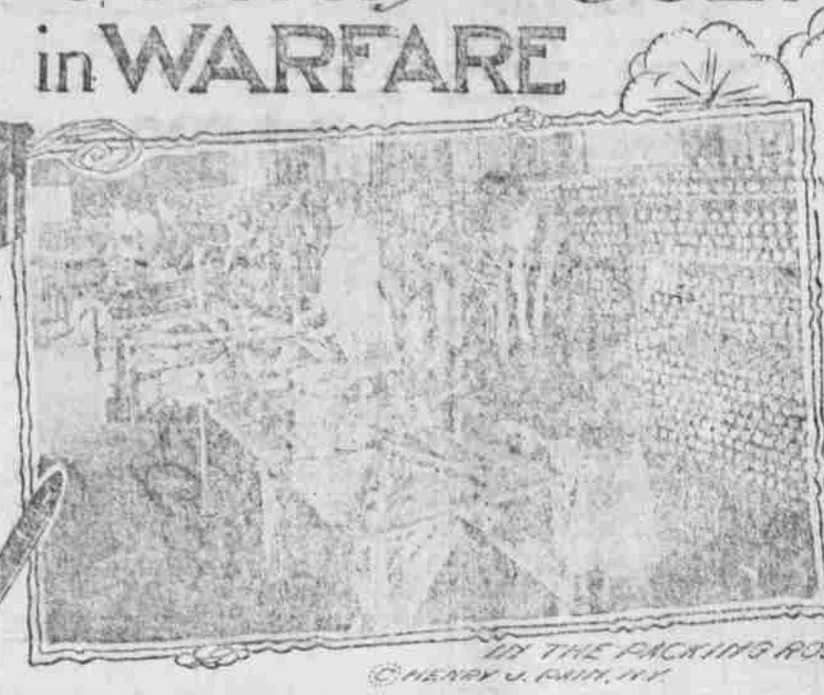
FOURTH of JULY in WARFARE

FINISHING SIGNAL LIGHTS ©HENRY J. PAIN, N.Y.

WATERPROOFING ROCKETS ©HENRY J. PAIN, N.Y.



IN THE PACKING ROOM ©HENRY J. PAIN, N.Y.

FILLING CONTAINER

SETTING OFF AN ILLUMINATING ROCKET

Pyrotechnic Devices Used In the Great War Are Now Being Improved and Standardized By the United States Government.

BY RENE BACHE

THE "Star-Spangled Banner" is a song of war. But when it speaks of "the rockets' red glare, bombs bursting in air," the description suggests a display of fireworks.

It is worth remembering, however, that the Chinese, who invented gunpowder, used it in fireworks for many centuries before anybody thought of turning it to account for war purposes. And it is rather interesting to observe that fireworks have within recent years become of enormous importance in military operations.

Uses Of War Fireworks

Rockets were used during the great war for two purposes mainly—for signaling, and for illumination. The illuminating rocket carried a linen parachute, which, liberated by the explosion, floated in the air, upholding a suspended cartridge that was packed with a brilliantly-burning composition. The latter, ignited by the explosion, would burn for several minutes, throwing a bright light over a wide area.

This was by no means a new idea in warfare. The French during the reign of Louis XIV made very satisfactory use of rockets equipped with parachute "flares."

In those days and afterwards rockets were frequently used in battles on the Continent of Europe, to some extent as missiles, but more commonly for incendiary purposes. They were employed by the British against the Americans in our Revolutionary War, and at first aroused no little trepidation among our troops; but this feeling of alarm vanished when it became apparent that they did no great amount of damage.

A kind of war rocket called "carcasse" was used in an attack on Boulogne in 1805. Hundreds of these were thrown into the town, which was soon in flames, burning for two days. At that period it was thought that such fireworks might do away with naval cannon, delivering explosives without ordnance, but their range was necessarily limited, and improved guns soon relegated them to the discard.

One method of utilizing the celebrated "Greek fire," in the middle ages, was by rockets, which, for incendiary purposes, were sometimes provided with clawlike hooks, clinging thereby to buildings on land or to ships on the sea. It is not surprising that the Crusaders, assailed by such missiles distributing flames which water could not quench, should have been terrified by them, even attributing their effects to the supernatural.

Terrors Of Greek Fire

Greek fire was invented in the seventh century by an alchemist and vigorous warrior named Gallicinus, of Heliopolis, a town in Syria. For 400 years the Greeks preserved the secret which was of inestimable value to them in wars with their neighbors. In an attack on Constantinople they succeeded by its means in burning nearly 2,000 of the enemy's ships.

The Saracens (we call them Turks in these days) had acquired the secret by the time of Richard Coeur de Lion and the damage they did with Greek fire to his invading forces is familiarly known to the student of history. The Crusaders described the war rockets thrown at them as flaming masses the size of hogsheads, but this was probably an exaggeration.

Fireworks of this unpleasant and alarming kind were used in many ways—as, for instance, in the discharge of flames from metal tubes against enemy ships at close quarters. It is indeed [illegible] the original of the "flame-thrower," employed on many occasions with deadly effect during the recent war. The principal fire-making material, too, was the same, viz., petroleum.

The composition used for Greek fire was usually a mixture of petroleum, pitch, sulphur and resin. If quicklime were added, water would merely set it aflame, the [illegible] of the ingredient generating enough heat to ignite the stuff.

A simple manner of employing it was to soak cotton rope in it and roll the rope into balls, which, kept ready for instant use, were lighted and thrown. Once arrived on a ship's deck, or in her rigging, they would burn furiously a long time, and could by no means whatever be extinguished.

Incendiary Missiles

Here (or roughly enough) we have the original of the incendiary bomb—another contrivance that cut an important figure in the recent war.

This simple device for destruction, long forgotten, was reinvented by a French officer during the siege of Toulon. Again it was a rope soaked in a combustible liquid mixture and rolled into a ball, but the ball was inclosed in a sack and fired from a mortar.

Later came the incendiary bomb of metal, the inflammable composition being contained within two hollow hemispheres and ignited by a fuse. This was called the "murdering marron"—marron being the French word for chestnut.

The inventor of the war rocket used by the British during the Revolution was Sir William Congreve. As already explained, it was designed mainly for incendiary purposes. A more important and practical invention of his was the so-called "rocket light-ball," which was for illumination. It carried a parachute, with a suspended cartridge that burned five minutes.

During the war we have read a great deal about "star shells," which were the fireworks most extensively utilized in the battle area. Whenever there was an alarm or expectation of attack, up went the star shells in numbers, brightly illuminating the landscape.

The above-mentioned rocket light-ball served the same purpose in much the same way. But the star shell (originally developed by the Krupps) was a projectile fired from a gun. It contained half-a-dozen pasteboard cylinders loaded with the sort of illuminating composition used for white Bengal lights. At the bottom of each cylinder was a small folded parachute of silk.

Illuminating "Stars"

The shell, ignited by a time fuse, bursts at an elevation of 900 to 1,000 feet. The cylinders, thrown out, release the parachutes, each of the latter being fitted with a little spring which causes it to spread open instantly. Each cylinder, on starting to fall, hangs beneath its parachute, with its burning end downward. This is the "star," which burns several minutes, projecting a vivid light toward the ground in the form of a huge cone.

Referring to the Bengal light, it is worth mentioning here that this kind of firework gets its name from the fact that it originated in India. It was extensively used during the war as a "position light," to indicate the location of trenches to aerial observers.

Toward the end of the recent conflict in Europe "rifle lights" importantly supplemented star shells for illuminating purposes. These were really a remarkably clever invention, a cylindrical "discharger" (to hold the firework) being attached to the muzzle of the gun. Thus the rifle is converted into a small mortar, the light being shot out by firing a blank cartridge.

When the firework explodes high in the air, the half-dozen "stars" it contains (pasteboard cylinders filled with illuminating composition), are blown out and simultaneously ignited. They travel through the air much in the manner of meteors, and during their flight flame brilliantly, burning with an intense light for six to ten seconds.

Caterpillar Lights

This particular kind of rifle light is useful chiefly for signaling, its stars burning white, green or red. Another kind, provided with a parachute, is for illumination. It is fired in exactly the same way, but is so ingeniously constructed that its discharge from the gun does not injure the parachute mechanism. The stars it throws out are connected together, so that in falling they appear as a caterpillar-like chain.

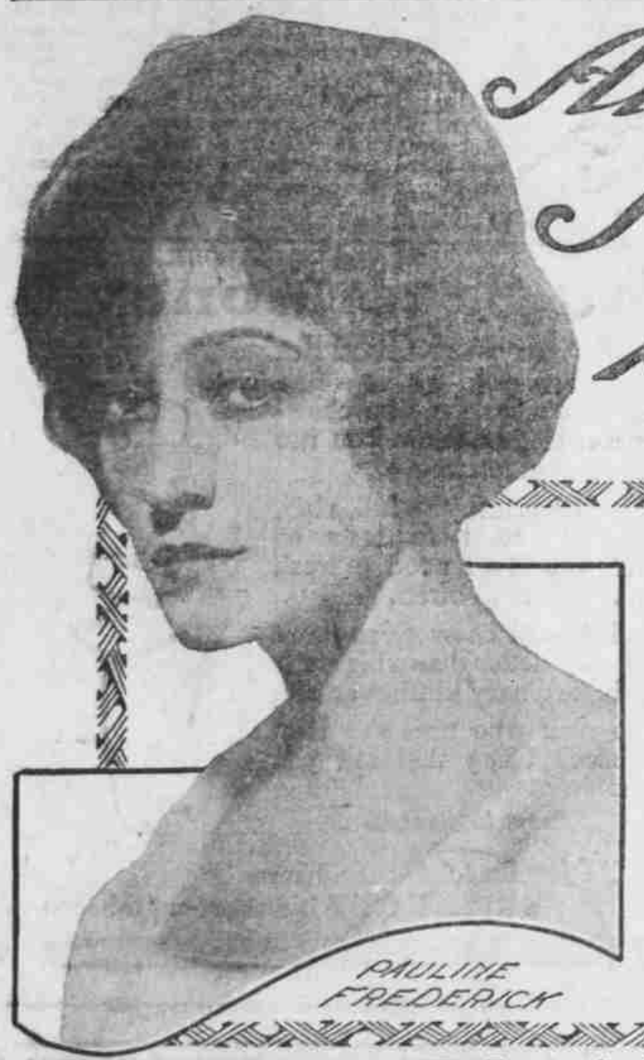
During the latter part of the war much use was made of illuminating hand-grenades, which proved of utmost practical value at night in helping to repulse attacks on intrenchments. A few of these would reveal the attackers to view, when thrown by the defenders, who were thereby enabled to shoot with accuracy.

A novelty in the war was the "photographic bomb," which, exploding high in air, emitted light that illuminated with brilliancy a circular area a mile in diameter. It was in effect a giant flashlight, lasting only two-fifths of a second, but long enough for a snapshot exposure.

Fire Rain

Barring pinwheels (which are said to be a Chinese invention), there is scarce any kind of firework seen at amusement exhibitions that has not been utilized in warfare. "Fire rain" is an example in point. Originally employed for incendiary purposes, its beautiful effects gave it popularity for entertainment long after it had been dismissed from attention as a means of destruction.

Among the Movie Stars

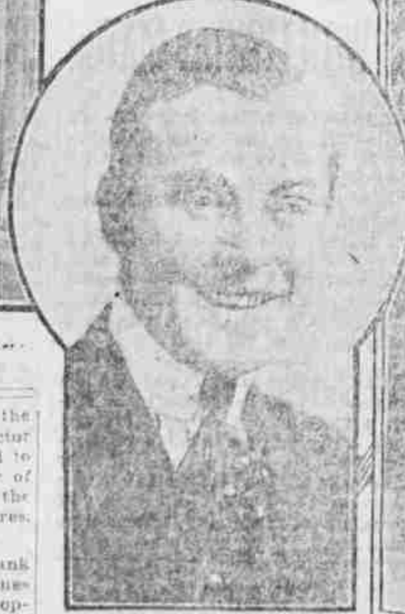


PAULINE FREDERICK

EILEEN PERCY IN "THE TOMBOY"

FLORENCE DIXON

ROBERT HARRON AND JUNE WALKER IN "COINCIDENCE"



NEAL BURNS

MARY MAC LAREN AND HOLMES HERBERT IN "THE WILD GOOSE"

WILFRID NORTH

"The Mistress of Shenstone"—"The Tomboy"—A Chester Character Comes To Life—"Coincidence"—"The Wild Goose"—"The Supreme Passion".

IN "The Mistress of Shenstone," adapted from the novel of the same name by Florence Barclay, Pauline Frederick, popular emotional star, has a role vastly different from anything which she has ever before done for the screen.

Lady Ingleby is the wife of a man much older than herself, who although very kind, regards her more as a pretty toy than a helpmate and companion. When through an accident Lord Ingleby is reported killed, and Myra after many months of loneliness meets a man who makes of her a confident and companion; who regards her as the most wonderful being in the world, she is supremely happy. But like a bolt out of a clear sky, shattering their happiness, and making the way dark before them, comes the news that the report of Lord Ingleby's death is false.

How Myra meets the situation which then arises, how she succeeds in keeping pure the wonderful love of the man who has come into her life, and at last is enabled to meet her heart's desire, furnish the many dramatic moments in the screen version of this famous novel.

An Ideal Tomboy

"The Tomboy" is an excellent name for the picture, because Miss Percy is something of a village cutup. She shocks the neighbors with frequency. She is the "star" of the local baseball team; in fact she is the "Babe" Ruth of the team. She knocks 'em over the fence (if there is a fence in the vicinity) in every game, and she is a "terror" on the bases. She's popular with everybody—except the blue-law-loving men and women folk. And she makes the mothers of daughters gnash their teeth with envy as they watch her capture the love of a wealthy young fellow who drives into town in his car for a short stay. Minnie is some Tomboy.

Wilfrid North

Wilfrid North, production manager of Vitagraph's West Coast studios and an actor of note, will play the role of J. Rufus Wallingford in "The Son of Wallingford," by Mr. and Mrs. George Randolph Chester.

Mr. North was for years on the stage with Mrs. Fiske and is an actor of the old school, when actors had to act. He later became a producer of stage plays and directed some of the greatest stars before entering pictures.

"Coincidence"

Billy Jenks is a five young bank clerk in a dead old town, who comes to New York in search of greater opportunities.

One day a bill blows out of the window, and falls on a hat of a pretty young girl who is passing. Billy arrives in time to prevent her handing over the bill to a grasping stranger, and the two young people fall in love at first sight. Billy and Phoebe spend so much time in dreaming about each other that they both lose their jobs.

An aunt leaves Billy a fortune, so he and Phoebe plan to be married at once. As they ride down town on a bus, their guileless conversation is overheard by Harry Brent, of New York's underworld.

Next morning, Billy goes downtown and collects his entire inheritance, $100,000 in bonds, but a man in a Palm Beach suit snatches the envelope from him and escapes. In his efforts to recover his fortune Billy has a series of exciting adventures which finally lead him to both his money and Phoebe and all is well.

"The Wild Goose"

Do you know the legend of the wild goose and his mate? Well, it is proverbial that the wild goose never deserts its mate. Men may desert their helpmates, but the wild goose never. The story of "The Wild Goose," is founded upon this saying. Frank Manners, an architect, has a romantic-minded wife who becomes infatuated with another man. The husband is prevented from seeking vengeance by another woman who secretly loves him. She is married and when her husband learns the truth, he takes a hand in the triangular game with highly dramatic results. In the end the wild goose saying is fulfilled.

"The Supreme Passion"

Two men love the same girl. She is young, beautiful, cultured and fascinating. One of the men is much older than she and has the advantage of wealth and social position. The other has only youth, determination and love. Social aspirations of the mother and business depression affecting the father serve to the advantage of the rich suitor.

A most discouraging complication confronts the younger man, who has always loved Mary, the heroine of the girl. He incurs the displeasure of his stern, proud father, who disinherits him because of his love for the girl. The ultimate outcome is indeed gratifying, although the two lovers pass through many trying situations that promise to destroy their happiness.

Miss Florence Dixon, who plays the lead, is conceded to be one of the most exquisitely beautiful girls on the screen and her interpretation of the character of Mary is ideal in every detail.

Neal Burns

Neal Burns, who is featured in "Oh Buddy," is one of the most versatile of players. He has been in pictures a little more than six years.

Before entering picture work, Burns appeared in a number of musical comedies where he became an adept in impersonations.