

Build a Sportset

for Football, Camp, etc.)

enjoy. Already, it has made a hit NEWS staff. And we predict that by those who want a small portable use in out-of-the-way places. It with plenty of volume, too!

Haynes

just above audibility (beyond hearing).

The signal-frequency oscillation is varied by means of the tuning condenser C1, while the quenching frequency is adjusted by the proper balance of the tapped choke L2 and its fixed tuning condenser, C4. If a constant audio squeal is heard it indicates that the L2, C4 combination is too large and should be reduced, either by using a lower capacity condenser or by removing turns from the choke L2. This choke, L2, which is not particularly critical, is best purchased in the form of a close-wound universal choke of about 20 M.H. inductance, tapped about 1/2-way from the inside (about 1/3 of the inductance). For best sensitivity the condenser, C4, should be as large as possible without causing an audio squeal. The value of all the fixed condensers in this circuit vary to some extent with different layouts, but the given values should be about right. It may be well to try varying the position of the loop tap for the best regeneration control.

Low-Cost Design

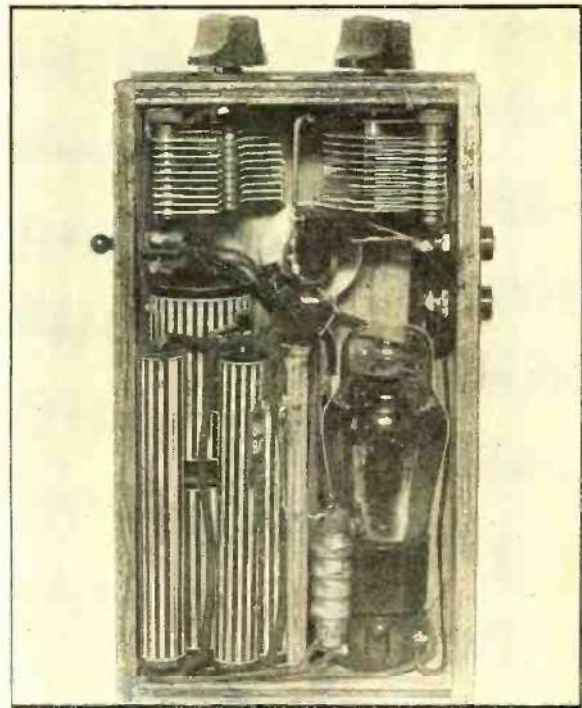
Current for the filament is supplied by two of the large, single-cell flashlight batteries such as the Burgess No. 2. If good batteries are used their life will be surprisingly long as the filament current of the 30 tube used is only .06 amps.

The 14-ohm resistor shown in the filament circuit can be easily made by winding some fine insulated copper wire on a small dowel or resistor form until the proper resistance has been reached. If you have no ohmmeter your radio store or any serviceman can wind it for you in a few minutes. Or a section of an old rheostat can be employed. The "B" or plate-circuit battery consists of four "pencil type," 2-cell, flash-light batteries (Burgess No. 22). As these are 3-volts each, a total of 12 volts is obtained when they are connected in series. The circuit will operate satisfactorily with only 3 batteries or 9 volts but there is room for the extra battery and 12 volts gives a little added improvement in volume and sensitivity.

L3 is an ordinary pie-wound 2.1 m.h. choke and is held in place by passing one of its leads through a small hole in the partition beside it; its other lead connecting directly to the plate terminal of the tube socket. The latter should be one of the small molded sockets which were so common a few years ago. If you haven't one in the "junk box" most any radio

store will probably be able to produce one, and several manufacturers still make them (I.C.A. No. 2430).

The placement of (Turn to page 249)



AS COMPACT AS IT IS USEFUL

This view, with the cover removed, gives all the details for constructing the Sportset. It can be wired in half an hour.

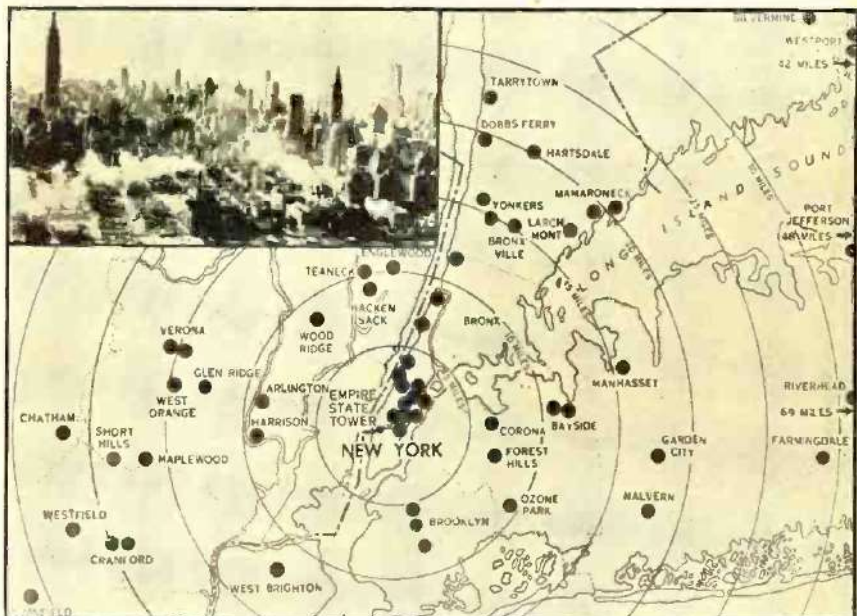
Television Range Extended

By John Strong

TELEVISION field coverage tests conducted jointly by the Radio Corporation of America and its subsidiary—the National Broadcasting Company—have proven exceptionally satisfactory to

participating engineers. The programs on the current 441-line definition are clearly and consistently received as far as 69 miles away, as verified by receiving stations as

(Turn to page 239)



this tonal purity is maintained throughout the following circuits, each carefully designed to do its job in passing to the loud-speaker the same purity provided by the detector. A 6J7 tube acts as a built-in microphone or "phono" pick-up pre-amplifier and is selected by the fidelity knob as desired. This 6J7 feeds the main a. f. amplifier, consisting of a 6L7 volume-expander amplifier, with its two 6J5 expansion-control tubes, a 6J5 driver amplifier and two 6L6 Class A prime, beam-power tubes.

The volume expander is of a new type, completely eliminating overload blasting and distortion and providing controllable expansion to fit any broadcast or "phono" recording and to expand each program exactly as needed to make it duplicate the music played before the microphone.

Independent continuously-variable bass and treble tone controls allow tones to be accentuated, equalized or attenuated exactly as desired for each individual listener.

Of course, all r.f. and i.f. trimmers are permanent, non-varying, air-dielectric of the best types obtainable, r.f. and oscillator sockets are isolantite, wave-change switches are isolantite and gang-condenser insulation is special high-frequency mycalex. All this and more that space prohibits even mention of, make for superb long and short-wave performance, while a beat oscillator, which can be set for "single-signal" c.w. selectivity, gives code-reception ability and easy short-wave station finding.

The control panel is almost as complete as a broadcast station studio. One knob controls volume smoothly from a whisper to organ volume, automatically compensated to keep tone quality uniformly perfect at all volume levels. A fidelity knob gives choices of 4, 8, 12 and 32 kc. band-pass selectivity and "phono" or "microphone" operation. Another knob controls volume expansion as desired. Separate bass and treble tone knobs give complete tonal flexibility, and another selects between the five wave-bands. Tuning is through a 9-inch, full-vision, color-identified lance dial, the knife-edge pointer of which permits readings that eliminate usual parallax error. The tuning knob automatically selects 16:1 and 80:1 ratios and leaves nothing to be desired for easy and precise short-wave tuning. On the relogging, illuminated, band-spread dial seen through the window just above the tuning knob each wave-band is spread out to a length of over eight dial-feet—spreading usually crowded short-wave bands out over inches, not just a few degrees, or its 0-to-200 degree scale.

Television Range is Expanded

(Continued from page 203)

far away as Riverhead, L. I. The proximity of this Long Island town to the Empire State Building in New York, where the transmitting antenna is located, is indicated on the accompanying map together with locations of other towns within the service area of the sight-and-sound station.

Daily transmissions are being made to some seventy-five receivers in the homes of RCA and NBC engineers and executives. These are distributed in all locations marked off on the map.

The photo insert denotes the great height of the Empire State Tower at the left—the highest antenna point in New York City—which offers great advantages to the video station.

The "Tiny-Tot"

(Continued from page 215)

supply unit certainly helps in making a neat, compact assembly and its operation leaves nothing to be desired.

The r.f. tank circuit, with its associated leads to the grid and plate of the 45, is extremely important. It must be rigid and compact, but still not overcrowded. It is just a question of adopting a mechanical layout which will permit the desired electrical design. In this particular case the tuning condenser is mounted on a small panel of hard rubber, or other good high-frequency insulating material, which is fastened to the chassis with a bracket at the bottom. The r.f. choke, which connects to the center tap of the tank coil, is mounted securely on the back of this panel with a light, flexible lead to the coil. The latter is soldered directly to the tuning condenser terminals and placed so that it is a little more than its own diameter away from everything. The top is the grid end.

The tuning condenser is 20- mmfd., double-spaced, so that its capacity will be less affected by vibration and jolts. The two outside plates should be removed if good band-spread is desired. 10 mmfd. is all the tuning capacity that should be used at these frequencies.

If you don't already possess one; build, buy, or borrow a field-strength meter of some description. Do not depend on resonance indications on the milliammeter too much. This advice is particularly applicable to mobile transmitters. You are liable to find all kinds of resonance points on the milliammeter and it may be anything between the front and rear bumpers that is developing that nice, juicy current loop which you are trying to place on the antenna. (Next month, in the third article of this series, a description of a complete, modern, car installation will be presented, including details of the wiring, antenna arrangement, etc. In this installation the "Tiny Tot" receiver is mounted in the glove compartment on the dash and the transmitter in the trunk. The installation is so arranged that everything is controlled from the receiving position—The Editors)

Parts List

- C1—Hammarlund, type MEX, Isolantite trimmer, 30 mmfd.
- C2—Hammarlund, type MC-20-MX, double-spaced variable, 20 mmfd.
- C3—Solar, .00025 mfd., mica
- C4—Mallory, type OT459 tubular condenser, .005 mfd., 800 v. a.c.
- C5—Mallory, type TP420 tubular, .25 mfd., 600 v.
- C6, C8—Mallory, type TN112 dual electrolytic, 55 mfd., 35 v.
- C7—Mallory, type TP415 tubular, .05 mfd., 600 v.
- C9—Solar, .00025 mfd., mica
- C10, C11—Mallory, type HS692, 8 mfd., 600 v.
- C12—Solar, .001 mfd., mica
- R1—10 ohm, 2 watt
- R2—1 ohm, 10 watt, adjustable
- R3—1. R. C. 50,000 ohms, 1 watt
- R4—1. R. C. 500 ohms, 1 watt
- R5—Vaxley, type Y250MP, ¼ meg. potentiometer
- R6—1. R. C. 3,000 ohms, ½ watt
- R7—1. R. C. 30,000 ohms, ½ watt
- R8—1. R. C. 5,000 ohm, ½ watt
- RFC—Grid leak form wound full with single layer of No. 28 d.s.c. wire
- CH1, CH2—U.T.C. chokes, 150 ma., 10 henry
- T1—R.F. tank coil, 6 turns No. 14 enam. wire, ¼-inch diam.
- T2—U.T.C. mike transformer, type CS-5
- 1—Mallory, type VP552 "Vibrapak" synchronous vibrator power supply, 300 v., 100 ma.
- 2—Vaxley, type A-2, midget jacks
- 2—Eby, octal wafer sockets
- 1—Eby 3-prong plug connector (male and female)
- 1—Hammarlund, 4-prong Isolantite socket
- 1—National, type BM dial, scale 100-0-100
- 1—I.C.A., No. 3827 cabinet, 10 by 10 by 8 inches
- 1—I.C.A., No. 1561 chassis, 9½ by 7½ by 3 inches
- 2—Panel feed-through insulators
- 1—20 ampere fuse and holder



PERFECT FOR SOUND TRUCKS
Yet Can Be Used Anywhere

Operates on 110V. AC or 6 V. DC



Model MP-530 Hcs

- Plug-in Power Pack for either 6 Volt DC or 110 Volt AC operation.
- Hand Type Crystal Microphone
- Phonograph and High Fidelity Pickup Built into Amplifier
- Two Heavy Duty 8" M. Speakers
- Mixes Microphone and Phonograph. Tone Control also incorporated
- Economically Priced

Model MP-530 is designed to answer the problem of one sound system that will perform anywhere. This is the one system that all dealers should own. It will take care of any kind of parental demand, inside auditoriums, outside pavilions, sound trucks, roadside stands, camps, water fronts. Handles any size to approximately 5000 people—outdoors—twice this number indoors.

Everything you need is included—even a phonograph is built into the amplifier. Get into this fast-growing sound market today.

WEBSTER-CHICAGO INTER-OFFICE COMMUNICATING SYSTEMS
Plastic Cases
Choice of Colors



Model OCM



Made in 2-station and multiple-station systems with all variations. The Multiple System shown here is fast becoming the most popular. Dealers find that for a slight additional cost, customers can add more stations at a later date, should expansion make it desirable.

WEBSTER-CHICAGO
Section 6-6, 5822 Bloomingdale Ave., Chicago, Ill.

Please send me more information on:

- Model MP-530 All Purpose Sound System.
- Inter-Office Communicating System.
- I am also interested in.....

Name.....
Address..... State.....
City.....