SPOT

NOV., 1941

PHOTOS AND MAPS BY RADIO LATEST MILITARY MARVEL

THE FLYING PHOTOGRAPHER TRAINS HIS "BIG BERTHA" AERIAL CAMERA ON A CONCENTRATION OF "ENEMY" FUEL TANKS. IN WAR-TIME TANKS WOULD PROBABLY BE HEAVILY CAMOUFLAGED

TO INDULGE in a bit of belligerent make-believe: the United States infantry, preceded by armored forces, is breaking through the enemy's lines when artillery fire from a hidden gun emplacement starts shattering the spearhead. Headquarters is notified and a reconnaissance plane is sent aloft with the Signal Corps' latest miracle machine—the radio facsimile transmitter.

Within a few minutes the flying observers have scanned many square miles of enemy-held territory and have located the battery. An aerial camera makes a picture of the guns' location and the surrounding terrain. In exactly 58 seconds a paper negative is made and, within another minute or two, a radio receiver in field headquarters is ticking off a perfect reproduction of the photograph. By means of data transmitted with the picture and a protractor, the location of the guns can be ascertained exactly. Either bombers or artillery fire then silence the offending guns and the advance continues. The offensive has not been stopped, only slightly delayed, thanks to this new, super-fast means of communicating military intelligence.

The reconnoitering transmitter can also telecommunicate sketches in such a way that they are not subject to aerial eavesdropping by the enemy. The sketch —of ammunition dumps, airfields or troop concentrations—is made on a red outline map, crosshatched with black lines. The transmitter is insensitive to the red lines and does not send them. When the sketch is received a crosshatched tracing of the original map is superimposed to complete it. Both transmitter and receiver, which have a range of many hundreds of miles, can be used in tanks, armored cars or ships, as well as in planes. Facsimile transmission makes possible the

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THIS IS AN UNRETOUCHED REPRODUCTION OF THE PICTURE RECEIVED ON THE FINCH DUPLEX AUTOMATIC FACSIMILE UNIT WITHIN A FEW MINUTES AFTER IT WAS MADE MANY MILES AWAY

perfect coordination of mechanized forces, the essence of modern warfare, by providing secret, up-to-the-minute information about enemy movements. It is the invention of a British-born American, William G. H. Finch, former assistant chief engineer of the Federal Communications Commission. After years of experimentation Finch gained success by solving the baffling problem that had stood in the way of successful facsimile telecommunication—perfect synchronization between the stylus that burns the image on the paper and the scanning movement of a tiny beam of light. The U. S. and Britain have exclusive rights to its use.

The development of the paper negative, used instead of film for speed, is done in less than a minute with the aid of a lightproof black bag and specially built developing and fixing tanks.

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The air scout places the picture, still wet, in the transmitting unit and waits for the go-ahead signal from field headquarters. Audible messages are sent on the same wavelength as the facsimiles.

In field headquarters an officer waits for the complete transmission of the picture. A stylus burns the image at the rate of eight square inches a minute; the scanning spot is .01-inch in diameter.

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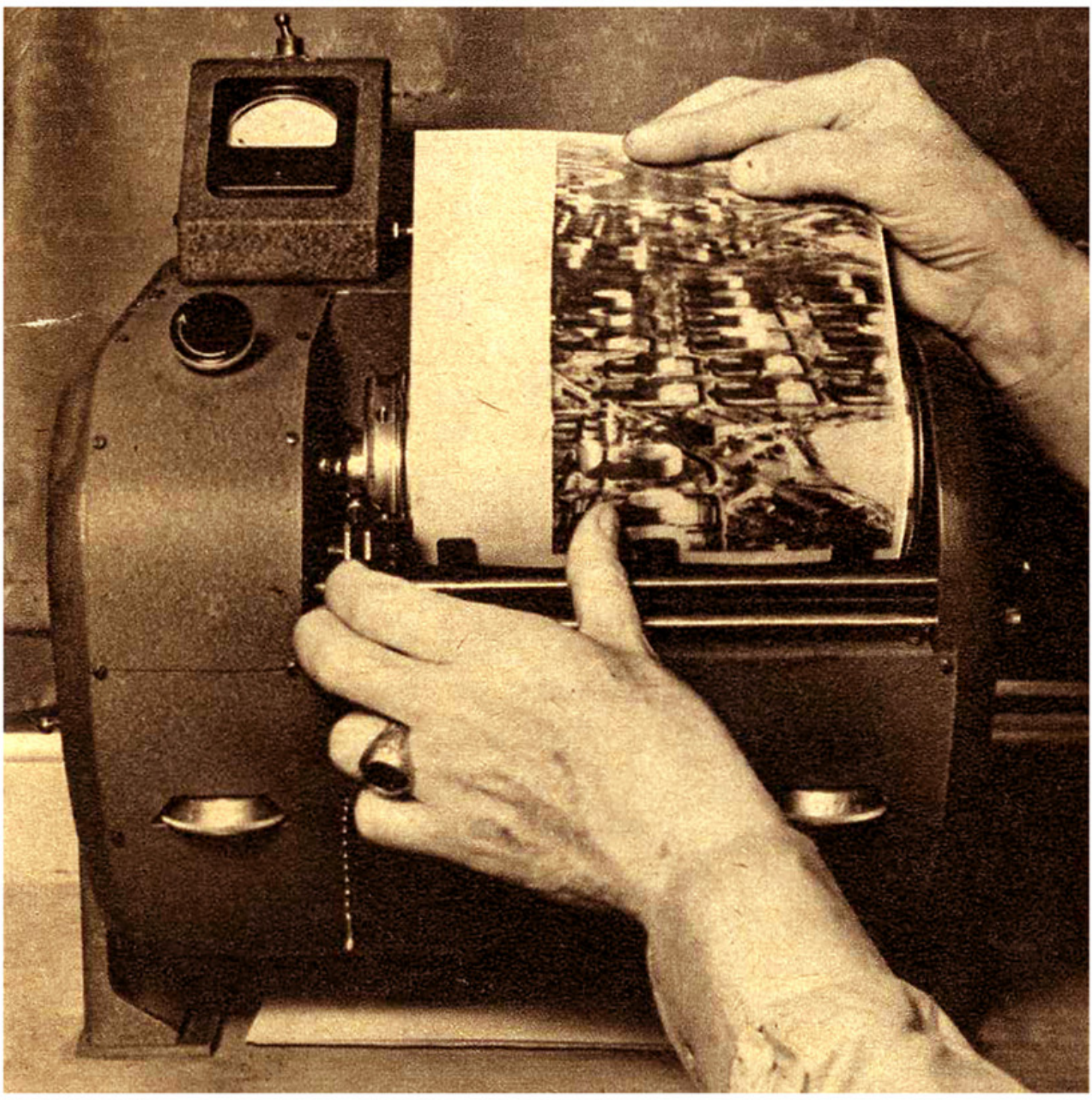
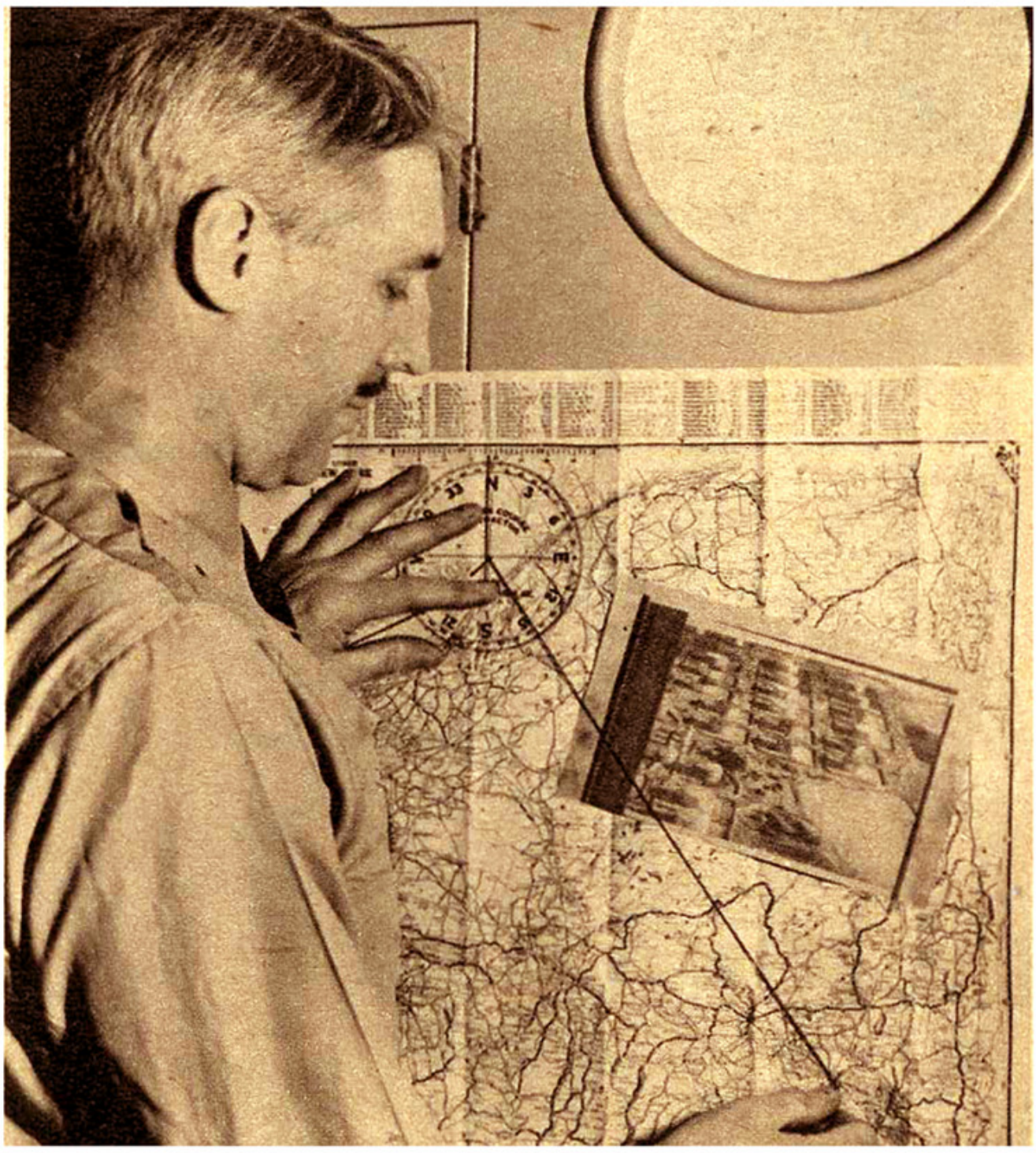


The officer in charge of the receiving equipment demonstrates how the facsimile can be removed before transmission is completed. With his left thumb he pulls the stylus from the paper and takes out the picture.



The commanding officer determines the tanks' exact position by using a protractor and measurement on a military map of enemy territory. He will then dispatch bombers to "destroy" the oil tanks.

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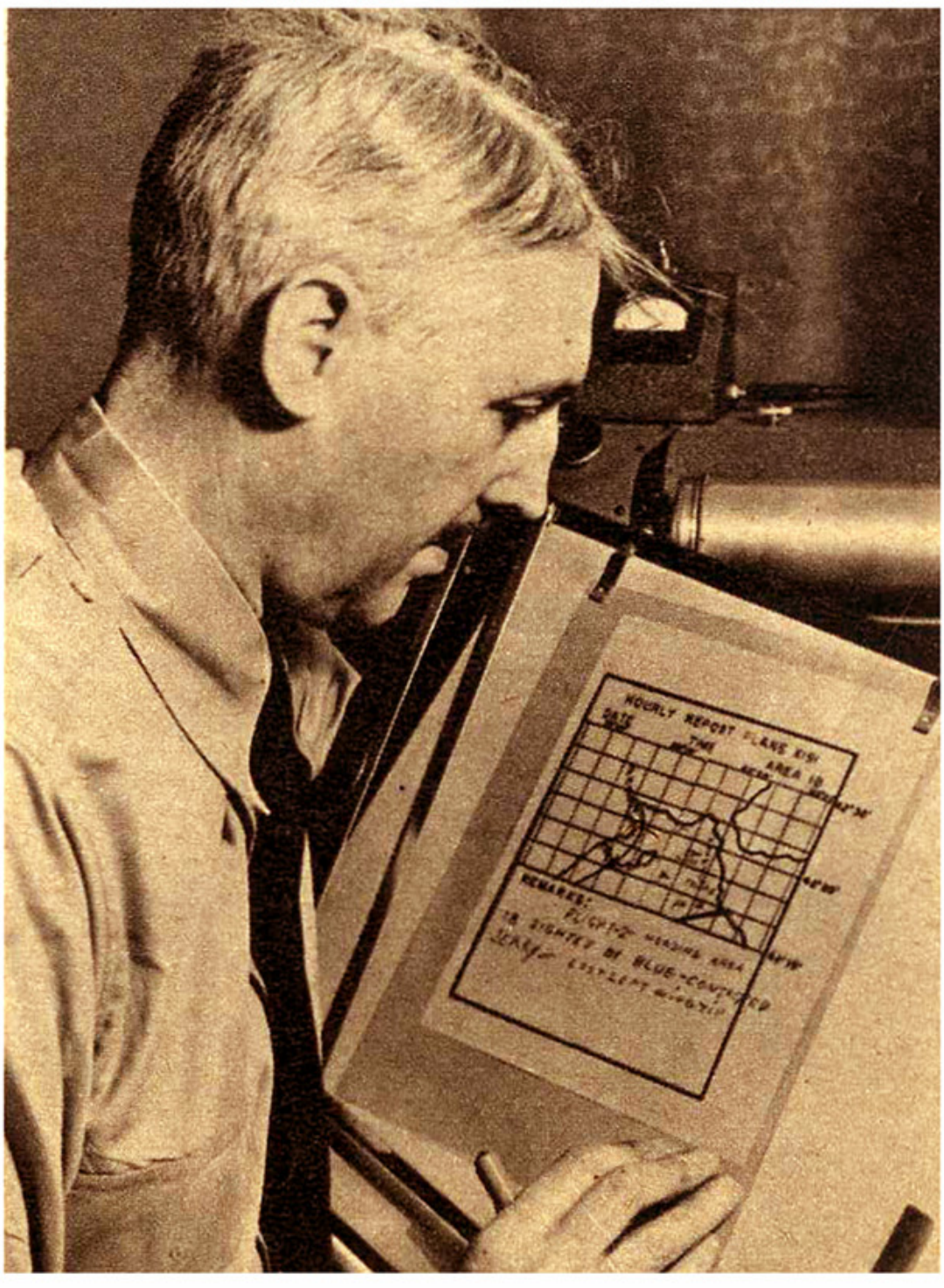

The air scout's map looks just like this but the bold outlines, indicating area, were not transmitted. The officer restores them with a transparency by matching the crossed lines.

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