FOR the first time in our military history, commanders saw as well as heard the reports of scattered scouts, instantly, fully, clearly, during the giant maneuvers of the U. S. Army recently held in northern New York State. Television donned khaki, took the field at a moment's notice, and proved that such visual means of communication can play an important role in the defense of our nation. Indeed, offensive "Blitzkrieg" now meets defensive "Blitzkrieg" as lightning-fast scouting neutralizes the all-important surprise element of the lightning-fast attack. Once again military science strikes a balance between attack and defense.

Quick to recognize the vast military significance of television, Allen B. Du Mont, one of America's leading television pioneers and head of his own company manufacturing television receivers and transmitting equipment, arranged with Army officials to send a full-equipped mobile television unit to the scene of the gigantic maneuvers. A base was established on the campus of St. Lawrence University at Canton, N. Y., and the television crew of fifteen men lost no time in getting their mobile and stationary equipment into action. Soon these television experts were flashing scenes of troop movements of the invading "Blitzkrieg" to television posts at the headquarters of the "Defending Army," with a network of FM transmitters and receivers handling the accompanying verbal reports and coordinating the ultra-modern scouting activities. [Note the use of FM—Ed.]

The main television transmitter, a 50-watt job operating on 51 1/2 megacycles, was installed in the Physics Building at the University. The television antenna was raised to the top of one of the towers of radio station WCAD located in that building. Some 200 feet away, on the college Chapel Tower, a second antenna was placed, serving as the relay link in picking up the 158 megacycle image signals transmitted by the mobile unit out in the field. The video signals thus picked up were sent via 300 feet of coaxial cable to the main transmitter for re-
The Iconoscope camera used in the Army maneuvers. All power came from batteries and portable generators.

transmission to receivers at Second and Third Corps Headquarters. The Du Mont flexible synchronizing system whereby the receiver sweeps are controlled from the transmitting end, was used, with a repetitive rate of 30 pictures per second as against the usual 60, made possible by the Du Mont "memory screen."

Television scouting falls right in with the mechanization of the modern army. A small truck carried the complete mobile television pickup equipment, followed by an Army truck carrying a gasoline-driven generator for the necessary power supply on the battlefield. The 25-watt mobile transmitter flashed its television report to the relay receiver located in the Chapel Tower at St. Lawrence University, for relaying and retransmission as already stated.

Engineers stationed in the Chapel Tower checked the images as they were received, and relayed them by coaxial cable to the main transmitter in the nearby Physics Building. There they were again monitored and then sent out to the Army officers who watched the actions with avid interest, on receivers installed at Hucvelton and DeKalb Junction, and also in Canton.

Working under the most difficult conditions of actual military action, the video boys gained invaluable experience in setting up and operating their television mobile and stationary equipment. The crew admitted they were relatively "green" at this sort of thing, and the mobile equipment hardly had its paint dry when it was rushed into battle, so to speak. Nevertheless, the simplicity of the mobile and stationary units enabled quick setups and operation, while an FM intercommunication system, also brought along, enabled the highest degree of coordination among the scattered television operators. Speaking of this FM equipment, the men kept in touch with each other and with the main transmitting quarters, at distances up to 25 miles. The FM equipment was used even in fast-moving cars dashing about the field, maintaining necessary contact all the while. By patching in on the Army telephone lines, all points in the communication network were reached.

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FM-AM Mobile Receiver
(Continued from page 21)

Blitzkrieg Television
(Continued from page 7)

The mobile or portable television pickup equipment consisted of eight metal cabinets with carrying handles and protective panel covers, plus the iconoscope camera and also the necessary power plant in the absence of a battery. Units and camera could be readily packed in an automobile. Included in this mobile equipment are the camera synchronizing generator, the shading control whereby adjustments are made to correct for excessive highlights or shadows, the camera controls and power supply, the monitor, and the line amplifier. The signals are, of course, fed either to a nearby ultra-short-wave mobile transmitter which relays the pickup to the main transmitter, or via coaxial cable or line direct to the transmitter. The units can be used as standard studio equipment, mounted in racks. In fact, the units can serve both in the studio and out in the field, in an economical dual capacity.

As for the television service range under the difficult conditions obtaining during the maneuvers, excellent pictorial detail was obtained at distances up to ten miles after final adjustments had been made. With more thorough installation, good television pictures were received up to 20 miles away from the 50-watt main television transmitter, with a 60 microvolt signal at the set antenna terminals. The images suffered some loss in detail at this ex-
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Exteme distance, due to local interference. However, up to 8 miles the picture resolution was 500 lines, originating at the studio or at a remote point connected by coaxial cable. When images originated at the mobile transmitter, which was sited by the main transmitter, considerable interference from other transmitters was experienced, and the resolution of the received images was of the order of 300 lines.

The Army officers who viewed the television scouting reports flashed on their receivers seemed highly pleased with the results. The day-time images revealed a wealth of military information, especially as the camera crew were leaving the mobile equipment truck andあってか under cover of trees, bushes and tall grass, got shot with increased pictorial detail. Night television was also essayed, using some 10 kilowatts of floodlight illumination. However, the pictures were relatively poor, since a minimum of 100 kilowatts of illumination would be necessary for satisfactory television reception.

That this television demonstration took place under the most adverse conditions, is amply confirmed in the matter of operating life. The main television transmitter, working off the local power line, frequently had to operate on a high built-in level, specifically for 115 volts. Even so, satisfactory images were put out, despite the limitations of the local power system.

The television crew worked from 16 to 18 hours each day. They set up six field installations for the reception of the television images in addition to the mobile transmitter, relay receiver and main transmitter with monitoring facilities.

In addition to pickups from the "field of battle," Du Mont engineers set up their camera at the Message Center in Canton, P.O., where pick-up points were set up in the telecasts. Among those who appeared before the camera were Major E. L. Upson, I.G.G. Buth, F.A., and Majors Anderson and Savage. Assistance in carrying out the demonstrations was graciously rendered to the video news by Col. John C. Moore, First Army Signal Officer.

The successful demonstrations were supervised by Allen B. Du Mont assisted by Richard L. Campbell who is in charge of transmitting equipment at the laboratories, as well as by Drs. Thomas T. Goldsmith, Charles Huffman, Walter Swenson, Anthony Vitele, William Sayer, Herbert Bernard, Charles Benedick, Klaus Landsberg, Newton Smalley, Robert Kessler, Raymond Lafferty, Harold Fests, and Will Balin, the former mentioned being the program director of the new Du Mont television station now being completed in New York City.

Highly pleased with the results of this first military television demonstration, authoritative sources look ahead to startling developments in this ultra-modern branch of scouting, particularly if and when television equipment is designed and built for the peculiarities of military service.

"I was hoping," Colonel Du Mont, "that we might try television scouting from the vantage point of an airplane flying over the maneuvers, but no such facilities were available. With our television technique now providing satisfactory pictorial resolution, especially when using the greater number of lines which we get with our synchronizing, halved repetitive rate, and increased screen technique, television images which compare most favorably with standard motion pictures. Thus commanding officers back at headquarters can see what is going on at the front and even in the back areas of the enemy's line by means of speed telephoto drops."

"Just a bit more stretching of the imagination, yet entirely within bounds of present-day achievement, and we have the television camera truck, whereby a command post can see that the radio-controlled crew swept bombing reptiles can be the primary target and release the lethal cargo at the precise moment."

A parallel development can take place in naval warfare, with scouting ships or planes flashing back television reports, and with crewless 'mosquito boats' or bomb-divers remotely controlled with all the energy recharged with actual sight at the scene of battle.

"It is to be hoped that in our military preparations we shall not overlook the importance of visual images which can be played by television. It is only through the mobilization of such scientific, technical and industrial assets that we can make absolutely secure the visual vulnerability in the face of potential enemies whom, until now, have had all the advantages up their sleeves to the consternation of their victims."

External Noise Silencer
(Continued from page 15)

Circuit trimmer of the preceding I.F. transformer must be realigned to response. The receiver should now operate in normal fashion, with the only change that has been made has been in the substitution of the last I.F. tube with the 6L7. The trimmer of T1 should now be adjusted for minimum noise. If a voltmeter is available this can be placed directly across R3 to ascertain when resonance is obtained.

Varying R1 will determine the amount of voltage fed into the injector grid of the 6L7 and, therefore, the amount of silencing action of the unit. The silencer incorporates a variable resistor (R6) in the cathode circuit of the 6K7 which controls the sensitivity. If you are an amateur operator and have a receiver without some means of silencing you should certainly incorporate this unit in your receiver. You will find it especially effective on the higher frequencies where man-made static of the ignition type hampers reception.

If you are a service man, here is an opportunity to increase your income. Home set manufacturers have, somehow, overlooked the fact that the growing short-wave listening public could be made very happy if some or all of the noise on the air could be eliminated. Build up one of these units for demonstration. They are easily installed in any superhet receiver using 456 kc. I.F.'s.