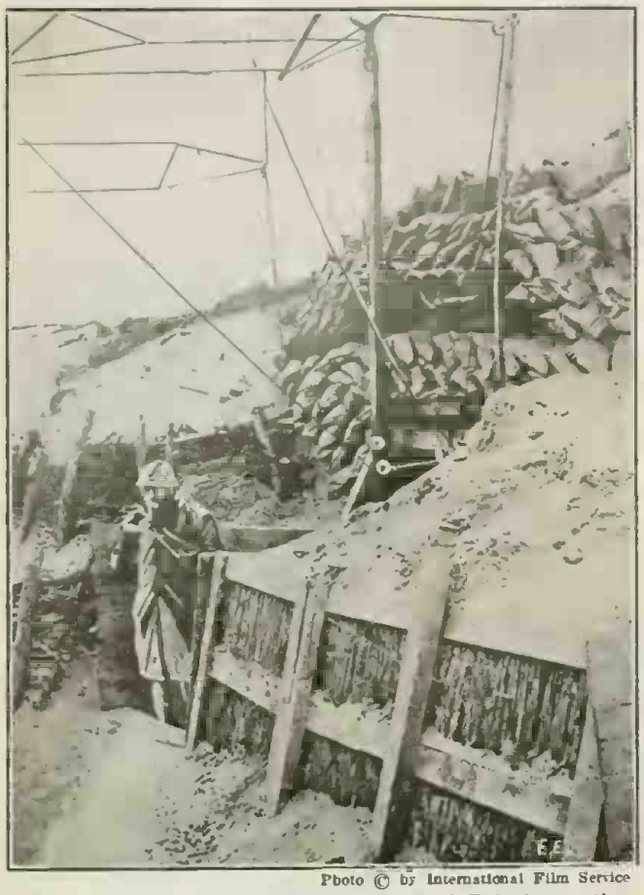
WIRELESS STATION IN FRENCH TRENCH.

The present illustration shows a radio station and the operator standing outside the dugout in a French, second line trench.



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In a Second Line French Trench We Find This Interesting, Battle-Front Radio Station. The Aerial is a Low Affair, so as Not to Be Easily Seen by the Enemy. The Apparatus is Placed in the Dug-out at the Right.

These men are almost continually under bombardment the enemy making every effort to destroy the stations and the aerials. The aerials extend but a short distance above the top of the trenches of course, as becomes clear from the photo, as otherwise they would soon be destroyed by shell or machine gun fire from the enemy. The radio apparatus is located in the dug-out shown; note the heavily reinforced roof of sand bags to withstand shell fire. Some of these dug-outs form entrances only to an elaborate underground operating room or gallery. This gives better protection and less interference due to noises from shell and rifle fire.

DECEMBER MEETING OF THE I. R. E.

A very interesting paper was presented at the December meeting of the Institute of Radio Engineers at the Engineering Societies Building, New York, on December 5th.

Many notable radio men were on hand and the attendance was large, mostly due to the fact that the paper had a good advance notice and the interesting topic of "Radiotelephony on the Union Pacific Railroad" was discust. Dr. Frederick H. Millener, the author, described with many amusing incidents the work of almost ten years spent in experimenting and installing wireless telegraph and telephone sets on moving trains and in main stations.

The first researches were made on a specially constructed flat car, about ten feet in length, and weighing a couple of tons, fitted with storage cells and other apparatus. On each of the cars were set two short poles and a crude four wire aerial was strung between them. An illustrated slide was here shown and the crowd of curiosity seekers about the radio-car almost swamped the small car and its operators. This car was kept in the yards and experiments were made from the laboratory located in a small shop nearby. It was possible to sound various kinds of warnings on the car and to start, stop and reverse its motion by Radio. An arrangement was also worked out so that a tower man could send a signal and an automatic arm or light would operate and warn the engineer in the cab. But this nearly always failed to work at a critical moment and not the some few thousand times in succession that is required of a device which is to be practically adopted.

At this juncture in the game certain patent suits started, claiming infringements, and therefore the work was abandoned for a time, also certain needed apportionments didn't quite materialize in the budget.

After a time work was again resumed and better quarters were fitted up and a number of stations erected along the main line of railroad; these maintained direct connection constantly. Work was also done in Radiotelephony and a number of arcs of different types were experimented with. Also some were tried with gases contained in the surrounding chamber; a disastrous attempt at using illuminating gas put the gas idea out of the running.

The Radio-phone worked fairly well between the establisht land stations but some difficulty was experienced with the set installed on the train. The voice had a peculiar manner of dying away suddenly and then after a time coming back again.

It was also tried in conjunction with the then existing telegraph lines, using the same as aerials, but it did not answer very satisfactory and this scheme was dropt.

Later a regular research laboratory was establisht on wheels, being in the same class as the safety and other exhibition cars. A pullman dining car was made over and a large aeriel set a few feet above the roof. Also at one end a collapsible mast capable of extending about 80 feet was fastened for experiments on sidings. A large generator and a gasoline engine were installed to furnish power. One end was partitioned off for sleeping quarters. The rest of the car was devoted to the experimental laboratory and judging by the lantern slide shown of it, it was some class! With carpet on the floor, rest chairs and what not—well it certainly looked more like a grand salon!

Nevertheless much important work was accomplisht, and exhaustive tests were made and charts calibrated of results. The ten years of experimenting fell thru when war was declared and the laboratory hung out its shingle, "closed for the season!" The paper was a change from some of the technical papers that have been read and Dr. Millener's personality did much to get the "high-brows" in the audience in good spirits and all of those present appreciated his coming East to speak before the Institute on so interesting a topic.

TEACHING U. S. AVIATORS RADIO-TELEGRAPHY.

"Learn to do by doing" is the motto of Uncle Sam's new military aviation service. And let no one tell you that action is not suited to the instruction. One of the first things new recruits have to do is to learn wireless telegraphy. Mark the application of their motto: They learn the art by talking across tables with one another by wireless. Here is a class in action. An airman's first step in learning the science of radio, which he will shortly be called upon to use over the German trenches in France, is to master the International Morse Code. The men here shown are cadets at one of the "Ground Schools" practising the sending of dots and dashes, which are immediately reproduced on the tape before them. This permits them to lengthen or shorten their motions until they are wholly accurate. The teaching of Radio to the thousands of new aviators now being schooled by Uncle Sam is a man's-size job. Radio instructor officers have been recruited from civilian walks of life for this purpose, in many cases.

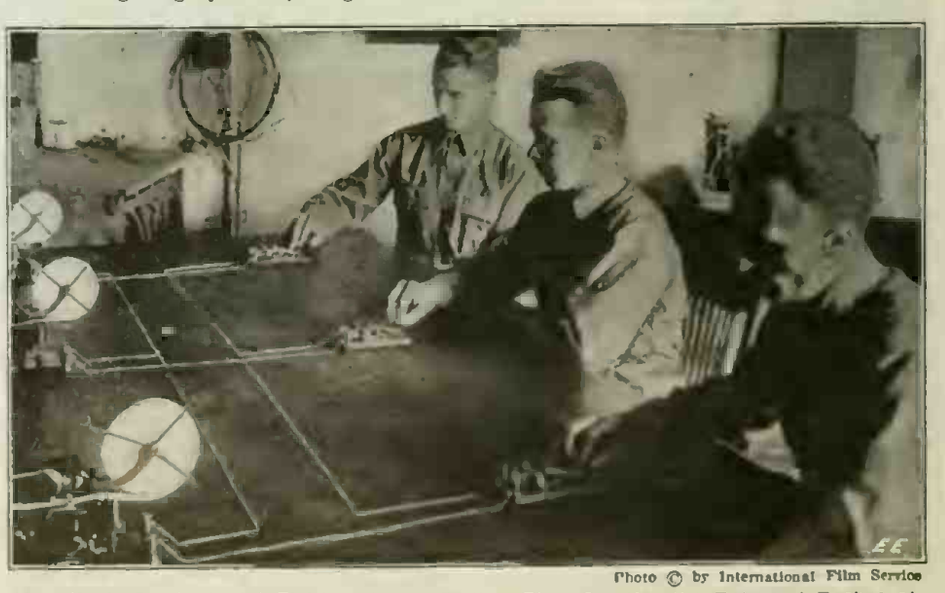

Photo © by International Film Service

How Uncle Sam's Aerial Fighters Learn Radio. They Practise the Dots and Dashes at First, the Signals Being Reproduced Before Them on the Tape Registers. This Allows Them to Check Up Their "Sending Fist."