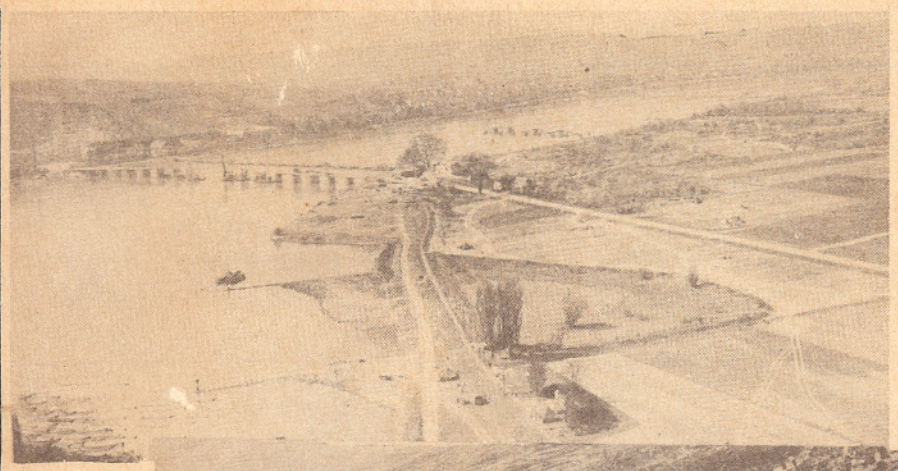
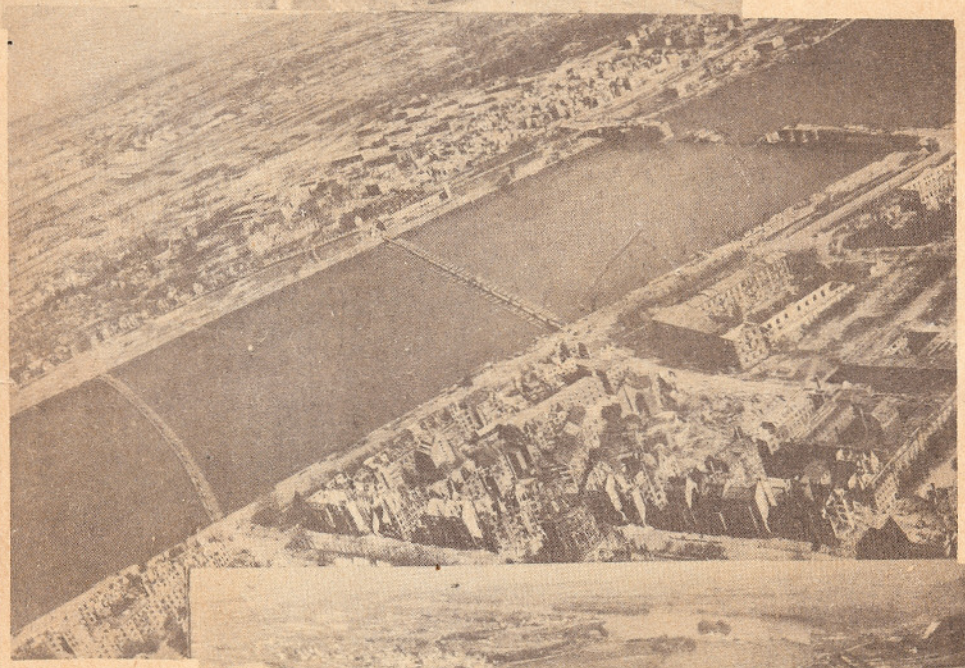
# CROSSING of the RHINE RIVER

X-O CONFIDENTIAL

By

# THIRD US ARMY





OFFICE OF THE ENGINEER

CONFIDENTIAL

# C-O-N-T-E-N-T-S

# CROSSING OF THE RHINE RIVER BY THIRD US ARMY

On 222200 March 1945, assault boats carrying men of the 11th Infantry Regiment of the 5th Infantry Division and operated by the 204th Engineer Combat Battalion, silently shoved off from the west bank of the Rhine River at Nierstein, Germany, and the first assault crossing of the Rhine in modern history had begun. Before darkness of the following night, a bridge had spanned the river and such a firm bridgehead had been established on the east bank of the river that there was no longer any question of the success of the operation. Within the next five days, three more crossings were successfully executed and all resistance along the Rhine on the Third Army front had collapsed. Thus was successfully concluded the fruits of the most intensive period of Engineer planning that had been engaged in since the D-day operation of Normandy.

Planning for the crossing of the Rhine had started as early as August 1944, when it became apparent that the crossing of the Rhine might take place in the not-too-far distant future. To prepare for the operation, the Army Engineer established a special staff section and by September, preliminary estimates of the equipment and material needed had been calculated and ordered, and a preliminary plan of action drawn up based on the troops then available and the stretch of river lying within the Army zone of advance.

Subsequently, as all the Allied Armies came closer to the Rhine, the plans of the higher headquarters unfolded and conferences were held by both SHAEF and Twelfth Army Group at which the technical and supply problems expected to be encountered in executing the crossing were discussed, and provisions made to get the special troops, materials and means needed for coping with the various problems. From these conferences the number of supporting Engineer troops and the amount of equipment that was expected to be available were also determined.

Based upon this information and that forthcoming from the Army G-3 and Chief of Staff, a plan of action providing for crossings to be made in the vicinity of Mainz with Frankfurt and Darmstadt as the targets was drawn up. Included in the plan was an analysis of all troops and equipment requirements which served as a guide for training specific units to execute specific tasks.

Since the tasks expected to be encountered in the operation were considerably more complex than any engaged in up to that time, it was decided to organize schools to train certain units to perform specific tasks. Accordingly, schools were set up to train the hundreds of outboard motor operators required for the storm boats and powered assault boats expected to be used; the crews to construct floating Bailey bridges, nets, booms and cableways; and for the Naval Unit with its LCVP's and LCM's to perfect the technique of operating on the rivers. Despite many interferences with training because of the requirements for troops for tactical purposes, by mid-December enough personnel had been trained so that a breakdown of tasks could be allocated to specific units.

Continuously from August thereon, a stock of all types of equipment expected to be needed, including that for two fixed permanent type bridges, was being built up at Toul, but the crossings of the Moselle and Saar were so costly in assault and bridging equipment from a combination of flooded rivers and strong enemy resistance that it was necessary to cut deeply into the Rhine stockpile to support these operations, and it required the most strenuous

efforts on the part of the supply forces to finally get sufficient equipment on hand to support the operation.

By mid-December, since the Army was well on its way through the Saar, a crossing seemed imminent, and on 15 December a meeting of the Corps Engineers as well as other members of the Army and Corps staffs was held at Nancy, France, and an Engineer Outline Plan for making a crossing was presented and discussed, and a comprehensive topographical study of the river was given to the Corps.

Shortly after this conference, the December breakthrough occurred, and the Army shifted its direction of advance to the North instead of to the East, but the secondary objective was still crossing the Rhine, and plans and studies were therefore made for executing a crossing in the area between Koblenz and Koln if necessary, though there was never a firm commitment on the probability of this happening. Consequently, though the question of moving all the river-crossing material from Toul to the vicinity of Luxembourg was considered several times, after an evaluation of the problem of loading, hauling and unloading 10,000 tons of materiel, it was decided that the equipment should not be moved. At one time early in March some equipment was actually loaded and moved to VIII Corps, since a plan for their making a crossing in the vicinity of Neuwied was being considered. As events subsequently proved however, the stretch from Bingen to Worms was still the primary target area and as XII Corps struck down across the Moselle towards Worms, the final preparations for the crossing were begun.

One of the greatest fleets of trucks ever assembled for an operation was sent to the dumps at Toul, Esch and Arlon where they were loaded on carefully arranged priorities with assault boats, storm boats, outboard motors, life preservers and bridging equipment. However, even then the task of getting the equipment to the river was far from solved, for the enemy held the direct routes through the Saar to the Rhine until 20 March, so that the first convoys had to pass on a great circle route along the north bank of the Moselle to get to the advanced dump at Alzey. While the subsequent routes were shorter, they nevertheless required a 300-mile round-trip from the rear depots to the forward depot at Alzey through a hitherto forbidden area over roads that had to be cleared and streams bridged as they came. The hauling was further complicated by the delays occasioned by the heavy combat traffic moving over these roads at the same time. To assist in expediting the movement of the stream crossing equipment, liaison planes were employed to traverse the highways and to report the location of stranded or wandering convoys so that patrols in vehicles could be sent out to guide them in.

Despite these difficulties, by the time troops were ready to make the crossing, sufficient equipment was on hand to adequately back the operation, particularly inasmuch as though both XII and XX Corps were scheduled initially to make the crossing, only XII Corps was finally committed to the task.

The crossing by XII Corps was one of superior merit and it could well serve as a model for future crossings. The plan called for a crossing in the vicinity of Nierstein at a site selected many months before. Here a good network of roads intersected from the north, east, south and west, and a bridge with a floating center section and several ferry sites were located on the

river at this place.

The terrain was good from the XII Corps standpoint since hills and a town masked approaches on the west side of the river, while a long, flat, open plain extended from the east bank several miles from the river, as can be seen from the pictures illustrating the crossing. The stage of the river was normal - about mean water and a current of about 3-4'/sec was running, and the weather was mild and clear which greatly aided air support.

The plan for the crossing was that a single division would make the crossing and that all Engineer work was to be executed by Corps Engineers or Army Engineers, depending generally upon previously planned tasks outlined in the Army Plan.

The staging of the operation by the Corps was directed by the 1135th Engineer Combat Group, and in accordance with the Corps Engineer's plan - approximately 100 storm boats and motors, 300 assault boats and motors, life belts and other pertinent items were assembled by the Corps in addition to the T/E equipment of approximately 500 boats and 100 motors. To back the operation with troops, one heavy ponton battalion (minus one company) was initially attached to the Corps for use in rafting operations, the remainder of the battalion and one other battalion were subsequently attached. Two especially trained Engineer combat battalions having approximately 400 outboard motor operators, three treadway bridge companies, two light ponton companies plus a light equipment platoon and seven battalions were attached as well. Still another unit, one-half of Naval Unit No. 2, consisting of 12 LCVP's and their crews were attached and pioneered the use of Naval craft in assault river crossing operations.

The historic crossing action started at 222200 March with the 11th Infantry Regiment supported by 204th Engineer Combat Battalion making a secret crossing in paddled assault boats. Wave after wave was crossed, with over 200 assault boats shuttling continuously throughout the night and by dawn a substantial part of all the Infantry in the 5th Infantry Division had crossed. By 0300 the LCVP's of the Naval unit had arrived and by 0730 twelve LCVP's were in the water and ferrying personnel, light vehicles and supplies, and evacuating wounded at such a rate that assault boats were no longer needed.

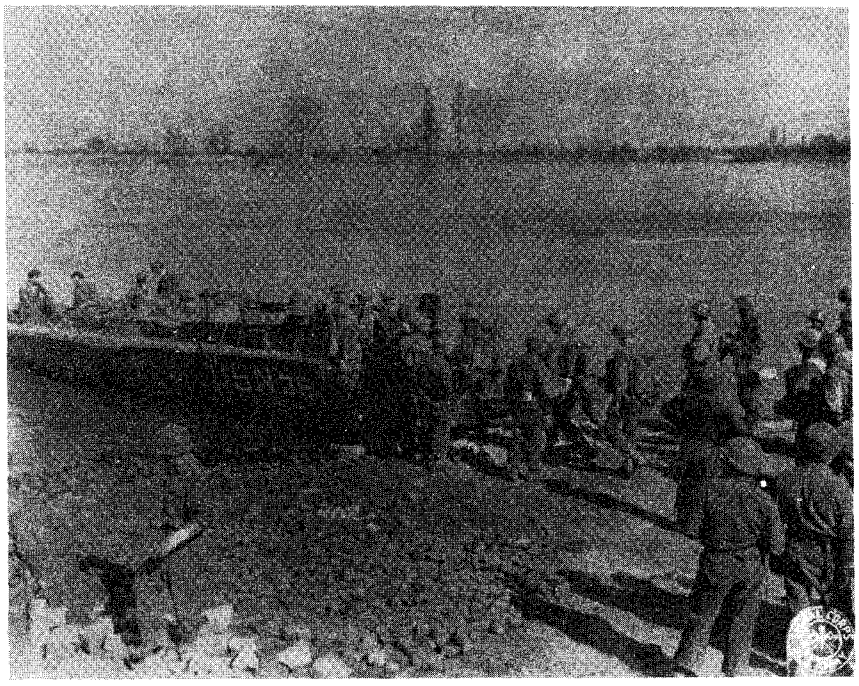


Photo No. 1
INFANTRYMEN BOARD LCVP AT NIERSTEIN

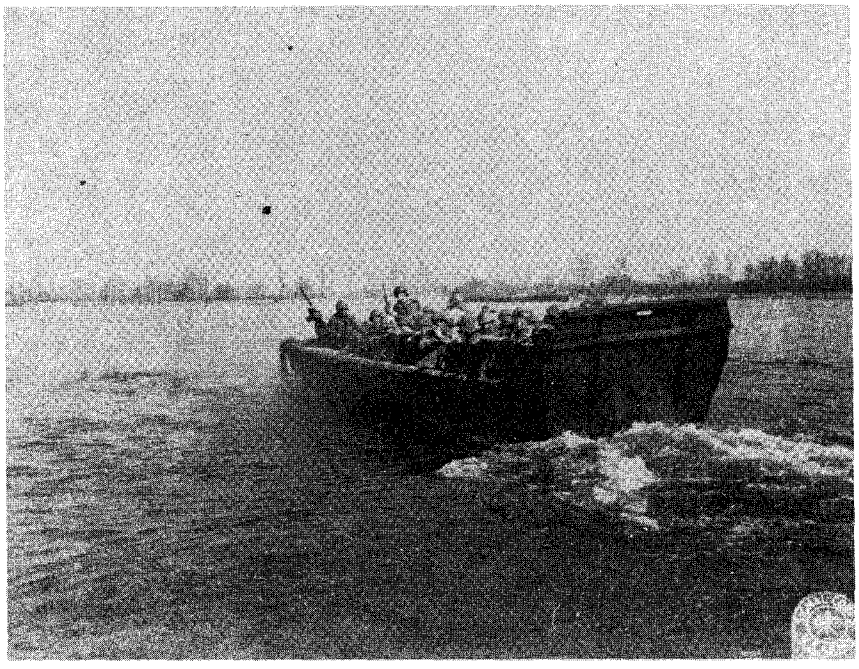


Photo No. 2
LCVP LOADED WITH INFANTRY CROSSES RHINE NEAR NIERSTEIN

Photo No. 3
FIVE LCVP'S IN ACTION NEAR NIERSTEIN

Photo No. 4
JEEPS DEBARK ON EAST BANK OF RHINE AT NIERSTEIN. (Note type of beach - no work was required to permit vehicles to use it).

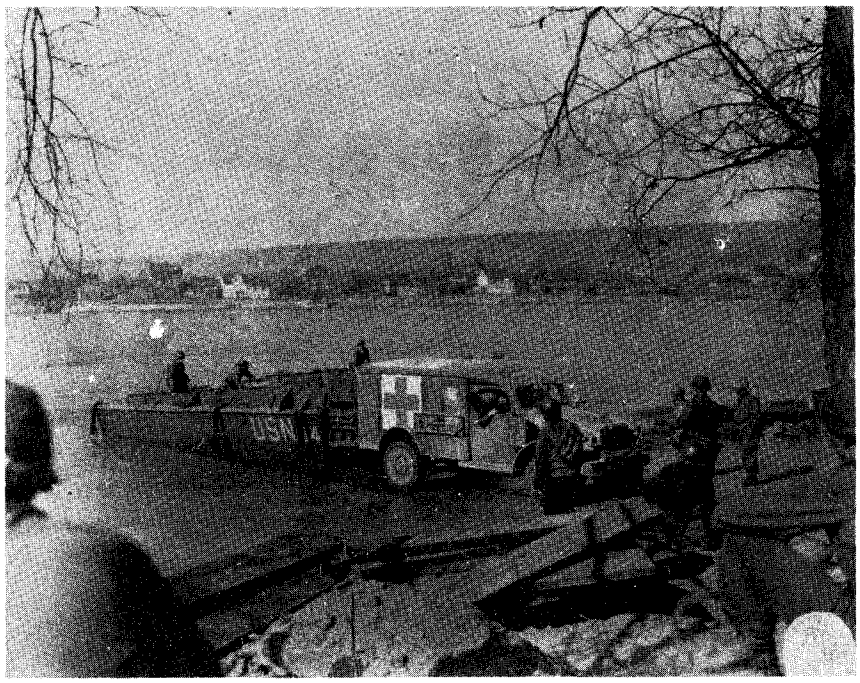


Photo No. 5
AMBULANCE DEBARKS FROM LCVP ON EAST BANK OF RHINE AT NIERSTEIN (Note beach).


Photo No. 6
INFANTRYMEN BOARD LCVP AT NIERSTEIN ON WEST SIDE OF THE RIVER. (Note ferry landing from which boats operate).

During the night, work had begun by the 150th Engineer Combat Battalion in the shelter harbor extending from the river at Oppenheim on the assembly of parts of a treadway bridge, and though the artillery fire searched the harbor and continued to harass the crossing forces during the day, no substantial damage was done. The Luftwaffe also ventured out in strength to strafe and bomb, but the air cover and AA prevented it from doing any more than incidental damage.

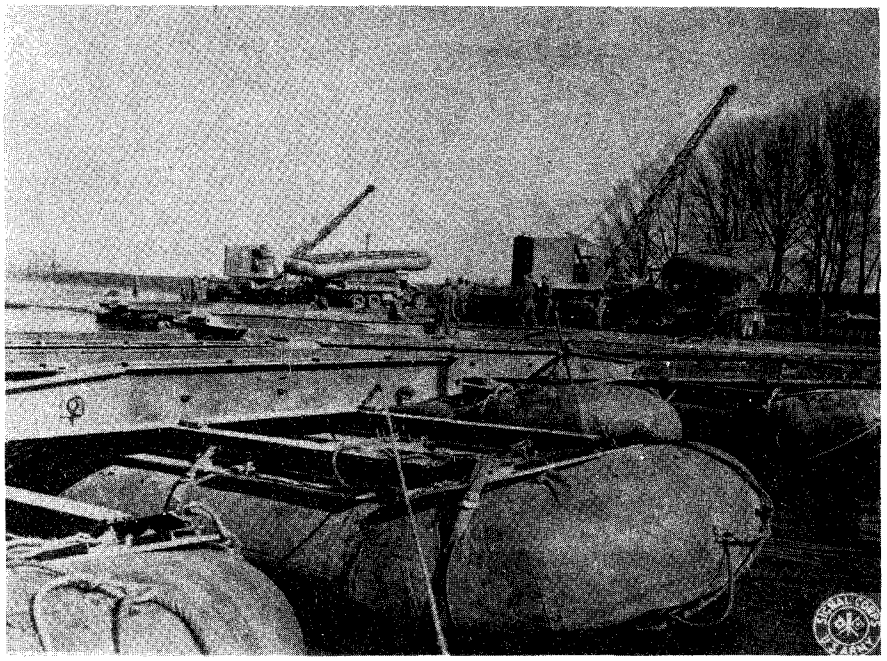


Photo No. 7
SECTIONS OF TREADWAY BRIDGE BEING ASSEMBLED IN SHELTER HARBOR AT OPPENHEIM.

The work on this treadway bridge is worthy of special note inasmuch as the practice previously developed by XII Corps of inflating the floats in a rear area and carrying them forward on 2½-ton trucks demonstrated fully its value here, since the unloading and assembly of the huge amount of material required was carried on with a minimum of confusion, as shown in Photo No. 7. At daybreak the sections were assembled into rafts and work started on constructing a bridge at an old ferry site just downstream of the entrance of the shelter harbor. Work continued during the day and by 1800 the Class 40 M-2 treadway bridge shown in Photo No. 10 was taking traffic.

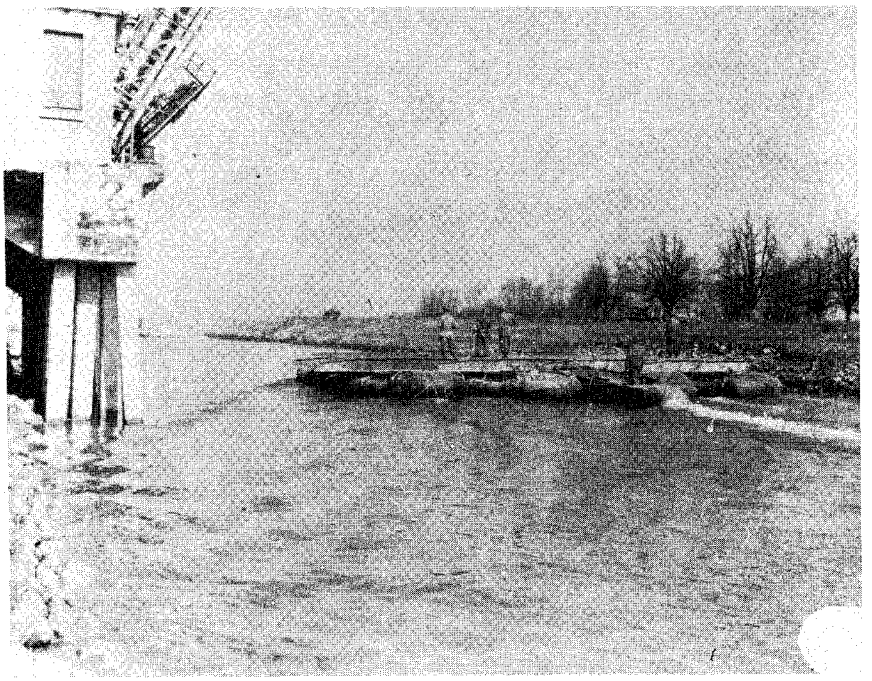


Photo No. 8
M-2 TREADWAY RAFT BEING MOVED OUT OF SHELTER HARBOR AT OPPENHEIM TO BRIDGE SITE.

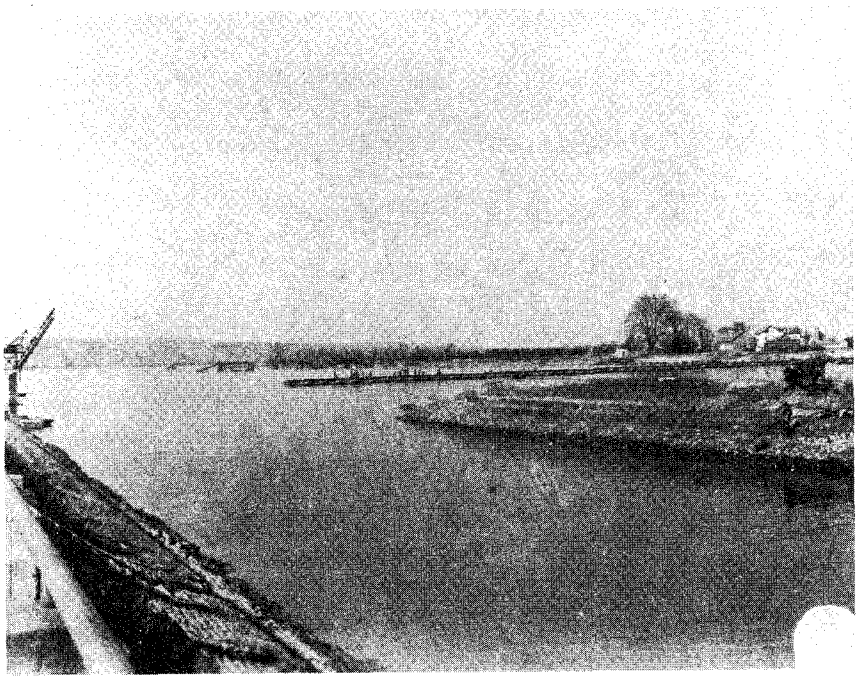


Photo No. 9
TREADWAY BRIDGE AT OPPENHEIM UNDER CONSTRUCTION - VIEW FROM SHELTER HARBOR WHERE PARTS OF BRIDGE WERE ASSEMBLED.

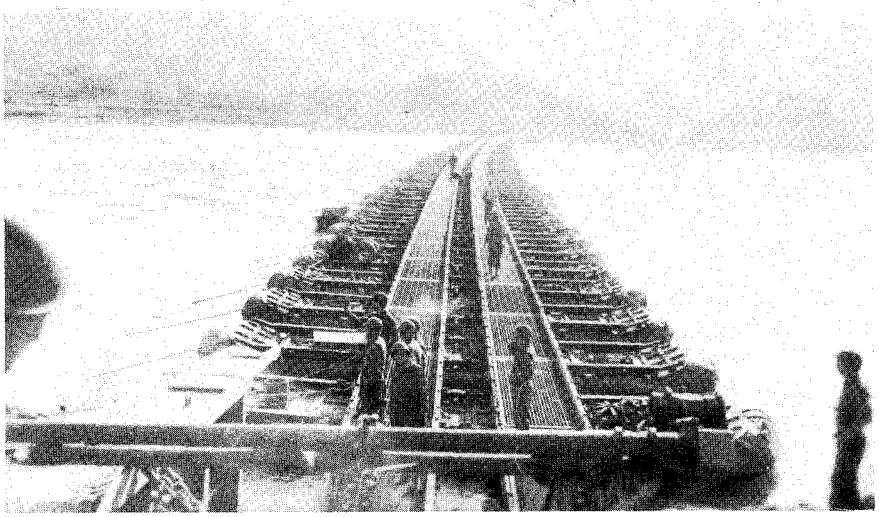


Photo No. 10
M-2 TREADWAY BRIDGE AT OPPENHEIM - FIRST BRIDGE ACROSS THE RHINE IN THIRD US ARMY'S AREA.

Also during the night, the heavy ponton company of the 88th Engineer Heavy Ponton Battalion was unloaded and the construction of Class 40 rafts for ferrying was started. The first raft was in operation by 0700 and by 0930 four rafts were ferrying over tanks, TD's and supply vehicles. About 65 tanks and TD's were ferried during the day in addition to hundreds of other vehicles. In addition five-ponton Infantry support rafts were constructed and further supplemented the ferry capacity, and about ten DD tanks wallowed across the river. A platoon of DUKW's subsequently joined the crossing forces and made 220 trips carrying ammunition, rations and gasoline.

During the day a heavy ponton bridge (shown in photo No. 17) was started by 87th Engineer Heavy Ponton Battalion and by 240130 March, a 1280-ft Class 24 bridge was ready for traffic, and by 0700 of the same day, it had been reinforced to carry Class 40 loads. While under construction, a 150mm shell hit directly in the center of the bridge, but fortunately failed to explode, and aside from piercing the deck and a ponton and delaying the construction, it caused no important damage.

Through this bridgehead of the 5th Division, the 4th Armored raced off so swiftly to the east that the Main River was reached in one day. To speed the traffic at still a faster rate, still another treadway bridge was ordered to be put in and work was started on 24 March and the bridge shown in Photo No. 19 was opened at noon on 25 March.

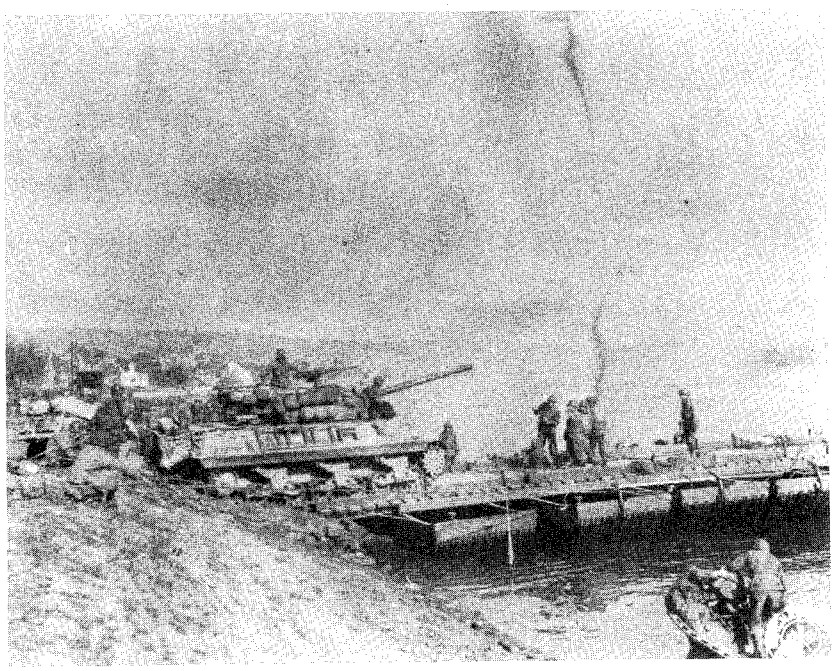


Photo No. 11
TD BOARDS HEAVY PONTON RAFT AT NIERSTEIN

Photo No. 12
TANKS BEING FERRIED ON HEAVY PONTON RAFT AT NIERSTEIN.

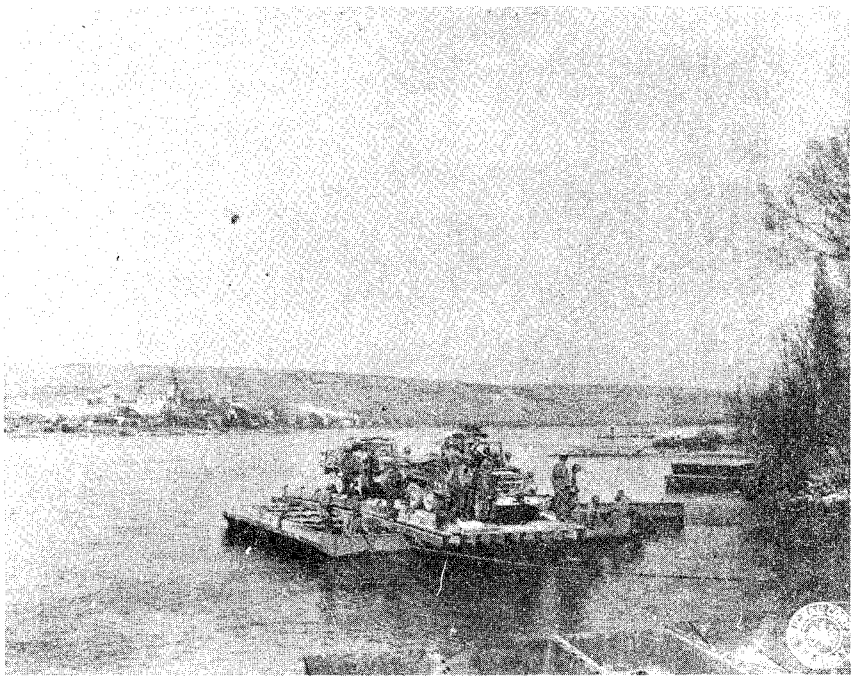


Photo No. 13
SUPPLY VENICLES FERRIED ON HEAVY PONTON RAFTS AT NIERSTEIN.

Photo No. 14
PRISONERS ARE CARRIED ON HEAVY PONTON RAFT AT NIERSTEIN.

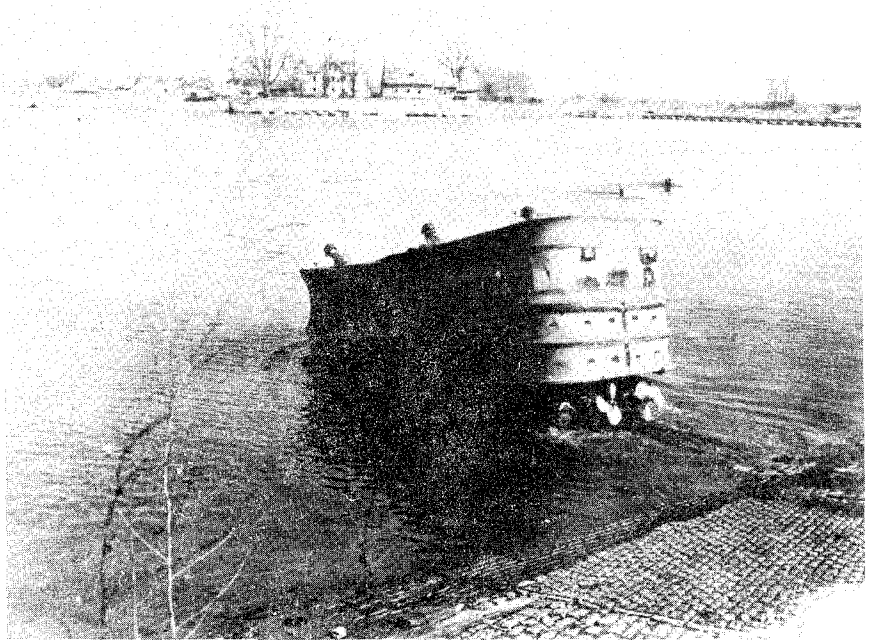


Photo No. 15
DD TANK ENTERS RHINE RIVER AT NIERSTEIN - (One that has already crossed is seen climbing on far shore. Bridge in background was uncompleted at this time).

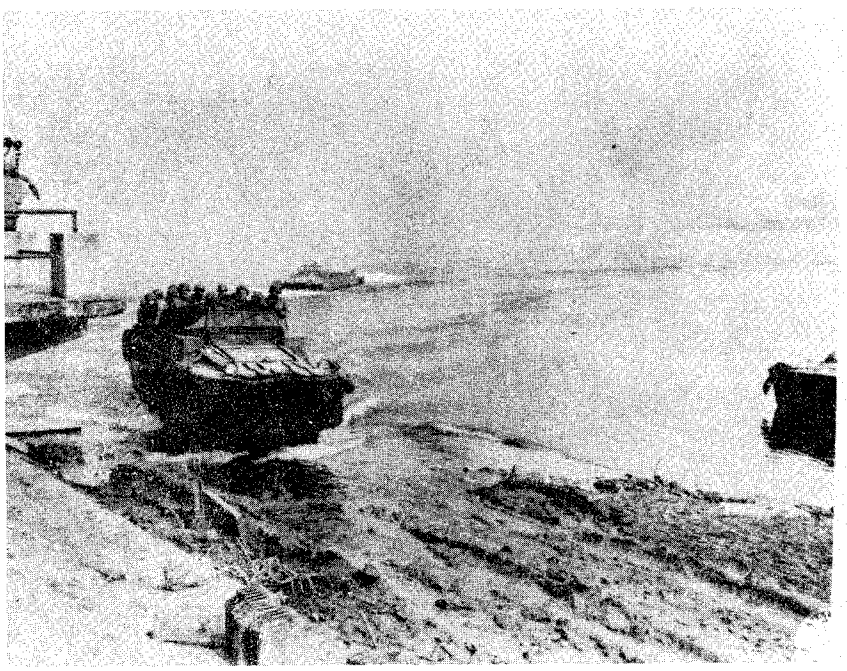


Photo No. 16
DUKW'S EMERGING FROM RHINE RIVER AT NIERSTEIN.

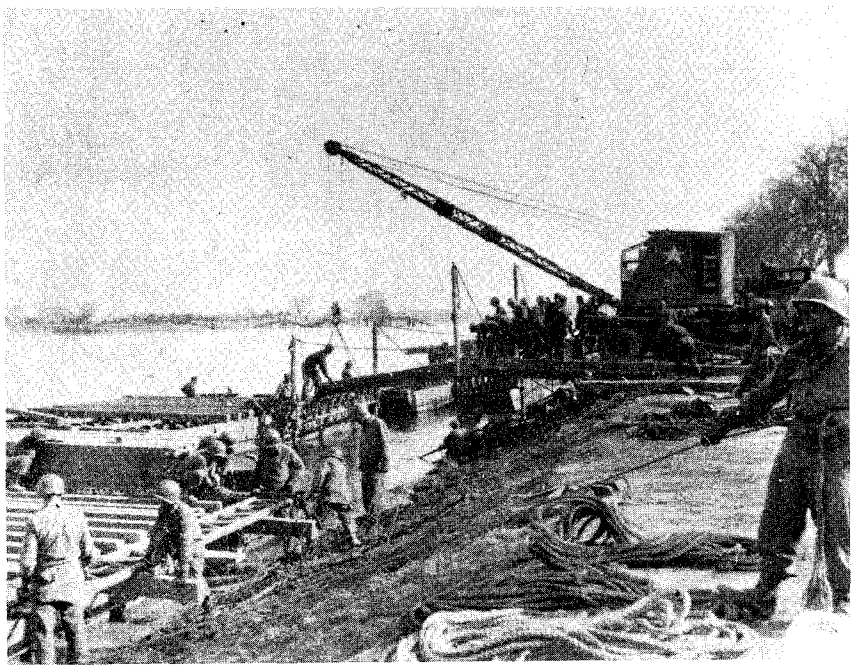


Photo No. 17
HEAVY PONTON BRIDGE UNDER CONSTRUCTION AT NIERSTEIN.

Photo No. 18
TRAFFIC ROLLS OVER HEAVY PONTON BRIDGE AT NIERSTEIN.

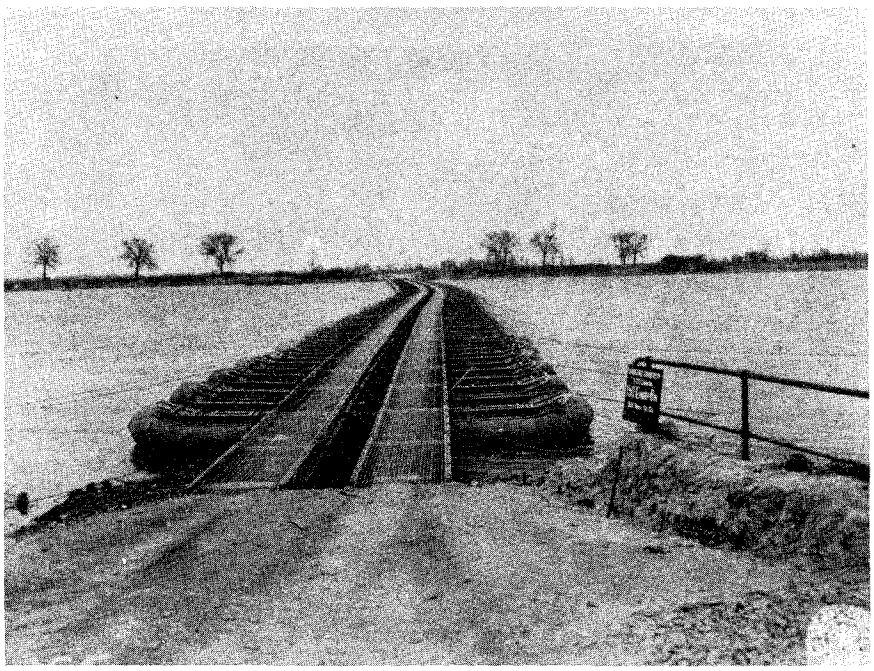


Photo No. 19
TREADWAY BRIDGE AT OPPENHEIM.

By 27 March, five divisions had passed over these three bridges as well as supplies and necessary supporting troops. The rate at which traffic crossed can be determined from the fact that the entire 6th Armored Division crossed in 16 3/4 hours. During the period from 24 March to 31 March, 60,000 vehicles crossed over these bridges at Oppenheim.

Aside from the actual problem of building the bridges, the protection of them posed several problems which required special equipment and training, but this had been anticipated and fortunately the enemy was unable to halt the construction of,or damage the bridges. The following security measures were employed.

a. Air protection - For the initial days of the operation, air cover was constantly maintained over the bridges - during the day 30 planes were constantly in the air high over the bridges while about four battalions of AAA, including multiple barrelled .50 Cal., 40mm and 90mm guns were so effectively employed that even though a few enemy planes did sneak through the air cover, the AA was so terrific that they were either shot down or driven off before any substantial damage could be inflicted.

To supplement the AA, a smoke screen 2½ miles long and 3/4 of a mile wide cast such an effective pall over the entire area that any air visibility of the bridge was effectively disrupted.

b. Waterborne assault - Since Intelligence sources had reported the possibility of "Gamma" swimmers attacking the bridges, an anti-personnel net of the British Admiralty netting type was installed and the first night aided in the capture of two of the swimmers. These swimmers reported that three others had been in the party, but those never put in an appearance.

As a further deterrent to swimmers, upstream of the bridges an LCVP constantly patrolled and during the night dropped depth charges overboard consisting of 25-lbs of explosives with a one-minute time delay. These were dropped at the rate of about one every five minutes, and though not lethal over a wide range, were nevertheless a deterrent to swimmers.

In addition to the anti-personnel boom, two anti-mine mine booms consisting of logs fastened together by wire cable were also placed. To prevent the failure of the entire boom in the event of breakage, all the booms were provided with anchors every 50 to 100 feet in addition to the shore connections.

A still further protection was provided by the installation of an anti-barge boom which consisted of four 1-inch steel wire cables, supported on bouys made of 55-gal drums. This boom was designed to stop a barge or at least to slow it down so that the artillery used in support of the boom could be brought to bear upon whatever did come down the river and sink it.

In addition to the passive measures of protection, the booms described above - Radar coupled with a battalion of 75mm TD's were also used. Experiments had been carried on by AAA on use of Radar for the detection of floating objects while on the Moselle River, and it had been determined that this could be successfully employed to warn of the approach of objects as small as assault boats, and since there was always the possibility of small, explosive-filled power boats or one-man submarines being used against the bridge, some means of providing a warning especially at night was needed, if the guns at the site were to be employed against them. However, with the exception of two small launches that drifted downstream, the guns had a quiet time. The bridge guards themselves constantly surveyed the stream for suspicious looking objects and fired on anything that appeared to possibly be a mine.

To further supplement the warning system for the guns, searchlights were mounted along the bank and lighted the booms and stretch of the stream upstream of the booms continuously at night. Since CDL's were available, these were employed for the dual-purpose of lighting the stream and as protective artillery in addition to the TD's. After about nine days, when the tactical situation had changed and crossings had been made upstream of the crossing site, the TD's were removed; but the CDL's were still used and are expected to be used indefinitely even after the fixed bridges have been installed.

Subsequent to the original tactical crossings, plans had been made to replace the floating treadway bridges by floating Bailey bridges and by 29 March, six days after the initial bridging had begun, and despite the vast supply needs of other Corps to be discussed further on, sufficient material was on hand to permit a floating Bailey bridge to be started, and this was opened for traffic by 31 March.

Photo No. 20
FLOATING BAILEY BRIDGE AT OPPENHEIM.

Simultaneously, equipment and material were being assembled by the 1301st Engineer General Service Regiment for the construction of a fixed bridge, and by 31 March, survey work was able to be started on the project - an eleven-hundred-foot pile bridge named "The President Roosevelt Memorial Bridge," which was opened and dedicated on 15 April 1945. This bridge is particularly noteworthy inasmuch as practically every piece of material put into it was obtained locally. Piling up to 80 feet in length was hauled out of nearby forests and steel I-beams, 50 to 90 feet long, were found in steel mills at Hanau. By so fortunately obtaining these materials close by, a vast amount of transportation that would have been required had the material been hauled from Toul, was released to the Army for other haulage purposes. The work on the bridge was expedited by special equipment previously secured specifically for this job: steam pile-drivers, 1½-yard shovels and NL ponton rafts. Work proceeded 24 hours a day and though floodlights were used at night;except for a rare air raid, no other enemy action was encountered.

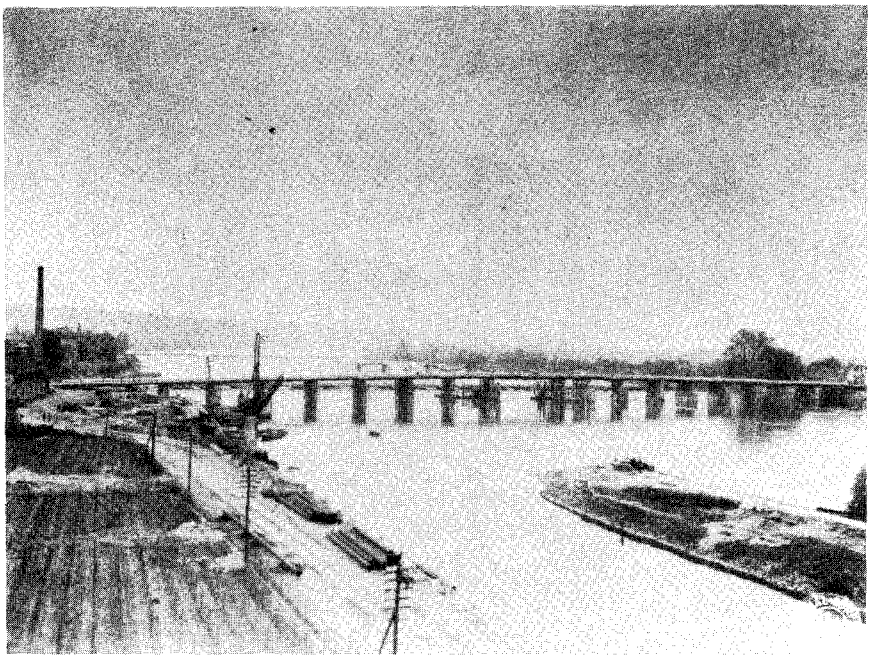


Photo No. 21
"PRESIDENT ROOSEVELT MEMORIAL BRIDGE" ACROSS THE RHINE.

At the same time the crossing of XII Corps was under way, plans were readied to support a crossing of the VIII Corps in the great gorge which runs from Bingen to Ober Lahnstein. This particular stretch is the most famous on the entire river, and the steep cliffs through which the river has forced its way are dotted with ancient castles and the region is rich in Germanic lore - a particularly striking place being the famous "Lorelei" - site of the Wagner Rock, where the river is a hundred feet deep. This stretch of the river posed a most difficult crossing problem for several reasons, viz., the approaches to the valley on each side were over steep-winding roads cut into the sides of the gorge, so exposed that any vehicle movement could be easily spotted by the enemy on the far shore, furthermore the stream itself was very swift, running 6 to 8 feet per second, over such a rocky bottom that anchorage would be most difficult.

Because of these conditions, the problem of putting in a bridge caused some concern, but once a ground reconnaissance had been made, the river did not seem so bad as studies had indicated and it was definitely felt that though the task of bridging would be difficult, it was far from being insurmountable and plans were made accordingly.

The same base of supply, the depots in Toul, Esch and Arlon were used for the support of VIII Corps' operation, and the hundreds of boats and motors required had to make the long run over even more torturous terrain - the Hunsruck Mountains - to put the supplies in the Corps depot at Braunshorn. Also, twelve of the twenty-four LCVP's of the Army had been allocated to the Corps for the operation, and since they had been routed to the vicinity of

Alzey in the expectation of crossings being made as originally planned by XII and XX Corps in the stretch from Bingen to Worms, they now had to be routed over the hills to the north. Fortunately, the time factor was adequate to enable them to make this move and they were ready and in position by H-hour due to the excellent work of the Naval Unit staff and that of the Army 1134th Engineer Combat Group.

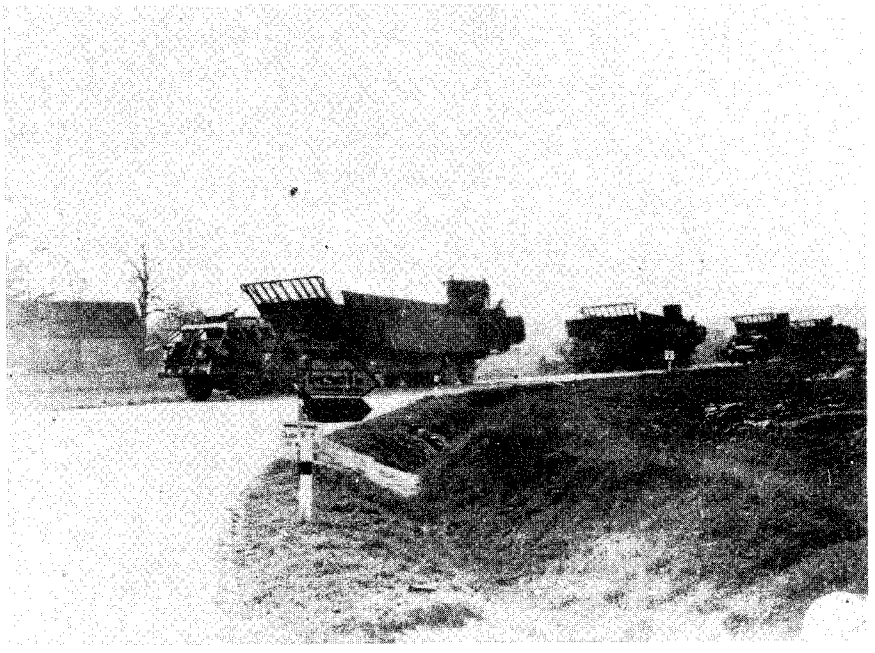


Photo No. 22
LCM'S "ON THE ROAD" TO PARTICIPATE IN ASSAULT CROSSINGS OF THE RHINE.

The crossing plan of VIII Corps called for an assault crossing to be made in paddled assault boats by the 87th Infantry Division, with one crossing in the vicinity of Rhens, and another crossing at Boppard. The crossing at Boppard, however, was to be the main crossing site and the bridge was to be put in here. The initial wave crossed satisfactorily in each place, but strong enemy resistance was encountered at the north crossing from enemy artillery and small arms and this was subsequently abandoned when it became apparent that the Boppard crossing was successful. Though six LCVP's had been allocated by the Corps to take part in this operation, none were actually committed until about 12 hours after the assault started, since the advisability of using them at all was being carefully weighed, especially since if they had been knocked out on the way to site, the only approach road might have been blocked by them. Once in the water, however, they performed excellently as ferries and moved over great numbers of men, light vehicles and equipment as well as evacuating the wounded. Once these were in the water, the need for the powered assault boats and storm boats which

had been used up to this time was ended, for the LCVP's had all the troop-ferrying capacity needed. The Naval commander estimated that 5,000 men and 400 vehicles were carried by the Navy alone.

Infantry support rafts and M-2 treadway rafts had been also constructed earlier in the day and these were used to carry over light vehicles and tanks respectively.

An M-2 treadway bridge was started by 0800 on the morning the assault crossing was made, and by 0930 of the following day, it was completed.

As previously mentioned, the technical difficulties produced by the stream made construction difficult inasmuch as two standard power utility boats and two 22-HP outboard motors could scarcely handle the five-ponton M-2 rafts. The LCVP's proved to be invaluable here in supplementing the power boats since their powerful engines were able to breast the swift current.

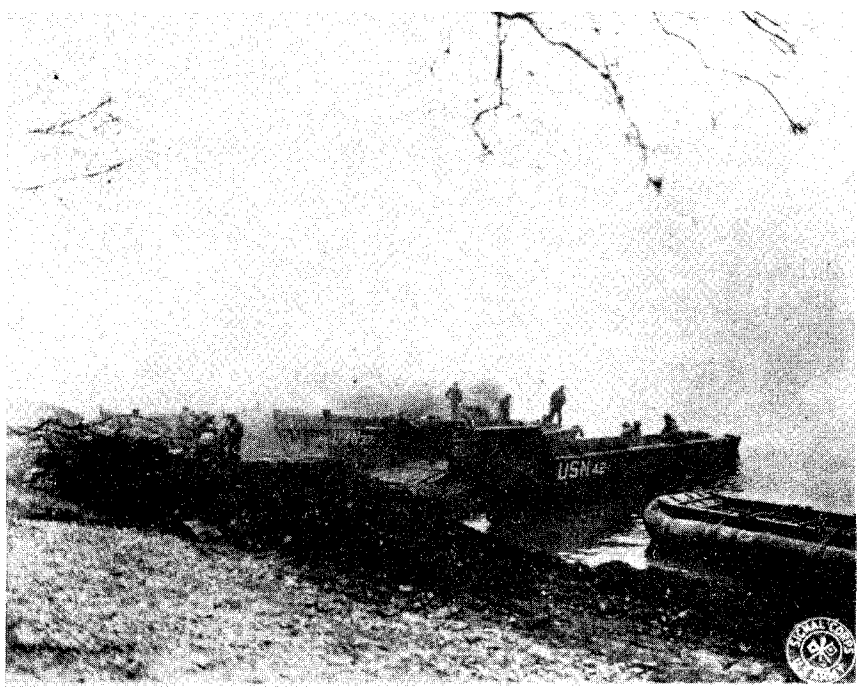


Photo No. 23
EQUIPMENT BEING LOADED UNDER SMOKE SCREEN ON LCVP'S DURING ASSAULT CROSSING OF RHINE RIVER AT BOPPARD.

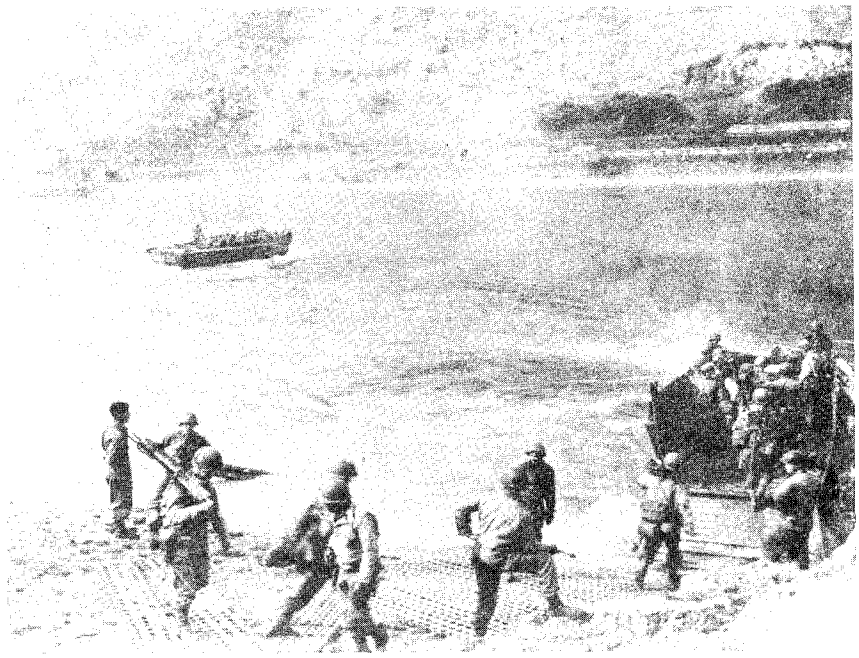


Photo No. 24
INFANTRY ASSAULT TROOPS BOARD AN LCVP AT BOPPARD ON THE RHINE.

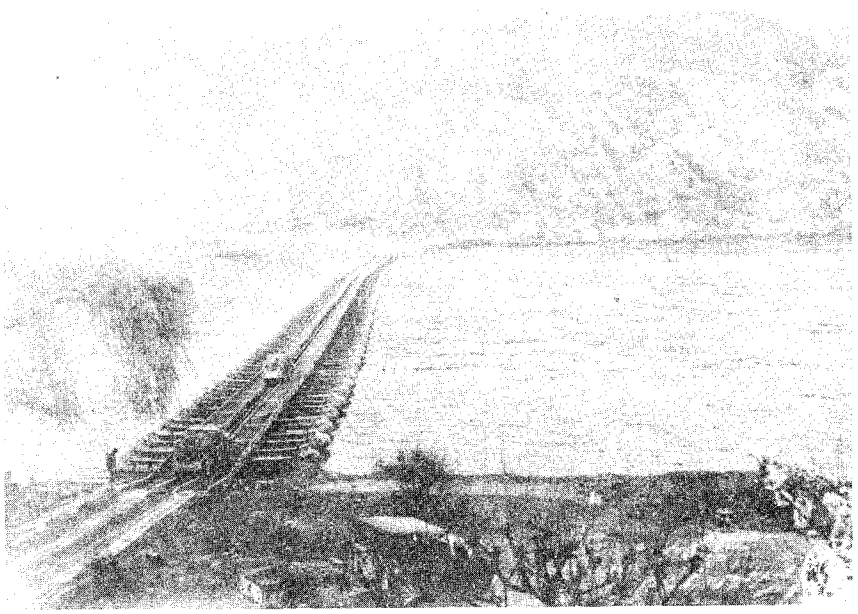


Photo No. 25
TREADWAY BRIDGE AT BOPPARD IN THE RHINE GORGE.

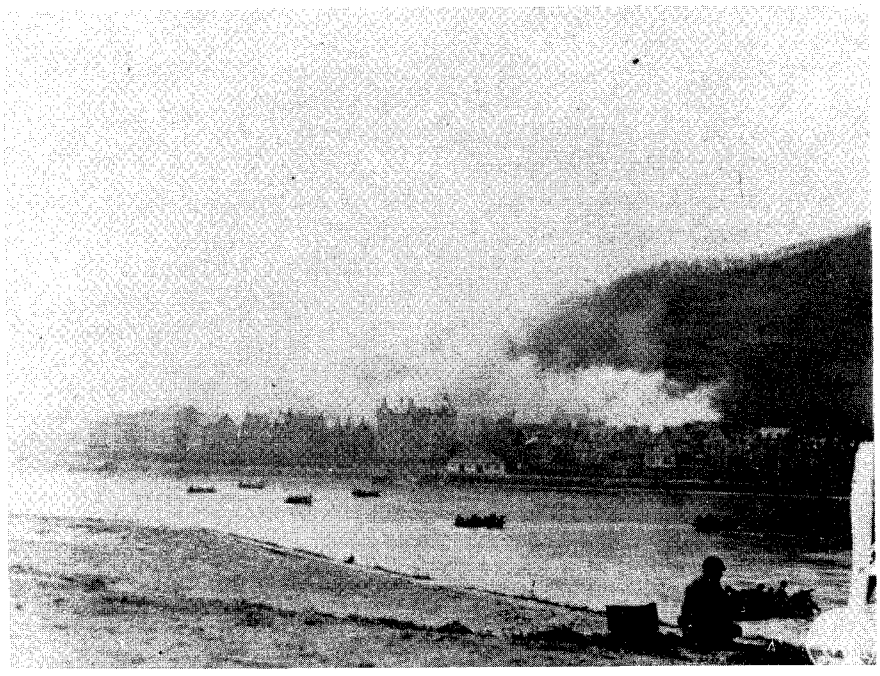


Photo No. 26
ASSAULT TROOPS CROSSING RHINE RIVER AT ST GOAR

While this operation was still underway another crossing was started by VIII Corps on the night of 25-26 March at St Goar and Oberwesel. The pattern of the previous crossings was followed at St Goar with paddled assault boats making the initial crossing with powered assault boats carrying the succeeding waves.

This crossing at St Goar was strongly resisted, and since only negligible resistance had been encountered at Oberwesel the main crossing forces were shifted to Oberwesel where they crossed and outflanked St Goar. When finally captured, it was found that St Goar had been held by a relatively small force, but it was well-equipped with auto-weapons that were well placed and skillfully concealed in the steep cliffs which line the stream.

At Oberwesel, the crossing was made with relatively light resistance though sporadic artillery fire fell intermittently in the area. The initial crossings here, too, were made by paddled assault boats followed by powered craft. Here, however, though the Naval craft were available, because of the difficult approach roads they were not put into action until the afternoon. In the meantime a fleet of 10 DUKW's did a heroic job of transporting troops and supplies and in all made 236 crossings.

However, as soon as six LCVP's and six LCM's had been put into the water, the entire complexion of the picture changed, for they passed troops and equipment over the river at such a terrific rate, that within 48 hours nearly an entire division with all its vehicles and equipment had been carried over.

This ferrying operation quickly supplied enough troops and armor so that St Goar was able to be cleared by the morning of 27 March and a treadway bridge was started on the same day and completed about 36 hours later.

This operation was slow, but the swift current and the poor anchorage made it a most difficult job. To assist in anchoring a bridge and as in construction as well, a one-inch steel aerial anchor line was emplaced and the bridge initially fastened to this. Subsequently, the anchorage was supplemented by heavy barge anchors.

Photo No. 27
DUKW TRANSPORTS ASSAULT TROOPS OVER RHINE RIVER AT OBERWESEL.

The fourth crossing was executed by XX Corps at Mainz in a difficult and strongly resisted operation. The initial waves of the 80th Infantry Division crossed secretly in paddled assault boats, while the succeeding waves crossed in double assault boats and storm boats powered with outboard motors. However, flanking fire from 20mm flak weapons on an island just north of the crossing site caused many casualties to the crossing forces until the island had been completely cleared. It was here that the Navy again demonstrated its ability to be most useful and effective in a crossing operation by providing a crossing means so swift and of such capacity that the enemy can be quickly overwhelmed by sheer weight. Soon after the Naval craft hit the water, they poured over such a continual stream of troops, vehicles and TD's in the early crucial hours that the artillery was able to be silenced and further ferrying and bridging was able to proceed without interference.

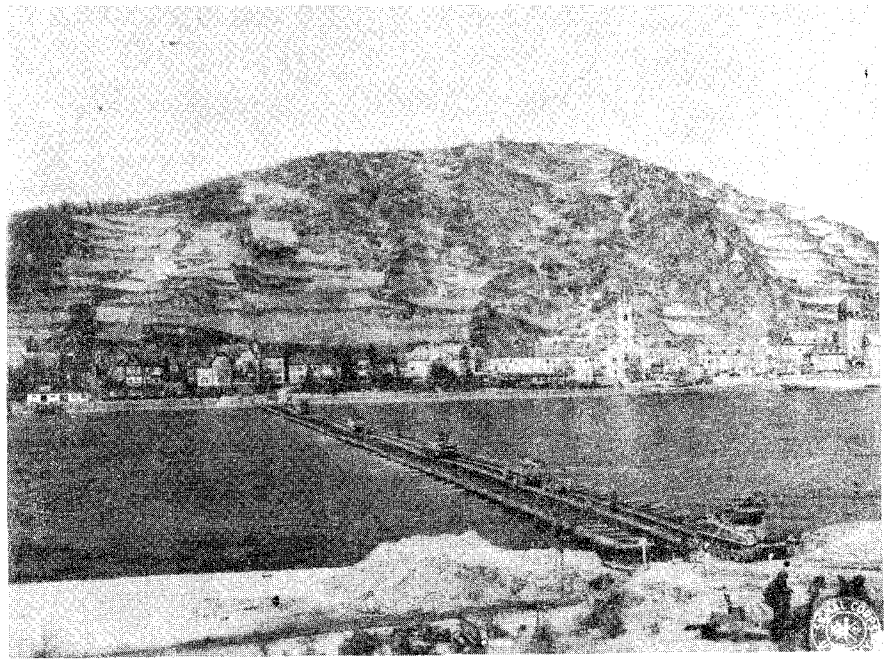


Photo No. 28
TANKS CROSS TREADWAY BRIDGE AT ST GOAR ON THE RHINE RIVER.

Photo No. 29
ARMORED CAR DEBARKS FROM LCM AT MAINZ

Photo No. 30
INFANTRY CROSSING IN LCM AT MAINZ.

Photo No. 31
TROOPS AND VEHICLES DISEMBARK FROM LCM AT MAINZ.

From the time the first craft went into operation at H plus 3½ until the treadway bridge was open at H plus 34 hours, the Navy transported an estimated 7,000 troops and 600 vehicles. This was a magnificent performance inasmuch as the river was about 2,000 feet wide at this point and the distance traversed from the loading point on the near-shore to the unloading point on the far shore was nearly a mile. About 15 minutes was required for a crossing cycle.

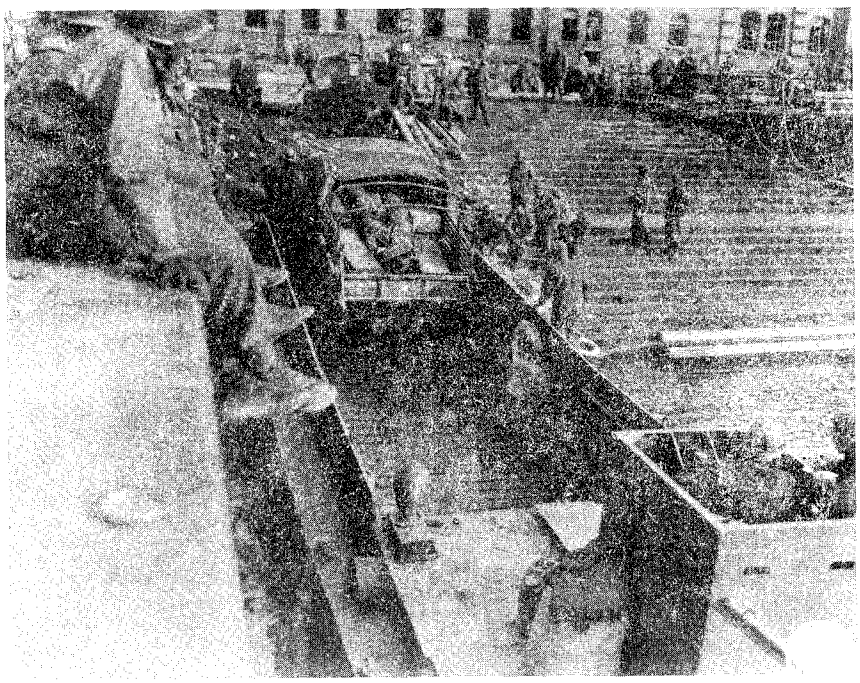


Photo No. 32
SUPPLY VEHICLES BOARDING AN LCM AT MAINZ.

Even after the completion of the bridge, the Naval craft were still used as ferries to carry back empty vehicles and evacuate the injured since the treadway bridge was used exclusively for one-way traffic heading towards the enemy.

The treadway bridge at Mainz is really a monumental structure, being 1896 feet long and is probably the longest tactical bridge ever constructed. Other long bridges have been built, but this was an assault bridge started under enemy fire and subject to harassment during the construction from artillery and air attack.

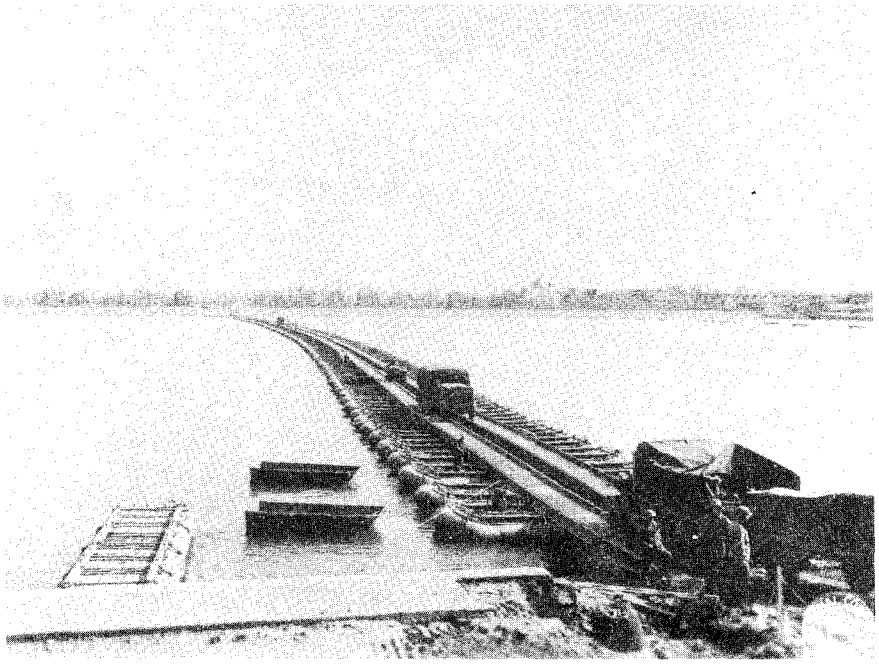


Photo No. 33
M-2 TREADWAY BRIDGE AT MAINZ - 1896 FEET LONG. THE LONGEST TACTICAL BRIDGE EVER BUILT.

The crossing at Mainz was coordinated with a simultaneous crossing of the Main River just east of the confluence of the Main and the Rhine at Mainz by other elements of the division. The assault waves on the Main crossed in paddled assault boats with a buildup following in powered assault and storm boats and on Infantry support and M-2 treadway rafts which were able to be constructed at an early hour since the enemy was quickly overwhelmed by the crossing forces. This crossing was not so strongly opposed as that at Mainz and an M-2 treadway bridge was started at 0700 of the day the assault started, and was completed by 1900 that evening; it was 624 feet long.

This ended the assault phase of the Rhine operations. At this time, 30 March, Third US Army held the entire west bank of the Rhine River and the east bank as well from Oppenheim to Koblenz with the exception of a pocket extending on the east side from about Eltville to Winkel, which though little enemy activity had been noted in this area, it had not been physically cleared.

The following items are pertinent to all the crossings:

a. The same pattern of executing the crossing and providing defensive measures described for the XII Corps crossing was in general followed at the other sites with minor modifications as determined by the individual characteristics of the site.

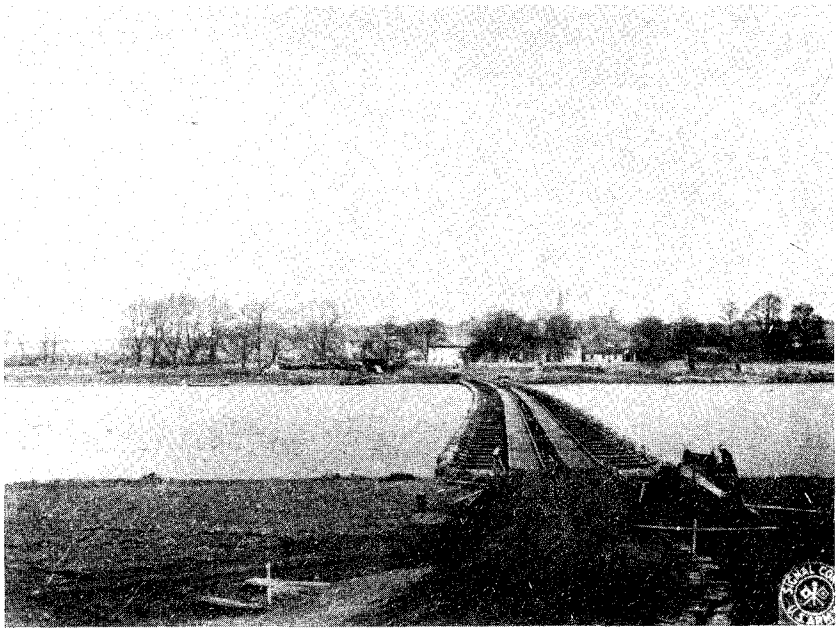


Photo No. 34
M-2 TREADWAY BRIDGE AT HOCHHEIM.

b. All crossings were made secretly without artillery preparation.

c. Outboard motor boats attracted enemy fire whenever used.

d. When LCVP's and LCM's are available, the quantity of troops and equipment that can be ferried in them is so great that very close coordination must be established between them and traffic control authorities in charge of the crossing, since much valuable transport time may be lost waiting for loads.

e. The standard power utility boats are not powerful enough to efficiently serve as general work boats in a stream as swift as the Rhine, though two of them aided by two outboard motors can readily navigate a five-ponton raft with M-2 pneumatic or heavy ponton. Because of their lack of power and as well as to supplement the number which was available, both LCVP's and LCM's were used to aid in the construction of the bridges.

Immediately following the assault phase, construction of the floating Bailey bridges to release the tactical bridging for use farther forward was begun. As previously noted, a floating Bailey bridge had been constructed at Oppenheim by 31 March and at the same time, the general service regiment scheduled to construct a permanent type fixed bridge at Oppenheim started work at the site, even though the assault crossing had been made only eight days previous, and the companies employed had to complete projects on the Saar River - some 80 miles to the rear - on which they had been only able to start on about 19 March wnen the breakthrough was made.

Similarly at Mainz, a floating Bailey bridge was started on 29 March the day after the assault crossing, and this was finished on 2 April.

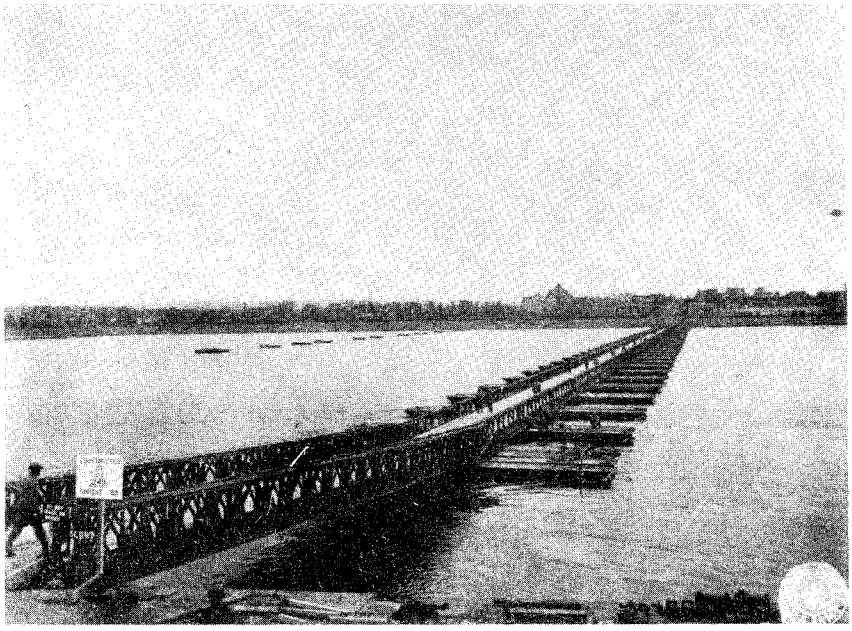


Photo No. 35
FLOATING BAILEY BRIDGE ON RHINE RIVER AT MAINZ.

The construction could have proceeded faster had it not been for the problem of getting enough Bailey equipment moved up from Toul and Esch, since every vehicle in the Army that could be used on the job was being employed at the time at either the bridge sites or the Corps or Army dumps, the moving of which had to be accomplished if the advance were to continue at the pace started. Nonetheless, this bridge was completed on 2 April but because of the extremely swift current: 6.6 feet per second flowing at the site, its capacity was initially limited to Class 35, until extra pontons could be placed in each bay in the swift water sections and false bows provided for all the boats. This swift water is not the normal rate of flow at Mainz, but it was caused when the three center spans of road bridge were dropped into the stream causing a partial damming. (See Photo No. 36).

This caused the water gap to be restricted, and consequently the water about 100 yards from each shore about one-half mile downstream of the wrecked bridge flows at a substantially faster rate than usual. However, because of the road network, this particular stretch was the most suitable for traffic flow and therefore both floating bridges were constructed at this point. Once additional anchorages had been provided, the bridges offered no unusual problems of maintenance other than could be expected

on bridges of such length.

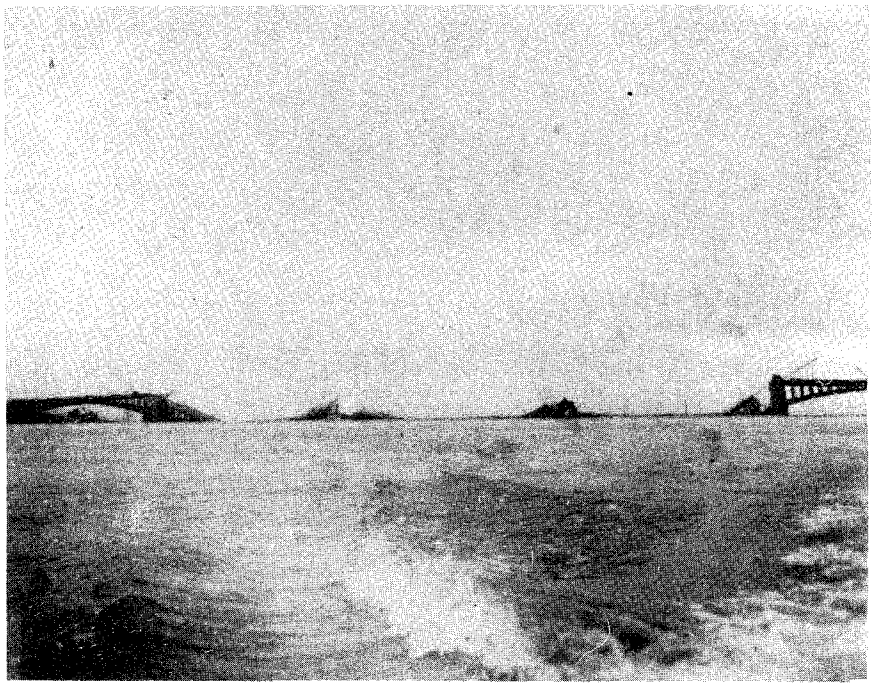


Photo No. 36
PARTIALLY DESTROYED HIGHWAY BRIDGE AT MAINZ.

At Mainz, too, a general service regiment, the 1303d, was ready to start work at an early date, and by 29 March, the day following the assault crossing work had already begun on building a timber bridge on the site of the destroyed bridge, with the wreckage of the former bridge being utilized where practical as a foundation for the bridge. This site was selected primarily because it was felt that a bridge could be built here in about one-half of the time that would be required to construct an entirely new bridge, particularly since the length of an entirely new new bridge would be close to 2,000 feet, whereas the gap in the damaged bridge was only 1050 feet. Time was the essence of decision, since at anytime after the 1st of May the start of the summer high water season could be expected, and it was felt that a permanent structure must be finished by this time, since the usual accumulation of debris accompanying the floods would probably make it impossible to maintain floating bridges.

As a further safety factor, the LCM's and LCVP's that had been used in the assault operation were still held on the river for emergency use. They proved to be invaluable in assisting in the building and maintenance of bridges and the nets and booms.

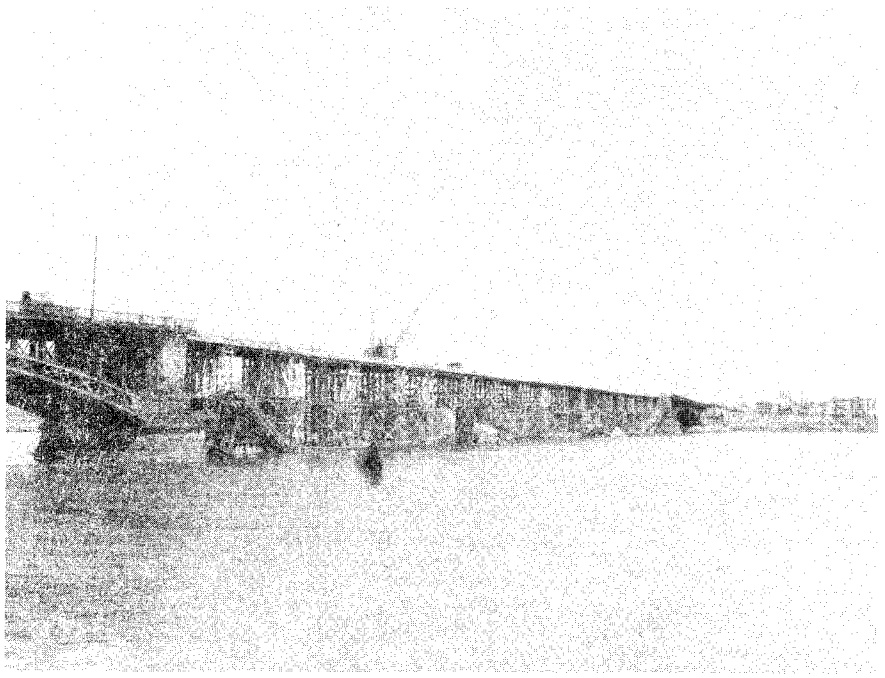


Photo No. 37
MILITARY FIXED BRIDGE UNDER CONSTRUCTION ON SITE OF DEMOLISHED HIGHWAY BRIDGE AT MAINZ.

In addition to the bridges described above, another floating Bailey bridge was constructed at Bingen and still another one was begun at Lorch to be used as a Corps tactical bridge, but construction was subsequently halted when the advance of the forces progressed so far beyond the river that it lost its orginal importance.

At this time, the importance of the bridge at Boppard and both of the treadway bridges at Oppenheim had declined to the point where they could be removed, and these were removed by 8 April and material carried forward to support further operations.

In the meantime, a Bailey bridge with a center section floating on barges was started on the site of an existing structure at Budenheim by the 1306th Engineer General Service Regiment and this was completed on 12 April. This bridge shown in photo No. 40 was 2,220 feet long and is believed to be one of the longest military bridges ever built. The completion of this bridge assured a crossing that could be depended on despite floods and served as a reserve bridge in the event either the fixed bridge at Mainz or Oppenheim was damaged.

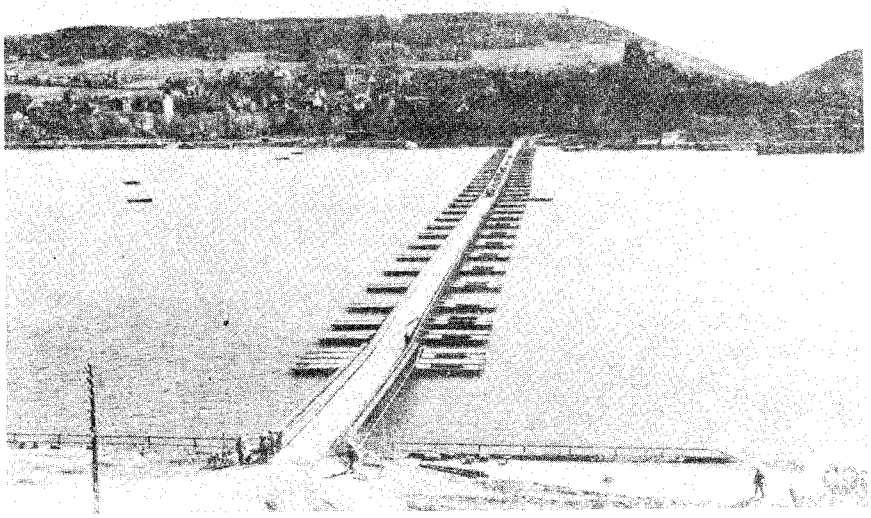


Photo No. 38
BAILEY BRIDGE OVER RHINE RIVER AT BINGEN

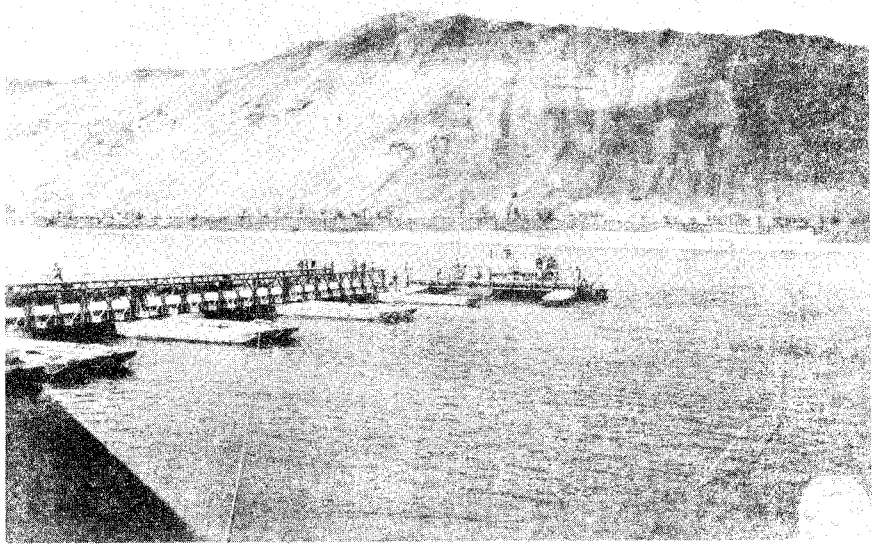


Photo No. 39
FLOATING BAILEY BRIDGE UNDER CONSTRUCTION AT LORCH.

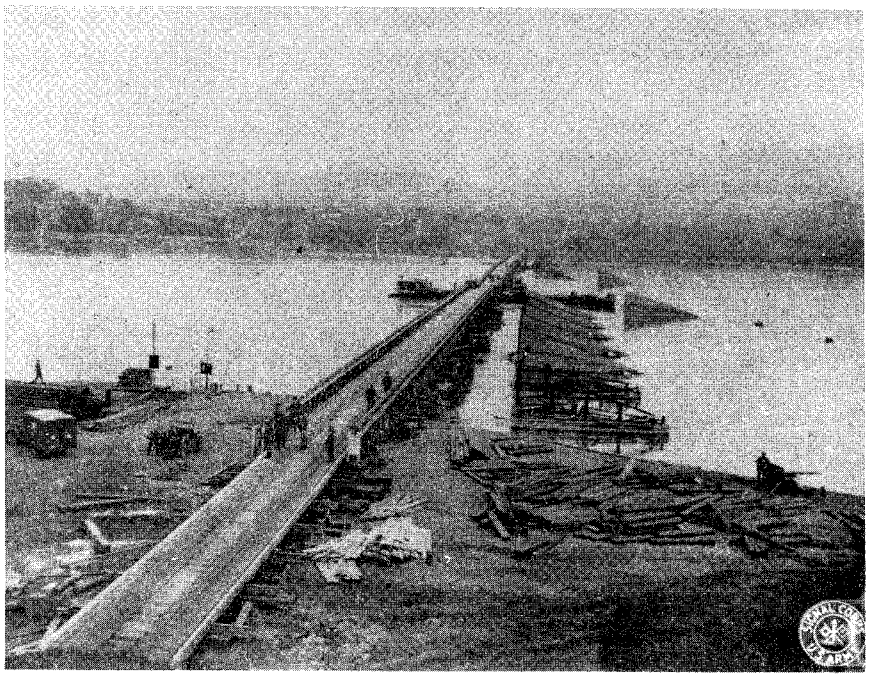


Photo No. 40
BAILEY BRIDGE OVER RHINE RIVER AT BUDENHEIM.

THUS ENDED THE RHINE RIVER CROSSING SAGA OF THE THIRD US ARMY.

ANNEX NO. 1

"FLOOD PREDICTION SERVICE"

In connection with the plans for the Rhine River crossing, a Flood Prediction Service was operated to forecast any rises or floods on the Rhine or its tributaries. This service was started on 21 November 1944 in conjunction with the Rhine River study made by the Engineer Section, Third US Army.

Data was compiled on past records of the Rhine and its main tributaries, the Meurthe, Moselle and Saar Rivers. Gaging stations were established within the Army area and readings taken every eight hours. Predictions were made and forwarded to the Corps Engineer and interested Engineer units for protection of floating equipment, and also for stage data for crossing sites.

On 19 December, the main Flood Prediction Service of ETOUSA was established under a SHAEF directive, and the responsibility of the Third Army in the plan assigned. Key gaging stations were selected to fit previously read stations used by the Germans in this system. Some had been destroyed and were re-established by the Army Survey Center.

Readings were observed every eight hours and sent to the Army Engineer, who in turn forwarded them to the Headquarters, Flood Prediction Service, through the Weather Detachment. Prediction and gage readings by the other Armies operating in the system were transmitted through the Weather Detachment to the Army Engineer, who in turn informed the Corps Engineer units.

While no major flood occurred during operations, the service provided prediction and forecasts for periods of 48 hours and was in a position to provide warning of any flash flood should such occur.

## ANNEX NO. 2

### SUPPLY

As an indication of the quantity of stream crossing equipment used to support the crossings of the Rhine, the following is a list of the major items of equipment assembled for the operation:

| | | |
|---|---|---|
| Boats, assault M-2 | 1,500 | |
| Paddles | 15,000 | |
| Boats, power, utility | 57 | |
| Boats, storm | 300 | |
| LCVP's | 24 | |
| LCM's | 15 | |
| Motors, outboard, 22-HP | 660 | |
| Motors, outboard, 55-HP | 250 | |
| Infantry support rafts | 120 | |
| Floating Bailey bridge | 7,000 | ft |
| Heavy ponton bridge | 2,200 | ft |
| Treadway bridge | 11,000 | ft |
| Cable, steel, 1" | 75,000 | ft |
| Cable, steel, 3/4" | 125,000 | ft |
| Cable, steel, 5/8" | 100,000 | ft |
| Cable, steel, 1/2" | 125,000 | ft |
| Rope, Manila (all sizes) | 250,000 | ft |
| Cable clips (all sizes) | 20,000 | |

CONFIDENTIAL

Zone - VIII Corps. Corps Engineer - Col Charles Keller, Jr.
Crossing Location - Rhens and Boppard.
Engineer Combat Group Staging Operation - 1102d, Col Henry G. Douglas, CO.

Assault Crossing -
Rhens and Boppard
Date - 25 March. Time - 0001
Assault Troops - 87th Inf Div
Crossing Means - Paddled assault boats
Powered assault boats
Storm boats
Engineer Troops Operating Means - 35th, 44th, 159th and 178th Engr C Bn's

Buildup -
Crossing Means - Storm boats
LCVP's
Infantry Support rafts
M-2 Treadway rafts
Engineer Troops Operating Means - 35th, 44th, 159th Engr C Bn's
991st Engr Trdwy Bridge Co, and
Naval Unit N-2

Tactical Bridging -

| | Site No. 8 |
|---|---|
| Type | M-2 Treadway |
| Time of Construction (Hrs) | 25½ |
| Length | 1044' |
| Date of Opening | 26 March |
| Constructing Troops | 991st and 1012th Engr Trdwy Br Co's<br>159th Engr C Bn |

Booms - 1301st Engr GS Regt

Zone - XX Corps. Corps Engineer - Col Robert G. Lovett.
Crossing Location - Mainz.
Engineer Combat Group Staging Operation - 1139th, Col John S. Niles, CO.

Assault Crossing -
Date - 20 March. Time - 0130.
Assault Troops - 80th Inf Div
Crossing Means - Paddled assault boats followed by
Powered assault boats and
Storm boats
Engineer Troops Operating Means - 135th and 249th Engr C Bn's

Buildup -
Crossing Means - Storm boats and
Assault boats
LCVP's
LCM's
Infantry Support rafts
M-2 Treadway rafts
Engineer Troops Operating Means - 135th and 160th Engr C Bn's
997th Engr Trdwy Br Co
Naval Unit N-2

Tactical Bridging -

| | Site No. 5 | Site No. 6 |
|---|---|---|
| Type | M-2 Trdwy | Fltg Bailey |
| Time of Construction (Hrs) | 24 | 72 |
| Length | 1896' | 1800' |
| Date of Opening | 29 March | 2 April |
| Constructing Troops | 997th Engr Trdwy Br Co<br>160th Engr C Bn | 249th Engr C Bn<br>under 1123d Engr C Gp |

Permanent Bridging -

| | |
|---|---|
| Type | Pile Bent |
| Time of Construction | 20 days |
| Length | 1050' |
| Date of Opening | 17 April |
| Constructing Troops | 1303d Engr GS Regt (1 Bn) |

Booms - 1301st Engr GS Regt

Zone - VIII Corps. Corps Engineer - Col Charles Keller, Jr.
Crossing Location - St Goar and Oberwesel.
Engineer Combat Group Staging Operation - 1107th, Col Karl E. Hobart, CO.

Assault Crossing -
St Goar and Oberwesel
Date - 26 March. Time - 0200.
Assault Troops - 89th Inf Div
Crossing Means - Paddled assault boats
Storm boats
Engineer Troops Operating Means - 168th, 178th, 188th, 1252d and 243d Engr C Bn's

Buildup -
Crossing Means -
St Goar - Paddled assault boats
Oberwesel - Storm boats
Infantry Support rafts
DUKW's
LCVP's
LCM's
Engineer Troops Operating Means - 168th, 178th, 188th, 1252d and 243 Engr C Bn's
Naval Unit N-2
453d Amphibian Truck Company

Tactical Bridging -

| | Site No. 7 (St Goar) |
|---|---|
| Type | M-2 Treadway |
| Time of Construction (Hrs) | 36 |
| Length | 828' |
| Date of Opening | 27 March |
| Constructing Troops | 243d Engr C Bn<br>1010th and 1012th Engr Trdwy Br Co's |

Booms - 1301st Engr GS Regt

Semi-permanent Bridging -

| | |
|---|---|
| Site | C |
| Type | Fixed Bailey on pile bents with 520' center section on floating barges. |
| Time of Construction | 9 days |
| Length | 2220' |
| Date of Opening | 12 April |
| Constructing Troops | 1306th Engr GS Regt (4 companies) |

Semi-permanent Bridging -

| | |
|---|---|
| Site | D |
| Type | Floating Bailey |
| Time of Construction | 54 hours |
| Length | 1520' |
| Date of Opening | 5 April |
| Constructing Troops | 178th Engr C Bn (under 1123d Engr C Gp) |

Zone - XII Corps. Corps Engineer - Col Clyde E. Dougherty.
Crossing Location - Oppenheim - Nierstein
Engineer Combat Group Staging Operation - 1135th, Col Alfred D. Starbird, CO.

Assault Crossing -
Date - 22 March 1945. Time - 2200.
Assault Troops - 11th Inf Regt of 5th Inf Div
Crossing Means - Paddled assault boats
Engineer Troops Operating Means - 204th Engr C Bn

Buildup -
Crossing Means - Paddled assault boats
Infantry support rafts
LCVP's
Heavy ponton rafts
Engineer Troops Operating Means - 204th and 249th Engr C Bn's
87th and 88th Engr Hv Pon Bn's
Naval Unit N-2
453d Amphibian Truck Company

Tactical Bridging -

| | Site No. 1 | Site No. 2 | Site No. 3 | Site No. 4 |
|---|---|---|---|---|
| Type | M-2 Trdwy | Heavy Pon | M-2 Trdwy | Floating Bailey |
| Time of Construction | 11½ hours | 13 hours | 20 hours | 44 hours |
| Length | 972' | 1280' | 1116' | 942' |
| Date of Opening | 23 March | 24 March | 25 March | 31 March |
| Constructing Troops | 995th, 996th & 997th Engr Trdwy Br Co's 150th Engr C Bn | 87th & 88th Hv Pon Bn's 249th Engr C Bn | 996th & 997th Trdwy Br Co's 150th Engr C Bn | 178th Engr C Bn under 1123d Engr C Gp |

Permanent Bridging -

| | |
|---|---|
| Site | A |
| Type | Pile Bent |
| Time of Construction | 12 days |
| Length | 1050' |
| Date of Opening | 15 April 1945 |
| Constructing Troops | 1301st Engr GS Regt (1 Bn) |

Booms - 1301st Engr GS Regt

# CROSSING OPERATIONS ON THE RHINE RIVER

## BY THIRD US ARMY

PREPARED BY ENGINEER THIRD US ARMY
-CONFIDENTIAL-