

Seeing Wireless Signals

OUR front cover illustration shows one of the latest wireless signaling devices perfected by Teutonic experts. With this device the reception of radio messages on a flying aeroplane is made much more positive, inasmuch as the noise from the engine or machine gun does not interfere in the least with it, as is the case where the aerial radio operator has to listen in a pair of sensitive head telephones.

We are indebted to William Dubelier, a radio-engineer of New York City, for the description and photograph of this remarkable instrument, who personally saw this apparatus in the Berliner factory at Vienna, Austria, and besides had the pleasure of observing signals being received from a distant station with it.

This apparatus consists of a sensitive Einthoven galvanometer with a small electric lamp shown at the very bottom of the photograph. The light from this lamp is focused thru lenses on to a small mirror, which in turn reflects the light thru a magnifying glass, the same as in an opera glass. The upper part thru which the observer looks is constructed on the prismatic binocular principle, making the sighting apparatus equivalent to six times its length.

In other words, the observer does not actually see the wireless signal or wave literally speaking; he only sees the effect of the etheric wave, after it has impinged on the antenna attached to the aeroplane, and after it has past thru the tiny quartz fiber suspended between the poles of a strong magnet, and perpendicularly to the magnetic flux lines. If a weak current, such as a received radio signal current, passes thru this quartz fiber, the latter will be displaced from its normal position in a direction perpendicular to its axis and to the magnetic flux lines.

The fine galvanometer string moves in front of a narrow slot, illuminated by the small lamp fed from a battery (see illustration). An optical reproduction of the slit and wire is thrown on the sensitive retina and pupil of the eyes, one of the most sensitive devices we know of. As the messages come in, in the form of telegraphic dots and dashes—short and long signals—the quartz string is deflected back and forth correspondingly; thus the radio operator "sees" the incoming signals. A short deflection indicates a "dot," while a longer deflection represents a "dash."

The apparatus just described and here pictured serves the same function as the detector used in all radio receiving sets. It is usual therefore to connect it with some form of tuning coil or transformer, so that the outfit can be readily tuned to the proper wave length.

As the front cover illustration shows the operator holds the instrument with both hands, or only one hand, if he desires to write down the message received. This he can readily do with a little practise, keeping one eye on the instrument and the other on the message pad as he writes. A good

operator can write down a message without looking at his pen or pencil. Besides, it is not impractical to install a light weight typewriter on the aeroplane; and "touch typists" never have to look at the keyboard. Radio and wire telegraphists are daily using the typewriter in just this way, by the thousand.

The principle of the optical and photographic reception of radio signals is not new. The efficacy of the Einthoven string galvanometer in this rôle was quite thoroly tested out by the Poulsen radio experts, both in this country and abroad. The American Poulsen interests—the Federal Telegraph Company of San Francisco—

In an article in the "Cologne Gazette" on a visit to Kiel, where the dockyards are said to be mainly, but not entirely, engaged with repairing work, contains the following passage on copper and electricity:

"Copper is now used in large quantities in all ships, altho, of course, consumption is restricted as much as possible. Especially for steam piping there is no substitute for copper, and it is also needed for all purposes where high resistance to sea water and salt air is necessary.

"Over against the boiler shop is the electrical shop, which becomes every day more important with the increased use of electricity. We have already gone a long way in this direction, altho we have not yet gone quite so far as the Americans, who even drive the screw-shafts of large ships by electric motors. As regards our submarines, it is indeed much the same with us, for our submarines already consist half of electricity. The submarines are also concerned with the accumulator shop, where accumulators are repaired. Repair is not always possible, for the demands made on the accumulators in war are sometimes too great."

BOOKS FOR OUR SOLDIERS.

While furnishing books, magazines and other literature to these men, whom we are beginning to consider truly "our own," we should not forget that there are large forces in France with quite as keen a desire for American literature and with far less chance of having it satisfied. An appeal has just been issued calling attention to this need.

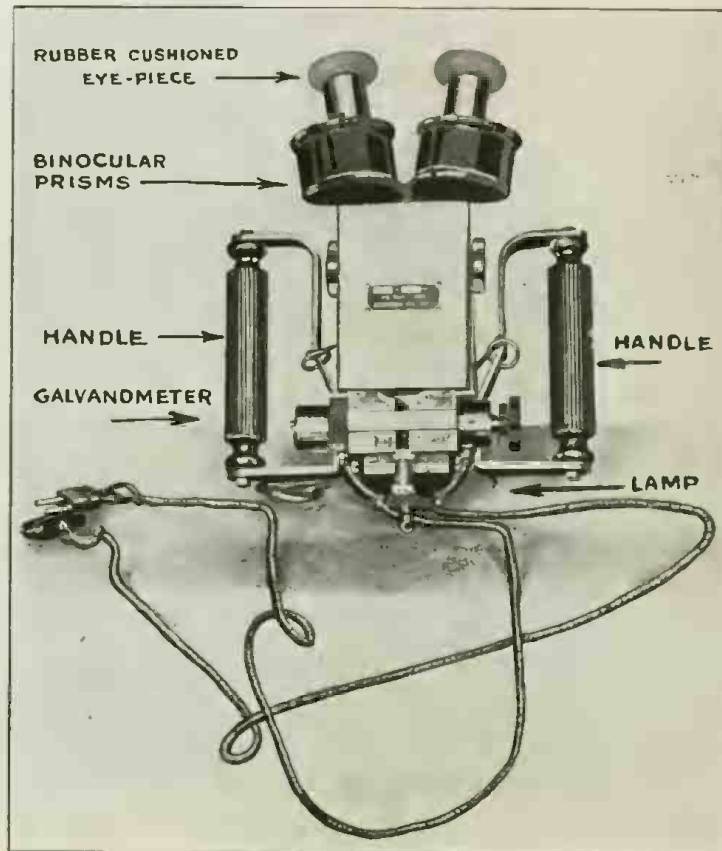
In New York City books may be put in packages marked for the "American Overseas Force" and left with any public library. They should be in fairly good condition. Magazines are wanted—and contributors are requested not to send periodicals more than two years old.

The type of books our Sammies enjoy? Fiction first; then French grammars and dictionaries, first-year French books, volumes of travel, biography, history; books on aviation, wireless telegraphy, submarines, automobiles and mechanics.

Don't forget that there are men with the overseas forces who have been educated to a taste for the best of literature. "Sartor Resartus," or "God, the Invisible King," will be received as avidly as one of E. Philip Oppenheim's novels. There are men in the army with Harvard and Yale and Cornell educations—and with a corresponding literary appetite. And the army also includes men with little schooling. Consequently you have a broad and almost unlimited field for literary charity, and don't fail to read the notice on the front cover of this journal.

THE ELECTRIC TAXI

For crowded traffic (ease of control), simplicity, ease of operating and freedom from engine troubles, the electric taxi is coming well into favor.



Here is the Latest Teutonic War Device. It Permits the Radio Operator in a Flying Machine to "See" the Wireless Signals. Thus the Engine and Other Noises Do Not Bother Him in the Least.

spent many thousands of dollars in their researches on this method of receiving radio signals, the only difference being that the movements of the quartz string were highly magnified and recorded photographically on a moving film. It is hopeful that this work may be taken up again and followed up to a successful conclusion. The United States needs the best it can get for every branch of its military service and it would seem that the apparatus here described and being successfully manufactured in Germany can certainly be duplicated, and no doubt considerably improved, in this nation of vast industrial and scientific resources.

ELECTRICITY AND WAR IN LAND OF THE "HEINIES."

The "Frankfurter Zeitung" announces that the German Government has requisitioned all electrical machinery and apparatus, and it is not now possible to buy or sell electric motors without special permission.