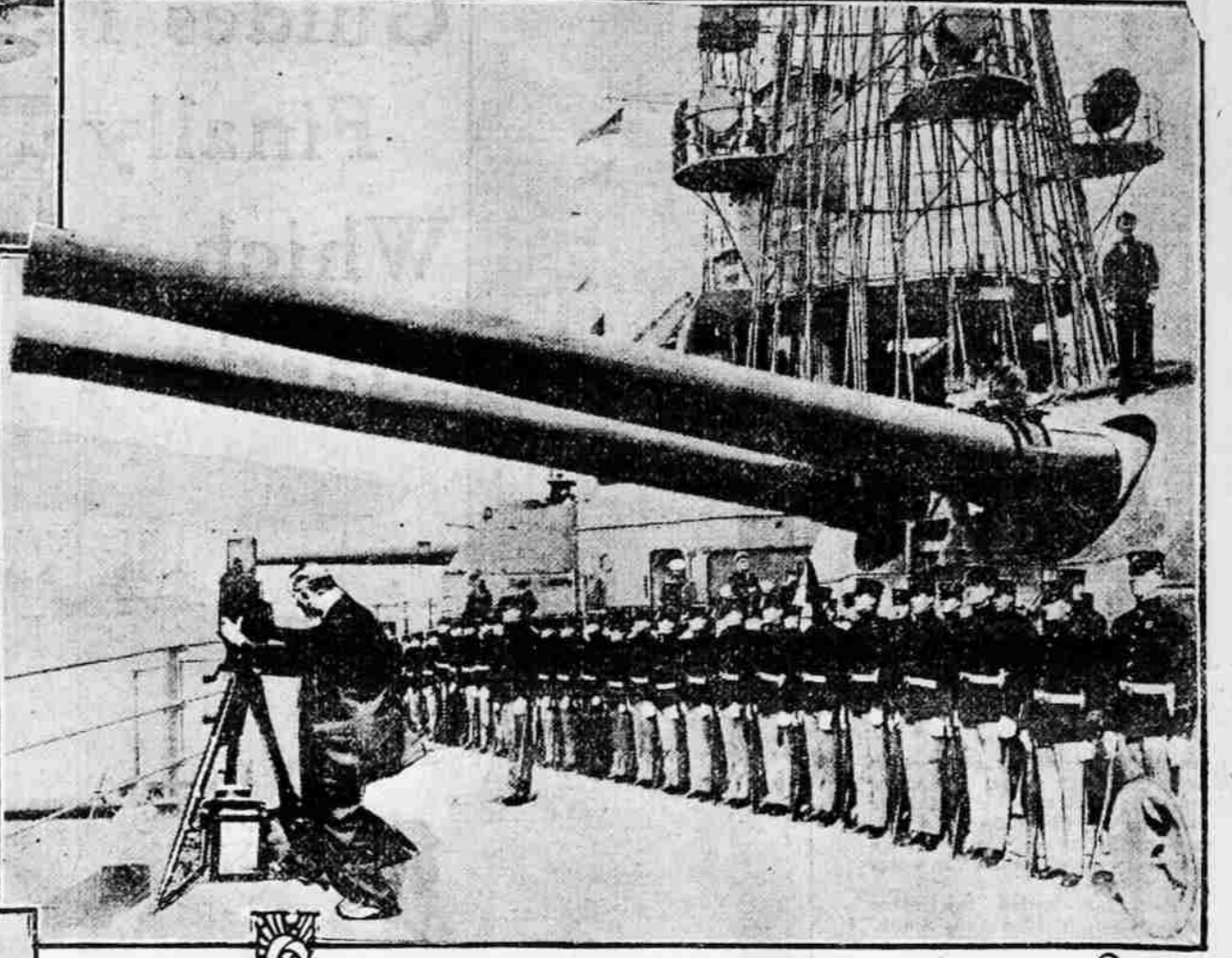
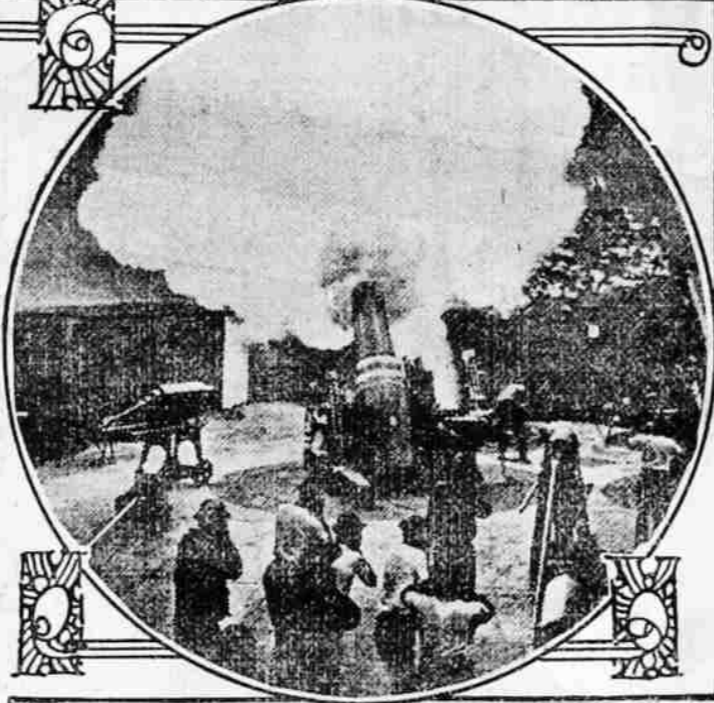
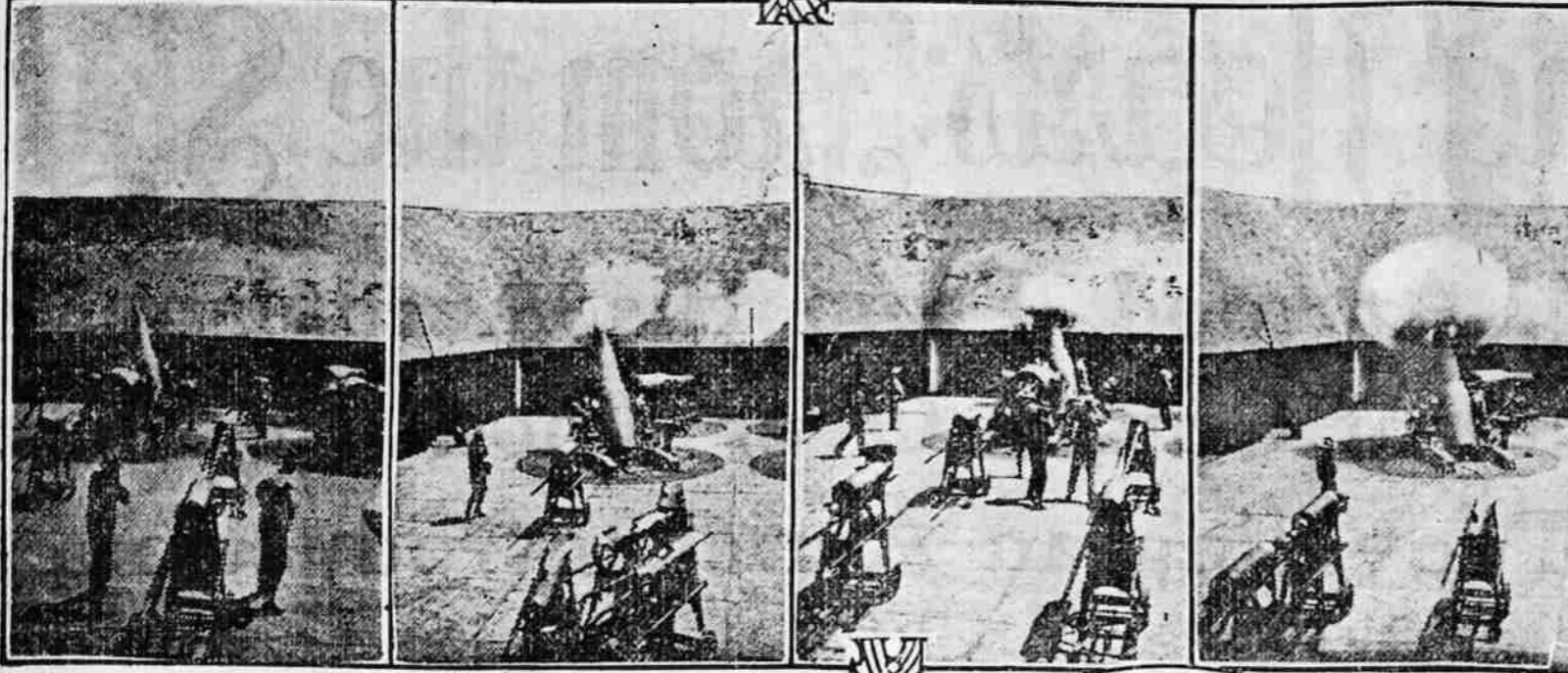


Hitting The Mark With The Aid Of The Movies



American Gunners, Champion Shots of the World, Are Using the Cinematograph to Photograph Shells in Flight as an Aid in Finding the Range Quickly.

The gunners of America have always held the championship of the world for accuracy. They are now experimenting with a new range finding device, which will give the American gunner the range before the enemy can get it and give the fighter for the American Army the chance to hit the mark first.

The cinematograph is the device called into use by the American gunner and experiments are now being conducted by an Eastern Optical Company under the supervision of the United States Government along the lines of new style range finding.

The movie man who has invaded the church, the political hall, the public school and is capturing much of the patronage of the theater is now going to be the knight of war. He will be part of the personnel of every battleship of over every coast defense. While experiments have been made with the moving picture man operating his camera standing on the turret of the battleship, the best results have been with a camera attached to the gun itself.

In cases when the mark cannot be seen from the gun the machine will have to be stationed elsewhere, but so far good results have not been obtained from such operation.

The human eye cannot detect the motion of a projectile through the air. We can hear the cannon ball coming, but it comes so swiftly it cannot be seen with the eye. The camera, however, is swift enough to catch sight of the projectile. Accurate photographs of projectiles have been taken by a swift shutter, but not until recently has the moving picture machine been called upon to photograph the flight of the projectile.

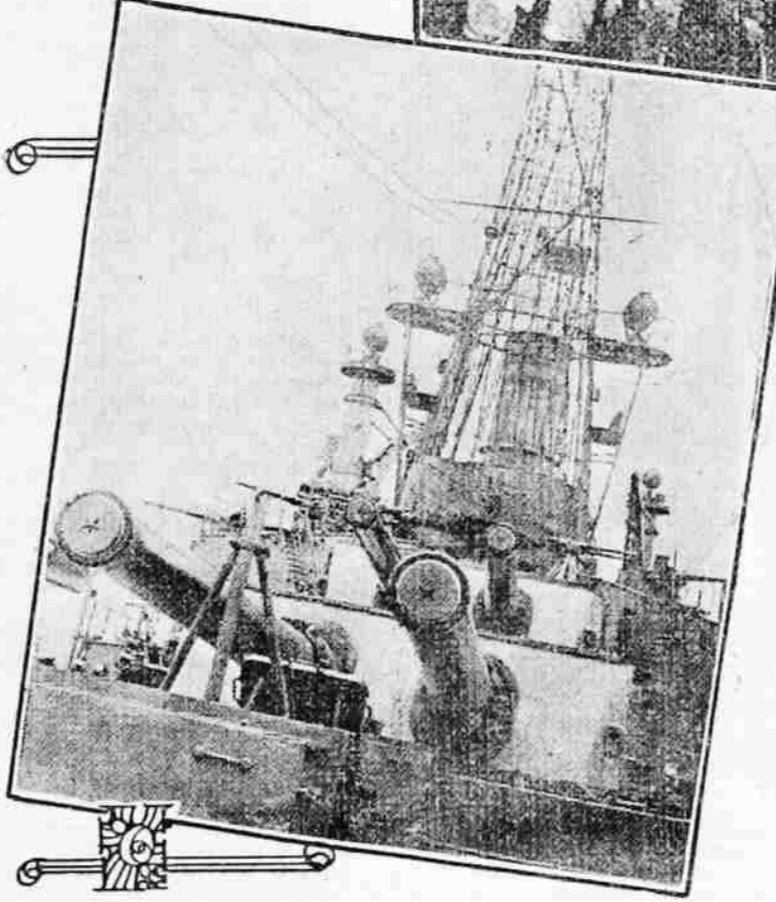
The plates of the moving picture camera after taking the picture are run into a fixing bath, and the impression is firmly fixed so it can be seen on the plate with the naked eye. The point where the projectile strikes is shown clearly. In case the bullet strikes short of the mark the distance is photographed and the gun can be raised. If it shoots over the mark the gun can be lowered.

The Americans having been the first to discover this new device, doubtless will have it more highly developed than any other nation should we go to war.

The advantage of getting the exact range of the enemy before he gets your range is obvious. If you can explode several shrapnel shells in the enemy's trenches or aboard his boat before he can find your range you have won a great advantage. All other things being equal, the side which gets in the first telling shot wins. The same is true of a projectile. Should a projectile be fired into a ship's side it may be possible to sink the enemy before he can find your range.

Operating on that theory the Americans are sparing no pains to get the first shot.

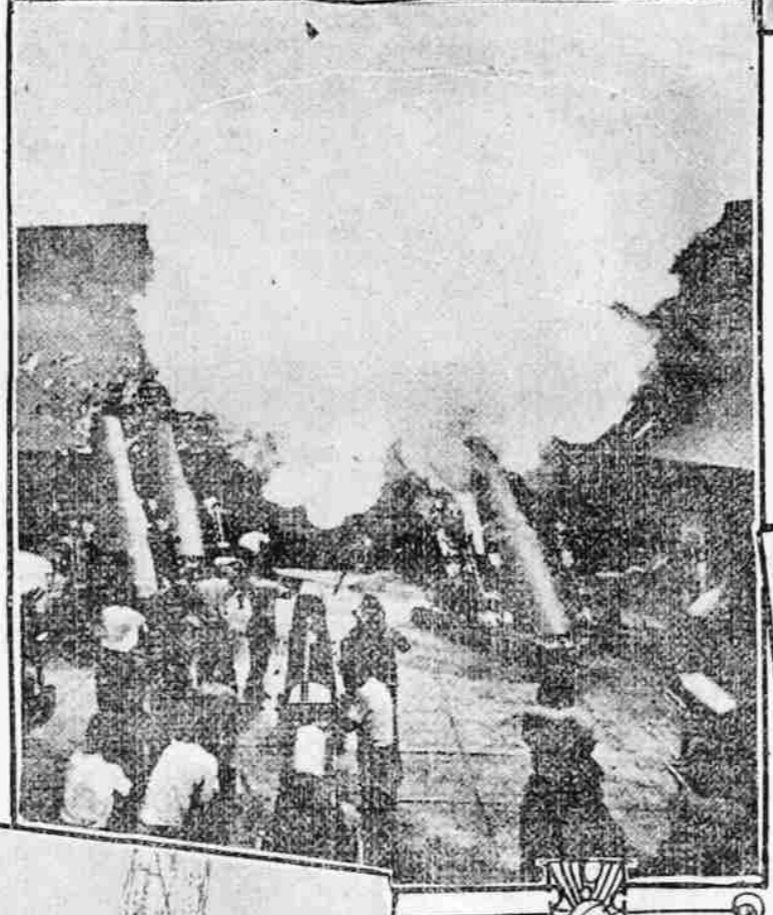
MONSTER TELESCOPE IN FRONT OF CAMERA.
A monster telescope is mounted on a cannon to give a large picture



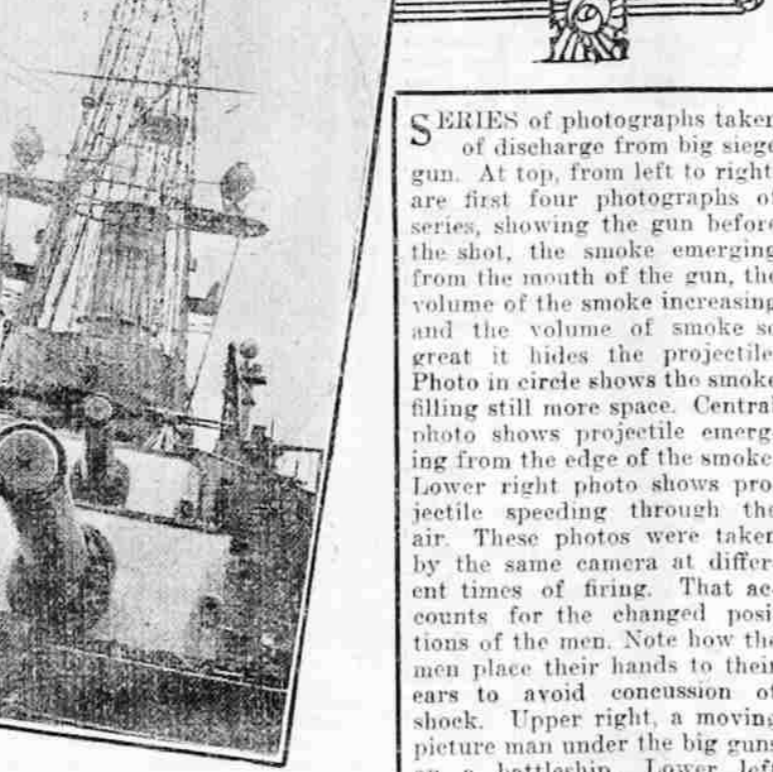
of the spot struck to the camera. This innovation in range finding is entirely unknown to the Europeans. Europe still contents itself with watching for the range with the eye and the eye is likely to err greatly. The camera never makes even the slightest mistake. The machine never thinks. Patiently it responds to the demands of the maker.

Since the birth of the American Republic a remarkable progress has taken place in the science of war, and nowhere has the progress been noted more than in range finding.

The men who fought under John Paul Jones took a look at the whites of the eyes of the English and fired. They pulled their ships alongside and fired load after load of cannon shot and rifle balls into each other. It was a favorite trick of Admiral Jones to lash his ship to that of the English and board the enemy. Imagine the fighters of today boarding the enemy's craft. In



SERIES of photographs taken of discharge from big siege gun. At top, from left to right, are first four photographs of series, showing the gun before the shot, the smoke emerging from the mouth of the gun, the volume of the smoke increasing and the volume of smoke so great it hides the projectile. Photo in circle shows the smoke filling still more space. Central photo shows projectile emerging from the edge of the smoke. Lower right photo shows projectile speeding through the air. These photos were taken by the same camera at different times of firing. That accounts for the changed positions of the men. Note how the men place their hands to their ears to avoid concussion of shock. Upper right, a moving picture man under the big guns on a battleship. Lower left shows the big guns in time of peace.



those early days of American fighting our ancestors won their spurs as champion shots and gunners of the world.

While we first earned that title in the days of muzzle loading gun fighting, we have never lost it. A story of the Battle of Lexington has it that a farmer with a single barrel muzzle loading musket of the flint lock type, left his farm and hurried across a neighbor's field to snipe some of the British soldiers who were retreating from that famous battlefield. He had one load in his gun and enough powder for a second charge.

"Why didn't you take a full horn of powder?" another minute man asked.

"If I kill two men and every other minute man does his duty that will be enough, will it not?" flashed back the man with an extra charge. The two minute men lay in wait behind a fence for the approach of

the retreating English. The man with two shots took deliberate aim at one of the officers and fired. The man fell. The minute man deliberately loaded his gun. Carefully he rammed the charge home, looked after the priming, examined the flint to see if all was in readiness and fired again. Another officer fell. He then returned to his home. He had done his duty.

The minute man's desire not to waste gunpowder was born of necessity. Gunpowder was expensive and about the time of the Battle of Lexington it looked as though there might be need of a great deal of it before the war was over. The minute men did not shoot blindly. They first got the range, sighted deliberately and then used up their shots.

Photo of siege guns copyrighted by Multispeed Shutter Company; reproduced by courtesy of Erker Bros. Optical Company.

Before the Americans had opportunity to test the power of their ability as gunners again, cannon had come into use more widely than ever before. Wars had been waged all over Europe.

RANGE FINDING ON LAKE ERIE.

At one of the battles in Northern Mexico, Gen. Zachary Taylor's grape artillery was under the direction of

own to sink, sailed away on his captured vessel.

The Mexican War did not give the Americans much chance to distinguish themselves for gunnery on sea, but they built up quite a reputation on land for quickly finding the range.

At one of the battles in Northern Mexico, Gen. Zachary Taylor's grape artillery was under the direction of

extensively. The Revolutionary War had found us with little artillery. The War of 1812 found us much better prepared.

Gen. William Henry Harrison, fighting in Ohio and Indiana and working in communication with Commodore Oliver Perry of the navy, was given the task of ousting the English who had crossed over into the Northwest territory of the United States and menaced the ownership of the entire Mississippi Valley.

Harrison waited for Perry. It soon came. Perry, with his sailors, made his way to the great lakes. There he chopped down trees and built a navy to meet the English lake fleet. Men-o'-war of that time were not the wonderfully constructed things they now are. They were for the most part merchantmen fitted up with guns for the occasion. Perry sailed out on the lake. Although his flagship was riddled and sunk under him, he boarded another of his boats and flashed the battle, driving the English from the lakes by his great gunnery.

Perry was only following out the example of Admiral Jones when he refused to give up with the sinking of his ship. Jones was a little more unusual, however. He first boarded a British ship. Then, leaving his

Captain Bragg, Grape shot was something new in the annals of artillery. It was a good deal like our modern shrapnel. To be more explicit, it might be termed the father of shrapnel. The shells were loaded with the shot. When the shell exploded in the ranks of the enemy by the burning out of the fuse the shot was scattered all through the ranks.

The cost of war was creeping up even then. It was much more expensive to fight in the Mexican War than to fight in the Revolution. Captain Bragg so distinguished himself for his good marksmanship that the Mexicans retreated in bad order.

The Civil War is another example of first-class American gunnery. In that conflict the shooting was done not until the Spanish-American War that we had opportunity to test our ability with the enemy.

When the Spanish-American War opened, the report was current in Europe that we could not fight acceptably. We were poor gunners at the best, according to the reports. Americans were discredited in nearly every European port.

SMALL AMERICANS LOSSES IN FIGHT WITH SPAIN.

But the American losses were so

slight in the war with Spain that the eyes of the world were opened. Spain was considered the military equal of the United States. She had a bigger standing army. She had been conducting a long war in Cuba and had more regular soldiers fighting there than we had altogether. Her navy was as big as ours, although it was far removed from the base of supplies.

The United States war chiefs called the Oregon to come around Cape Horn and help fight Spain.

There were critics who said she would be the prey of Spainiards. There were Europeans who said she never would be of any use to America again. The United States trusted to the ability of the Americans to find the range and shoot first and fast. The Oregon made the trip without event. In the meantime the Spanish fleet crossed to Cuba and took position in Santiago.

Before the Santiago fleet could be conquered, Dewey sailed into Manila Bay and there surprised the world by utterly destroying the Spanish fleet. The Spanish did not seem to have a chance. While all their ships were sunk the Americans lost nothing. Only a few of the Spanish shots found their mark.

The story was repeated in Cuba. When the Spanish fleet tried to leave the bay, the Americans began an attack. They entirely destroyed the Spanish fleet, although not a single American ship was lost. In both cases it was a matter of finding the range first and shooting accurately after the finding.

It's a long jump from Admiral John Paul Jones and his methods of fighting to the methods of Admiral Dewey. It is still a longer jump from the methods of Dewey to the methods which will be employed if America ever goes to war again.

Today there are hundreds of things to be taken into consideration, which never were thought of in Paul Jones' day. The direction and velocity of the wind is one. The wind has a mighty influence on a big projectile. It made no difference when your enemy was within pistol shot. When he is fourteen miles away it makes a lot of difference. The gunner also has to reckon on the wind between him and the enemy. There are often contrary currents. That is especially true when fighting on land where there are many hollows and valleys, or on sea just off the coast.

The gunner instead of depending on his vision, has to figure out by triangulation where his bullet ought to land. He has to raise his gun so instead of shooting straight at the enemy he shoots high in the air and the shell falls down on the enemy. Instead of shooting in the general direction of the enemy, he has to shoot to the right or left, according to the wind and the distance to be traversed. He has to know the violence of the wind, too.

It is almost impossible to fight as the minute man and hit the mark the first thing. Therefore, the moving picture machine comes in handy because it makes it possible to find the range at least after the first few trial shots. A bullet in a big gun costs from \$600 to \$800. We can afford to spend a good deal of money just to find the range before shooting a whole broadside.

POOR CONNIE.
Poor Connie Mack, the luckless king, Is weeping in despair, His pitching staff is on the blink, His outfield only fair.

His veterans are frail and thin, And weak and worn and wear, And all that they can do to win A pennant every year.