Searchlights Mounted on Anti-Aircraft Cannon

The electric searchlight has been advantageously combined with many different forms of war machinery in the past few years of the great international cataclysm across the sea, but possibly one of the most unusual adaptations of the electric searchlight is that shown herewith, which illustrates how the English cannon employed for the defense of London against enemy aircraft, was fitted with a small searchlight in order to increase the rapidity and accuracy of fire. The anti-aircraft gun is mounted on a tall building or promontory, or else on a high powered motor truck so as to speed rapidly from place to place. Such a combination spells deadly accuracy of fire, as anyone who has experimented with the electric flashlight pistol will have found, for when the searchlight or flashlight beam was centered on the target, and the shell or bullet dispatched, it struck the center of the spot of light on the target; in the present case, it would strike in the center of the beam from the searchlight. It can readily be imagined with what rapidity the gunners can "spot" an enemy aeroplane or dirigible and bring it down.

McADOO WOULD ELECTRIFY ALL RAILROADS.

Director-General of Railroads McAdoo said recently on his return from a trip that his observation of the vast resources of water power during the two months he had been absent from Washington since the close of the last bond campaign, had imprest him with the idea of electrifying the railroads of the United States. If the Government were to continue the administration of the railroads of the country for any prolonged period, he said, he would be in favor of resorting to the use of electricity just as far as it could be practically employed.

Director-General McAdoo said that for the present nothing could be done toward substituting water-power for coal-produced steam, but it might come as a plain matter of necessity while this war was on. It would first be desirable to keep up the volume of manufacturing power and then it would be required to relieve terminal needs. Ultimately electricity would be principally employed first of all in simplifying terminal problems.

The fact that the topography of the country was relieved by its many mountain ranges, all abounding in streams that would provide power, was a guaranty of the practical distribution of current in the sections that were now forging rapidly forward in manufacturing importance.

Some of the virgin ground of manufacturing development, such as the South along the Atlantic seaboard, especially invited the consideration of this plan to relieve the country from the thralldom of coal mining and shipment, according to Mr. McAdoo. He held that even if there were no such great necessity to conserve our coal supply, the fact that transportation limits the available power of our coal would of itself justify transforming many of our railroads to electrical systems.

The Secretary suggested that probably electrification would be actually undertaken while the Government had control of the railroads, and that the problem would be attacked at the most favorable points in the country where the static value of water was most obvious and the cost of making the change from steam to electricity would be comparatively slight.

English Anti-Aircraft Guns Used in the Aerial Defense of London Have Been Fitted With Searchlights to Increase the Accuracy and Rapidity of Fire, This Unit Being Mounted on a Motor Truck.

U-BOAT IN SPANISH PORT DIRECTS RAIDS BY RADIO.

Investigation has disclosed that the German submarine U-56, which recently arrived at Santander, Spain, under its own power, had been in communication with other U-boats at sea.

Commander Reisser of the U-boat, repeatedly was seen signaling toward the sea, while the Spanish government intercepted wireless messages from the U-56 after a French steamer was sunk and its crew killed by a submarine.

It is quite obvious that the U-56 was sent to Santander to organize the destruction of Allied and Spanish shipping from a favorable spot, it is believed.

FRENCH VIEW OF ELECTRICITY IN MODERN WAR.

The important part played by electricity in the modern war game is set forth in an entire number recently given over to the subject by the leading French magazine, *Je Sais Tout*. Trench warfare has imposed the use of the telephone for the transmission of orders, for reports and for communications of all kinds. In order, however, that it should be the ideal agent of communication, there are certain features attending the use of electricity in this connection not necessary in times of peace.

Communication must be secret, and the wires must be placed so that they cannot be destroyed by shot or shell. In the first days of the war the Boches quite successfully tapt the French wires. Their listening posts were discovered, and the telephone officer attached to each regiment has so disposed of wires and currents that secrecy is now assured.

A means of making use of the electric magnet under water has been devised in Japan, and it promises to be of great assistance in locating sunken vessels, to recover which salvage operations on a big scale are expected after the war.

ARC-WELDING SAVES MONEY.

Arc-welding by electricity has been brought prominently before the public thro the fact that it was used to restore the broken engine castings of the interned German steamships. When breaking these castings the much learned (?) and foxy Germans thought they could not be repaired, and that it would require a year or more to replace them. However, even before the ships could be otherwise overhauled and made ready for transport service the broken castings had all been repaired and were good as new. This achievement has imprest the value of arc-welding upon the minds of many shop managers, and in many plants castings and other parts of apparatus which in the past would have been scrapped as hopelessly damaged, are now perfectly restored by the arc-welding process at small cost and great saving of time.

Welding High-Speed Steel Tips on Tool Shanks of Ordinary Steel by the Arc Method.

One large manufacturer, working on munitions, has installed an arc-welding equipment for the sole purpose of making tools for turning shells.

Ordinarily these tools are made from high speed steel and cost about $12.00 each. This manufacturer uses high-speed steel for the tip of the tool only, welding it to a shank of carbon- or machine-steel, and in this manner the tools are produced at a cost of $2.00 to $4.00. For some time this plant has been turning out 240 welded tools per day, the men working in shifts of four, which is the capacity of the outfit illustrated.—*Photo courtesy Westinghouse Electric Co.*