

Locating Airplanes in Night Fighting

THE photograph herewith of the large Paraboloid reflector with two soldiers standing at either side, and equipt with special head phones, which are connected with the sound detecting apparatus mounted in the central focus of the reflector, is em-

guns, dynamos, motors, gasoline engines, et cetera. The searchlight is mounted on light wheels, similar to small auto wheels, fitted with rubber tires. It can be hauled to any desired spot in a short time.

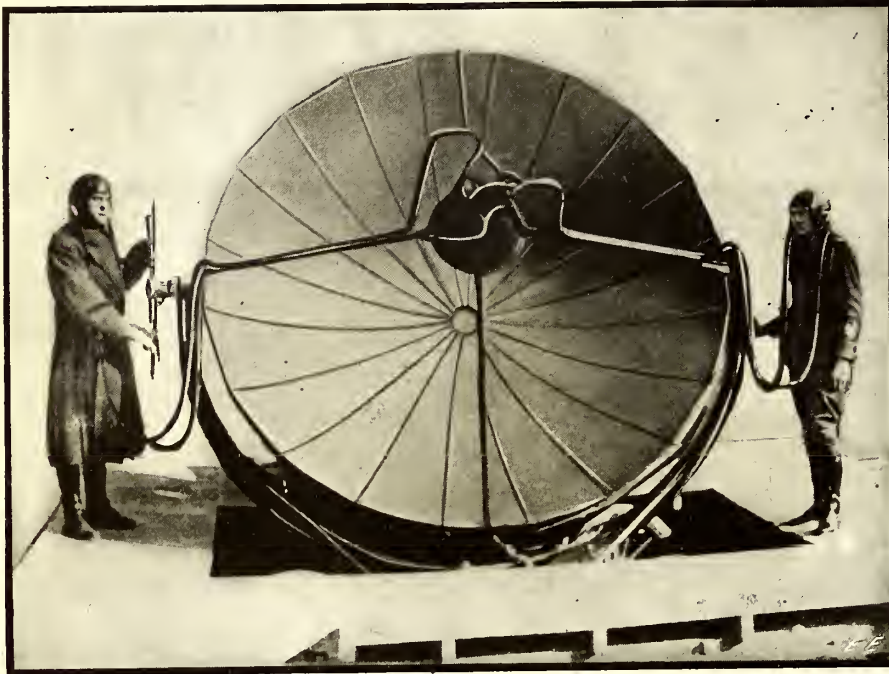
During the period of the war, many

alone. This new form of locator—the Paraboloid—has several novel improvements over previous apparatus of this type, one of the best features being that it can readily detect the hostile aircraft at great distances, especially valuable when the enemy tries to make a surprise attack at night.

Spotting the Enemy.

Imagine a peaceful village, such as are numerous in the sparsely settled sections on the coast of England, seemingly defenseless. Yet there seems to be an air of mystery about some of these places—and there is, for thru underhand means, the enemy "spies" learn that secret research work is being carried on in this unassuming little hamlet. It would be suicide upon the part of these "spies" to personally attempt to carry out any large exploitation or even to think of attempting to blow up the place with any hope of success. The nearest recourse that they could have would be to get in touch with a squadron of enemy planes, and notify them where these operations are taking place. On a dark night, these enemy planes issue forth and swoop down, like a nest of hornets, upon this defenseless little village. But one thing they have overlooked. Altho they have come unheralded, it is true, the watchful *electrical eyes and ears* of the engineer corps are prepared for any such surprise, thanks to the fact that they have this marvelous invention on hand, whereby it is possible, no matter how dark the night, to quickly and positively locate the approach of enemy aircraft. To their sensitive ears comes the hum of the engines. Word is flashed to every little town, fort and hamlet within the vicinity, and especially planned advance action is arranged. Ere the fliers have reached their destination, the heavens are being explored by gigantic searchlights for the enemy marauders. Trained gunners, using the very latest types of anti-aircraft guns, are soon popping away at the enemy, and what was hoped to be a great surprise and success on the part of the enemy, turns out to be one grand fizzle, much to his discomfiture.

These powerful searchlights, besides being available for enemy spotting, are also much used as a means of signaling. This is one branch of the signal corps work which has proven one of the big factors in helping to win the war. Searchlights of this type mounted on warships helped to protect the American sea coasts.



Here is the "Paraboloid"—the Clever Sound Focusing and Detecting Device Used by the Allied Armies in Locating Enemy Aircraft While They Were Yet Several Miles Away. The Sound of the Airplane Engine Carried Far, and by Carefully Focusing the Collected Sounds and Concentrating Them onto a Sensitive Microphone, the Trick was Done.

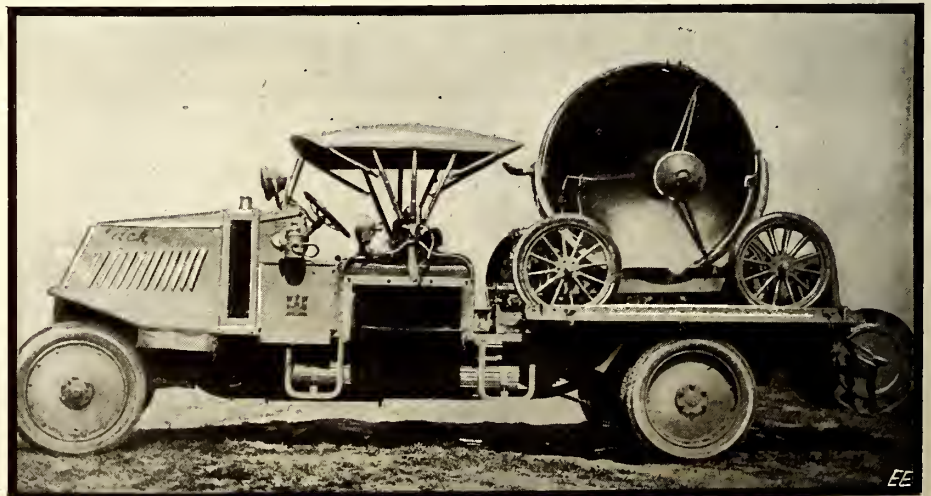
ployed for locating the direction of approaching hostile aircraft at night. The reflector is balanced and pivoted so that it can be rapidly swung to any angle desired. When the approximate location of the approaching aircraft is determined by means of this sound wave catcher, then powerful searchlights are suddenly flashed on, and their beams pointed in the direction previously indicated by the sound detector. The range of this sound detector, owing to its efficient design, is said to be about $3\frac{1}{2}$ times that of the unaided ear. It is extremely light and portable, and can be rapidly transported to any place desired.

Five-Foot Searchlight Added to Terror of Night Fighting.

The accompanying photograph illustrates one of the remarkably light, yet extremely powerful, electric searchlights developed for use in the war. Searchlights of this type were built by the thousand by all of the leading powers, and both sides used them for various purposes, including night battles, the discovery of hostile aircraft, trailing the movements of enemy troops and freight trains, and automobile freight lines.

The searchlight here shown requires about 15 K. W. or 20 H. P. to light it to full brilliancy, and its powerful light will carry from 10 to 15 miles easily. The searchlights that we are usually accustomed to seeing on vessels and in the neighborhood of forts are usually cumbersome affairs, but the exigencies of wartime, where such vast amounts of paraphernalia had to be hauled over by train, horse, or auto-truck, called for the very lightest weight in all such apparatus as these, where there was no real necessity for making such an apparatus of great weight, as is the case with many pieces of machinery, such as

novel and startling inventions have come to the fore, especially means for locating hostile airplanes and dirigibles. The majority of these operate on the simple sound wave principle, the waves being transmitted thru the medium of the air from the propellers of the hostile aircraft. Some of these devices have been made in the form of large tubes, provided with a simple microphone method of detection, but they were rather unwieldy, and to a certain extent never gave full satisfaction, due to the fact that too great a dependence was placed on the amplifying of the hum of the airplane engine by means of microphones



Gigantic Electric Searchlights of the Portable Type Were Used to Expose the Enemy Flier as Soon as the "Paraboloid" Had Succeeded in Spotting Him. The Anti-Aircraft Guns Then "Saluted" Him—and the Allied Planes Finished the Rest.