

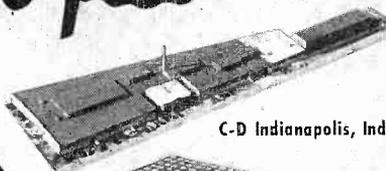
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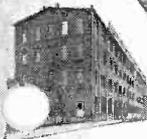
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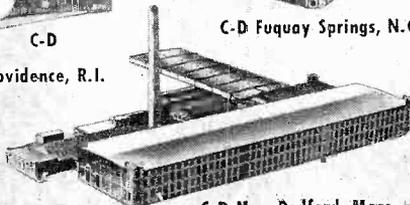
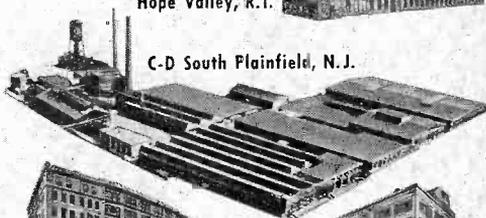
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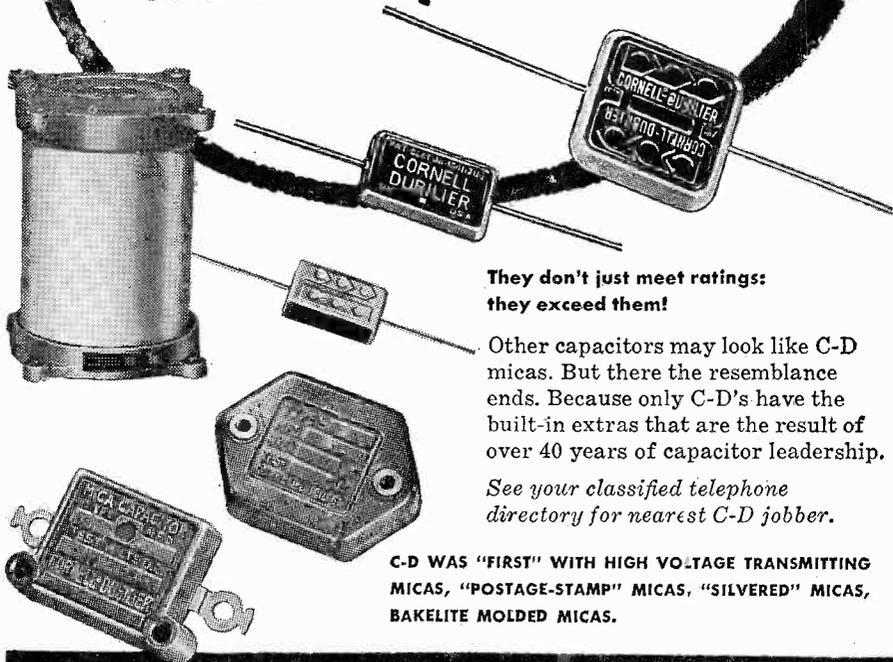
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## A BATTERY-OPERATED GRID-DIP METER

The theory and applications of the grid-dip meter are so well known that neither will be reviewed here. Many constructional articles have described conventional instruments of this type, and several commercial models are available as manufactured instruments and in kit form. Various technical and semi-technical books describe the use of the grid-dip meter in checking resonant frequency, capacitance, and inductance, and its use in certain transmission line measurements. The grid-dip meter has found some application too in television as a marker generator and as a bar generator.

The grid-dip meter described in this article has the advantage of complete isolation. Being operated entirely from self-contained batteries, it removes any of the inconveniences which might arise from a power-line connection. Some of the advantages accruing from battery operation are the ability to operate at locations which are remote from the power line, greater freedom of movement because of absence of the trailing line cord, and elimination of r. f. coupling through the power line to other equipment under test. By restricting the tubes to a single oscillator and avoiding any bleeder or

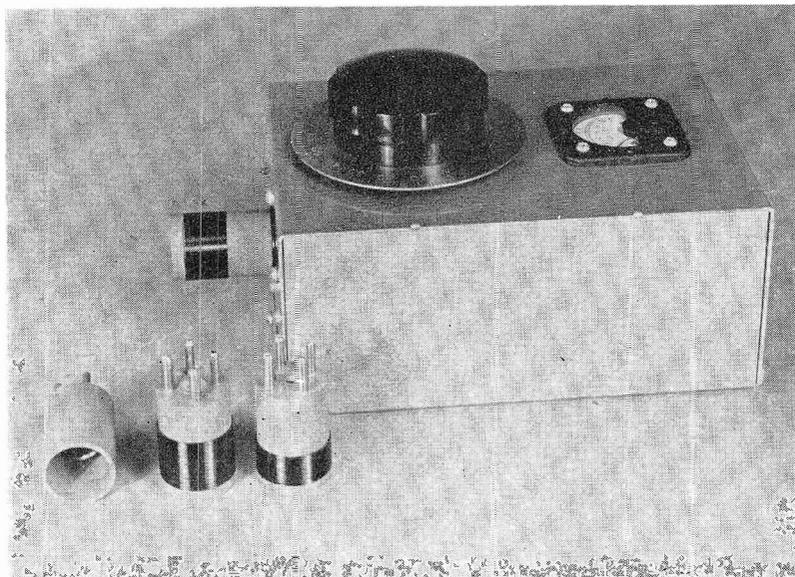


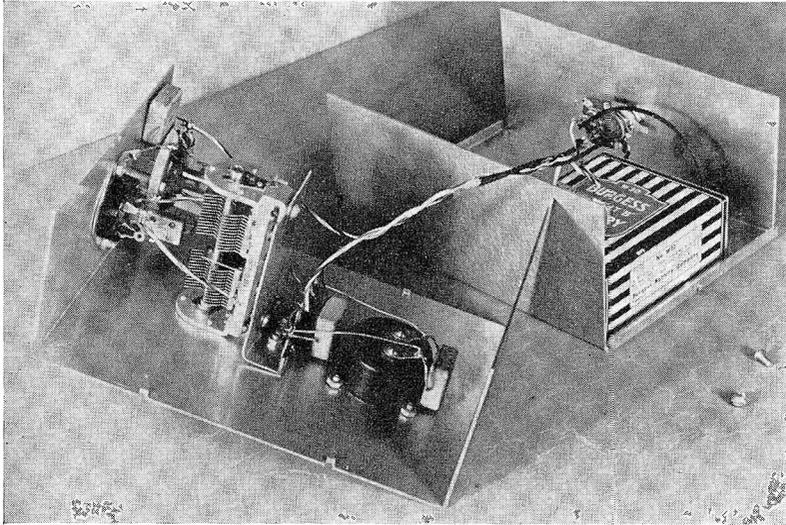
Fig. 1. External View of the Grid-Dip Meter with Experimental Coils. The small, battery-operated instrument is light enough to be held in one hand while being operated.

voltage divider resistors, battery economy is effected.

With the coils specified in this article, the instrument covers the range 2 to 140 megacycles in four ranges: 2-6, 5-15, 14-46, and 45-140 Mc. The range can be extended in either or

### Instrument Circuit

The complete schematic of the grid-dip meter is given in Figure 3. This will be recognized as a Colpitts-type circuit. This oscillator arrangement permits use of 2-terminal coils; a definite advantage, since tapped coils often



**Fig. 2. Internal View, showing construction and wiring. Compare with the layout sketch, Fig. 4, for identification of parts and battery location with respect to meter and tuning capacitor.**

both directions by means of additional coils. A higher inductance than that afforded by Coil A (See accompanying Coil Table) will extend the low-frequency end of the range downward from 2 megacycles. A smaller inductance than that afforded by Coil D will extend the range upward from 140 Mc.

The instrument is small and light enough to be held comfortably in one hand, while being adjusted with the other hand. Its coils are small enough to be "probed" into reasonably close quarters.

introduce performance difficulties in duplicate instruments.

Tuning is accomplished by means of a midget split-stator, 100 uufd.-per-section variable capacitor,  $C_1$ . This places an effective total capacitance of 500 uufd. across the coil. Coils are of the plug-in type.

For efficient isolation of the tuned circuit from the d. c. supply, the tube grid is capacitance-coupled through the 100-uufd. capacitor,  $C_2$ , and the plate through the similar capacitor,  $C_3$ . Resistor  $R_1$  is the grid leak. The

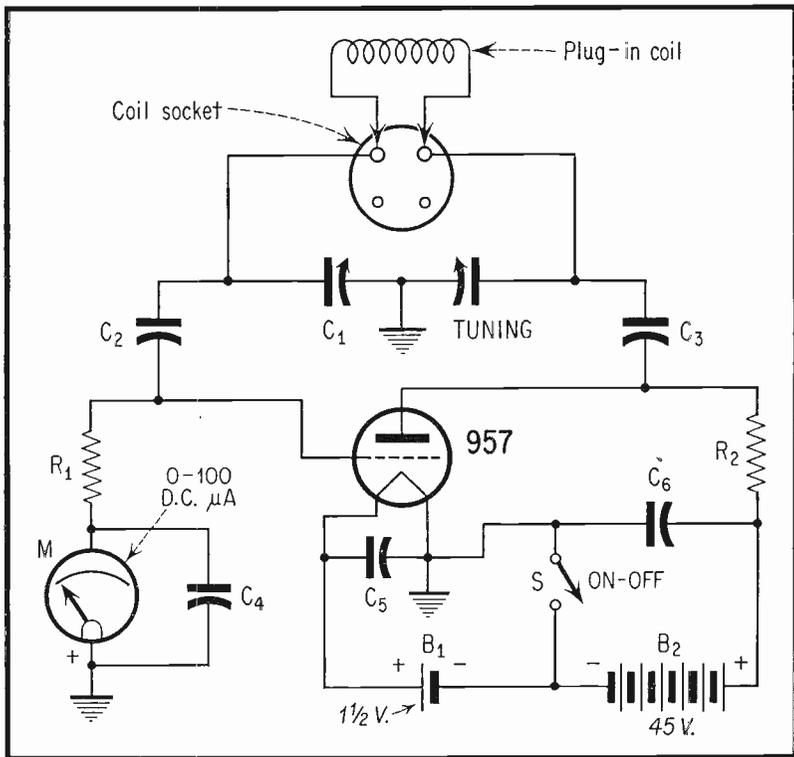


Fig. 3. Complete Circuit of the Grid-Dip Meter.

plate resistor,  $R_2$ , serves as the plate load, as well as securing partial current regulation of the plate ( $B+$ ) supply.

A battery-operated, filament-type acorn tube, Type 957, is employed. This tube plugs into the standard 5-contact acorn socket.

Filament bypassing is essential and is accomplished by means of the 0.1-ufd. mica capacitor,  $C_5$ . Other essential bypass capacitors are  $C_4$  across the meter, and  $C_6$  shunting the B-battery. Both are 0.01-ufd. mica units.

The meter is a miniature 0-100 d. c. microammeter. While a small-sized

( $1\frac{1}{2}$ -inch-diameter) instrument, for maximum space saving, is shown in the grid-dip meter here, see Figures 1 and 2, any medium-sized meter (such as obtainable in some war surplus stocks) can be used. Its depth however must not interfere with the self-contained batteries.

The tube filament is supplied by a single jumbo-sized flashlight cell. This  $1\frac{1}{2}$ -volt unit is designated  $B_1$  in Figure 3. The plate voltage is furnished by the small-sized 45-volt B-battery,  $B_2$ . Smaller-sized B-batteries than the one shown will not give good operating life in this instrument.

A single-pole, single-throw switch, S, is adequate for switching the power supply on and off. No plate or grid current can flow when the tube filament is extinguished, therefore no switch contacts are needed in the B-battery circuit.

The author has not found r. f. chokes to be necessary in any part of the circuit, and they undoubtedly will not be required in duplicates of this grid-dip meter if the recommended layout (See Figure 4) is followed. Deviations from this arrangement, however, might introduce r. f. coupling and transmission difficulties which best might be corrected only by r. f. chokes in grid, plate, or filament circuits.

The circuit is a reasonably stable and dependable oscillator, and the

acorn tube provides operation continuously throughout the specified operating range of the instrument.

No pilot lamp, blinker, or other ON signalling device has been included, in order to keep battery drain at the lowest possible level. To prevent untimely burnout of the batteries, the operator, therefore, must diligently switch-off the instrument when it is out of use.

### Mechanical Construction

**Coil Winding.** The coils are wound on small 4-pin, 1-inch-diameter low-loss phenolic forms (National Type XR-1). All are closewound, with the exception of Coil D (45-140 Mc.). See the accompanying Coil Table for

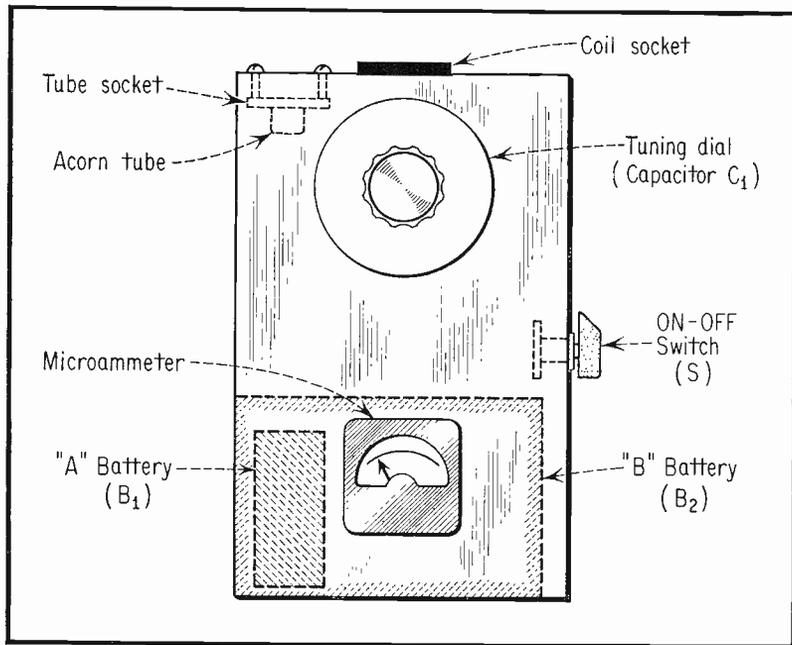


Fig. 4. General Layout of Grid-Dip Meter.

winding specifications. Since stray capacitances in individual instruments differ considerably, it may be necessary to vary the number of turns in the coils (1 or 2 turns in one direction or the other) in order to cover the frequency ranges given in the Coil Table.

Coil D, for the highest-frequency range, is a single "hair-pin" loop of No. 14 bare copper wire. Its total over-all height, including the ends inside the prongs of the coil form, is 2 inches. The width of the hair-pin is 1/2 inch. It undoubtedly will be necessary to adjust the inductance of this coil. This may be done in the following manner: squeezing the hair-pin together will raise its inductance; spreading it apart will lower the inductance.

In each instance, the two large pins of each coil form are used for coil connections.

**Instrument Construction.** The grid-dip meter is built into an aluminum chassis-box 7" long, 5" wide, and 3" high. The box breaks apart into two square-U sections. The tuning capacitor, microammeter, coil plug, and tube socket are mounted on the top section. The

batteries are held in the bottom section and the ON-OFF switch is mounted on its right side. Figure 4 shows the general layout arrangement, and the photographs (Figures 1 and 2) show details of construction.

The split-stator tuning capacitor normally requires only a single 3/8-inch shaft mounting hole. However, this component is held also by a small aluminum bracket (visible in Figure 2) for additional bracing and stability. This capacitor is mounted close to the "nose-end" of the case. The diameter of the tuning dial, attached to the shaft of the tuning capacitor, is the only factor limiting how close the capacitor can be mounted to the nose of the box.

The tuning dial seen in Figure 1 is a 3-inch-diameter type (National 0). The author did not find a vernier to be necessary, although it admittedly would be a refinement. An individual builder can satisfy his own desires in this direction. As apparent in Figure 1, the plain 180-degree dial scale is employed here and is used in conjunction with several tuning curves plotted for the frequency ranges of the coils.

COIL TABLE

Coil	Frequency Range	Winding Specifications
A	2-6 Mc.	85 turns No. 30 enamelled wire close-wound.
B	5-15 Mc.	33 turns No. 22 enamelled wire close-wound.
C	14-46 Mc.	8 turns No. 22 enamelled wire close-wound.
D	45-140 Mc.	Hair-pin loop of No. 14 bare copper wire. Height 2" including ends of hair-pin inserted in prongs of coil form. Width: 1/2-inch.

All coils wound on 1-inch-diameter low-loss phenolic forms (National XR-1).

A direct-reading frequency dial can be made for faster tuning, if desired.

The coils plug into a standard 4-pin tube socket mounted in the "nose end" of the case. This socket is seen in Figures 1, 2, and 4. The two large-pin contacts of the socket are used for coil connections. Since the tuning capacitor is mounted close to the end of the case, the two leads from the coil socket terminals to this capacitor can be kept short.

A ceramic-type acorn tube socket is employed. This socket is supported from the nose-end of the case by means of long 6-32 screws and mounting pillars, and may be seen in Figure 2. The approximate position is shown also in Figure 4.

The 1½" diameter microammeter clears the B-battery with good room. Note from Figure 2 that bypass capacitor C<sub>4</sub> is soldered directly to the lug-type terminals of the meter. Battery leads of hookup wire are simply twisted (See Figure 2) and are pulled neatly to one side, out of the vicinity of the tuning capacitor, as the two halves of the box are fitted together.

A thin "tone-control-type" wafer switch is used for the ON-OFF function. This component is mounted on the right-hand side of the bottom half of the box, near the center region, so as to clear the B-battery. This arrangement is shown in Figure 2. A wafer-type switch was chosen because of its small space requirement.

The B-battery rests on the floor of the bottom half of the box. The A-battery is placed on top of the B-battery. Figure 4 shows this arrangement. Both batteries are secured to the box by means of flat phosphor bronze strips, not shown in Figure 2.

## Calibration

The completed grid-dip meter is calibrated best against an **unmodulated** r. f. signal generator or test oscillator of good accuracy. Fundamental frequencies of both the generator and grid-dip meter should be employed.

Both the signal generator and grid-dip meter must be loosely-coupled into a crystal diode detector circuit which is followed by an audio amplifier. This is the usual beat-note detector-amplifier arrangement described so often in the literature.

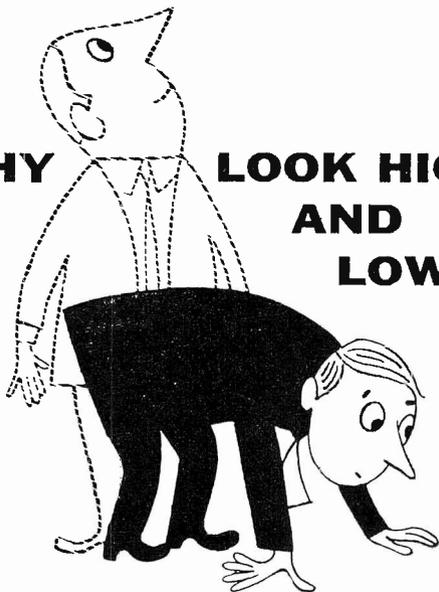
The procedure is first to set the grid-dip dial to one extreme of its scale, and then to "follow it up" with the signal generator, using zero beat to determine the exact frequency to which the grid-dip dial is set. The procedure is repeated at as many calibration points as possible, with each coil.

From this calibration data, tuning curves may be drawn, or a direct-reading frequency may be prepared.

## PARTS LIST FOR FIGURE 3

- B<sub>1</sub>—1½-volt jumbo-size flashlight cell — Burgess Type 2
- B<sub>2</sub>—45-volt "B" Battery — Burgess W30
- C<sub>1</sub>—Dual 100-uufd. midget variable — Hammarlund HFD-100
- C<sub>2</sub>, C<sub>3</sub>—100 uufd. midget mica (C-D Type 5W 5T1)
- C<sub>4</sub>, C<sub>5</sub>, C<sub>6</sub>—0.01 ufd. mica (C-D Type 1D 3S1)
- M—Miniature 0-100 d. c. microammeter — International Instruments 1½"
- R<sub>1</sub>—10,000 ohms ½ watt composition
- R<sub>2</sub>—33,000 ohms ½ watt composition
- S—S. p. s. t. wafer switch

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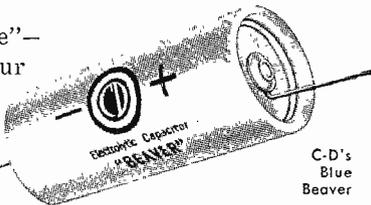
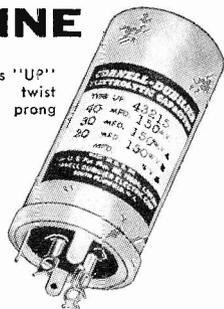


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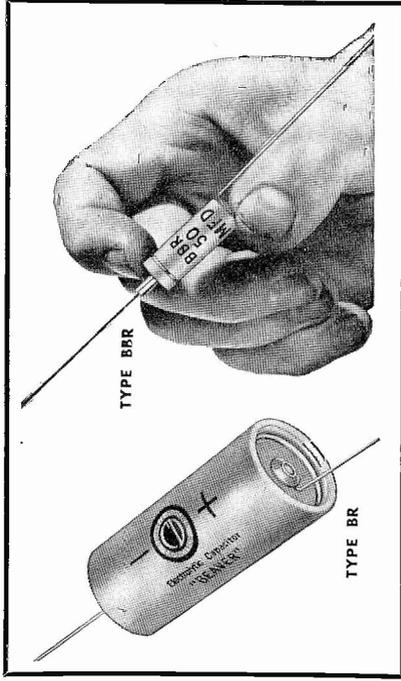
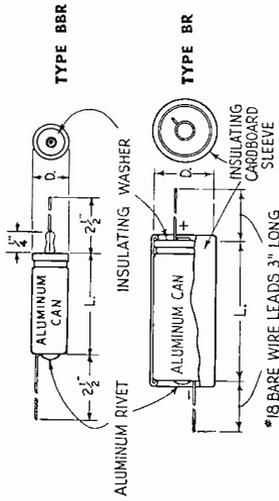
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<b>BBR 50-3</b>				
50	5	6 Volts 3/8 x 1 1/8	.95	.57
<b>BBR 5-6</b>				
5	25	3/8 x 1 1/8	.80	.48
<b>BBR 25-6</b>				
25	50	3/8 x 1 1/8	.85	.51
<b>BBR 50-6</b>				
50	100	3/8 x 1 1/8	.95	.57
<b>BBR 100-6</b>				
100	250	3/8 x 1 1/8	1.20	.72
<b>BBR 250-6</b>				
250	100	1 1/2 x 1 1/8	1.35	.81
<b>BBR 100-15</b>				
100	100	1 1/2 x 1 1/8	1.25	.75
<b>BBR 10-25</b>				
10	20	3/8 x 1 1/8	1.00	.60
<b>BBR 20-25</b>				
20	25	3/8 x 1 1/8	1.00	.60
<b>BBR 25-25</b>				
25	50	3/8 x 1 1/8	1.10	.66
<b>BBR 50-25</b>				
50	100	3/8 x 1 1/8	1.35	.81
<b>BBR 100-25</b>				
100	1	50 Volts 3/8 x 1 1/8	.90	.54
<b>BBR 1-50</b>				
1	2	3/8 x 1 1/8	.90	.54
<b>BBR 2-50</b>				
2	4	3/8 x 1 1/8	1.00	.60
<b>BBR 4-50</b>				
4	5	3/8 x 1 1/8	1.00	.60
<b>BBR 5-50</b>				
5	10	3/8 x 1 1/8	1.00	.60
<b>BBR 10-50</b>				
10	25	3/8 x 1 1/8	1.05	.63
<b>BBR 25-50</b>				
25	10	3/8 x 1 1/8	1.10	.66
<b>BBR 10-90</b>				
10	16	1/2 x 1 1/8	1.10	.66
<b>BBR 16-90</b>				
16	4	1/2 x 1 1/8	1.00	.60
<b>BBR 4-150</b>				
4	8	1/2 x 1 1/8	1.05	.63
<b>BBR 8-150</b>				
8	10	1/2 x 1 1/8	1.05	.63
<b>BBR 10-150</b>				
10	12	1/2 x 1 1/8	1.10	.66
<b>BBR 12-150</b>				
12	16	1/2 x 1 1/8	1.15	.69
<b>BBR 16-150</b>				
16	20	1/2 x 1 1/8	1.20	.72
<b>BBR 20-150</b>				
20	4	250 Volts 1/2 x 1 1/8	1.00	.60
<b>BBR 4-250</b>				
4	8	1/2 x 1 1/8	1.15	.69
<b>BBR 8-250</b>				
8	12	1/2 x 1 1/8	1.25	.75
<b>BBR 12-250</b>				
12	1			
<b>50 V. D.C.</b>				
25	1.00			
50	1.10			
<b>150 V. D.C.</b>				
4	1.00			
8	1.05			
10	1.05			
12	1.10			
16	1.15			
20	1.20			
25	1.25			
30	1.30			
40	1.35			
50	1.40			
60	1.50			
80	1.60			
100	1.75			
150	1.90			
<b>250 V. D.C.</b>				
4	1.00			
8	1.15			
12	1.25			
16	1.30			
20	1.35			
30	1.45			
40	1.55			
50	1.70			
60	1.80			
<b>350 V. D.C.</b>				
4	1.05			
8	1.20			
12	1.30			
16	1.40			
20	1.45			
30	1.55			
40	1.70			
50	1.80			
<b>450 V. D.C.</b>				
1	1.10			
2	1.10			
4	1.15			
8	1.25			
10	1.30			
12	1.35			
16	1.40			
20	1.45			
30	1.55			
40	1.70			
50	1.85			
<b>BR 145</b>				
1	1.10			.66
2	1.10			.66
4	1.15			.69
8	1.25			.75
10	1.30			.78
12	1.35			.81
16	1.40			.84
20	1.45			.87
30	1.55			.93
40	1.70			1.02
50	1.80			1.08
<b>BR 435</b>				
4	1.05			.63
8	1.20			.72
12	1.30			.78
16	1.40			.84
20	1.45			.87
30	1.55			.93
40	1.70			1.02
50	1.85			1.11
<b>BR 835</b>				
8	1.20			.72
12	1.30			.78
16	1.40			.84
20	1.45			.87
30	1.55			.93
40	1.70			1.02
50	1.85			1.11
<b>BR 1235</b>				
12	1.30			.78
16	1.40			.84
20	1.45			.87
30	1.55			.93
40	1.70			1.02
50	1.85			1.11
<b>BR 2035</b>				
20	1.45			.87
30	1.55			.93
40	1.70			1.02
50	1.85			1.11
<b>BR 3035</b>				
30	1.55			.93
40	1.70			1.02
50	1.85			1.11
<b>BR 4035</b>				
40	1.70			1.02
50	1.85			1.11
<b>BR 5035</b>				
50	1.85			1.11
<b>BR 145</b>				
1	1.10			.66
2	1.10			.66
4	1.15			.69
8	1.25			.75
10	1.30			.78
12	1.35			.81
16	1.40			.84
20	1.45			.87
30	1.55			.93
40	1.70			1.02
50	1.85			1.11
<b>BR 245</b>				
24	1.20			.72
36	1.35			.81
48	1.50			.90
60	1.65			.99
72	1.80			1.08
84	1.95			1.17
96	2.10			1.26
108	2.25			1.35
120	2.40			1.44
132	2.55			1.53
144	2.70			1.62
156	2.85			1.71
168	3.00			1.80
180	3.15			1.89
192	3.30			1.98
204	3.45			2.07
216	3.60			2.16
228	3.75			2.25
240	3.90			2.34
252	4.05			2.43
264	4.20			2.52
276	4.35			2.61
288	4.50			2.70
300	4.65			2.79
312	4.80			2.88
324	4.95			2.97
336	5.10			3.06
348	5.25			3.15
360	5.40			3.24
372	5.55			3.33
384	5.70			3.42
396	5.85			3.51
408	6.00			3.60
420	6.15			3.69
432	6.30			3.78
444	6.45			3.87
456	6.60			3.96
468	6.75			4.05
480	6.90			4.14
492	7.05			4.23
504	7.20			4.32
516	7.35			4.41
528	7.50			4.50
540	7.65			4.59
552	7.80			4.68
564	7.95			4.77
576	8.10			4.86
588	8.25			4.95
600	8.40			5.04
612	8.55			5.13
624	8.70			5.22
636	8.85			5.31
648	9.00			5.40
660	9.15			5.49
672	9.30			5.58
684	9.45			5.67
696	9.60			5.76
708	9.75			5.85
720	9.90			5.94
732	10.05			6.03
744	10.20			6.12
756	10.35			6.21
768	10.50			6.30
780	10.65			6.39
792	10.80			6.48
804	10.95			6.57
816	11.10			6.66
828	11.25			6.75
840	11.40			6.84
852	11.55			6.93
864	11.70			7.02
876	11.85			7.11
888	12.00			7.20
900	12.15			7.29
912	12.30			7.38
924	12.45			7.47
936	12.60			7.56
948	12.75			7.65
960	12.90			7.74
972	13.05			7.83
984	13.20			7.92
996	13.35			8.01
1008	13.50			8.10
1020	13.65			8.19
1032	13.80			8.28
1044	13.95			8.37
1056	14.10			8.46
1068	14.25			8.55
1080	14.40			8.64
1092	14.55			8.73
1104	14.70			8.82
1116	14.85			8.91
1128	15.00			9.00
1140	15.15			9.09
1152	15.30			9.18
1164	15.45			9.27
1176	15.60			9.36
1188	15.75			9.45
1200	15.90			9.54
1212	16.05			9.63
1224	16.20			9.72
1236	16.35			9.81
1248	16.50			9.90
1260	16.65			9.99
1272	16.80			10.08
1284	16.95			10.17
1296	17.10			10.26
1308	17.25			10.35
1320	17.40			10.44
1332	17.55			10.53
1344	17.70	</		

**WANTED** — Western Electric key telephone system, No. 1A units and 440 and 460 series phones; General Industries, model D, phono motor, for cash. James W. Hoskins, 1439 Ohio St., Vallejo, Calif.

**SELL OR SWAP** — Table model, auto, and portable radios. Will trade for radio gear, or 1937 to 1942 Radio-Craft magazines. Ambrose Radio, Route 4, Richmond, Va.

**FOR SALE** — Heath TV alignment gen., TS-2, \$20; Heath grid dip meter GD-1, \$15; GE portable wattmeter type AP-9, 3000 w. at 300 v., 1500 w. at 150 v., (list \$90), \$40. L. R. Battersby, 31 Grant Pl., Red Bank, N. J.

**FOR SALE** — Heathkit TS-2 sweep gen., wired, converted to use 2 crystals, with manual, less crystals. Send certified check or money order for \$25. Zimmer Radio & TV, Hornell, N. Y.

**SELL OR TRADE** — Rider TV manuals, 1 thru 9, 1. n., or will trade for complete Sams. Herb Covey, Bunge's Appliance, 280 So. Grove Ave., Elgin, Ill.

**WANTED** — Riders manuals: radio No. 20 and up; TV No. 4 and up, or Sams. Have Hickok 610A gen., for sale, hardly used, guaranteed, \$125. J. Kenner, 2000 86th Ave., Oakland 3, Calif.

**FOR SALE** — Like new power trans. for RCA model 170A audio chanalyst, \$5 postpaid. L. Cohen, 151 - C9 34th Ave., Flushing, N. Y.

**WANTED** — Stancor PT8312 or PT8315 plate transformer; have Stancor 2938 modulation transformer for sale. F. W. Jones, Gabbs, Nev.

**WANTED** — Used mahogany, walnut, or ebony cabinet for 16" RCA 630 TV chassis. William P. Gretes, 401 Wayne Circle, Norfolk 13, Va.

**FOR SALE OR RENT** — Small service shop with living quarters in best climate, especially good for elderly man wanting to ease-up. Write fully about yourself, etc., for details. Paul J. Lang, Route 1, Box 76, Elsinore, Calif.

**WANTED** — Broadcast coils for HRO7T, reasonable. Frank L. Cavano, Jr., 1629 Doan Ave., East Cleveland 12, Ohio.

**FOR SALE** — Scope transformer: 110 or 220 v., 2.5 v., 1.75 amp.; 6.3 v., 0.6 amp., 2,300 v., 2 ma.; four oil filled 15 Mid., 660 v. AC or 2500 v. DC. Hilton L. Remley, 730 E. Euclid St., Arlington Heights, Ill.

**WANT** — For cash, synchros, 60 cy. types: \$20 for 1HG, 1HCT, 1DG, 1D, 1F, 1G, 1DF; \$30 for 3F, 3HCT, 3G. Subject to inspection; also need other type selsyns. Craig Corp., 58 Eastern Ave., Boston 13, Mass.

**WANTED** — ART-13, ATC, DY-17, DY-12, CU-25, ARN-7, BC-610, 614, 939, 729, 312, 342, 348, etc., test equip., technical manuals, SIG-5, teletype, Boehme & McElroy equip. Tom Howard, 46 Vernon St., Boston 8, Mass.

**FOR SALE** — Like new custom auto radios: '54 Ford, '53 Ford, '51 or '52 Hudson, '51 Nash with 2 spkrs., '52 Willys, \$40 each plus shipping. Conrad TV, 12908 Lorain, Cleveland 11, Ohio.

**SELL OR SWAP** — Webcor 106-27 changer, Altec 600 spkr., McMurdo 909 sweep gen., Weston 865 meter, panel meters, Powerstat 10 ampere, Bell and Howell 16 mm. camera. Want audio test equip. F. J. Goldwater, 572 Broome St., New York 13, N. Y.

**SWAP** — 2 coil sets for 1-10A; 4 National plug-in coils; antique radio books. Need grid dipper, good Hi-Fi rcvr.; Xmitter, or gasoline generator. Chas. Fernandez, 81 Warren St., Roxbury 19, Mass.

**FOR SALE** — New books: Essentials of Radio by Slurberg & Osterheld; Electrical Fundamentals of Communication by Albert; Ultra High Frequency Technique by Brainerd; \$2.50 each; Mathematics Essential to Electricity and Radio by Cooke and Orleans, \$2 postpaid. Herbert Greenberg, 821 Rutgers Road, Franklin Square, N. Y.

**FOR SALE** — Precision E-200 sig. gen., \$25; Electronic Designers VTVM, \$35; Air King console TV, model TC-1, with antenna and "Tenna-rotor" (needs tuning), all in good operating cond., \$75 FOB. L. M. Swingle, 4723 48th St. NW, Washington 16, D. C.

**FOR SALE** — Dumont 208-B scope; Brown- ing P4 scope; Superior 1226 powerstat; Electrovoice 726 cardyne mike, also 635 mike; TU-6-N tuning unit; Mallory Vibrapack 551; Sola 3004 constant voltage transformer. W. C. Woods, 43 Richardson Rd., Lynn, Mass.

**WANTED** — Precision E-200-C sweep gen., will pay cash or trade for 3 car radios in good cond. John Bonaccorso, 134-33 57 Rd., Flushing, N. Y.

**SELL OR TRADE** — Riders 1-14, \$50; Riders TV3, \$10; Eico 625 tube checker, no kit, \$25; all exc. cond. Need Precision E-400, capacitor bridge checker, ham mobile Xmitter. John R. Graham, Box 68, Wurtsboro, N. Y.

**SELL OR SWAP** — NRI radio and TV comm. course ('53 edition), including all kits, with 30 w. Xmitter, etc. Best offer over \$60, or swap for mobile equip. What have you. Jesse W. Stonecipher, 1610 West John, Champaign, Ill.

**WANTED** — Heathkit or Eico sig. tracer and capacitor checker in good cond., priced right. Also battery eliminator. Roy Goodwin, North Drive, R. 1, Ben Hill, Ga.

**SELL OR SWAP** — Eico deluxe 315 sig. gen., factory aligned; Transvision CRT tester-reactivator, both l. n., for 8 mm. camera and projectors, or good electric room heater. Local. Seymour Schwartz, 1713 East 14th St., Brooklyn 29, N. Y.

**FOR SALE** — 29 foot Glider trailer, l. n., used as radio shop, with built-in bench and drawers, Masonite constructed. Best offer. Must dispose. Mrs. Anna Pellock, Benld, Ill.

**SWAP OR SELL** — EV-3000 auto TV booster, \$25; anchor, \$10; Precision EV-10S VTVM, \$55; Photofacts, 140 copies, \$1 each; Hallicrafters S-47 chassis sprk., l. n., \$55; Bogen 2-stage interphone, l. n., \$30. John Pellock, 815 W. Washington, Springfield, Ill.

**WANTED** — Good FM-AM tuner with pre-amp, must be late model in exc. cond.; also Zenith FM radio 7H918, or Zenith FM-AM radio. S. Swetozoff, 149 Intervale St., Boston 21, Mass.

**WANTED** — CQ magazine, Sept., '45. State price, cond. Frank's Servicing, 10101 So. Albany Ave., Evergreen Park 42, Ill.

**SELL OR TRADE** — Back issues of Radio Electronics, Radio & Television News, to date; Service, Nov., '47 to Aug., '48; 70 copies Mechanix Illustrated and Popular Science. Want receiving equip. Richard Daneker, 316 East Second St., Lansdale, Pa.

**WANTED** — Hammarlund HQ 129X rcvr. State price, cond., etc. Frank Appgar, R 1, Box 69, Parsippany, N. J.

**FOR SALE** — Riders radio manuals, vol. 2-15, good cond. with index, \$75 or \$7 ea.; old Supreme 89 tube tester, good cond., \$10. Melvin Saur, Kent City, Mich.

**FOR SALE** — Oak Ridge synchro-sweep, model 104, for TV servicing. William H. Martin, Fife Rd., R 2, Bridgeville, Pa.

**FOR SALE** — Leece-Neville alternator, 80 amp., 100 amp., L-N regulator, wiring harness, PE-103 dynamotor, very reasonable. Roy Durso, 384 Sackett Street, Brooklyn 31, N. Y.

**SELL OR TRADE** — Blonder-Tongue CA1 amplifiers, with or without weatherproof covers; all kinds of community TV system equip.; RG-11 and RG 59, 5 and 3 cents per foot. Any reasonable offer or trade for ham gear. Dave Graves, Barnesville, Ohio.

**FOR SALE** — Eico VTVM model 221, \$20. Anthony R. Fasano 333 14th St., Brooklyn 15, N. Y.

**SWAP OR SELL** — Eico scope, model 400, with Superior TV sig. gen., for BC-348 or 100 w. CW Xmitter. Sam's Television Service, 188 Main St., Everett, Mass.

**WANTED** — BC-474 or similar unit. Give cond. and price. John Schultz, 1829 Cornelia St., Brooklyn 27, N. Y.

**FOR SALE** — Premier RF-AF sig. gen., model 570A, 75 kc. to 150 mc. in 7 bands, with Vernial Scale, includes shielded output lead. Perfect operating cond., \$25 plus shipping. W. Levine, 67-22 218th St., Bayside 64, N. Y.

**FOR SALE** — Eicor dynamotor, input 14 v., output 1000 v. @ 350 ma, \$12; 20 w. and 40 w. Hi-Fi PA amplifiers, both need repairs, \$18 and \$25; Bliley Vari-x osc., \$15. Paul Wunsch, Jr., 421 Clifton Ave., Clifton, N. J.

**WANTED** — Sams folders. State numbers, price and condition. Wilbert Simmons, Conde, S. Dak.

**WANTED** — Hallicrafter HT6, any cond. Have Hallicrafter S-29 or lots of gear. Send for list. E. S. Bednar, 81 Lincoln Ave., Carteret, N. J.

**WANTED** -- Presto turntable; 20,000 ohm VOM meter; condenser tester; 3-speed record changer. Have CREI engineering course, twin track type recorder and speaker enclosure to swap. J. Bazewick, 11221 NE 9 Court, Miami 38, Fla.

**WANTED** -- Copy in any cond. of 1940 catalog and manual Taylor tubes. State cond., and price. E. S. Reynolds, 4063 Lasher Rd., Drexel Hill, Pa.

**WANTED** -- Any data on BC-967/SCR-613 3-band VHF rcvr. Urgently needed, will pay cash. Joel B. Jones, 1222 Cruiser Ave., Louisville 5, Ky.

**WANTED** -- Whip antenna for fixed amateur station use on 10, 20, 40 meters. State price. Have two 5BP4 CRT; also Merit universal modulation Xmt., model A4005 for use with PP807's or better. C. Gabler, 1307 Merrim Ave., New York 52, N. Y.

**WANTED** -- 16 mm. movie projector, cornet or trumpet. Cash or have TV tubes, parts, and radio supplies. John Arnold, Box 84, Bluffs, Ill.

**FOR SALE** -- HQ-129X in perf. cond., \$125; dual speed, dual track Tapemaster tape recorder, l. n., \$75; all-band VFO CW and NBFM 125 w. Xmitter with or without 1000 v. power supply, best offer. John M. Miller, 3225 N. 6th St., Harrisburg, Pa.

**WANTED** -- Sams service manuals and TV-radio test equip. Maurice W. Allen, R. 2, Greencastle, Ind.

**FOR SALE** -- 8 Rider radio volumes, 10 thru 17, \$27; TV Rider vol. 5, \$15. You pay postage. R. F. Olson, 3556 Lime Ave., Long Beach 7, Calif.

**FOR SALE** -- Heathkit Electronic switch, used very little, perf., \$14.50, plus postage. Lowe E. Smith, R. 1, Trion, Ga.

**TRADE** -- Webster-Chicago wire recorder, less mike for some 2-meter ham equip. Prefer local. Roy R. Hovland, 7th St., Saint James, L. I., N. Y.

**TRADE OR SELL** -- Hi-Fi 5-tube 8 w. amplifier, less cabinet, \$14.95; GI 3-speed phono-recorder assembly, model GI-R851, in factory carton, needs some adjustment, \$12.95, or trade for ?? Y. Brevda, 55 Hanson Pl., Brooklyn 17, N. Y.

**FOR SALE** -- PE-103-A dynamotor type 530D3-CB, l. n., with base and cables, \$30 FOB. Tommy Electronics, 3306 Aldrich Ave. N., Minneapolis 12, Minn.

**WANTED** -- Coils for model T Ford. Will pay cash or trade used radio tubes. Donald Cline, Gold Hill, N. C.

**SWAP** -- Hallicrafter S-40-A for Kodak 35 mm. folding enlarger. M. J. Brady, Box 365, Wilmington, Calif.

**FOR SALE** -- Heathkit wired TV alignment gen., \$30. Want 1951 Mercury auto radio. Echement TV, 909 Brookline Blvd., Pittsburgh 26, Pa.

**FOR SALE** -- Pentron 9T-3C tape recorder, l. n., includes automatic shut-off, four 7", two 5" reels plastic tape, \$85 FOB. D. A. Hodges, 7 Sycamore St., Bronxville 8, N. Y.

**WANTED** -- B&W jack bar assembly (swing-link) for BVL coils, also BVL coils for 80, 20 and 5 meters, or antenna tuner similar arrangement. Have for sale Harvey-Wells bandmaster deluxe, l. n., \$95. Mitchell Misiak, 69 E. Suffolk Ave., Central Islip, N. Y.

**WANT** -- Xmt.-rcvr., mobile, 6 v. FM 30-40 mc. band. T R. West, Box 189, New London, Conn.

**TRADE** -- 10" Westinghouse H196AM, needs 6AC7, 6BH6, 6AO5, otherwise perf., for Cascadian or Astatic AT-1 booster or other good booster. FOB. Clarence Kelly, 214 W. Market St., Blairsville, Pa.

**FOR SALE** -- Hallicrafter model 5R10A 5-tube broadcast and shortwave radio set, l. n., no reasonable offer refused. A. A. Lewis, 37 Bay 26 St., Brooklyn 14, N. Y.

**FOR SALE** -- Eico: model 425K 5" scope; model 360K sweep gen., both wired and in operation, both for highest bid above \$70. Thomas F. Wilson, Box 101, Charleston, Tenn.

**FOR SALE** -- All-band exciter; Sonar VFX-680, complete with tubes, coils, and instruction manual. Perf. cond., best offer. Alfre B. Wetzl, 1645 Campbell Ave., Des Plaines, Ill.

**SELL OR TRADE** -- Masco Sky Chief TV booster, l. n., cost \$34.50. Ellison Radio Service, Centertown, Ky.

**FOR SALE** — LM Frequency meter with HF check points and curve, \$35; BC457 complete \$6; HQ120X receiver with spkr., \$90; band switching CW trans with power, \$25. FOB. A. R. Eggensperger, 101 Christie St., Tenafly, N. J.

**WANTED** — 304TL tubes. Pay cash or trade pair 861's, conds., trans., meters, etc. E. L. Felder, Box 184, Tylertown, Miss.

**SELL OR SWAP** — Hallicrafter S-20R with tuning eye. Best offer over \$35 or trade for transceivers. Louis Kurkjian, 146 No. Ardmore Ave., Los Angeles 4, Calif.

**WANTED** — Cabinet for Temple table model radio, model G-513. White preferred, brown OK. Bill's Radio and TV, 9956 So. Normal Ave., Chicago 28, Ill.

**WANT** — Good used Rek-O-Kut overhead type disc recording lathe, with or without cutting head. Trade electronic equip., or pay cash. John T. Moore, Box 63, Seneca, S. C.

**FOR SALE** — Radio and Television News, Radio Electronics, Popular Science, Popular Mechanics. Most issues 1946 to 1954, 35 cents each postpaid in U. S. Charles J. Moore, Box 422, Wolfe City, Texas.

**WANTED** — Garrard RC80, RC90 or Webcor 216 record changer, complete with 45 RPM spindle and cartridge. Unit must be in perf. mechanical cond. D. Kurs, 321 Fairmount Ave., Jersey City 6, N. J.

**WANTED** — Up-to-date radio and TV servicing course. Specify number of lessons, and if equip. is included. Will also pay cash for recent books but must be bargain, postpaid. W. Kay, 666 West Cordova, Vancouver, B. C.

**SELL OR SWAP** — Simpson 303 VTVM; Triplett 625-NA VOM, both meters as new; Bell & Howell 57 16mm projector; '47 Pontiac auto radio. Want good binoculars, telescope, or ?? Joseph J. Buckley, 3461 Jasper St., Philadelphia 34, Pa.

**FOR SALE** — Riders TV vol. 1, \$10, Radio vol. 1, \$2; antique battery radios; Altec 755A 8" PM spkr., 1. n., \$12.50; Edison cylinder phonograph, horn and records; Edison business phono (early dictograph). G. N. Hartwell, 38 Charlemont St., Newton Highlands, Mass.

**WANT** — Prewar issues of Radio Craft and Radio News; postwar issues of Electronic and Service; also want back issues of British radio magazines. Pat Blaney, New Straitsville, Ohio.

**FOR SALE** — 35 w. TVI-proof transmitter with power, VFO, modulator, \$30; CW break-in monitor \$25; BC457 converted \$8. Want ARC-5, 7 Mc. receiver diagram. Bud Woida, Manitowac, Wis.

**TRADE** — Air King A-1000 10" TV needing slight work with all good tubes and new condensers, for scope, tube checker, VTVM, other test equip. E. W. Hart, 1545 Ormond Dr., Corpus Christi, Tex.

**FOR SALE** — Regency UHF converter, model RC600, in good cond., \$35; Feiler electronic stethoscope, model TS-3A, 1. n., \$25. Cam's Radio Service, 98 Fourth St., Auburn, Me.

**FOR SALE** — 16GP4 picture tube in good condition. Make offer. Want battery eliminator in working condition. J. M. Kerrigan, 541 6th St., Braddeck, Pa.

**WANTED** — Motorola P69-18 police rcvr., trade or cash. 1008 Willbanks Ave., East Gadsden, Ala.

**WANTED** — HT 19 transmitter. State cond. and price. A. Brackmann, 223 East 96th St., New York 28, N. Y.

**WANTED** — Information on circuits for building electronic organ. Have electric organ keyboard only, including footkeys and stops. Larry Dillin, 10431 Hillhaven, Tujunga, Calif.

**TRADE OR SELL** — 3 speed record changer; SX-42 and 129 comm. rcvr.; Philco 17" TV set. What have you? Fred Simonian, 96 Blossom St., Lynn, Mass.

**WANTED** — Type 5527 Iconoscope. State price and cond. R. Gaze, 362 Memorial Dr., Cambridge 39, Mass.

**SELL OR SWAP** — Heathkit VTVM V-4A, very good cond., \$20, or swap \$20 worth unused TV tubes, at net, of my choice. C. Elgasser, 1920 Fern St., San Diego 2, Calif.

**WANTED** — Instruction manual, schematic, or any kind of data on RCA RAK-5 and RAL-5 regenerative receivers. Dallas Wisner, 6104 Music St., New Orleans 22, La.

**CASH** — For car radios: new, used, any quantity. State price, quantity, make. Troch's, 290 Main St., Spotswood, N. J.

**SELL OR SWAP** — Supreme 502 multimeter and tube tester \$30; Hickok sig. gen. with decibel output meter \$30. All FOB. Charles B. Cerates, Auburn, Calif.

**FOR SALE** — Test equip., 1E36 for 522, 1 n., \$20. H. I. Griffiths, 39-82 65 Pl., Woodside 77, L. I., N. Y.

**WANTED** — University Finned Tweeter, model 4408 or any 600 crossover tweeter. Will pay \$8. Eugene Roy, 5 Hillside St., Haverhill, Mass.

**FOR SALE** — Riders 1-7, \$5 ea., or swap for U.S. or British Colonial stamps. Have Radio News, QST, etc., also ham gear. R. A. Teneyck, Garnerville, N. Y.

**SELL OR TRADE** — Sylvania type 140 tube tester, Sola constant voltage transformer, BC-733D, complete BC-654, S-1286 photo flash units. Want 3-speed record changer, LP records, binoculars, scope, sweep gen. D. C. Weber, Box 582, Ft. Myers, Fla.

**WANTED** — GE pickup arm A1-500 and magnetic cartridge. Must be reasonable. S. Consalvo, 4905 Roanne Dr., Washington 21, D. C.

**SALE** — 300 w. Xmtr., Meissner sig. driving 813 final, model PP811. Separate power supplies for final and mod., all in steel rack, \$100. Chicago area only. R. B. Bell, 14540 S. Kolmar, Midlothian, Ill.

**FOR SALE** — RCA sig. gen., six alignment ranges, from 100 kc. to 30 megas. H. Latko, 1922 Dickens, Chicago, Ill.

**FOR SALE** — Unused Webcor tape recorder, model 2010, \$155. J. Gilbert, Box 31, Boston 30, Mass.

**WANTED** — Weston Sensitrol meter relays, model 705, 712 or 813. Will swap radio equip., or pay cash if price is right. John Puttress, 6310 Winthrop, Detroit 28, Mich.

**SELL OR SWAP** — 480 old-type radio tubes in orig. cartons, 25 cents ea., or swap for any good camera. Marvin Sims, 3022 Euclid, Lawton, Okla.

**WANTED** — Stancor 202 Xmtr., state cond. and price. A. Brackmann, 223 East 96th St., New York 28, N. Y.

**WANTED** — Precision, RCP, or Superior tube tester. Will trade antique double-barrel muzzle loading shotgun, imported from Sweden. Jess E. Webb, 515 Grand, Goodland, Kan.

**SELL OR TRADE** — Eico 950-A condenser tester; RCA station allocator model 171; Mossberg .22 repeater; record changers; Triplett professional all-wave servicer; car radios. E. G. Bartlett, Atlanta, Mo.

**FOR SALE** — BC-610-E Xmtr., and matching BC-614E speech amp., complete, no changes, 10-20-40-80 fone or CW. Harry C. Weidner, Box 524, R. 1, Temple, Pa.

**WANTED** — 2 Philco tube checkers, model 7000 or equiv. Dick Sexton, 815 Violeta Dr., Alhambra, Calif.

**FOR SALE** — Sonafone portable marine radiotelephone, model M4W, crystals and power pack, like new. Cost \$285, make offer. L. Brooks, 1656 Manchester, Maywood, Ill.

**SELL OR SWAP** — Several headphones, \$1 each; 3 dynamotors 6 v. DC input, 350 v. 150 mill output conservative rating, \$20 each complete with filter and starting relay. Want VTVM and sweep gen. Frank A. Finger, Box 839, Tallahassee, Fla.

**SELL OR SWAP** — Unused Ampro model 731 tape recorder with foot switch for best offer. Want cameras, ultrasonic gear, outboard motor. L. Benedict, Box 338, Bath, Pa.

**SELL OR TRADE** — Sprague Kwik-test condenser tester; Do-All TV sig. gen.; 7" Precise scope, model 300W, wired; SX-62 and S-39 portable Halliçrafter receivers. Want ham gear, 32 v. transmitter, no war-surplus. Milo Adamson, 4060 So. Penna., Englewood, Colo.

**SELL** — Homemade portable TV tower-trailer, ideal for UHF, from 0 to 50 feet with winch, 60' with 10' extension. Has features not found in commercial units. Jack's Radio and TV, Bedford, Iowa.

**SWAP** — Gramophones with 100 cylinder records in exc. cond., for radio parts, tubes, or test equip. Clifton Shears, Cresaptown, Md.

**WANT** — RCA VTVOM, WV97A, and roll chart tube tester or current TV tubes, for matched registered set golf clubs, leather bag and spikes. Blake Snyder, RD 1, Vincentown, N. J.

**FOR SALE** — Mallory UHF converter, all channel, same as new, \$22; also large number of radio and TV engineering books, Radio & Television News, and Radio Electronics magazines, all in good con., 1949 thru '53. C. L. Miller, 404 Hanbury Ave., Portsmouth, Va.

**SELL OR TRADE** — R.E. magazines 1946 to 1952, 10 cents ea., or 12 for \$1; Philco car radio, \$3 plus postage; Meissner Analyst, 12 tubes and VTVM, A-1 cond., \$40, or trade for 5" scope, 12" tel. rec., or sig. gen. W. F. Onder, Rt. 2, Box 193, Arnold, Mo.

**TRADE** — TV schematics and service notes, technical magazines for intercom. Selcraft, Box 394, Spring Valley, N. Y.

**SELL OR TRADE** — Eico 425 scope, factory wired, converted to Feb., '54 Radio Electronics plans. Earl Aasheim, Enderlin, N. D.

**SELL** — Test equip., TV, FM, amplifiers, mikes, SW converters, car radios, set of Riders. Local. Bob Boener, 949 Rosewood, Inglewood, Calif.

**FOR SALE** — Hallicrafters "Skyrider 32", later version of SX-28, perf. with matching speaker, \$80 FOB. E. A. Humphreys, 4 Michigan Dr., Hicksville, L. I., N. Y.

**WANTED** — Eico 377-K audio gen., or variable audio oscillator and condenser checker. Joel Greck, 3929 Burton Ave., Toledo, Ohio.

**FOR SALE** — PE-103 dynamotor in perf. cond.; BC-223 transmitter and dynamotor; tuning unit 2000 kc. to 3000 kc., 4 Xtal channels. Louis F. Rodman, 2307 North Catalina, Burbank, Calif.

**FOR SALE** — Like new BC-375-E transmitter, complete with 7 tuning units, antenna coupler, dynamotor and spare parts; vibrator power supply PE-157; Wilcox comm. rcvr. type CW3; transrcvr. BC-645. Best offer. J. Pietropaolo, 25 Pine St., Port Byron, N. Y.

**FOR SALE** — Supreme AF-100 transmitter, 150 w. input, 80 thru 10 meters, 95% de-TV'd, CW, AM, FM, and ICW, \$150 FOB. A. G. Bauerfeind, 563 N. Clark St., Niles, Mich.

**WANTED** — Complete radio-TV courses with or without kits. State price, cond., list of materials furnished. Joseph Sampietro, 124 Lynch St., Brooklyn 6, N. Y.

**WANTED** — Photofact deluxe binders, must be cheap. Harold C. Morris, 404 Second St., Shenandoah, Va.

**WANTED** — Small discarded 5 or 6 tube 110 v. AC table radios. State make, cond., cash price. Joseph A. Spalla, Plaza, N. D.

**SELL OR TRADE** — Heath sine and square wave audio generator, perf., \$18; Heath FM tuner, model FM-2, \$15. Need good late model tube checker, or 10" TV set. L. E. Smith, RFD 1, Trion, Ga.

**FOR SALE** — Eico RC and Comparator bridge, model 950B, \$26; Heath signal tracer T-3, \$28; Heath sig. gen., SG-8, very little used, \$23, all for \$70. Sal Isgro, 118 Gamewell St., Hackensack, N. J.

**FOR SALE** — Beltone "Monopac" model M hearing aid, in like-new condition, with earphone, cord, and batteries, \$10. Mike Peterhans, Pond Farm, Guerneville, Calif.

**FOR SALE** — Like new Eico instrument kit, wired; model 221 VTVM \$33 or model 214, \$48; 377 sine and square wave gen., \$43; 320 sig. gen., \$25. All FOB. John Willis, Passaic Ave., Caldwell, N. J.

**FOR SALE** — 3 inch RCA scope, model 155A, \$25. D. Pollock 178 Pinckney Rd., Little Silver, N. J.

**FOR SALE** — BC-348-L receiver converted to 110 v. AC, built-in S meter, good cond., \$55; Hi-Fi RF amp., #0811 Millen, 10 meter coils, 2-829-B tubes, \$25. Robert Kimmel, 705 E. Ninth, RR 2, North Manchester, Ind.

**TRADE** — Sky Buddy Hallicrafter rcvr. Want jig saw, milling attachment for Atlas lathe or a grid dip meter. Max B. Strauss, 4025 Wilmington Rd., South Euclid 21, Ohio.

**WANTED** — Instuctograph code machine with tapes, in good cond. Will trade Heathkit scope, model 0-7, or pay cash. Also have tubes, parts, and test equip. to trade. Irby H. Kolb, 915 Greenwood St., Montgomery 7, Ohio.

**FOR SALE** — A-1 latest model Heathkit 6 w. amp., \$18; 1 tube GE pre-amp 110 v. AC \$8. Trade for good tube tester. Stanley Strangle, Trout Creek, Mich.

**SWAP** — Cinemaster 8 mm. movie camera, 3.5 lens, telephoto lens, shade, filters, tripod; Kodak 35 mm. camera, 4.5 lens, leather case. Want tape recorder, Elmac A54H, Harvey TBS 50A, Sonar SRT120, Lysco 600S. W. M. McDonald, 60 Hill St., Providence, R. I.

**SELL OR SWAP** — Astatic model A1 Tel-Booster, never used, with registration card and all installation for same. John Ehrlich, 281 Schaffer St., Brooklyn, N. Y.

**WANTED** — Used comm. rcvcr., must be reasonable. Owen Williams, Vermilion, Alberta, Canada.

**JOB WANTED** — Young man desires radio work, recent residence school graduate, radiophone 2nd class license, NRI grad. Will consider jobs in broadcasting or servicing. James Gross, Box 53, West Graham, Va.

**WANTED** — Model 0-6 Heathkit scope with instruction in good cond. James Caprio, RFD 2, Moscow, Pa.

**SELL** — 75 w. 807 Xmtr and power supply with meter and bond switching mounted in Bud deluxe cabinet, \$75. Local. A. C. Johann, 288 Morningside Terr., Teaneck, N. J.

**FOR SALE** — Sprague Kwik-Test condenser checker model KT-1, in orig. carton, \$23; 522 complete transmitter-rcvcr., with power supply, spkr., mike, A-1 operating cond., fully converted, \$50; Heathkit VTVM V-5 assembled, exc., \$20. Eugene Adams, 755 Delafield Avenue, Staten Island 10, N. Y.

**SWAP** — Motorola 7" portable TV, complete with tube and carrying case, in working cond., for printing press, tape recorder, or enlarger. A. Cuches, Box 35, Brooklyn 11, N. Y.

**FOR SALE** — Mod. transformer P-P plates 20 w., \$1; 50 w., \$3; Triumph 33S multi-range meter, less meter, \$2; 705A's, \$1 each; TV tuner less tubes, \$1. Al Swirmickas, 2512 W. 69th, Chicago 29, Ill.

**WANTED** — Low-priced UTC LS-57 audio trans. in A-1 cond., swap or cash. What do you need? George Novak, 5036 S. Kildare Ave., Chicago 32, Ill.

**SWAP** — Motorola 7" TV model 7VT5RA for 6 v. ATR battery eliminator or model S40B Hallicrafter rcvcr. Toups Radio Service, 317 W. Pine St., Crowley, La.

**FOR SALE** — E-200C Precision sig. gen., coax cable and instruction book, in orig. carton, \$60; Precise VTVM 909, practically new, \$25; Precision 85-VOM, \$25. Local only. G. M. Eckert, 7272 112 St., Forest Hills, N. Y.

**SELL OR SWAP** — Eldico EE-2 Electronic keyer, with monitor, factory wired and tested, 1 n.; also Sonar LP-7 52 ohm low pass filter, or wire trade for 75 ohm low-pass. Thomas D. O'Connor, 46 Orange St., Manchester, N. H.

**FOR SALE** — Heathkit BE-2 battery eliminator (6 v., 15 amps.); Simpson ammeter installed (0-25 amps); scope, model 0-6 (push-pull). Both 1 n. and with manuals. Joseph A. Bednarz, 340 Ashley St., Perth Amboy, N. J.

**WANTED** — FM, 152-162 mc.; FM, 88-108 mc. AC-DC radio. Have 400 old records, combined record player with baffle speaker; AC 4-tube Decca, 1 speed. H. Kuell, 18½ Thomas St., Newark 5, N. J.

**FOR SALE** — 16 8-tube coin operated hotel or tourist court radios in very good cond., in locked metal cases, finished in gray. Edwin Halverson, 2505 Meadow Lane, Manitowoc, Wis.

**PARTNER** or outright sale — TV-radio service store, ideal location, near bus stops, small apartment, driveway for parking and auto service, yard, woman technician. Make offer. Paragon TV & Radio Service, 170-26 Jamaica Ave., Jamaica 32, L. I., N. Y.

**SELL** — Tube tester with 9 pin test socket and picture tube test adapter, \$20; Eico voltmeter 102, \$10; Eico sig. gen., model 320, \$25. Wm. P. Halleran, 5515 Ollie St., Pittsburgh 7, Pa.

**FOR SALE** — Supreme 40 microamp., 3½" meter movement, good cond., with AC, DC and ohm scales, \$7.50 postpaid. S. Winterfeld, 1044 Boynton Ave., Bronx 72, N. Y.

**FOR SALE** — Mallory TV-101 UHF converter, 1 n.; Triplett tube checker, model 2413, 9-pin added. Any reasonable offer. Ike's Radio-TV, Box 243, Cass City, Mich.

**FOR SALE** — Low-power ham Xmmitter with power supply; good 7" TV set (front panel but no cabinet); ½-ton GE air conditioner; NRI comm. course with VTVM. J. H. Anderson, 909 West Nevada Ave., St. Paul 13, Minn.

**SELL OR TRADE** — Hallicrafter S-47, very good cond., Need press camera. Al Werhan, Manlius, N. Y.

**JOB WANTED** — Part-time anywhere in Brooklyn from 7 to 10 p.m. Will work for experience in radio and TV repair shop. Jerome Charles, 24 Rutledge St., Brooklyn, N. Y.

**SWAP** — New and used rec. tubes; booster; amplifier, for what have you? Thomas R. Rohland, RR 3, Martinsville, Ind.

**FOR SALE** — Unused Eico test equip., completely wired, A-1, (less cabinets but with front panels); model 36C sweep gen., crystal calibrated, \$20; model 425 scope, \$25. Arthur Kremer, 2001 Potter Ave., North Merrick, L. I., N. Y.

**FOR SALE** — Ghirardi's books: "Rec. Circuitry and Operation"; and "Rec. Troubleshooting and Repair", in good cond., \$9. L. Matushefske, 2 Elmont Rd., Elmont, N. Y.

**FOR SALE** — Sylvania sweep gen., \$100. Larry Higgins, 115 Harrison Ct., Perdue University, La Fayette, Ind.

**SWAP OR SELL** — Heath signal tracer; sig. gen.; sweep gen.; RCP VTVM, 3" scope; Eico VOM; battery eliminator; Simpson cap. bridge. J. Leach, Federal near Mulberry, Milton, Del

**WANTED** — 5 x 8 Kelsey printing press. Have test equip., TV set, other items to trade. ACE TV, 5341 Cordelia Ave., Baltimore, Md.

**WANTED** — 20 meter 150 w. fixed center link coil, 20 BCL or similar type. Antone L. Oliveria, 94 Potomska St., New Bedford, Mass.

**SELL OR TRADE** — Superior CA-12 sig. tracer, used once, factory built, for Heathkit battery eliminator. Robert J. Canradi, Box 310, Kern Dr., Cincinnati 11, Ohio.

**SELL OR TRADE** — 522 Xmtr, No. 19 MK II, Lettine 240 Xmtr, BC-221 AH. Need Hi-Fi rcvr., such as National 1-10, HFS, etc. Prefer local. A. Kaiser, 1331 Dayton St., Camden 4, N. J.

**FOR SALE** — Textbooks of DeForest's correspondence course, \$25; Applied Practical Radio by Coyne, \$7.50. Both for \$30. George Langol, Jr., 3056 Custer Ave., Pittsburgh 27, Pa.

**WANTED** — Sams folders, TV only, after 207-11. J. C. Zilinsky, 629 East Sixth St., South Boston 27, Mass.

**WANTED** — Test equip., especially tube tester, sig. gen., scope. Give type No. manufacturer, price. Alcar Instruments, Inc., 20-21 Wagaraw Rd., Fair Lawn, N. J.

**FOR SALE** — Hickok 292X Microvolt sig. gen., exc. cond., \$150. L. W. Clark, 511 Old Orchard Rd., Baltimore 29, Md.

**WANTED** — Schematic and parts list for Lester VHF converter. Joseph Kotlas, Box 431, Dunn, N. C.

**FOR SALE** — Twin-Trax model 80 8CV professional double channel magnetic tape transport mechanism. Speed 15" per second, attainable response 30 to 13,000 cycles per second; semi-finished pre-amp., bias oscillator, power supply, complete instructions, \$160. F. H. McCafferty, 149 West Godfrey Avenue, Philadelphia 20, Pa.

**SELL OR SWAP** — Navy transmitter, 200 w. phone, with 800 cy. power supply and tuning units for 160, 80, and 40 meters. Ready to go on air, can demonstrate. A. W. McAuly, 730 Herron Ave., Verona, Pa.

**WANTED** — TB35 or United Electronics 5562 tube. Cash or trade for radio parts. Chas. Remick, 7 Elizabeth Pkwy., Eatontown, N. J.

**SELL OR SWAP** — 6 v. - 220 v., 100 MA DE Philco Transitione dynamotor. Need TV test equip. What have you? C. D'Amico, 215¼ East "F" St., Ontario, Calif.

**SELL OR TRADE** — Radio-TV parts, manuals, diagrams, etc. Want tube tester, in any cond. Vincent Malack, 10530 Edbrooke Ave., Chicago 28, Ill.

**SELL OR TRADE** — Brush "Mail-A-Voice" magnetic recorder; Hallicrafters "Sky Buddy," model S19R, both in good cond. Want 7", 10", or 12" TV set in operating cond. Paul B. Farrar, Norwich, Kan.

**TRADE** — Prest-o-Lite torch, complete with B-tank, pressure regulator, hose, torch handle and flame stem, plus Halide gas leak detector, used very little. Want VOM in good working cond., or volt-, amp-, wattmeter. John Buza, Route 4, Jefferson, Ohio.

**FOR SALE** — Riders manuals 1 to 5 abridged and vols. 6 thru 14, \$100; Hewitt-Packard 200B audio oscillator; Ferret model 720 FM TV sweep gen.; Balentine model 300 AC electronic volt-meter; Webster 180 wire recorder. W. P. Manser, Manser Appliances, Hincley, Ill.

**SELL OR TRADE** — Complete 10 meter VFO mobile, 15 w., 2BR Morrow; Philco radio; all parts of 829E Taylor Super Modulation Xmitter. Want AR88, or what have you? Chester Benson, 311 South 5th St., Richmond, Ind.

**FOR SALE** — Viking I, VFO 4D32 final and spares; 522 transmitter with supply; 10 m. mobile transmitter-exciter; NC-100-ASD receiver and speaker; Gonset 10-11; PE-103 complete; Eico VTVM. Send for list. Peter Rosenbaum, 41-26 73rd St., Apt. 22D, Jackson Heights, N. Y.

**FOR SALE** — Heathkit AT1, 35 w., 10 to 80 meter transmitter, wired and tested, worked many DX stations, ideal for novice, 1. n., \$29.50. Michael Bobrow,, 104-21 191st St., Hollis 12, N. Y.

**SELL OR TRADE** — Signal Corps surplus manuals for transmitters and receivers; 8 mm. movie film. Want "Radio Operating Questions and Answers" or other books. Eldon Davis, Jr., 2519 Gordon St., Vernon, Tex.

**FOR SALE** — Riders radio manuals 1-16, 1. n., \$50; RCA dynamic demonstrator model 3 in orig. carton, \$25; 6 v. 250 w. gasoline generator, \$25. George Keller, 1420 Newkirk Ave., Brooklyn 26, N. Y.

**FOR SALE** — Books: "Control of Atomic Energy" McGraw Hill, \$4; 2 Broadcasting and Telecasting "Yearbooks" \$5; "Applied Practical Electricity" Coyne, 7-vol. set, \$15 postpaid. J. E. Howell, Box 126, Lumberton, N. C.

**SELL OR TRADE** — Signal Corps TM's and FM's, circuit diagrams on SCR 506, 508, 528; freq. meter set SCR 211, power supplies AN/VRC-5, AM-65, AN/TRC-7, AN/ARC-3; other Army-Navy sets. Need info on MK II radio. F. C. Moyer, 45 Gurley Rd., Nixon, N. J.

**FOR SALE** — Bud cabinet 40-80 meter 45 w. CW transmitter, and coils; Triplett milliammeter; two power supplies. No reasonable offer refused. Lettine 240 tuner, all coils, \$90. Want Viking II. Spencer Dubov, 3100 Brighton 2nd St., Brooklyn 35, N. Y.

**WANTED** — Aerotrol Xmtr. and rcvr., suitable to install in model boats or plané. Will buy any type or swap. John Dumont, 86 Lakeview Dr., Allentown, N. J.

**SELL OR TRADE** — Stancor 203A Xmitter; Gonset tri-band converter, master mount. Need test equip., or two meter equip. Robert Faeth, 11 Godfrey Terr., Glen Rock, N. J.

**FOR SALE** — Ferret model 730 sig. tracer-electronic volt ohm meter, complete with test leads, RF probe and instr. manual, manufactured by Coastwise Electronics Co., in A-1 cond., \$40 FOB. Otto M. Johnson, 5765 Gratiot Rd., Saginaw, Mich.

**SWAP** — 522 transmitter and receiver with power supplies, rack mounted, push-to-talk, mike, spare 832, for FM or AM-FM Hi-Fi tuner. Robert Cobaugh, 29-29 213th St., Bayside 60, N. Y.

**SELL OR TRADE** — Professional portable Geiger counter with GM tube, perfect cond., used twice, complete with manual. Ralph Peck, 2835 So. Robinson St., Philadelphia, Pa.

**WANTED** — Pair unused 6ASG tubes. Norman P. Dort, RFD 1, Putney, Va.

**TRADE** — Electric engraver pencil and points; RCA 5-tube table model radio walnut cabinet; Zenith 5-tube table model radio, mahogany cabinet, for good hand printing press and supplies. Gene Lamb, 1203 E. Parker St., Lakeland, Fla.

**FOR SALE** — Transvision field strength meter, model FSM-5, used very little. Will sell for \$65 with 250 ft. of wire, and ship prepaid in orig. box upon receipt of cash. C&R Electronics, Box 93, West Graham, Va.

**FOR SALE** — Precision EV-10 VTVM; Weston 772 VOM; Clough-Brengle scope and sig. gen.; Riders manuals; Hammarlund Comet pro short-wave rcvr., and other items. Glenn Watt, 415 W. First, Chanute, Kan.

**FOR SALE** — Hallicrafters SX-62 receiver with Hi-Fi bass reflex speaker. Slightly used, \$195. Witte Radio and TV Co., 125 South 16th St., Philadelphia 2, Pa.

**FOR SALE** — TS-2 Heathkit TV generator, factory checked, aligned, \$20. Westcott Electric, Ontario, Ore.

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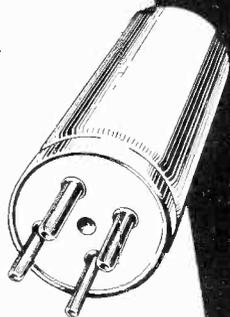
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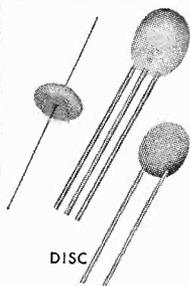
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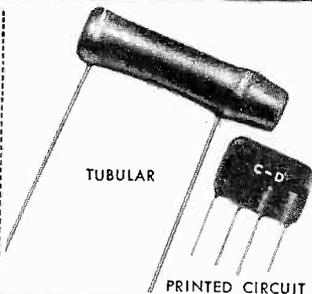
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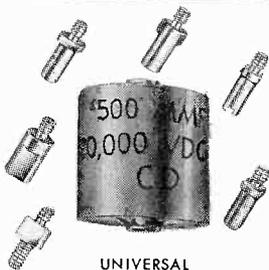


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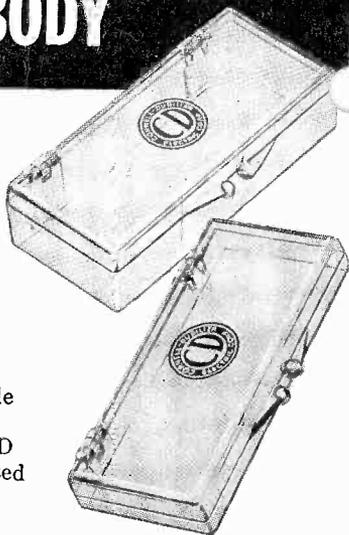
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