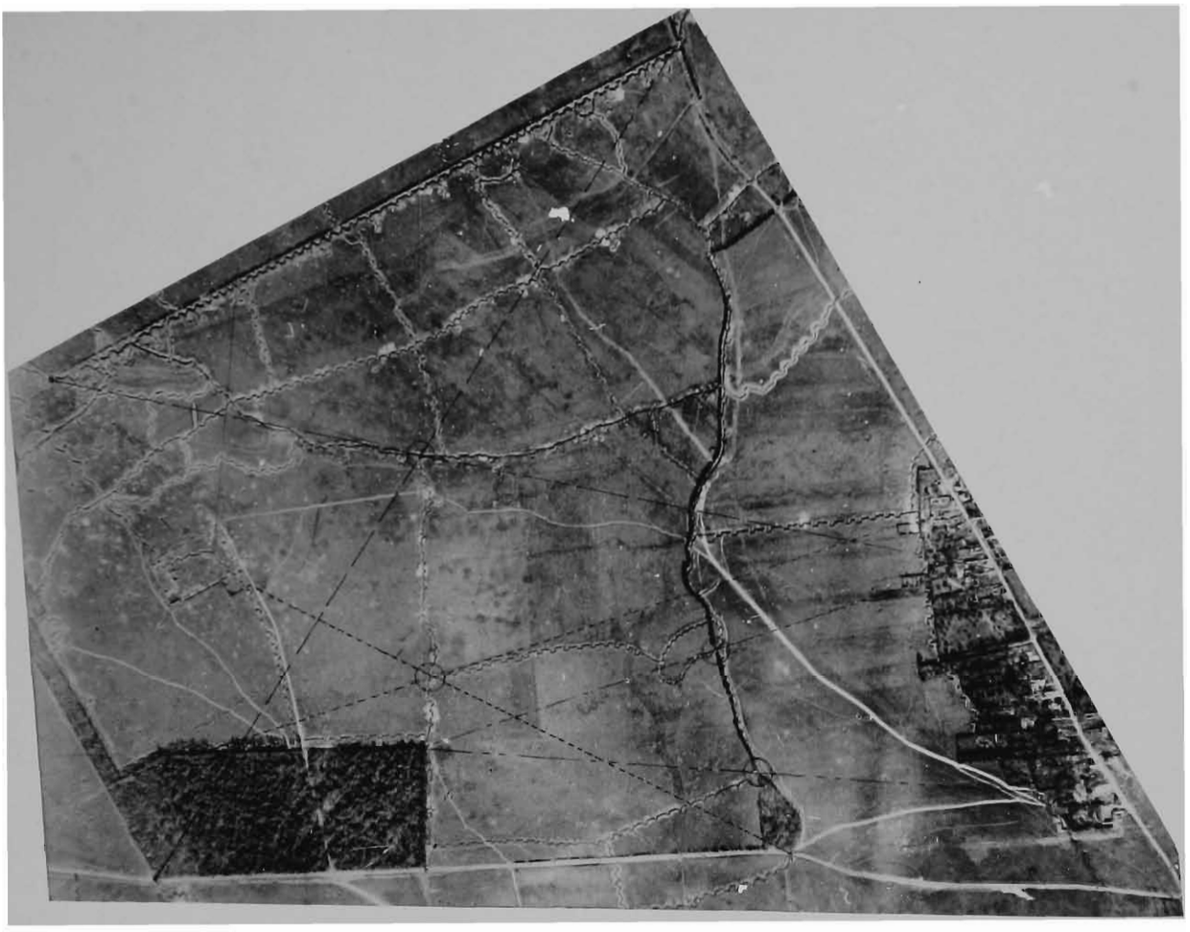
Photograph correctly marked.

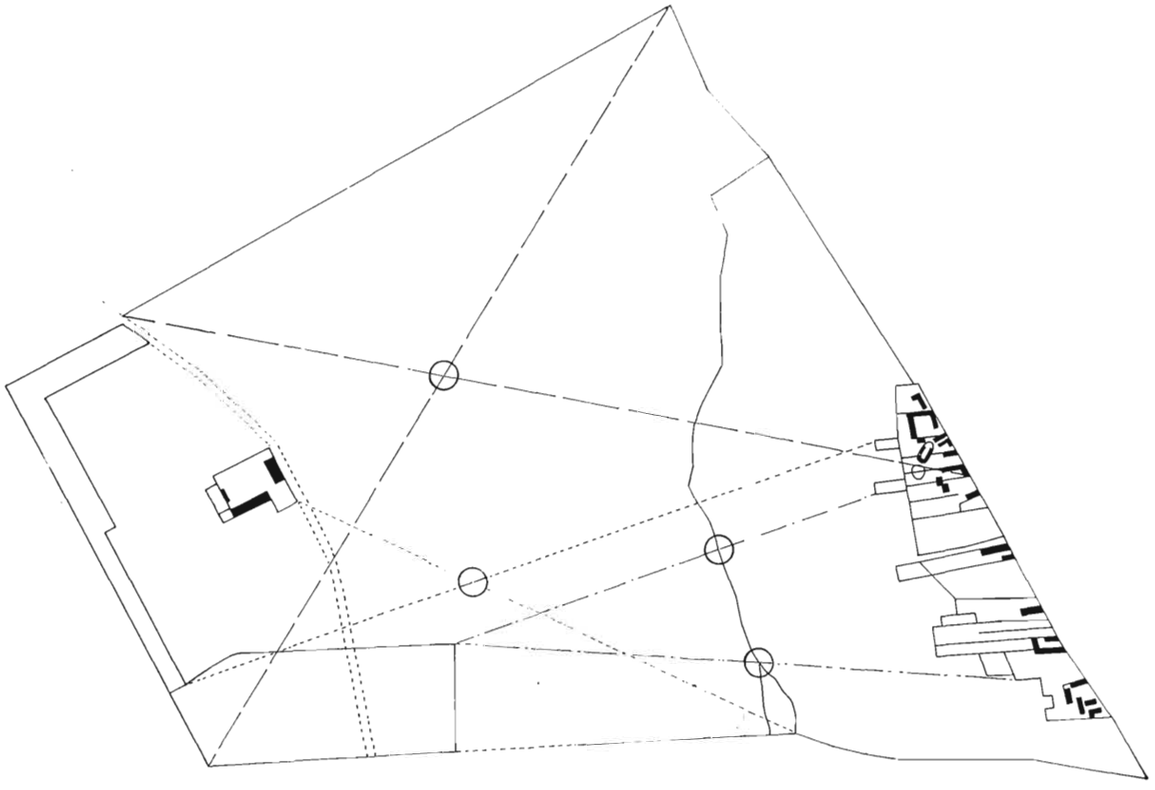


Photograph incorrectly marked.



METHOD OF TRANSFERRING DETAIL RAPIDLY AND ACCURATELY FROM A PHOTOGRAPH TO A MAP.





METHOD OF TRANSFERRING DETAIL RAPIDLY
AND ACCURATELY FROM A PHOTOGRAPH TO A MAP.

On the photograph, select four points easily identified on the map, which are so situated that the lines joining them intersect on or close to the particular detail which it is desired to fix.

On the map, draw lines joining the corresponding points; the intersection of these lines will give the true position of the particular detail in question.

The remainder of the detail can be quickly drawn in with the aid of proportional compasses.

It will be seen from the illustration that three trench junctions and the corner of the small wood have been determined by this method.

MODEL OF A TYPICAL TRENCH
MORTAR EMPLACEMENT.

MODEL OF A TYPICAL TRENCH MORTAR EMPLACEMENT.

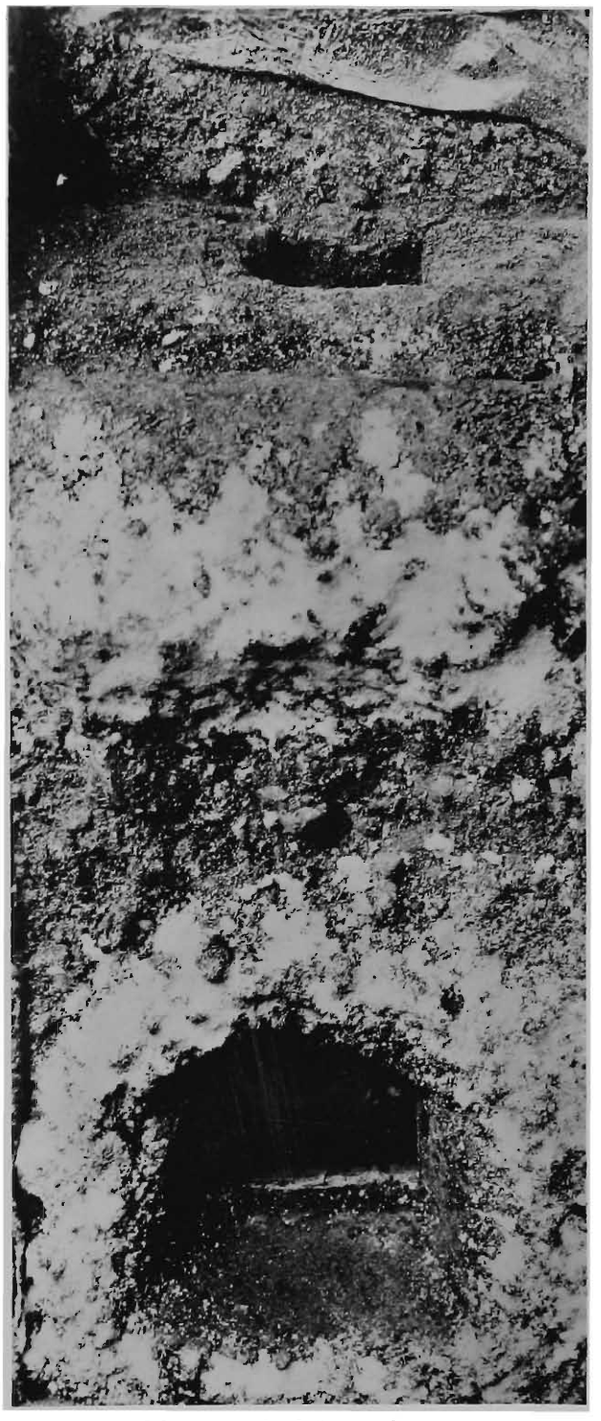
The model was made before the salvage parties had removed the trench mortar and ammunition.

Time taken about 30 minutes.

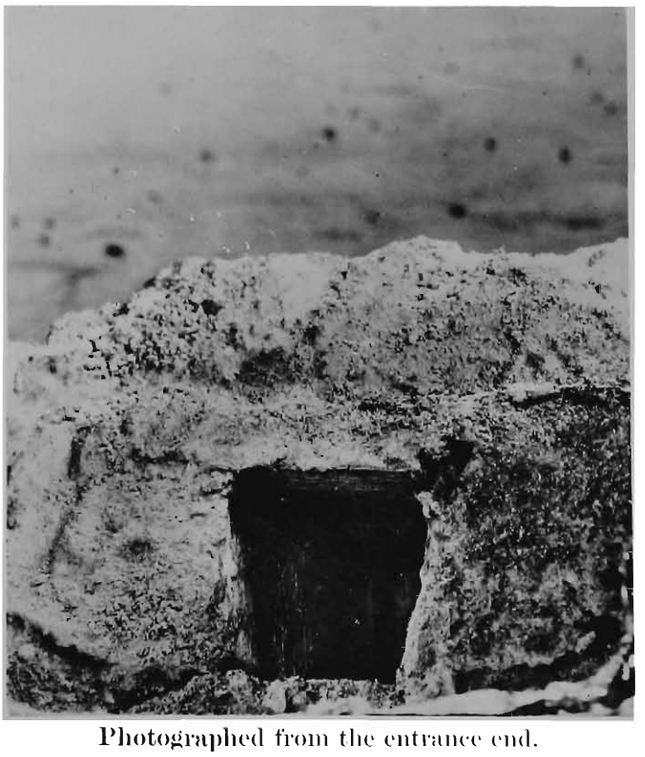
Materials an old cigarette tin, a wooden match box and a few handfuls of cement.

The model was dusted with table salt before being photographed, in order to give the appearance of earth as shown on a photograph.

Copies and a description of the photograph were immediately sent to Corps, to compare with emplacements of similar appearance opposite their front.



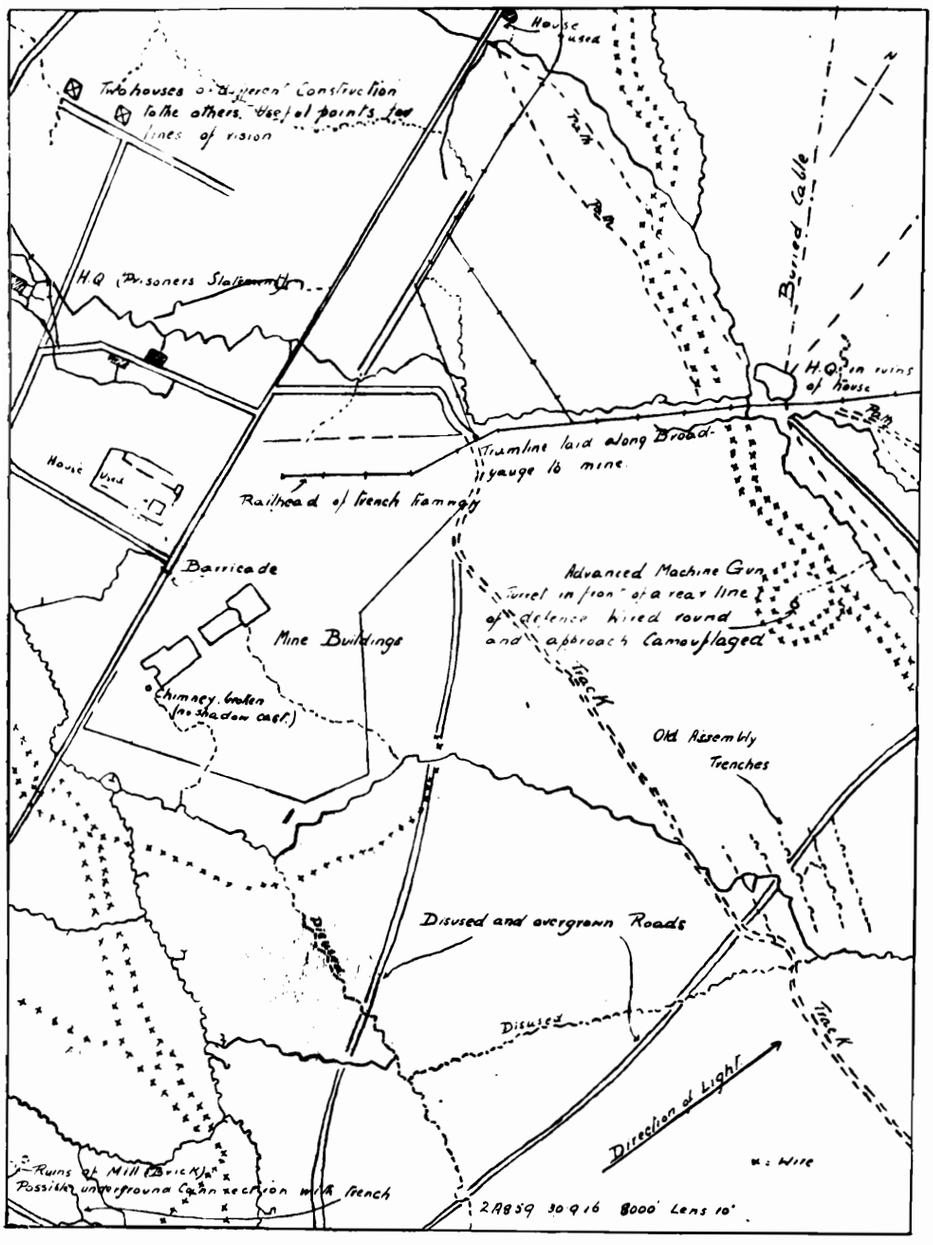
Photographed from above.



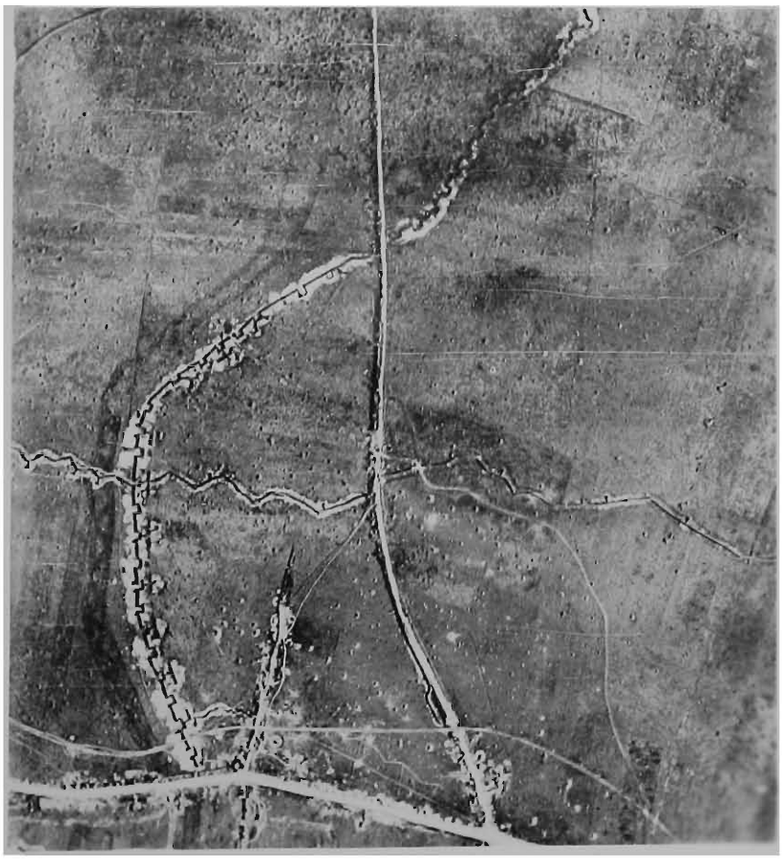
Photographed from the entrance end.

MACHINE GUN EMPLACEMENTS.

AREA :—La Bassée Canal to River Scarpe.

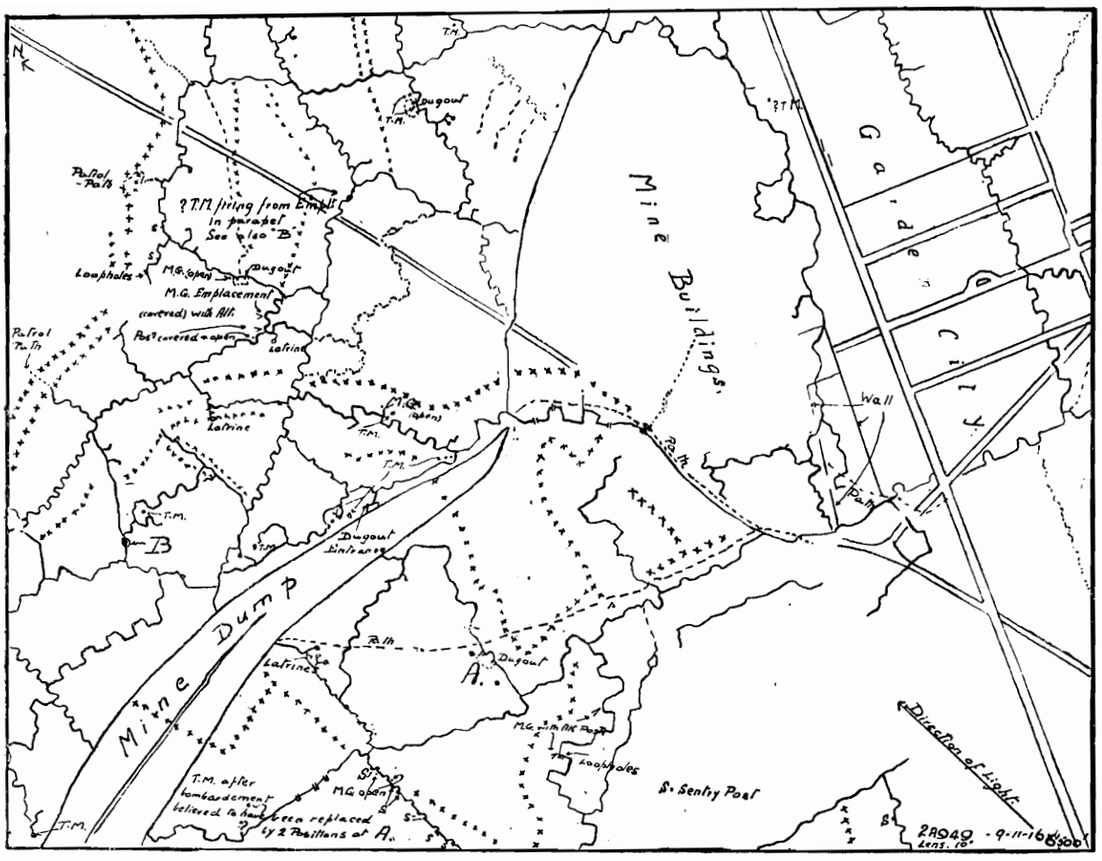

House used
Two houses of different Construction to the others. Use of points for lines of vision
H.Q. (Prisoners Stockade)
House used
Railhead of French tramway
Tramline laid along Broad-gauge 18 mine
Barricade
Mine Buildings
Chimney broken (no shadow cast)
Advanced Machine Gun Turret in front of a rear line of defence hired round and approach Camouflaged
Track
Old Assembly Trenches
Disused and overgrown Roads
Disused
Disused
Track
Direction of Light
Ruins of Mill (Brick)
Possible underground Cabin section with French
W = Wire
2.A.8.59 30.9.16 8000' Lens 10'
Buried Cable
H.Q. in ruins of house
Direction of Light
Concrete M.G.E.





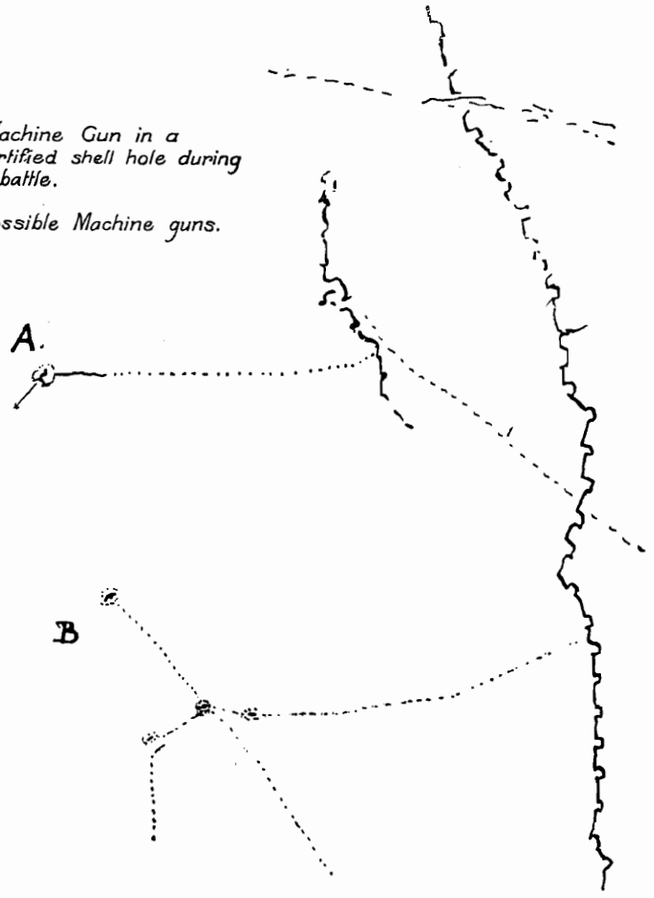
MACHINE GUN EMPLACEMENTS.

AREA :—La Bassée Canal to River Scarpe.
River Ancre to River Somme.



A. Machine Gun in a fortified shell hole during a battle.

B. Possible Machine guns.

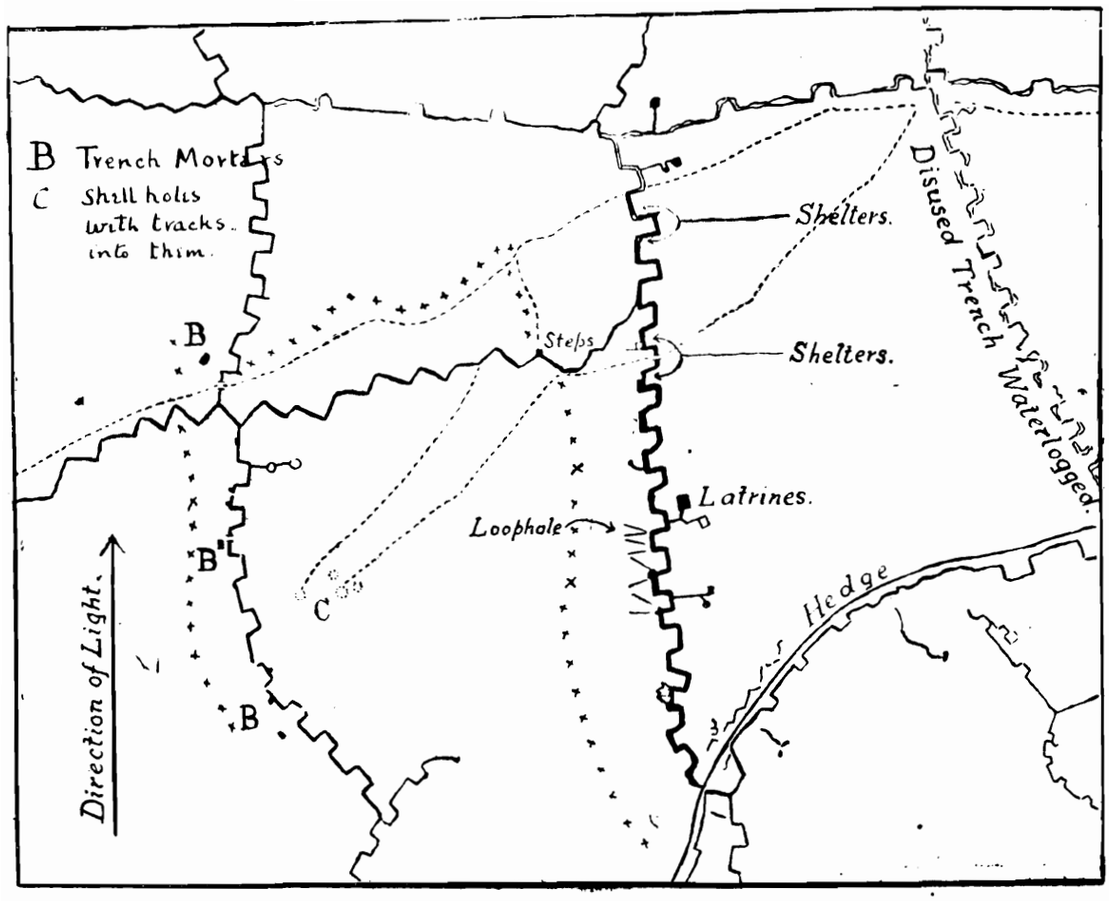


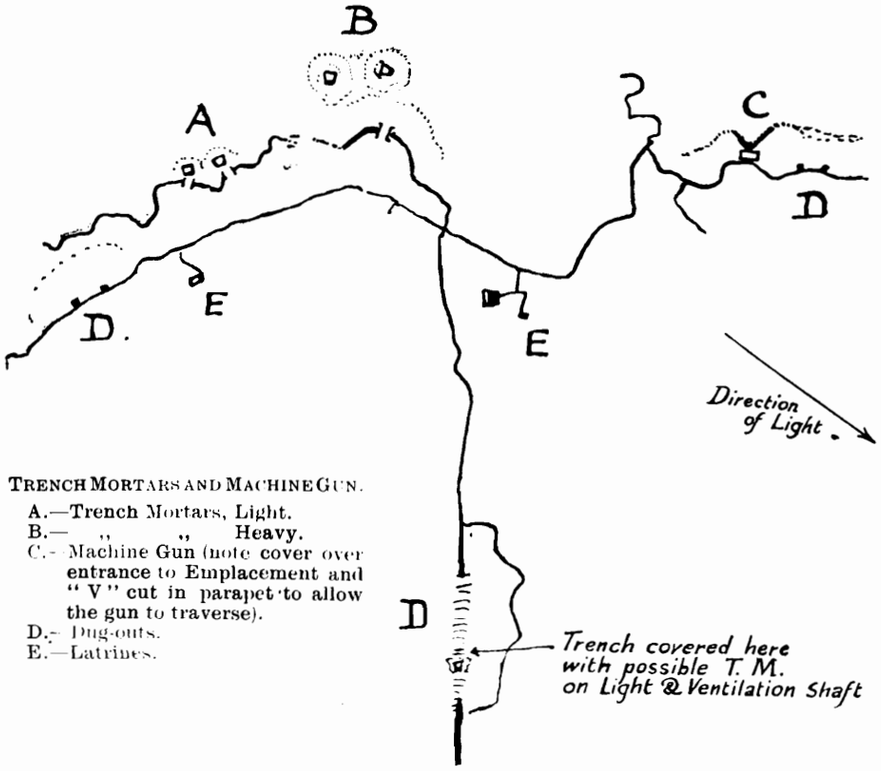




TRENCH MORTAR EMPLACEMENTS.

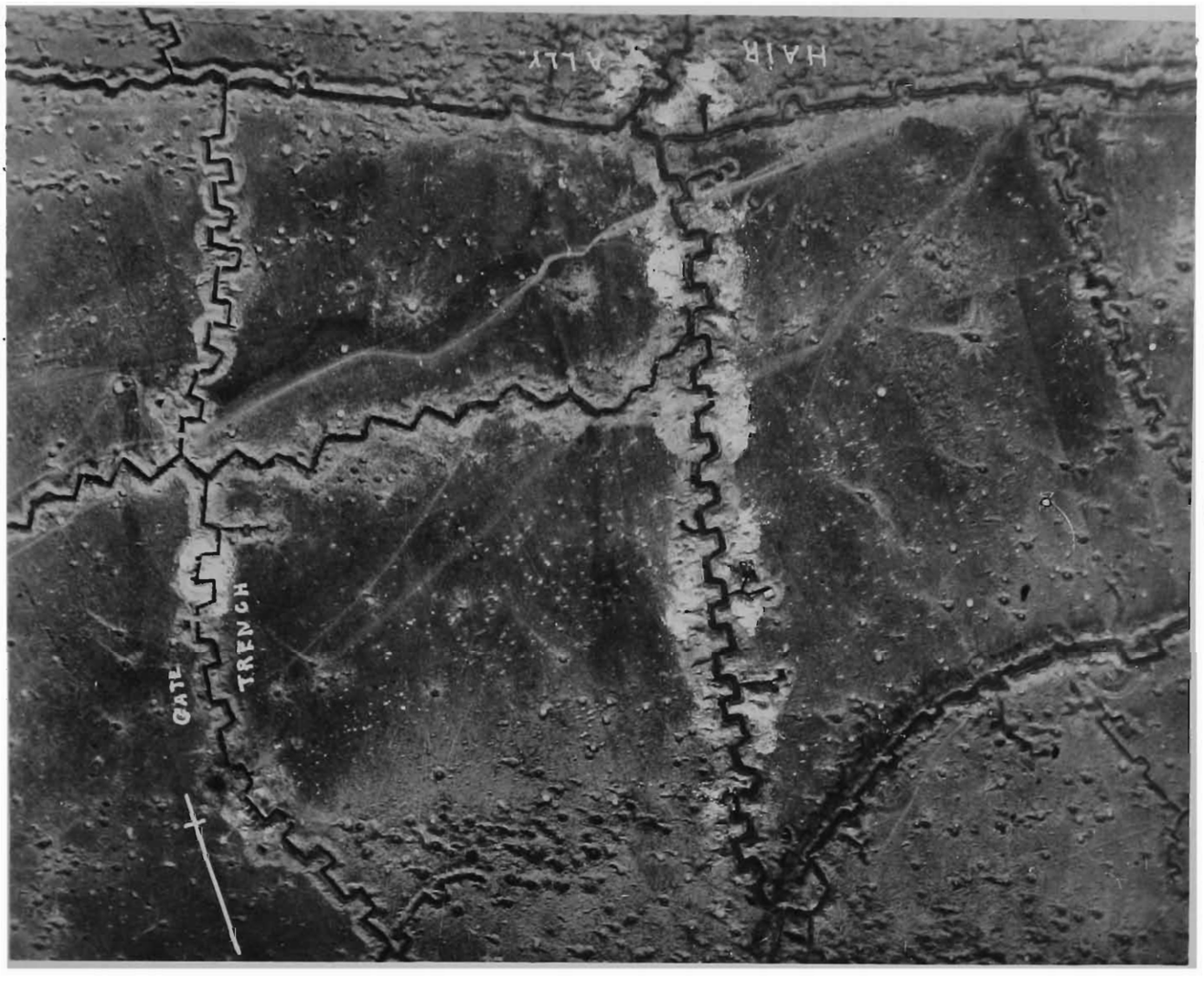
AREA :—River Scarpe to River Ancre.
La Bassée Canal to River Scarpe.

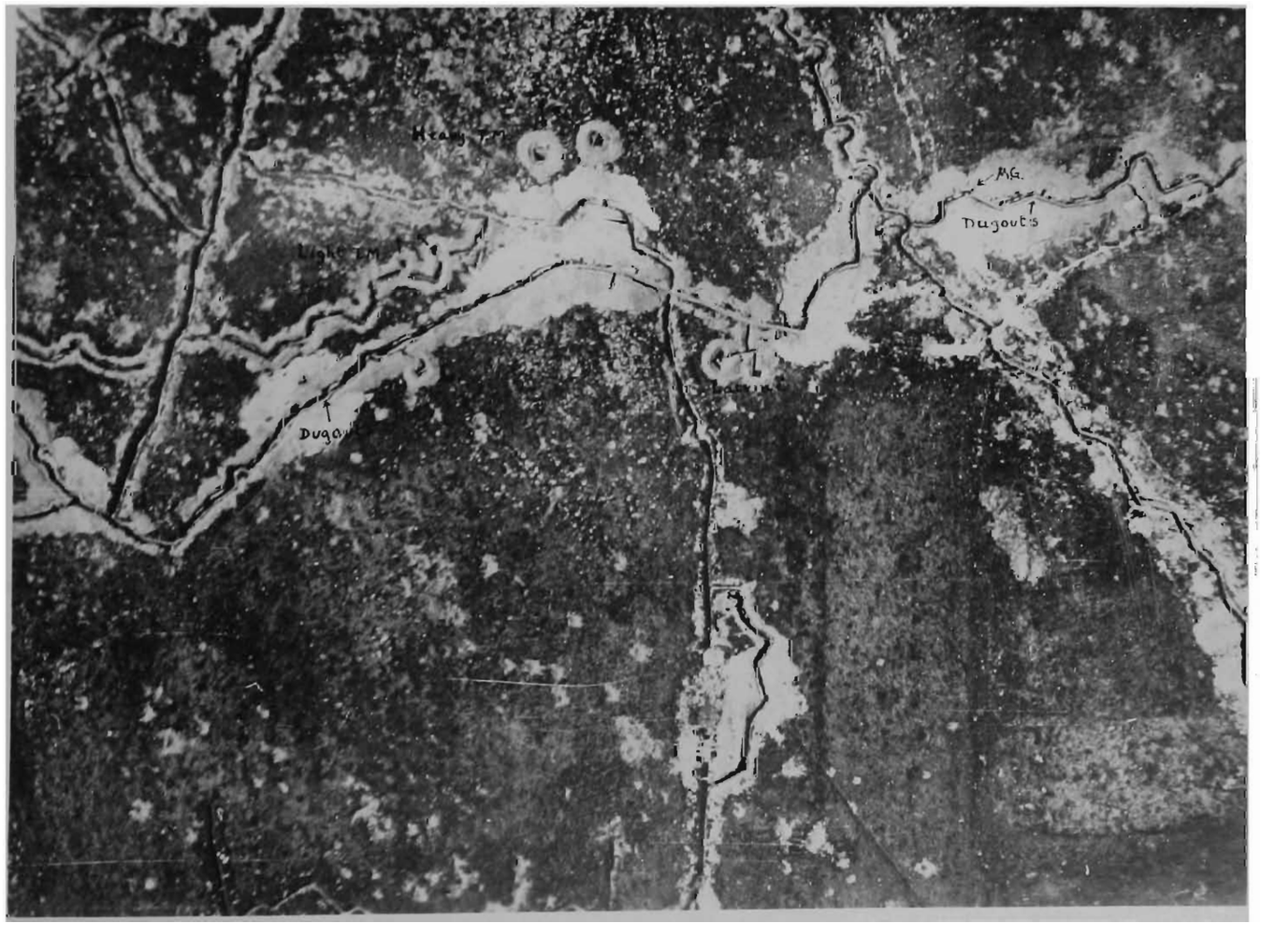




TRENCH MORTARS AND MACHINE GUN.

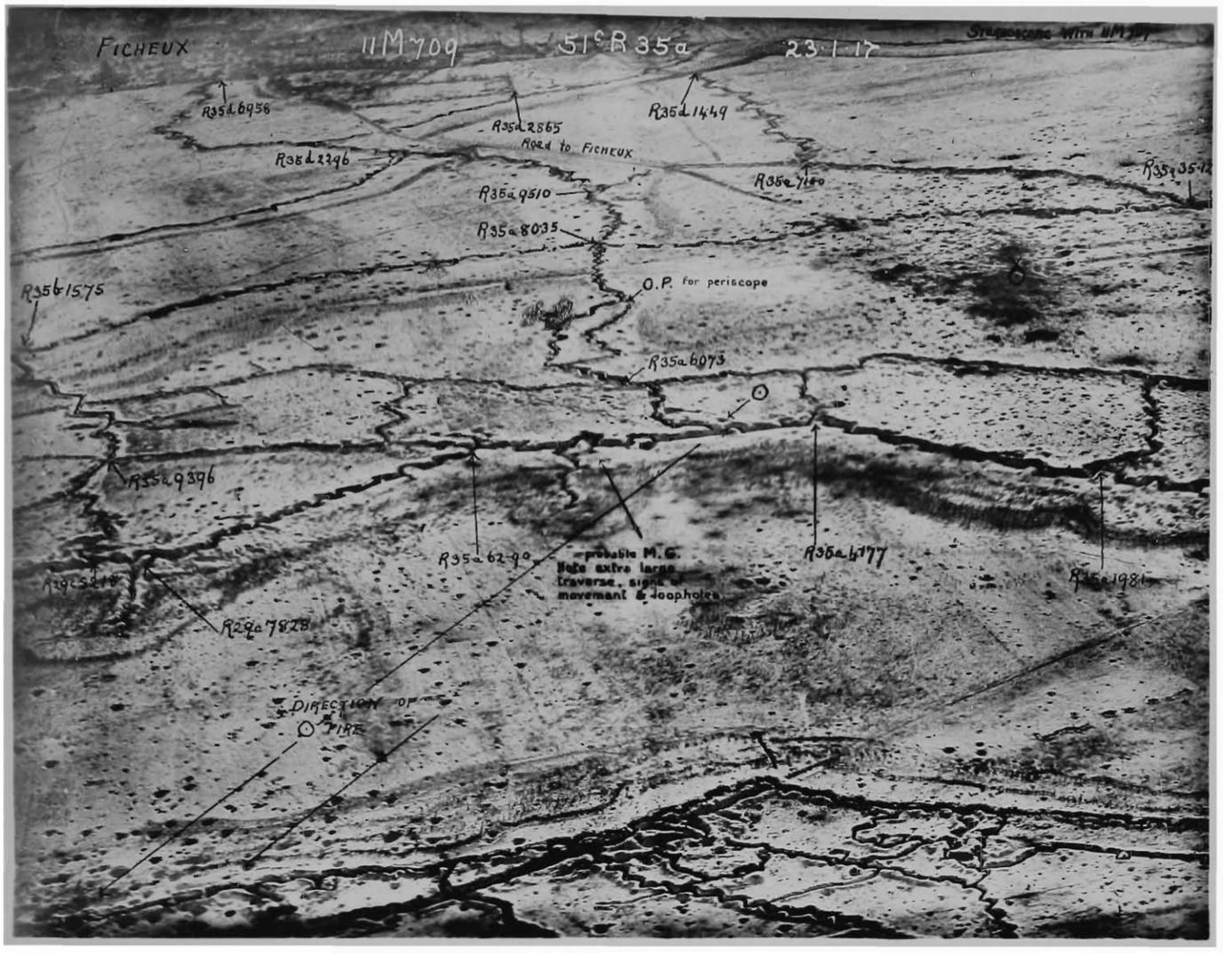
A.—Trench Mortars, Light.
B.— ,, ,, Heavy.
C.—Machine Gun (note cover over entrance to Emplacement and "V" cut in parapet to allow the gun to traverse).
D.—Dug-outs.
E.—Latrines.


GATE
TRENCH


M.G.
Dugouts

OBLIQUE PHOTOGRAPHS SHOWING MACHINE GUN AND TRENCH MORTAR EMPLACEMENTS.

AREA :—River Scarpe to River Ancre.


FICHEUX
11M709
51c R35a
23.1.17
R35d6956
R35d2865
R35d1449
Road to FICHEUX
R35d2246
R35a9510
R35a8035
R35b1575
O.P. for periscope
R35a6073
R35a9396
R35a6290
probable M.G.
Note extra large
traverse, signs of
movement & loopholes
R35a6177
R29c3218
R29a7828
DIRECTION OF
FIRE

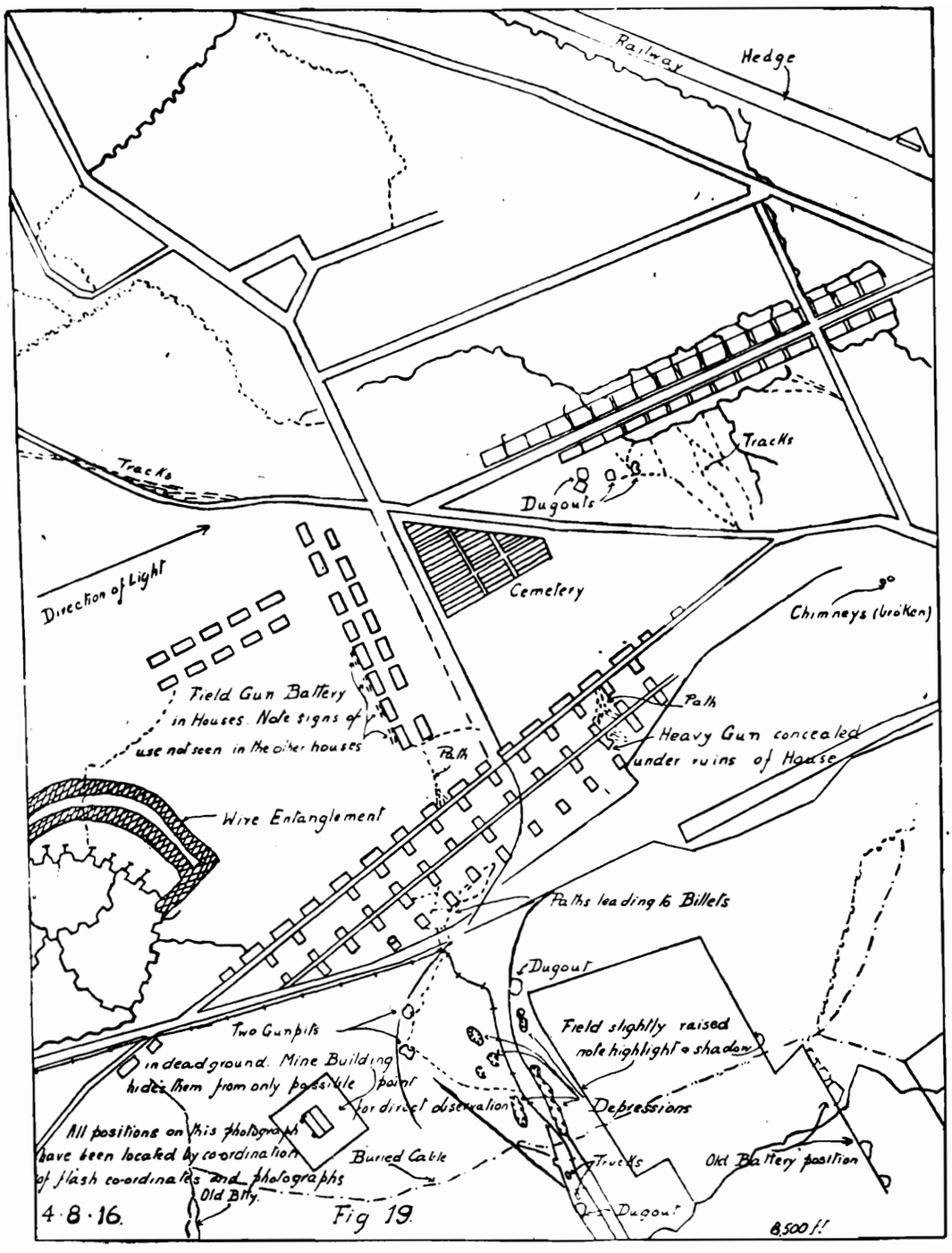

11M820
GOMMECOURT WOOD
28.1.17
1000Ft
20°
LIGHT RLY.
K5a72.88
ROAD
GOMMECOURT WOOD
PROBABLY M.G. EMPLT
NOT YET CAMOUFLAIGED
E28a00.82
PROBABLY M.G.
SQUARE LOOPHOLES WITH
SCREEN OR PROTECTION
BETWEEN THEM.
SAP AT E28b.38.24

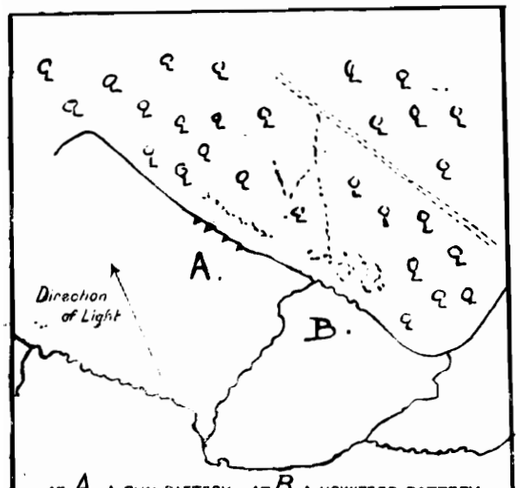
NORMAL TYPES OF BATTERY EMPLACEMENT.

BATTERY IN HOUSES.

BATTERIES IN A WOOD.

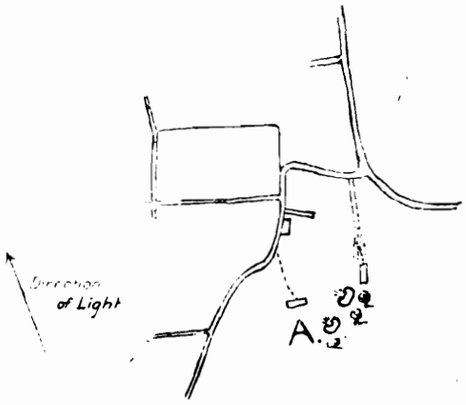
AREA :—La Bassée Canal to River Scarpe.
River Scarpe to River Ancre.





AT A. A GUN BATTERY. AT B. A HOWITZER BATTERY THE FLAT TRAJECTORY GUNS HAVE MADE FOUR CLEAR BLAST MARKS. THE HOWITZERS ARE FURTHER IN. NO BLAST MARKS ARE APPARENT, BUT THE LEAVES AND SMALL BRANCHES HAVE BEEN BLOWN AWAY AT THE EDGE OF THE WOOD.

AT A. TWO HOWITZER PITS UNDER A CLUMP OF TREES







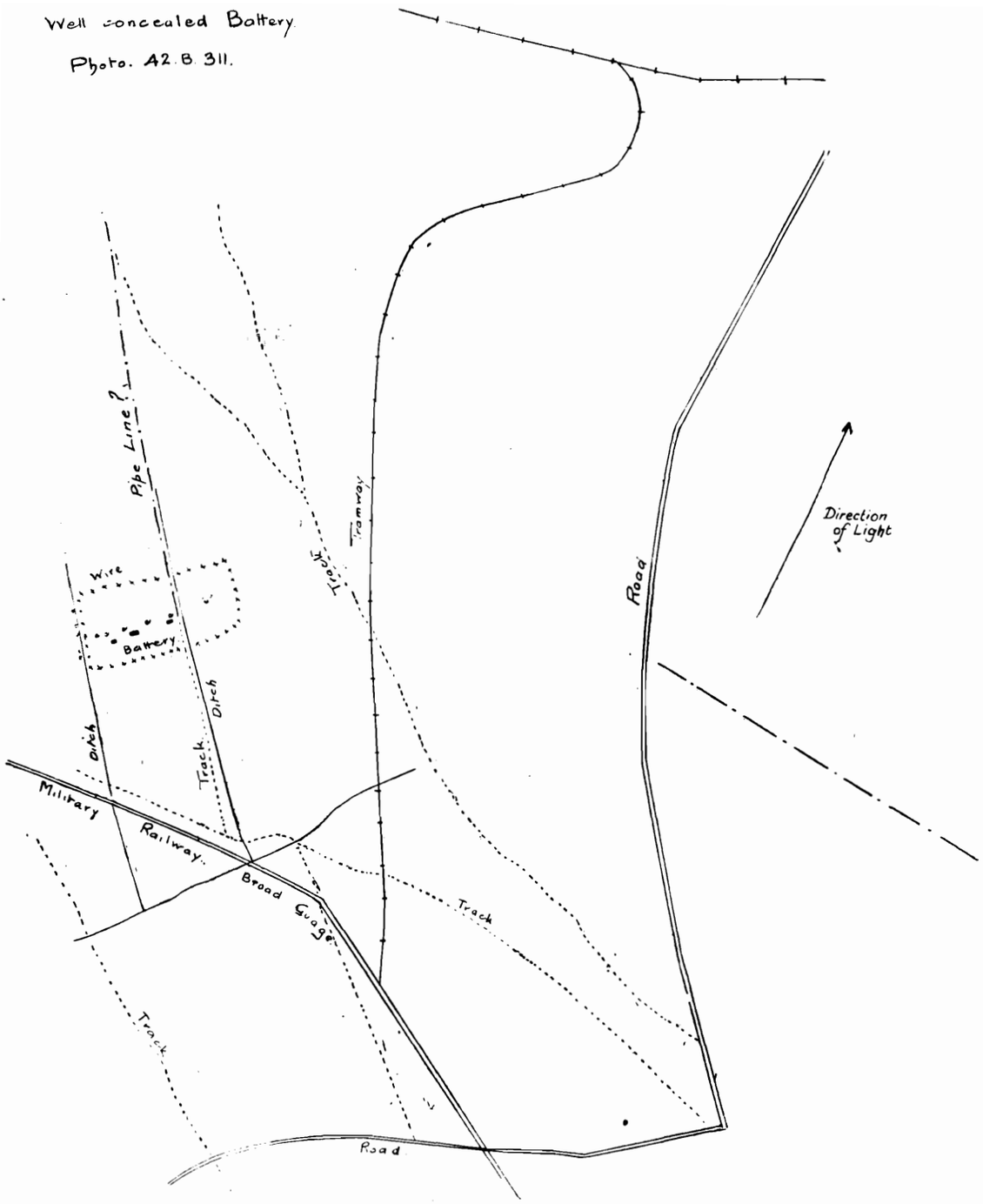


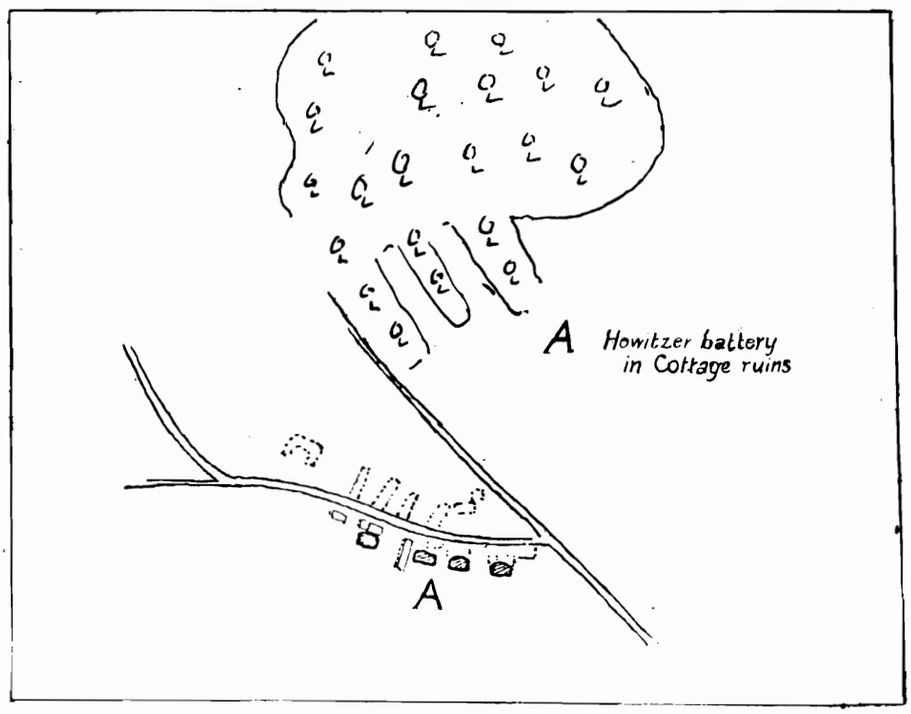
BATTERY IN OPEN COUNTRY.
BATTERY IN COTTAGE RUINS.

AREA :—Boesinghe to Ypres-Comines Canal.
La Bassée Canal to River Scarpe.

Well concealed Battery

Photo. 42.B.311.



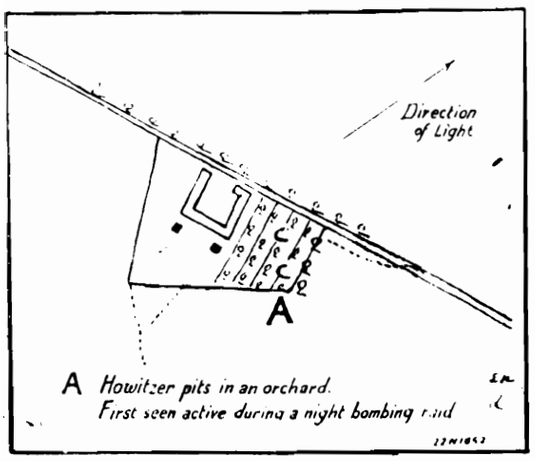


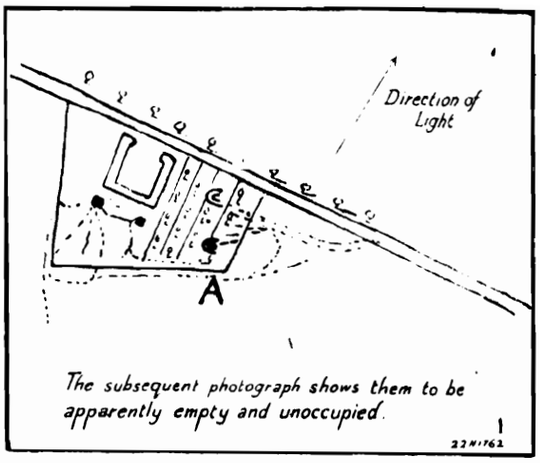


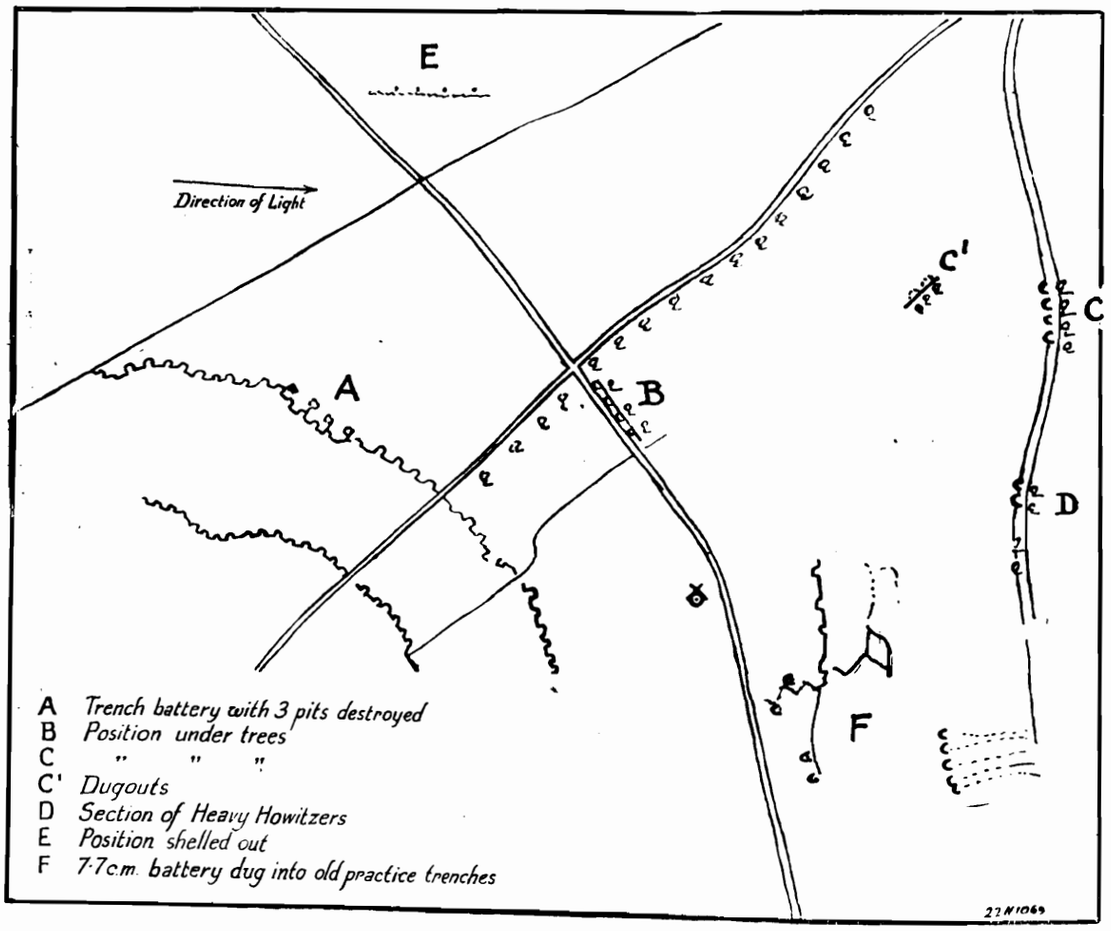


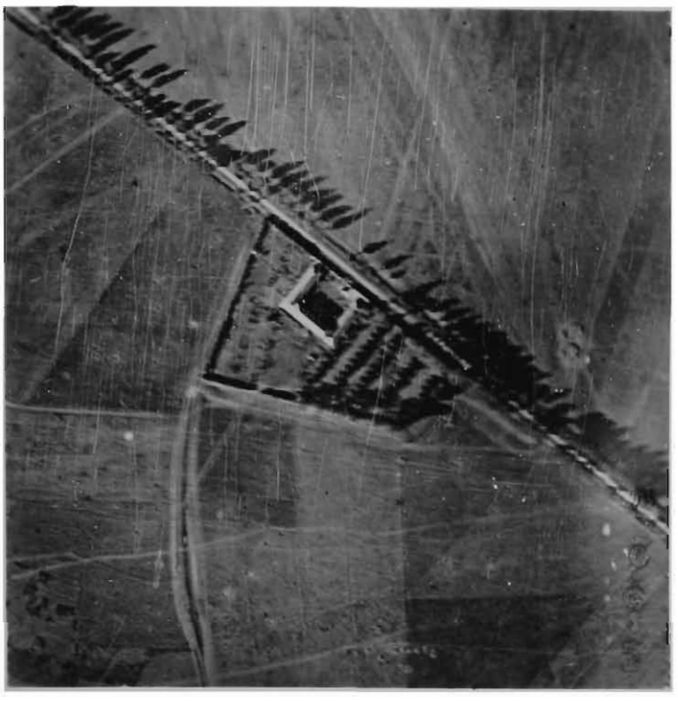
HOWITZER PITS IN AN ORCHARD.
TRENCH EMPLACEMENTS.

AREA :—River Ancre to River Somme.


Direction of Light
A
A Howitzer pits in an orchard.
First seen active during a night bombing raid
22 N 1643


Direction of Light
A
The subsequent photograph shows them to be apparently empty and unoccupied.
22 N 1762


E
Direction of Light
A
B
C
C'
D
F
A Trench battery with 3 pits destroyed
B Position under trees
C " " "
C' Dugouts
D Section of Heavy Howitzers
E Position shelled out
F 7·7 c.m. battery dug into old practice trenches
22 N 1069

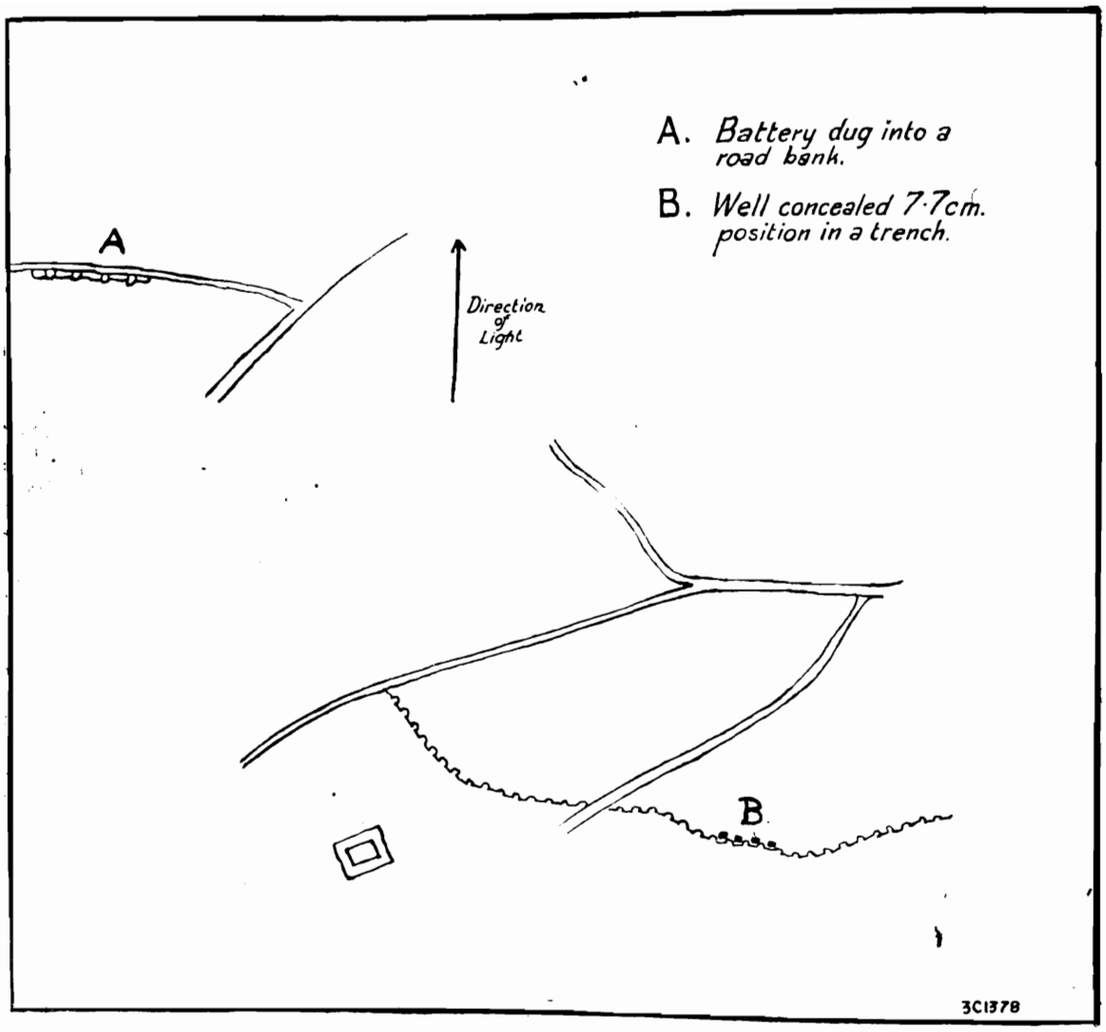


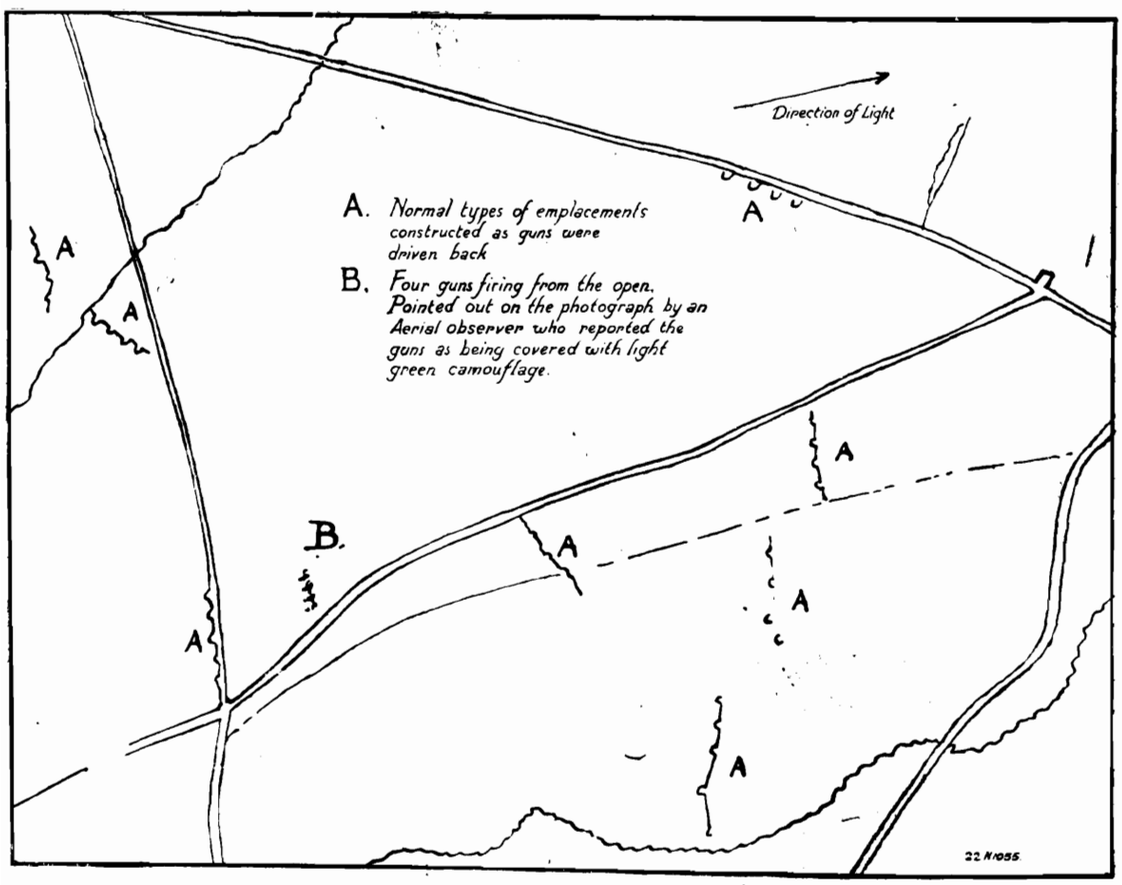




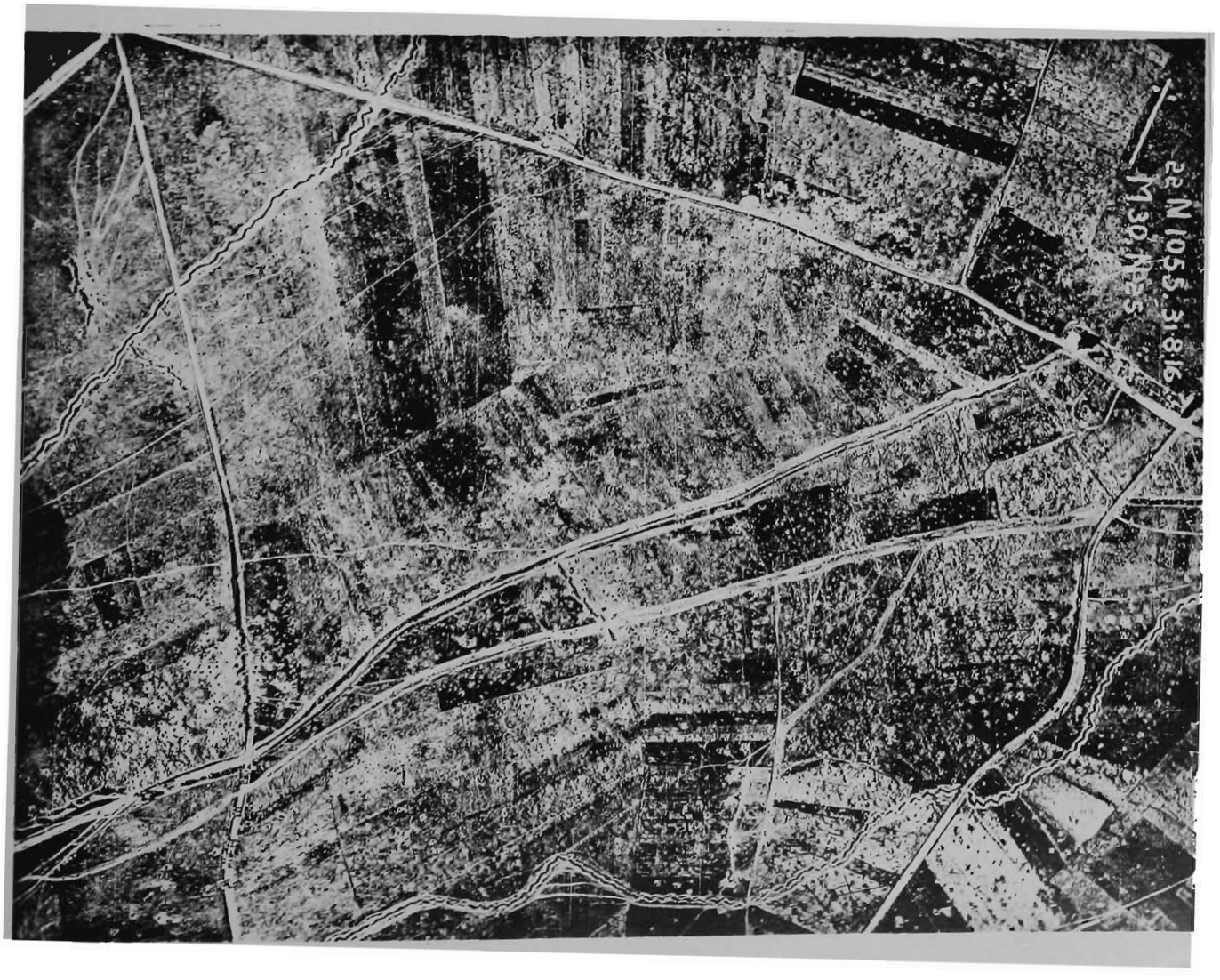
TRENCH EMPLACEMENT.
BATTERY DUG INTO A ROAD BANK.
GUNS FIRING UNDER CAMOUFLAGE
FROM THE OPEN.

AREA :—River Ancre to River Somme.


A. Battery dug into a road bank.
B. Well concealed 7·7cm. position in a trench.
A
Direction of Light
B
3C1378


Direction of Light
A. Normal types of emplacements constructed as guns were driven back
B. Four guns firing from the open. Pointed out on the photograph by an Aerial observer who reported the guns as being covered with light green camouflage.
A
B
22.N1055.

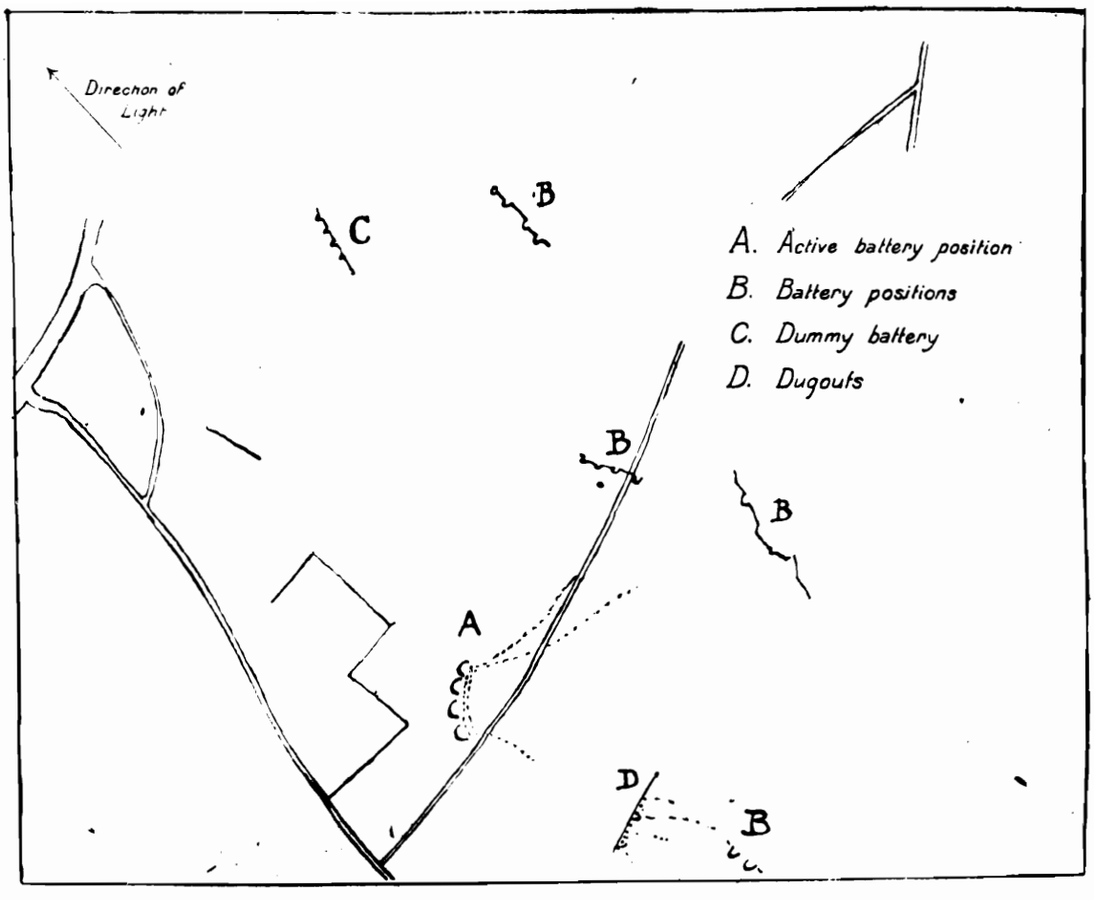

3c.1378
H32.b.d.33a.c
22.10.16.—11

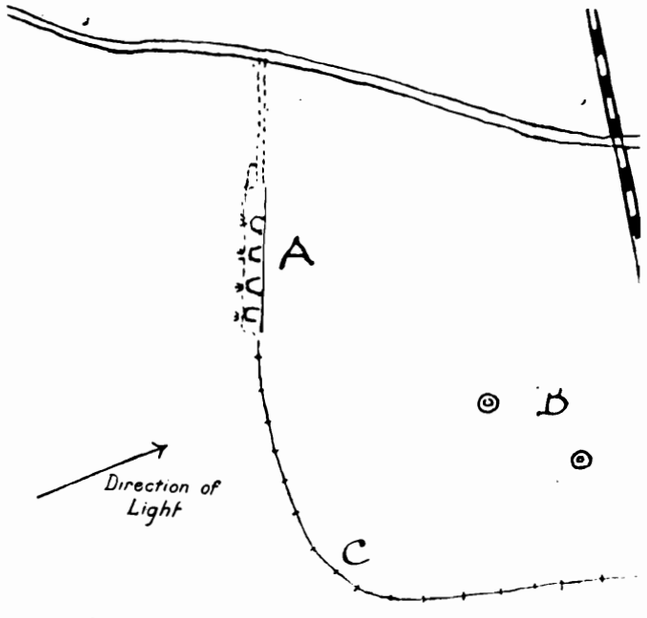

22 N 10.5.31.8.16
M 30 Nos

DUMMY EMPLACEMENT.

ANTI-AIRCRAFT EMPLACEMENT.

AREA :—River Ancre to River Somme.
La Bassée Canal to River Scarpe.



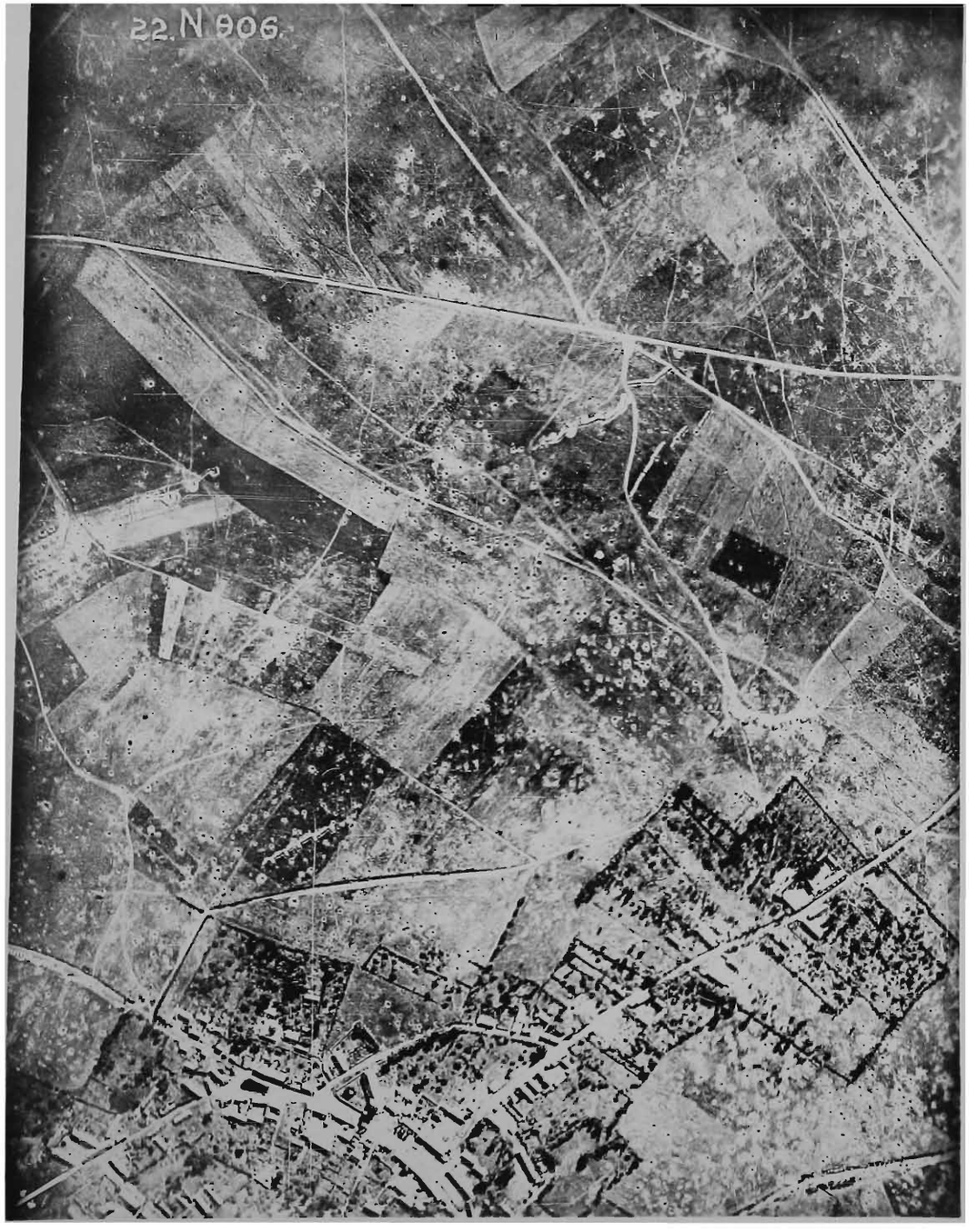


A. Battery

B. Anti-Aircraft emplacements

C. 40 cm. tramway

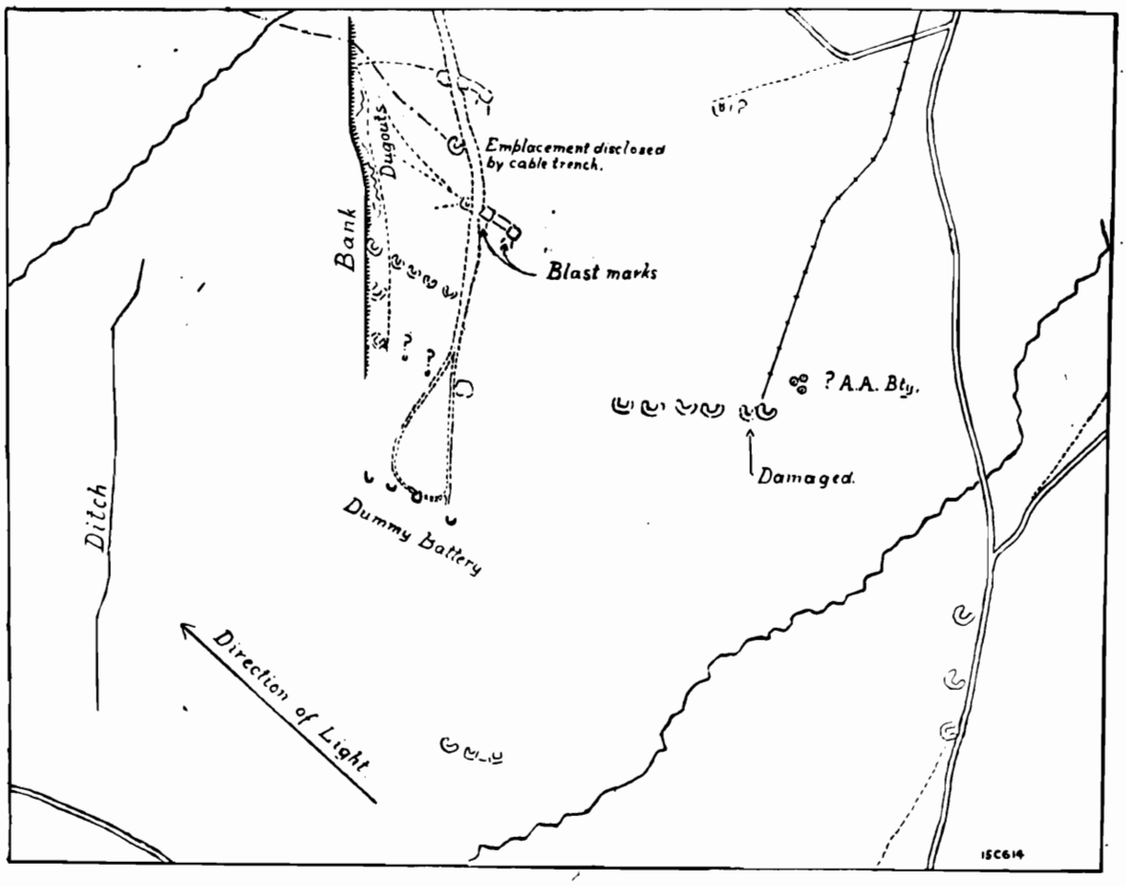
13L307

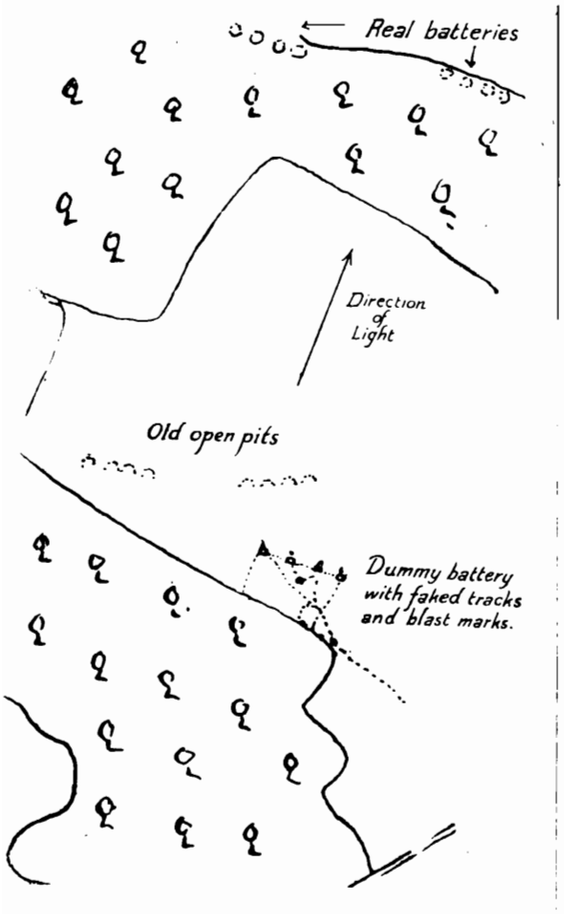

22. N 906.

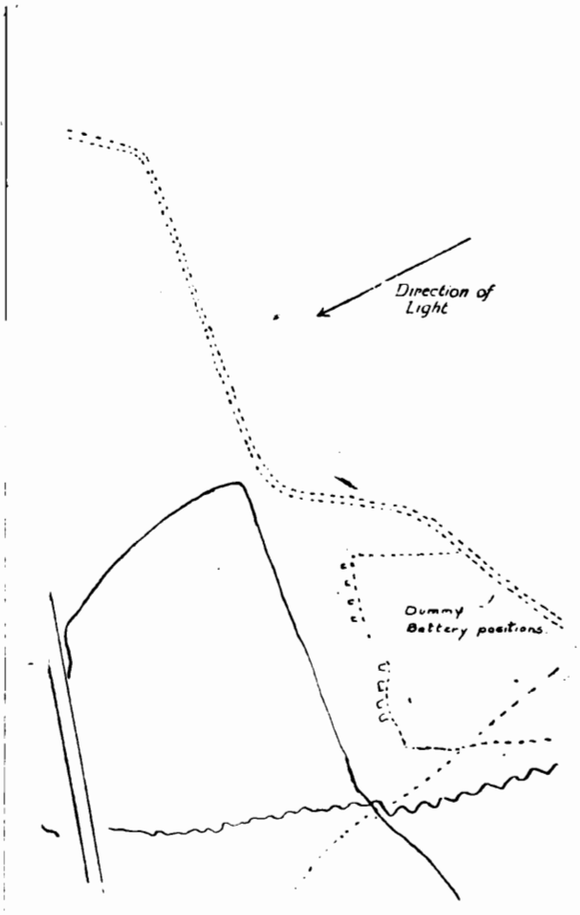


DUMMY EMPLACEMENTS.

AREA:—River Scarpe to River Ancre.
La Bassée Canal to River Scarpe.
River Scarpe to River Ancre.


Emplacement disclosed by cable trench.
Bank
Dugouts
Blast marks
? A.A. Bty.
Damaged.
Dummy Battery
Ditch
Direction of Light
15C614


Real batteries
Direction of Light
Old open pits
Dummy battery with faked tracks and blast marks.


Direction of Light
Dummy Battery positions.






Dummy
Battery
Positions.
1.
2.

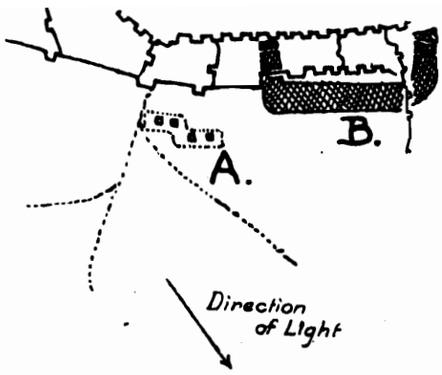
ABNORMAL TYPES OF BATTERY EMPLACEMENT.

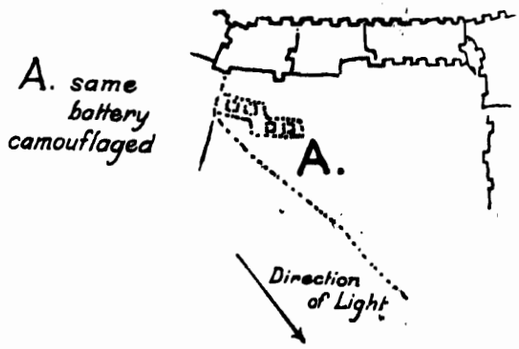
HOWITZER BATTERY DUG-IN.
EMPLACEMENT TUNNELLED UNDER A RAILWAY EMBANKMENT.
"A PIECES."

AREA :—River Scarpe to River Ancre.

A.—Howitzer battery dug-in.

B.—Wire.

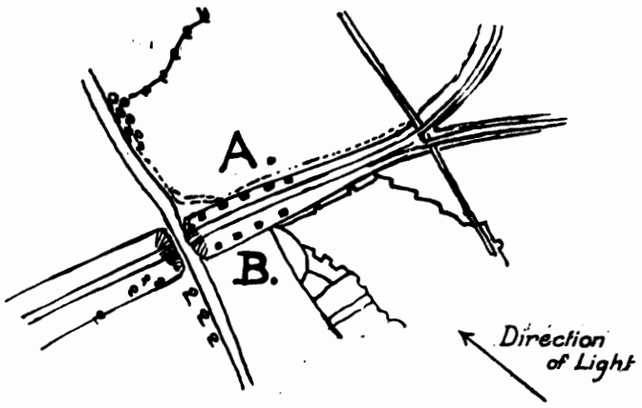




EMPLACEMENT TUNNELLED UNDER A RAILWAY EMPLACEMENT.

A.—Entrances.

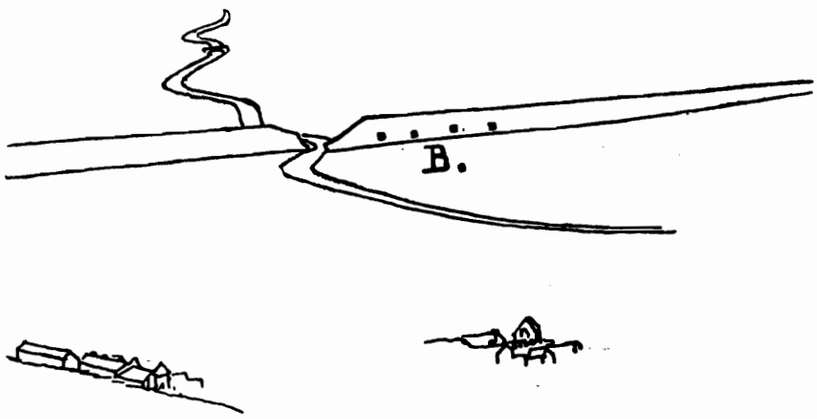
B.—Ports.

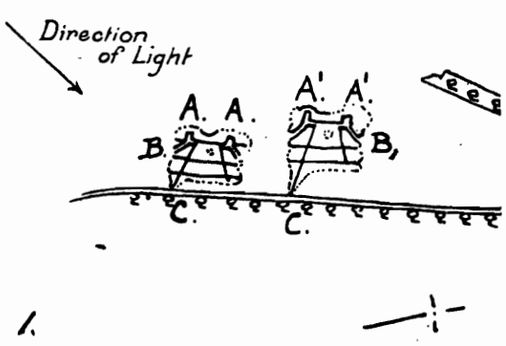


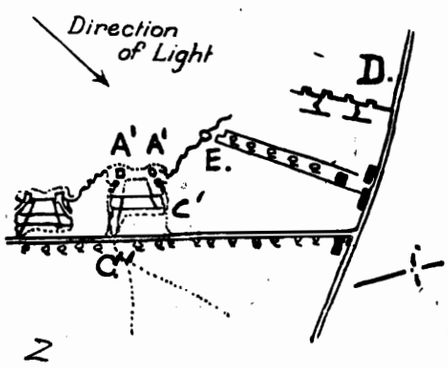
OBLIQUE PHOTOGRAPH OF ABOVE.

B.—Ports.

The embankment is very high. Compare with houses in the foreground.





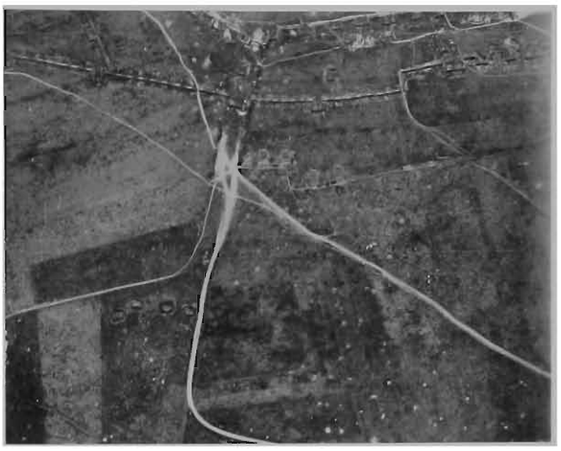


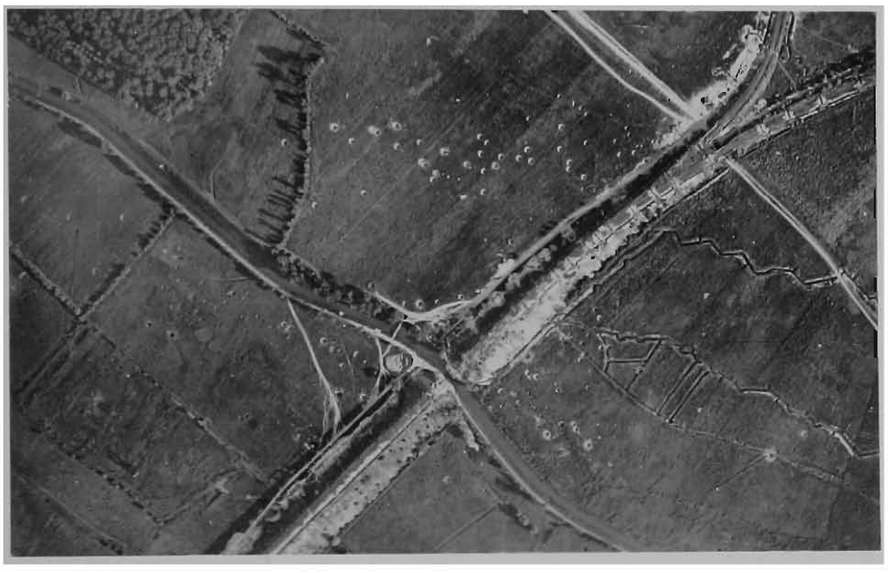
"A Pieces"

1. A.A.—Gun-pits uncovered.
   B.—Ramp to run guns in.
   C.—Inclined trench from road.

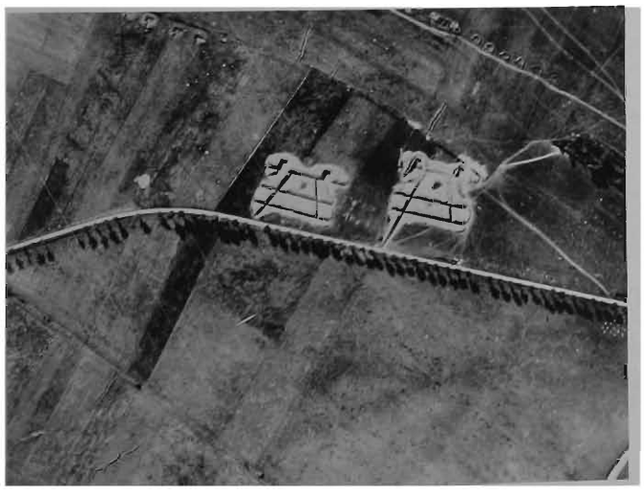
2. Northern "A Piece" occupied.
   A'.A'.—Covered pits.
   C'.C'.—Tracks where guns have been run in and ammunition brought up.
   D.—"Aeroplane" emplacement.
   E.—Battery commander's dug-out.

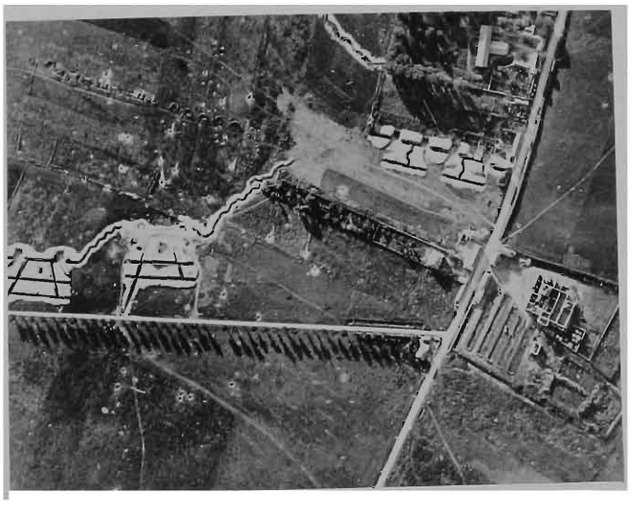






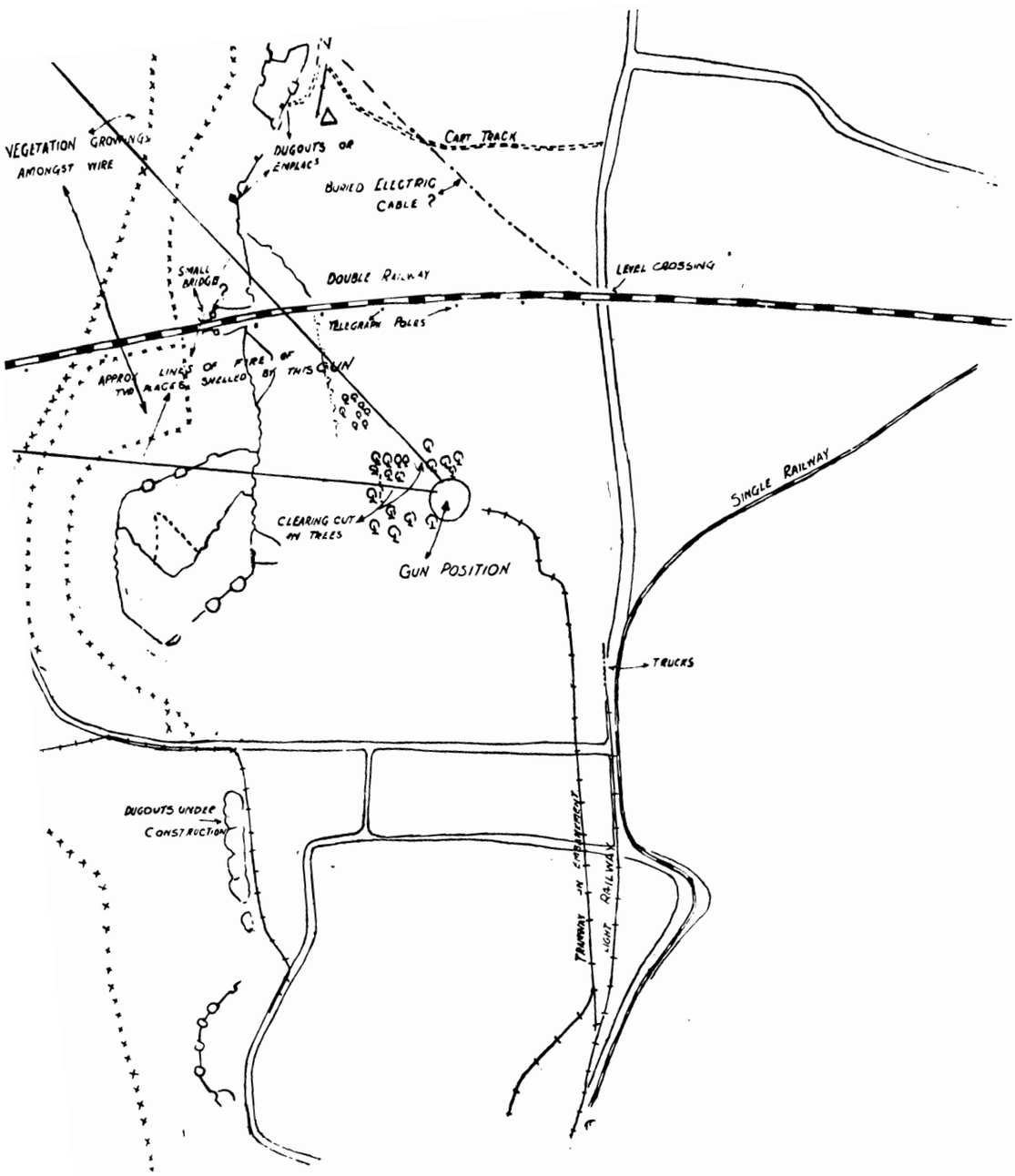


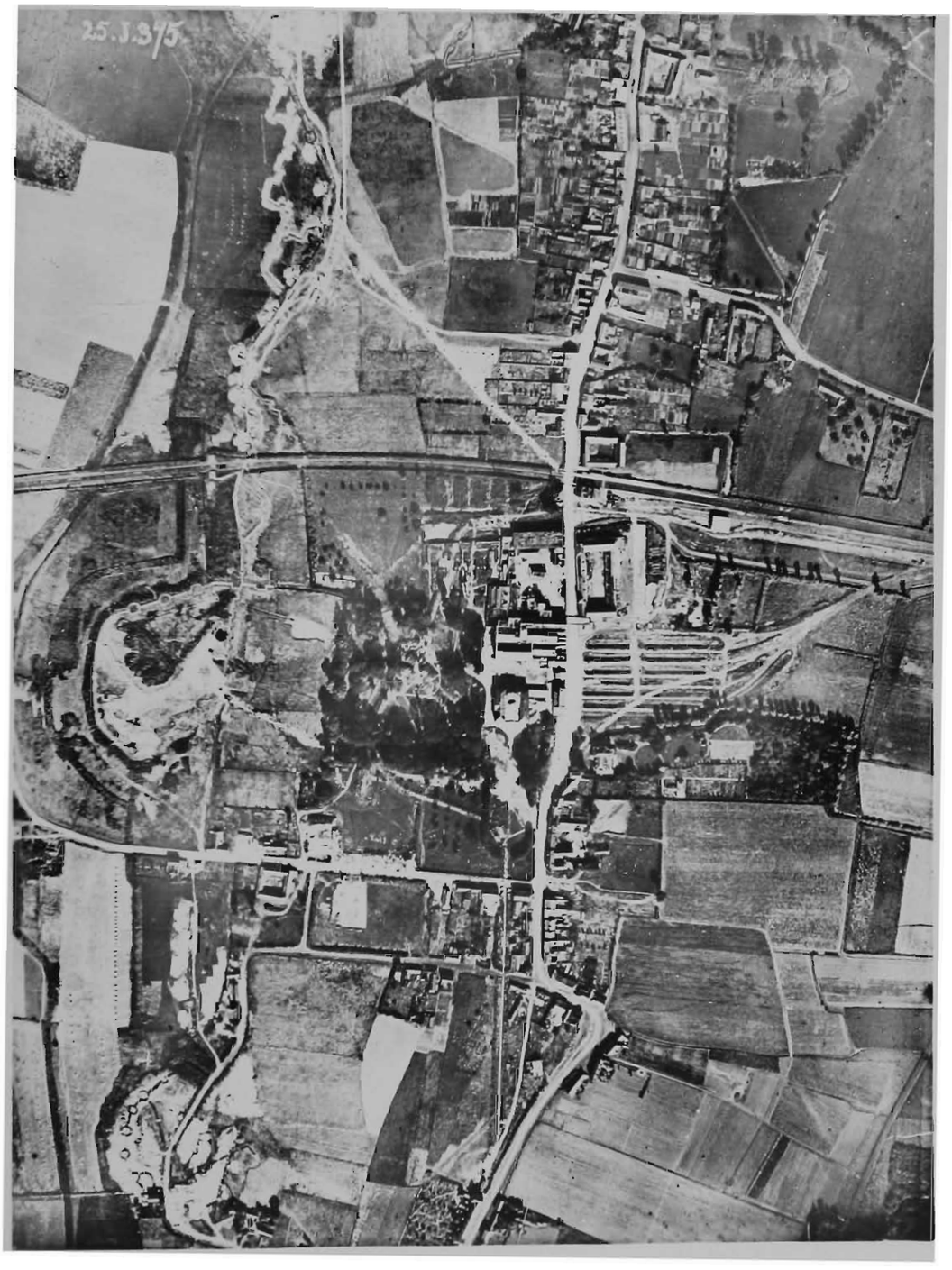




HEAVY GUN POSITION.

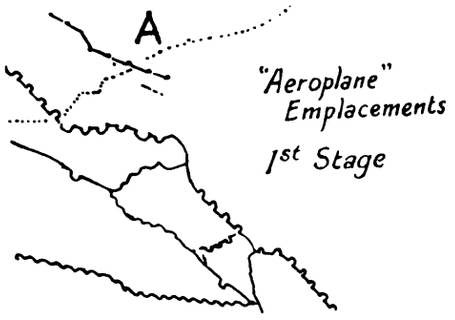
AREA :—Ypres-Comines Canal to La Bassée Canal.

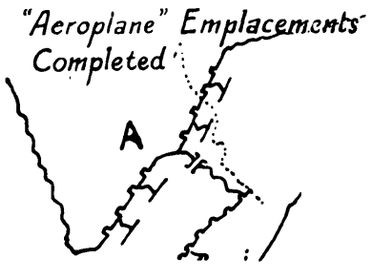

N
VEGETATION GROWING AMONGST WIRE
DUGOUTS OR EMPLACS
CART TRACK
BURIED ELECTRIC CABLE ?
SMALL BRIDGE ?
DOUBLE RAILWAY
LEVEL CROSSING
TELEGRAPH POLES
APPROX TWO RACES
LINES OF FIRE OF SHELLED BY THIS GUN
CLEARING CUT IN TREES
GUN POSITION
SINGLE RAILWAY
TRUCKS
DUGOUTS UNDER CONSTRUCTION
TRAMWAY OR LIGHT RAILWAY

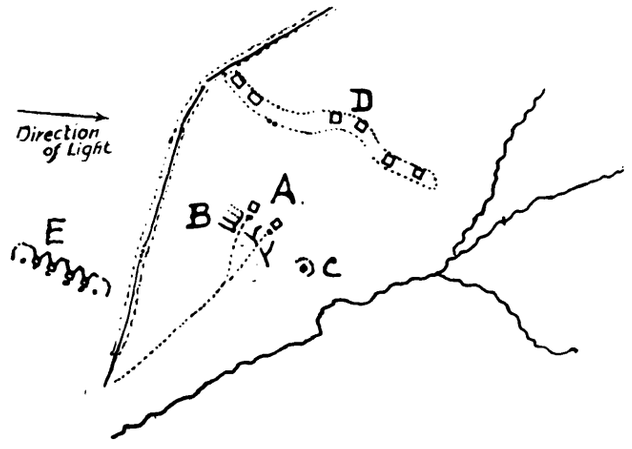

25.3.375

"AEROPLANE" EMPLACEMENTS.
HEAVY HOWITZER PITS.
EMPLACEMENT UNDER CONSTRUCTION.

AREA :—River Scarpe to River Ancre.







A. Emplacement for heavy Howitzers.

B. Trenches for men and ammunition.

C.—Battery commander's dug-out.

D. Six-gun battery in an artificial bank.

E. Emplacement with heavy cover cut away in "V"s in front of the pits.

EMPLACEMENT UNDER CONSTRUCTION.

1. A.—First trench dug.

   B.—Entrances to dug-outs under the road.

2. A.—3 pits covered, 1 still uncovered.

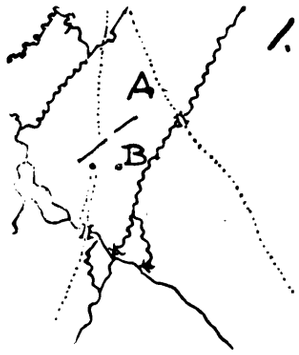
   B.—Dug-outs further advanced.

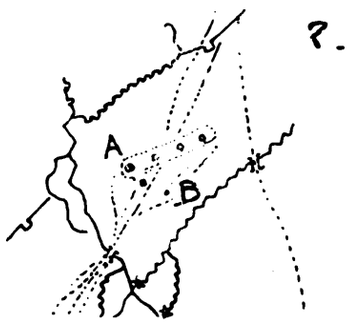
3. Pits covered over and dug-outs camouflaged.

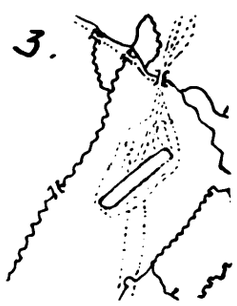
4. A A A A.—Blast marks.

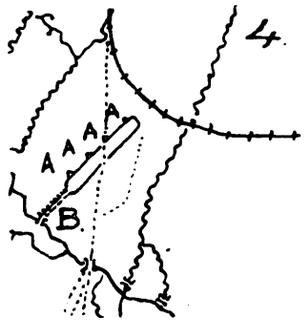
   B.—Covered trench leading to communication trench.

   The road has been continued over and through the emplacement to prevent signs of use up to, but not beyond, the battery.

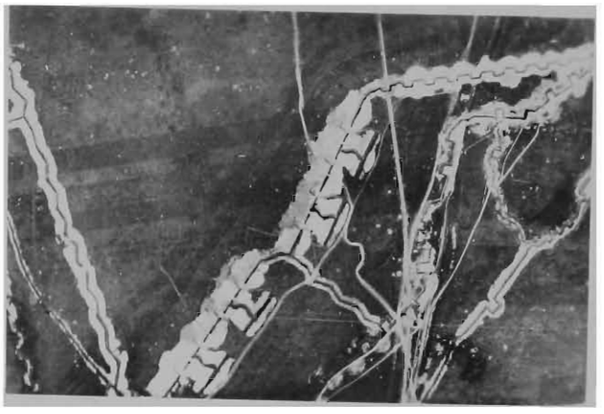


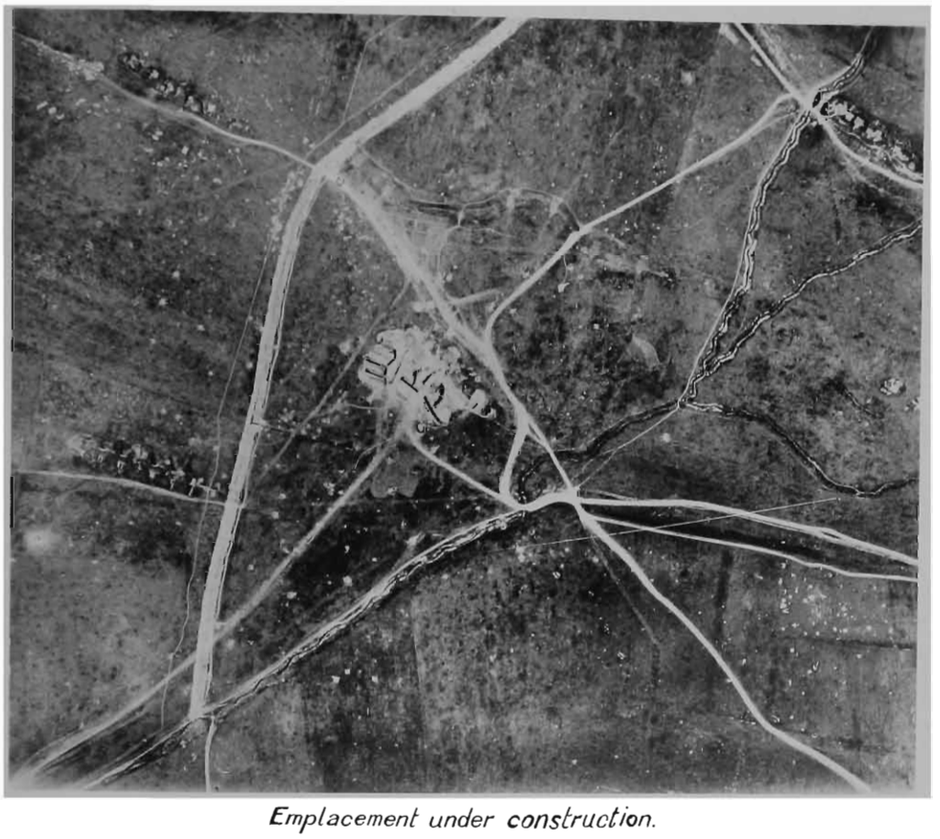






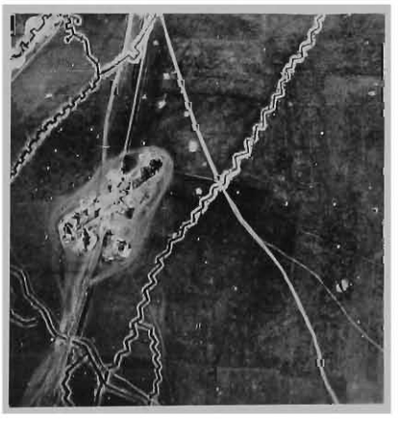






Emplacement under construction.





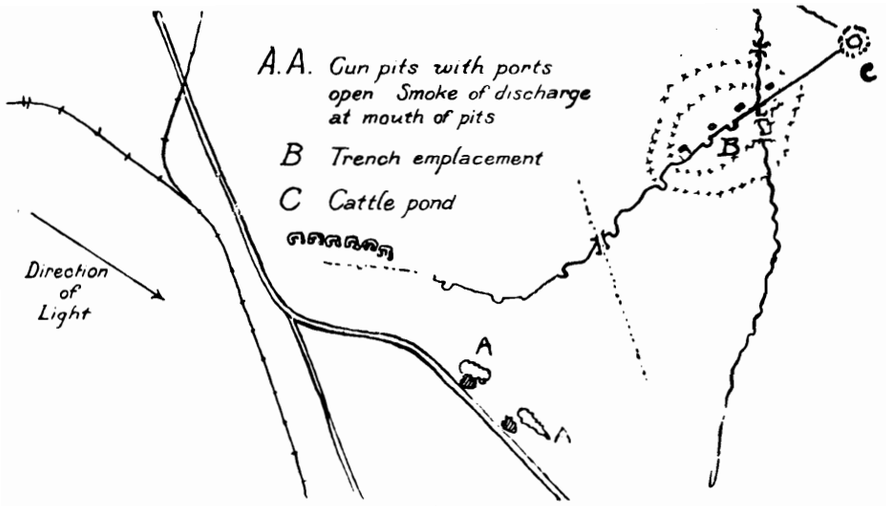


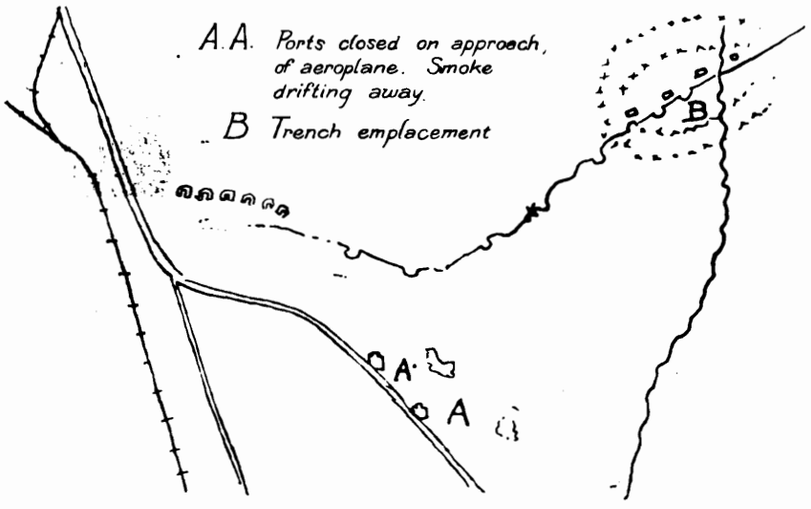


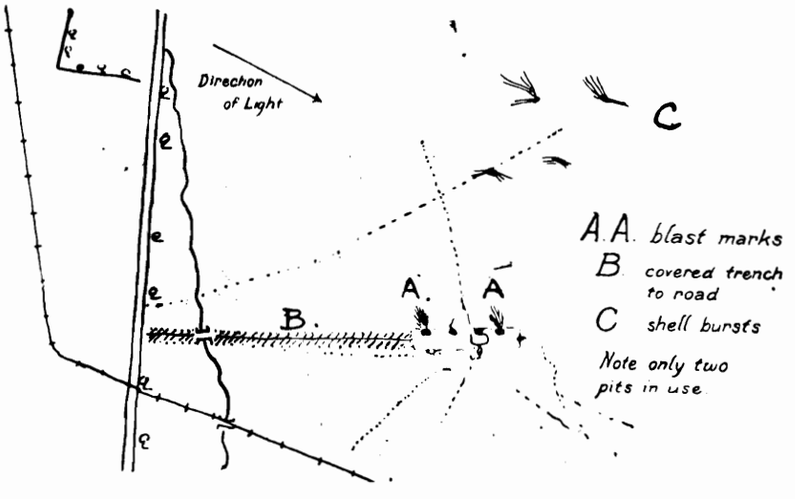
GUNS FIRING.

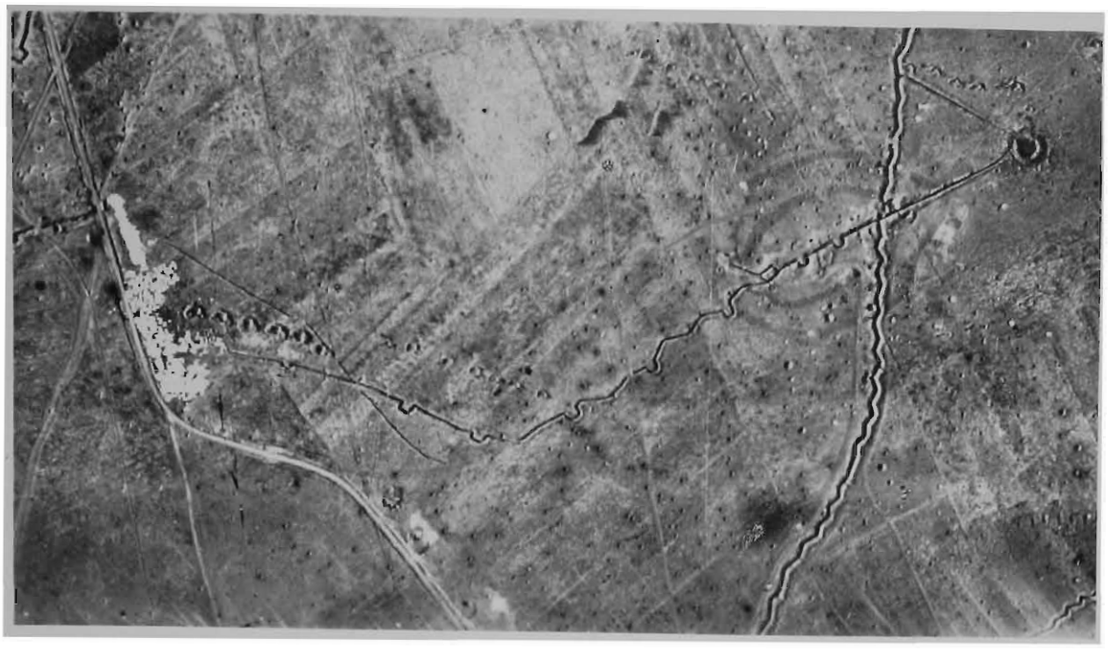
BLAST MARKS IN SNOW.

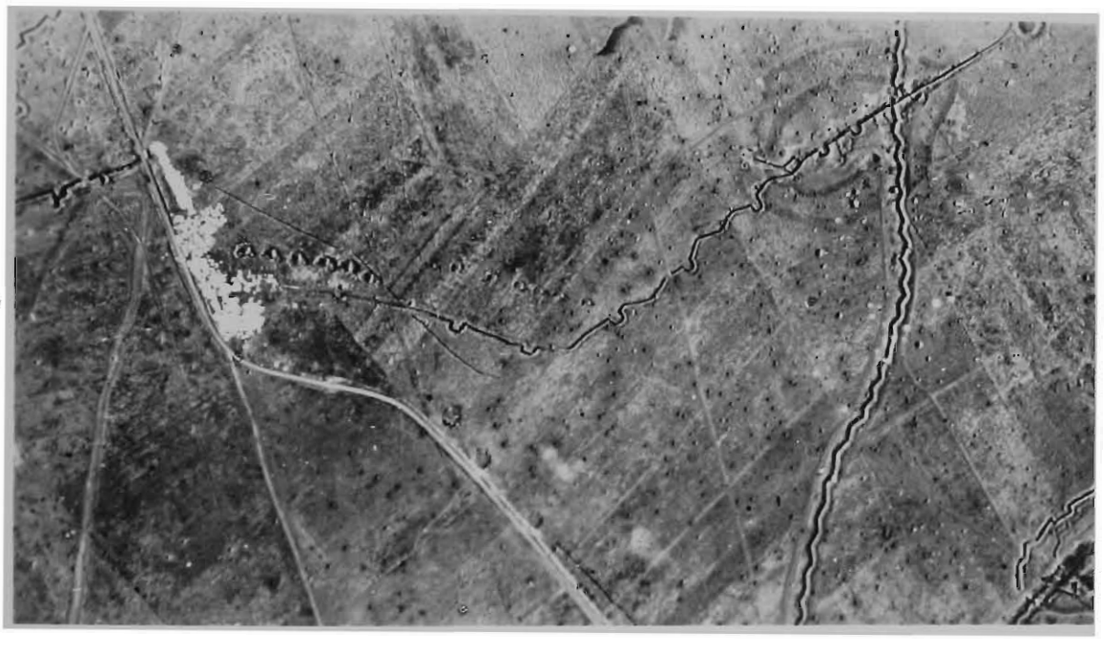
AREA :—River Scarpe to River Ancre.

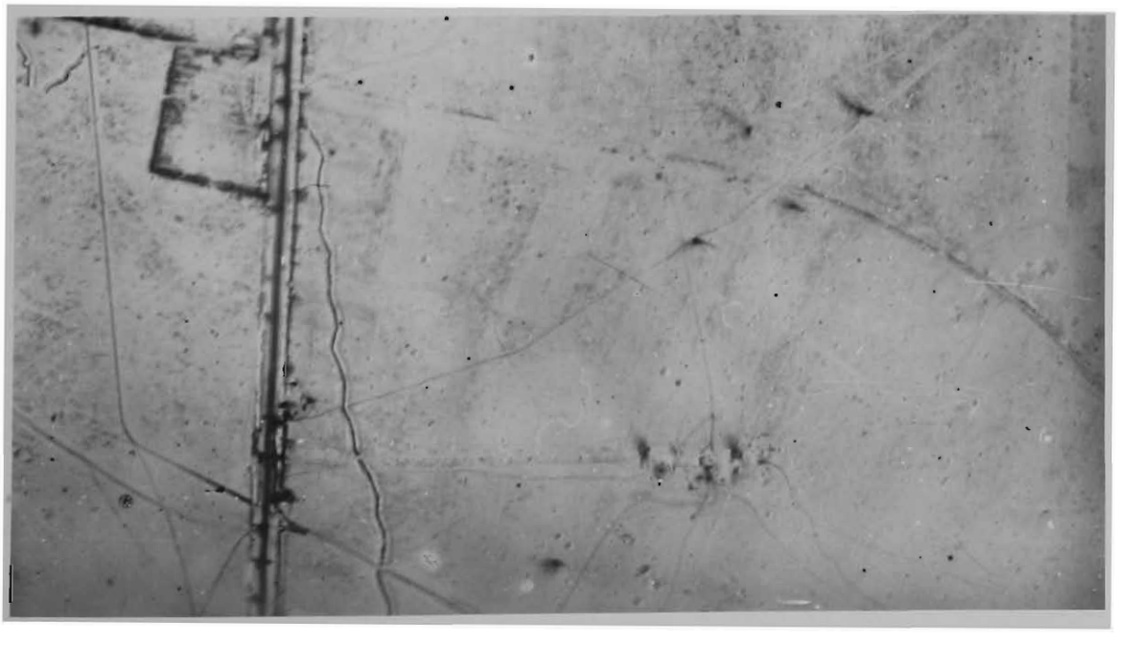

A.A. Gun pits with ports open Smoke of discharge at mouth of pits
B Trench emplacement
C Cattle pond
Direction of Light
A
B
C


A.A. Ports closed on approach of aeroplane. Smoke drifting away.
B Trench emplacement
A
B


Direction of Light
A.A. blast marks
B covered trench to road
C shell bursts
Note only two pits in use
A
B
C



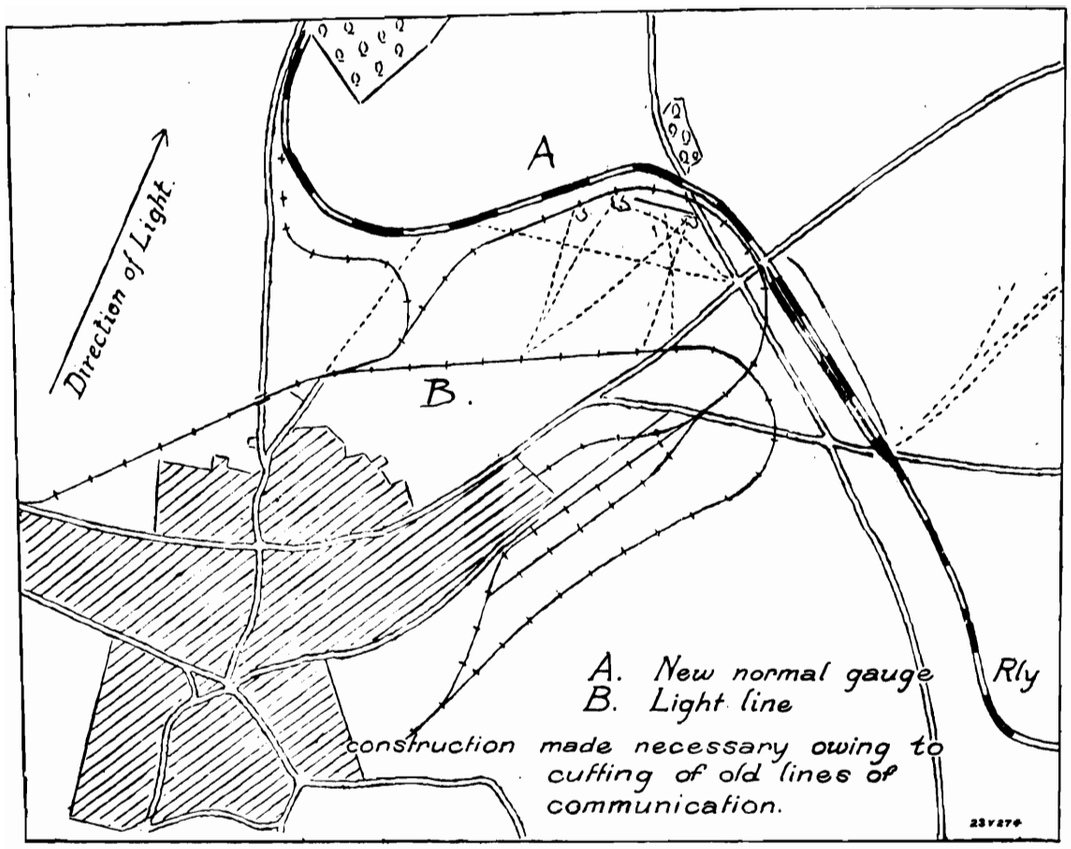


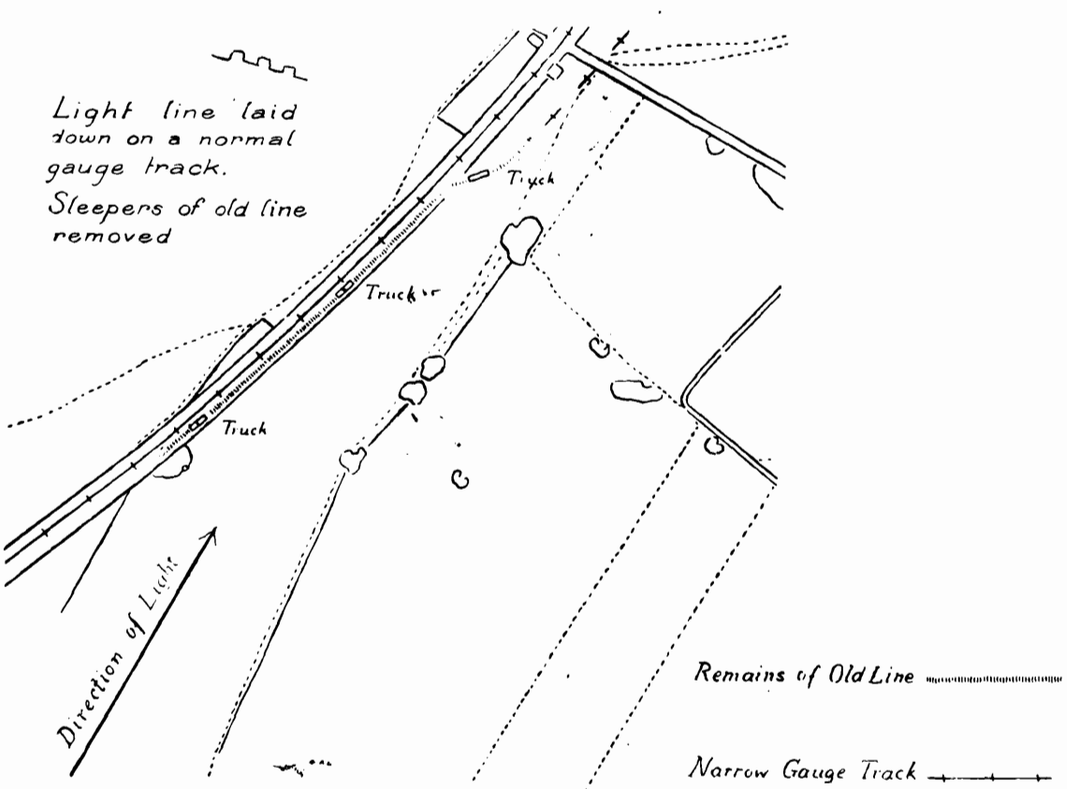


NORMAL GAUGE RAILWAY.

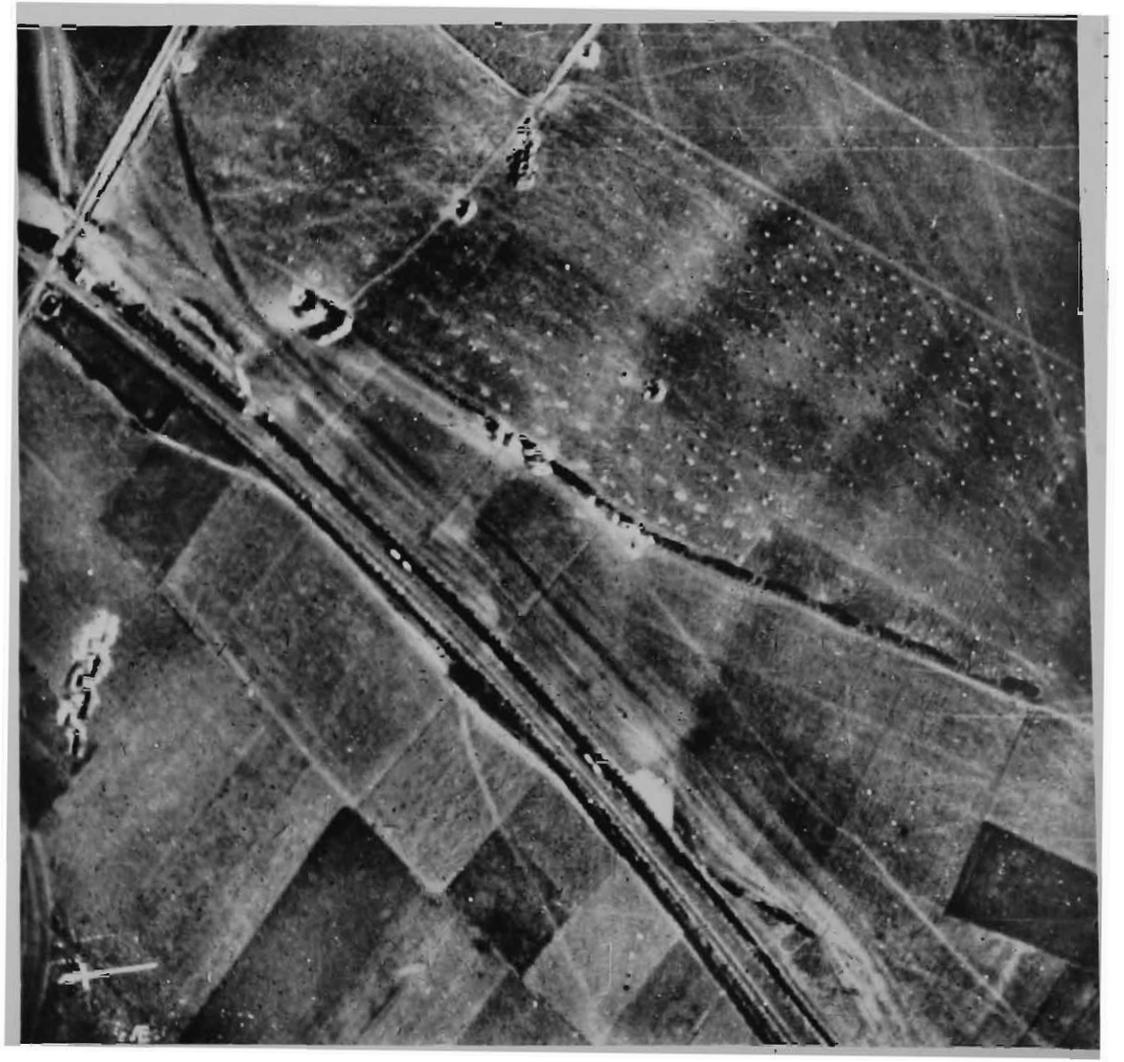
LIGHT RAILWAY.

AREA :—River Scarpe to River Ancre.


A
B.
Direction of Light
A. New normal gauge Rly
B. Light line
construction made necessary owing to cutting of old lines of communication.
23v27¢


Light line laid down on a normal gauge track.
Sleepers of old line removed
Truck
Truck
Truck
Direction of Light
Remains of Old Line
Narrow Gauge Track

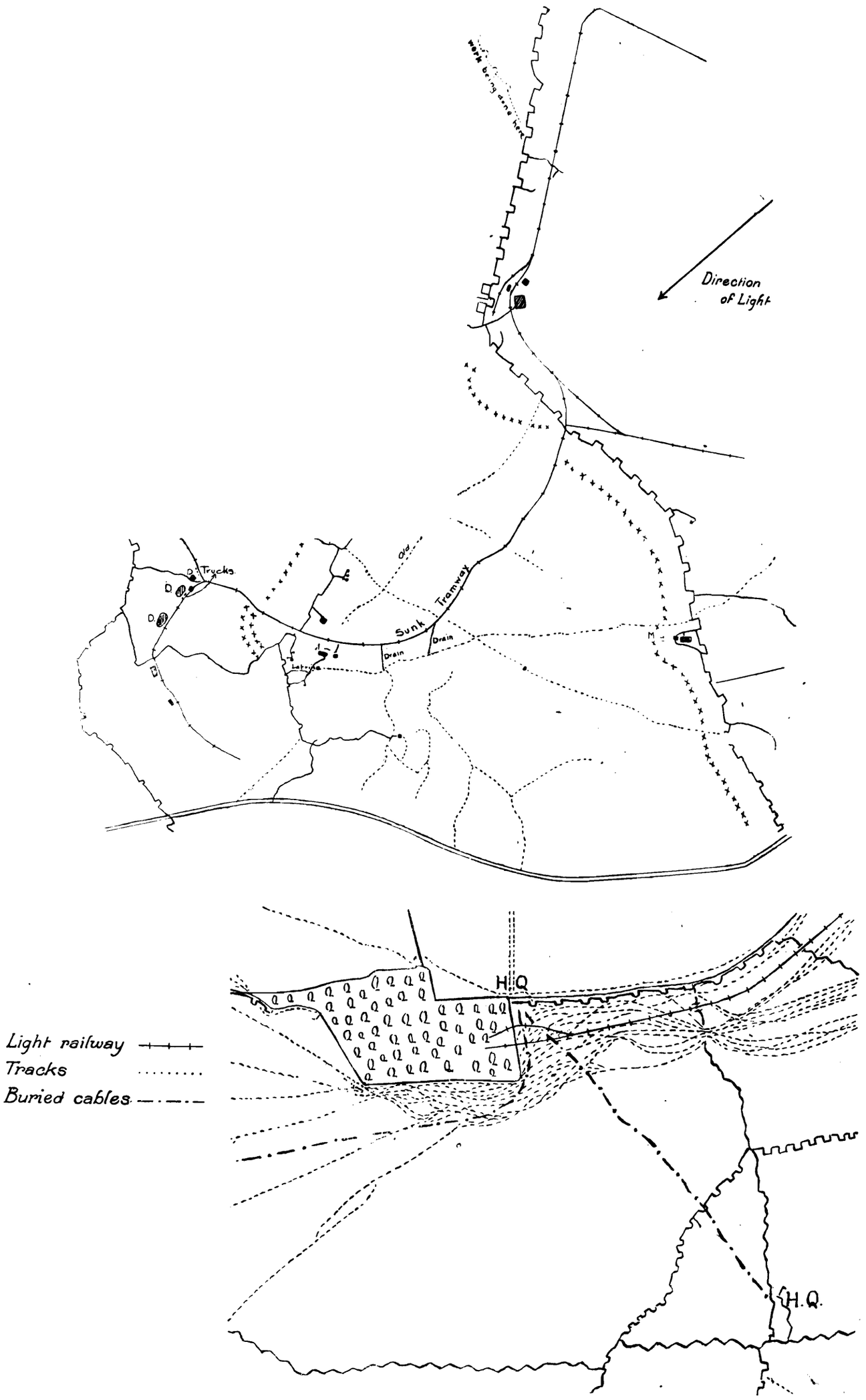

23V274
57c. B. 15d·16, c4,
21.bd.22,
22·11·16



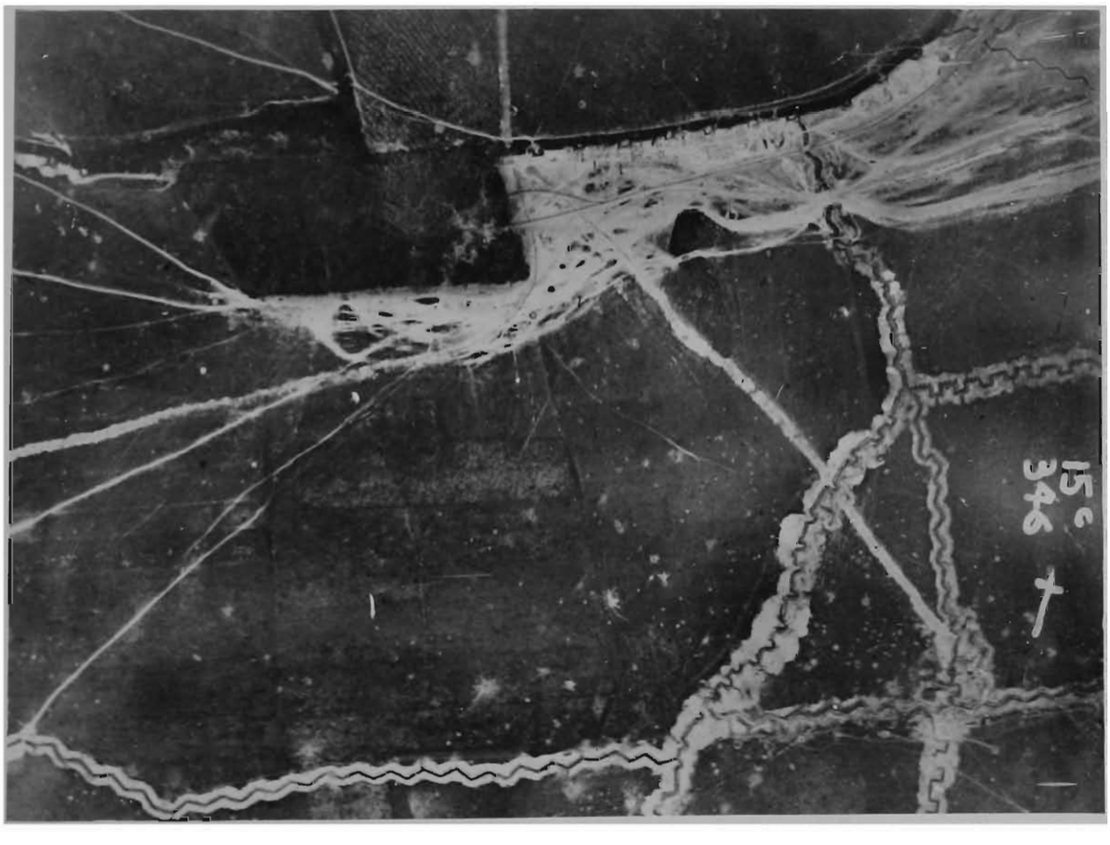
TRENCH TRAMWAY.

0·60 M. LIGHT RAILWAY. TRACKS.

AREA:—La Bassée Canal to River Scarpe.
River Scarpe to River Ancre.

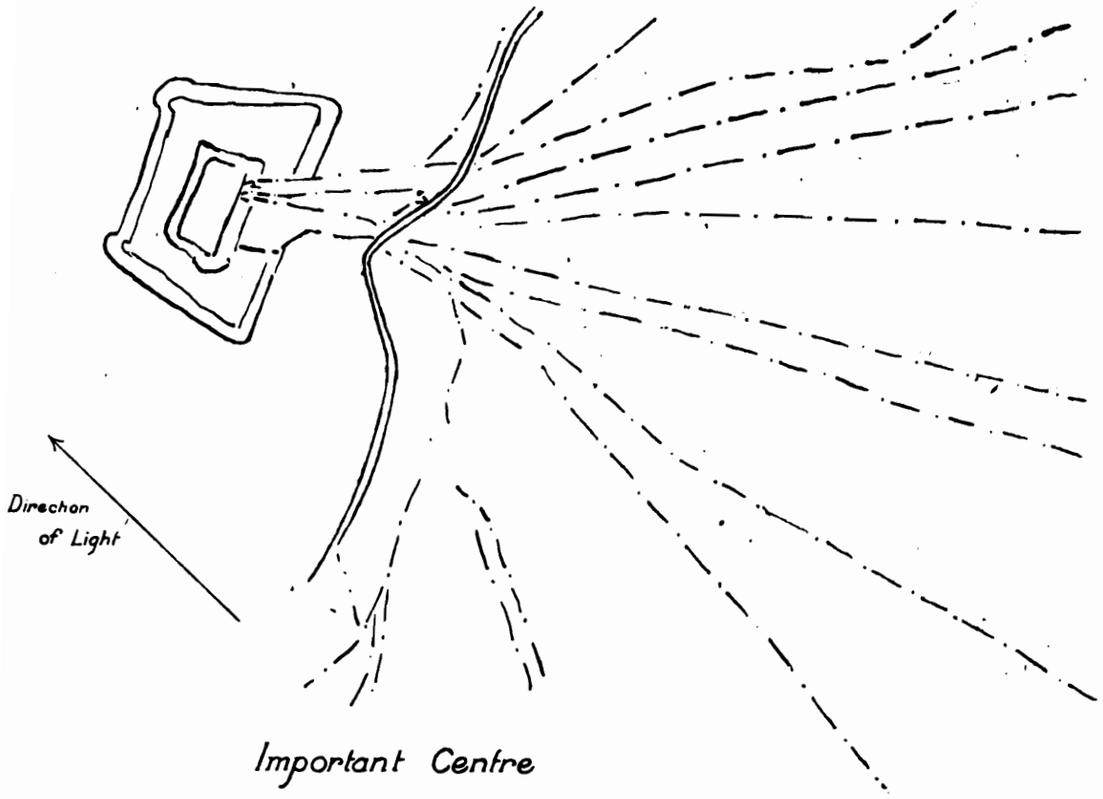

Work being done here
Direction of Light
Trucks
Old
Sunk Tramway
Drain
Drain
Latrines
H.Q
H.Q.
Light railway
Tracks
Buried cables

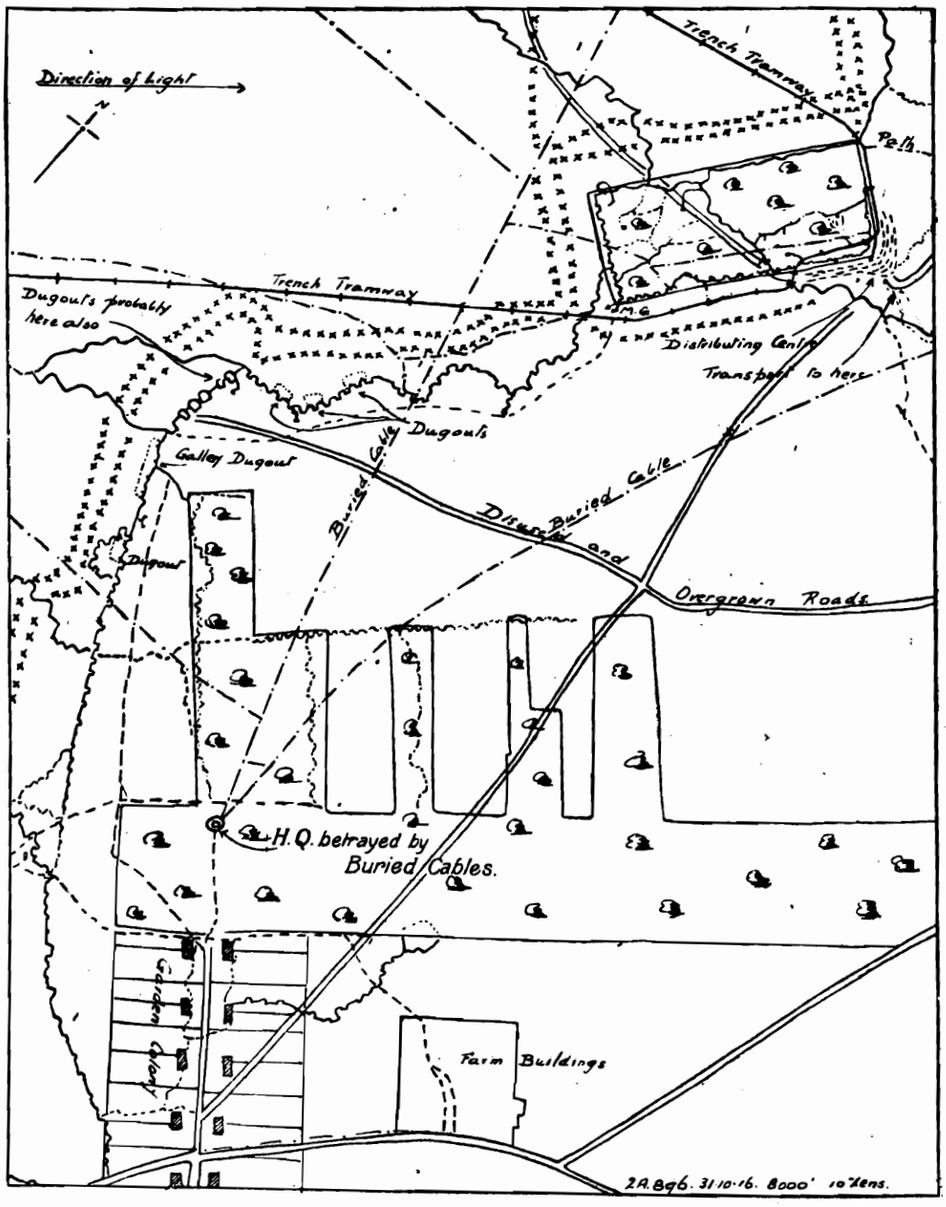


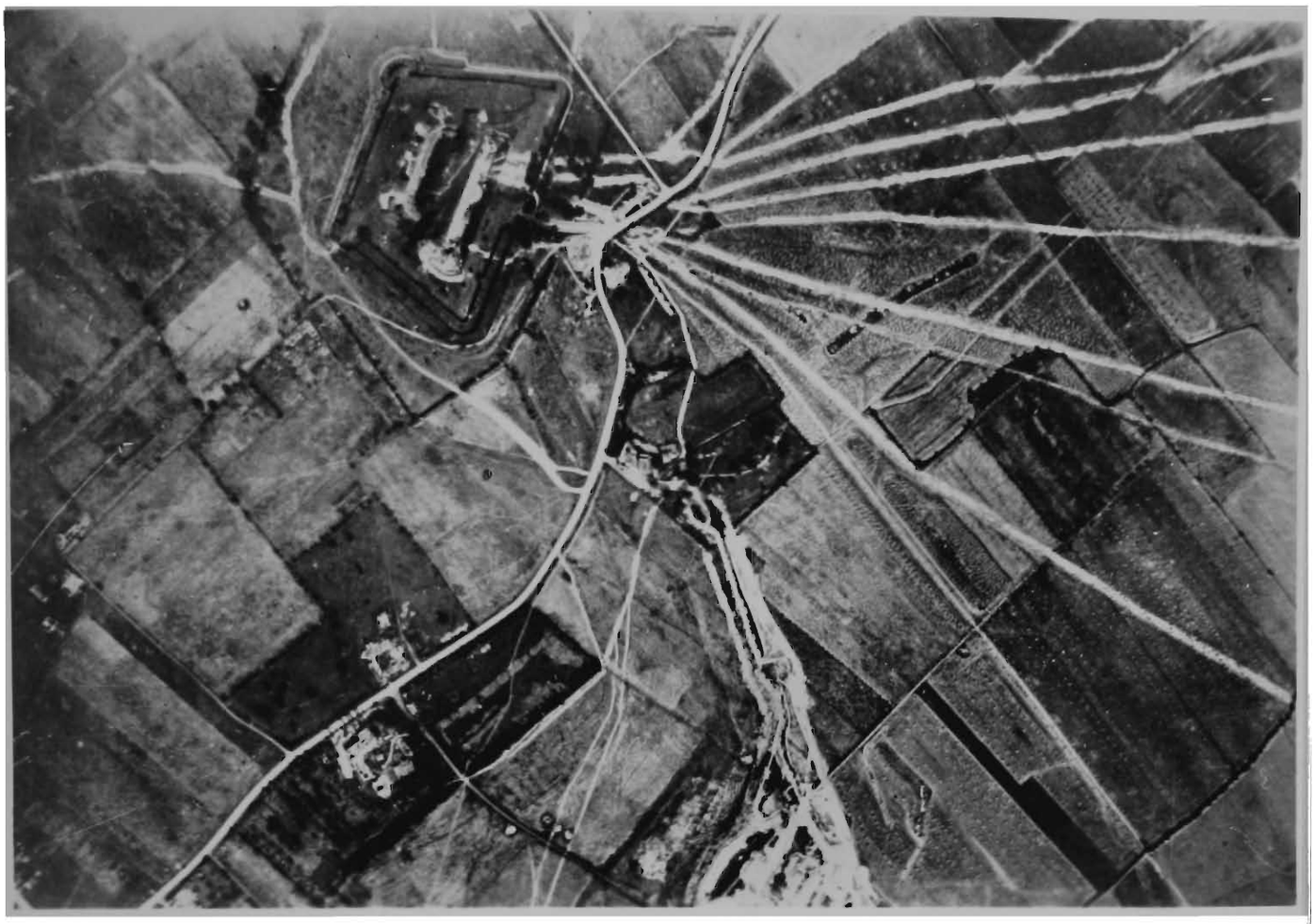

15c
346

BURIED CABLES.

AREA :—Ypres—Comines Canal to La Bassée Canal.
La Bassée Canal to River Scarpe.


Direction of Light
Important Centre

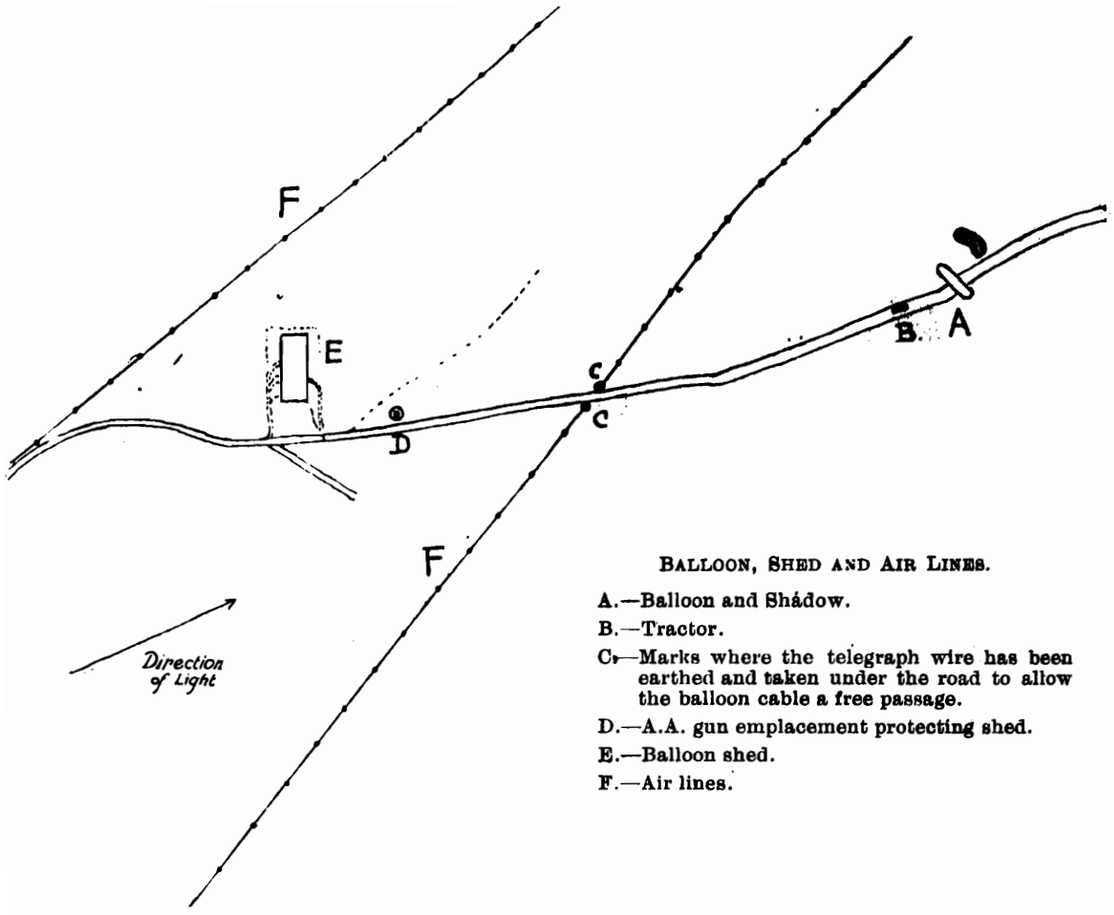

Direction of Light
Trench Tramway
Pelh
Trench Tramway
Dugouts probably here also
Dugouts
Distributing Centre
Transport to here
Gallery Dugout
Buried Cable
Buried Cable
Dugout
Overgrown Roads
H.Q. betrayed by Buried Cables.
Garden Orchard
Farm Buildings
2A.Bgb. 31.10.16. 8000' 10"Lens.





AIR LINES.

AREA :—River Scarpe to River Ancre.



BALLOON, SHED AND AIR LINES.

A.—Balloon and Shadow.

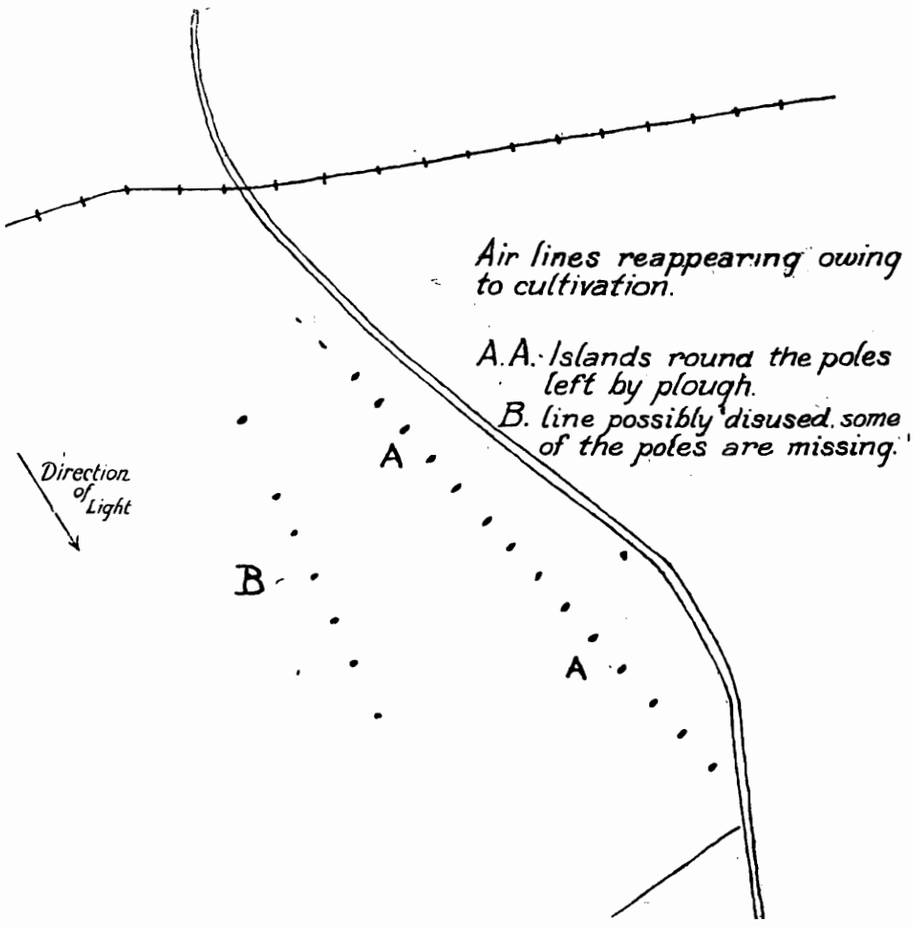
B.—Tractor.

C.—Marks where the telegraph wire has been earthed and taken under the road to allow the balloon cable a free passage.

D.—A.A. gun emplacement protecting shed.

E.—Balloon shed.

F.—Air lines.

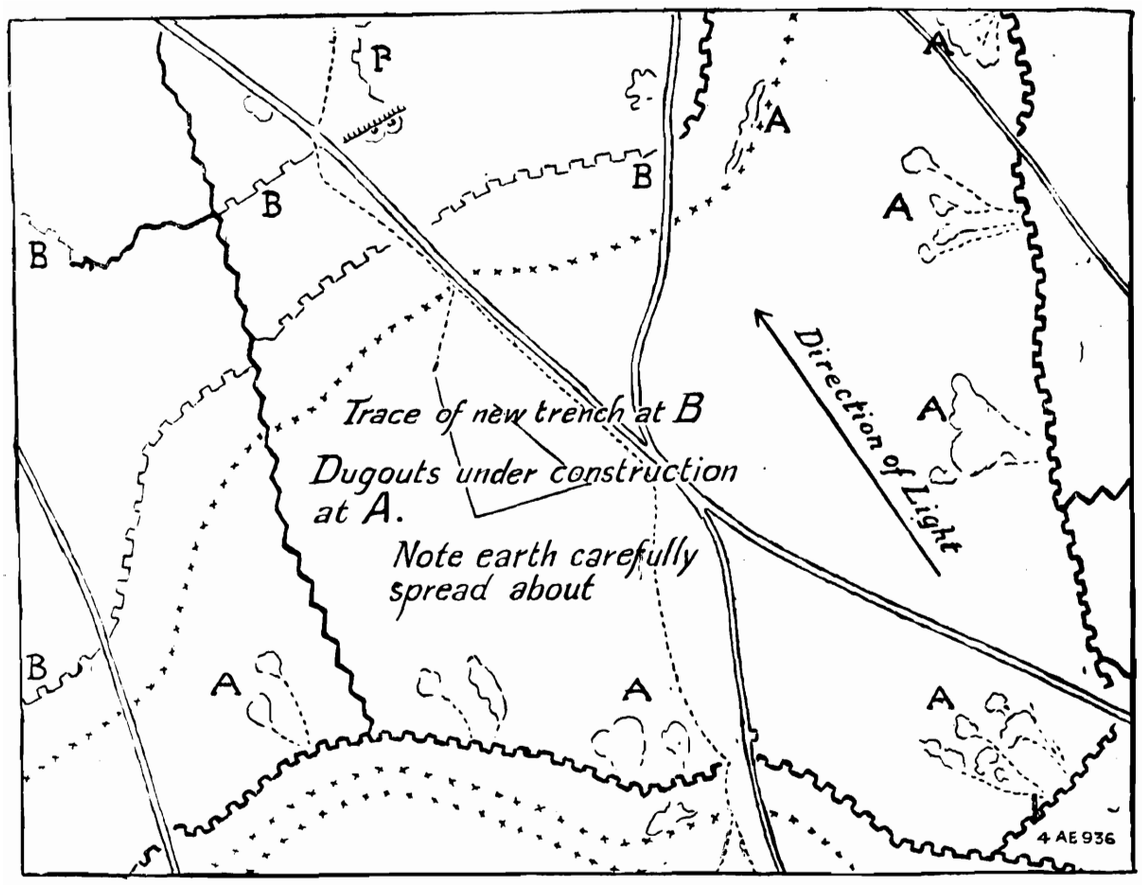






DUG-OUTS.

AREA :—River Scarpe to River Ancre.

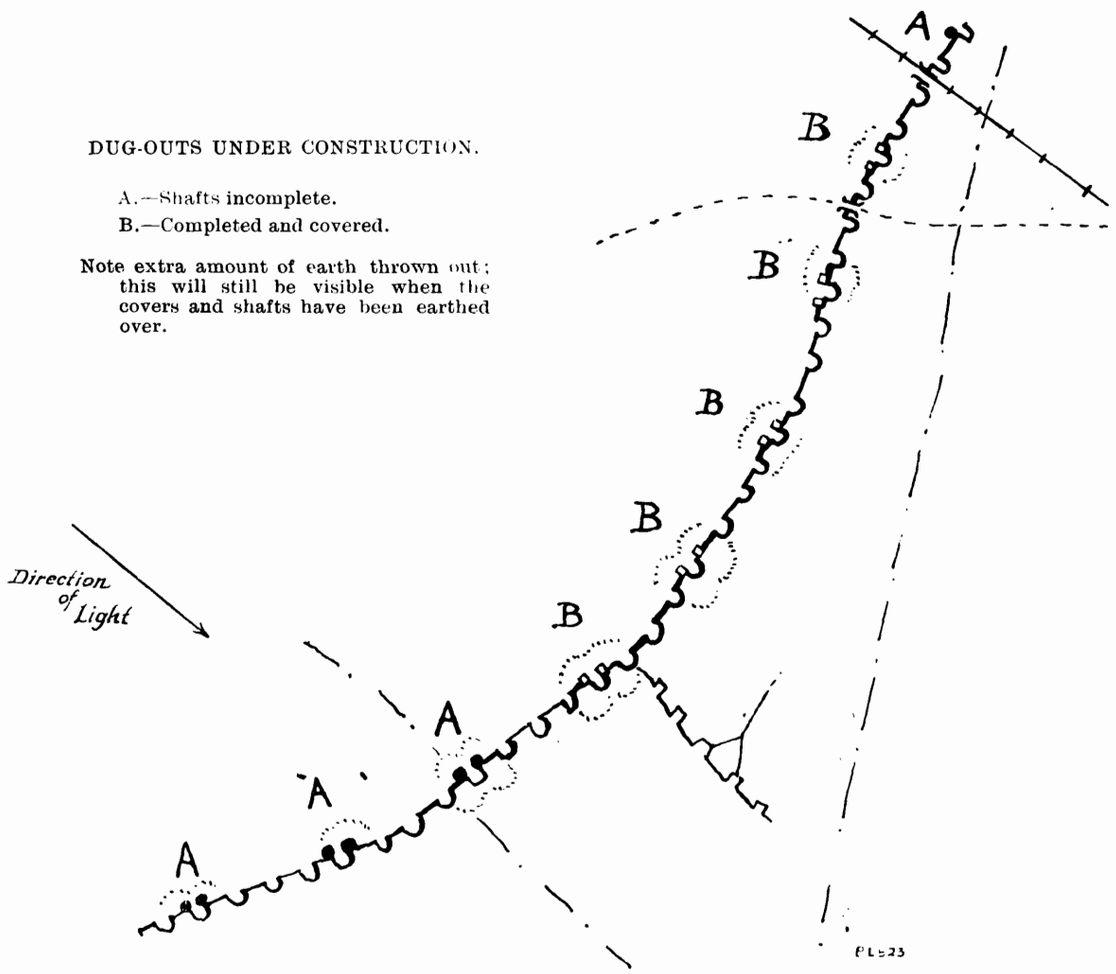


DUG-OUTS UNDER CONSTRUCTION.

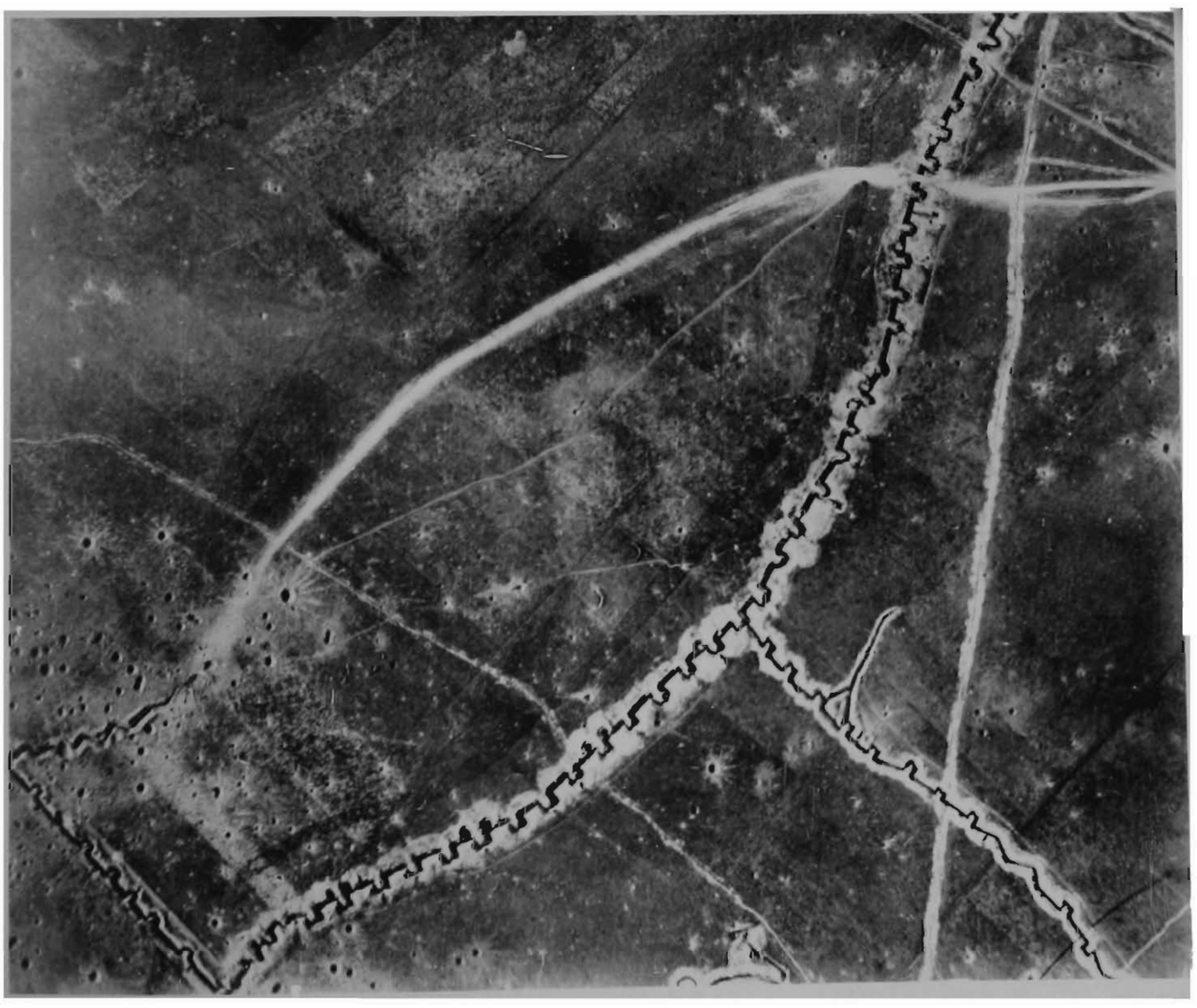
A.—Shafts incomplete.

B.—Completed and covered.

Note extra amount of earth thrown out; this will still be visible when the covers and shafts have been earthed over.

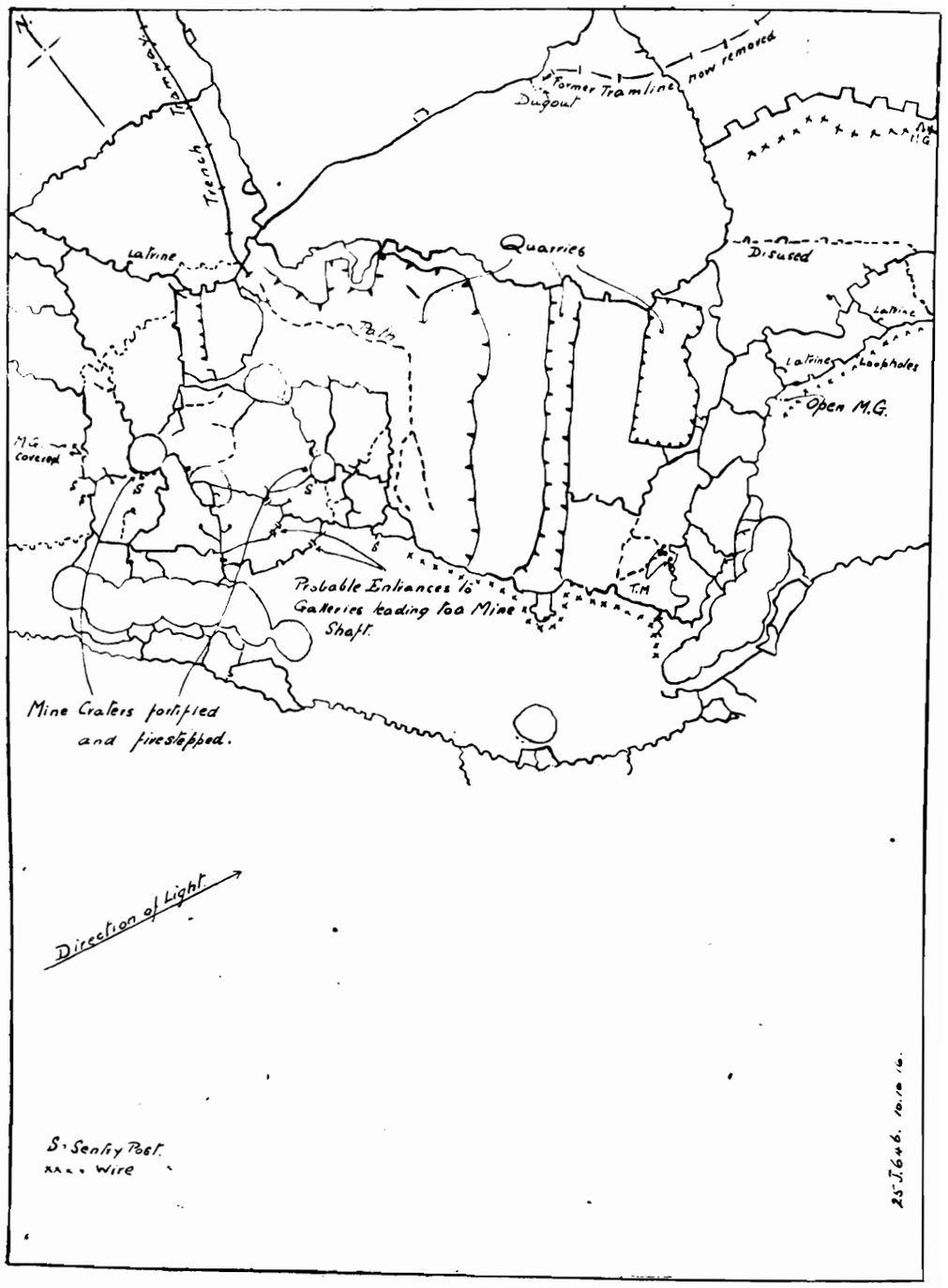


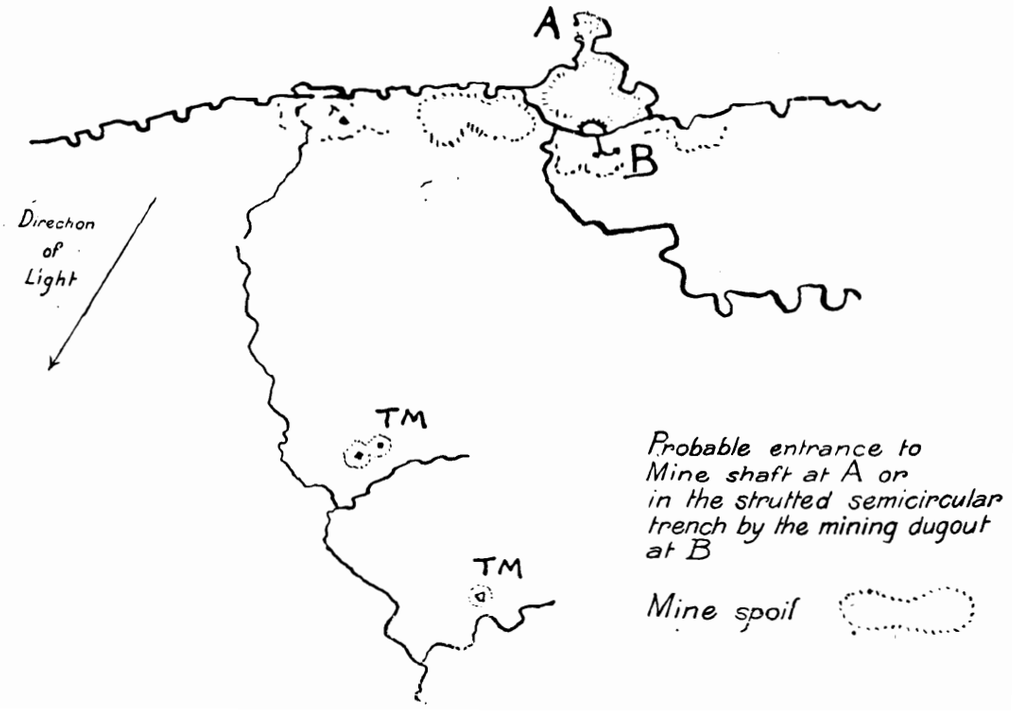




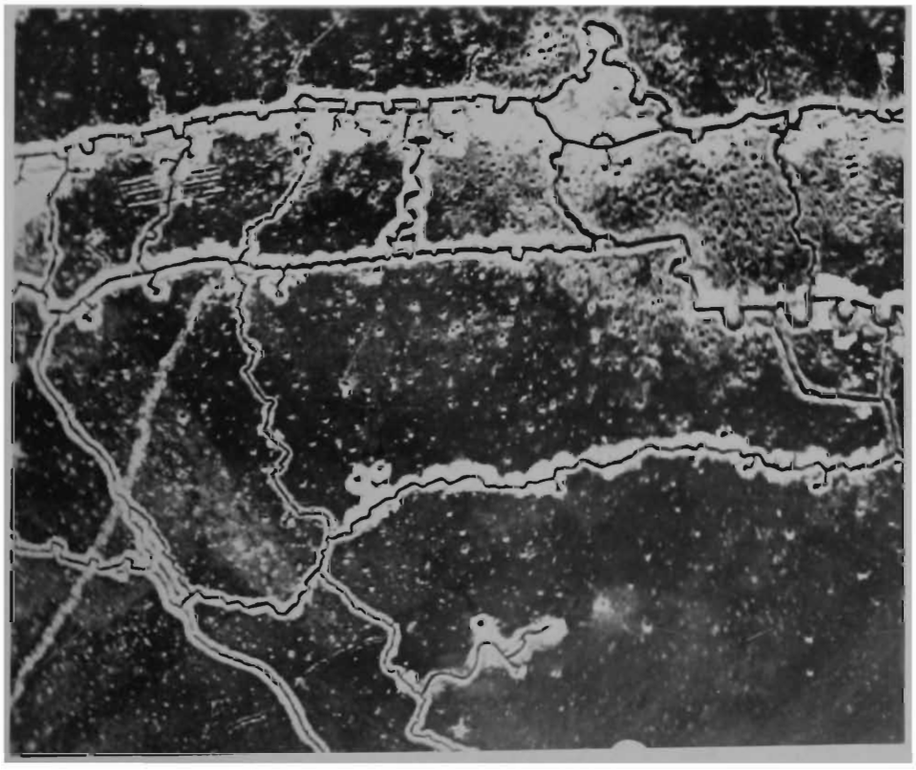
MINE SHAFTS.

AREA :—La Bassée Canal to River Scarpe.


N
Former Tramline now removed
Dugout
Trench
M.G.
Latrine
Quarries
Disused
Latrine
Latrines
Loopholes
Open M.G.
M.G. covering
Probable Entrances to Galleries leading too Mine Shaft.
T.M.
Mine Craters fortified and firestepped.
Direction of Light
S. Sentry Post
Wire
25.J.646. 10.10 16.


A
B
Direction of Light
TM
TM
Probable entrance to Mine shaft at A or in the strutted semicircular trench by the mining dugout at B
Mine spoil

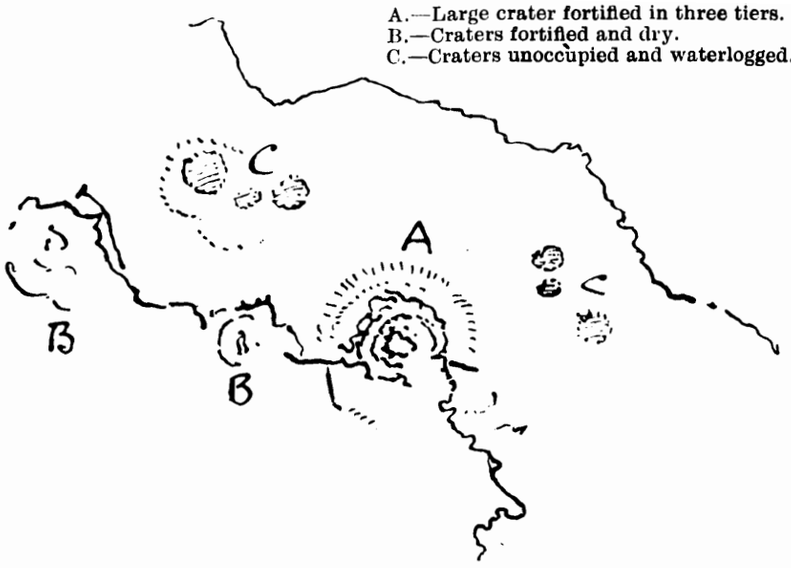

N

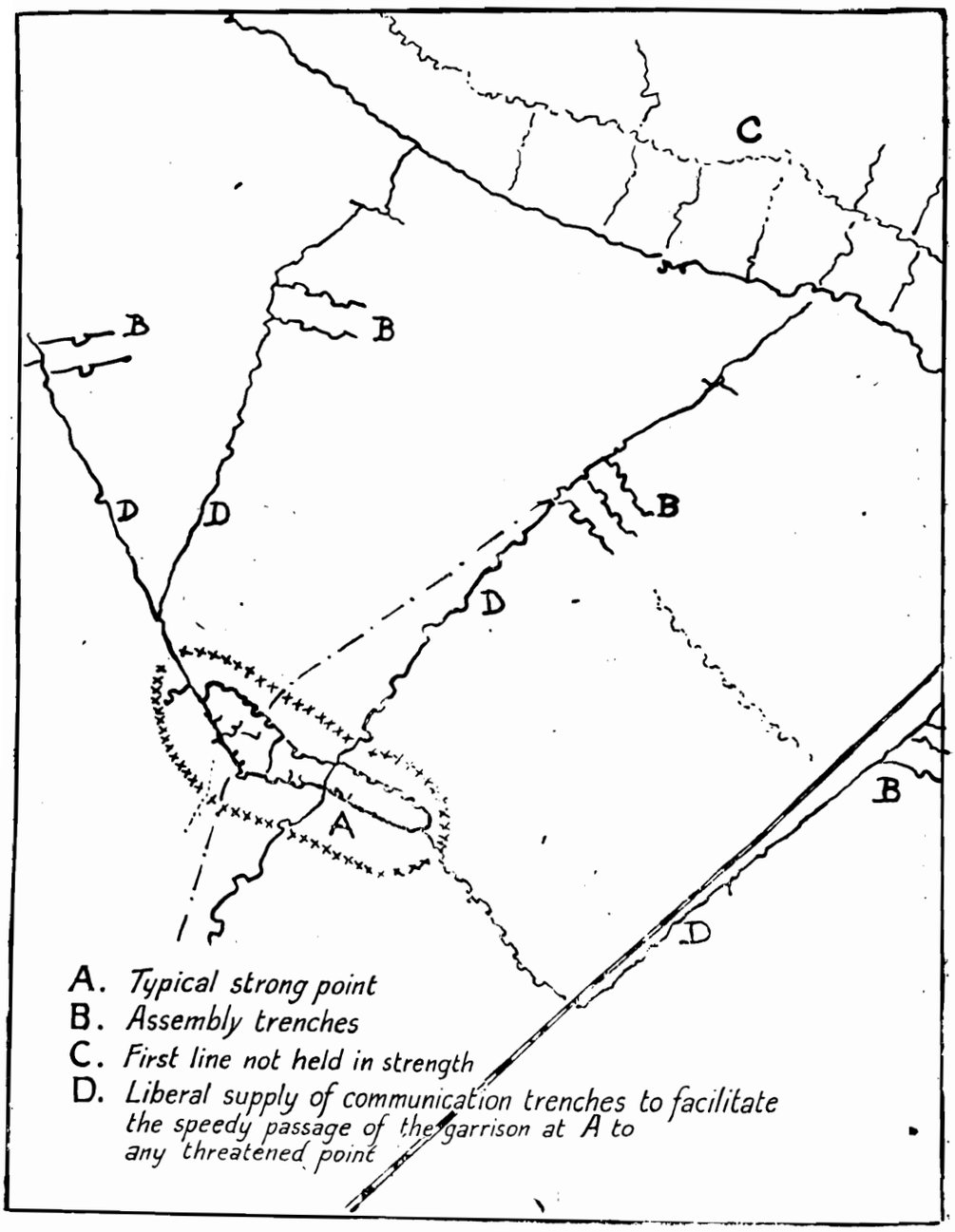


FORTIFIED CRATERS.
TYPICAL STRONG POINT.

AREA :—Ypres-Comines Canal to La Bassée Canal.
River Scarpe to River Ancre.

A.—Large crater fortified in three tiers.
B.—Craters fortified and dry.
C.—Craters unoccupied and waterlogged.



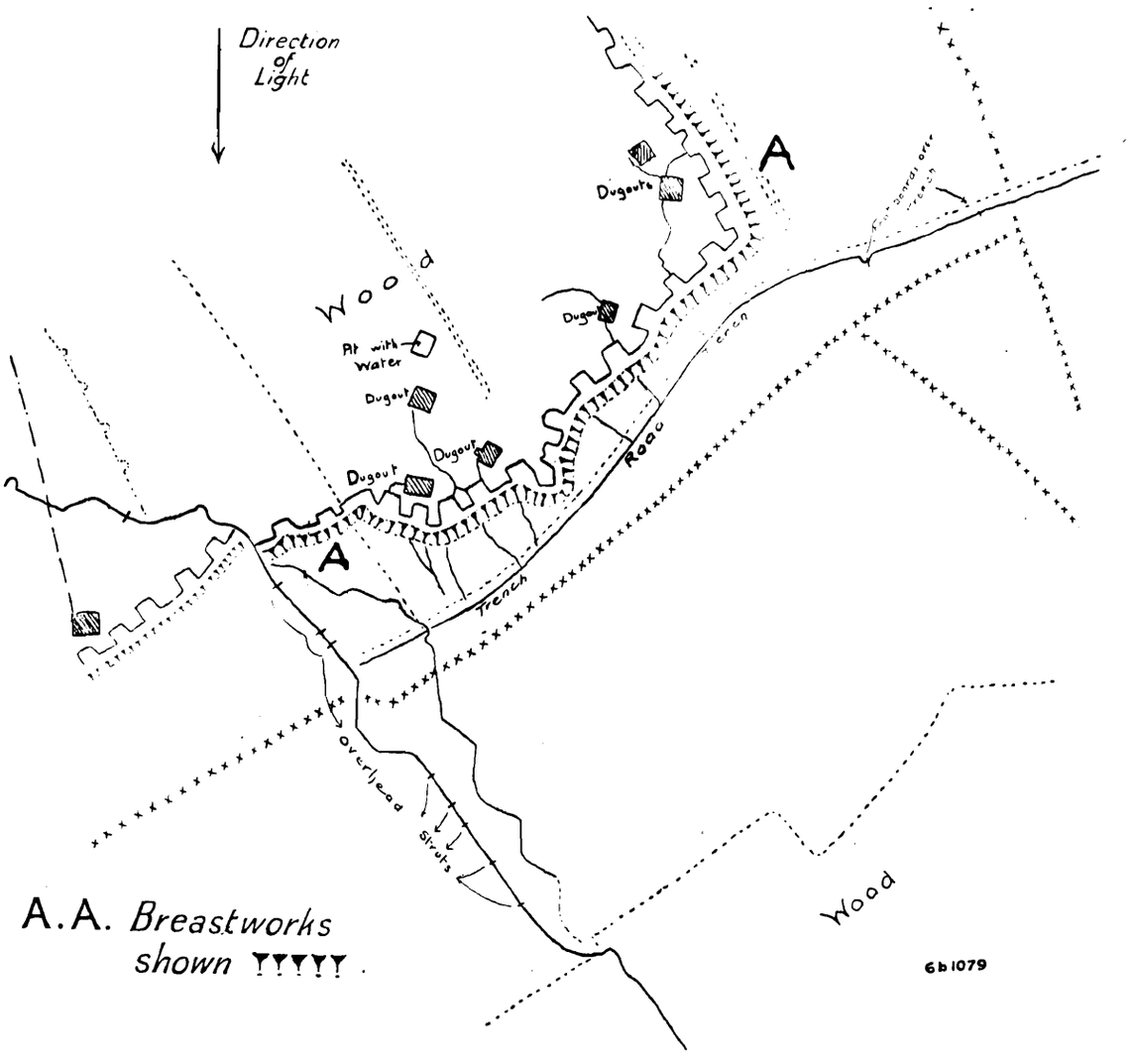


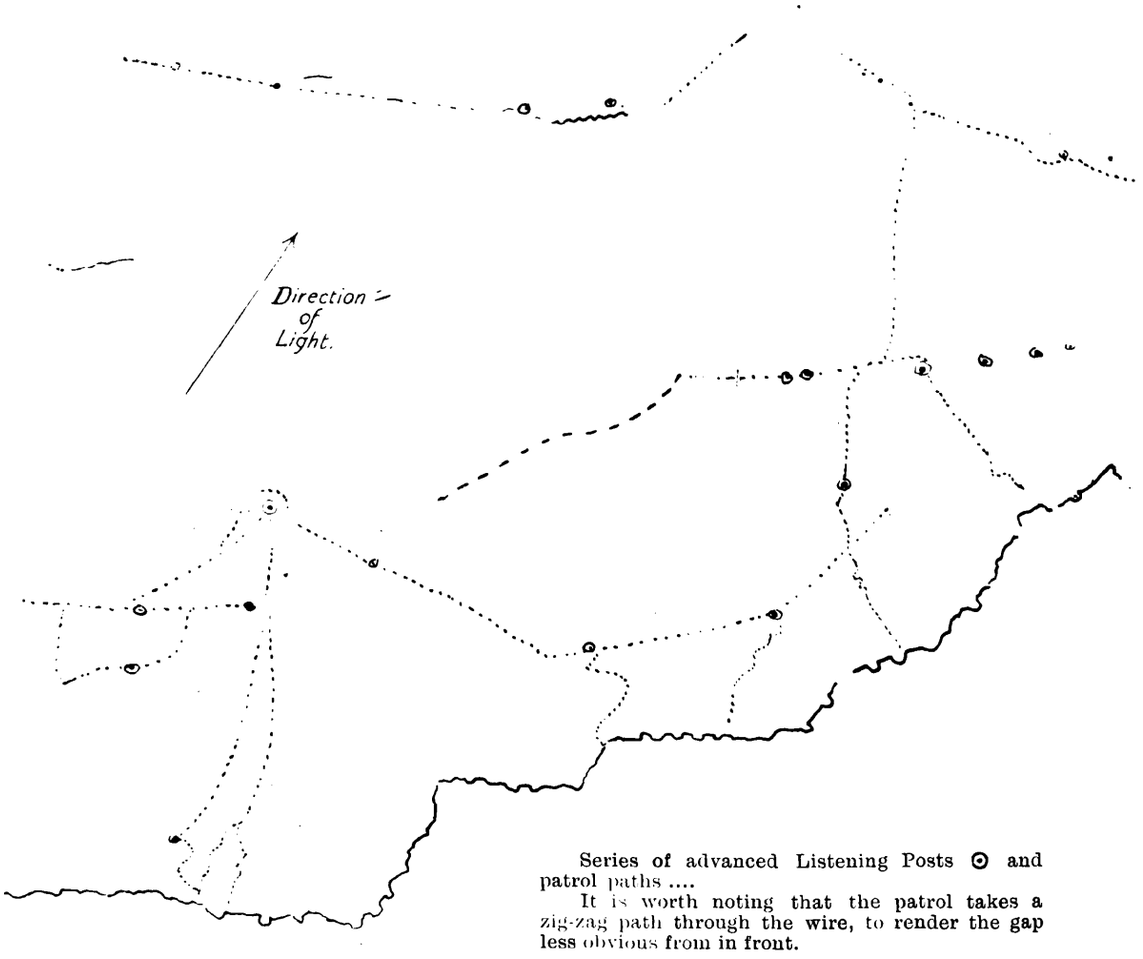




BREASTWORKS.
ADVANCED LISTENING POSTS. TRACKS.

AREA :—Ypres-Comines Canal to La Bassée Canal.
River Scarpe to River Ancre.

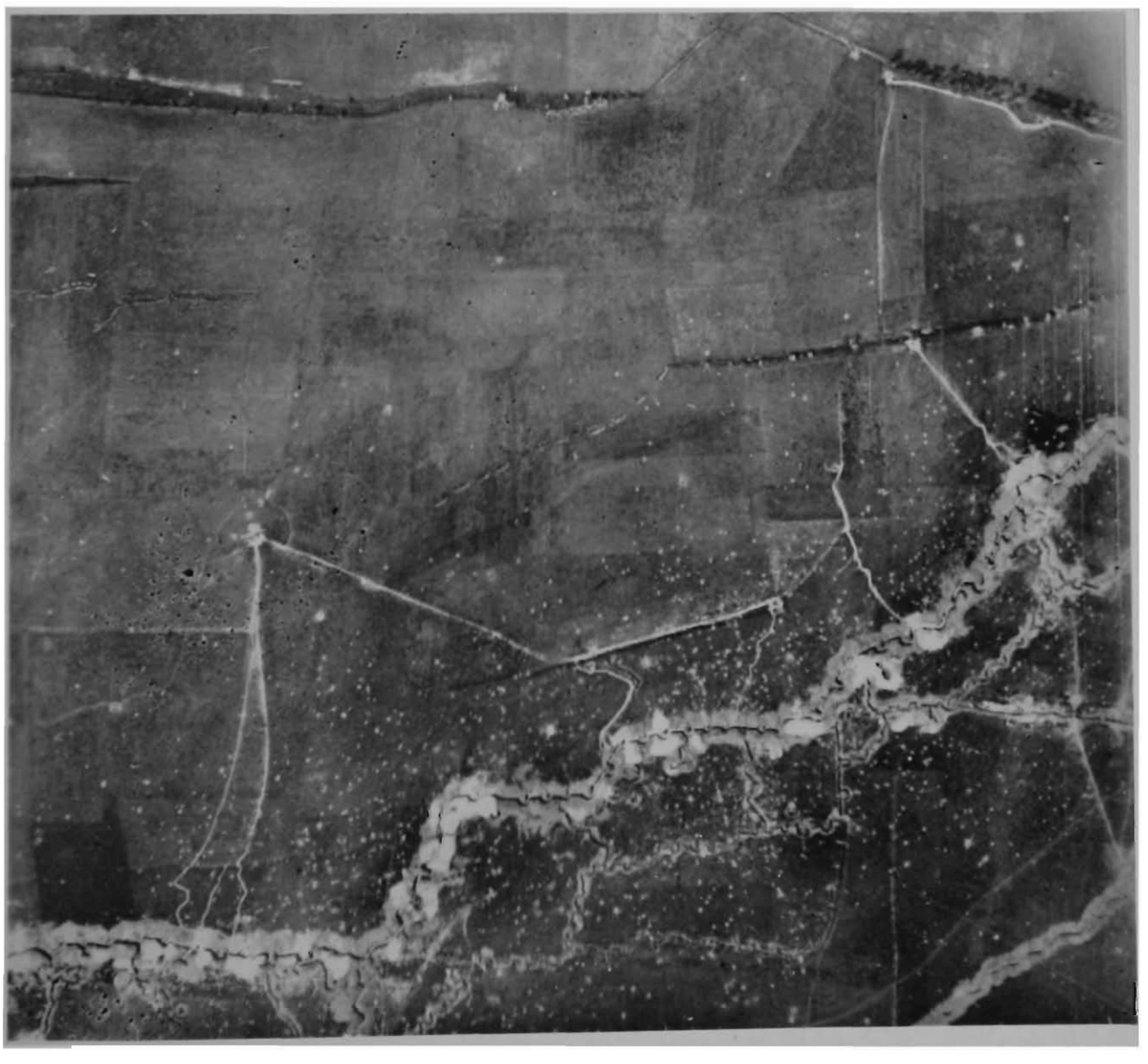




Series of advanced Listening Posts ⊙ and patrol paths ....

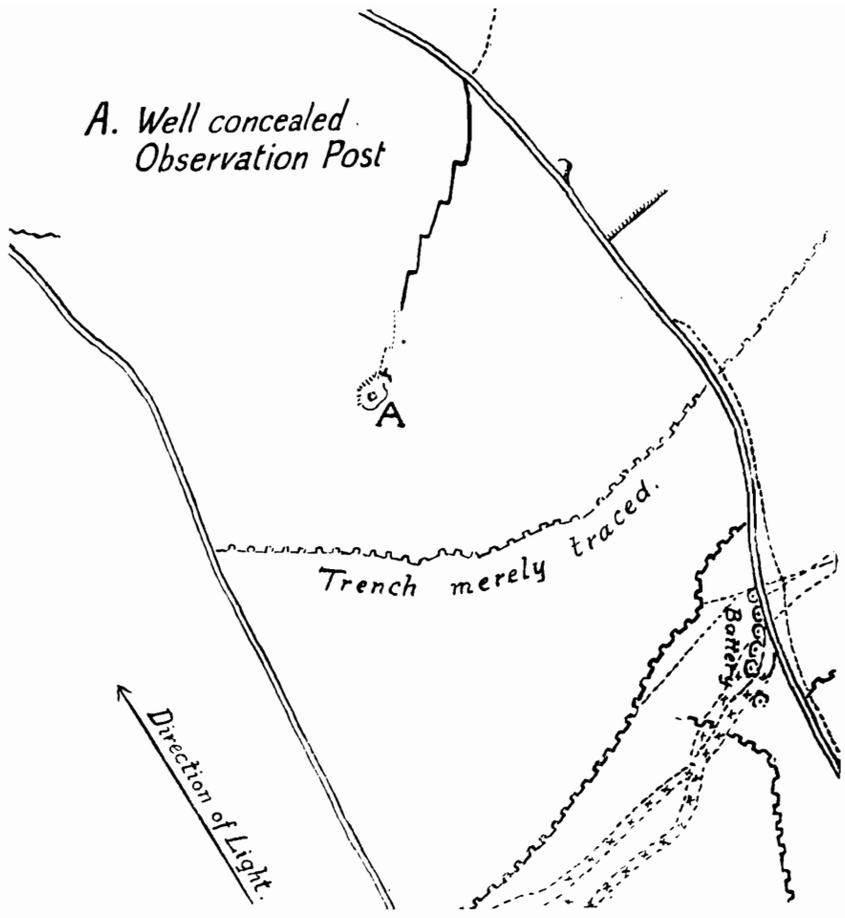
It is worth noting that the patrol takes a zig-zag path through the wire, to render the gap less obvious from in front.

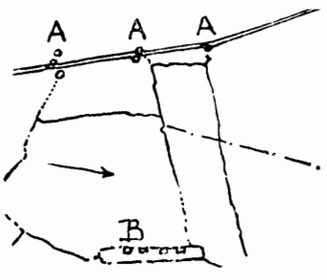




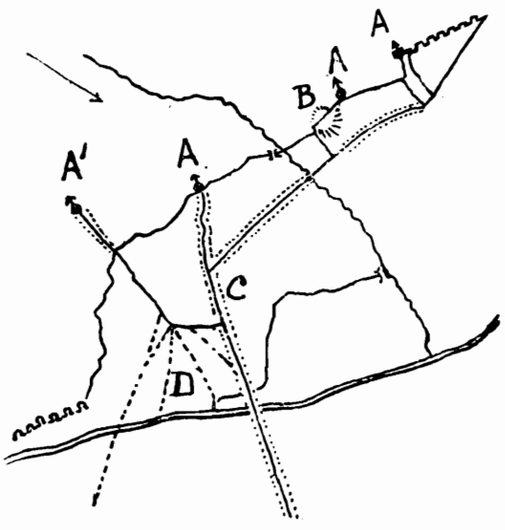
OBSERVATION POSTS.

AREA :—River Scarpe to River Ancre.





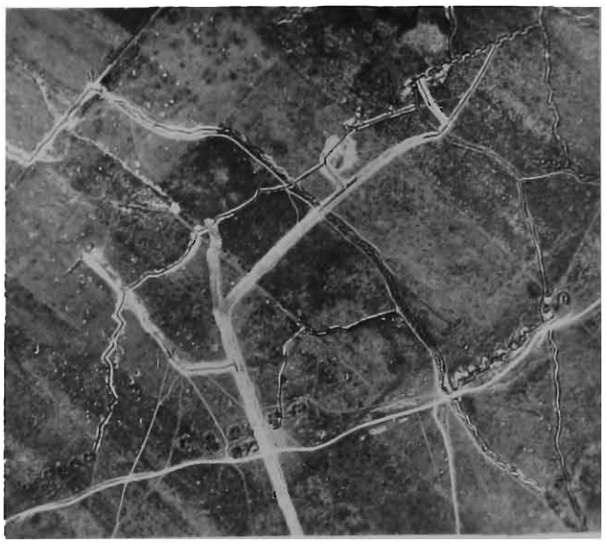
A.A.A.—Haystacks used as observation posts.
B.—Battery.



A.A.A.A.—Observation posts.
B.—Dug-out.
C.—Covered Trench for Cables and personnel.
D.—Tracks where observers have jumped into the trench just before reaching the sky line. These point to the observation post A' being the most used.

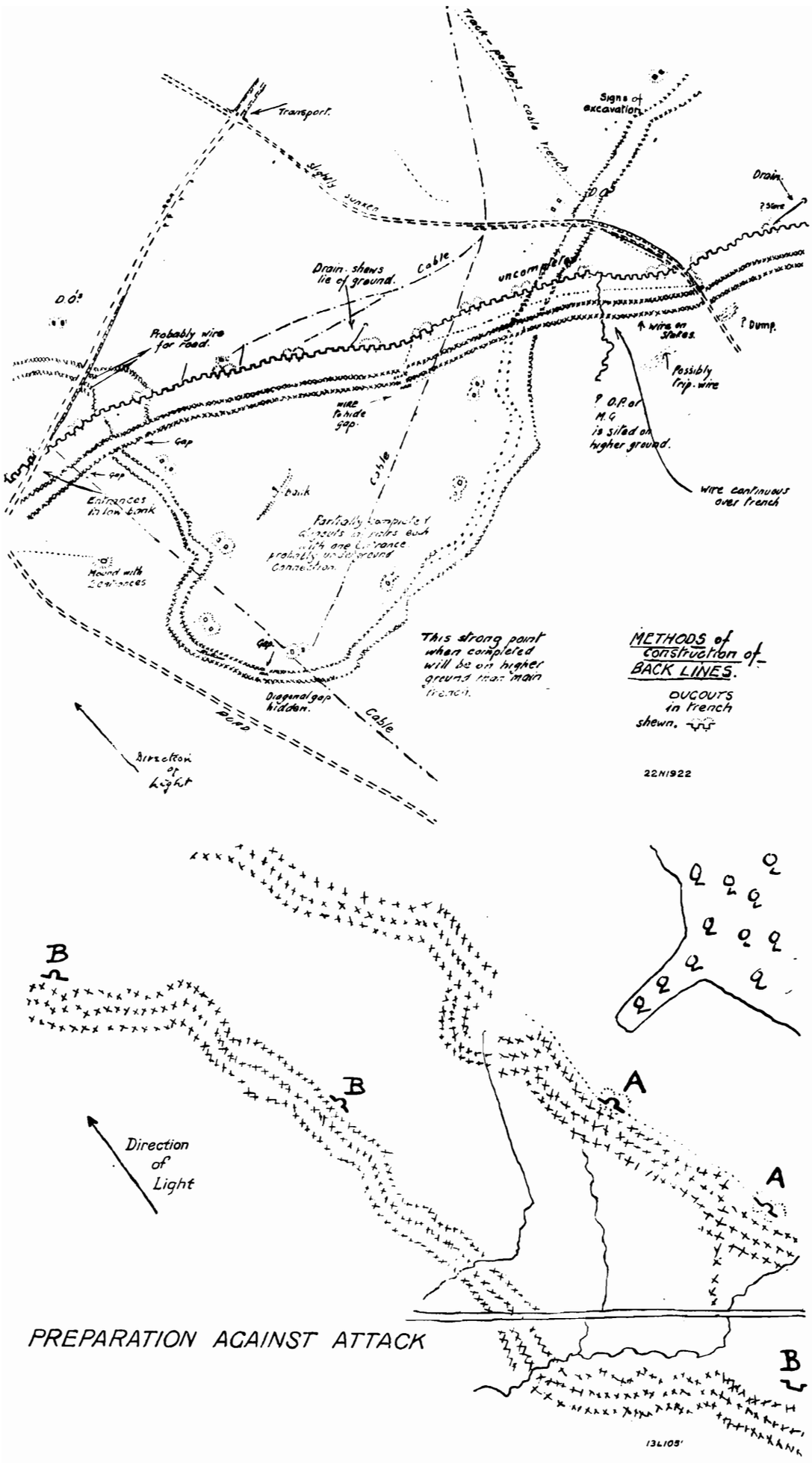

7AE614





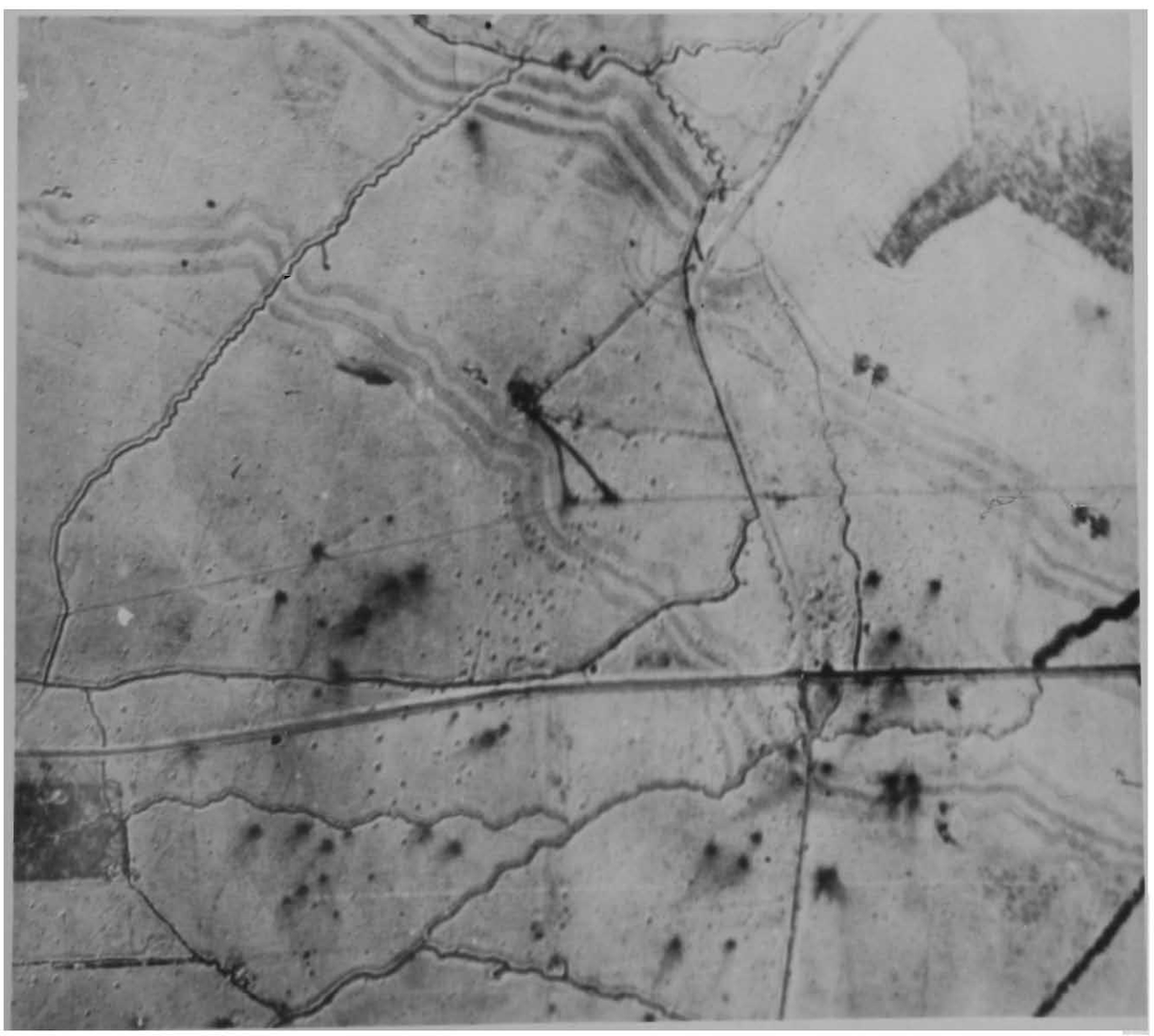
PREPARATION AGAINST ATTACK.

AREA :—River Ancre to River Somme.
La Bassée Canal to River Scarpe.



New lines of wire erected before the trench is dug. At A.A. trace of trench and traverses with dug-outs commenced. At B.B. traverses dug to mark course of new trench.



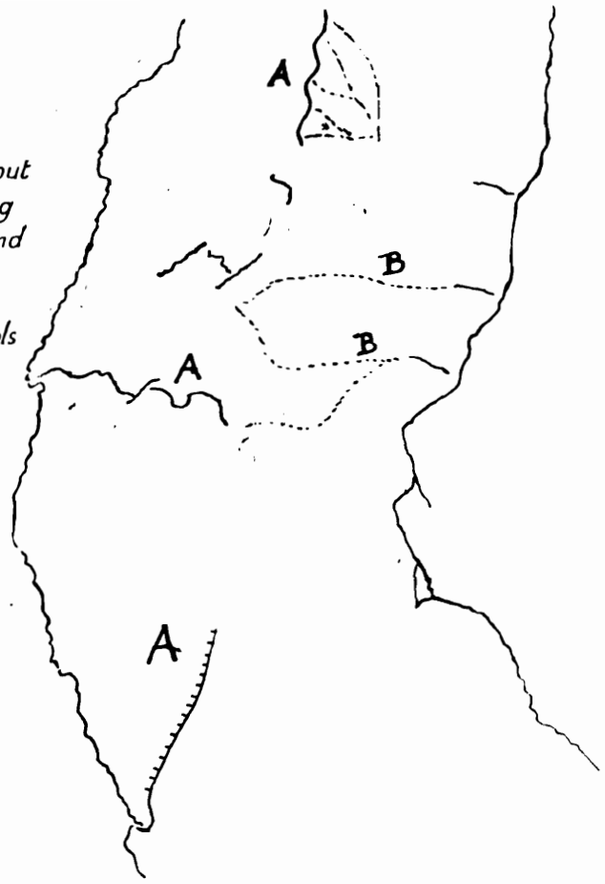


INDICATIONS OF A RAID OR AN ATTACK.

AREA :—La Bassée Canal to River Scarpe.

A. Saps pushed out and trenches dug to hold raiding and covering parties

B. Tracks of patrols sent out from opposing line to reconnoitre work.



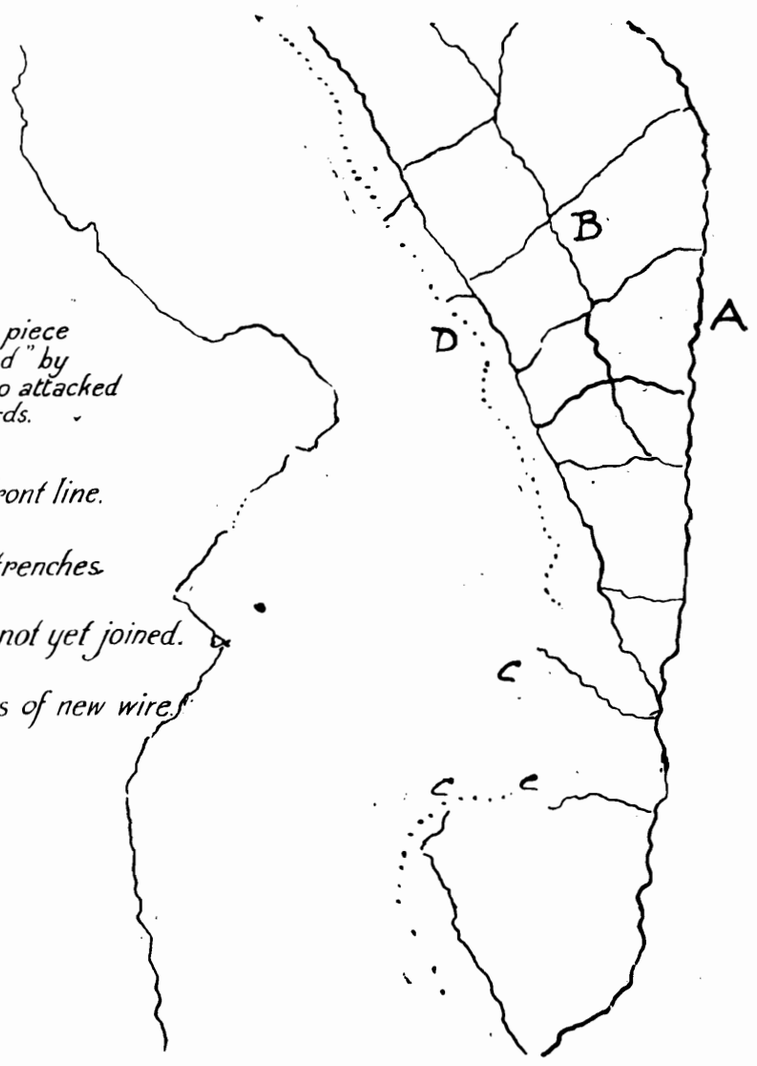
Gain of a large piece of "No Man's land" by the enemy, who attacked shortly afterwards.

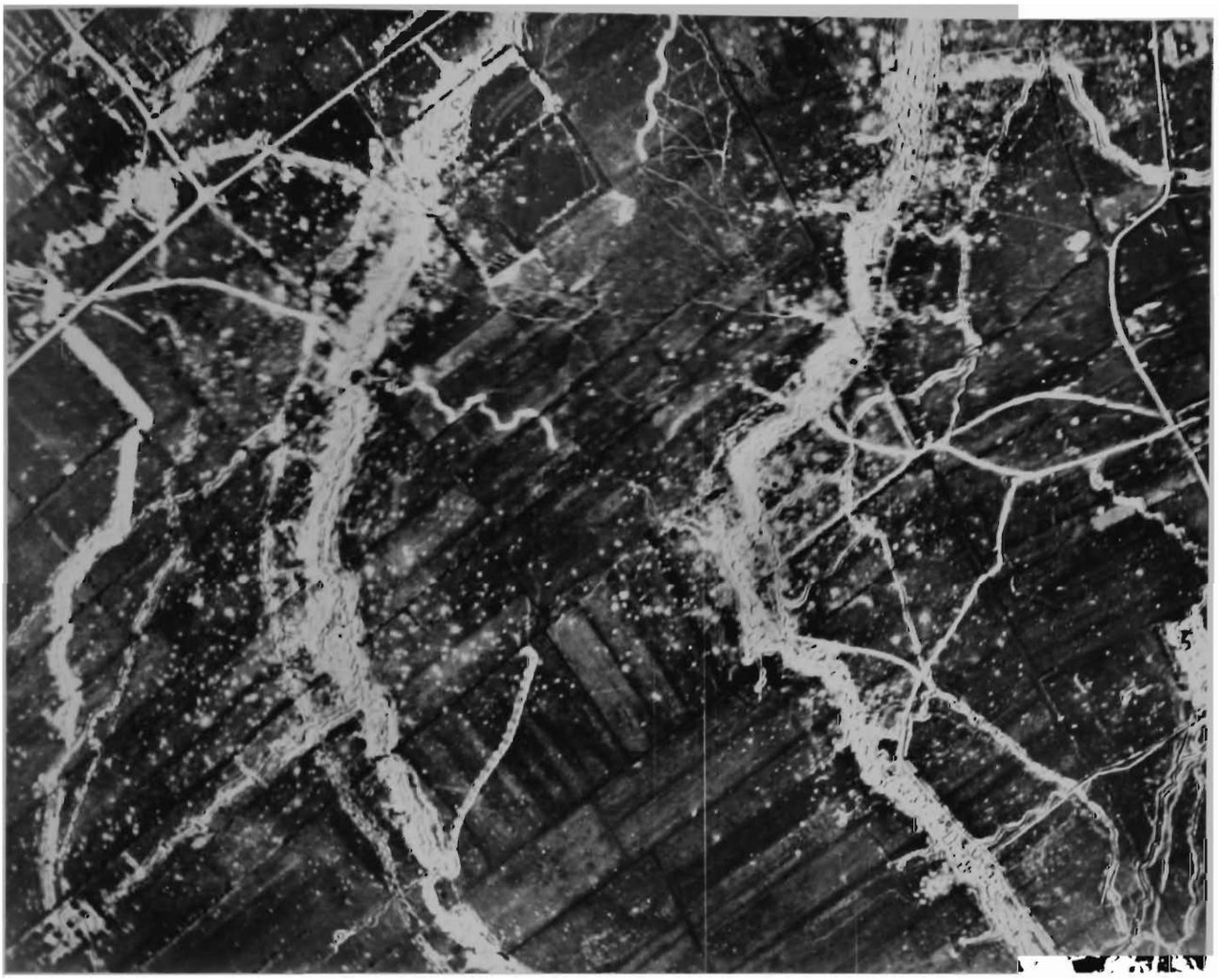
A. Old Front line.

B. New trenches.

C. Saps not yet joined.

D. .....Posts of new wire.



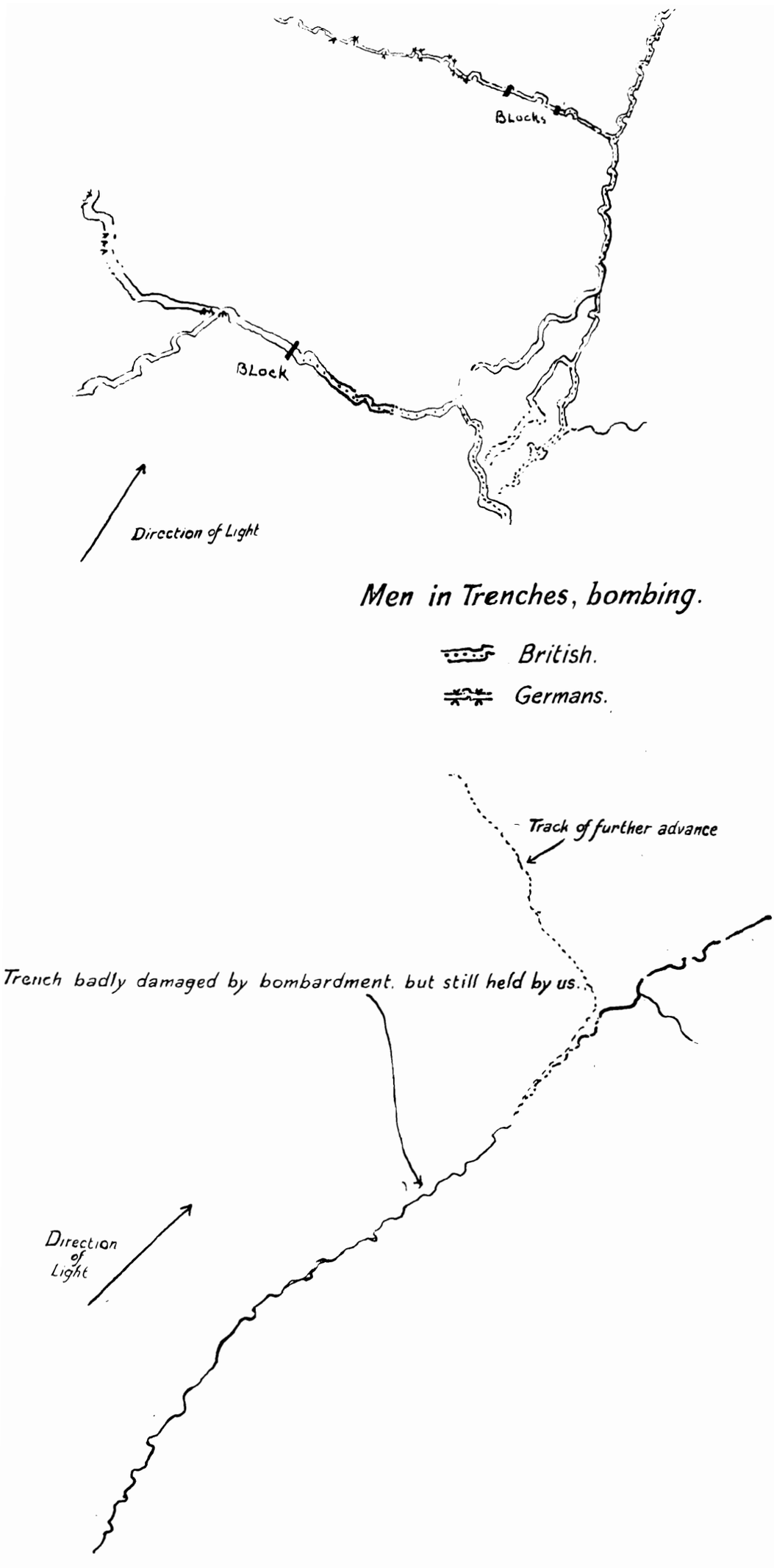




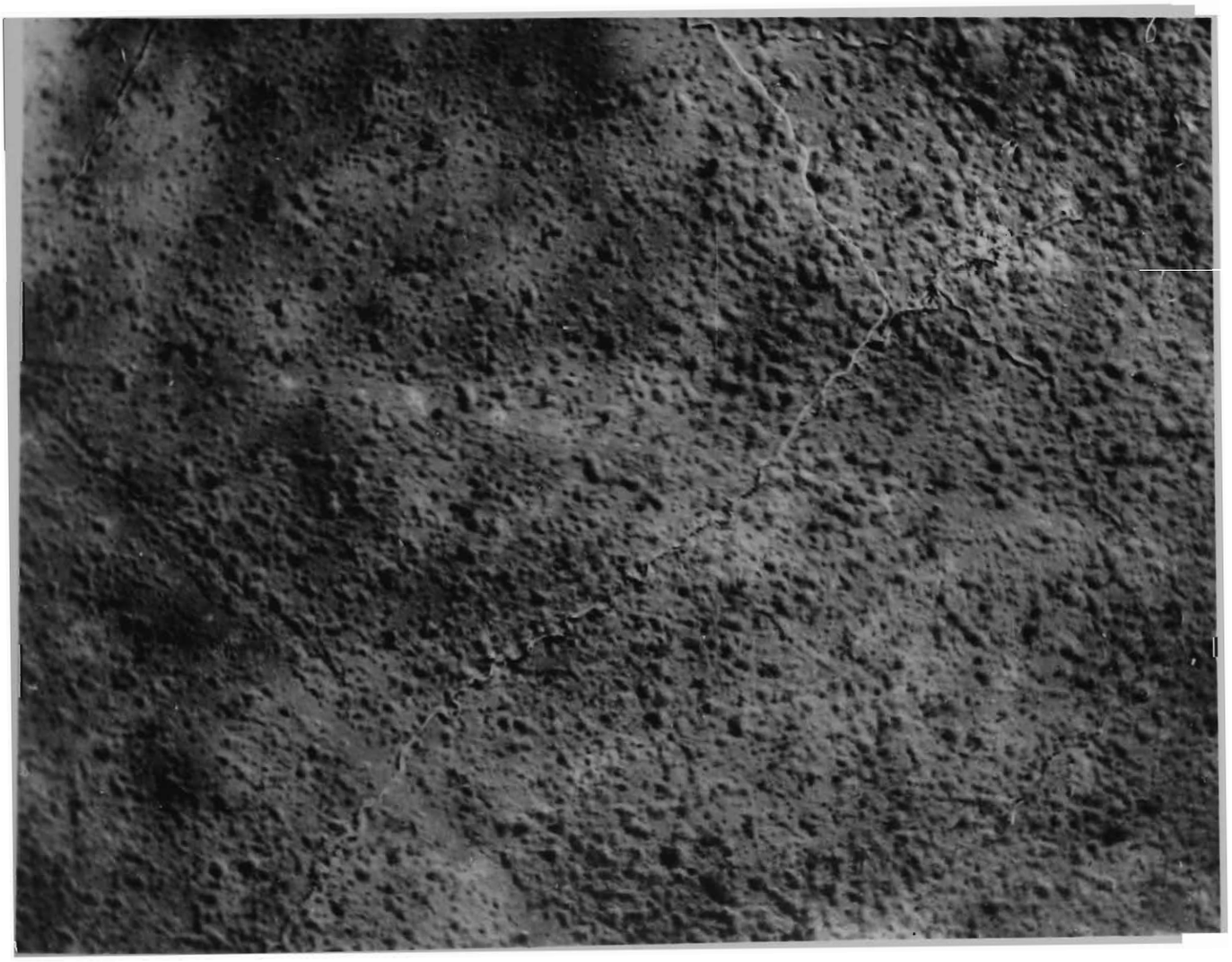
TRENCH CONSTRUCTION DURING A BATTLE.

BOMBING. BLOCKS.

AREA :—River Ancre to River Somme.

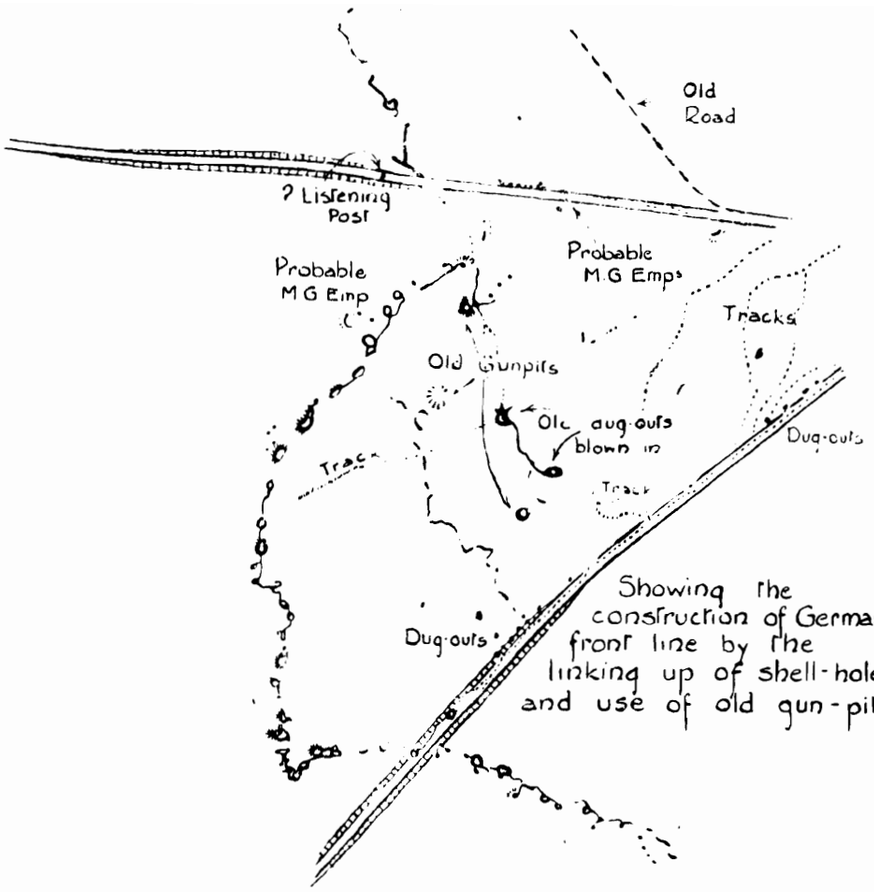

Blocks
Block
Direction of Light
Men in Trenches, bombing.
British.
Germans.
Track of further advance
Trench badly damaged by bombardment. but still held by us.
Direction of Light



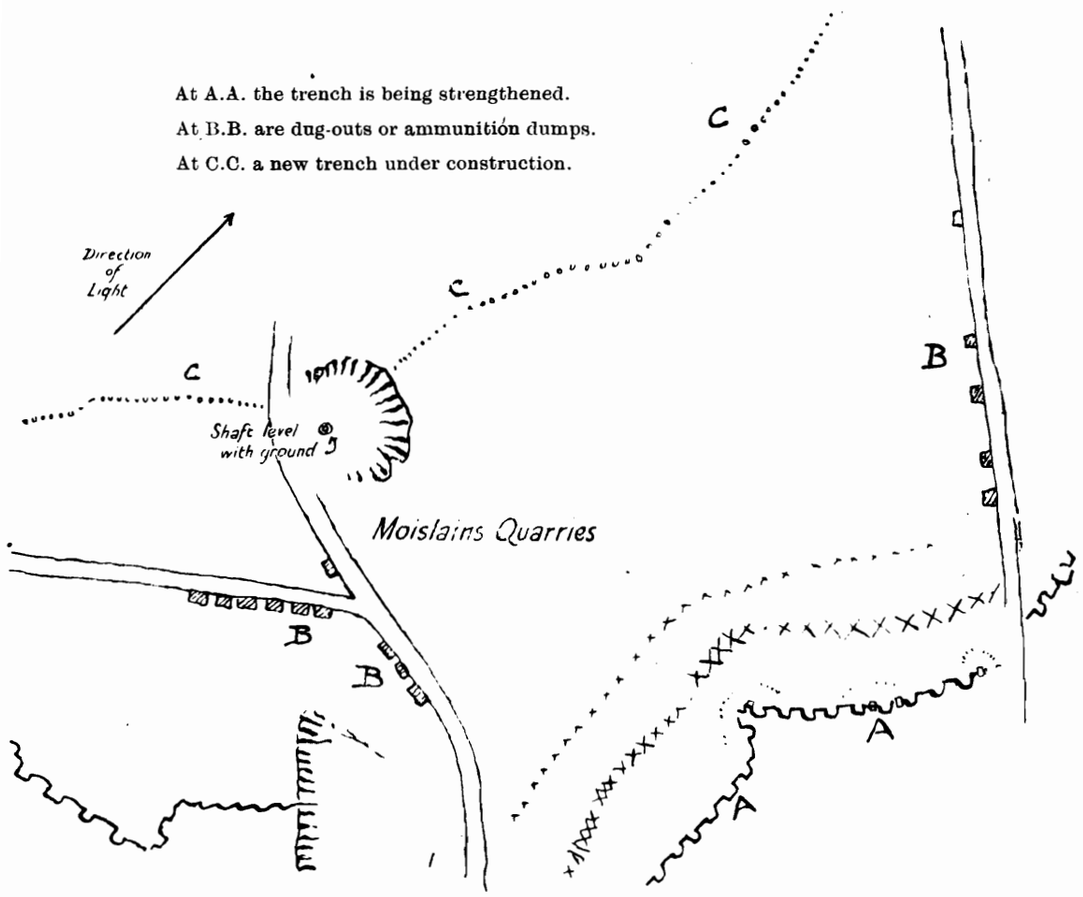


LINKING UP SHELL HOLES.

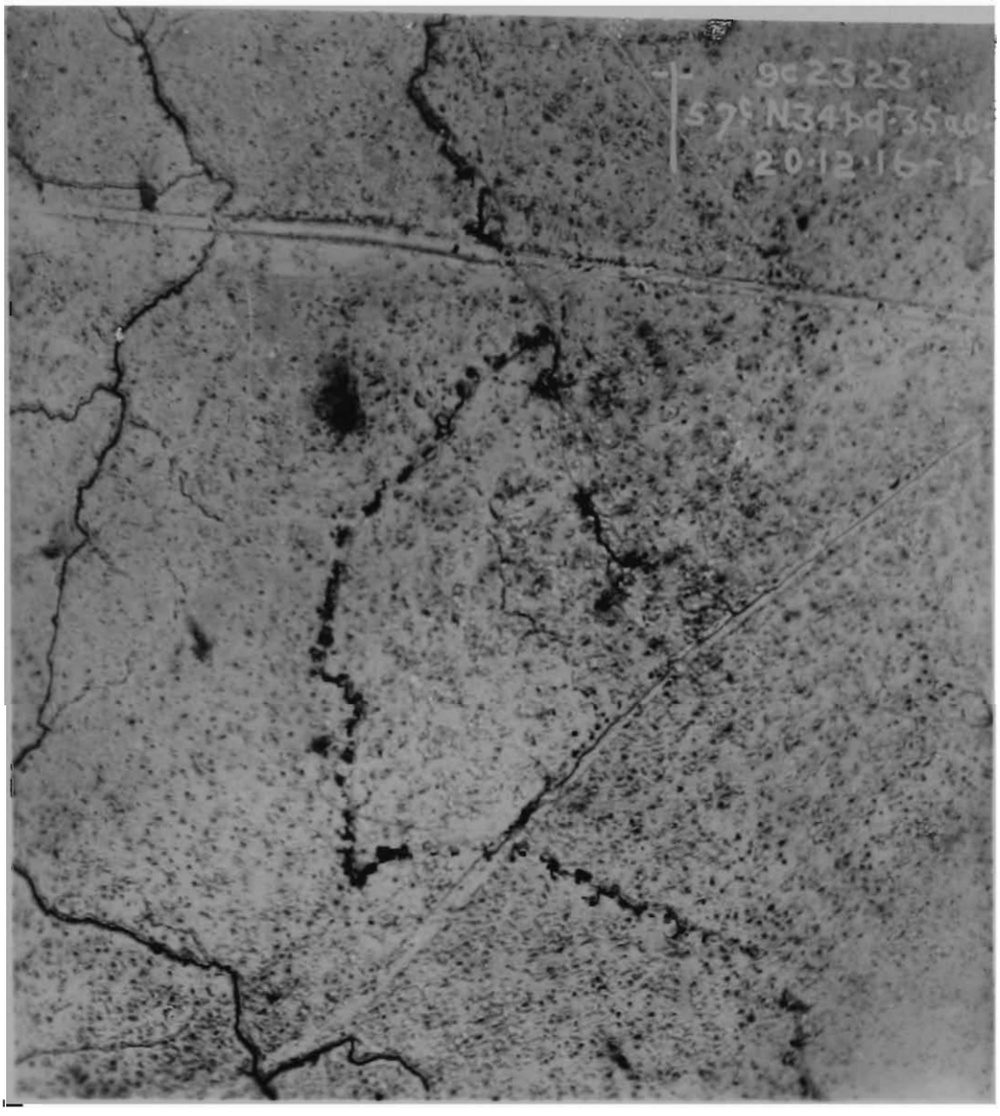
AREA :—River Ancre to River Somme.



Showing the construction of German front line by the linking up of shell-holes, and use of old gun-pits.



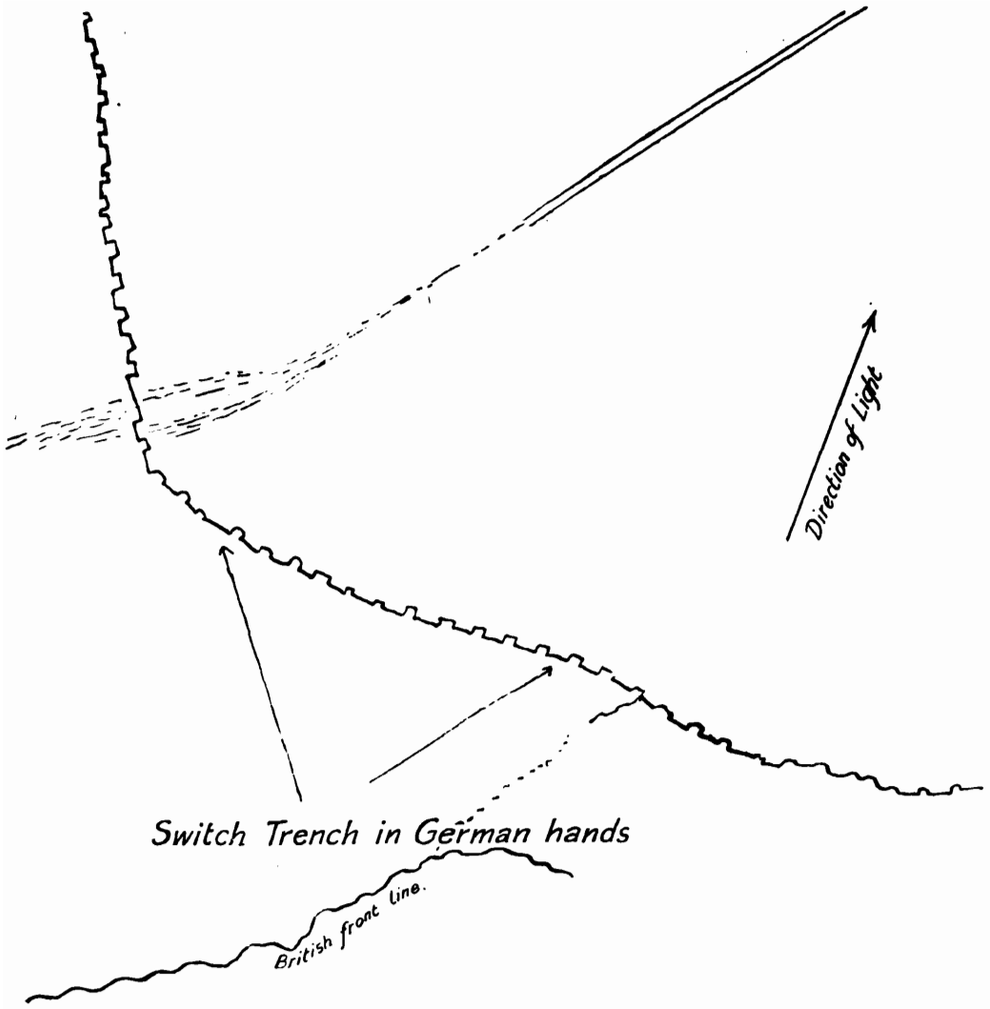
At A.A. the trench is being strengthened.
At B.B. are dug-outs or ammunition dumps.
At C.C. a new trench under construction.

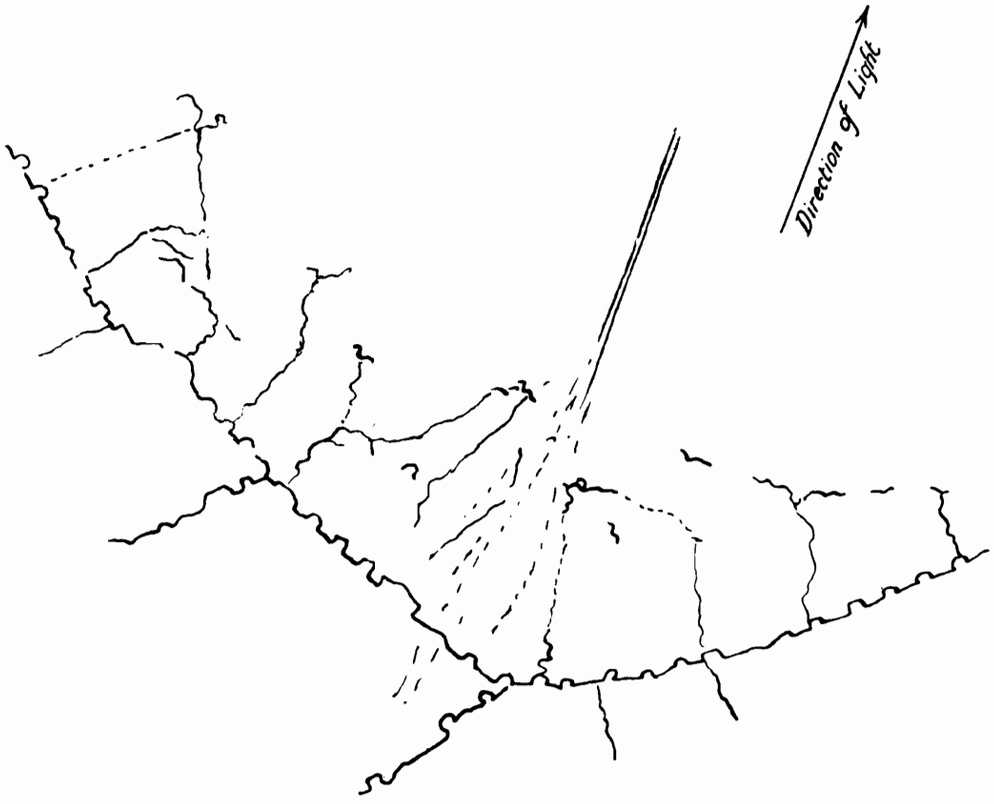

9c 23 23
20 12 16



TRENCH BEFORE AND AFTER CAPTURE.

AREA :—River Ancre to River Somme.

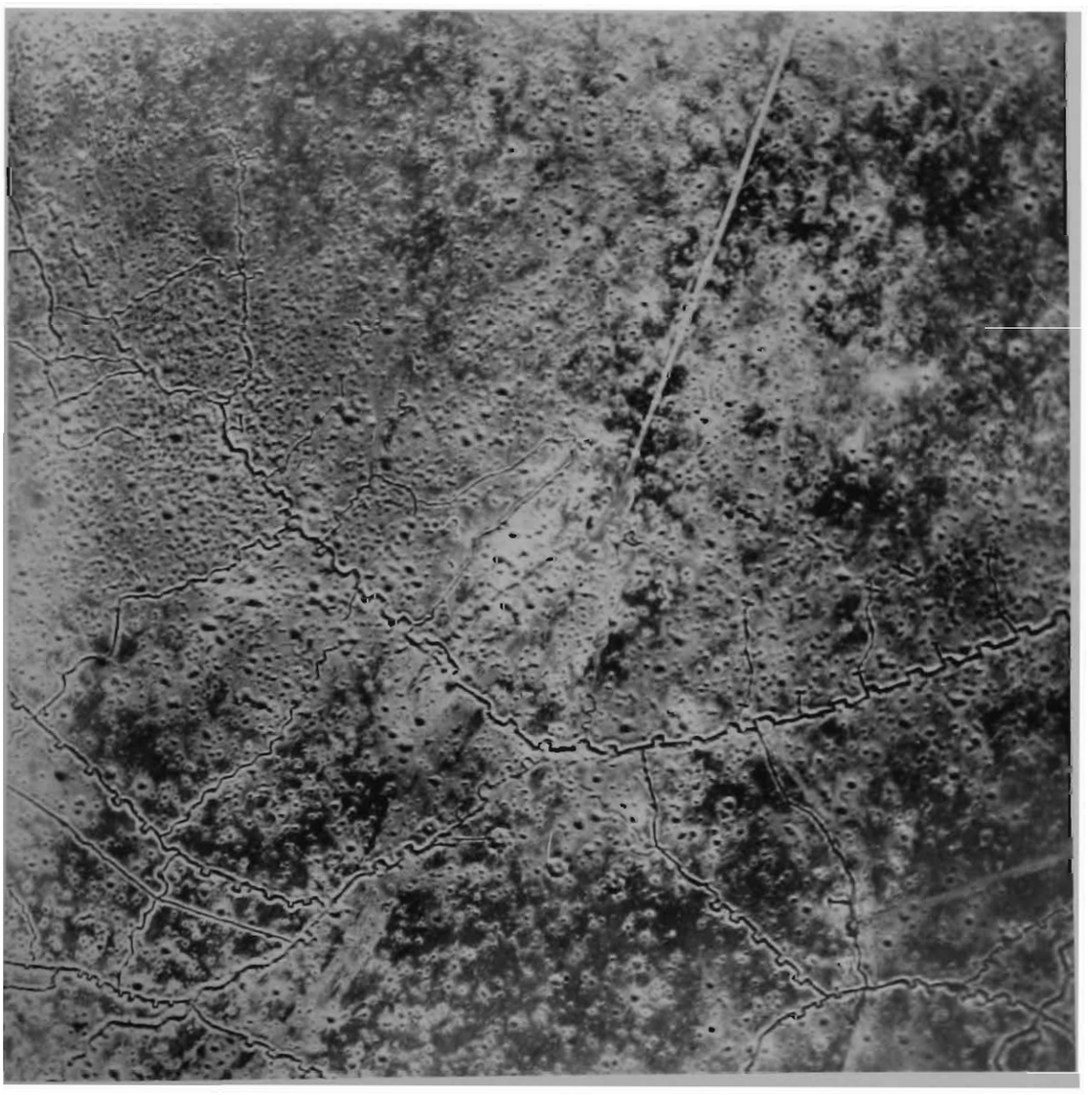




Switch Trench in our hands. Saps being pushed forward and linked up, preparatory to a further advance.

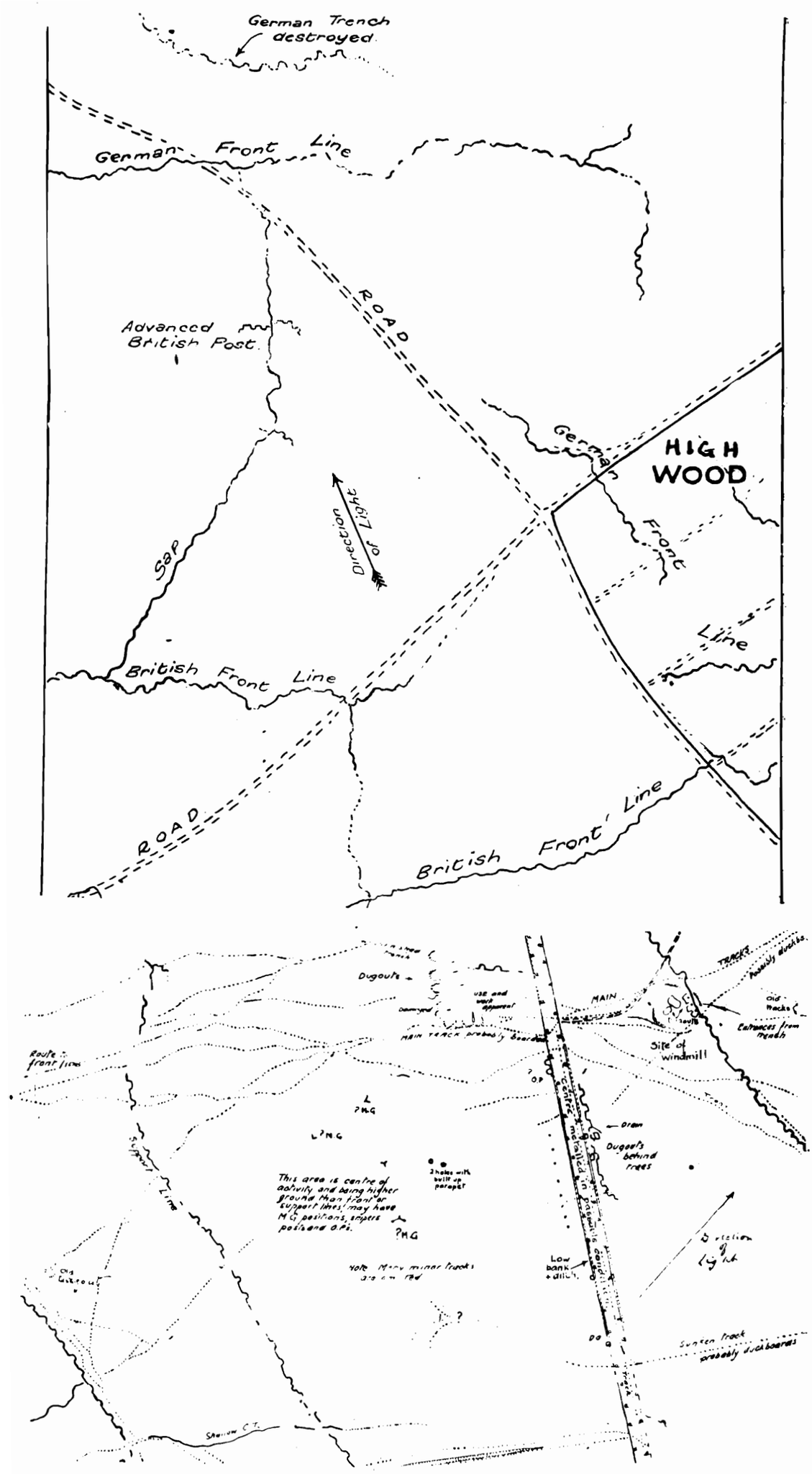
These photographs illustrate the importance of ascertaining the exact position of our troops.





ADVANCED POST.
TRACKS.

AREA :—River Ancre to River Somme.

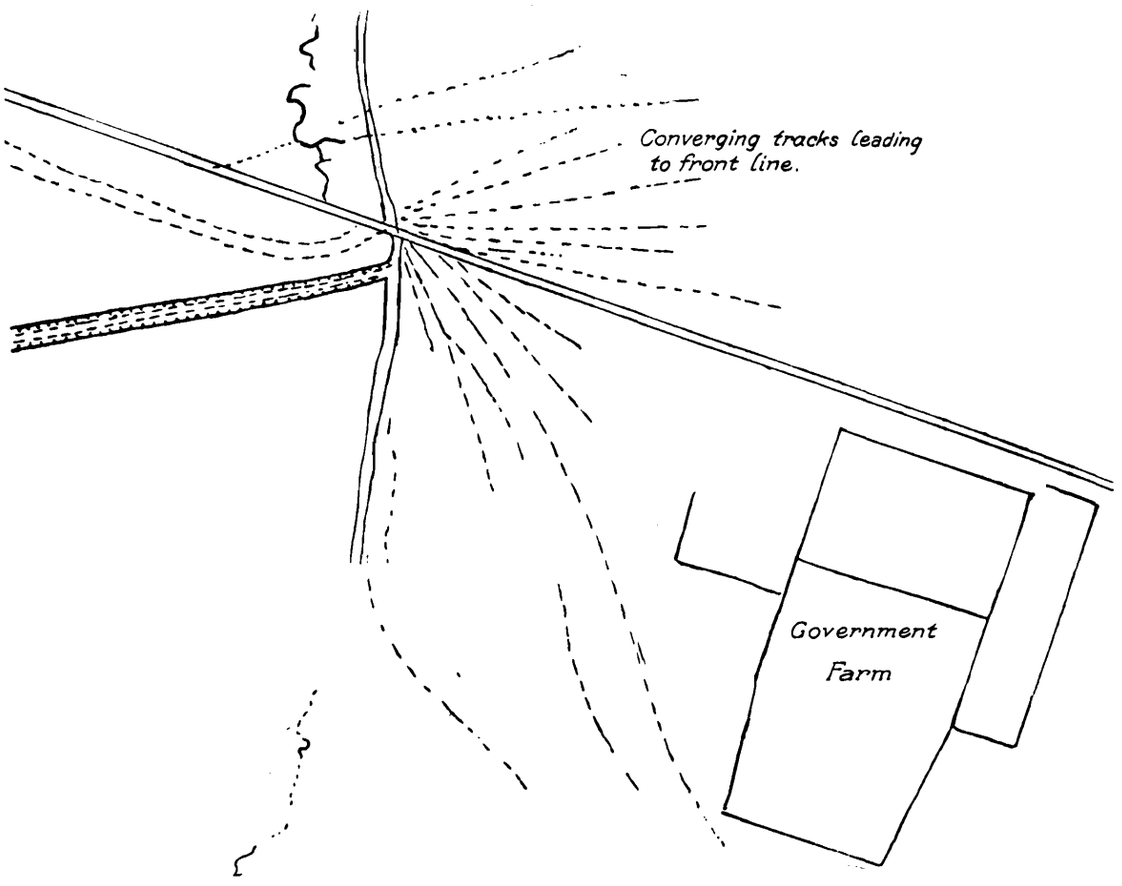

German Trench destroyed
German Front Line
ROAD
Advanced British Post
HIGH WOOD
German Front Line
Direction of Light
Sap
British Front Line
ROAD
British Front Line
Dugouts
MAIN
TRACKS
Site of windmill
Route to front lines
Support Line
This area is centre of activity and being higher ground than front or support lines, may have M.G. positions, snipers post and O.Ps.
Dugouts behind trees
Low bank + ditch
Sunken track probably duckboards
Old Gas trench

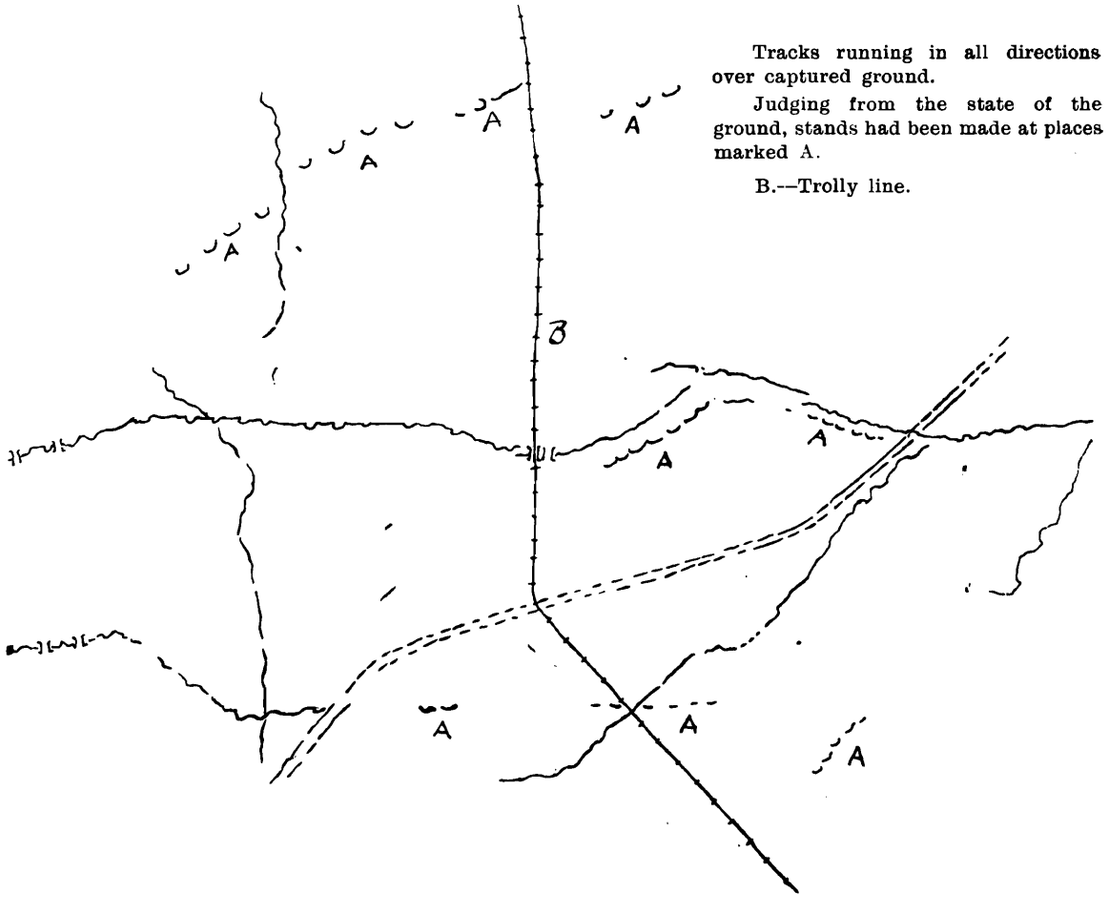




TRACKS.

AREA :—River Ancre to River Somme.

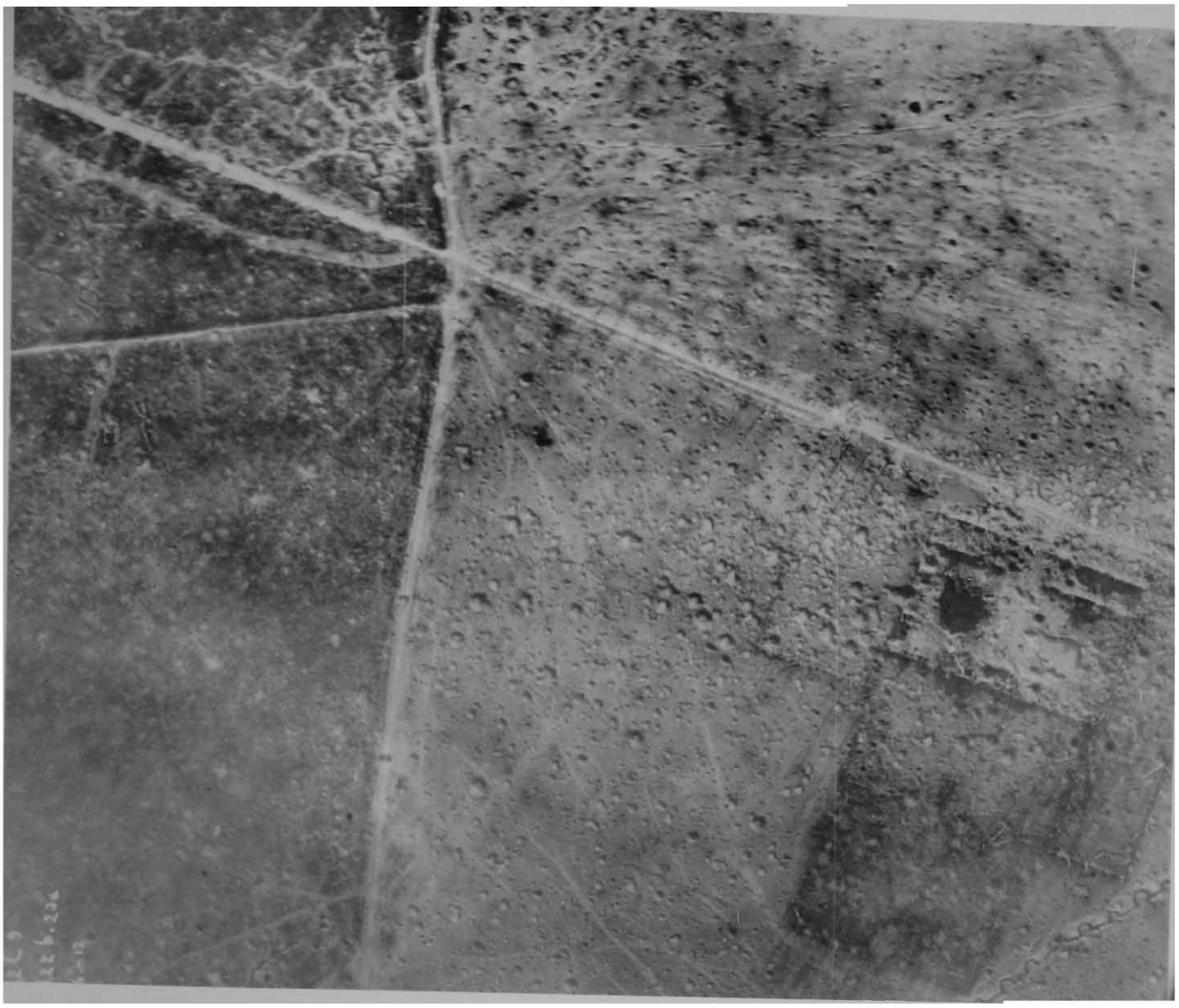


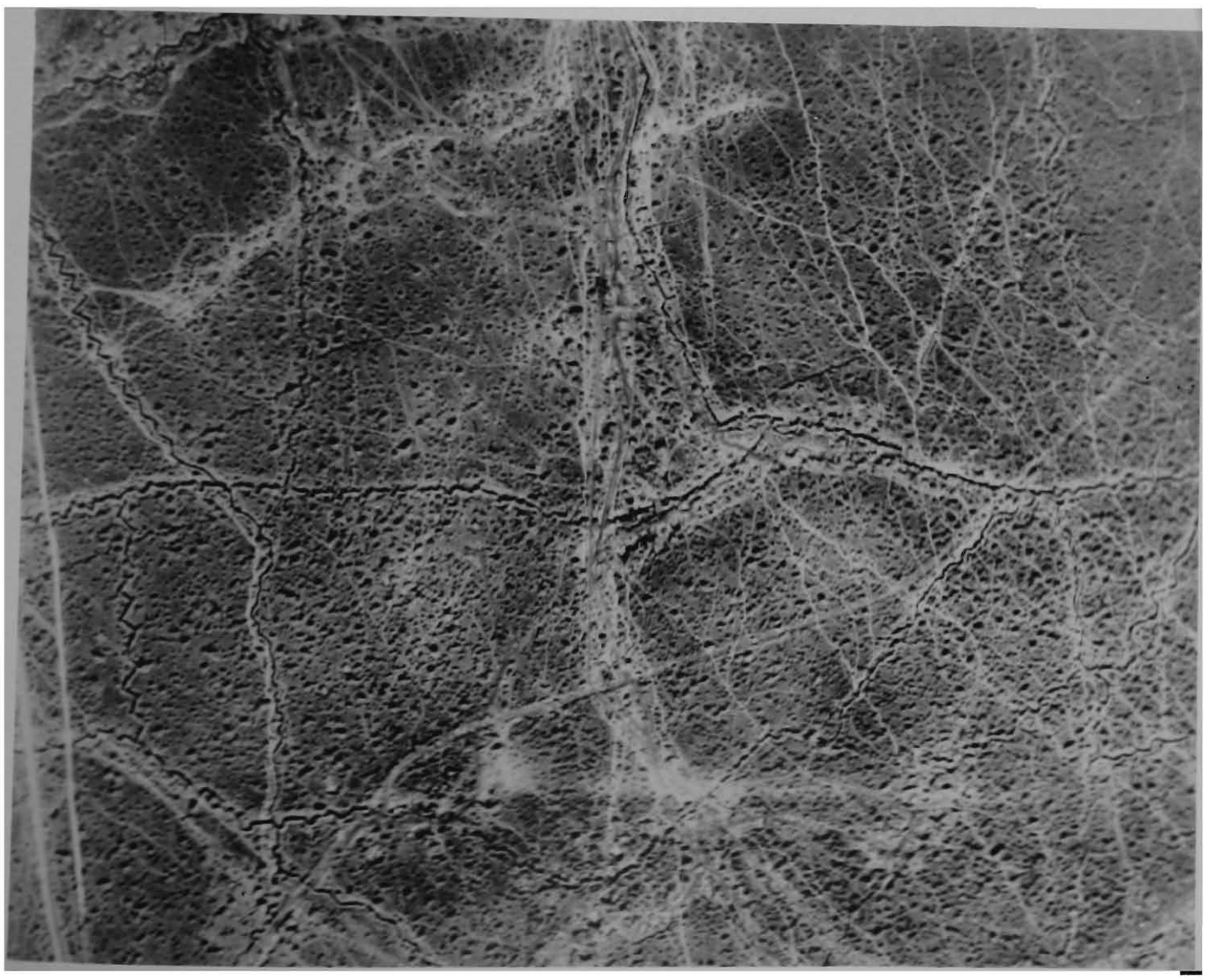


Tracks running in all directions over captured ground.

Judging from the state of the ground, stands had been made at places marked A.

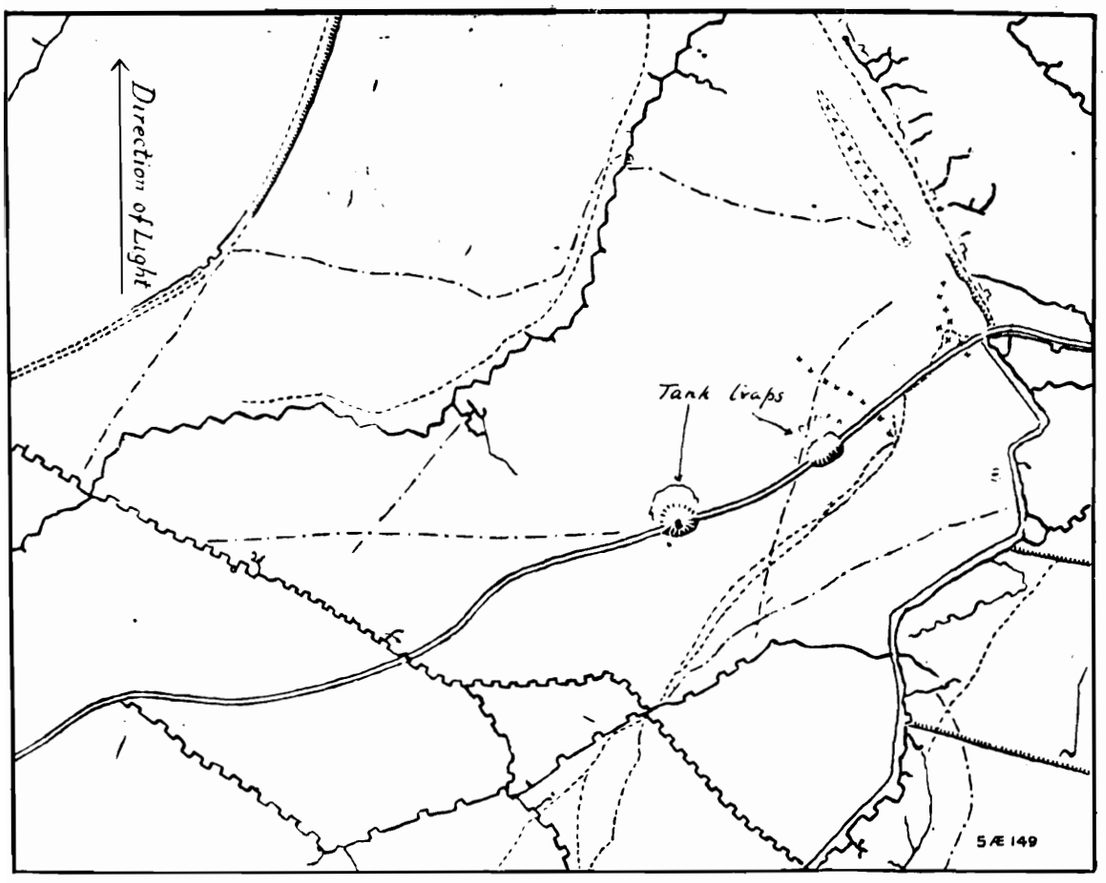
B.—Trolly line.

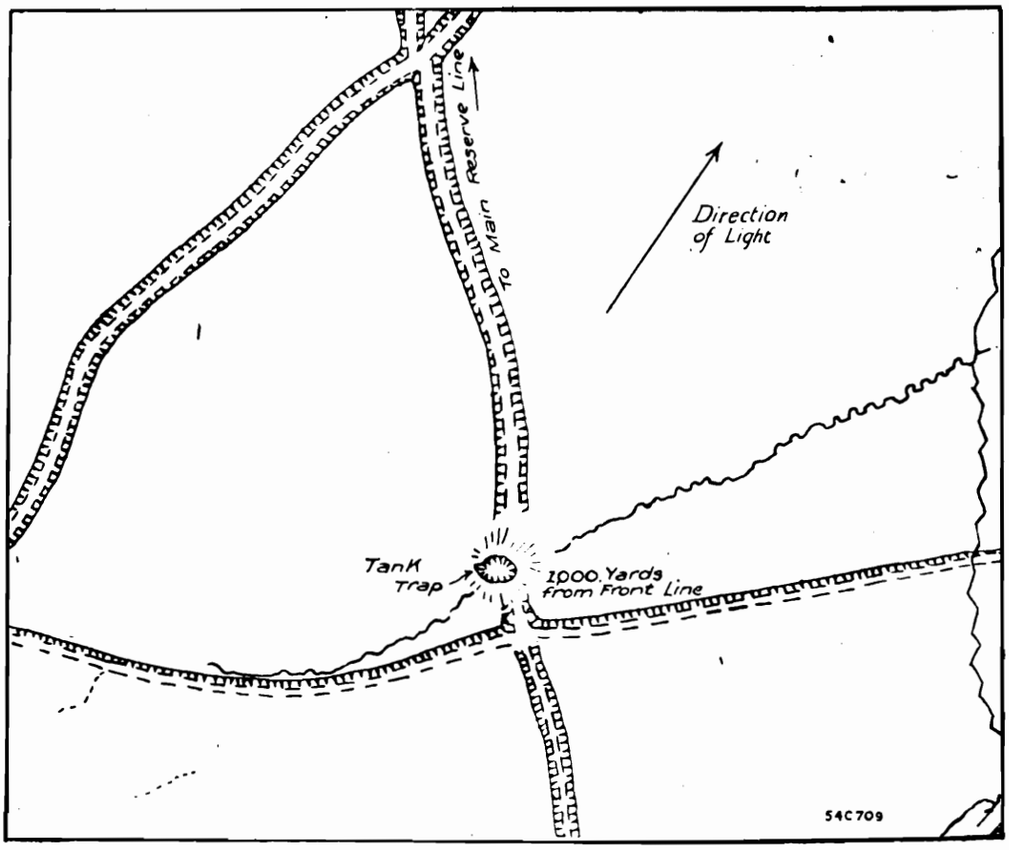




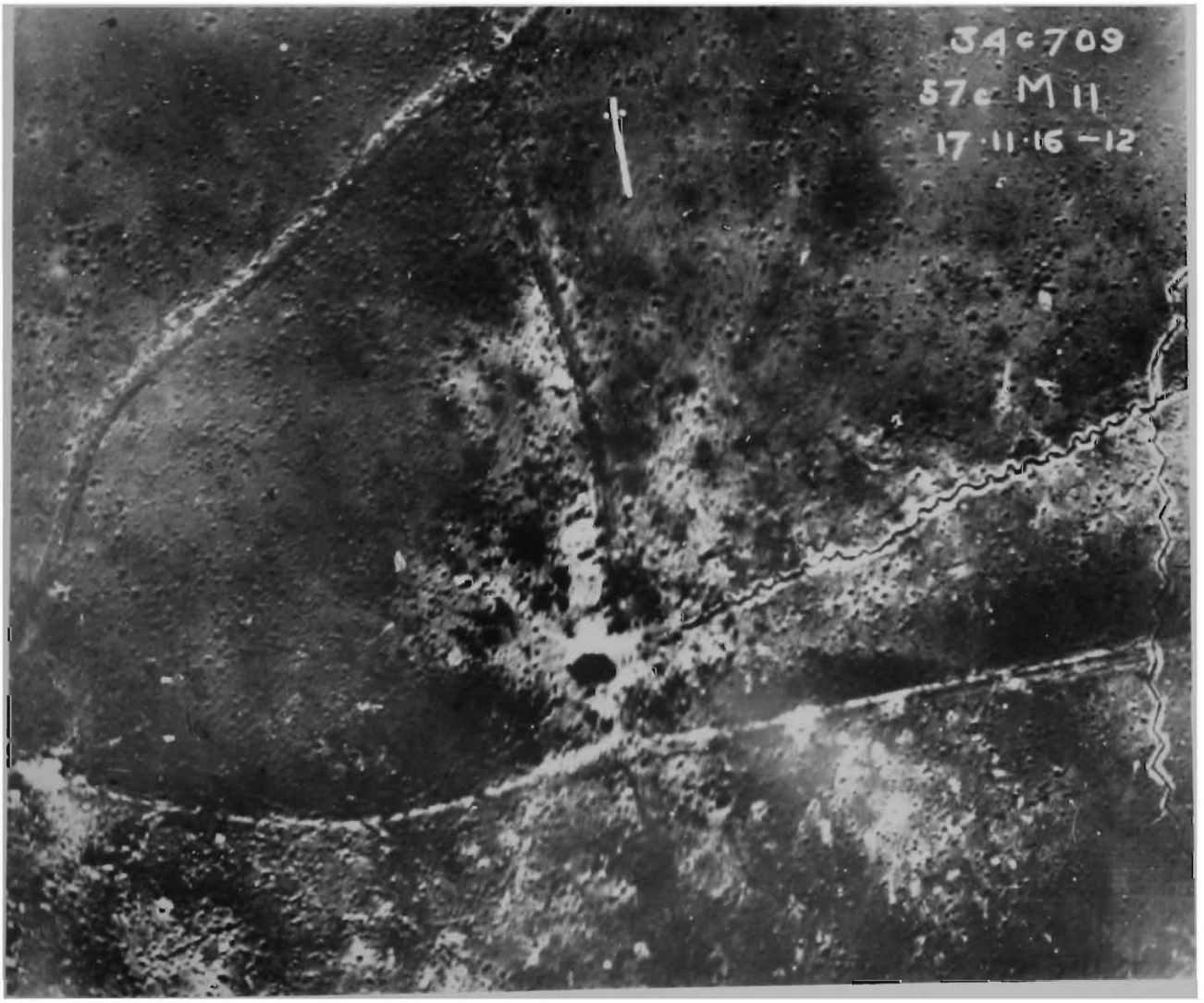
TANK TRAPS.

AREA :—River Scarpe to River Ancre.
River Ancre to River Somme.


Direction of Light
Tank traps
5Æ 149

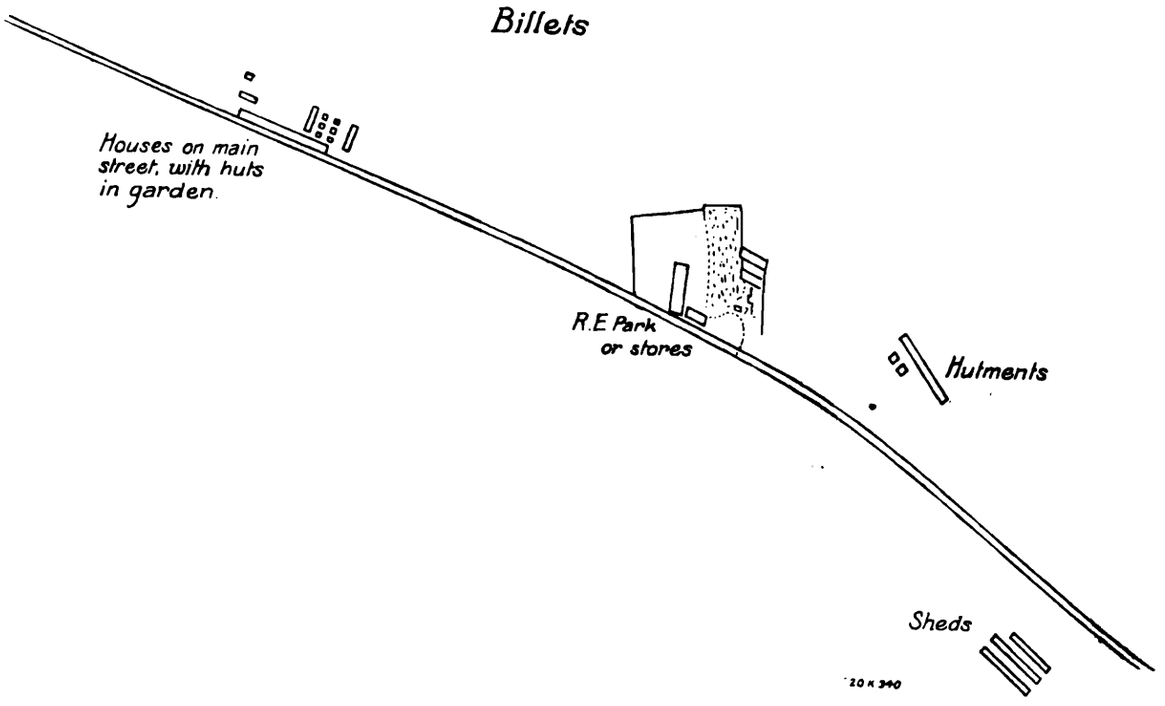

To Main Reserve Line
Direction of Light
Tank Trap
1000 Yards from Front Line
54C709

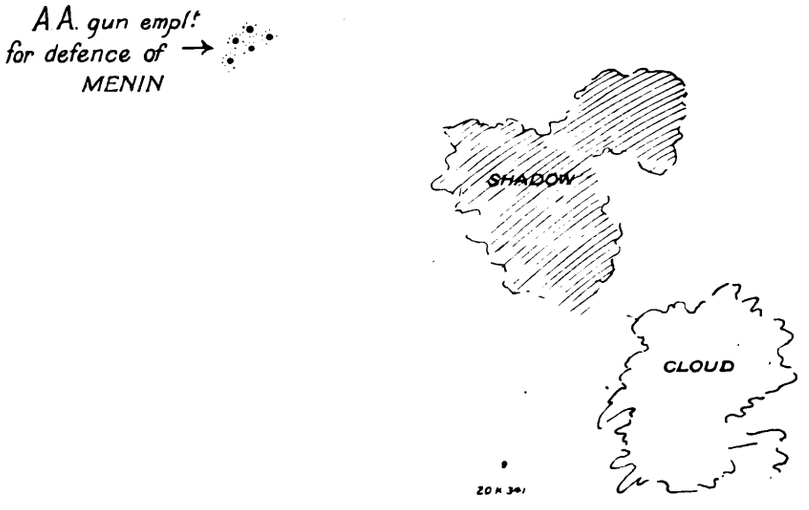

34c.199
57D K.18 Central
5.11.16


34c709
57c M 11
17·11·16 – 12

TYPICAL CLOSE COUNTRY.

AREA :—Boesinghe to Ypres-Comines Canal.


Billets
Houses on main street, with huts in garden.
R.E Park or stores
Hutments
Sheds
20 K 340


A.A. gun empl.t for defence of MENIN
SHADOW
CLOUD
20 K 341


20K.
340.

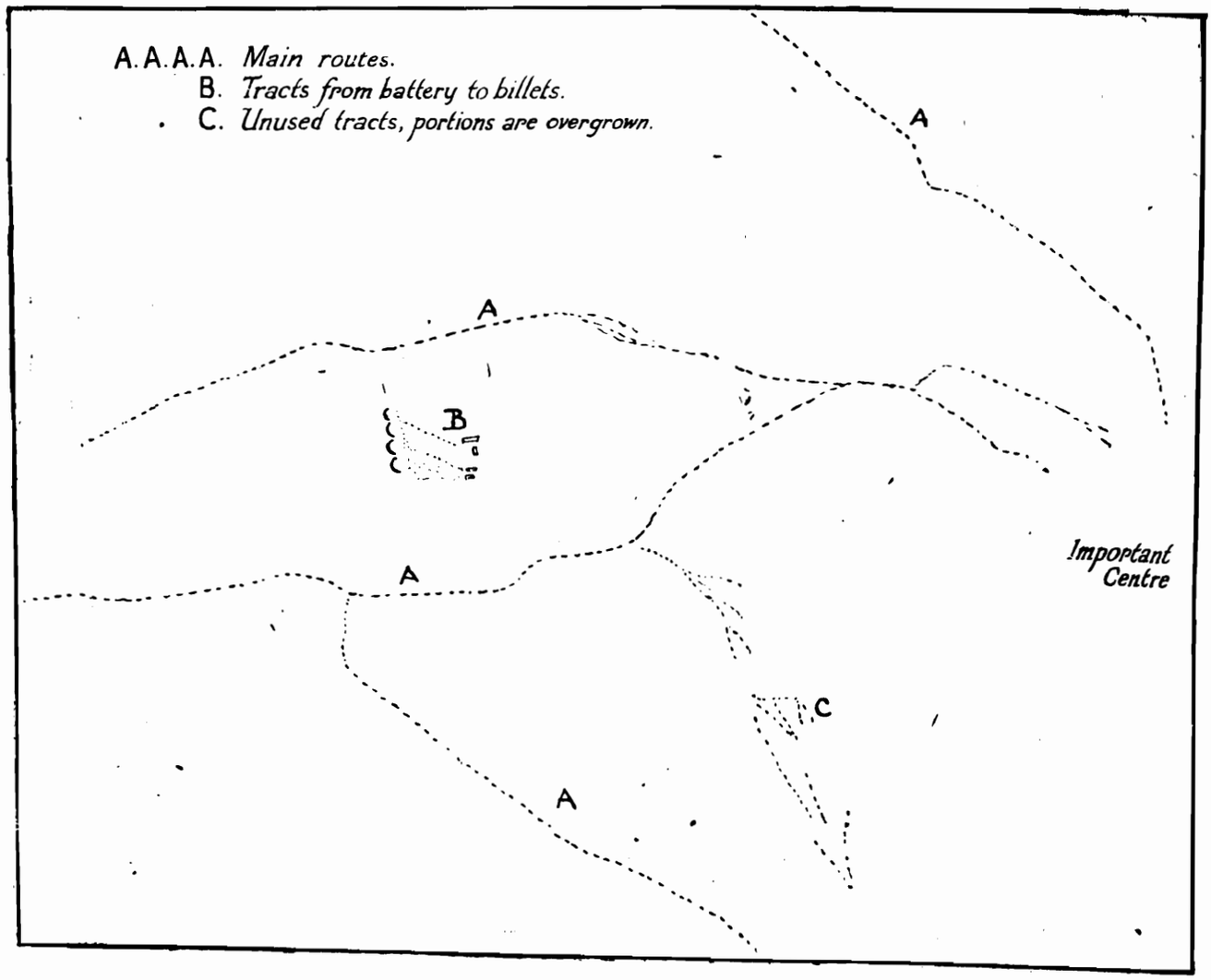

20K341.

TRACKS.

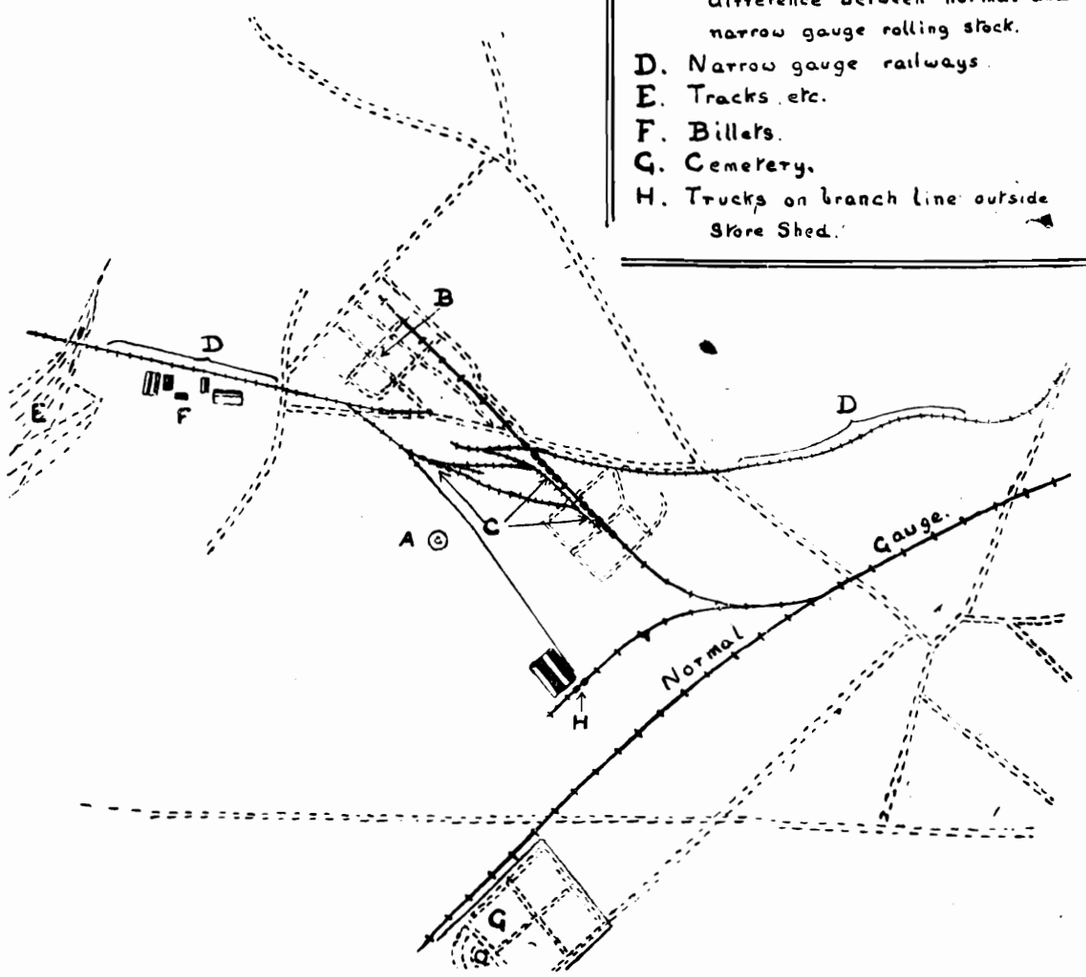
IMPORTANT SUPPLY CENTRE.

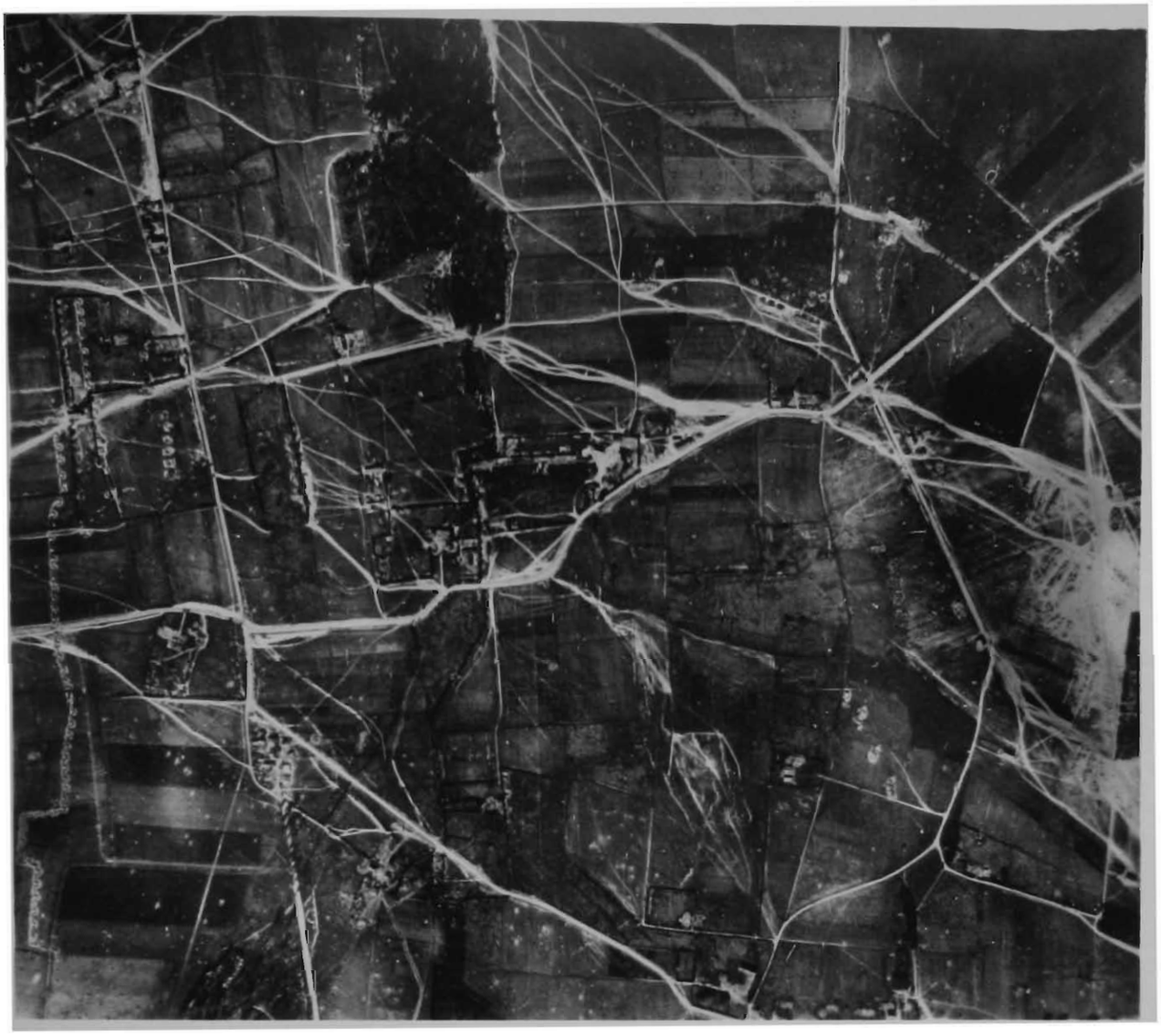
AREA :—Boesinghe to Ypres-Comines Canal.

A.A.A.A. *Main routes.*
B. *Tracts from battery to billets.*
C. *Unused tracts, portions are overgrown.*



A. Anti-Aircraft Gun.
B. Material stored in open.
C. Sidings with trucks, showing difference between normal and narrow gauge rolling stock.
D. Narrow gauge railways.
E. Tracks etc.
F. Billets.
G. Cemetery.
H. Trucks on branch line outside Store Shed.



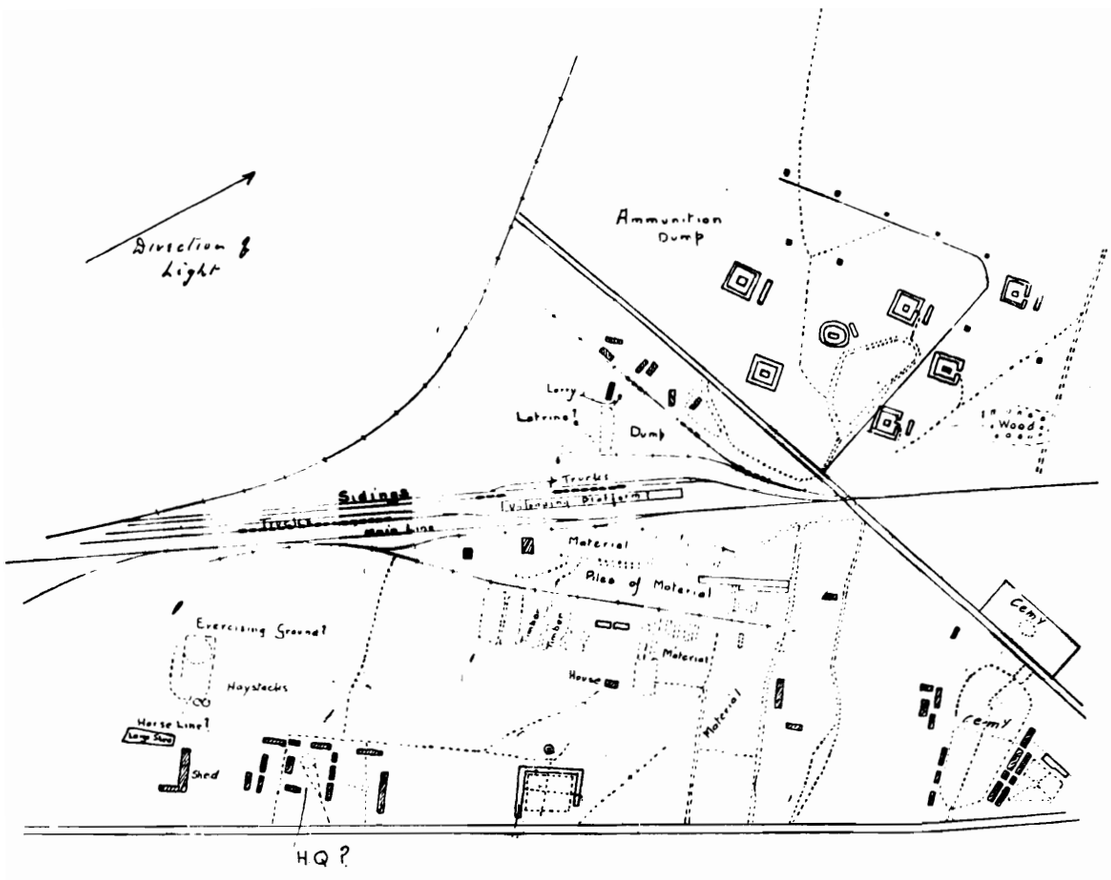


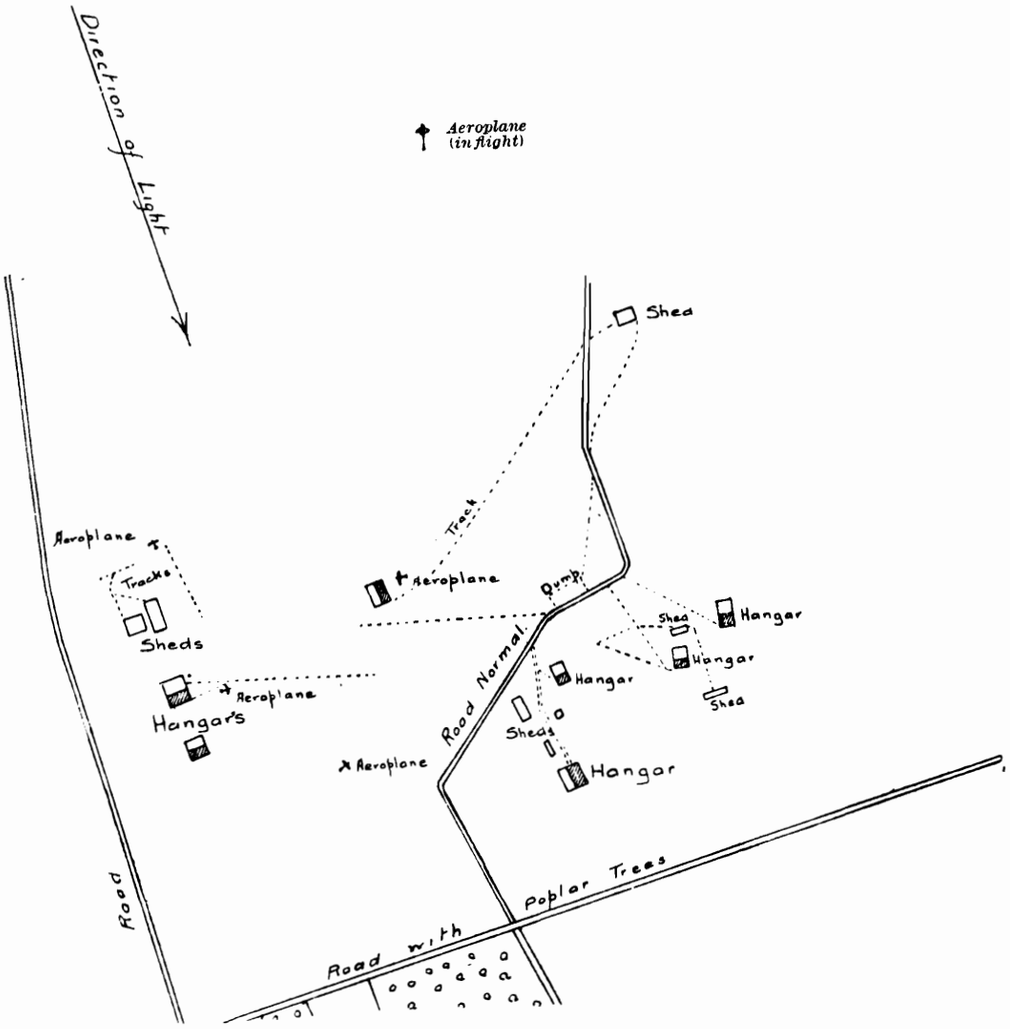

16

SUPPLY CENTRE.

HOSTILE AERODROME.

AREA:—Boesinghe to Ypres-Comines Canal.


Direction of Light
Ammunition Dump
Lorry
Latrine?
Dump
Wood
Trucks
Sidings
Material
Bins of Material
Cemy
Exercising Ground?
Haystacks
Horse Lines?
Shed
House
HQ?


Direction of Light
Aeroplane (in flight)
Shed
Track
Aeroplane
Dump
Hangar
Shed
Hangar
Hangar
Shed
Aeroplane
Tracks
Sheds
Hangar's
Aeroplane
Road Normal
Sheds
Aeroplane
Hangar
Road
Poplar Trees
Road with



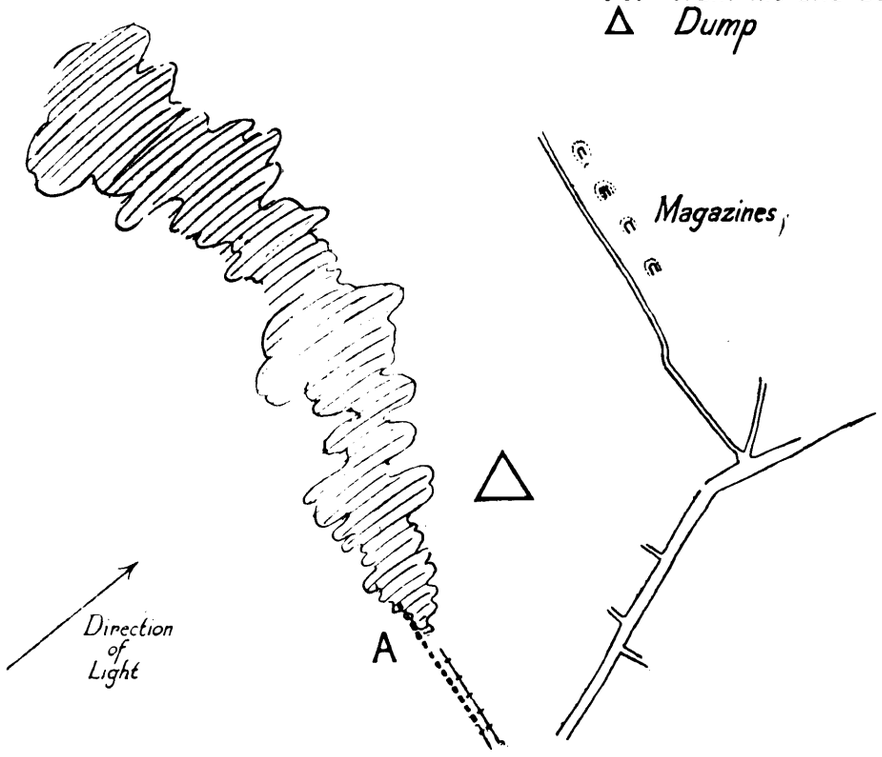


BOMBING RAIDS.

AREA :—River Scarpe to River Ancre.

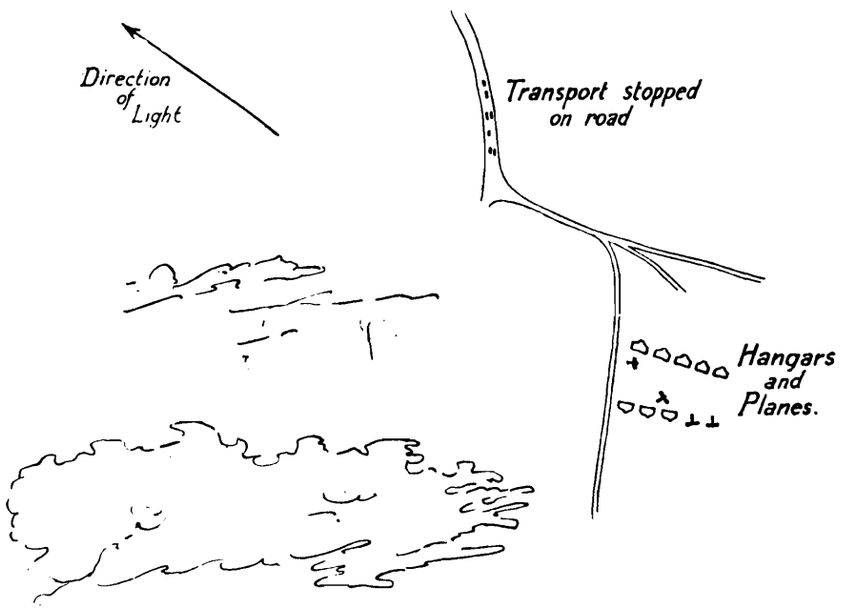
Bombing Raids

A. Train hit and burning
Δ Dump





Landing T





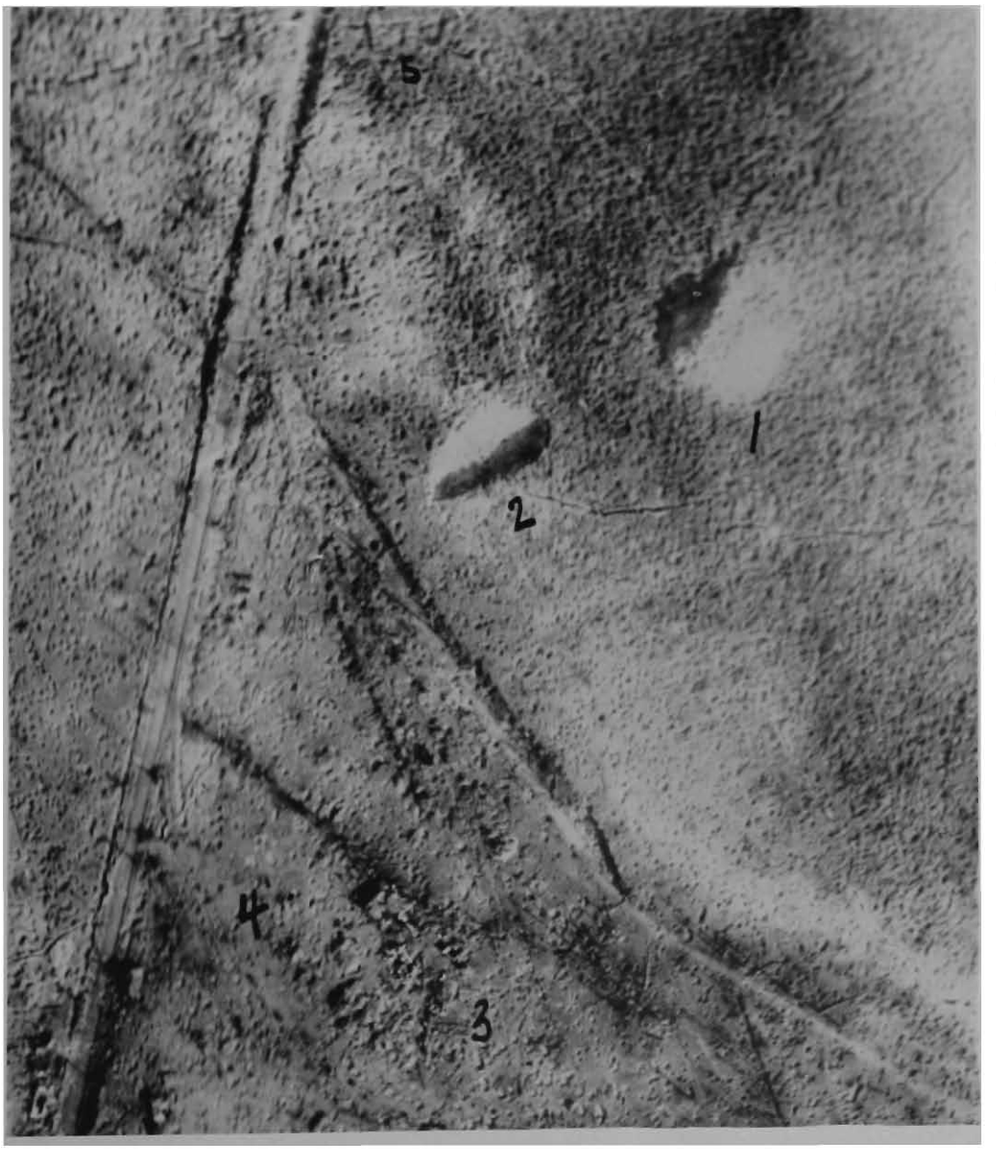


OBLIQUE AND VERTICAL PHOTOGRAPHS OF THE SAME AREA.

AREA :—River Ancre to River Somme.

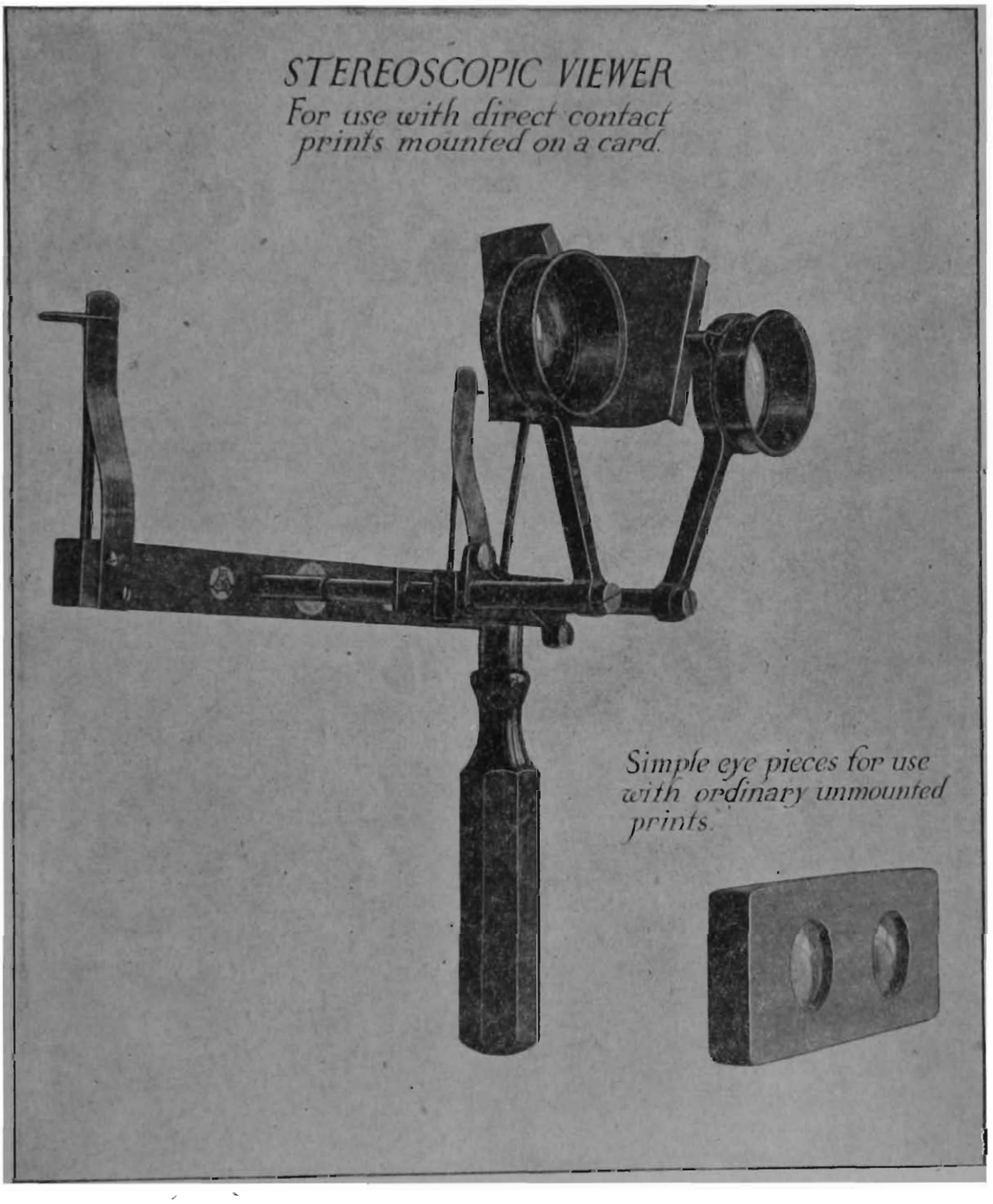


1. *Butte de Warlencourt.*
2. *Quarry.*
3. *Dump.*
4. *Normal gauge line from dump to* **Bapaume.**
5. *Trench.*



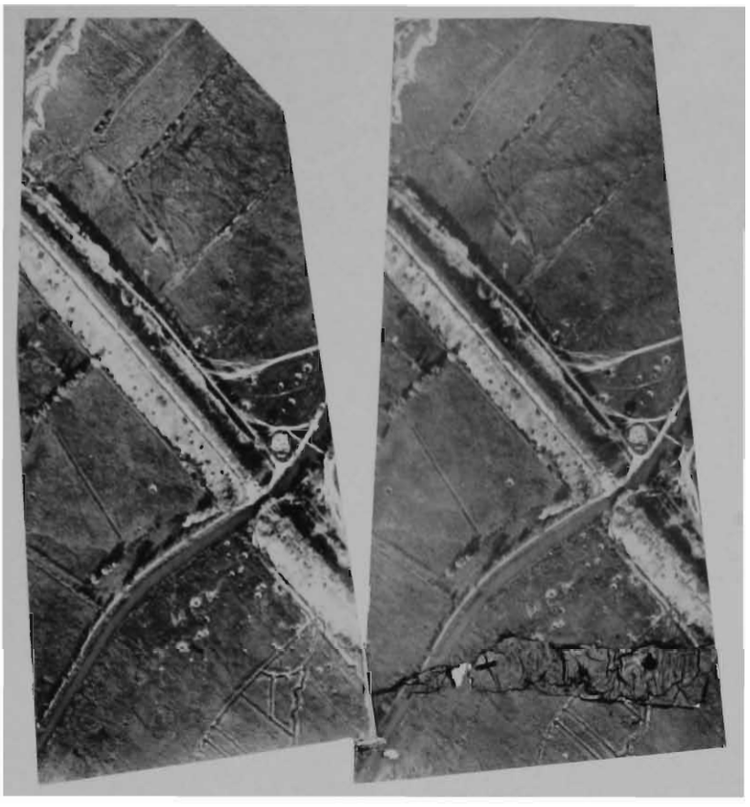
Example of Oblique and Vertical Photographs covering the same area.

STEREOSCOPIC VIEWER.



STEREOSCOPIC SLIDES.

Direct contact prints mounted for the stereoscopic viewer.



Ordinary enlargements mounted for the simple eye pieces.

