

Laboratories Develops Army Telephone Set

A portable field telephone set—one that “listens” and “talks” much better and has a number of new wrinkles to gladden the heart of G.I. Joe—has been developed by the Laboratories to meet the forward-looking program of the Signal Corps.

The new set—the first since the well-known EE-8 used in World War II and Korea—embodies all the new technical knowledge and telephone experience acquired in the last 15 years. Basically it has been modeled to a considerable extent after the new Bell System 500-set which has recently gone into production. Designed to meet the performance requirements of the Signal Corps Engineering Laboratories the field set has been markedly altered for military use and incorporates a number of special military features.

Here are some of the high-lights of the new set, in addition to its superior transmission, which G.I.'s are expected to welcome:

It is lighter in weight, about eight pounds compared to the eleven pounds of the present set, thanks to lighter weight components and the use of light weight magnesium in the container. It is smaller, too, about the size of a loaf of bread. It is rugged; tough new plastics are used for the handset, and the entire set is expected to survive parachute drops with ease. It is very flexible; different circuit arrangements are available with the flick of a switch—common battery, local battery or a combination of these. In an emergency the set operates efficiently for several miles without batteries—on voice power alone.

The handset is shaved at the receiver end so it can fit beneath a battle helmet with comfort, while it can be operated by a soldier wearing long, heavy Arctic mitts. It works effectively at 40 degrees below zero or in the heat of 130 degrees, and at altitudes over 10,000 feet. It can be dunked in water without effect; the entire set is waterproofed by a series of gasket seals. The mouthpiece, or transmitter, stands up nicely to nearby gun blast.

The signal “bell”—actually a sharp tapping sound such as a woodpecker makes—can be adjusted in loudness from complete silence, through a whisper, to a loud penetrating alarm.

Like the telephone set in your home or office, the new set is a basic unit of the military communications network. The new military set can be connected by wires directly to an-



In the new telephone set, the handset is shaved at the ear-piece end so it can fit comfortably beneath a battle helmet, and the “press-to-talk” switch can be operated when wearing Arctic mitts. Tony Prestigiacomo posed the picture.

other set, to a switchboard or, with the flick of a switch, to a remote transmitter for radio communication.

The set was developed under a contract between the Signal Corps and Western Electric. Thus the set reflects both the Laboratories' and Western's long experience in coordinating telephone development and manufacture as well as the Signal Corps' knowledge of field requirements and combat experience. It will soon undergo rigid engineering tests by the Army.

The circuitry of the new set is basically the same as that of the new Bell System 500-type set, with a powerful transmitter and an automatic equalizer to adjust this power to varying requirements; an extra sensitive receiver also controlled by the equalizer, with built-in protection against “clicks” from power surges; and other improvements to assure high-quality performance.

An example of the care and planning that have gone into the new set to make it as near perfect for the soldier in the field as is humanly and technically possible is the design of the “press-to-talk” switch on the handset. While a definite pressure is needed to push the switch down, it can be held down with relatively little pressure, a special feature aimed

to avoid undue fatigue for the user. This, too, can be operated with Arctic mitts.

The "woodpecker" calling signal is pitched at a frequency which has been found best for hearing in the presence of background noise, and one which humans can hear best even when their hearing has been dulled by combat fatigue. The possibility of reducing the signal to a whisper or even silencing it completely is highly desirable for outposts in exposed positions.

The new magneto generator for the set was furnished by the Signal Corps Engineering Laboratories. This generator is "free-coasting" and can be spun by finger-tip operation either with or without Arctic mitts.

The new set retains a special arrangement of the older set which was specifically designed for use under extreme field conditions, in this case, in very cold temperatures. On local battery operation, the set gets its power from a pair of ordinary flashlight batteries which are enclosed in the container. In very cold weather, however, such batteries become so sluggish they do not provide enough power. In the new set, arrangements are made for wiring the set to a pair of batteries which the soldier can carry in his pocket, next to his body, where it's warm enough to ensure efficient operation.

An unusual problem in the design of the set was posed by two military requirements; first, that the set be entirely waterproof and, secondly, that it be transportable at altitudes as high as 50,000 feet. The first could be

easily met by completely sealing the set with gaskets; but then, at 50,000 feet, there would be normal air pressure inside the set but very little air pressure on the outside—an imbalance that might cause serious mechanical distortion or even breakage. Bell Laboratories engineers solved the difficulty by inserting tiny ceramic valves in the set and in the handle of the handset. The ceramic—about the size of the head of a carpet tack—allows air to pass through so that air pressures inside and outside the set are the same at any altitude—and yet it keeps water out.

Labs Engineer Praised for Public Service

Edward F. Watson, Director of Telegraph Development, was honored at a testimonial dinner given him early in February at the Washington Arms Restaurant in Mamaroneck. The occasion was to mark Mr. Watson's retirement from public life last December 31, when he completed his term of service with the Town Council of Larchmont.

Active in various offices since he came to live in Larchmont in 1923, Mr. Watson has held the offices of Larchmont trustee, Mayor and Town Councilman. A representative gathering of 225 persons extolled Mr. Watson as their "Citizen No. 1" and a public official who was "conscientious, self-sacrificing and untiring" in his service to his community.

Among the awards received by Mr. Watson at the testimonial dinner was a gold police badge presented by Cecil W. Borton, chairman of the Town Police Commission, and a gold Atmos perpetual clock presented by Cornelius J. Quinn, secretary of the Police Commission. A resolution passed by the Town Council of Mamaroneck extolling Mr. Watson's virtues as a councilman was presented by Congressman Ralph A. Gamble.

Bibliography of Automatic Controls

The Bureau of Reclamation of the Department of the Interior has recently published a Bibliography of Automatic Controls prepared by F. Stenger and R. M. Ancell and designated Technical Bibliography No. 212. It lists all publications on the subject during the last thirty years, and gives a brief digest of most of the references. Requests for copies should be addressed to: U. S. Department of the Interior, Bureau of Reclamation, Federal Center, Building 53, Denver, Colorado. Attention: Librarian.



E. F. Watson, left, receives his fellow townsmen's testimonial from Congressman Gamble.