Broadcast being held in Studio "A." Note two Presto transcription tables in foreground and BBC record table in background.

THE AMERICAN

By KENNETH R. PORTER

RADIO NEWS War Correspondent

With the cooperation of the BBC, the Yanks in the E. T. O. now have their own private network.

AMERICAN soldiers in the European Theatre of Operations have their own private radio network now—thanks to the British Broadcasting Corporation and the U. S. Army Signal Corps.

The Yanks can tune in on Bob Hope and Jack Benny and all their other favorite radio stars almost as they did in the good old days of civilian clothes and unpowdered eggs. It's not quite like the living room at home; the programs come to them over G.I. olive drab radio sets, and listeners usually are sprawled on G.I. cots in G.I. Nissen Huts. But the programs are possibly their closest link to home, and that's important when home is some thousands of miles away.

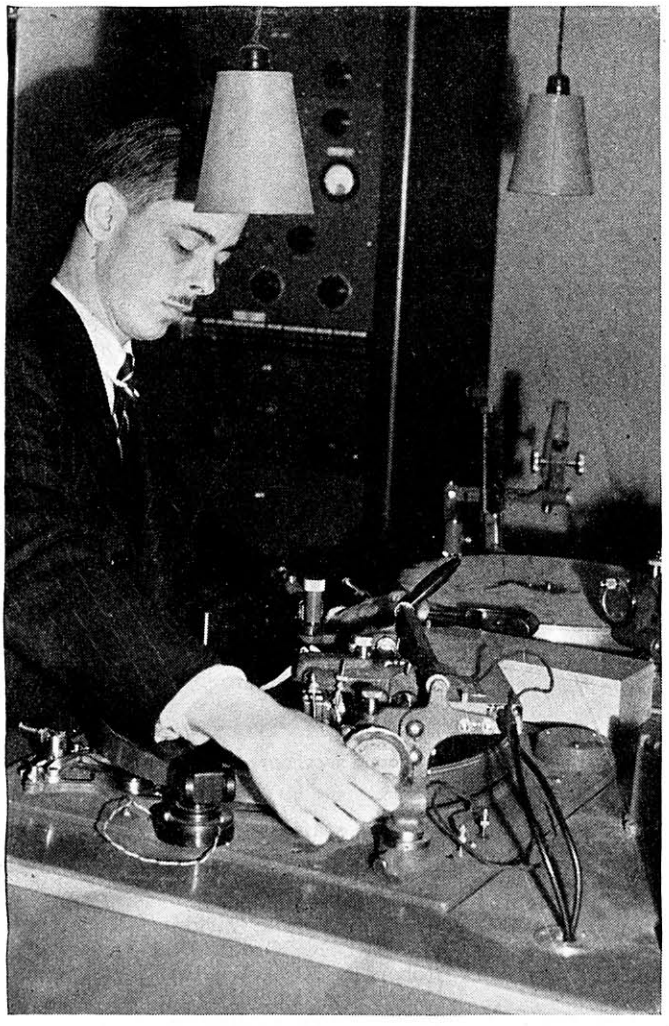
Briefly, the network comprises a series of low-power transmitters situated near United States Army installations. These transmitters are linked by telephone lines to the main studio, which receives transcriptions of the leading programs broadcast by the National, Blue, Columbia and Mutual Broadcasting Systems each week. These are augmented by recordings, news programs, BBC originations, and special G.I. shows to complete the well-rounded schedule broadcast daily by the American Forces Network.

All this, of course, would not have been possible without the generous and friendly cooperation of the BBC, which waived its monopolistic rights on radio broadcasting in Great Britain and offered many of its own facilities so that the Yanks could enjoy American programs on what the soldiers call the "G.I. Network."

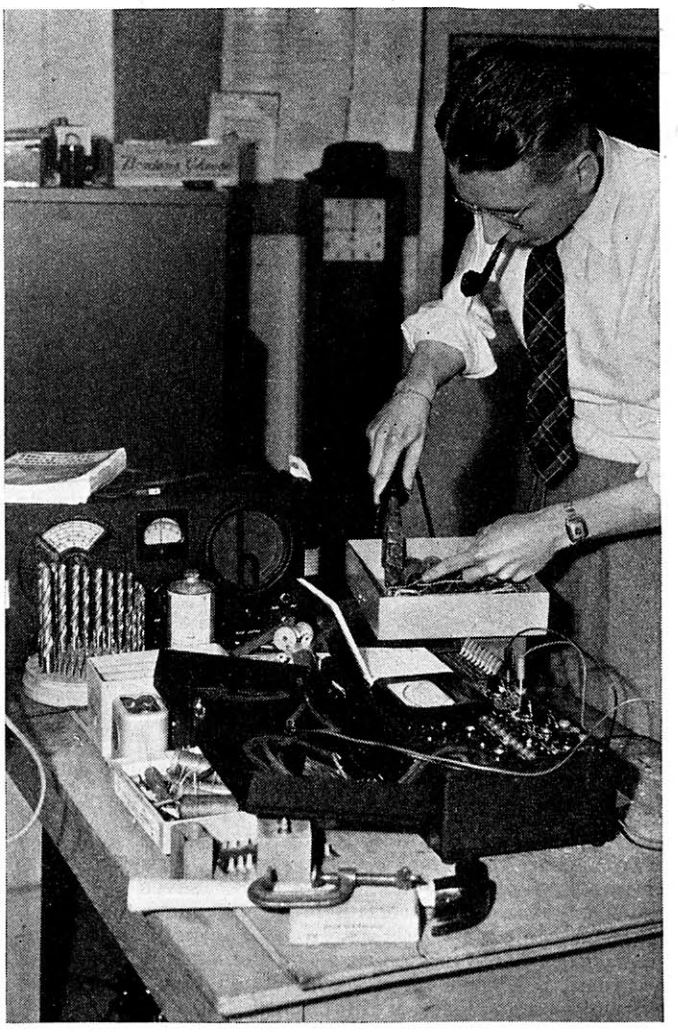
And the "G.I. Network" is just that. Officers and enlisted men of the Signal Corps are responsible for maintaining the enterprise—getting the programs through to their fellow men in khaki. To many of the Signalmen it is merely an application of their peacetime pursuits, for many of them were radio installation and maintenance men in civil life.

The program end of the network is handled by a staff of administrators, writers, directors and announcers whose Army classification cards show they made their mark in radio long before Hitler started turning the world upside down. Now they're G.I.'s who consider themselves darned lucky to be able to make such good use of their civilian experience.

No mere words can describe the planning, work, and improvisation that built the American Forces Network into the leading—and in some cases the only—form of recreation for American soldiers in this Theater.

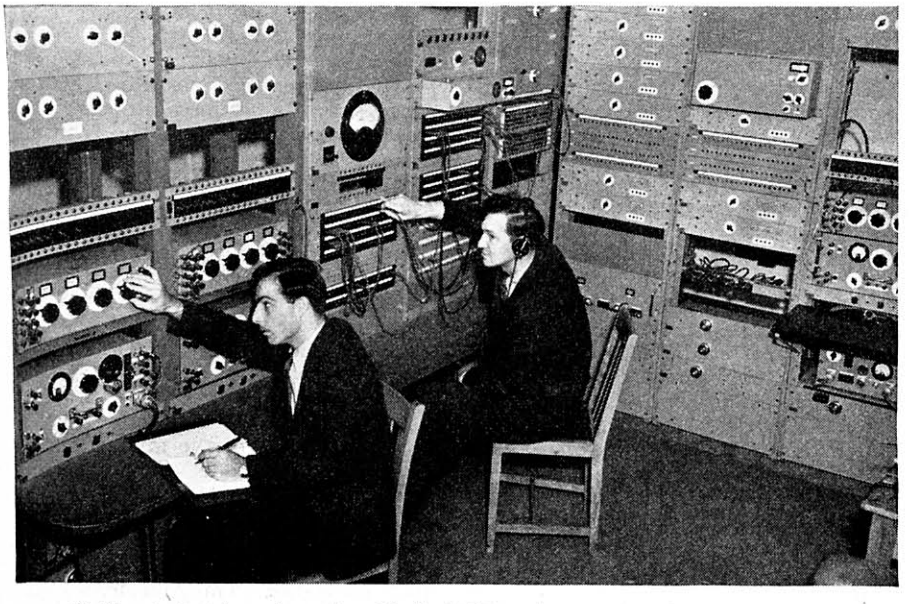


News broadcast cutting being made in recording and cutting room.



Civilian technicians are employed for radio repair and maintenance.

FORCES NETWORK

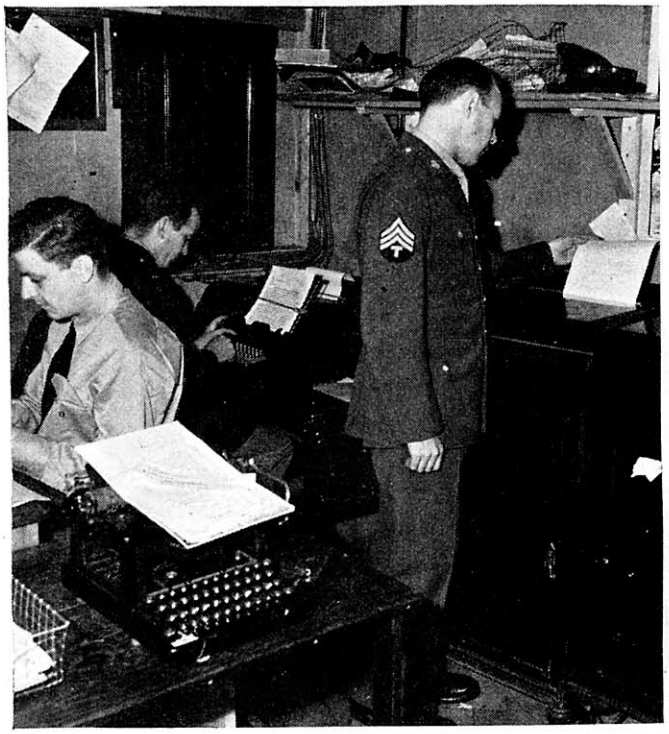


Civilian technicians, formerly with the RAF, at their posts in the control room.

The equipment finally selected, and the way that equipment has been utilized, certainly is of interest not only to radio enthusiasts, but to everyone who has a relative or friend serving with the Army in Great Britain.

Much of the political and technical work encountered in establishing a network so novel in its use and so large in scope, was handled by Mr. Brewster Morgan, chief of the OWI Radio Division and Mr. Richard Condon, chief engineer for OWI in London. These men are responsible for arrangements with BBC which permit use of the British Network's lines and of its outstanding news and entertainment features. When the Wireless Telegraphy Board, governing body of radio communication in the United Kingdom, gave its blessing, the Network's future was assured.

Keystone of the entire American Forces Network is the central studio —a former BBC emergency studio from which news broadcasts were made during the blitz period. The OWI and BBC studio engineers revamped the existing facilities, doing considerable rewiring and remodeling to equip the studio for its new job. New amplifier bays and control positions were installed along with two



Newsroom is typical of that operated by any large radio network.

Newscast being broadcast from a secondary studio over the network.

recording channels and a teleprinter news service. Inter-bay wiring was rerouted and several additional telephone cable inputs were run into the control room.

Since the entire system used by the Network is based upon its unique transmission facilities, a thorough description of the control room must be preceded by a few words about the series of transmitters installed throughout the British Isles by the Signal Corps.

Captain L. C. Sigmon, former chief engineer at KMPC in Hollywood, was in charge of installing the 50-watt transmitters and connecting them to BBC equalized lines. He was assisted in his work, especially in the adjusting phase, by Mr. T. J. Chadek of San Diego, California and Technical Sergeant Claude Fulk, both highly experienced radio men.

The transmitters are completely portable, taking up no more space than an ordinary kitchen table. They comprise a high gain speech amplifier, two-channel mixer, speech amplifier power supply and a high and low voltage power supply for the R-F section and modulation. All transmitters operate on 1402 and 1420 kilocycles. They are crystal controlled, and the Terman Woodward system of efficiency modulation is used in the two 814 tube lineup along with the 807 crystal oscillator and 807 buffer tubes. The input is approximately 250 watts.

Antenna structures and sites were selected on the basis of expediency. Most of the antenna supporting masts are of the readily demountable type which can be erected in half an hour. These are 72 feet high and support a ¼ wave "L" type antenna. Since it is desirable to keep the range of the transmitters short—a maximum of seven miles—no special ground systems were employed. A matching network incorporated in the transmitter allows power to be run into any type antenna less than ¼ wave in length.

All transmissions operate from the central studio and no facilities are provided for local announcements. Two G.I. operators, however, are assigned to maintain each transmitter station. In addition there is a permanent staff of officers and enlisted men whose job is to select sites for additional installations and to order supplies and perform the necessary clerical work. Since the number of transmitters is being increased from day to day, these Signalmen are among the busiest soldiers in the European Theater.

Besides the transmitters, which already are numerous enough to provide extensive coverage for even the most isolated outposts of Americans in Great Britain, speakers wired directly to the studio have been placed in barracks, Red Cross clubs and other places where soldiers congregate in the London area. There is no need, therefore, for a transmitter in London.

The control studio is under the direction of the Special Services Division. The radio chief is Lieutenant Colonel Charles H. Gurney, former owner of WNAX, Yankton, South Dakota, who, with Captain John S. Hayes, formerly of Mutual Broadcasting Company in New York, supervises the soldiers and civilians who make up the American Forces Network staff.

The control room and studio engineering staff is composed of former radio station and "ham" operators. These include Don V. R. Drenner, KGGF, Coffeyville, Kansas; F. Lewis, WTAR, Norfolk, Virginia; J. L. Boor, KFJI-KGIR, Great Falls, Montana; Robert L. Ellis, W60CA, Los Angeles, California; and Harold O. Wright, W9UYA, Peoria, Illinois.

Their headquarters control room which uses chiefly British apparatus, consists of ten standard rack-and-panel bays, which hold all the necessary equipment for the operation of the studios for monitoring, signaling, and transmission. A series of line amplifiers feeding a "ring main" to provide programs to the recording channels, and for monitoring to various offices also is available.

Four operating positions are maintained, only one of which is in use normally. The others are stand-by and recording feed positions. A tone source for lining-up, a limiter which feeds the normal line to the transmitter network, and various jack fields and equalizer panels are included on the bays.

A talk-back circuit is provided to Studio A, and loudspeaker monitoring is fed to Studio A, C, and the news room. Studio A is the normal feed to the network. This studio has mike channels and two Presto transcription tables, as well as a BBC TD/7 type two-position record table. Studio B also has a TD/7 (turntable desk) announcer control of the mike, signaling circuits, and phone and monitoring circuits.

Considerable difference exists in nomenclature and methods of operation between the American and the BBC networks. The American Forces

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American Forces Network

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Network uses both. Visual and signal light types of cueing are used. Equipment is referred to by American terms usually, but both terminologies exist among the engineers.

A large number of telephone cables carry programs to the control room from the BBC services and provide control lines, normal music lines, and remote lines for the Network. Mr. A. W. Leach, OWI lines engineer, working with Mr. H. B. Rantzen, head of the BBC lines department, has provided these, as well as several additional circuits for a "wired net" to various Army headquarters. The normal lines, except the "wired net" lines, are equalized and fully reversable.

All control room equipment is brought to high-level jack-fields, and inter-amplifier patching, inter-line patching, or substitution is possible through a system of "inners-to-outers" jack wiring and listening jacks. Normal lines to outlying points are BBC lines leased by OWI. Most remotes are engineered by the Outside Broadcasting Department of BBC, which provides lines for special pick-ups.

The normal control amplifier used for studio work is of considerable interest. Known as OB/A/8, it is a BBC remote amplifier, a two-stage affair with 90 DB. gain and an ingenious vi, called a PPM (peak program meter). These amplifiers now are used almost exclusively by BBC, and in conjunction with a mixer, a line amplifier, and the usual adjuncts, provide flexible and high quality studio control. A standard control position, comparable to a studio console, (such as the WE 23-A OR C) as used at the American Forces Network consists of an OB/A/8, mixer, line patching jack field, (high and low level), a D amplifier, (for cueing and monitoring), and a line amplifier which has four output channels. Each line is therefore isolated by a small no-gain amplifier stage, called by BBC, a trap valve. High-frequency pentodes are used throughout in the OB/A/8, the D amplifier, and the trap valve amplifier. This has resulted in a standardization of tube types, a most important factor in wartime.

Although an emergency Diesel-powered a.c. unit is maintained, the OB type amplifiers may be operated from batteries in event they are used on remotes, or power fails.

The limiting amplifier is used, contrary to normal practice, to feed the entire net. This is because it is impractical and uneconomical in war time to install a limiter at each transmitter location. The over-all level transmitted to line is plus 4 db. With a depth of approximately 16 db. giving a satisfactory dynamic range. Reference level is 1 milliwatt across 600 ohms.

Microphones in use at the present time are Turner dynamics, although BBC type "A" ribbons are available when bi-directional properties are needed.

Although original plans called for two recording channels only one has been installed and is in operation. Recording work is normally handled by Mr. Fred Lewis and Mr. Robert Ellis, but all OWI engineers work flexibly enough to permit rush recording in the event a regular recording man is not available. The equipment is a standard Presto bay with dual turntables. Some modification has been made in the slope controls and this has been set at world characteristics with a rather more than usual high-frequency emphasis.

Playback facilities have been wired so that programs can originate from the recording bays to the Network. All BBC programs are fed to the recording room via the D amplifiers in the control room, and any of the four control positions, working from any of the three studios may be fed there for recording. Short-wave pick-ups, or monitoring from the BBC facilities also are routed to the "ring main" and recording room. Glass base 16" and steel base 12" discs are normally used for record cutting.

So that the greatest amount of coverage may be obtained from this very complete network installation, efforts are being made to have a radio in every G.I. day room where broadcasts come within range. Several hundred small receivers have been shipped here by the Special Service Section of the Army and have been distributed to isolated posts.

Programs are obtained from several sources. The Special Service Division of the War Department records the most popular daily broadcasts of the four American networks and ships approximately 25 hours of these programs to the G.I. Network each week. Soldiers know when their favorites are to be on the air by following the program schedule printed daily in the "Stars and Stripes."

BBC shows, with special emphasis on BBC's crackerjack news programs, also are available for the Network's schedule. Yanks have come to look forward just as anxiously as their British cousins, to Big Ben's nine-o-clock chimes and the newscast that follows.

Supplementing the BBC news, the American Forces Network maintains its own battery of news teletypes and radio news processors who prepare newscasts with a distinct American angle for their soldier audiences.

During the World Series the short-wave broadcasts from New York and St. Louis were recorded in the central studio and rebroadcast to cheering soldier audiences a few minutes after the games ended. When short-wave reception permits, the leading football game of the week is recorded for re-broadcast on Sunday afternoon. The G.I.'s "eat it up."

A well-catalogued library of more than five thousand recordings ranging from Beethoven to Benny Goodman, form the basis of several excellent record programs which feature, of course, numbers requested by the listeners. Live talent programs are difficult to plan because most soldiers are busily engaged in less pleasant pastimes. However, despite the obstacles encountered, more and more talented soldiers are appearing before live mikes in the G.I. Network's studios.

There is no adequate method of measuring the morale-boosting effect of the Soldier Network. However, the volume of fan mail certainly reflects wholesale appreciation on the part of the G.I. listeners and great credit upon the Signal Corps men who are largely responsible for the Network's success.

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Commando Communications

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mitter-receiver is that it is fix-tuned to three wavelengths, any one of which can be employed by the turn of a switch. The water-proofing of the set is completed by a rubber sheath passing over the plug and socket on the panel connecting the set to the batteries, which are carried in a separate container on the operator's back.

The over-all dimensions of this set, which is used for telephony only, are approximately 12x8x4 inches. The change-over from sending to receiving is done by a press-button switch on the operating panel.

The heavier pack transmitter-receiver carried by the advancing forces has considerably longer range and is used for telegraphy (Morse) as well as telephony. It is carried on the back of one signaller and is operated by another. By means of a rotatable socket on the side of the case the sectional rod aerial can be kept vertical when it is necessary for the signaller to lie down.

One of the heavier transportable transmitter-receivers, used by the advance H. Q. and intended for stationary operation, is provided with a means of remote control. This provision makes it possible to erect the set in an advantageous position from the point of view of radiation while at the same time the operator can be concealed a short distance away. This set, which derives its power from an accumulator through a vibrator, operates on 'phones in the 19 to 31 and 4.2 to 7.5 megacycles bands.

This description of Commando signallers, and some of the apparatus they operate and maintain, proves that the normally conflicting qualities required in the fighting soldier and in the technician have been successfully combined in Commando Signals—one of the newest branches of Britain's Forces.

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