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January, 1919.

German Tank Mines

Object of Report.

1. The object of this report is to give such information regarding the location and tactical value of anti-tank mines, the different types used by the Germans and methods employed in removing the same as is available at this date.

2. The contents of this report will be confined principally to observations made by the writer and to such other information as he has been able to secure from Engineers at present engaged in the work of removing abandoned tank mines within the area assigned to the 2nd U. S. Army.

3. Credit for many of the photographs and sketches contained herein is due to the Commanding Officers of 103rd and 304th Engrs., and to Lt. R. C. Thomas and Sgt. Hutton of 6th Observation Group.

General Location ^{and} Tactical Value of Mines.

4. While it was well known that the use of tanks by the Allies caused the Germans considerable concern it was not fully realized to what extent they had taken measures to cope with the problem until after the territory had been evacuated and the work of cleaning the mine fields was begun. Besides the numerous tank defences and mines encountered a demonstration field was found near Briey which had evidently been used as a school and field for testing various types of tank mines.

5. It appears that the scheme followed by the Germans was to prepare mine fields and auxiliary tank defences along logical avenues of approach for tanks, such as in broad fields, valleys, mesas and in the fields adjoining roads.

6. The utilization of tank mines and barriers is typical of a defensive attitude and when these measures were taken by the Germans it is evident that they had little intention of going ahead but were preparing to hold the ground at all cost.

7. While in the majority of the mine fields the mines were connected up and ready for use there were some instances where the mines were placed but had not been equipped with detonating devices. In these cases it is possible that while preparations had been made for a strong defensive organization an opportunity had been left to assume an offensive attitude.

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8. In other instances it is noted that the mine fields extending along the front alternate with open fields of similar length having no tank mines or barriers. Whether this arrangement was intended to allow the launching of attacks through the open spaces or whether the plan was to begin the construction of tank defenses at numerous points and eventually fill the intervening spaces is difficult to determine.

9. The Chambley 5-6 map attached hereto shows the organization of the tank mine field extending from Charey (364.3-264.3) across the open country to Lachausee Lake and it is fairly typical of the methods employed by the Germans in the area confronting the 2nd Army. This field is approximately 4 kilometers in length. The mines consisted principally of Types "B", "C" and "D" described herein. They were placed in one continuous line at intervals from 6 ft. to 10 ft. and at a distance varying from 100 meters to 400 meters in front of the first belt of German wire. The mines were equipped with detonating devices and were ready for firing.

10. An auxiliary tank defense consisting of a barrier of rails was constructed at a distance from 400 - 500 meters behind the mine field.

11. About one kilometer to the rear of the first mine field work had been started on a similar system of tank mines of the same types with a line of barriers 300 meters to the rear as an auxiliary defense.

12. It appears from this that the German plan was to organize the tank defenses to considerable extent in depth in a manner similar to that employed in siting the different trench systems.

13. It is easy to realize the value of such an organization for defensive purposes but it appears that the principal disadvantage of this system is that it deprives the occupants of the ground of the opportunity of assuming the offensive on a scale of any considerable extent as it would be extremely difficult to go forward over tank mines and through barriers with even the light field guns.

Types of Mines.

14. From the great variety of mines discovered it is evident that the manufacture of tank mines had not become standard but was still in a state of development. It appears that the devising of the machines was, to considerable extent, left to the ingenuity of the troops occupying the sector. The fact that at least one testing field (Briey) had been established would lead one to believe that it was intended to test the different types and decide upon certain ones as standards for manufacture.

15. While the different types of mines so far discovered are varied in details of construction they are, as a general rule, similar in methods of detonation.

16. The mines generally consist of a wood or metal box containing either a H.E. shell or a quantity of perdite. The mines are arranged to explode under the weight of a tank or even under the weight of a field gun.

17. The detonating device usually consisted of a spring fuse lighter, sketch and description of which is given in this report. In some instances mines were equipped with friction fuse lighters.

18. In addition to the mines actuated by the spring and friction fuse lighters a few types were found consisting of H.E. shells placed vertically in boxes and equipped with the regulation instantaneous fuses which would explode under the weight of a tank.

19. A type of mobile charge to be ignited and thrown in front of an approaching tank was also discovered at one place.

20. Of the entire number of mines removed there were discovered many ingenious types. Some of them were extremely dangerous to dismantle due to the fact that they would be exploded when the box was either closed or opened.

Placing of Mines.

21. The system generally followed by the Germans in the placing of the mines was to wrap each one in tar paper to protect it from moisture. The mine was then placed in a shallow hole so that the top of the box or container would be about level with the surface of the ground. It was then covered with a few inches of earth or sod as camouflage. After the mines had been placed the field was usually covered with a light belt of barbed wire or barbed wire concertina. This was probably done to camouflage the location of the field or to protect the occupants of the ground from accidents that might occur. In some instances mines were placed in pits which were then covered with branches.

22. There appears to have been no standard or logical scheme for the detailed organization of the tank mine fields. In some cases the mines were placed in one continuous line spaced at intervals of from 6 to 10 feet. In others they were placed in zig-zag formation while in some instances they were arranged in checker board fashion so that the intervals between mines would be about 10 feet in all directions. This latter system appears to be more logical than the others as there was evidence that the intentions were to continue placing mines from time to time to give depth to the mine field. This in conjunction with the secondary system of mines and barriers one kilometer or more to the rear would undoubtedly constitute a very effective organization and an obstacle which it would be difficult to overcome.

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Removal of Mines.

23. The removal of mines requires considerable care and skill. This is particularly true when the work must be performed under shell fire.

24. While the mine fields are generally easy to locate, there are so many different types employed that each mine is really a problem in itself.

25. On discovering a mine it should first be cleaned of sod and earth that generally covers it. The tar paper wrapper may then be removed and the mine carefully examined to ascertain the type before proceeding to disarm it. Among the box types employed by the Germans there were a few that were arranged to explode on raising the cover. After extracting the detonating device the mine may be handled without danger.

26. During active operations when preparations are made for an attack with tanks Engineers are assigned to the task of removing mines and barriers and otherwise assisting the advance.

27. Engineers detailed to perform this work should be familiar with the types of tank mines commonly employed and they should be thoroughly instructed in the methods of disarming them. These details should also be provided with maps or sketches showing the location of known or suspected mine fields.

Cleaning Mine Fields After Signing Armistice.

28. One of the provisions embodied in the armistice signed November 11, 1918, was that the Germans should indicate the location of tank mine fields, road mines, mined bridges, dugouts, buildings, etc. This information was collected and compiled by the Intelligence Section of the Staff and was then transmitted to the Chief Engineer of each Army.

29. The information received by the Chief Engineer, Second U.S. Army consisted of maps, the Chambley 5-6 map attached to this report being one of the set.

30. Engineer troops were detailed by the Chief Engineer of the Army to precede the marching columns of the Army of Occupation to repair roads and remove mines. Definite areas were assigned to each Divisional Engineer who was provided with maps indicating the roads for which he was responsible together with a complete set of maps showing the location of mines.

31. Regarding the removal of mines in connection with repairing of roads during the advance the Chief Engineer of the Army issued orders to the Divisional Engineers, extracts from which are as follows:

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"1. It is requested that the matter of the removal of mines, traps and road obstacles be handled as follows:

A. That sufficient men be detailed from your organization to search for and to remove all such devices in the battle zone along the main lines of march for which you are responsible. These details must precede the marching column starting at H hour.

B. That similar parties be detailed, as soon as it appears advisable, to clean up the remaining roads ahead of your divisional area.

C. That when A and B are completed, a thorough search be made over the area ahead of your divisional area, tank mines and shelters receiving special attention. All shelters should be marked "Inspected" if found safe.

2. The officer in charge of the Department of Railroads and Roads of this office, states that he has no objection to your diverting not to exceed one company from road work for this purpose. It is highly improbable however that you will require as much as a company for this work.

3. The order of importance of the three phases of the work mentioned in paragraph one and an approximate time limit set for their completion are as follows:-

Par. 1A This should be handled ahead of the marching troops.

Par. 1B This should be completed by the end of D plus two days, roads being covered in order of importance.

Par. 1C This should be completed by the end of D plus seven days."

32. A few accidents occurred during the work of removing the tank mines. These were probably due, in part, to unfamiliarity with the different types employed by the Germans. However it was found that in cases where the mines had evidently been in place for some time the detonating devices had become corroded and were very difficult and dangerous to remove.

33. It was eventually decided not to use American engineer soldiers for this work and German pioneer prisoners who were familiar with the different types of mines were detailed to complete the work of cleaning the fields.

34. The following extracts from letters written by the C.O. 103rd Engineers, indicate some of the difficulties encountered and the methods employed in some instances in the destruction of the mines.

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"Nov. 22, 1918.

1. Since November 17th this regiment has been engaged in the removal of German contact mines between JONVILLE and CHARY. During this time we have removed between 2,500 and 3,000 mines. On Wednesday, November 20th, five men were killed by the explosion of one of these mines. The only data we have in reference as to how this explosion occurred was that one of the men who was not injured heard Sergeant Henkel, who had charge of the detail, say "This is a hard one." A few seconds afterwards an explosion occurred, killing Sergeant Henkel and four other men. To-day, at 10:00 A.M. a Private was killed in the removal of one of these mines. We do not know how this explosion occurred. In the removal of these mines we have found at least six different patterns, and it has been necessary to shoot by other explosives about one-fifth of these mines. These mines are very dangerous, and in most cases it is practically impossible to tell their condition until they are uncovered, and they are always dangerous to uncover.

2. We have found that the only proper way to render these mines harmless is to take the tar paper off of the cover, remove the attachment between the cover and the detonator and remove the detonator. Where it has been found impossible to remove the detonator, we have then shot them with high explosives. It would not be wise to shoot them all by high explosives, as we would always run the danger of covering up or displacing mines that had not been exploded."

"Dec. 9, 1918.

1. In accordance with a letter from Hq. 6th Army Corps, Dec. 4th, 1918, a detail started removing tank mines between ST. BENOIT-DAMPVITOUX Road and the XAMMES-CHAREY Road at a point just south of DAMPVITOUX on Monday, December 9th.

2. After considering all methods, it was decided to have these mines removed as follows: (most of these mines consisted of two 150 mm. shells placed in a wooden box so arranged that when a load is placed on the cover of the box the cover will descend and pull the brass pin out of a fuse lighter setting off either a small piece of fuse or a detonator, thus exploding shell.)

Two 1 kilo. packages of perdite were placed on the top of the tank mine box, a package on each end, electric detonators were inserted in the perdite and the detonators connected to a blasting battery. The mines adjoining the mines that were to be shot were covered with heavy corrugated

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iron and in front of each unshot mine was placed heavy elephant iron for the purpose of protecting the mines from dirt dropping on the same. Any dirt that might drop would fall on the horizontal corrugated iron. Five boxes were shot and it was found that only five of the ten shells exploded. The tank boxes in each case being blown to pieces, and the brass pins of the fuse lighters were pulled from the same, but for some reasons these shells did not explode. One kilo. of perdite was placed on the top of each unexploded shell, and also at the same time one other tank mine was shot. Five of the shells exploded, one shell was broken in two by the explosion, but the high explosive in the same seemed to have become moist and deteriorated. One shell did not explode.

The crater made by the explosion of these shells is not very large, very little dirt was thrown on the unexploded mines, but pieces of shell flew in all directions within a radius of at least 300 or 400 meters."


G. R. DeBEQUE,
1st Lt., Engrs., U.S.

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TANK MINES



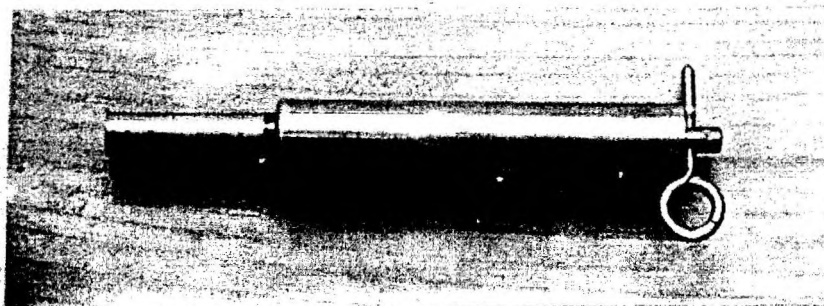
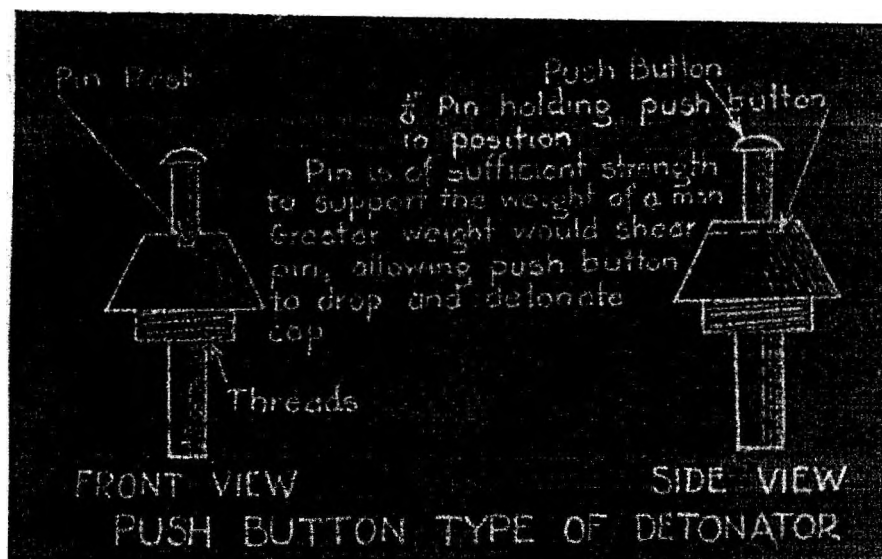
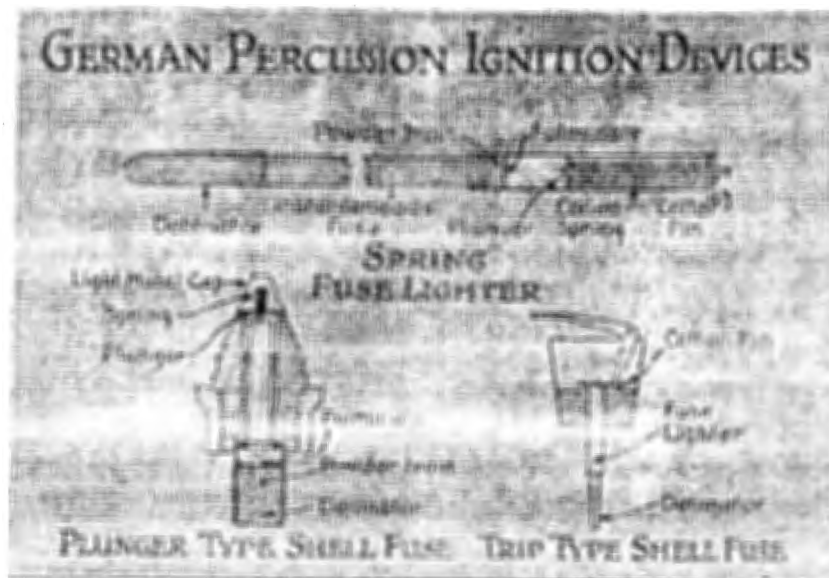
66 ✓



70 ✓

German tank mines of types "B", "C" and "D" which were removed from in front of the first belt of German wire in the open field between Charey and Lachaussee Lake. These mines were placed in one continuous line and spaced at intervals of from 8 ft. to 10 ft. The mines had been placed in shallow holes and covered with a couple of inches of earth. A light belt of barbed wire and barbed wire concertina then covered the mines, perhaps to camouflage their presence or to mark the field so that accidents would not occur among the Germans themselves.

TANK MINES

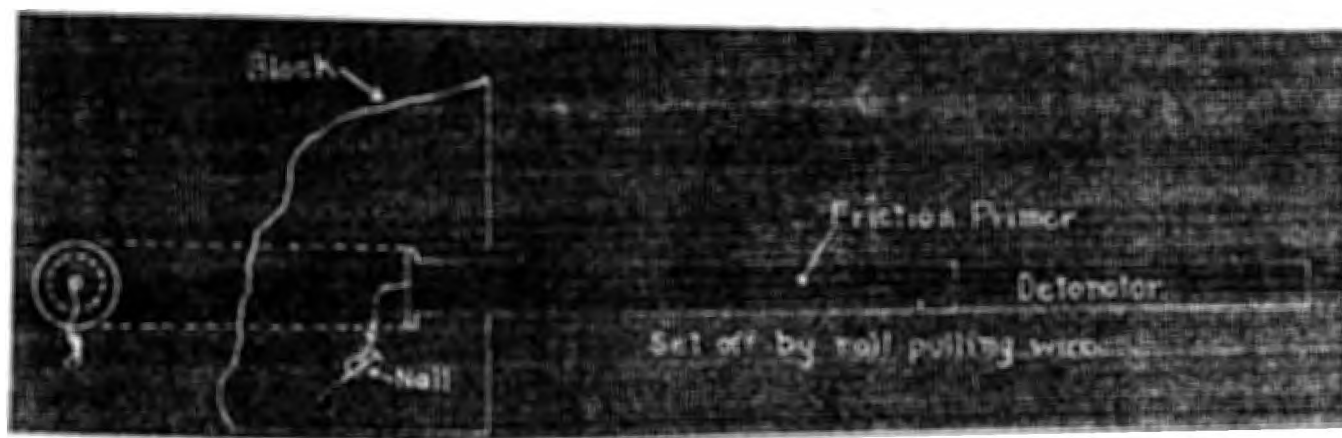


German spring fuse lighter with detonator removed. Natural size. The lighter is made of brass.

When the cotter pin is removed the plunger is released which explodes the fulminate primer.

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TANK MINES



A number of German mines of type "D" were found between Chary and Jonville, equipped with friction fuse lighter instead of the spring fuse lighter more commonly employed by the Germans.

When the block is forced down an instantaneous fuse is ignited by the friction wire.

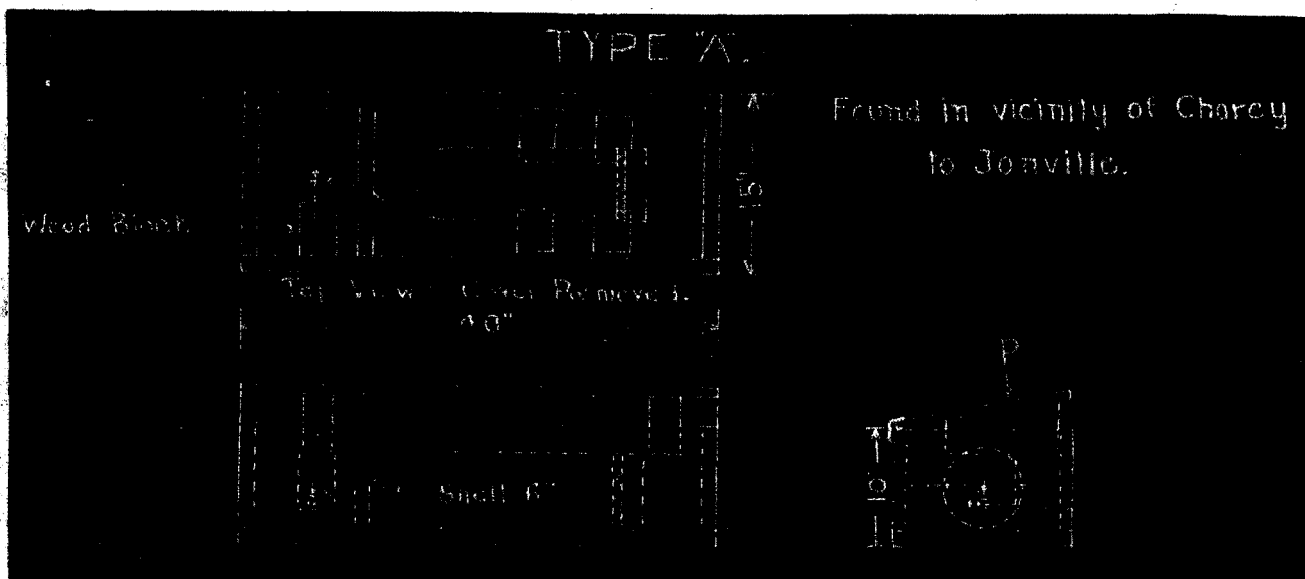
This type of primer is particularly dangerous. The head of the nail should be cut off and the wire carefully disengaged. The fuse and detonator may then be removed from the nose of the shell. During the operation great care must be taken not to pull the wire. After removal from the shell the detonator should be taken off at once.

Block will be used in the following manner:

To eliminate this mine the end of the wire should be cut off and the head of the nail should be cut off. The wire should then be pulled out of the mine and the detonator removed.

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TANK MINES



Type "A" tank mine, many of which were found at different places along the German line of trenches. It is similar to type "B" in that it consists of a wood box 40" x 15" x 10" containing a 6" H.E. shell from which the fuse has been removed. The principal difference between the two types is that in type "A" the lid extends the full length of the box instead of being on one end as in type "B". On the inner side of the lid is nailed a block of wood so that when the lid is pressed down a block lightly attached to the inner side of the box is forced down and with it the nail which is fastened to the cotter pin of a spring fuse lighter. When the cotter pin is pulled out the plunger of the lighter is released which explodes the fulminate detonator inserted in the nose of the shell.

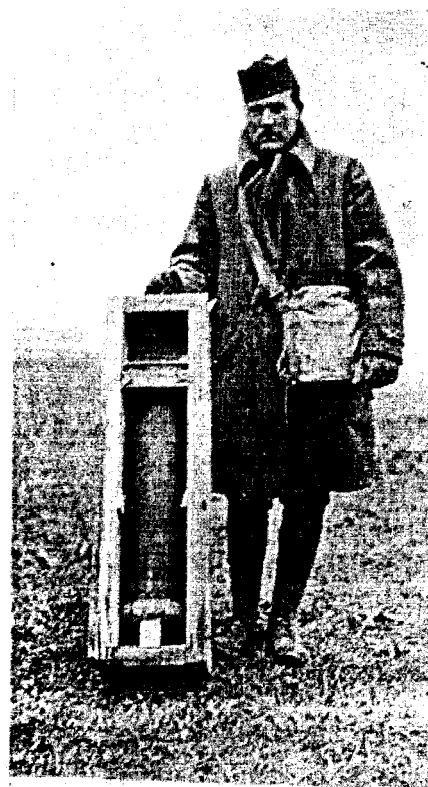
To dismantle this mine the end of the cotter pin should be bent to prevent accident, and the head of the nail cut off. The shell may then be pulled out of the cradle and the fuse lighter and detonator removed.

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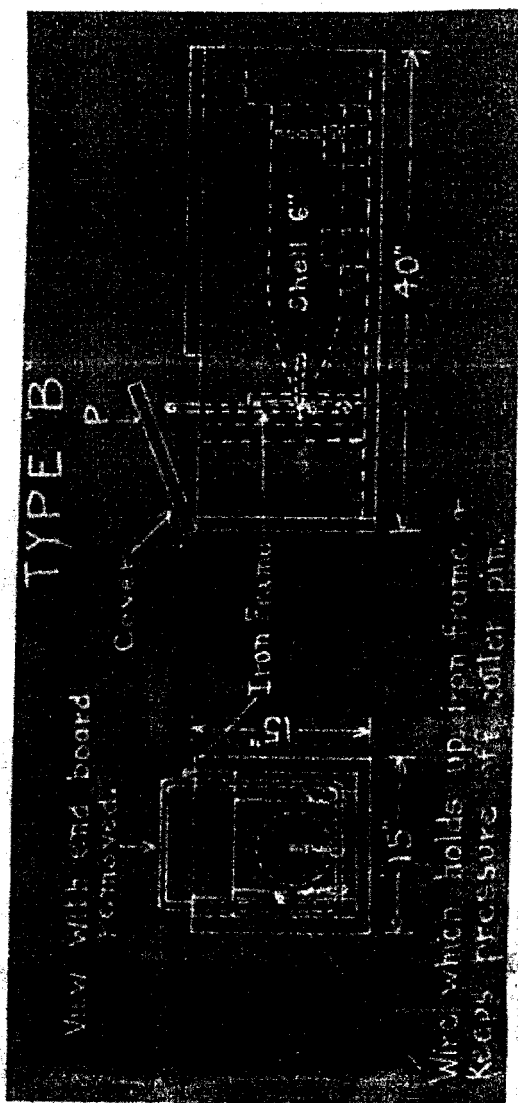
TANK MINES



76 ✓



72 ✓



Type "B" Tank Mine.
Wood box 40" x 15" x 15"
containing a 6" H.E. shell from
which the fuse has been removed.
A spring fuse lighter equipped
with fulminate cap is placed
in the nose of the shell. The
fuse lighter is attached to
the iron frame by a piece of
wire. When the cover of the
box is forced down by a weight
passing over it the iron frame
is pushed down pulling out the
cutter pin of the fuse lighter
and the mine is exploded.

To dismantle this mine
the end of the fuse lighter
pin should be bent as a pre-
caution against accident.
The wire connecting the ring
of the cutter pin to the iron
frame should then be disengaged
and the fuse lighter and detona-
tor removed from the shell.

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TANK MINES



Illustrative of type "C" German Anti-tank mines (Flachmine) removed from field ~~at~~ Charey ~~to~~ Jonville.
between and

This mine consists of a wood box 18" x 14" x 6" with a sheet iron cover. On the top of the box is a bridge consisting of a firing bar, four legs and sheet iron cheek plates. The mine contains 3 kilos Perdite.

The firing arrangement consists of four spring fuse lighters which are connected by instantaneous fuse to detonators placed in the packages of Perdite.

Each cheek plate is equipped with two studs which fit into the rings of the cotter pins of the fuse lighters. When a weight passes over the bridge of the mine the cotter pins of the fuse lighters are drawn and the mine exploded.

The method of rendering this mine harmless is to loosen the wing nut on the firing bar and disengage the studs on the cheek plates from the rings of the cotter pins of the fuse lighters. The bridge may then be removed, the sheet iron lid taken off and the instantaneous fuses cut and detonators removed from the packages.

In loosening the wing nut care must be taken that the natural weight of the cheek plates themselves will not cause the cotter pins to be withdrawn.

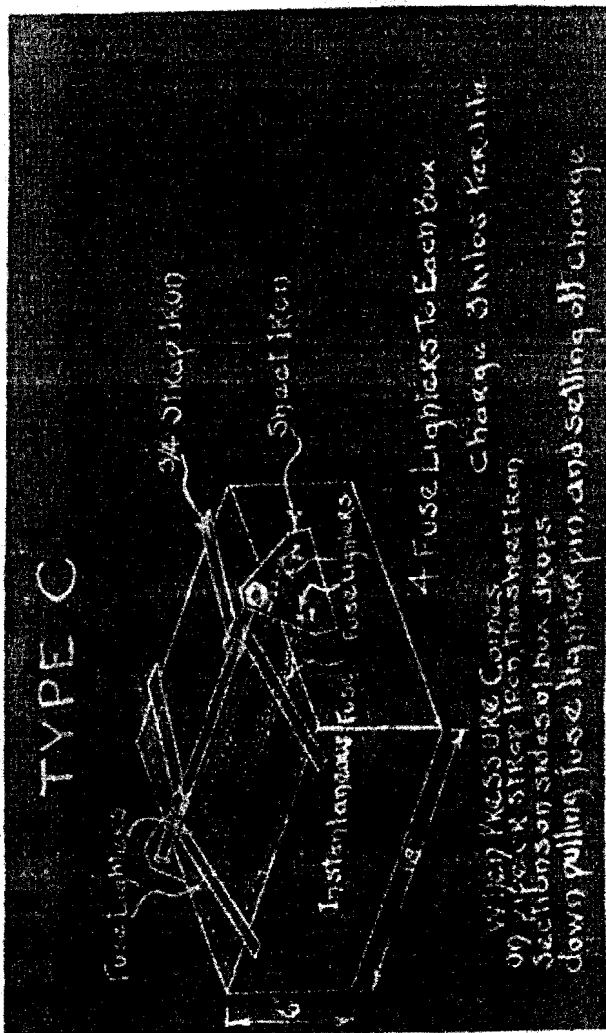
TANK MINES



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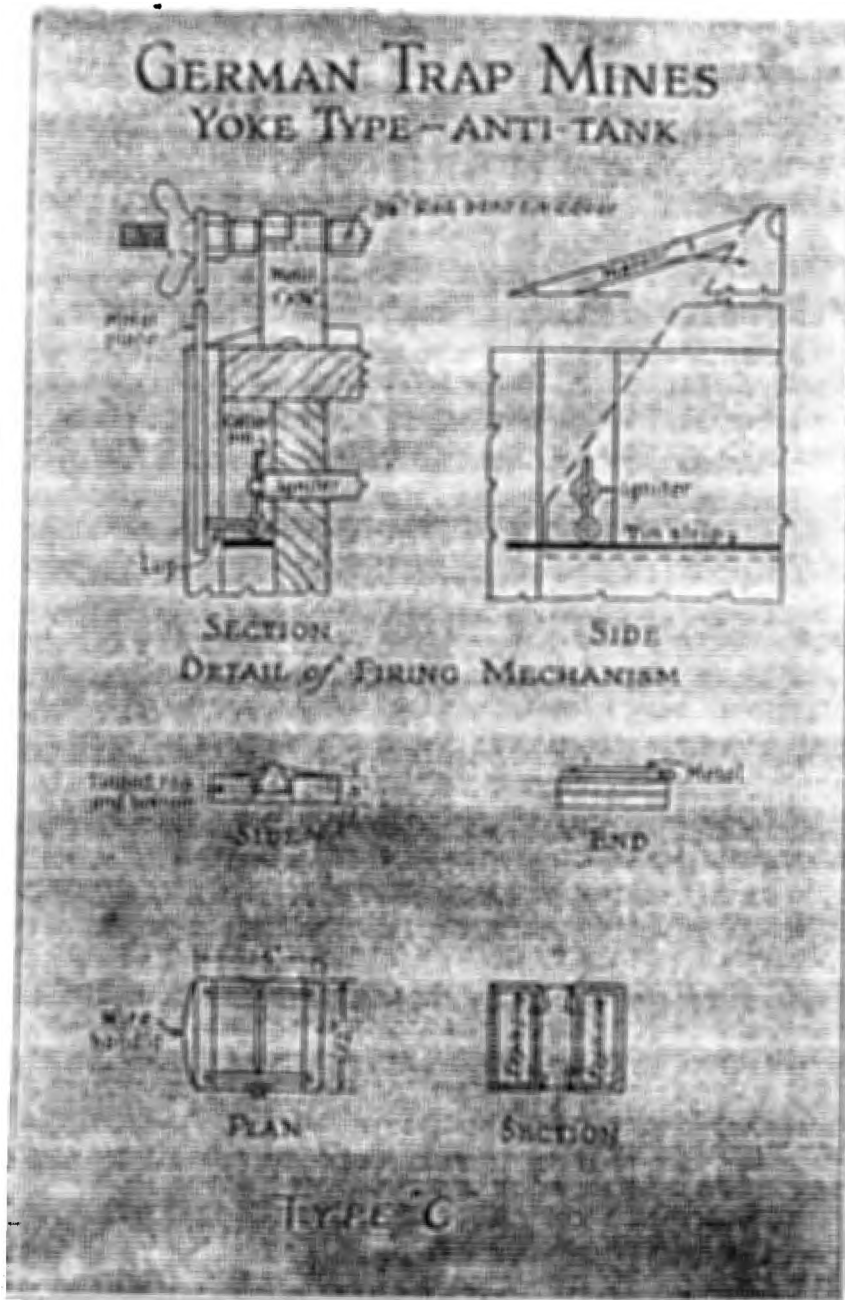


#69 ✓



Views of Type "C" tank mine description of which is given on preceding pages.

TANK MINES



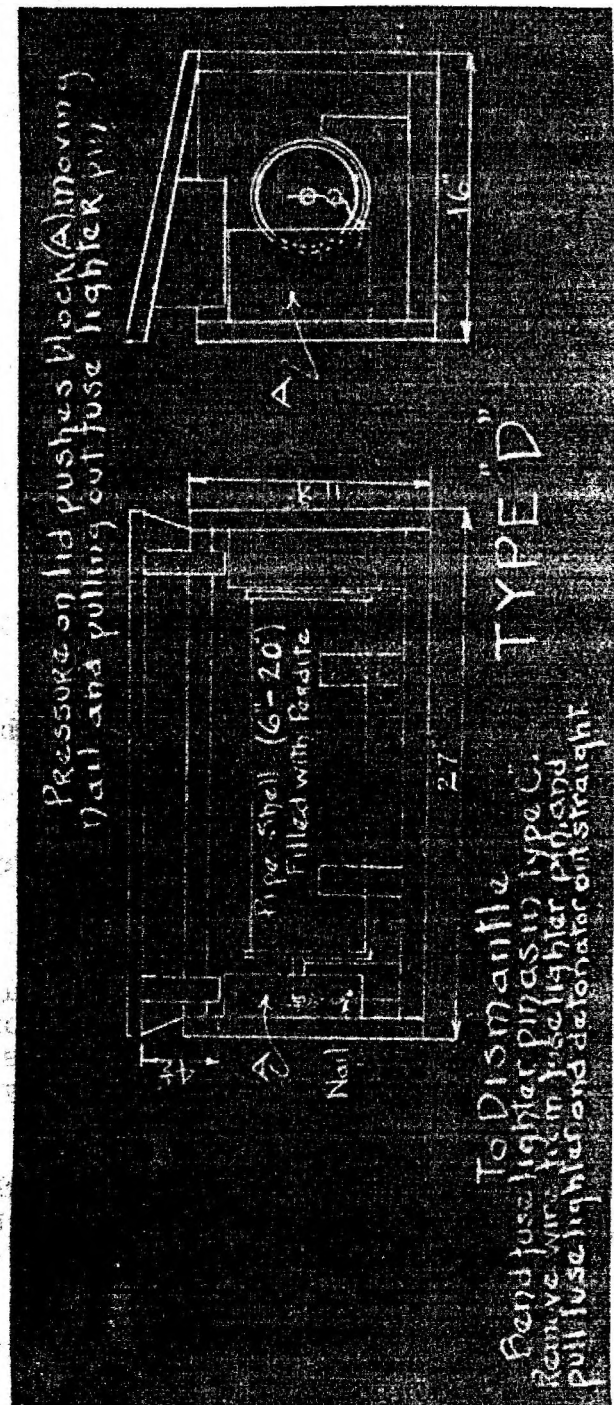
Details of Type "C" Mine.

TANK MINES



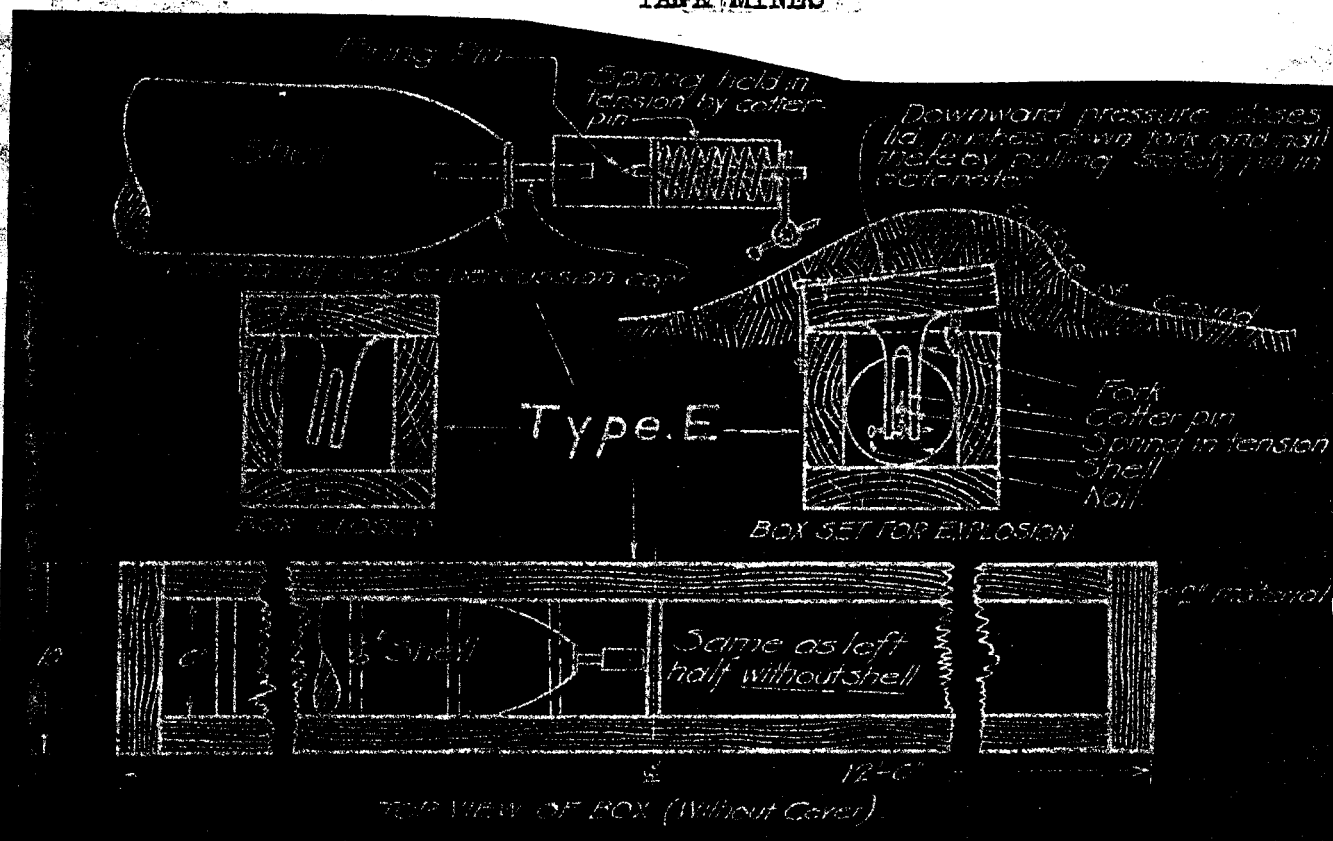
#78 ✓
Type "D" tank mine consisting of wood box 27" x 16" x 12" in which is placed a pipe shell 6" x 20" filled with perdit. Pressure on the lid pushes block "A", moving nail and pulling out fuse lighter pin.

To dismantle this mine the fuse lighter pin should be bent with pliers and the wire removed from the ring of the cotter pin of the fuse lighter. The fuse lighter and detonator may then be pulled out straight.



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TANK MINES



Type "E" mine, a number of which were found in the area of the First Army.

The mine consists of a wood box 12' x 10" x 10" containing one 6" H.E. shell from which the regulation fuse has been removed and spring fuse lighter inserted in its place.

A hinged cover extends the full length of the box. To the inner side of the cover is attached a metal fork to which is fastened the cotter pin of the spring fuse lighter by means of a nail.

This type is similar to Type "Q" in that the cotter pin of the fuse lighter will be pulled out and the shell exploded when the cover is either raised or pressed down. It is a very dangerous type to disarm.

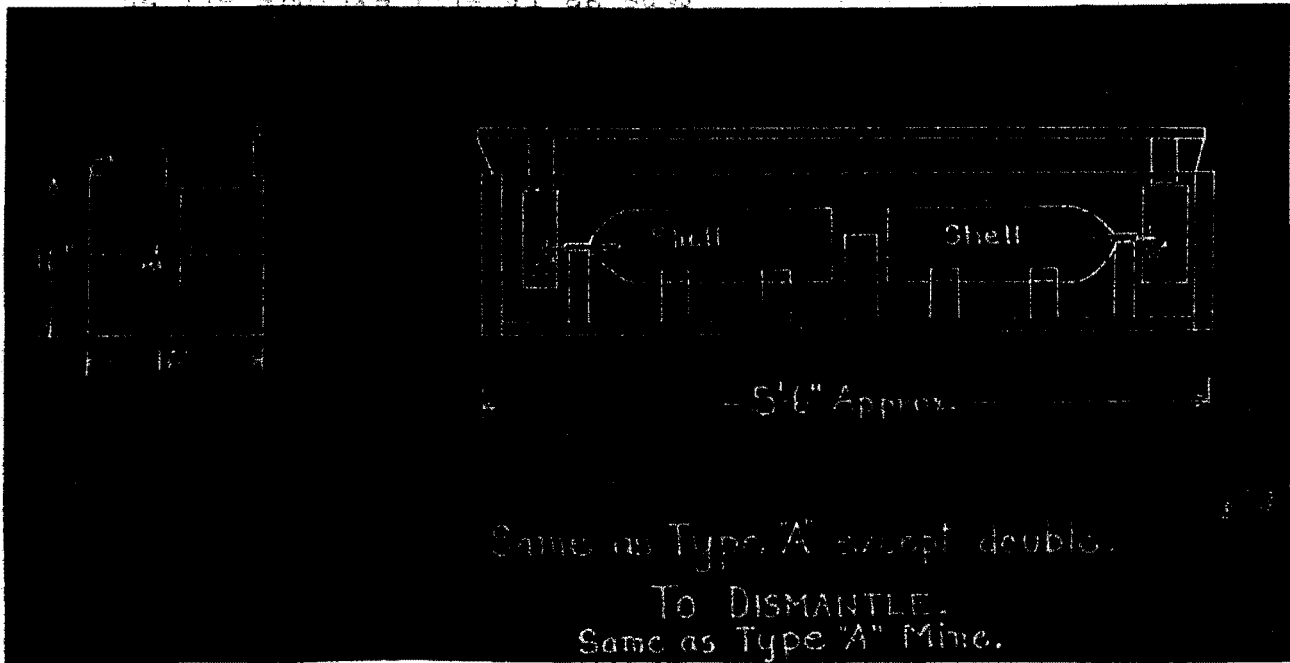
These mines were generally placed in a continuous line a short distance in front of the first belt of German wire.

To dismantle this mine the hand must be inserted inside the box without raising the lid and the nail connecting the cotter pin to the metal form removed. The lid may then be raised and the spring fuse lighter and detonator taken from the nose of the shell.

TANK MINES

15" mine

each side of the mine is
strengthened with a metal band
around the box and secured
with a pin and nut at each
corner of the box.



Same as Type "A" except double.

To DISMANTLE.

Same as Type "A" Mine.

(a) with to the mine to be used
in the mine to be used in the
mine. Type "F" mine which is similar in every
respect to Type "A" except that the box
contains two 6" H.E. shells instead of
one. Each shell is equipped with spring
fuse lighter, the cotter pin of which is
attached to a wooden block.

The method employed in dismantling
this mine is the same as that in Type "A".

TANK MINES

Type "G"

A few mines of this type were found by 103rd Engineers between Charey and Jonville. It is a particularly dangerous type as it will explode either when the lid of the box is raised or pressed down.

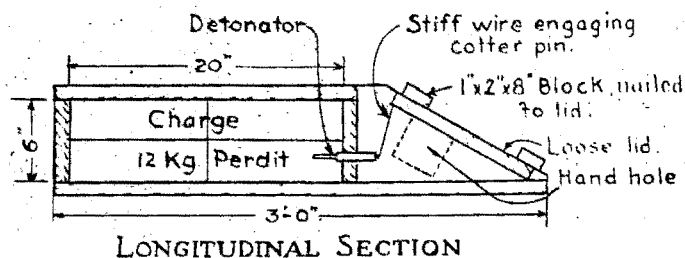
This type consists of a wood box 5' x 18" x 15" containing a 9.7" H.E. shell from which the fuse has been removed and a spring fuse lighter inserted in its place.

The cover of the box is held slightly open by means of a wood cleat nailed to the end. When the cover is forced down the cleat is broken and the cover drops inside the box. A wood block (B) is firmly nailed to the lower side of the cover, as shown in the sketch. A nail driven into this block is attached by means of wire (A) to the cotter pin of a spring fuse lighter. When the cover is forced down or raised the cotter pin is pulled out and the shell is exploded.

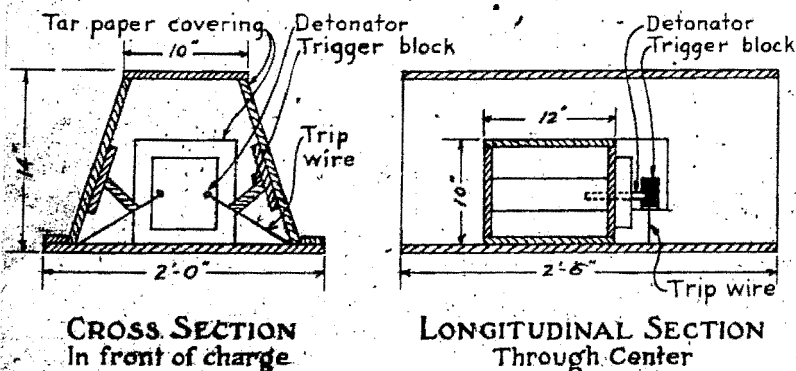
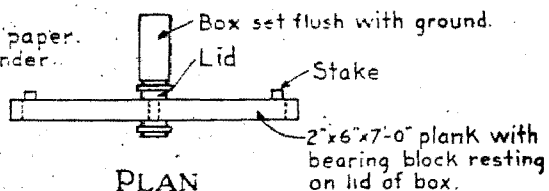
By reaching carefully inside the box and cutting the wire (A) the cover may be raised and the fuse lighter and detonator removed from the nose of the shell. The fuse lighter is sometimes held in place in the nose of the shell by means of a wood plug which may have to be removed.

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TANK MINES



Dimensions of charge 6"x6"x20"
6"(150mm) shell sometimes used.
Box of light material.
Charge cased in tar paper.
Trap usually is set under
wire entanglement
and camouflaged
with grass.



Type "H"

Details of Type "H". There were two varieties of this type - one equipped with a 6" shell and the other containing from 8 to 12 packages of Perdit. The spring fuse lighter is connected with the box by a wire so that any rough handling will explode it.

To dismantle, the hand is inserted inside the hand hole and the wire engaging the cotter pin should be cut after which the lid may be raised.

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TANK MINES

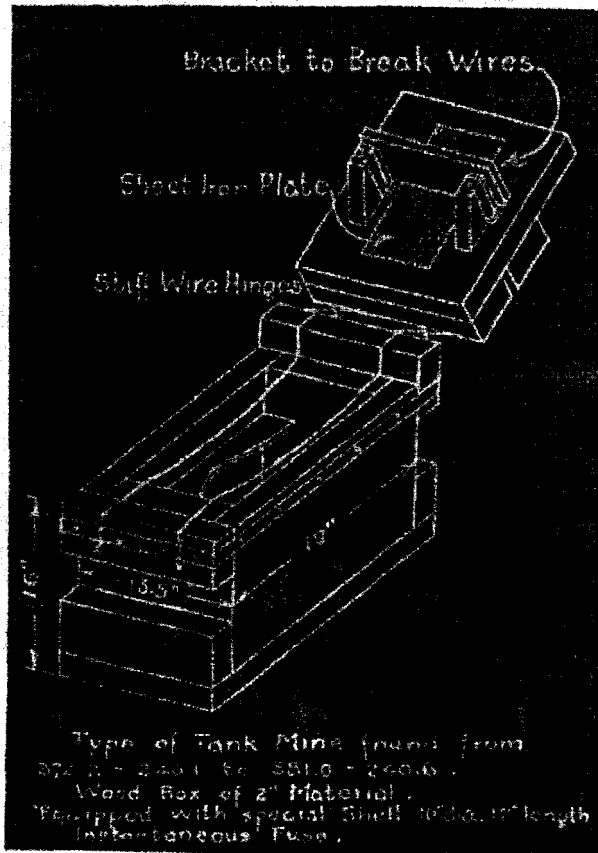


Type "H" tank mine. A number of these were removed by 304th Engineers.

TANK MINES



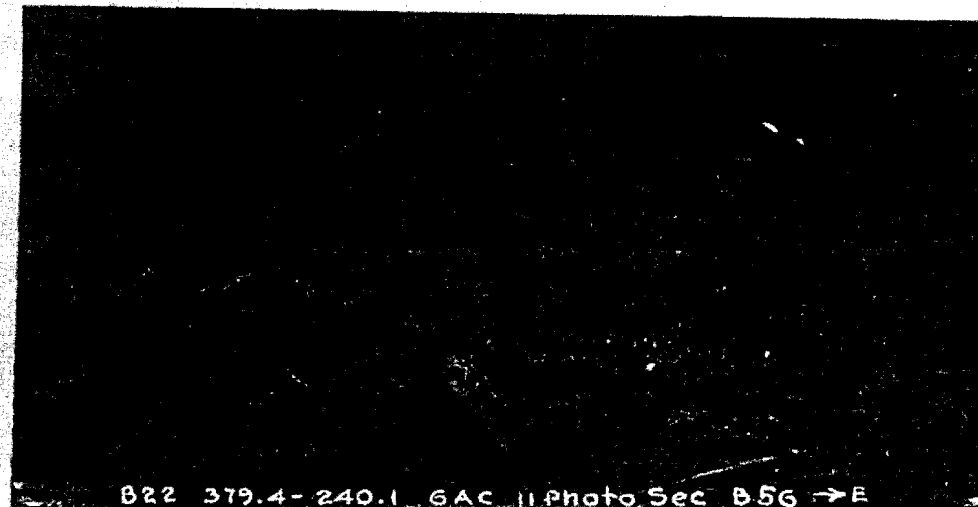
824 379.5-240.1 GAC II Photo Sec 856 → E



Type "I" Tank mine consisting of box 19" x 13.5" x 16" equipped with 10" shell and instantaneous fuse. Mine is buried in the ground; lid is closed down the bracket resting on the wires. Weight of tank breaks the wires and the cover jams the instantaneous fuse.

Type of Tank Mine found from 870.2-240.1 to 881.0-240.6.
Wood Box of 2" Material.
Equipped with special Shell 10" length
Instantaneous Fuse.

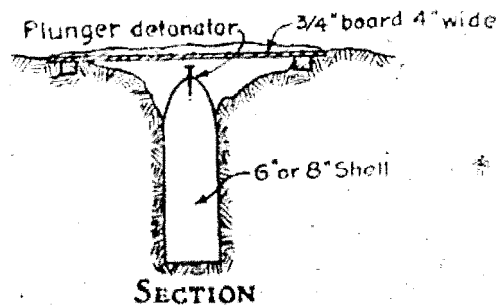
TANK MINES



Views of Type "I" showing the manner in which they are placed and camouflaged.

TANK MINES

GERMAN TRAP MINES ROAD TYPE

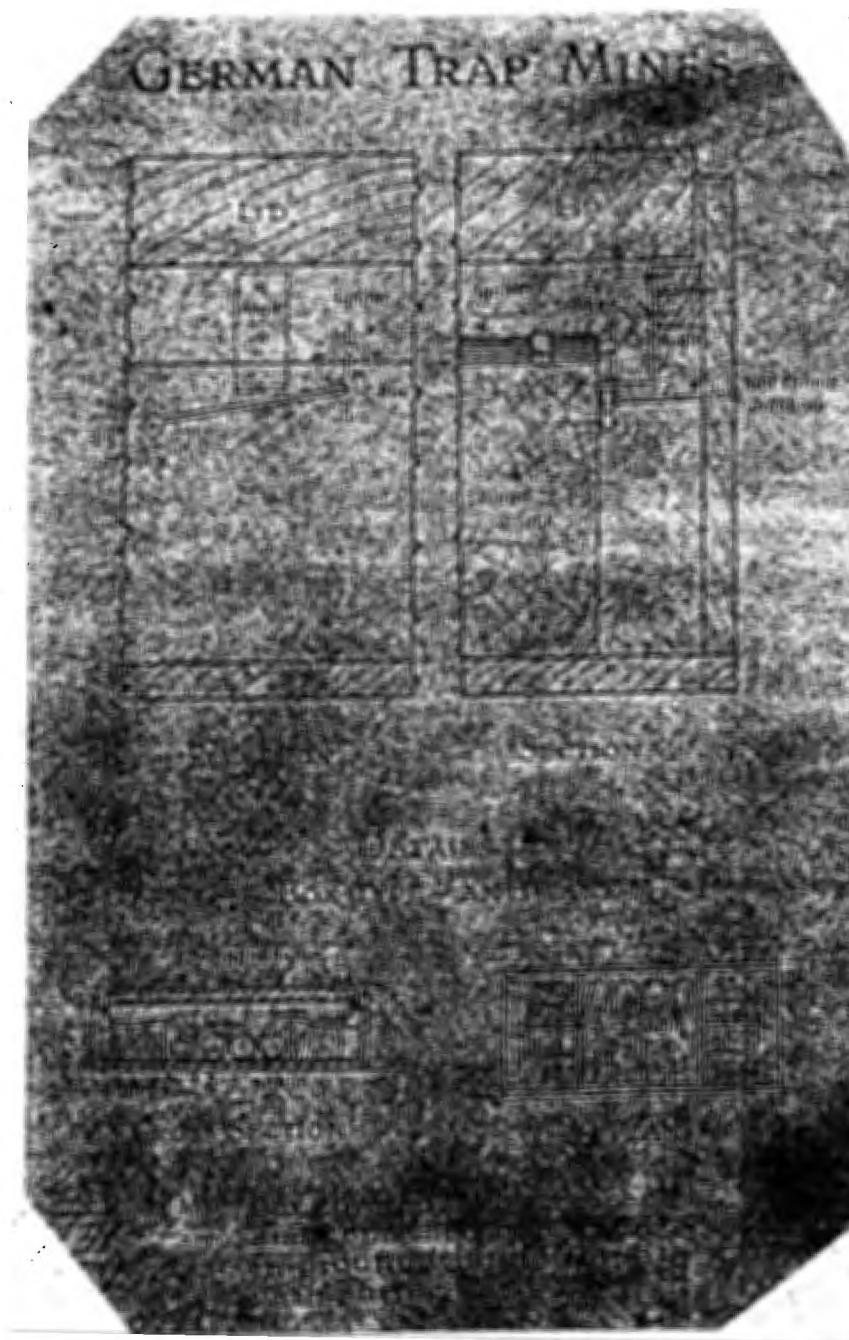


SHELL TYPE - ANTI-TANK



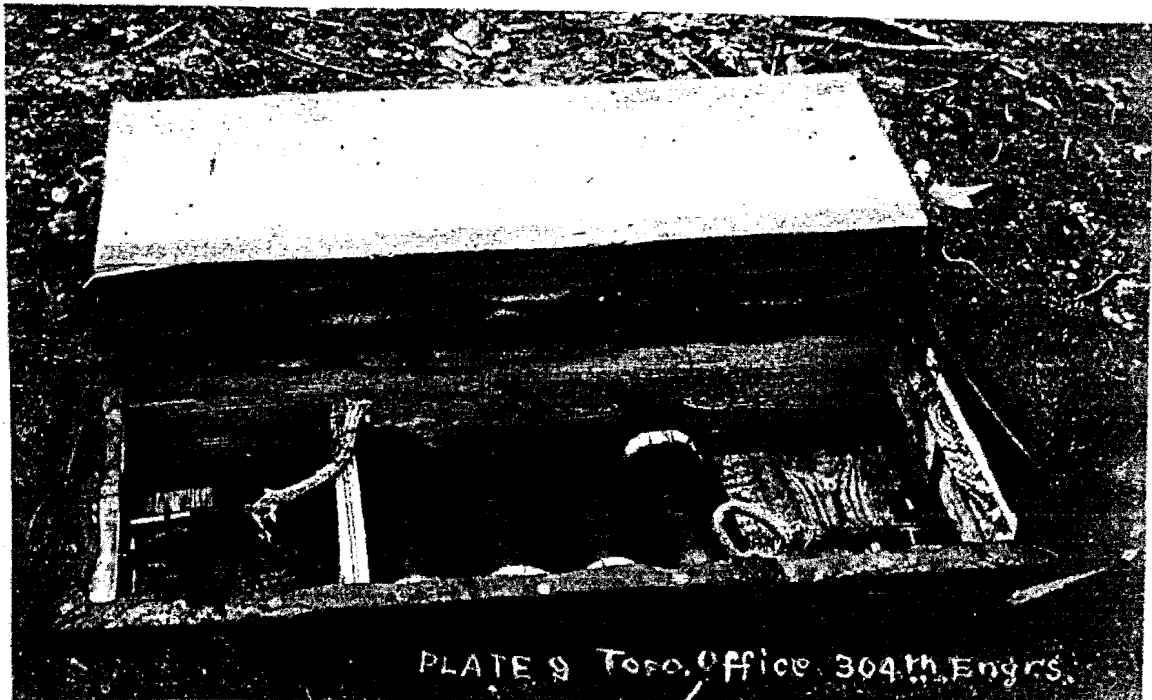
Type "J" consisting of 6" shell equipped with plunger igniter and detonator in nose of shell. These were found by 304th Engineers and also by the 11th Photo Section, 6th Corps, Aerial Service.

TANK MINES



Type "K" mine described on following page.

TANK MINES



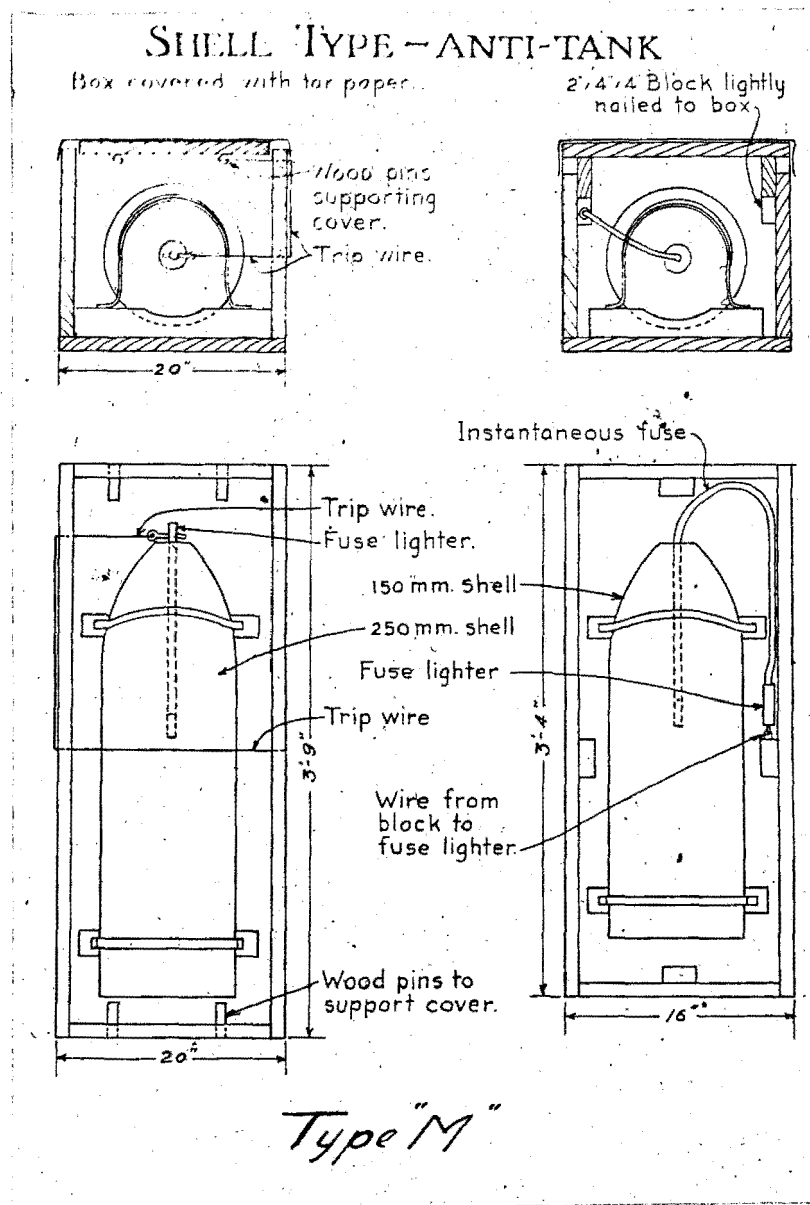
Type "K". A number of this type were removed by 304th Engineers. This mine consists of three 6" shells and two friction fuse lighters. Another form contained two shells and one fuse lighter. They were set in the ground, top flush with the surface and placed at intervals of 10 - 12 ft. To disarm this type the lid is raised and the fuses cut.

TANK MINES



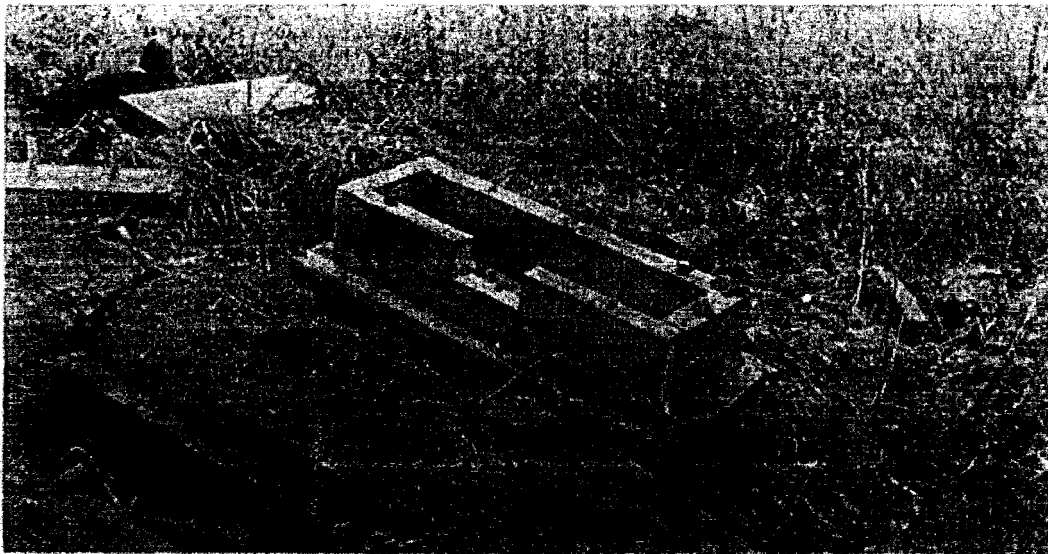
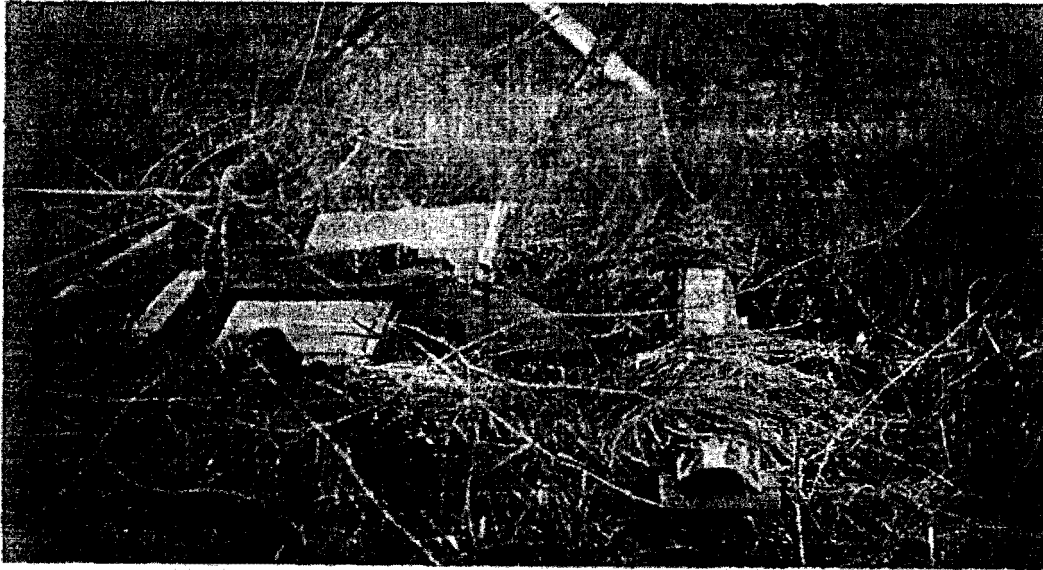
Type "L", consisting of box 19" x 13" x 7" containing 20 kg. H.E. set flush with surface of the ground and camouflaged. When lid is forced down friction fuse is ignited. These were placed at intervals of 10 - 15 ft. To render harmless the lid is raised and fuses cut.

TANK MINES



Type "M" found by 304th Engrs., consisting of two patterns, one equipped with 150 m/m shell, the other with 250 m/m shell.

Lids of boxes arranged so that detonating device would be sprung under weight of tank. Mines were placed in ground and camouflaged. A small ditch around each one protected it from surface water. They were placed at intervals of 10 ft. and line extended a distance of 1½ kilometers.



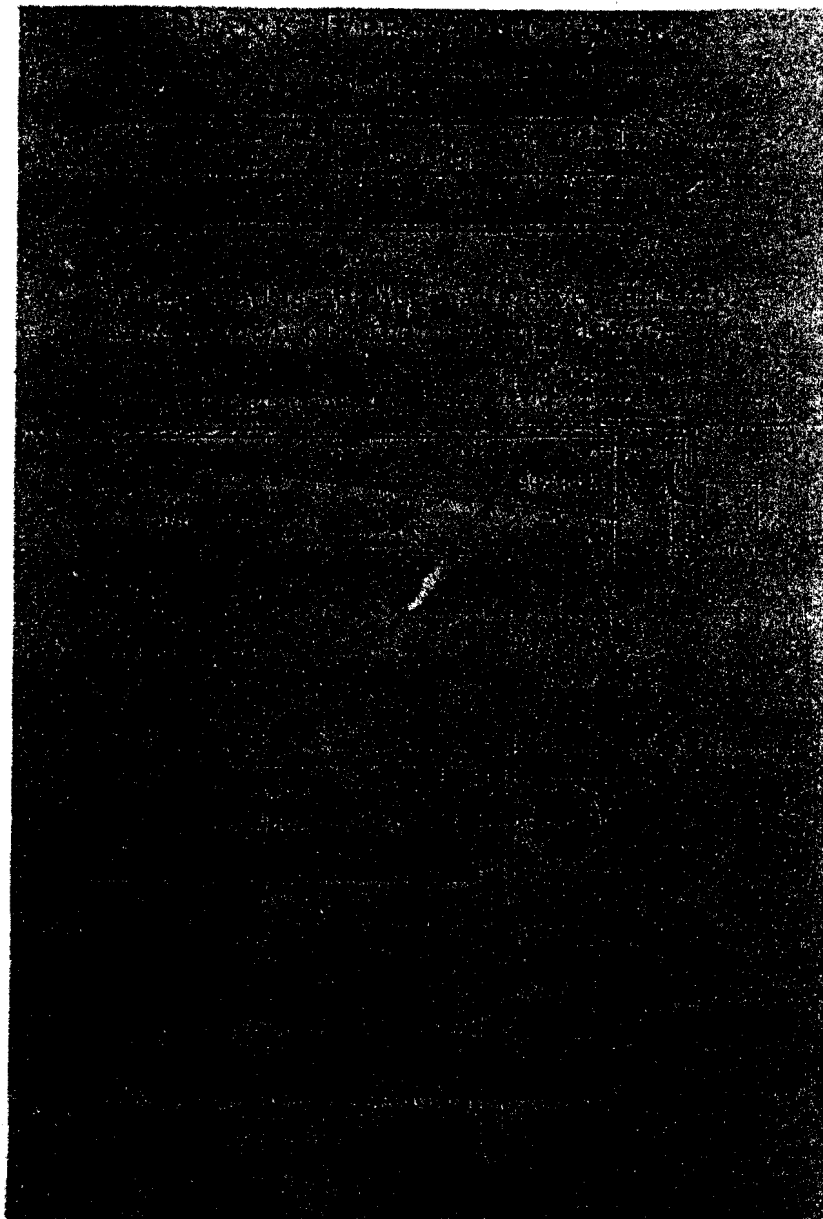
Views of type "M" mine. Mine containing 150 m/m shell equipped with detonator and friction fuse lighter, the cotter pin of which is attached to one of the blocks supporting the lid. See sketch on preceding page.



Views of Type "M", Type containing 250 m/m shell is equipped with friction fuse lighter and detonator in nose of shell. Wire attached to cotter pin is strung under the lid in such a manner that when lid is forced down the cotter pin is withdrawn. See sketch on preceding pages.

To dismantle these mines the lid should be raised and instantaneous fuse or wire cut and detonating device removed.

TANK MINES

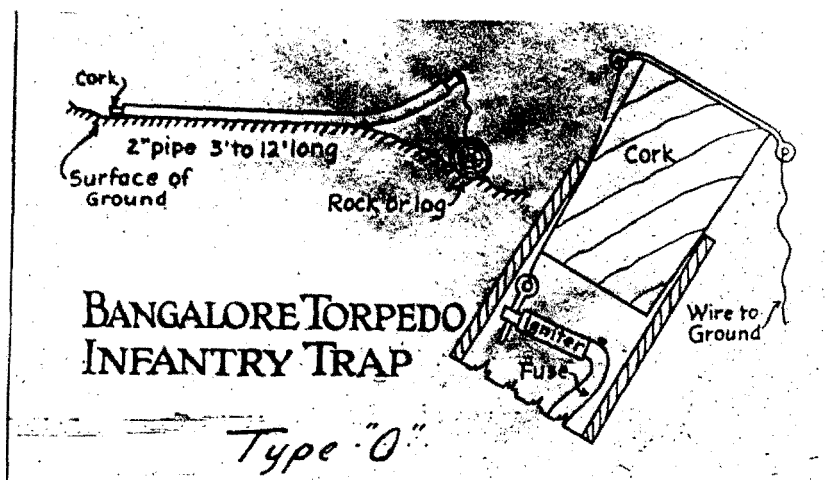


of Type "N" mine. Two different examples
of pit mines designed to explode a charge of
H.E. A number of these mines were found in
the Area of the Second Army.
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... however, the device is not

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TANK MINES

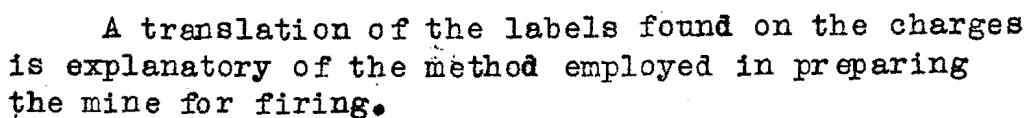


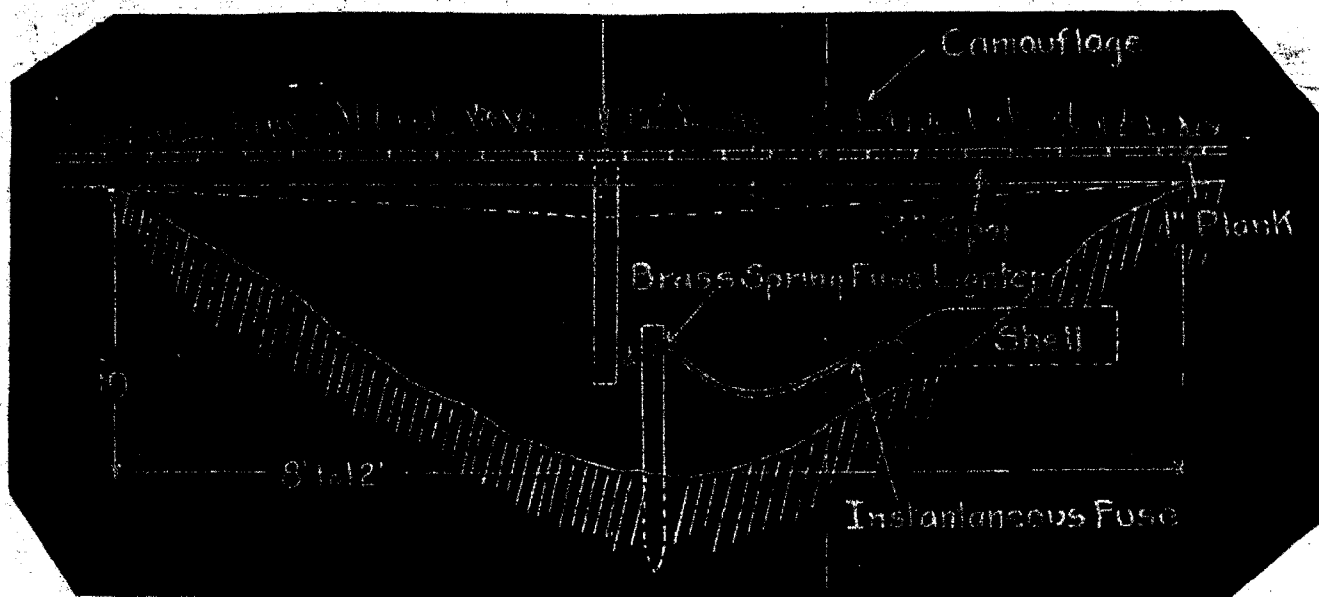
Type "O" mine consisting of Bangalore Torpedo 20 ft. length of 2" pipe equipped with spring fuse lighter and designed to explode when moved. A few examples of this type were found by the 304th Engineers near Ornes at 34.5 - 75.2

Handed over to the 304th Engineers at Ornes at 34.5 - 75.2

Handed over to the 304th Engineers at Ornes at 34.5 - 75.2

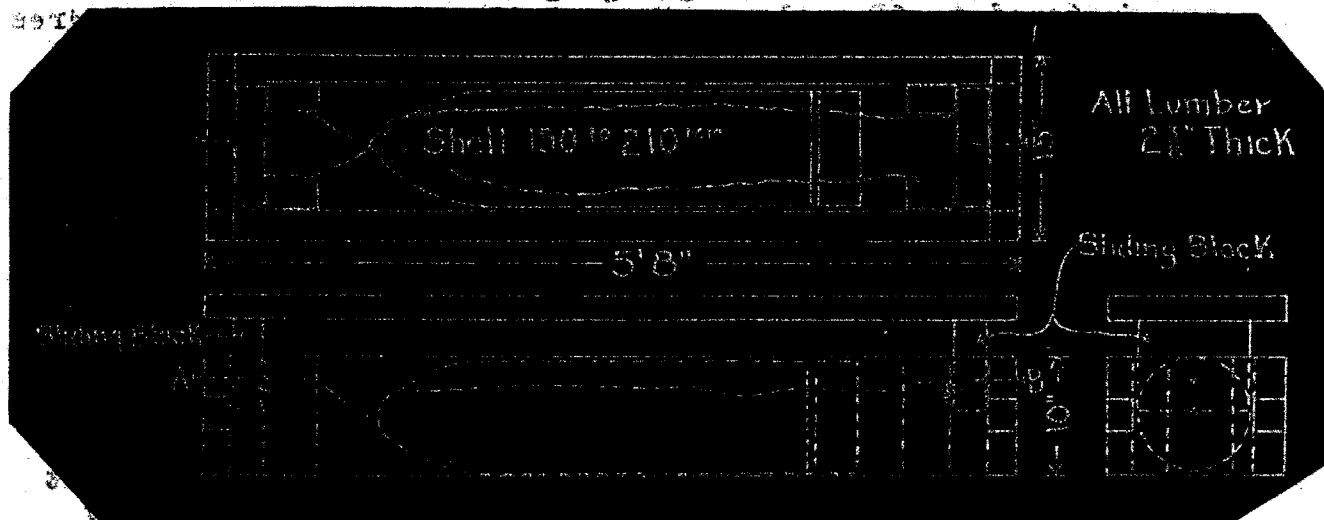
Handed over to the 304th Engineers at Ornes at 34.5 - 75.2





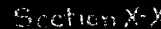
TYPE "P"

Type "P" mine found by 103rd Engineers in German training area near Briey. Sketch indicates manner in which it was arranged. A hole containing the mine and detonating apparatus is covered with a light plank platform and cleverly camouflaged. A tank passing over the platform breaks through and the cotter pin of the fuse lighter is pulled out which explodes fulminate primer and detonating cord in the nose of an H.E. shell.



Type "Q" mine found by 103rd Engrs. Contact platform consists of plank 5ft. 6in. by 15in. Box is 10 in. depth without bottom with a sliding block on each end held in place by a 20D nail at points "A" and "B". Four spring fuse lighters were fastened to vertical blocks at either end of the box; instantaneous fuse leading from fuse lighters to the nose of the shell. Cotter pin of each fuse lighter was connected to the sliding block by a small nail. Weight on platform would push down sliding blocks, setting off one or more of the fuse lighters.

To dismantle: Cut the fuses; bend the ends of the cotter pins to prevent accident and remove the shell, or place high explosives on top of the box and explode the same.



TYPE "H" mine found by 103rd Engineers in German training grounds near Briey. The contact platform consists of a wood beam about 6in. x 6in. x 9ft. 8in. The box is about 7.5in. wide, 9.5in. depth and 10ft. length without a bottom. At points A, B and C are eight gauge wires and ends of which are fastened to 6D nails on the outside of the box. The wires form loops inside and about 4in. below top of the box. On these loops rests the contact platform. On the inside of the box at points D, E, F, and G are placed spring fuse lighters with wires connecting the cotter pins; D to F and E to G with their loops a little more than 4in. below the top of the box. Instantaneous fuses lead from the fuse lighters to the nose of a shell placed behind the box. (There was nothing to show the manner in which the pieces of fuse were to be connected to the shell.) Sufficient weight on beam would break the wires supporting the beam, pulling out one or more of the cotter pins of the fuse lighters thereby exploding the shell.

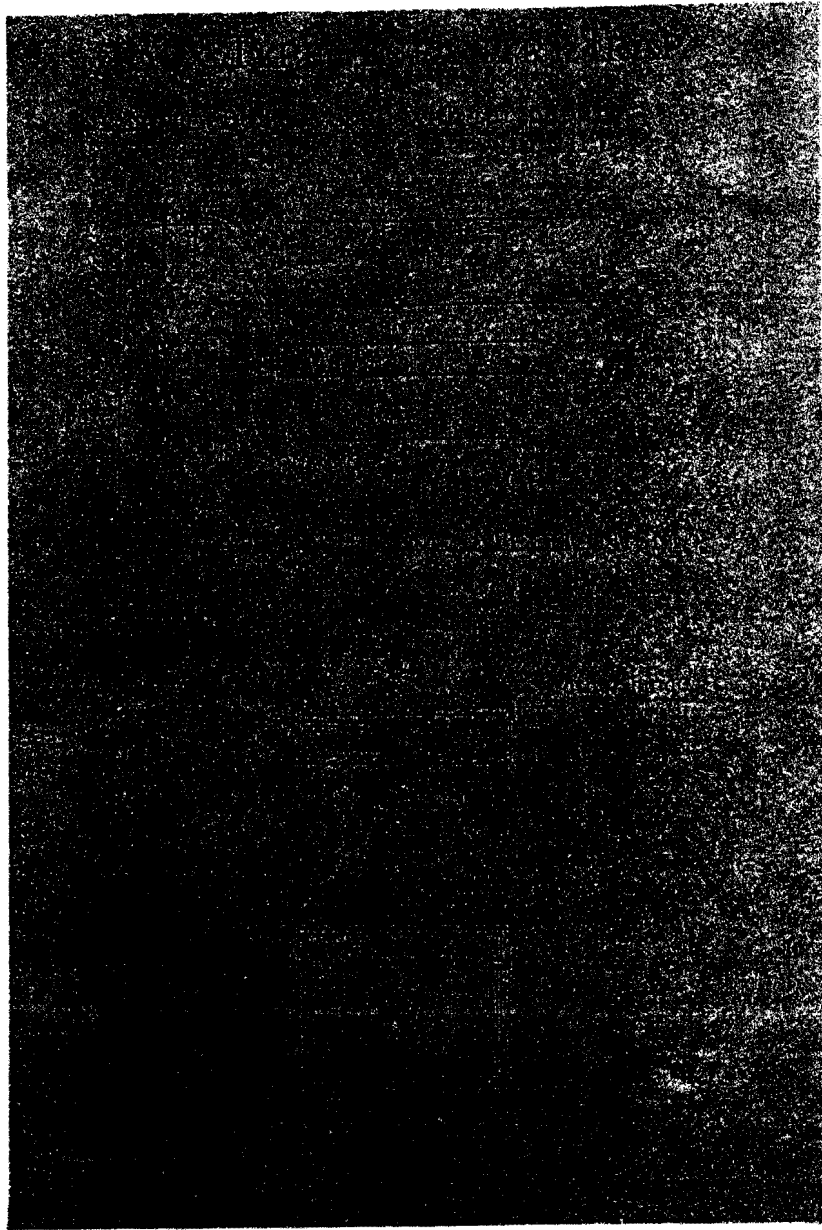
To dismantle: Remove beam; cut the fuses; bend ends of the cotter pins of the fuse lighters and remove the shell.

One or more shells can be placed behind or in front of the box. Considered a very efficient type of mine as by means of a false cover and by not connecting up the wires with the fuse lighters between D and F, and E and G the mine is safe and when it is desired to use the mine the false cover may be removed, fuse lighters connected and the beam placed in position.

[illegible]

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- 36 -

TANK MINES



Contact mine or Infantry trap, 75 of which were found in the Ornes Valley (33.0 - 75.3). Consists of box containing 4.5 lbs. Perditite with two friction fuse lighters and so designed that by pressing down or raising the lid the mine is exploded. The lid is held in position by five short wires.

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- 86 -

TANK MINES

MINING EQUIPMENT



Box type Infantry trap opened. This type is very dangerous to disarm. They were destroyed by exploding a small charge of T.N.T. on the top of each box. The lid of the mine is at an angle and the mine is exploded. The lid is in position by five screws.

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TANK MINES



View of box type Infantry traps (opened)
found in an old quarry in the Ornes Valley.
The mines were all at irregular intervals and
lightly covered with earth.

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TANK MINES



Showing manner in which tank mines were placed, spaced at intervals of about 10 ft.

TANK MINES



Showing the manner in which mine fields were camouflaged and protected with barbed wire and barbed wire concertinas.

TANK MINES



PLATE 26 Topo. Off. 36

Type of splinter-proof shelter which was used by 304th Engineers in destroying tank mines. Each shelter would accommodate two or three men and they were constructed close to the line of mines at intervals of about 600 ft. The mines were dismantled and shells piled in groups from 5 to 9 in contact with each other. A block of T.N.T. was placed against the nose of one shell in each group, tamped with clay and detonated electrically. The demolition squads took shelter in the dugouts and guards were posted about 1 km. in all directions. Shell fragments were sometimes thrown considerable distances.

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TANK MINES

The following blue prints were furnished by Colonel F. A. Snyder, Commanding 103rd Engineers and shows the area which was policed by that organization.

The first plate is very interesting as it indicates the different types of mines encountered and the manner in which they were arranged and spaced. From the great variety of mines employed on this comparatively short front it is evident that the preparation of mines and tank defenses had not reached a state of thorough standardization.

The second plate shows the number of mines removed from the area assigned to 103rd Engineers.

1 1/2 Meters

1 1/2 Meters

1 1/2 Meters

2 Meters

1 1/2 Meters

1 1/2 Meters

1 1/2 Meters

1 1/2 Meters

Type D 16 STM

Type B

Type D 16 STM

Type B

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Type B

NOTE:

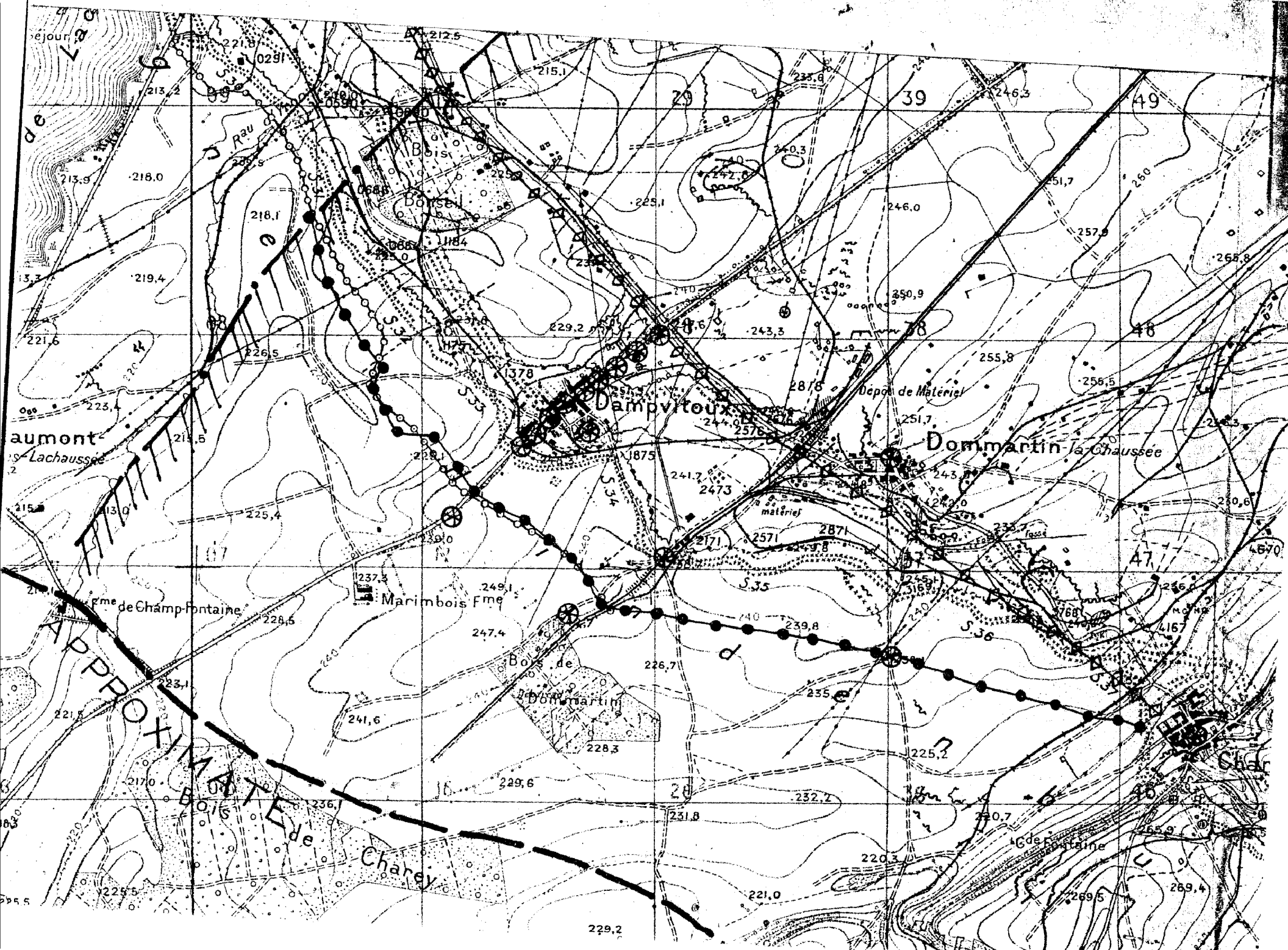
Total number of mines cannot be shown to scale but numbers, dimensions and arrangements are approximately correct.

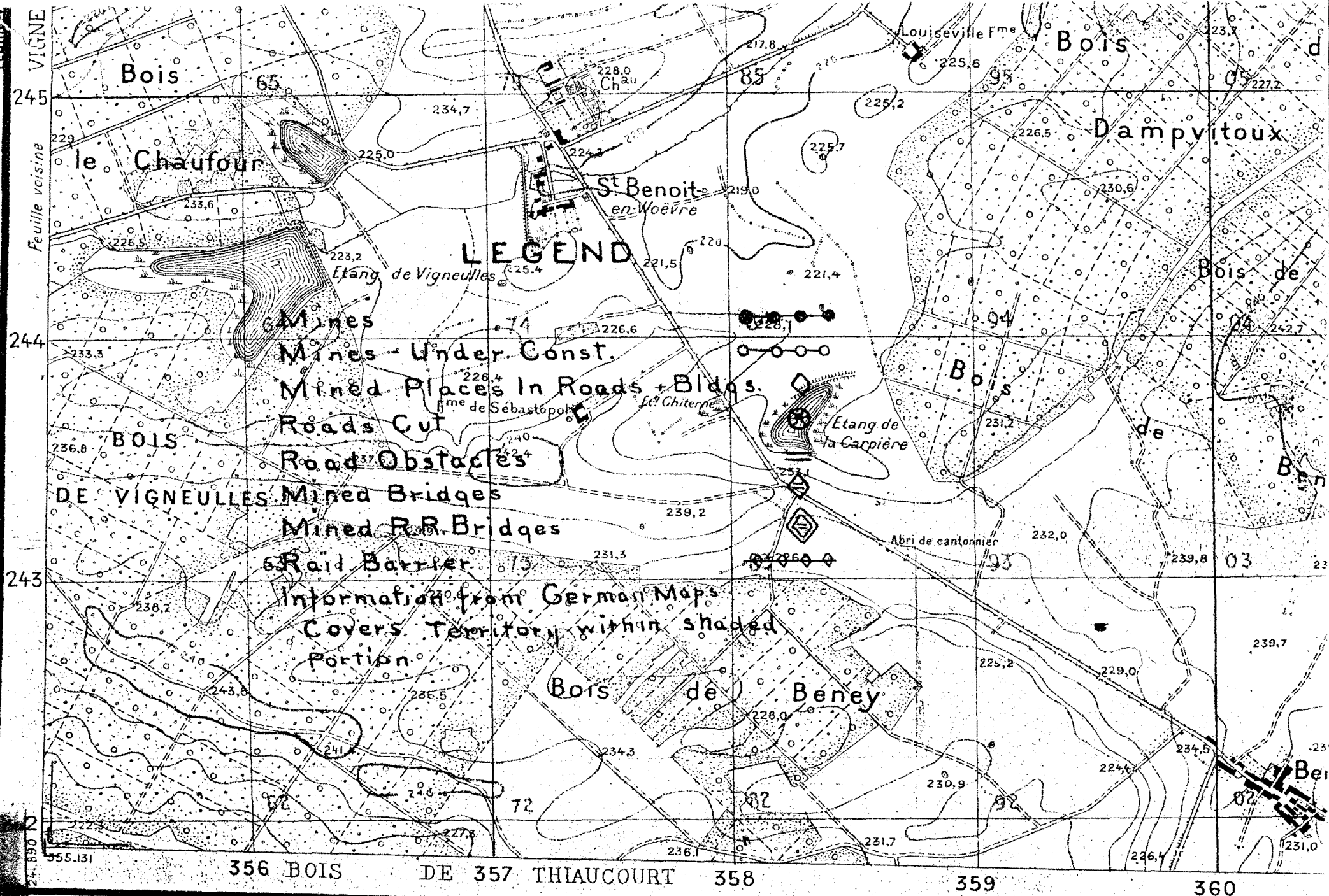
TIME: 1:50.0

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