

D-20

NATIONAL PARK SERVICE
DENVER SERVICE CENTER
BRANCH OF MICROGRAPHICS
LIBRARY COPY

IN STORAGE

Report on the Reproduction of "The Dictator"
or "Petersburg Express" - A 13-inch Sea Coast
Mortar Used in the Siege of Petersburg

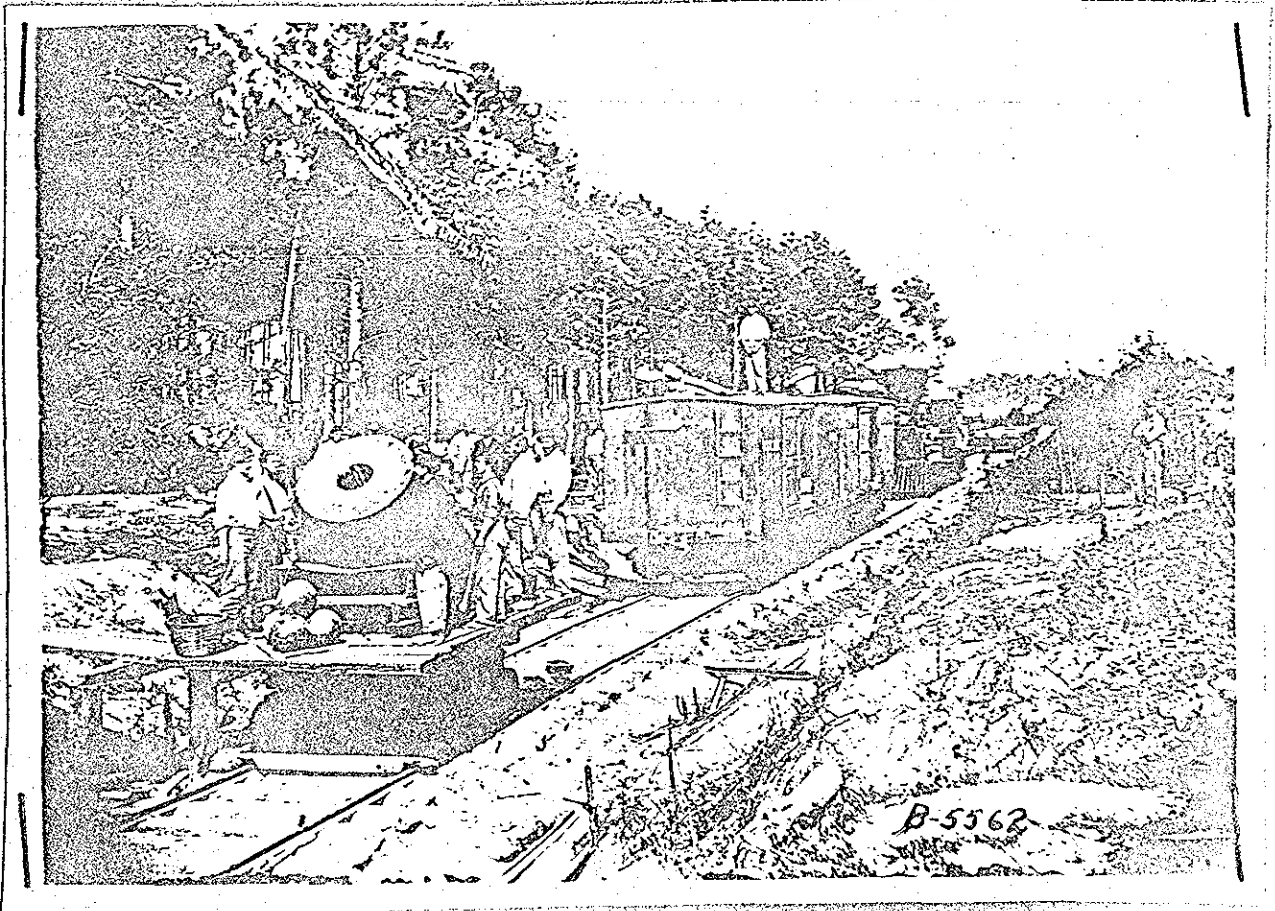
By: Junior Historian Voorhis - Summer, 1936

Petersburg NMP

LI

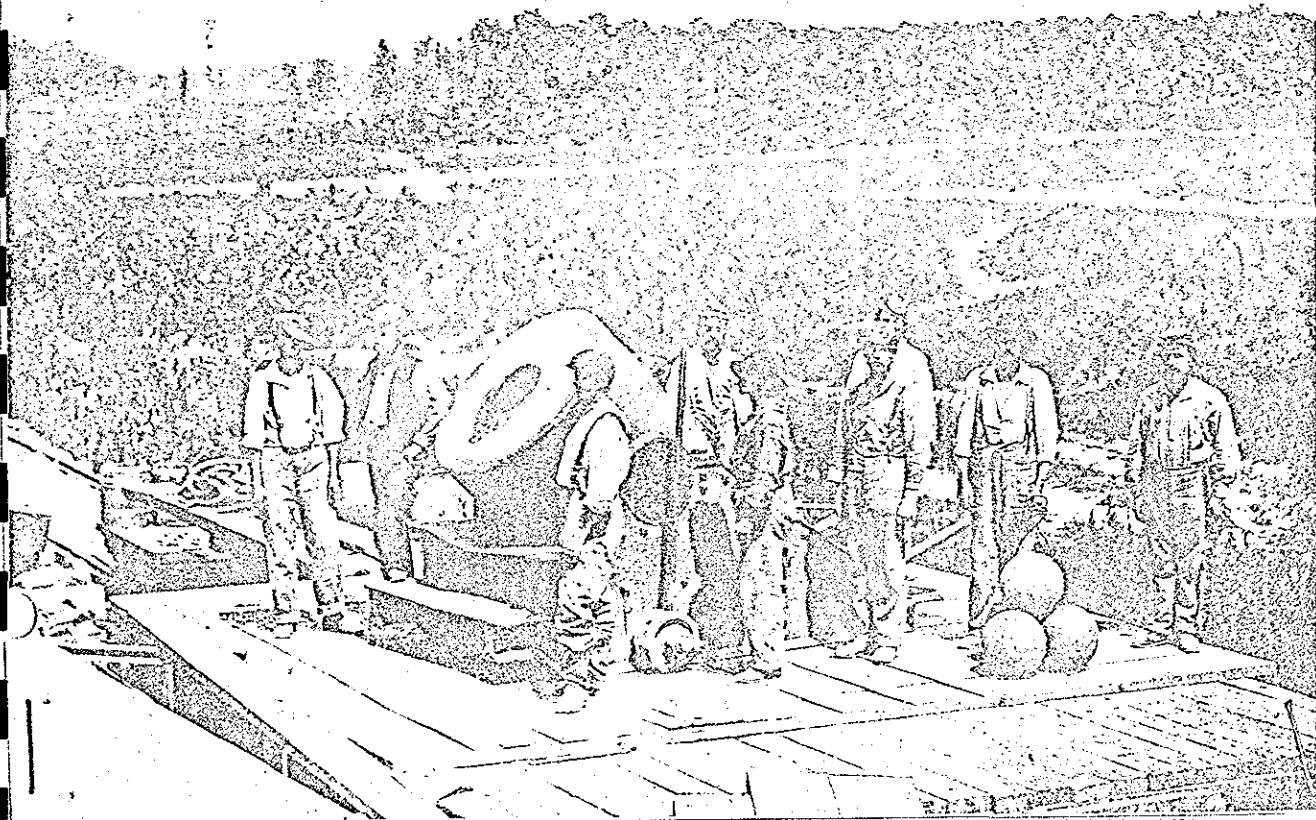
SCANNED

8/3/00



THE "PETERSBURG EXPRESS"

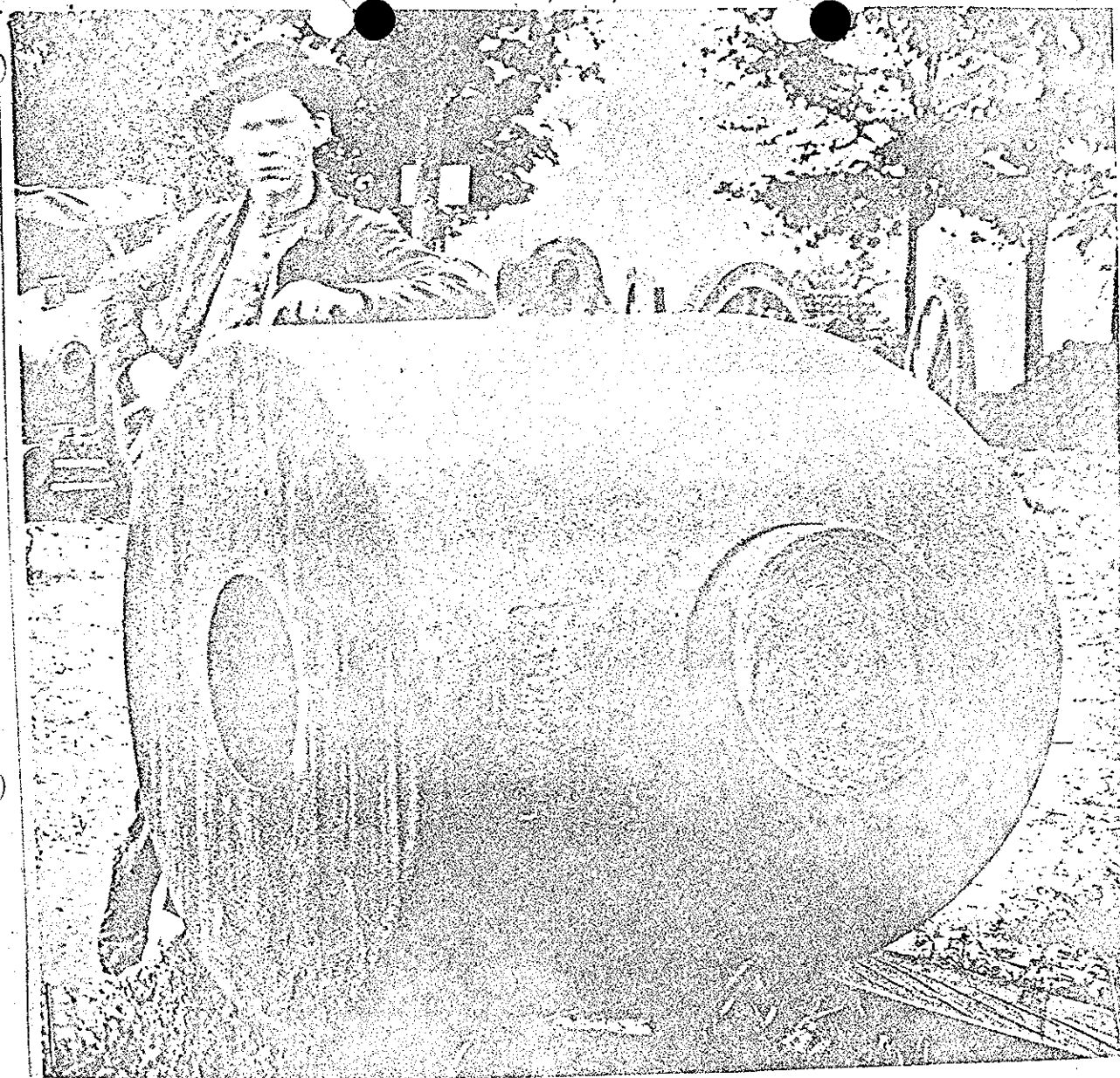
This photograph taken between July and October, 1864, was the inspiration for the mortar restoration project. At the time this photograph was taken the gun was being operated from the City Point Railroad at a point just within the Federal line. The mortar is aimed at Petersburg, two and one half miles away. Soon the gun will be discharged hurling the explosive shell weighing over two hundred pounds in a high arc into the city, and driving the gun carriage back fourteen feet on the track. The gun will also slide two feet on the platform. A slight curve in the track assists in aiming the piece, although the gun could also be shifted and elevated by levers, one of which is shown on the side of the mortar carriage. The first flat car was destroyed by the recoil.



THE "PETERSBURG EXPRESS" BECOMES "THE DICTATOR"

The huge gun is now being moved on a specially built railroad spur into its final position at Battery Five, where as "The Dictator" it became a conspicuous feature throughout the army. A Union veteran examining the reproduction of this mortar last summer, remarked: "I always wanted a look at this thing. We men in Wright's Corps were way down the line and never saw the 1st Connecticut's pet, but when we heard that deep roar, the boys used to say, 'there goes The Dictator'." War-time residents of Petersburg were also keenly aware when "The Dictator spoke." Often they would gather to watch from a beyond range vantage point when "the big gun" went into action, hurling the shells, with bright burning fuse, comet-like into the twilight sky. (The gun was frequently operated at the close of the day.) After the war the men of the 1st Connecticut Heavy Artillery bought the piece and removed it by rail and water to the public square in Hartford, Connecticut, where it still stands. "The Dictator" with its ponderous weight and power seems symbolic of the force and resources that finally overpowered Lee's army at Petersburg.

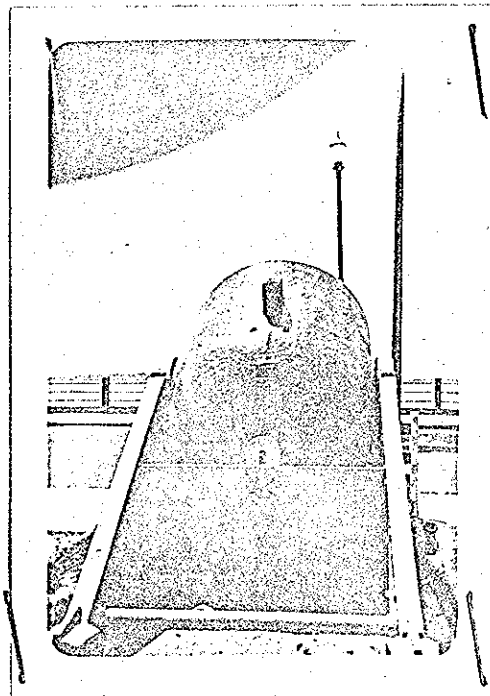
WR006!



A 17,000 POUND 13 INCH MORTAR BARREL, FORTY THREE INCHES ACROSS THE MUZZLE

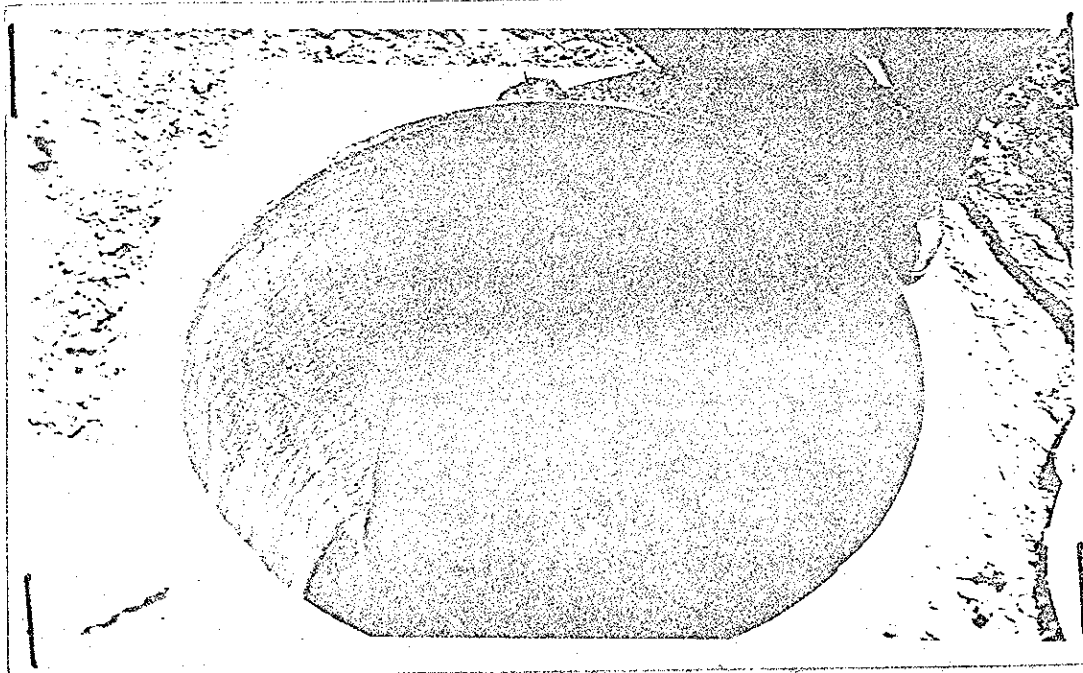
We were fortunate in having the above detailed photograph of an unmounted gun barrel. In constructing the reproduction, we used principally dimensions taken from the original gun by the City Engineers Office at Hartford, Connecticut. However, this information was not complete in some detail, thus the war-time photographs were useful. Moreover certain features of the gun were altered somewhat, either in mounting the piece after the war, or possibly at the close of the siege. The photographs taken in the summer of 1864 are, therefore, the final authority concerning the original appearance of the mortar. The above photograph of the gun barrel was scaled very carefully, using the 13 inch bore as a known dimension and allowing by mathematical calculations for the distortions of perspective. The dimensions from this and other war-time and modern photographs served as a check against measurements received from Hartford. It might be remarked here that the nature of the ownership of the Hartford gun prevented our obtaining it, not to mention practical difficulties we would have had in handling the 10 ton piece had it been presented.

Considerable information concerning the operation and location of the mortar was secured from the Official Records but no construction details were found there. The various Brady photographs and the well defined remains of the gun position were the source of information concerning the position of the original gun as it stood after its removal from the railroad car. When the calculations on this problem were complete test examinations were made and we were fortunate in finding the remains of the original sills of the gun platform, together with iron spikes and other metal objects pertaining to the mortar.



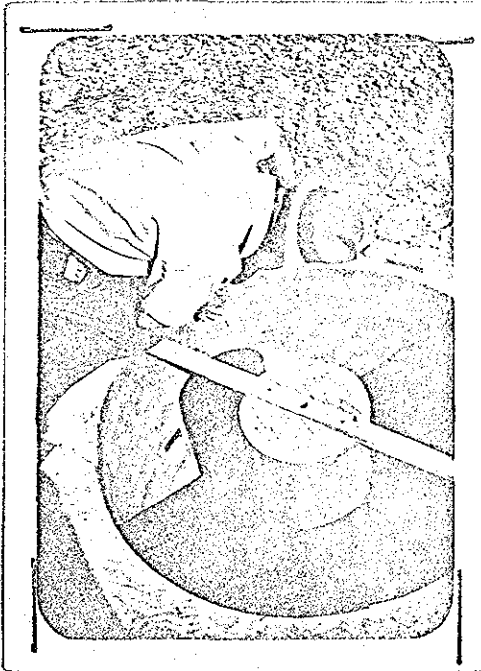
A THIRTEEN INCH MORTAR ON THE BATTERY AT CHARLESTON, S.C.

This mortar apparently similar in every respect to "The Dictator" was thoroughly examined by Junior Historian Voorhis before beginning work on the reproduction.



THE CLAY MOLD COMPLETE EXCEPT FOR THE BORE MOLD

The first job after preparing construction drawings was to make the barrel of the mortar. It was planned to cast this feature in a mold dug in a natural clay bed. A little exploration revealed a fine sticky white clay bed, and after removing the loose top soil construction was begun by simply digging a hole somewhat smaller than the size of the gun barrel. A one-inch iron pipe was then driven well into the ground in a vertical position. The pipe served as a fixed point from which all dimensions were taken. It also served as an axle for cutting tools used in shaping the mold. An iron blade was fastened to the end of a piece of two by four in which an inch hole had been bored. The distance from the center of this hole to the blade was twenty one and one half inches or half the diameter of the mortar barrel. The device was then slid down over the vertically driven pipe and by rotating the cylindrical portion of the gun barrel, about four feet, was cut. For shaping the dome shaped rear of the gun a quarter segment of the circumference of the gun barrel was made of wood and fitted with a sheet iron blade. This was also rotated on the pipe axis. Impressions for the trunnions (shown by a dark circle in the center of the photograph) were cut at either side, using the same method as was used in cutting the cylindrical portion of the barrel mold. Impressions were also made for the lifting "handle" and the elevating cogs. The interior of the mold was, of course, large enough to allow a man to work inside. Water applied with a whitewash brush was used freely during the entire process to keep the clay sticky and so that drying cracks would not develop.



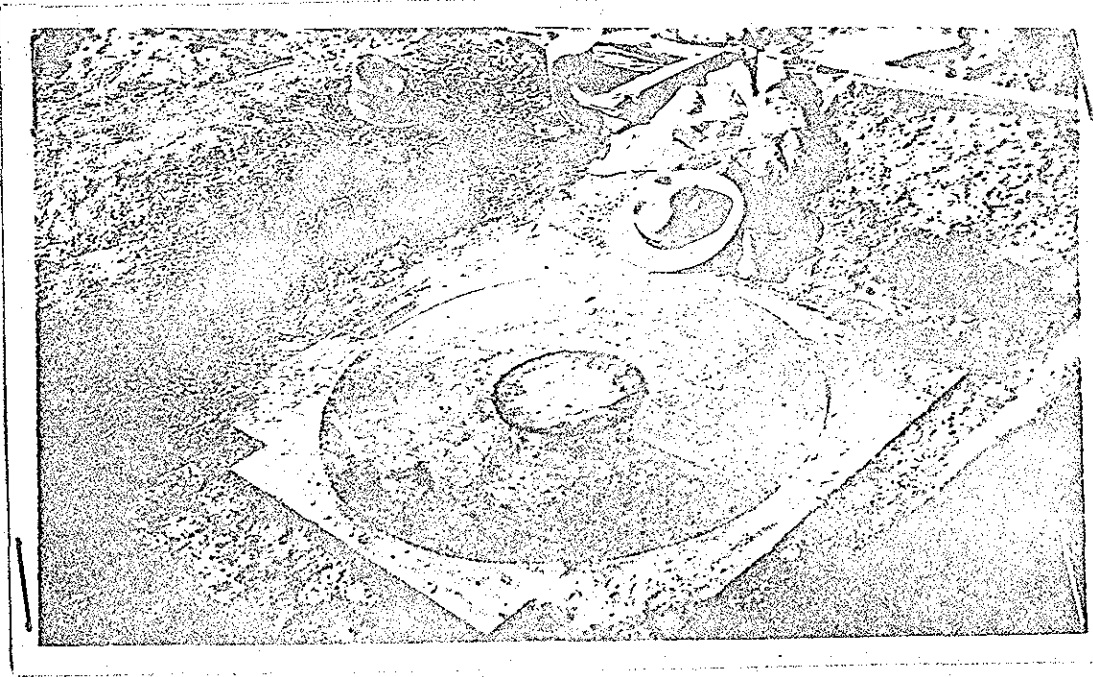
THE BORE MOLD

The cylinder which provides for the casting of the bore is fastened at the bottom to the previously mentioned vertical axis pipe. The upper part of the pipe has been cut off to prevent its extending into the finished gun bore. The photograph illustrates the method of securing the bore form at the top. The form is made of thin strips nailed to the circular end pieces. The strips were planed after being nailed in place to make a smoothly rounded surface.



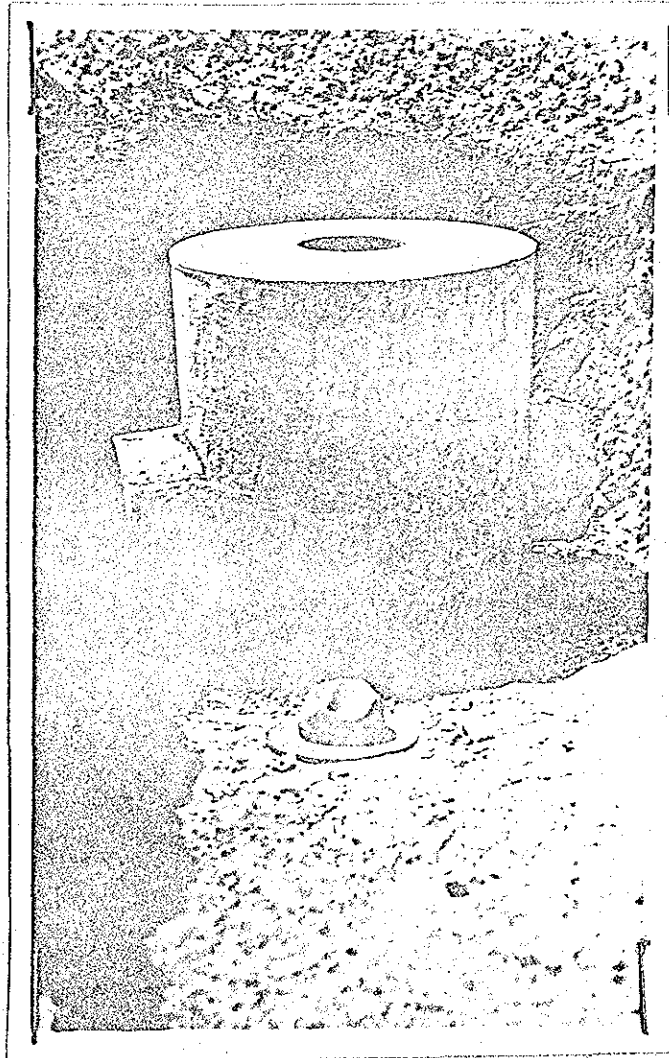
CASTING THE CONCRETE BARREL.

A 1-2-4 mixture (1 part cement, 2 sand, 4 gravel) was then poured into the mold, placing reinforcing rods as shown in the photograph. The concrete was tamped thoroughly with sticks and shovels to work the fine cement mixture to the surfaces of the casting.



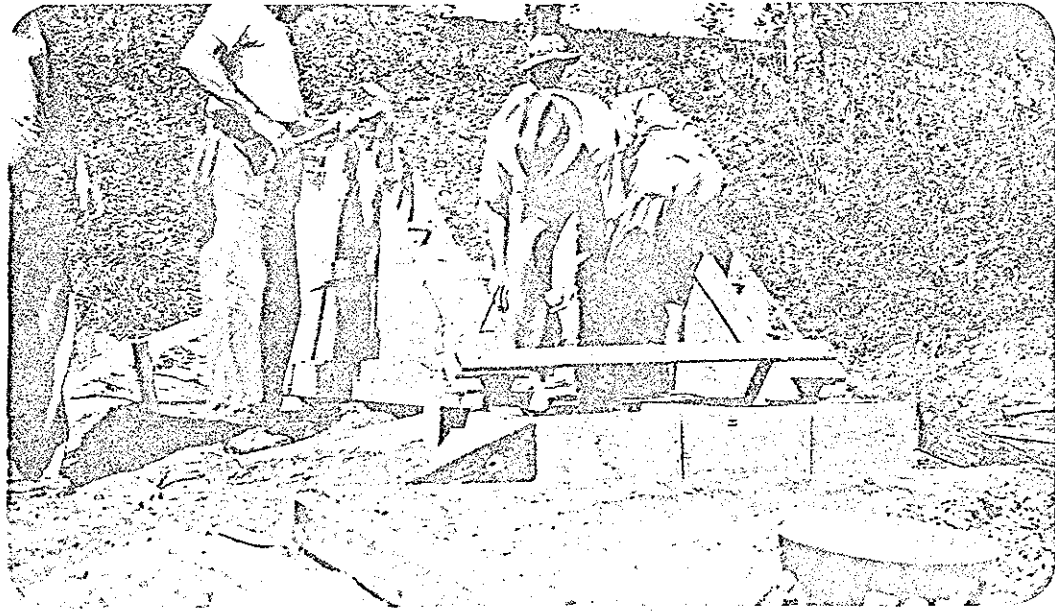
DRYING IN THE MOLD

In the photograph above the barrel casting is complete and has set for ten days well covered with canvas. A cement top dressing was applied to the exposed surface on the morning after the concrete was poured to fill up the shrinkage from the top,

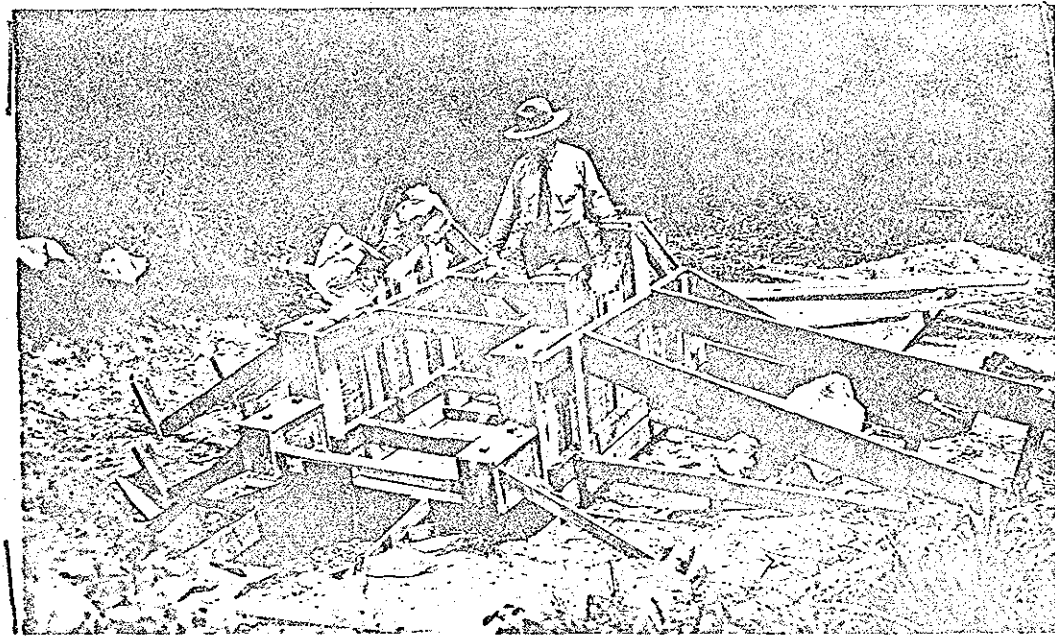


DUG OUT OF THE MOLD READY FOR CLEANING AND POLISHING

When the concrete had thoroughly dried the clay was dug from around the casting and a ramp, as shown in the foreground, was excavated. The gun was then dragged to the surface by a powerful tractor and set muzzle down for scrubbing and polishing. A trailer tank of water with hose attachment was used in wire brush scrubbing. After allowing a trickle of water to run over the casting for about twenty four hours, the entire surface was given a thorough polishing with a carborundum stone rubbing a pastry mixture of pure cement and very fine sand, about half and half, into the concrete. It is important that surfaces which receive an additional cement finish coat should be completely saturated with water.



FILLING THE GUN CARRIAGE FORMS



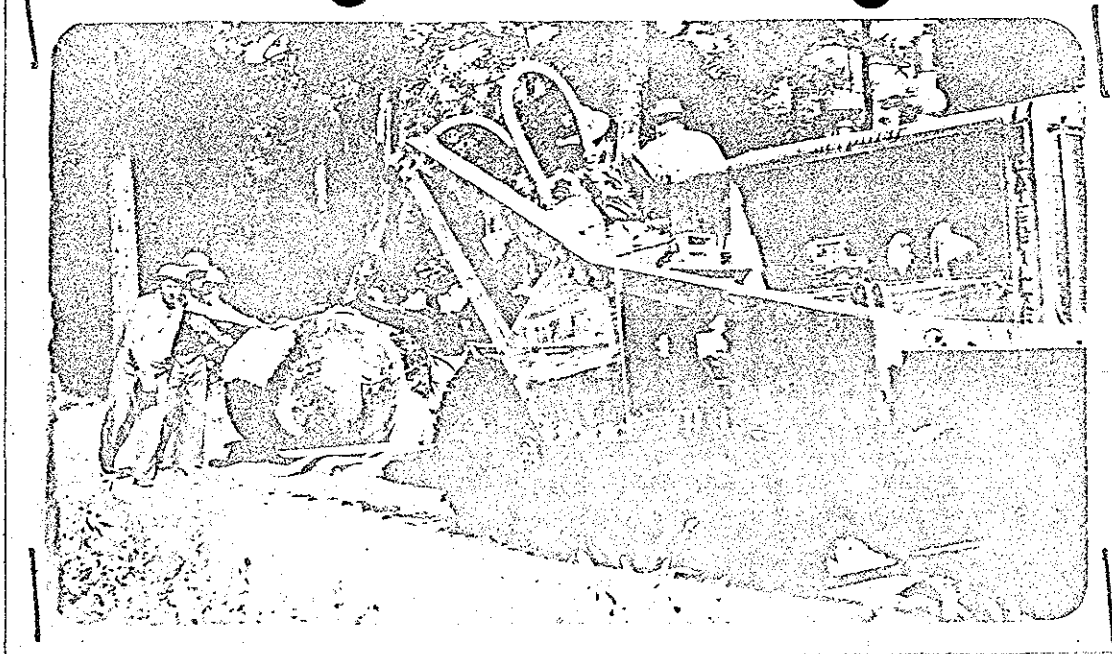
THE FORMS FILLED AND CLOSED AT THE TOP

Notice the amount of form bracing as compared with the picture above. The added strength was necessary to prevent bulging.

CASTING THE GUN CARRIAGE

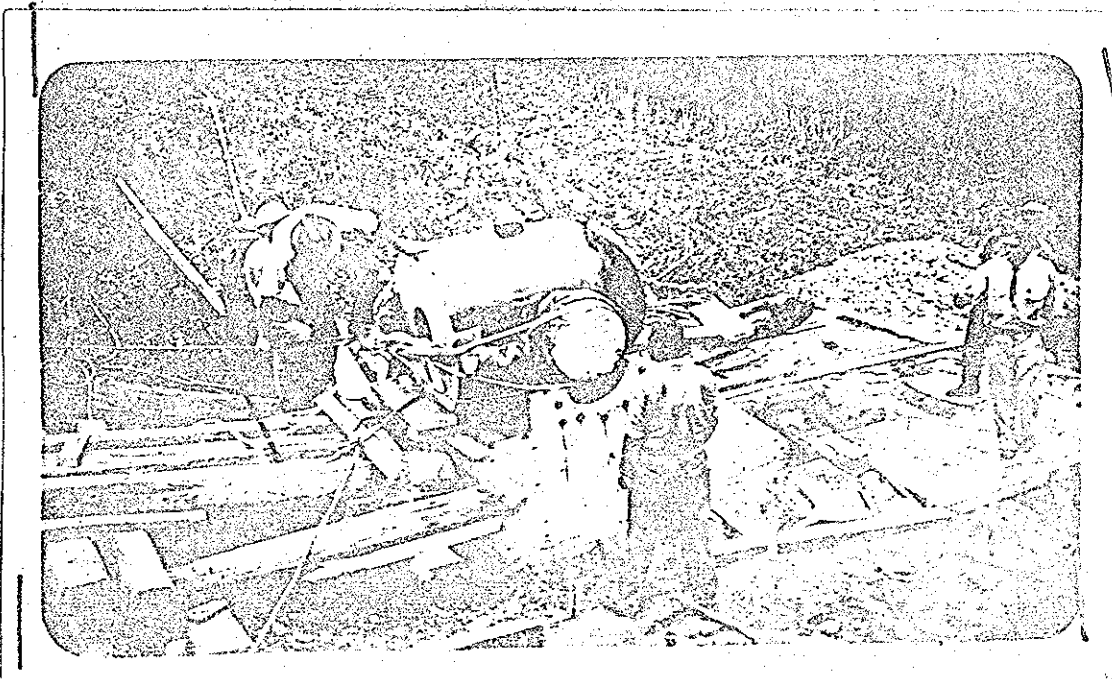
(Photographs on the preceding page)

Having determined the original location of the mortar as previously described, work was now begun on the mounting to receive the mortar barrel. A base was dug one and one half feet deep and filled with a 1-2-4 mixture of concrete with broken fragments of old concrete thrown in. Iron reinforcing rods were placed vertically so that they would extend up into forms for the upright supports of the gun barrel. Forms for these upright portions of the carriage were then made from heavy grade ply-wood. One inch wooden dowel pegs, greased, were inserted through the forms so that the pegs could be removed and replaced by iron bolts. Certain of the bolts shown in the photographs on the preceding page were placed as the forms were filled. These forms were lowered over the previously mentioned reinforcing rods extending into the base so that the whole was securely bound together. The forms were, of course, open at the bottom and were filled from the top edge, nailing on short pieces of board to close the top edge as the work progressed. The upper photograph on the preceding page illustrates this. A 1-2-3 mixture was used in these forms. The bracings as illustrated at the bottom of page 9 were not in the least more than was necessary.



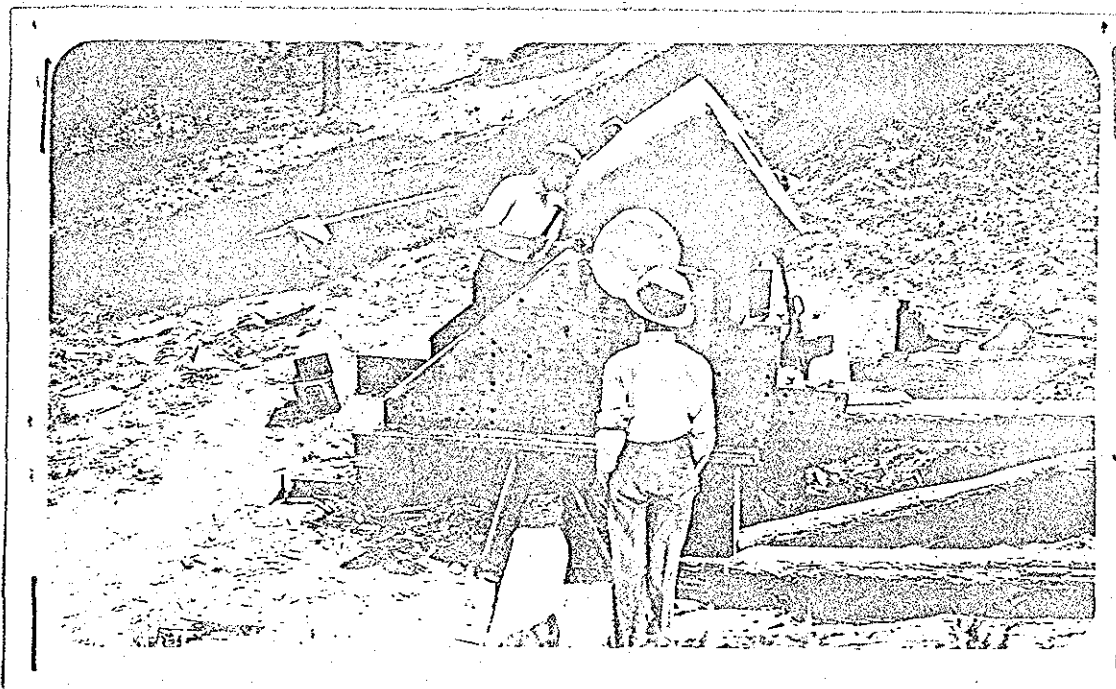
THE BARREL BEING DRAGGED IN AN "ALLIGATOR"

The barrel weighing nearly four tons was dragged in this manner. An "A" frame windlass hoist could not move the barrel casting so it was simply rolled over into a forked tree trunk "sled" and dragged about a mile to the site for mounting. There was no suitable clay bed for the barrel mold at the desired location for the gun.



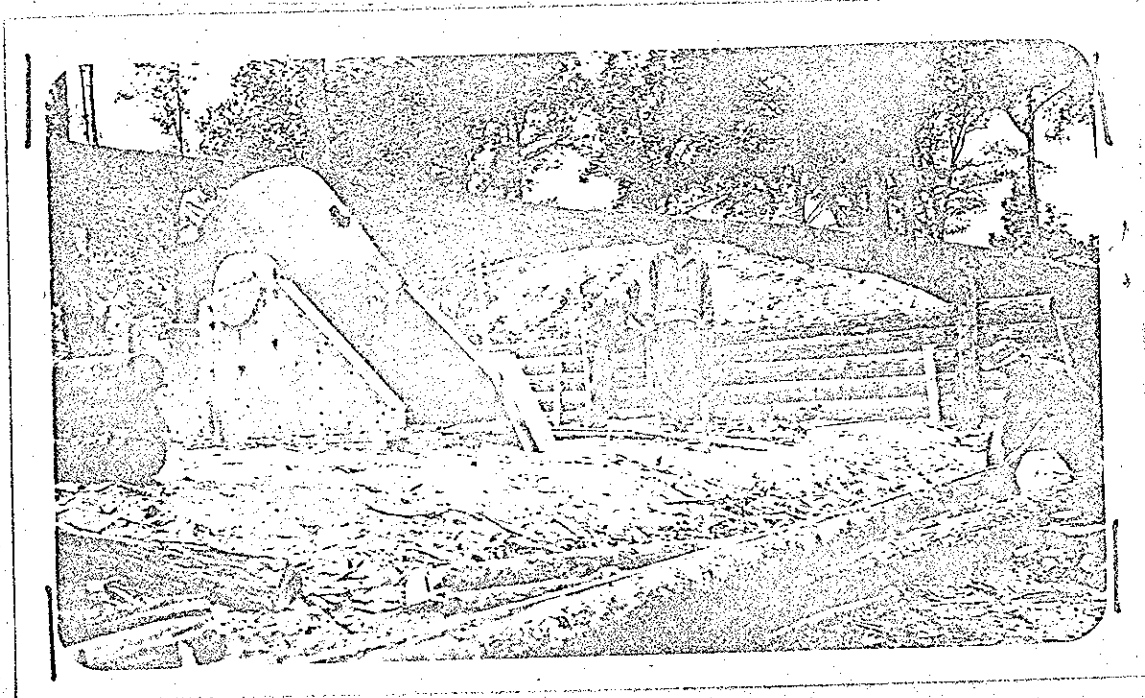
SLIDING THE BARREL INTO THE MOUNTING

The gun barrel was lowered down the hill into the mounting on skids. The cable is fastened to a heavy tractor which acts as a brake. With the aid of a railroad jack the cribbing was removed and the barrel slowly let into position.



PITTING THE BARREL INTO THE FIRING ELEVATION

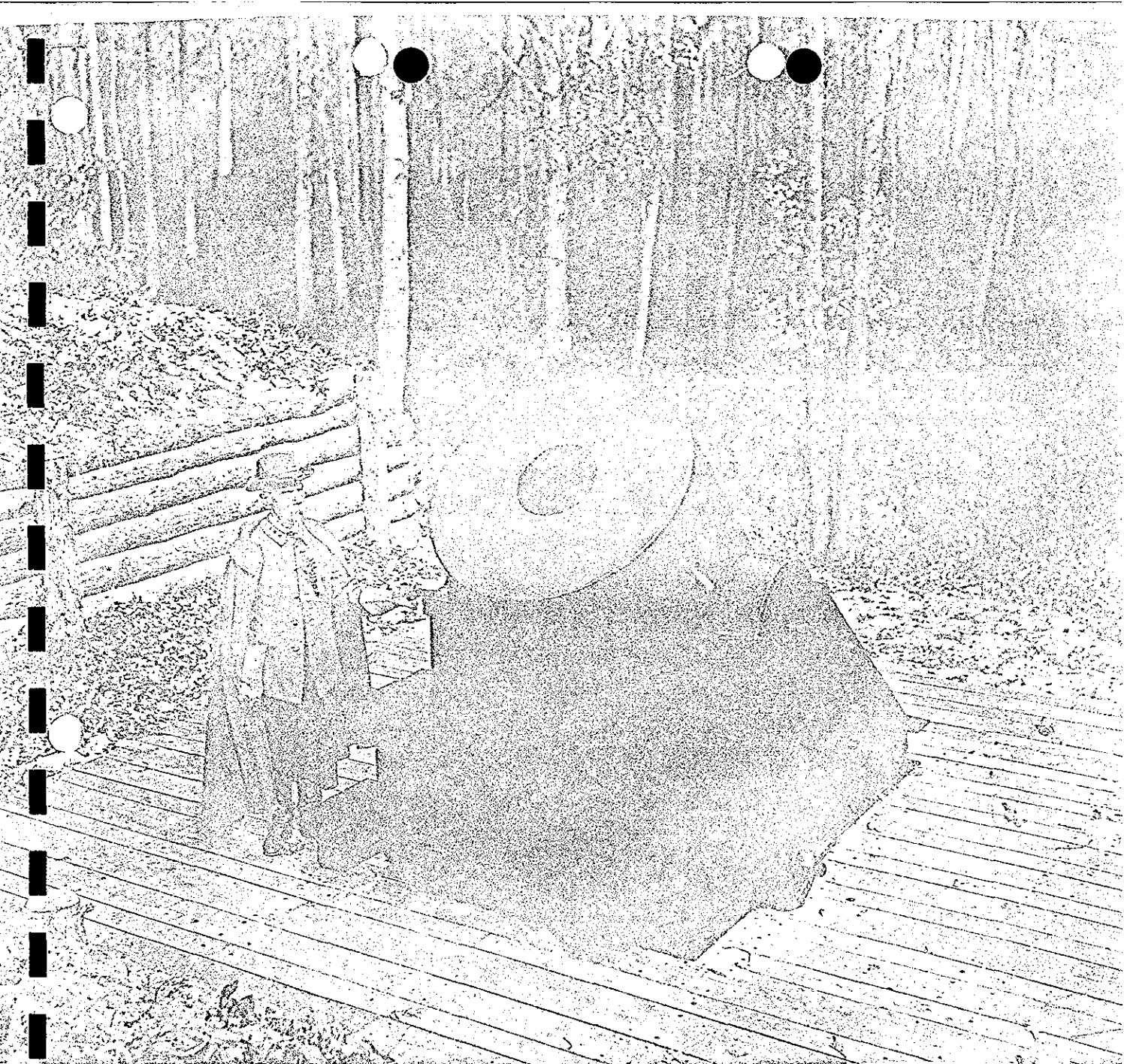
The barrel is being elevated while the trunnions are shaped to secure a proper fit. It was found that with a little trimming the gun barrel turned rather easily in the mounting, striking a nearly perfect balance as the piece was raised to a proper firing elevation. The junior historian is getting an abundance of suggestions from Captain Carter Bishop, a Confederate veteran of Petersburg.



NEARING COMPLETION

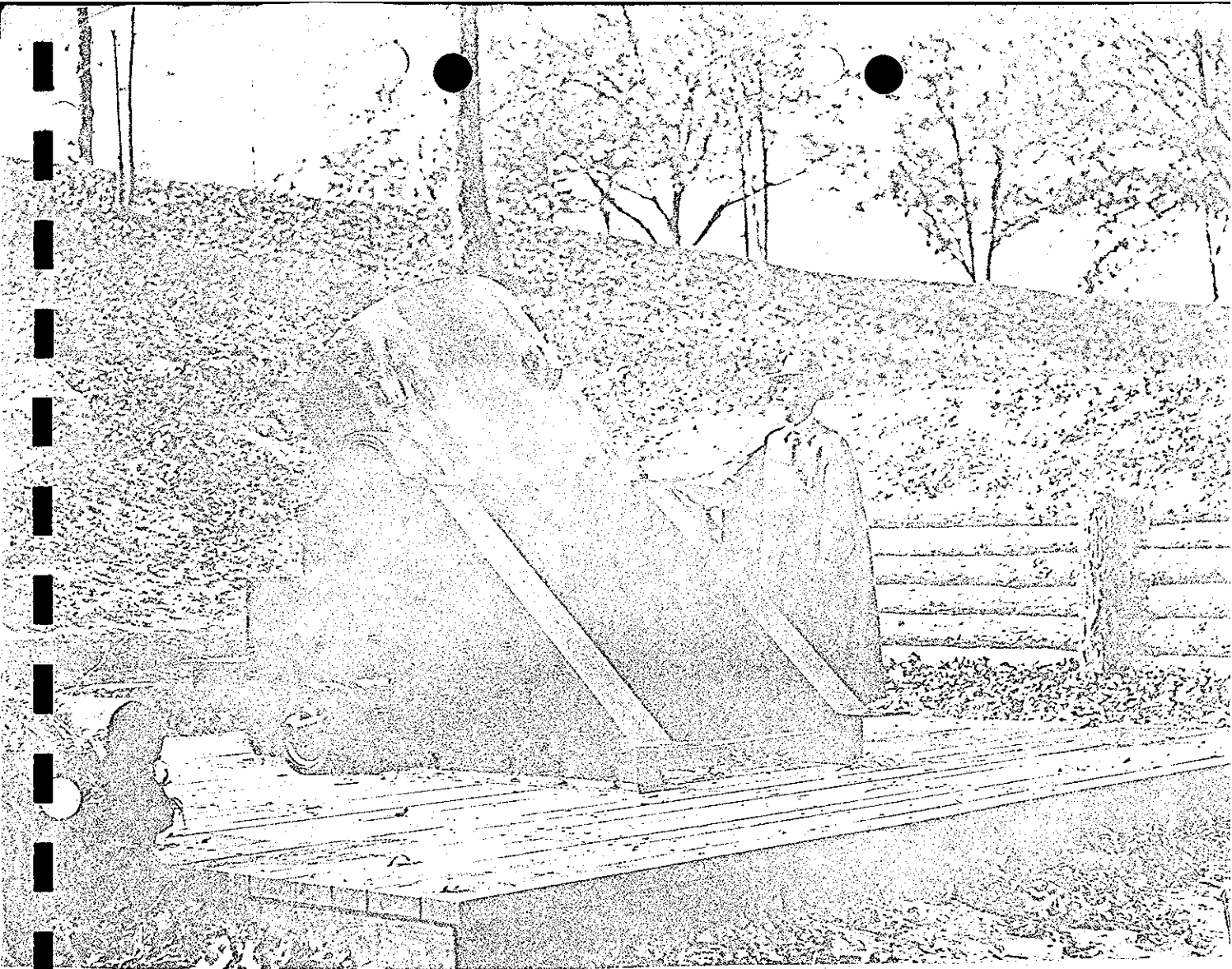
Work is continued on the mortar while restoration of the revetment and gun platform is in progress. The traverse behind the workman in the center was well preserved. It was only necessary to restore the log revetment and place some additional earth on the top of the traverse. White oak logs with the bark removed and tar treated on the inside were used in this work.

The photograph illustrates the treatment of the trunnion. A cement cap poured into a mold made of plywood and tin was used. This mold was made in two sections. Only the lower portion had been poured at the time this picture was taken. The line indicating a separation between the trunnion and the trunnion bearing was made by scoring the semi-hard cement with a knife blade. The photographs of the finished gun illustrates this more clearly.



THE REPRODUCTION COMPLETE

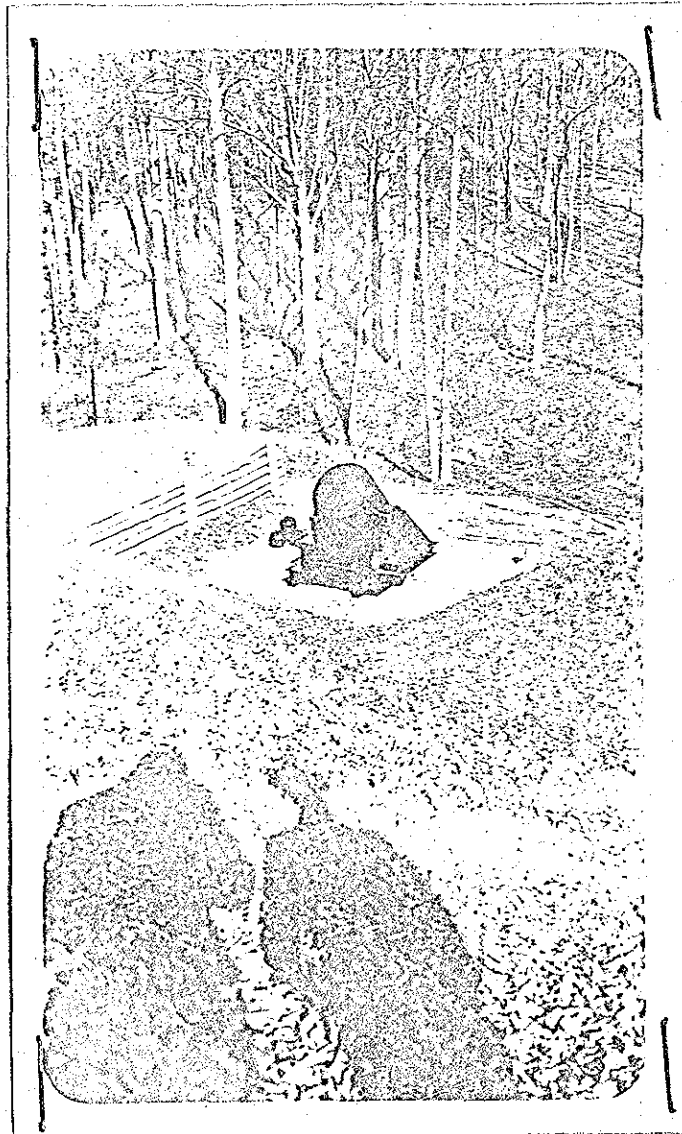
A half inch of wrought iron plate found in the park was cut by an acetylene torch for the steps and the flange plate on the rear slope of the gun carriage. One inch bolts have been inserted in the holes in the side pieces of the carriage. The circular moving ratchet at the base of the side piece was cast of concrete in a form made of wood and tin. This and a similar device on the opposite side served as moving gear on the original gun. A lever was inserted in the hollow shaft at the extreme outside. (See photograph, page 1). An asphalt paint known as Valdurite was used to cover the concrete and metal parts.



AIMED AT PETERSBURG

The gun platform of rough country sawn white oak rests on railroad tie sills. All of the platform lumber was creosote treated. Genuine old hand wrought spikes bought from a local junk dealer were used to fasten the planks. The platform planks are laid so that they give the impression that the gun is movable and is supported only by the platform. This effect is increased by covering the joint between the planks and the concrete side walls of the mounting with a cement flange. (The original gun had a similar flange.) Thus no part of the concrete sub-base is visible and the wooden platform can be replaced when it eventually rots without any disturbance of the mortar.

The figure in the picture is Captain Carter Bishop, Confederate veteran and Chairman of the Petersburg Battlefield Park Commission. Captain Bishop followed the restoration work with great interest. If some one failed to drive him to the job, the Captain would walk from the end of the street car line in defiance of his nearly ninety years. Captain Bishop regaled us with stories of the havoc which he witnessed as the big shells exploded in Petersburg.



HIDDEN FROM ENEMY FIRE

This view of the mortar illustrates how well the gun was protected in the ravine behind Battery Five. The traverse at the left was doubtless an addition placed to defend against a Confederate gun which was specially placed to shell the mortar from the flank. The mound on the right, a portion of which shows in the photograph, is the remain of the powder magazine which also afforded protection. The mortar shells shown stacked on the gun platform were cast in cement in a half round plaster of Paris mold which was coated with paraffin to prevent sticking.

Submitted by:

Manning C. Worley
Manning C. Worley,
Junior Historian