

# electronics

A MCGRAW-HILL PUBLICATION

## BUYERS' GUIDE ISSUE

JUNE 1947  
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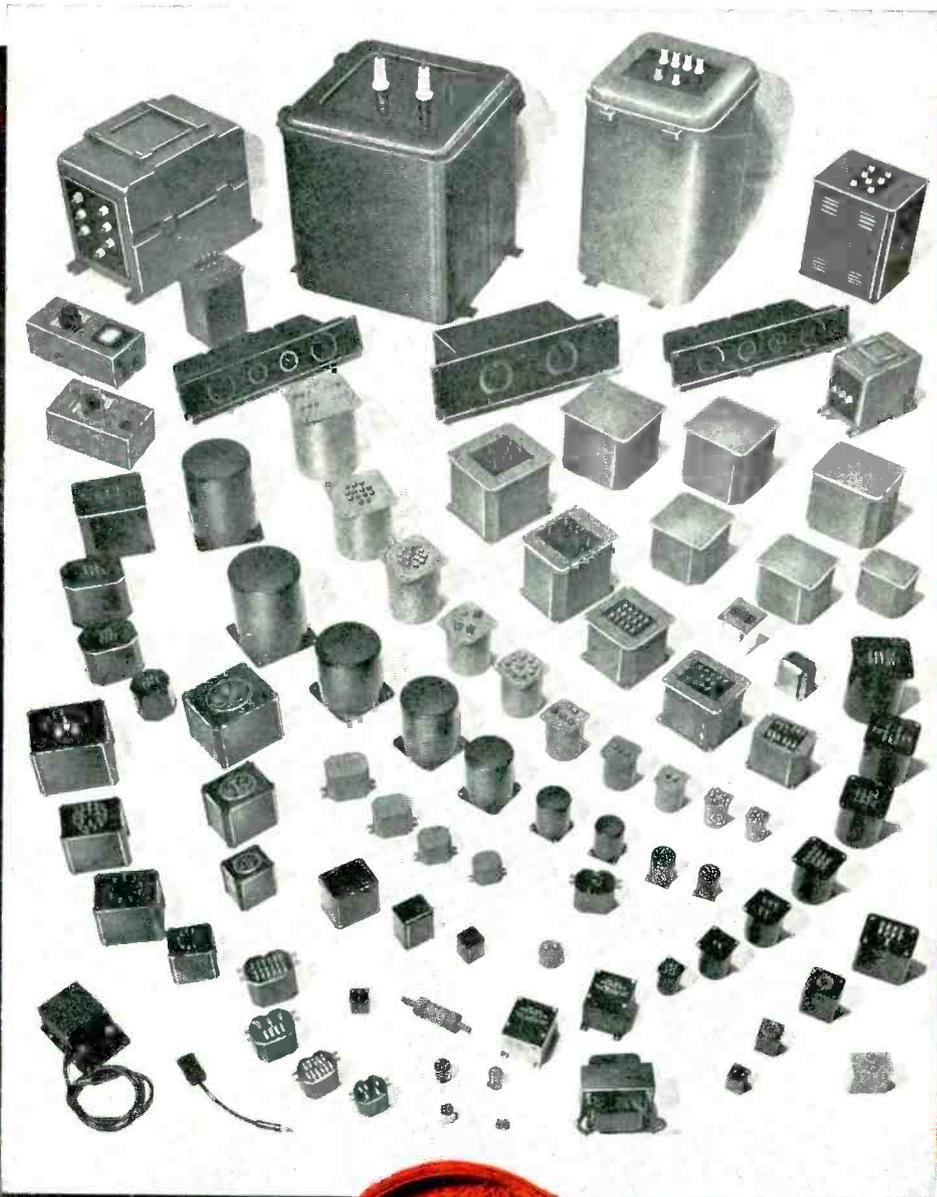
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# electronics BUYERS' GUIDE

1947-1948

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James H. McGraw, Jr., President; Curtis W. McGraw, Senior Vice-President and Treasurer; Nelson Bond, Director of Advertising; E. P. Hunt, Vice-President; Joseph A. Gerardi, Secretary; and J. E. Blackburn, Jr., Vice-President for circulation operations. **ELECTRONICS**, June 1947—MID-MONTH, Vol. 20; No. 6B. Published monthly, with an additional issue in June, price 75¢. Subscription rates—United States and possessions, \$5.00 a year, \$9.00 for two years, \$12.00 for three years. Canada, \$6.00 for one year, \$10.00 for two years, \$14.00 for three years. Pan American countries \$10.00 for one year, \$16.00 for two years, \$20.00 for three years. Please indicate position and company connection on all subscription orders. Entered as Second-Class Matter, June 15, 1935, under the Act of March 3, 1879. BRANCH OFFICES: 520 North Michigan Avenue, Chicago; 100 Abchurch Lane, London, W. C. 2; Washington, D. C. 4; Philadelphia 3; Cleveland 15; Detroit 26; St. Louis 8; Pittsburgh 22.



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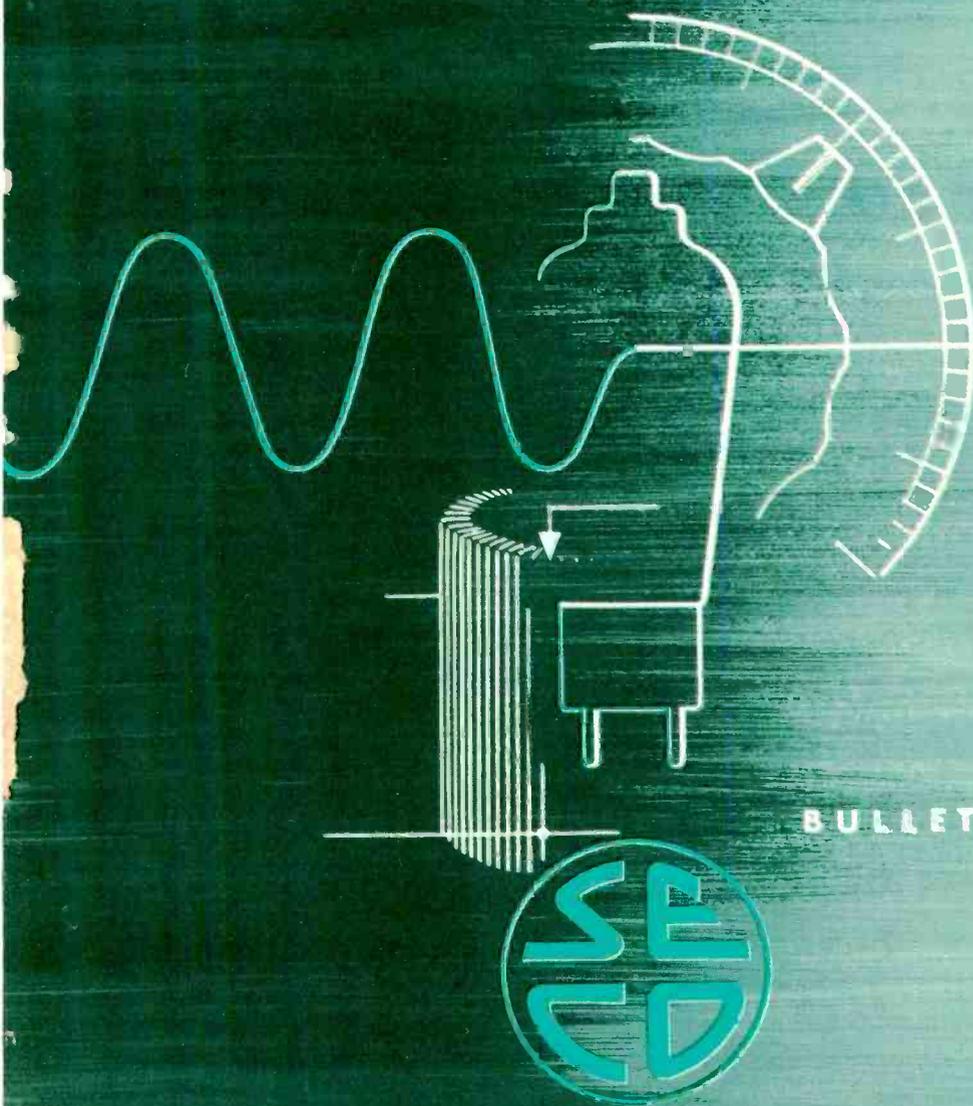
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**NOW** *is the time . . . .*

**TO INCLUDE THE 1948-49  
ELECTRONICS BUYERS' GUIDE  
IN NEXT YEARS' ADVERTISING BUDGET**

# SUPERIOR VOLTAGE CONTROL



BULLETIN 547



THE SUPERIOR ELECTRIC CO., BRISTOL, CONN., U. S. A.

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MODELS 1

# VOLTAGE CONTROL

## by SUPERIOR



With the rapid advancements and improvements in electrical apparatus the need for precise voltage control has become more and more critical. This bulletin will serve as your guide in selecting the correct POWERSTAT variable transformer to obtain continuously adjustable voltage from a-c power lines, a STABILINE voltage regulator to maintain a constant output voltage from fluctuating lines, and test instruments for variable voltage testing. If a voltage control problem is unusual, do not hesitate to consult the specialists in voltage control at The Superior Electric Company. Expert advice is available whether the application involves the control of heat, light, sound, or any phase of electronics or power.

## POWERSTAT VARIABLE TRANSFORMERS

A POWERSTAT variable transformer is an auto-transformer of toroidal core design with a movable brush tap which rotates to deliver a continuously adjustable output voltage from a-c power lines. Incorporated into each POWERSTAT are superior qualities of top electrical performance, rugged mechanical construction, compact design, and durability. The cut-away structural view of the type 20, together with figures 1 and 2, illustrate some of these features.



TYPE 20  
CUTAWAY

**EXCELLENT REGULATION** — negligible variation in output voltage from no load to full load current (Figure 1).

**HIGH EFFICIENCY** — at all output voltages (Figure 2) . . . Such is in contrast to the inefficient wasteful control offered by rheostats.

**CONSERVATIVELY RATED** — current ratings of all POWERSTATS is the current available over the entire range of output voltage. When operated at the nameplate rating, the temperature rise of POWERSTATS does not exceed 50 degrees centigrade under continuous full load current.

**ZERO WAVEFORM DISTORTION** — result of superior coil and core design and use of highest grade silicon steel.

**RUGGED MECHANICAL CONSTRUCTION** — extra large aluminum brush heat radiator . . . durable brush assembly . . . securely mounted core and coil . . . assembled by craftsmen to assure long life.

**SMOOTH CONTROL** — glass smooth commutator surface and advanced winding technique permit adjustment to fractions of a volt.

**EASY TO MOUNT** — for bench, wall, back-of-panel.

\*POWERSTAT is the United States registered trademark of all the variable transformers manufactured by The Superior Electric Company. Licensed under U. S. Patent Number 2,009,013.

To facilitate ordering and as an aid in selecting the POWERSTAT variable transformer most suited to a particular voltage control requirement, representative photographs together with mounting and outline dimensions are shown on

the following pages for each basic type. For ease of discussion, POWERSTATS have been grouped as to frame size. The basic frame sizes are the type 20; the 116 and 216; the 1126 and 1226; the 1156 and 1256.

## POWERSTAT PERFORMANCE DATA

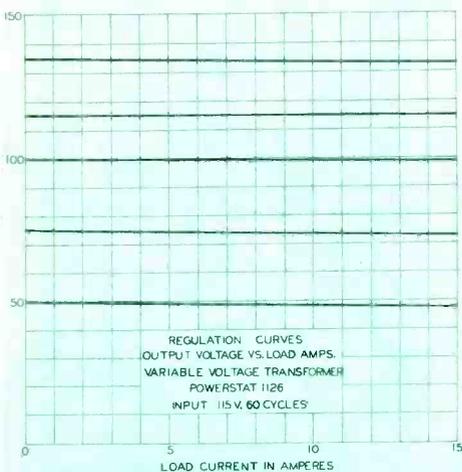


FIG. 1

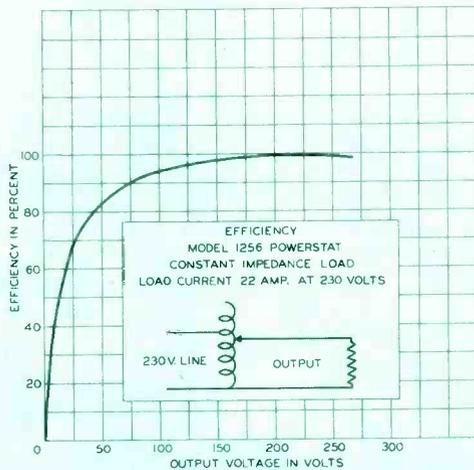


FIG. 2

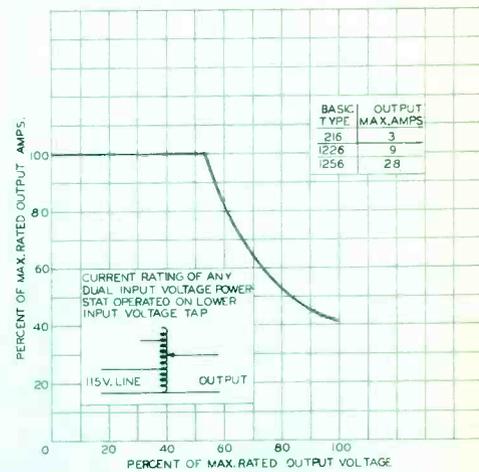


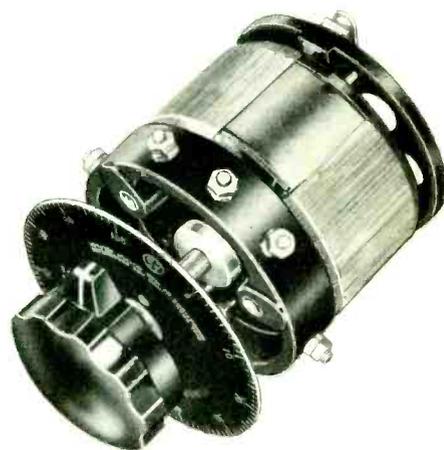
FIG. 3

# POWERSTAT TYPE 20

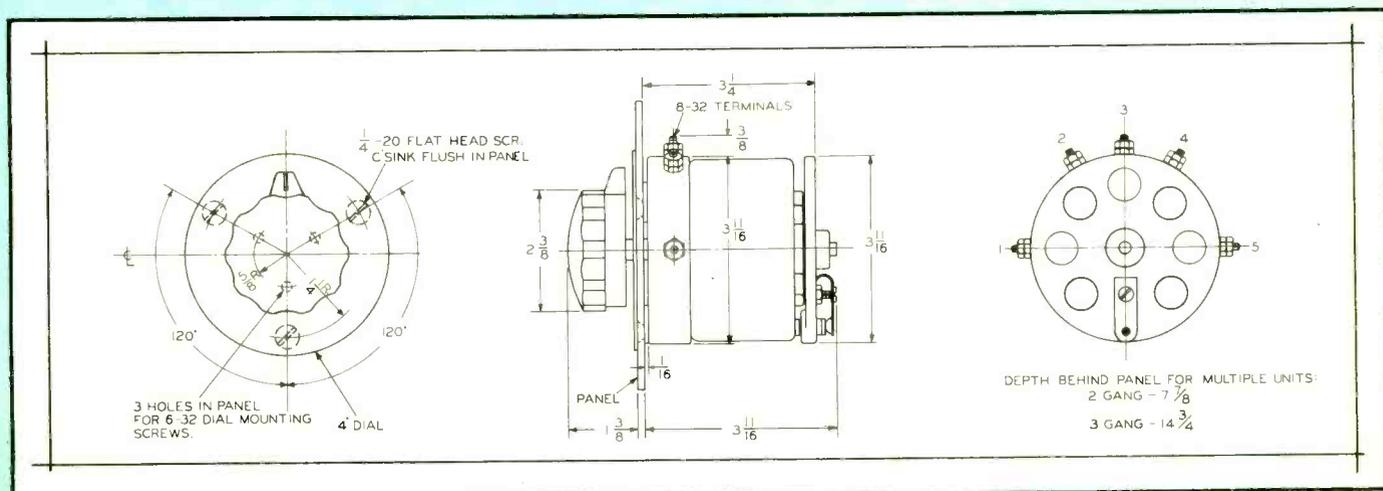
Although the smallest in physical and electrical size of the entire POWERSTAT line, the type 20 is extremely durable. Reference to the cut-away view on page 2 shows the rugged radiator, brush assembly, coil locking arrangement, and mounting base. Its current rating of 3.0 amperes exceeds all other units of comparable mounting dimensions. Five terminals permit clockwise or counter-clockwise rotation for increasing voltage up to, or above line voltage. For three phase operation, type 20 can be ganged for wye or open-delta operation. All type 20 units are designed for back-of-panel mounting.



TYPE 20-2



TYPE 20



# POWERSTAT TYPES 116 - 216

The popular types 116 and 216 find wide application in laboratories and throughout industry as the ideal source of continuously variable voltage for loads up to 1 KVA. In appearance and features both units are alike but the 116 operates on 115 volts while its companion, the 216, is designed for 230 volt operation. Both types are bench or wall mounted. Incorporated into each type is protective screening, output receptacle, "on-off" switch, input cord-plug, and a fuse in the output lead for instrument protection. Standard units are furnished to deliver an output voltage 17.5 percent above line but the output voltage can be limited to line voltage when so specified. This is known as an "L" type connection. Type 216 can be connected at the factory, if the user desires, to operate from a 115 volt source to deliver 0-270 volts output. With this type of connection, the allowable output current must not exceed the currents shown in figure 3.

When types 116 and 216 are to be back-of-panel mounted, the screening, output receptacle, "on-off" switch, input cord-plug, and fuse are not supplied. To

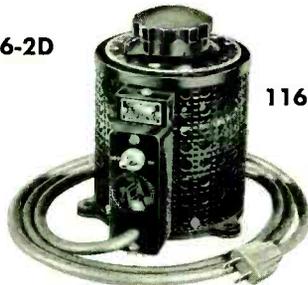
differentiate these uncased units from the cased bench-mounting types, the letter "U" follows the type number. Types 116U and 216U differ also from the 116 and 216 in that the turning shaft protrudes from the base mounting end. If it is desirable to have types 116U and 216U with the turning shaft extended from the commutator end, models 116UI and 216UI should be ordered. Connection to the uncased models is easily made by removing the terminal cover and soldering to the correct terminal lugs. Clockwise or counter-clockwise rotation for increasing voltage up to or above line may be obtained.

**POLYPHASE OPERATION . . .** Types 116 and 216 are tandem-mounted for series connection single phase and open-delta or wye connection three phase duty. Ganged assemblies are supplied with screening, dial and knob, but without fuse, output receptacle, "on-off" switch or input cord-plug. By providing a short shaft extension with ganged assemblies, bench mounting can readily be converted to back-of-panel mounting.

**MOTOR DRIVES . . .** All single and multiple types 116 and 216 can be adapted to motor operation. Speed of travel is shown on page 9.



116-2D



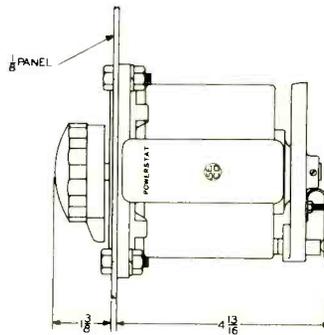
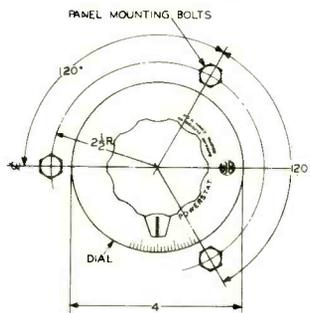
116



116 U



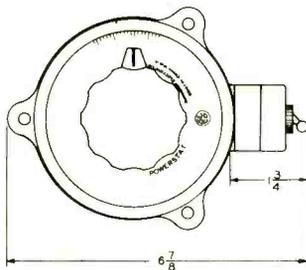
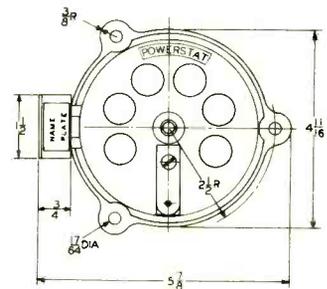
MT116



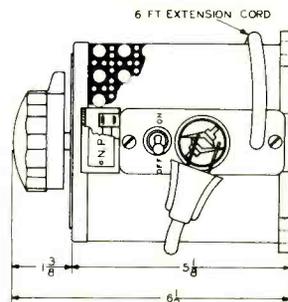
DEPTH BEHIND PANEL FOR MULTIPLE UNITS:

2 GANG -  $10 \frac{1}{8}$

3 GANG -  $16 \frac{1}{4}$



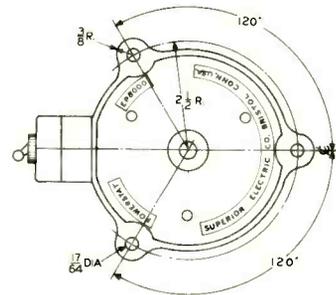
NOTE: WITH 2 AND 3 GANGS UNITS TERMINALS ONLY ARE PROVIDED. EXTENSION CORD, OUTPUT RECEPTACLE, SWITCH, AND FUSE ARE NOT FURNISHED.



HEIGHT OF MULTIPLE UNITS:

2 GANG -  $12 \frac{3}{8}$

3 GANG -  $17 \frac{3}{4}$



HEIGHT OF MOTOR OPERATED POWERSTATS:  
ADD  $6 \frac{1}{16}$  IN. TO HEIGHT OF SINGLE, 2 OR 3 GANGS UNITS TO OBTAIN OVERALL HEIGHT OF MOTOR OPERATED 116 OR 216 POWERSTATS.

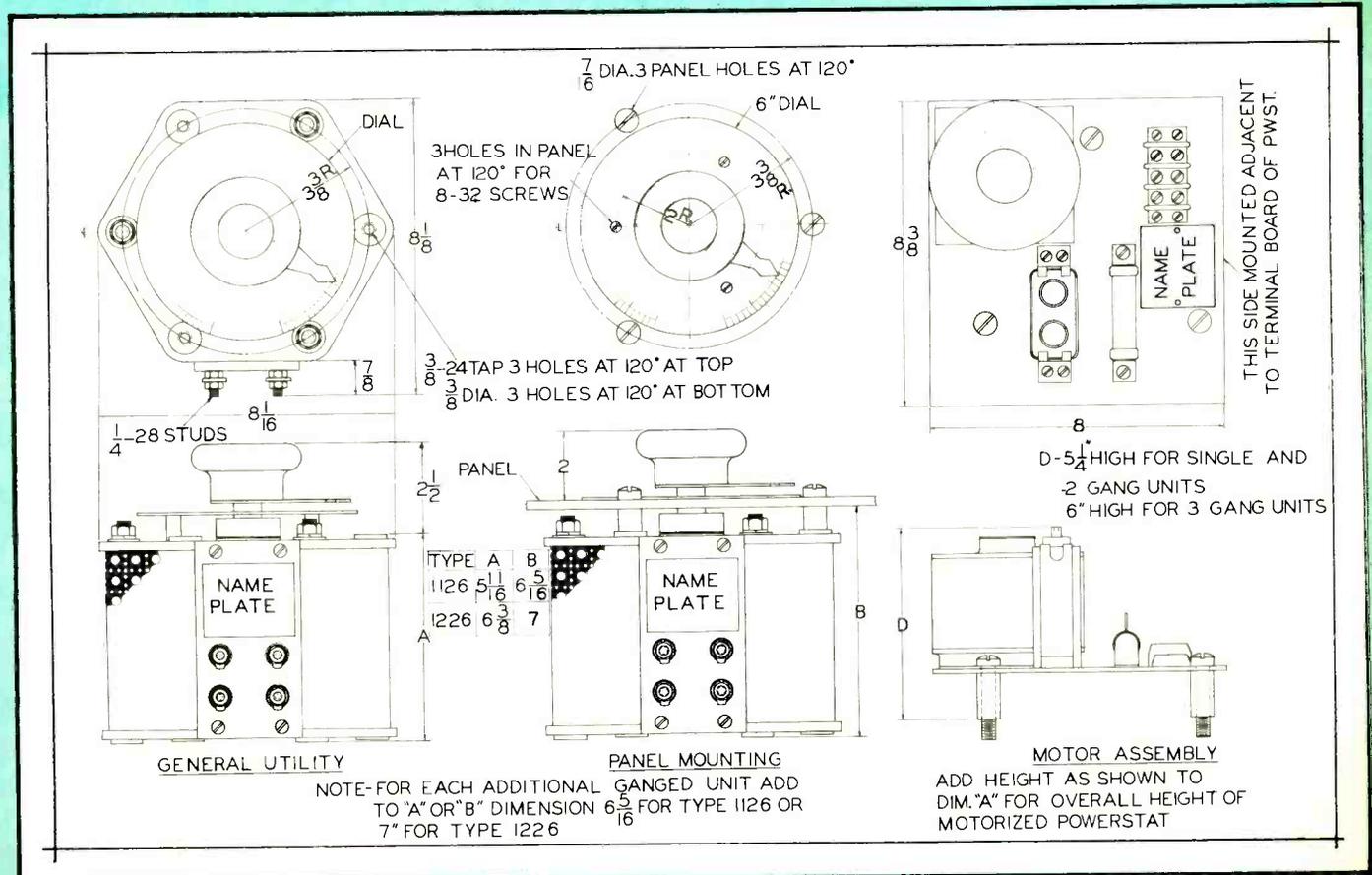
# POWERSTAT

## TYPES 1126 - 1226

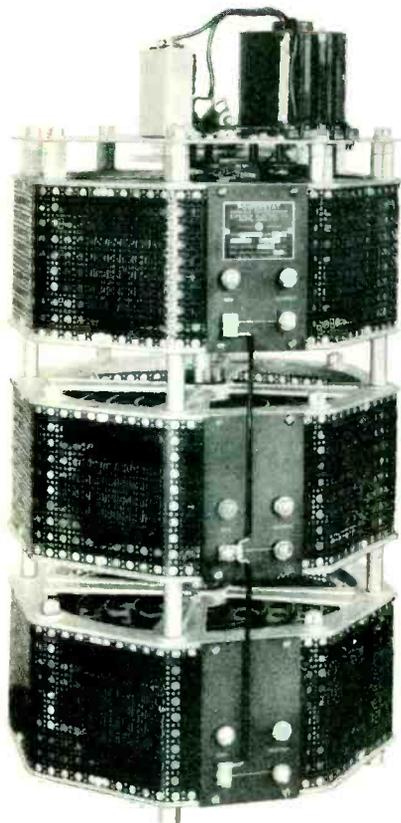
MY1226-3Y

Factory terminology refers to POWERSTATS types 1126 and 1226 as the 2 KVA frame size units. The versatility of connection and terminal arrangement of the 2 KVA series permits the selection of a standard unit from the rating chart to suit any application within the rating. When exposed terminal studs are required, type 1126 as illustrated, is supplied for 115 volt duty. Its companion, the 1226 for 230 volt operation, has the terminal board arrangement as shown in the tandem-mounted type MY1226-3Y. For greater voltage and current single phase requirements, units are tandem-mounted and series or parallel connected. To achieve three phase operation, units are ganged and open-delta or wye connected. Type MY1226-3Y is a typical ganged assembly. All units in the 2 KVA series with exposed terminal studs can be obtained with motor-operators. Four standard travel times—6, 14, 19, and 45 seconds for full range travel—are offered to fulfill the needs of most requirements.

**THE FUSED MODELS . . .** For those users who do not wish to perform the task of connecting leads and desire a POWERSTAT of 2 KVA capacity with input cord-plug and output receptacle, models 2PF and 3PF are available. The 2PF model is designed for 2 wire service and the plug and receptacle are straight blade type. The 3PF has the straight blade type plug and receptacle but is used on a three wire system with the third wire solidly grounded to the POWERSTAT frame. If a twist-lock type plug and receptacle is desired, the letter "T" is substituted for "P". Instrument and user protection is assured on all models by a fuse in the output lead housed in the cast-aluminum terminal box. When fuse protection is desired without the input cord-plug and output receptacle feature, types F1126 and F1226 are offered. These models have the same terminal stud arrangement as types 1126 and 1226 but a fuse is mounted on the terminal board and a bakelite cover protects both fuse and terminal studs.



# POWERSTAT TYPES 1156 - 1256



POWERSTAT is the tradename of all variable transformers manufactured by The Superior Electric Company; but, when referring to types 1156 and 1256, the "POWER" in POWERSTAT has a most significant connotation. Large amounts of power are controlled by the turn of a handwheel or by the finger-tip adjustment of a "raise-lower" switch. Type 1156 (the 115 volt unit) controls any load up to 45 amperes while the 1256 (the 230 volt unit) has a current rating of 28 amperes. To obtain greater single phase ratings, type 1156 is parallel connected in ganged assemblies as high as six individual units on a common shaft to deliver a variable voltage to load requirements up to 270 amperes. Type 1256 when parallel connected in a six gang assembly offers a variable output of 0-270 volts at 168 amperes. For 440 volt single phase duty, type 1256 is available in a series-parallel connection in mountings up to six gang to deliver an output of 0-515 volts at 84 amperes. This series-parallel connected type 1256 is catalogued as type 1256-6PS.

Three phase applications enjoy the same high degree of versatile connection arrangements. Type 1156 is open-delta connected for 115 volt operation and wye connected for 230 volt duty. The same connections are employed for 230 and 440 volt service with type 1256. Individual applications dictate the number of units that must be paralleled on each leg of the three phase connection to achieve the required current capacity.

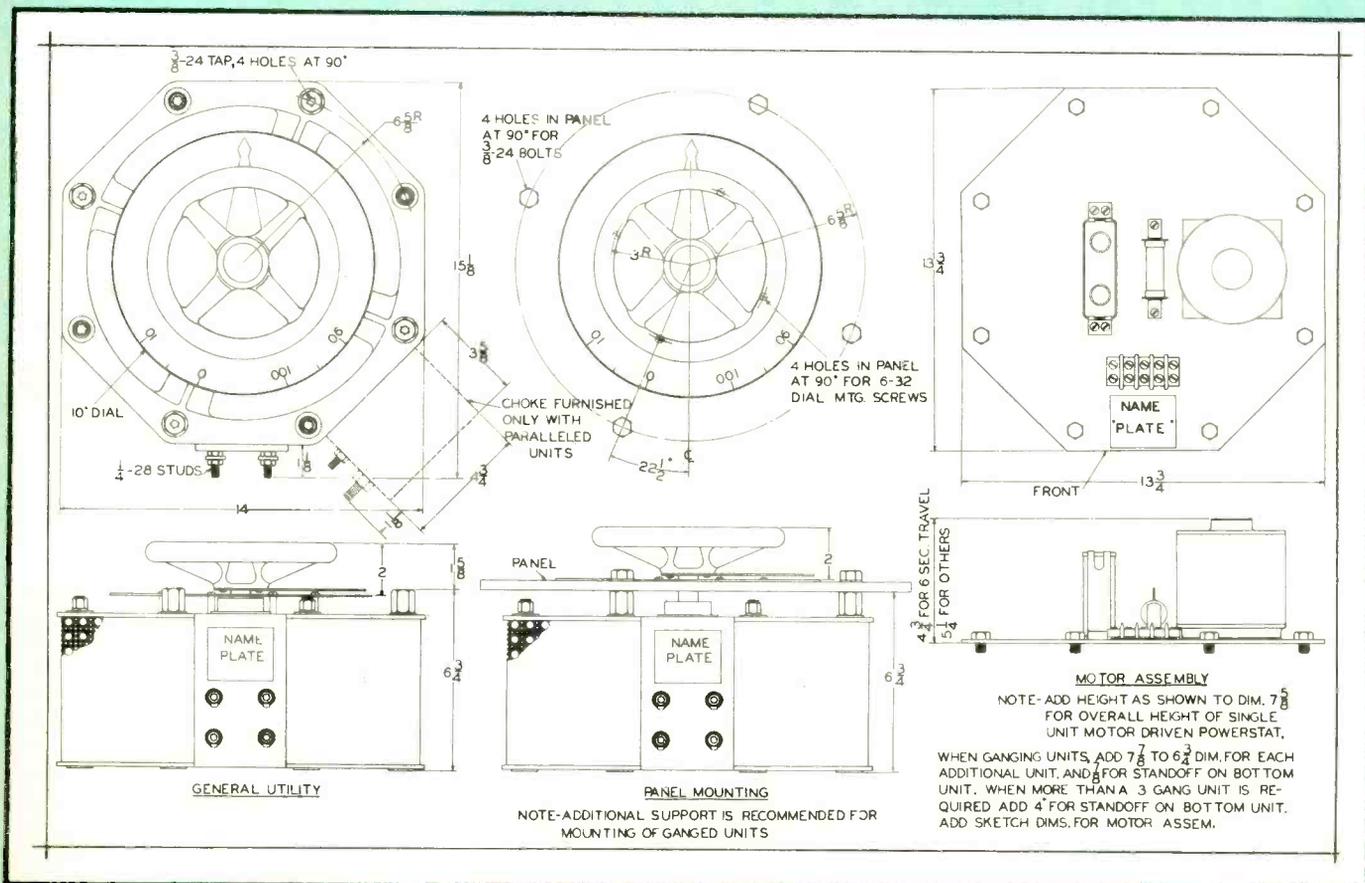
When motor-driven units are better suited to the needs of a particular application, the single units and up to three ganged assemblies are available in speeds of 6, 14, 19, and 45 seconds for full range travel. Although all ganged assemblies can be supplied for manual control, it is recommended that units of four gang and larger be motor driven. These POWERSTATS have standard speeds of travel of 14, 19, and 45 seconds.

The terminal board arrangement of type 1256 is illustrated in the photograph. Motor-driven POWERSTAT type MW1156L-3Y shows the terminal arrangement of type 1156 and the compactness of a three gang motor-driven assembly.

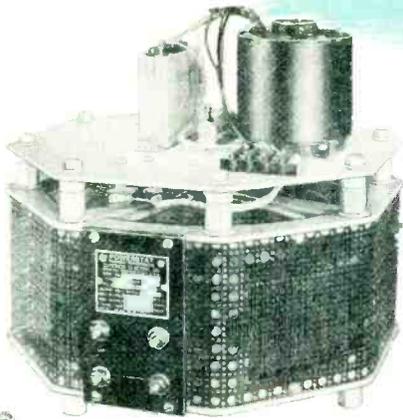


MW1156L-3Y

1256



**POWERSTAT  
MX1156**



**POWERSTAT  
0-1126**



**POWERSTAT  
2106LC**



**MOTOR-DRIVEN POWERSTATS . . .** Many applications require that POWERSTATS be controlled from remote push-button stations or by automatic controllers. For these requirements, a standard line of motor-driven POWERSTAT variable transformers is available in the same capacities as manually operated units. To offer the same control as obtained with handwheel adjustment, a special three wire synchronous motor is used to drive the POWERSTAT. It consists of two windings with externally mounted capacitor and resistor. By employing the appropriate gearing combinations, various speeds can be obtained to suit each need. Standard speeds of travel from zero to maximum output voltage are listed in the rating table on page 9. The motor assembly operates from a 115 volt single phase source and the maximum current requirement is .4 amperes. The rotor shaft is ball-bearing mounted, assuring long life and quiet operation. Rapid starting and practically instantaneous stopping are inherent characteristics.

**OIL-COOLED POWERSTATS . . .** Space limitations and the atmosphere in which a POWERSTAT is to operate sometimes dictate the use of an oil-cooled unit. The capacity of POWERSTATS can be increased above normal air-operation when mounted in transformer oil. The amount of increase depends upon such factors as the type of POWERSTAT, quantity of oil, area of wetted surface, and type of container. Most POWERSTATS can be adapted to oil mounting but since applications vary extensively only single phase 0-116, 0-216, 0-1126, and 0-1226 types are available as standard. Type 0-1126 illustrated is a typical unit. Any problems regarding the use of oil-cooled POWERSTATS should be referred to the factory.

**POWERSTAT LINE CORRECTORS . . .** Where the wide output voltage range of a POWERSTAT variable transformer is not necessary, but relatively large amounts of power must be controlled, a POWERSTAT LINE CORRECTOR is recommended. As shown in connections 6 and 11 on page 8, a POWERSTAT type LC consists of a POWERSTAT, appropriately tapped, controlling the primary of a step-down fixed-ratio transformer. By rotating the brush element, different voltages are applied enabling the secondary, which is in series with one side of the line, to buck or boost the line voltage. POWERSTAT LINE CORRECTORS are ordinarily used for line voltage correction to obtain a nominal output voltage from varying power lines. These units may also be used on a constant voltage line to furnish an output voltage variable over a limited range at large current capacities. Pictorially shown is single phase type 2106LC.

## VOLTBOX A-C POWER SUPPLIES

For variable voltage testing, it is desirable to have in addition to the essential POWERSTAT variable transformer, a voltmeter, circuit protection, and some means of quickly de-energizing the system. To collect each of these elements and carry to the place of test is an arduous task. A VOLTBOX a-c power supply contains all the components necessary for variable voltage testing in a compact portable black wrinkle-finished cabinet.

### THE REGULATED MODEL

For testing from a stable single phase power source, an unregulated VOLTBOX is generally employed. This type consists of a POWERSTAT variable transformer, a large four inch easily read voltmeter; combination quick-trip magnetic circuit-breaker and "on-off" switch; pilot light; output receptacles and binding posts; six foot cord and plug. Four types of unregulated VOLTBOXES are listed as standard in the rating chart on page 9.



**U-1000**

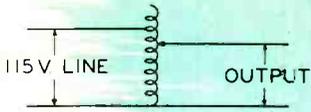


### THE UNREGULATED MODELS

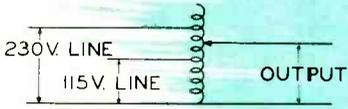
**R-500**

When variable voltage testing is required but the incoming line voltage fluctuates to such an extent that stable readings are impossible, some means of voltage stabilization must be placed in the line ahead of the VOLTBOX. The best procedure is to use a STABILINE voltage regulator type IE in conjunction with an unregulated VOLTBOX; however, many applications necessitate that the voltage stabilizer and variable voltage element be together in a self-contained portable cabinet. For these applications a regulated VOLTBOX should be used. This instrument is similar in every detail to the unregulated models except a transformer type stabilizer is included to provide the constant voltage feature. It will maintain the voltage supplied to the POWERSTAT in the VOLTBOX to within  $\pm 1\%$  of nominal for a total primary variation of 30 percent. As a word of caution, it must be remembered that the transformer type voltage stabilizer in the regulated VOLTBOX will not function with the same high degree of performance as experienced with the STABILINE voltage regulators.

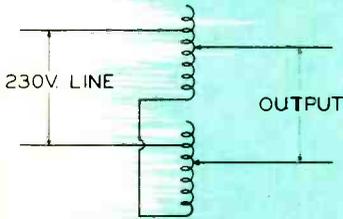
# CONNECTION ARRANGEMENTS



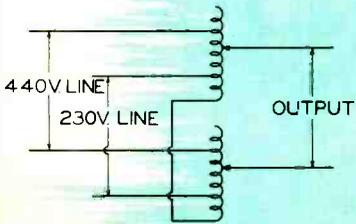
SINGLE PHASE CONNECTION 1



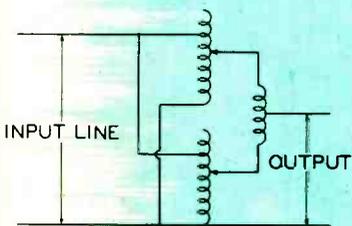
SINGLE PHASE CONNECTION 2



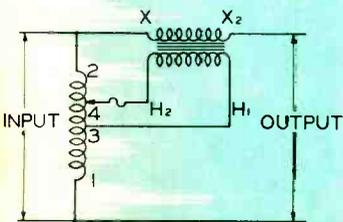
SINGLE PHASE CONNECTION 3



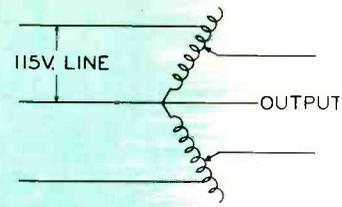
SINGLE PHASE CONNECTION 4



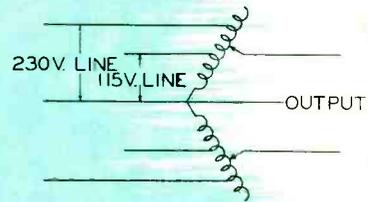
SINGLE PHASE CONNECTION 5



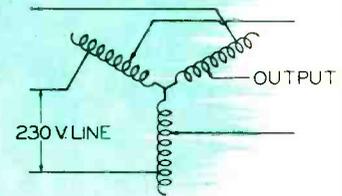
TYPICAL MANUALLY OPERATED SINGLE PHASE LINE CORRECTOR POWERSTAT TYPE LC CONNECTION 6



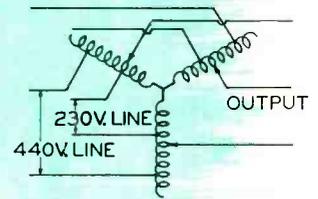
THREE PHASE CONNECTION 7



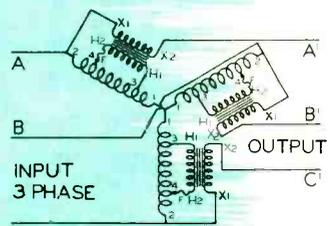
THREE PHASE CONNECTION 8



THREE PHASE CONNECTION 9



THREE PHASE CONNECTION 10



TYPICAL MANUALLY OPERATED THREE PHASE LINE CORRECTOR POWERSTAT TYPE LC CONNECTION 11

A distinct advantage of the POWERSTAT variable transformer is the number of connection arrangements. This enables a POWERSTAT to offer a variable voltage to any circuit requirement. On this page are shown the various methods of connection. Connection 1 is the connection employed for 115 volt single phase units such as types 20, 116, 1126, and 1156. Types 216U, 1226 and 1256 have the connections as shown in connection #2 to offer a variable voltage from 230 or 115 volt lines. POWERSTAT type 216 must be connected for either 115 or 230 volt service at the factory. By tandem mounting these single phase units in a series or parallel connection, increased voltage or current ratings are obtained. The letter "S" or "P" is appended to the single unit type number to denote series and parallel connection, respectively. The number of units ganged in an assembly is noted by appending this number after the single unit type number together with the letter denoting the type of connection. Connection #3 illustrates series connected two gang assembly such as 1156-2S and connection #4 shows the same type of connection for any 230 volt single phase POWERSTAT. A parallel type connection is shown in connection #5. A combination of series and parallel connections is necessary to achieve certain voltage and current ratings. An example is POWERSTAT type 1256-4PS; a 440 volt unit which delivers an output of 0-515 volts at 56 amperes. Connections 7, 8, 9, and 10 show the three phase type connections. Individual units are ganged and open-delta or wye connected. By paralleling units on each leg of the three phase system, unusually large power controlling capabilities are possible. The letters "D" and "Y" following the basic type number together with the number of units in the assembly denote open-delta and wye connection, respectively. An example of an open-delta connected POWERSTAT is type 1126-2D (connection #7) and of a wye connected unit is POWERSTAT type 1256-3Y (connection #10).

Unless specified to the contrary, POWERSTATS are supplied as shown in the rating table. If the maximum output voltage must be limited to the applied voltage, an "L" type unit must be designated when ordering, except on the type 20 and uncased 1 KVA models. Above the line and "L" terminals are provided as standard on these latter types. For instance, where POWERSTAT type 1126 is required to deliver an output of 0-115 volts from a 115 volt source, type 1126L should be specified when ordering.

Although not listed in the rating chart, POWERSTATS are available in ganged assemblies with each unit electrically independent but mechanically coupled on a common shaft. Each unit in the assembly will have the single phase rating of that particular unit. The letter "E" together with the number of units in the assembly is affixed to the single unit type number to designate this arrangement.

# R A T I N G S

## STANDARD POWERSTAT VARIABLE TRANSFORMERS

## POWERSTAT LINE CORRECTORS

| Line Voltage        | Output Voltage | Maximum Output Amperes | Output KVA | Frequency | Type Connection | Type (see note 1) | Approx. Wt. (Lbs.) | Ship. Wt. (Lbs.) | Standard Motor Speeds (see note 2) |   |
|---------------------|----------------|------------------------|------------|-----------|-----------------|-------------------|--------------------|------------------|------------------------------------|---|
| <b>Single Phase</b> |                |                        |            |           |                 |                   |                    |                  |                                    |   |
| 115                 | 0-135          | 3.0                    | 0.4        | *60       | 1               | 20                | 4                  | 6                | —                                  |   |
|                     | 0-135          | 7.5                    | 1.0        | 50/60     | 1               | 116               | 9.5                | 12               | T                                  |   |
|                     | 0-135          | 15.0                   | 2.0        | 50/60     | 1               | 1126              | 21                 | 25               | W,X,Y,Z                            |   |
|                     | 0-135          | 30.0                   | 4.0        | 50/60     | 5               | 1126-2P           | 48                 | 55               | W,X,Y,Z                            |   |
|                     | 0-135          | 45.0                   | 6.1        | 50/60     | 1               | 1156              | 73                 | 80               | W,X,Y,Z                            |   |
|                     | 0-135          | 90.0                   | 12.1       | 50/60     | 5               | 1156-2P           | 150                | 170              | W,X,Y,Z                            |   |
|                     | 0-135          | 135.0                  | 18.2       | 50/60     | 5               | 1156-3P           | 225                | 295              | W,X,Y,Z                            |   |
|                     | 0-135          | 180.0                  | 24.3       | 50/60     | 5               | 1156-4P           | 330                | 420              | W,X,Y                              |   |
|                     | 0-135          | 270.0                  | 36.4       | 50/60     | 5               | 1156-6P           | 500                | 600              | W,X,Y                              |   |
|                     | 0-270          | 3.0†                   | 0.35       | 50/60     | 2               | 216               | 9.5                | 12               | T                                  |   |
|                     | 0-270          | 9.0†                   | 1.05       | 50/60     | 2               | 1226              | 25                 | 30               | W,X,Y,Z                            |   |
|                     | 0-270          | 28.0†                  | 3.27       | 50/60     | 2               | 1256              | 73                 | 80               | W,X,Y,Z                            |   |
| 230                 | 0-270          | 3.0                    | 0.81       | 50/60     | 2               | 216               | 9.5                | 12               | T                                  |   |
|                     | 0-270          | 7.5                    | 2.0        | 50/60     | 3               | 116-2S            | 18                 | 23               | T                                  |   |
|                     | 0-270          | 9.0                    | 2.4        | 50/60     | 2               | 1226              | 25                 | 29               | W,X,Y,Z                            |   |
|                     | 0-270          | 15.0                   | 4.0        | 50/60     | 3               | 1126-2S           | 45                 | 52               | W,X,Y,Z                            |   |
|                     | 0-270          | 28.0                   | 7.5        | 50/60     | 2               | 1256              | 73                 | 80               | W,X,Y,Z                            |   |
|                     | 0-270          | 45.0                   | 12.1       | 50/60     | 3               | 1156-2S           | 144                | 164              | W,X,Y,Z                            |   |
|                     | 0-270          | 56.0                   | 15.1       | 50/60     | 5               | 1256-2P           | 150                | 170              | W,X,Y,Z                            |   |
|                     | 0-270          | 84.0                   | 22.7       | 50/60     | 5               | 1256-3P           | 225                | 295              | W,X,Y,Z                            |   |
|                     | 0-270          | 112.0                  | 30.2       | 50/60     | 5               | 1256-4P           | 330                | 420              | W,X,Y                              |   |
|                     | 0-270          | 168.0                  | 45.0       | 50/60     | 5               | 1256-6P           | 500                | 600              | W,X,Y                              |   |
|                     | 0-540          | 3.0†                   | 0.7        | 50/60     | 4               | 216-2S            | 18                 | 23               | T                                  |   |
|                     | 0-540          | 9.0†                   | 2.1        | 50/60     | 4               | 1226-2S           | 53                 | 60               | W,X,Y,Z                            |   |
| 0-540               | 28.0†          | 6.5                    | 50/60      | 4         | 1256-2S         | 144               | 164                | W,X,Y,Z          |                                    |   |
| 440                 | 0-515          | 3.0                    | 1.5        | 50/60     | 4               | 216-2S            | 18                 | 23               | T                                  |   |
|                     | 0-515          | 9.0                    | 4.6        | 50/60     | 4               | 1226-2S           | 53                 | 60               | W,X,Y,Z                            |   |
|                     | 0-515          | 28.0                   | 14.4       | 50/60     | 4               | 1256-2S           | 144                | 164              | W,X,Y,Z                            |   |
|                     | 0-515          | 56.0                   | 28.8       | 50/60     | 48.5            | 1256-4PS          | 330                | 420              | W,X,Y                              |   |
|                     | 0-515          | 84.0                   | 43.2       | 50/60     | 48.5            | 1256-6PS          | 500                | 600              | W,X,Y                              |   |
| <b>Three Phase</b>  |                |                        |            |           |                 |                   |                    |                  |                                    |   |
| 115                 | 0-135          | 3.0                    | 0.7        | *60       | 7               | 20-2D             | 9                  | 19               | —                                  |   |
|                     | 0-135          | 7.5                    | 1.8        | 50/60     | 7               | 116-2D            | 18                 | 23               | T                                  |   |
|                     | 0-135          | 15.0                   | 3.5        | 50/60     | 7               | 1126-2D           | 45                 | 52               | W,X,Y,Z                            |   |
|                     | 0-135          | 45.0                   | 10.5       | 50/60     | 7               | 1156-2D           | 144                | 164              | W,X,Y,Z                            |   |
|                     | 0-135          | 90.0                   | 21.0       | 50/60     | 58.7            | 1156-4D           | 320                | 410              | W,X,Y,Z                            |   |
|                     | 0-135          | 135.0                  | 31.6       | 50/60     | 58.7            | 1156-6D           | 490                | 590              | W,X,Y                              |   |
|                     | 0-270          | 3.0†                   | 0.6        | 50/60     | 8               | 216-2D            | 18                 | 23               | T                                  |   |
|                     | 0-270          | 9.0†                   | 1.8        | 50/60     | 8               | 1226-2D           | 53                 | 60               | W,X,Y,Z                            |   |
|                     | 0-270          | 28.0†                  | 5.7        | 50/60     | 8               | 1256-2D           | 144                | 164              | W,X,Y,Z                            |   |
|                     | 230            | 0-230                  | 3.0        | 1.2       | *60             | 9                 | 20L-3Y             | 15               | 28                                 | — |
|                     |                | 0-270                  | 3.0        | 1.4       | 50/60           | 8                 | 216-2D             | 18               | 23                                 | T |
|                     |                | 0-270                  | 7.5        | 3.5       | *60             | 9                 | 116-3Y             | 27               | 37                                 | T |
| 0-270               |                | 9.0                    | 4.2        | 50/60     | 8               | 1226-2D           | 53                 | 60               | W,X,Y,Z                            |   |
| 0-270               |                | 15.0                   | 7.0        | *60       | 9               | 1126-3Y           | 65                 | 75               | W,X,Y,Z                            |   |
| 0-270               |                | 28.0                   | 13.1       | 50/60     | 9               | 1256-2D           | 144                | 164              | W,X,Y,Z                            |   |
| 0-230               |                | 45.0                   | 17.9       | 50/60     | 9               | 1156L-3Y          | 215                | 280              | W,X,Y,Z                            |   |
| 0-270               |                | 56.0                   | 26.2       | 50/60     | 58.8            | 1256-4D           | 320                | 410              | W,X,Y                              |   |
| 0-270               |                | 84.0                   | 39.3       | 50/60     | 58.8            | 1256-6D           | 490                | 590              | W,X,Y                              |   |
| 0-230               |                | 90.0                   | 35.8       | 50/60     | 58.9            | 1156L-6Y          | 500                | 600              | W,X,Y                              |   |
| 0-540               |                | 3.0†                   | 1.2        | *60       | 10              | 216-3Y            | 27                 | 37               | T                                  |   |
| 0-540               |                | 9.0†                   | 3.6        | *60       | 10              | 1226-3Y           | 76                 | 86               | W,X,Y,Z                            |   |
| 0-540               | 28.0†          | 11.3                   | *60        | 10        | 1256-3Y         | 215               | 280                | W,X,Y,Z          |                                    |   |
| 440                 | 0-515          | 3.0                    | 2.7        | *60       | 10              | 216-3Y            | 27                 | 37               | T                                  |   |
|                     | 0-515          | 9.0                    | 8.0        | *60       | 10              | 1226-3Y           | 76                 | 86               | W,X,Y,Z                            |   |
|                     | 0-515          | 28.0                   | 25.0       | *60       | 10              | 1256-3Y           | 215                | 280              | W,X,Y,Z                            |   |
|                     | 0-515          | 56.0                   | 50.0       | *60       | 58.10           | 1256-6Y           | 500                | 600              | W,X,Y                              |   |

| Line Voltage        | Output Voltage | Maximum Output Amperes | Output KVA | Frequency | Type Connection | Type     | Approx. Wt. (Lbs.) | Ship. Wt. (Lbs.) | Standard Motor Speeds (see note 2) |
|---------------------|----------------|------------------------|------------|-----------|-----------------|----------|--------------------|------------------|------------------------------------|
| <b>Single Phase</b> |                |                        |            |           |                 |          |                    |                  |                                    |
| 95-135              | 115            | 52.0                   | 6.0        | 50/60     | 6               | 2106LC   | 65                 | 80               | W,X,Y,Z                            |
|                     |                | 130.0                  | 15.0       | 50/60     | 6               | 2115LC   | 175                | 200              | W,X,Y,Z                            |
| 195-255             | 230            | 32.5                   | 7.5        | 50/60     | 6               | 2207LC   | 75                 | 90               | W,X,Y,Z                            |
|                     |                | 120.0                  | 27.5       | 50/60     | 6               | 2228LC   | 180                | 205              | W,X,Y,Z                            |
| 380-500             | 440            | 15.0                   | 6.6        | 50/60     | 6               | 2407LC   | 70                 | 85               | W,X,Y,Z                            |
|                     |                | 40.0                   | 17.6       | 50/60     | 6               | 2418LC   | 180                | 205              | W,X,Y,Z                            |
| <b>Three Phase</b>  |                |                        |            |           |                 |          |                    |                  |                                    |
| 195-255             | 230            | 25.0                   | 10.0       | 50/60     | 11              | 3210YLC  | 185                | 210              | W,X,Y,Z                            |
|                     |                | 38.0                   | 15.0       | 50/60     | 11              | 3215YLC  | 200                | 225              | W,X,Y,Z                            |
|                     |                | 50.0                   | 20.0       | 50/60     | 11              | 3220YLC  | 215                | 240              | W,X,Y,Z                            |
|                     |                | 113.0                  | 45.0       | 50/60     | 11              | 3245YLC  | 535                | 615              | W,X,Y,Z                            |
|                     |                | 145.0                  | 58.0       | 50/60     | 11              | 3258YLC  | 570                | 750              | W,X,Y,Z                            |
| 380-500             | 440            | 16.0                   | 12.0       | 50/60     | 11              | 3412YLC  | 185                | 210              | W,X,Y,Z                            |
|                     |                | 22.0                   | 17.0       | 50/60     | 11              | 3417YLC  | 200                | 225              | W,X,Y,Z                            |
|                     |                | 33.0                   | 25.0       | 50/60     | 11              | 3425YLC  | 215                | 240              | W,X,Y,Z                            |
|                     |                | 66.0                   | 50.0       | 50/60     | 11              | 3450YLC  | 500                | 580              | W,X,Y,Z                            |
| 400-480             |                | 100.0                  | 75.0       | 50/60     | 11              | 3475YLC  | 550                | 630              | W,X,Y,Z                            |
|                     |                | 131.0                  | 100.0      | 50/60     | 11              | 34100YLC | 550                | 630              | W,X,Y,Z                            |

## OIL-COOLED POWERSTATS

| Line Voltage | Output Voltage | Maximum Output Amperes | Output KVA | Frequency | Type Connection | Type   | Approx. Wt. (Lbs.) | Ship. Wt. (Lbs.) |
|--------------|----------------|------------------------|------------|-----------|-----------------|--------|--------------------|------------------|
| 115          | 135            | 15.0                   | 2.0        | 50/60     | 1               | 0-116  | 44                 | 85               |
|              |                | 30.0                   | 4.0        | 50/60     | 1               | 0-1126 | 70                 | 100              |
| 230          | 270            | 6.0                    | 1.6        | 50/60     | 2               | 0-216  | 44                 | 85               |
|              |                | 18.0                   | 4.8        | 50/60     | 2               | 0-1226 | 74                 | 105              |

## VOLTBOX A-C POWER SUPPLIES

| Input Voltage | Output Voltage | Output Amperes | Frequency | Phase | Type   | Model       | Approx. Wt. (Lbs.) | Ship. Wt. (Lbs.) |
|---------------|----------------|----------------|-----------|-------|--------|-------------|--------------------|------------------|
| 115           | 0-135          | 7.5            | 50/60     | 1     | U-1000 | Unregulated | 20                 | 32               |
| 115           | 0-135          | 15.0           | 50/60     | 1     | U-2000 | Unregulated | 65                 | 105              |
| 230           | 0-270          | 3.0            | 50/60     | 1     | U-800  | Unregulated | 22                 | 34               |
| 230           | 0-270          | 9.0            | 50/60     | 1     | U-2400 | Unregulated | 69                 | 110              |
| 95-135        | 0-135          | 4.0            | 60        | 1     | R-500  | Regulated   | 60                 | 80               |

\*When these POWERSTATS are "L" connected so that the output does not exceed the applied voltage, the frequency range is 50/60 cycles.

†Values of maximum rated output current marked by the dagger apply to output voltage range from zero volts to 25 percent above input line voltage. For allowable output currents above this output voltage value, refer to figure 3 on page 3.

Note 1: If desired, POWERSTATS types 116 and 216 can be supplied with a three wire cord, plug and receptacle with the third wire grounded. To obtain this feature, prefix the letters 3PF to type numbers 116 or 216. On page 5 is explained the availability of types 1126 and 1226 with fuse protection, output receptacle and input cord-plug. When ordering, prefix the letters—F for fuse; 2PF, 3PF, for straight blade 2 or 3 wire types respectively; 2TF, 3TF, for twist-lock 2 or 3 wire types, respectively.

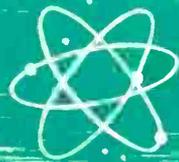
Note 2: When a motor-driven POWERSTAT is required, prefix the letters noted together with the letter "M" to denote motor drive and speed of travel. Letters noted are for time of full range travel from zero to maximum output voltage in seconds; T=5, W=45, X=19, Y=14, and Z=6. Since the driving motors are frequency sensitive, specify whether 50 or 60 cycle is required. Only manually operated POWERSTAT weights are listed; therefore, add 10, 11, and 14 pounds to the (116 & 216), (1126 & 1226), and (1156 & 1256) types, respectively when computing the weights of motor-driven POWERSTATS.

# STABILINE VOLTAGE REGULATORS

STABILINE automatic voltage regulators deliver a constant output voltage regardless of variations in input voltage or load current. Two distinct types of STABILINE automatic voltage regulators are available. One type referred to as the STABILINE INSTANTANEOUS ELECTRONIC regulator has no moving parts, and is completely electronic in operation. The other type known as the STABILINE ELECTROMECHANICAL regulator consists of an electronic detector circuit controlling a motor-driven POWERSTAT variable transformer. These basic differences in operation make it possible for STABILINE voltage regulators to meet the requirements of any problem in voltage regulation. Since the electromechanical regulator has moving parts, its speed of correction of line voltage fluctuations can not compare to the instantaneous correction offered by type IE. Another important difference is the design feature of extremely close control offered by the IE unit. On the other hand, for large size regulators, where low cost and high efficiency are paramount considerations the EM regulator can not be equalled. The electromechanical type has zero waveform distortion while the type IE produces a very small amount of waveform distortion. It is readily seen that each application will indicate which STABILINE automatic voltage regulator is to be employed to maintain constant voltage.



IE 5101



CABINET  
TYPE  
"C"



CABINET  
TYPE  
"B"



CABINET  
TYPE  
"A"

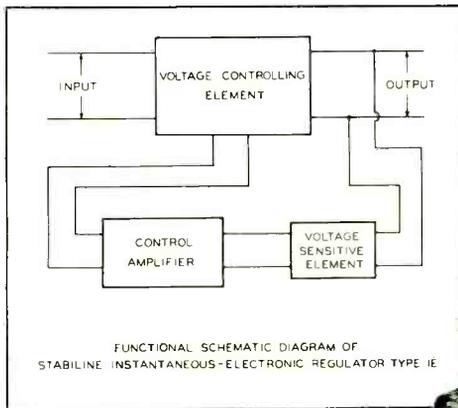
# INSTANTANEOUS *Electronic* MODELS

PATENT APPLIED FOR

To achieve instantaneous action with a waveform distortion not exceeding 3%—stable output voltage within  $\pm .1$  of 1% for wide line variations, the completely electronic STABILINE type IE automatic voltage regulator has been designed by The Superior Electric Company. The block diagram shows pictorially the method of operation. The desired output voltage may be selected by front-of-panel adjustment. When the output voltage varies from this preset value a signal from the voltage control circuit is supplied to the transformer regulating network. This network is connected between the input and output terminals of the regulator. The signal causes the effective transformation ratio between the input and output terminals to vary in the proper direction and magnitude to restore the output voltage to its preset value.

Referring to the chart which lists features of type IE regulators with respect to the input voltage range, output voltage range, frequency range, load current range, and power factor range; the maximum change in output voltage for any or all of these variations occurring simultaneously will not exceed  $\pm .25$  of 1%. For input voltage changes only, the change in output voltage will not exceed  $\pm .1$  of 1%. The response time depends upon the nature of the variation. Ordinarily complete correction is effected in from 3 to 10 cycles as shown in figures B and C. Distortion is usually considerably less than 3% as shown in figure A.

STABILINE type IE voltage regulators are available in attractive black wrinkle-finish cabinets.



REAR VIEW  
IE5101

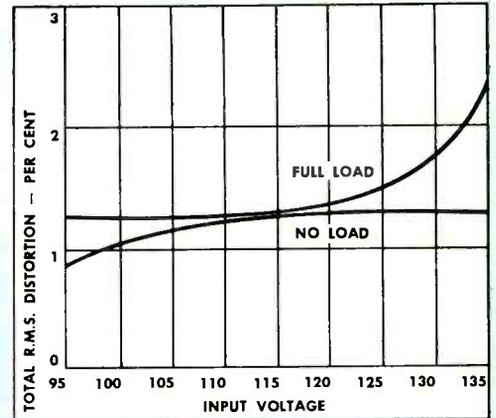
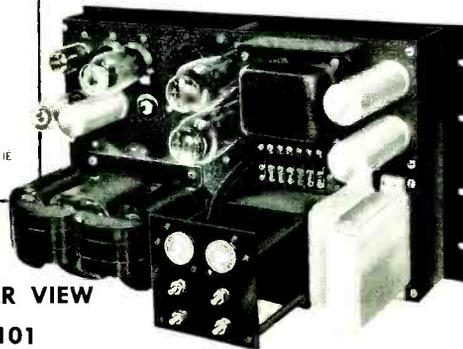


FIG. A

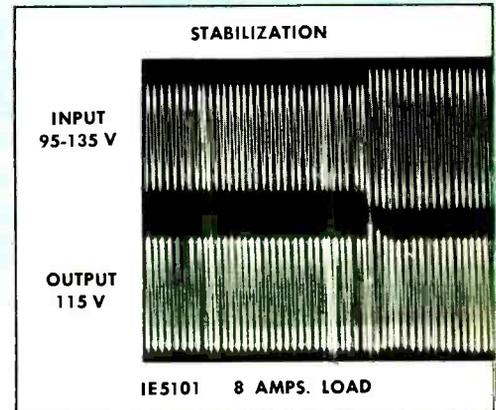


FIG. B

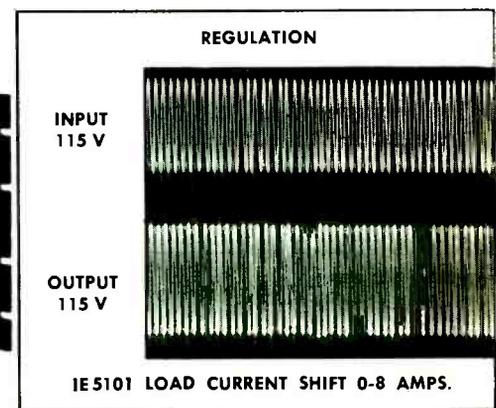


FIG. C

## SPECIFICATIONS

| INPUT VOLTAGE RANGE | OUTPUT VOLTAGE RANGE | FREQUENCY IN CYCLES | LOAD RANGE IN AMPERES | LOAD POWER FACTOR RANGE | RATED OUTPUT KVA | TYPE    |
|---------------------|----------------------|---------------------|-----------------------|-------------------------|------------------|---------|
| 95-135              | 110-120              | 60 $\pm$ 10%        | 0-8.5                 | .5 lagging              | 1.0              | IE5101  |
| 95-135              | 110-120              | 60 $\pm$ 10%        | 0-43.5                |                         | 5.0              | IE5105  |
| 195-255             | 220-240              | 60 $\pm$ 10%        | 0-11.0                | to                      | 2.5              | IE5202  |
| 95-135              | 110-120              | 50 $\pm$ 10%        | 0-8.5                 | .9 leading              | 1.0              | IEL5101 |
| 195-255             | 220-240              | 50 $\pm$ 10%        | 0-4.5                 |                         | 1.0              | IEL5201 |

All types except IE5105 may be ordered for standard 19" relay rack mounting by suffixing R to the type number.

# ELECTROMECHANICAL REGULATORS

PATENT APPLIED FOR

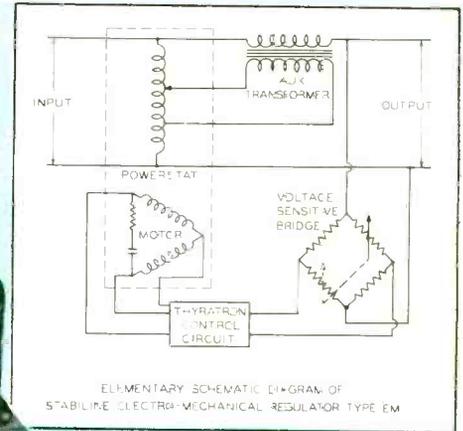
For maintaining constant voltage to large industrial loads or as a means of obtaining a constant output voltage with zero waveform distortion, the STABILINE type EM automatic voltage regulator is ideal. Some of its outstanding advantages are . . . zero waveform distortion, complete insensitivity to the magnitude and power factor of the load, no effect on system power factor, no critical adjustments, high efficiency and adjustable output voltage over a wide range.

The operating principle can easily be seen by referring to the block diagram.

STABILINE type EM regulators are available in various capacities obtained by combining the control circuit with a suitable power circuit. The attractive black, wrinkle-finish front panel has a 4 inch output voltmeter and screwdriver controls for sensitivity and output voltage.

The new control circuit shown is worthy of particular attention for it is representative of the latest advances being made in industrial control equipment.

Features include—small size, rugged construction, fast response, ability to operate in any position, performance unaffected by temperature changes, plug-in components, and other detailed refinements. In addition to the features listed above, the whole control circuit is mounted by inserting it into a female receptacle provided inside the cabinet. This plug-in feature combined with an exchange arrangement which will be explained by any representative of The Superior Electric Company, eliminates maintenance difficulties.



CONTROL CIRCUIT

## INFORMATION REQUIRED FOR QUOTING

Please supply the following information when requesting quotations or recommendations:

1. Frequency, number of phases, input voltage range, nominal input voltage, voltage unbalance between phases.
2. Nominal output voltage; output voltage range; load—current, KVA, balance, fluctuation.
3. Frequency and severity of line and load transients.
4. Special features such as finish, speed, mounting, extreme ambient temperatures, corrosive atmospheres, etc.

## STABILINE VOLTAGE REGULATORS ELECTROMECHANICAL TYPE RATINGS

| Nominal Output Voltage                 | Input Voltage Range | *Output Voltage Range | Output Current (Amperes) | Output KVA | †Correction Rate Second/Volt | Type    | Approx. Wt. Lbs. | Ship. Wt. Lbs. | Cabinet net Hght. | Dimensions (Inches) Width | Depth  |        |
|--|---------------------|-----------------------|--------------------------|------------|------------------------------|---------|------------------|----------------|-------------------|---------------------------|--------|--------|
| Single Phase<br>115                    | 95-135              | 110-120               | 20.0                     | 2.3        | .15                          | EM4102  | 135              | 205            | A                 | 27                        | 9 1/4  | 10 1/4 |
|  |                     |                       | 52.0                     | 6.0        | .15                          | EM4106  | 150              | 225            | A                 | 27                        | 9 1/4  | 10 1/4 |
|  |                     |                       | 130.0                    | 15.0       | .15                          | EM4115  | 260              | 415            | B                 | 19 1/2                    | 26     | 18     |
| 230                                    | 195-255             | 220-240               | 32.5                     | 7.5        | .10                          | EM4207  | 215              | 370            | B                 | 19 1/2                    | 26     | 18     |
|  |                     |                       | 120.0                    | 27.5       | .10                          | EM4224  | 275              | 430            | B                 | 19 1/2                    | 26     | 18     |
| 440                                    | 380-500             | 420-460               | 15.0                     | 6.6        | .05                          | EM4407  | 210              | 365            | B                 | 19 1/2                    | 26     | 18     |
|  |                     |                       | 40.0                     | 17.6       | .05                          | EM4418  | 275              | 430            | B                 | 19 1/2                    | 26     | 18     |
| Three Phase (WYE CONNECTED) see note 1 |                     |                       |                          |            |                              |         |                  |                |                   |                           |        |        |
| 230                                    | 195-255             | 220-240               | 25.0                     | 10.0       | .10                          | EM6210Y | 335              | 535            | C                 | 41                        | 23 1/4 | 15 1/4 |
|  |                     |                       | 38.0                     | 15.0       | .10                          | EM6215Y | 360              | 560            | C                 | 41                        | 23 1/4 | 15 1/4 |
|  |                     |                       | 50.0                     | 20.0       | .10                          | EM6220Y | 395              | 595            | C                 | 41                        | 23 1/4 | 15 1/4 |
|  |                     |                       | 113.0                    | 45.0       | .32                          | EM6245Y | 800              | 1150           | C                 | 44                        | 31     | 25     |
|  |                     |                       | 145.0                    | 58.0       | .32                          | EM6258Y | 850              | 1200           | C                 | 44                        | 31     | 25     |
| 440                                    | 380-500             | 420-460               | 16.0                     | 12.0       | .05                          | EM6412Y | 310              | 510            | C                 | 41                        | 23 1/4 | 15 1/4 |
|  |                     |                       | 22.0                     | 17.0       | .05                          | EM6417Y | 330              | 530            | C                 | 41                        | 23 1/4 | 15 1/4 |
|  |                     |                       | 33.0                     | 25.0       | .05                          | EM6425Y | 345              | 545            | C                 | 41                        | 23 1/4 | 15 1/4 |
|  |                     |                       | 66.0                     | 50.0       | .16                          | EM6450Y | 800              | 1150           | C                 | 44                        | 31     | 25     |
|  |                     |                       | 100.0                    | 75.0       | .16                          | EM6475Y | 875              | 1225           | C                 | 44                        | 31     | 25     |
| 400-480                                | 420-460             | 131.0                 | 100.0                    | .21        | EM64100Y                     | 900     | 1250             | C              | 44                | 31                        | 25     |        |

†The correction rate is computed on the basis of input voltage range and regulator speed

\*The output voltage range is obtainable when the input voltage is equal to the specified nominal output voltage.

Note 1: Polyphase regulators are arranged so that all phases are regulated by control from one phase.

Note 2: STABILINE regulators are normally furnished for 60 cycle operation. If a regulator is needed for 50 cycle service, it may be ordered by inserting the letter "L" after the letters EM in the type number. (e.g. EM4106 is for 60 cycle operation, EML4106 is for 50 cycle use).

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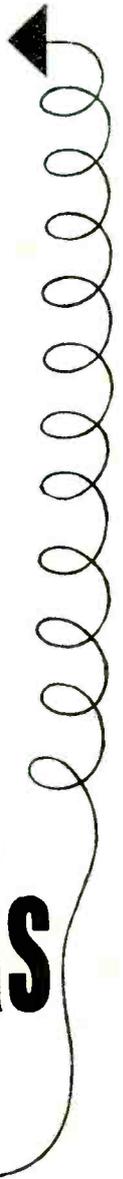
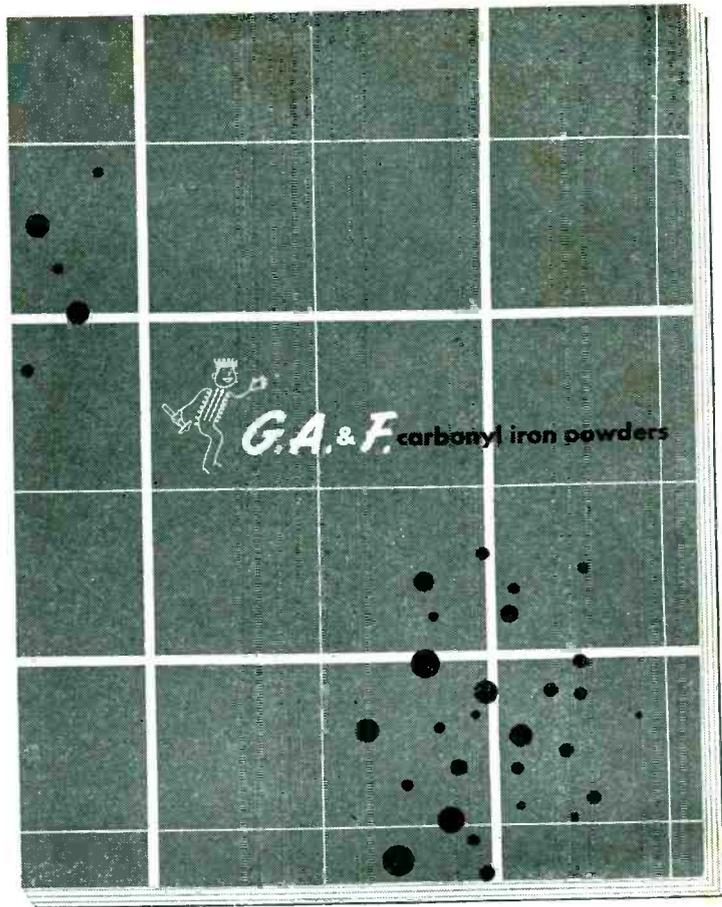


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**What This EDISON Relay Does**—The EDISON Thermal Relay times, delays, or sequences over a wide range, operates continuously or intermittently, and offers consistency of operation over a long life. It compensates for ambients from  $-60^{\circ}\text{C}$ . to  $+70^{\circ}\text{C}$ . It is inexpensive and requires no maintenance.

**How You Can Use It**—**A.** To introduce a delay into a circuit. **B.** As an automatic timer or sequencer. **C.** To delay plate voltage application in thermionic tubes until the cathode is properly heated. **D.** To limit over- or under-current or voltage. **E.** For general control use instead of magnetic relays.

**Some Specific Applications**—The EDISON Thermal Relay is being used to: integrate pulses and intermittent current into accumulated heat energy to operate controls; control loads to eliminate magnetic relay chatter and resultant false starting; improve sensitive instrument contact operation by providing a resistive load without inductive surges that produce contact welding; continue or delay operation of certain elements after a main circuit is opened or closed. Typical controls include: blanket heaters, surface combustion heaters, motor starting and operating sequence, and cathode protection. Here is a relay that will stimulate your imagination because it will do so many different jobs so much better and cheaper than any other type of relay.



### Operating Characteristics

1. **Electrical Heater**—AC or DC, deflects bi-metal to actuate moving contact.
2. **Contacts**—s.p.s.t., normally open or closed.
3. **Spring Arm**—Applies positive contact pressure immediately and noiselessly.
4. **Contact Spacing Screw**—Factory pre-set for desired operating time.
5. **Compensating Bi-Metal**—Supports contact; eliminates effect of ambient temperature variations on timing.
6. **Cushioning Springs**—Between ceramic support and glass envelope to absorb shocks.

### Sealed-in-Glass Thermostat

The EDISON Sealed-in-Glass Thermostat operates in an arc-quenching atmosphere, protected from dust, corrosion, and tampering.

Temperature settings are factory-fixed from  $-90^{\circ}\text{F}$ . to  $+600^{\circ}\text{F}$ .

Capacities are from  $\frac{1}{2}$  to 8 amperes; 250 volts maximum. Contacts normally open or closed.



### Sensitive Magnetic Relay Operates on 30 MICROWatts Yet Stands Big Overloads

The EDISON Sensitive Magnetic Relay has fixed coils and a moving magnet, which enables it to stand substantial overloads. Coils can be in series, or connected differentially for either polarized or differential operation, and can be wound to match circuits up to 22,000 Ohms. Contacts are s.p.s.t. or s.p.d.t., with or without neutral positions, and handle  $\frac{1}{3}$  ampere non-inductive load. This sensitive, light-weight relay is compact and sturdy... stands exposure and vibration.

### Consult with EDISON Engineers

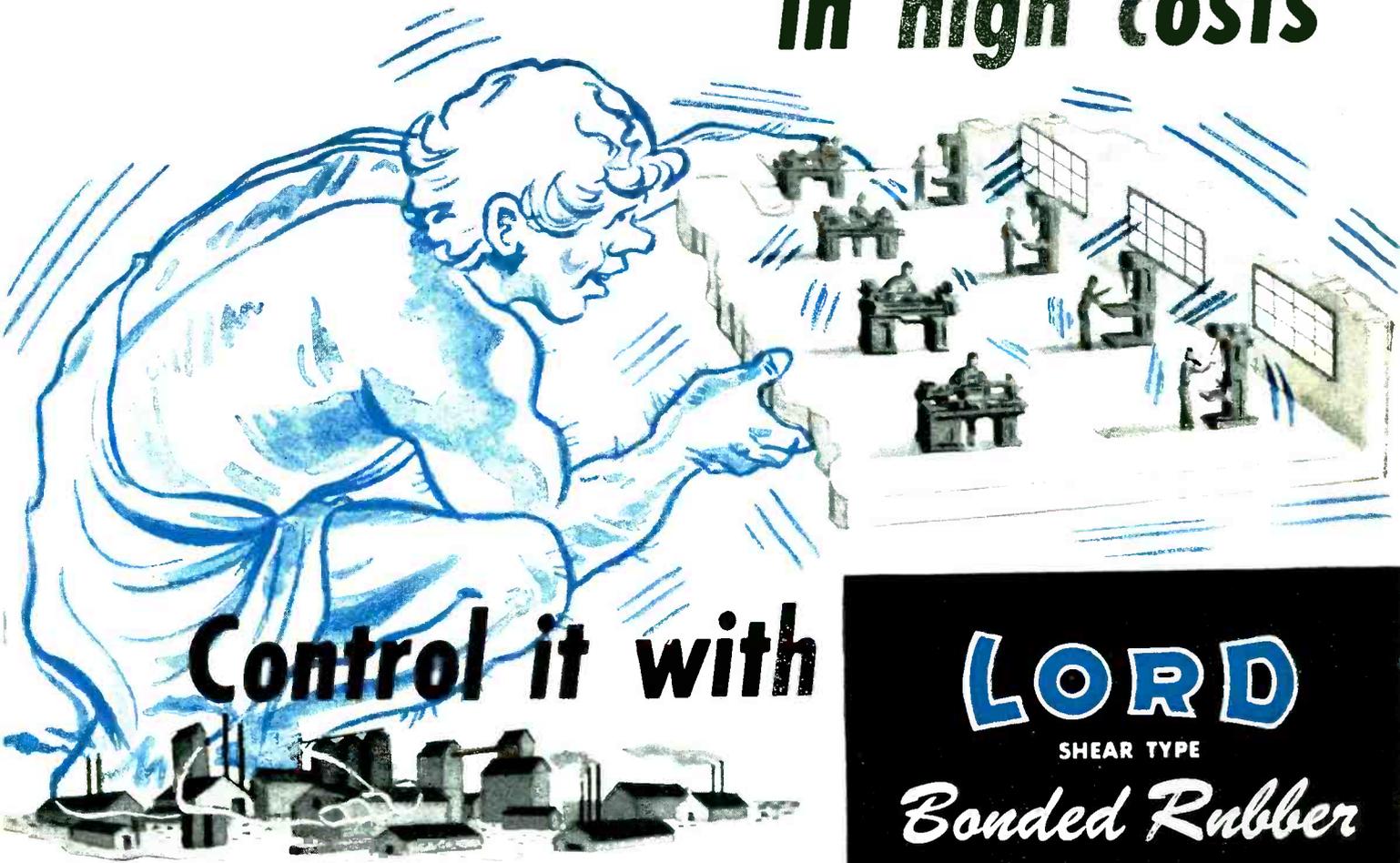
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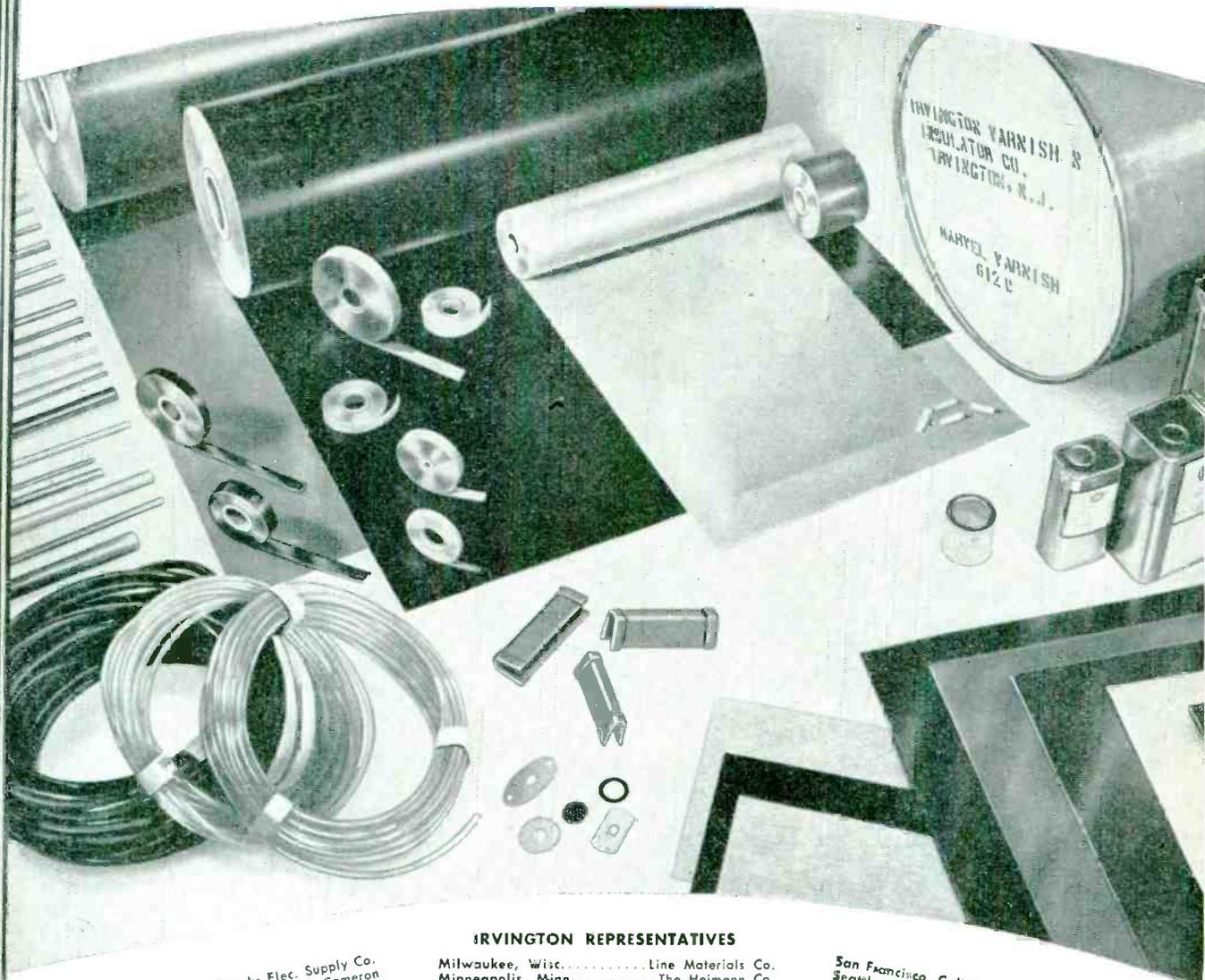
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**HARVEL VARNISHES.** Baking, air drying, internal curing. Internal drying varnishes cure to an infusible, non-thermoplastic mass. They possess exceptional penetration, bonding strength, and insulating properties . . . resist acids, alkalies, moisture, transformer oil . . . contain no harmful solvents to attack enamel wire.

**IRVINGTON VARNISHES.** Synthetic and oleoresinous insulating varnishes; black and clear; internal drying, baking, and air drying types; finishing and sticking varnishes — a wide range to meet all requirements.

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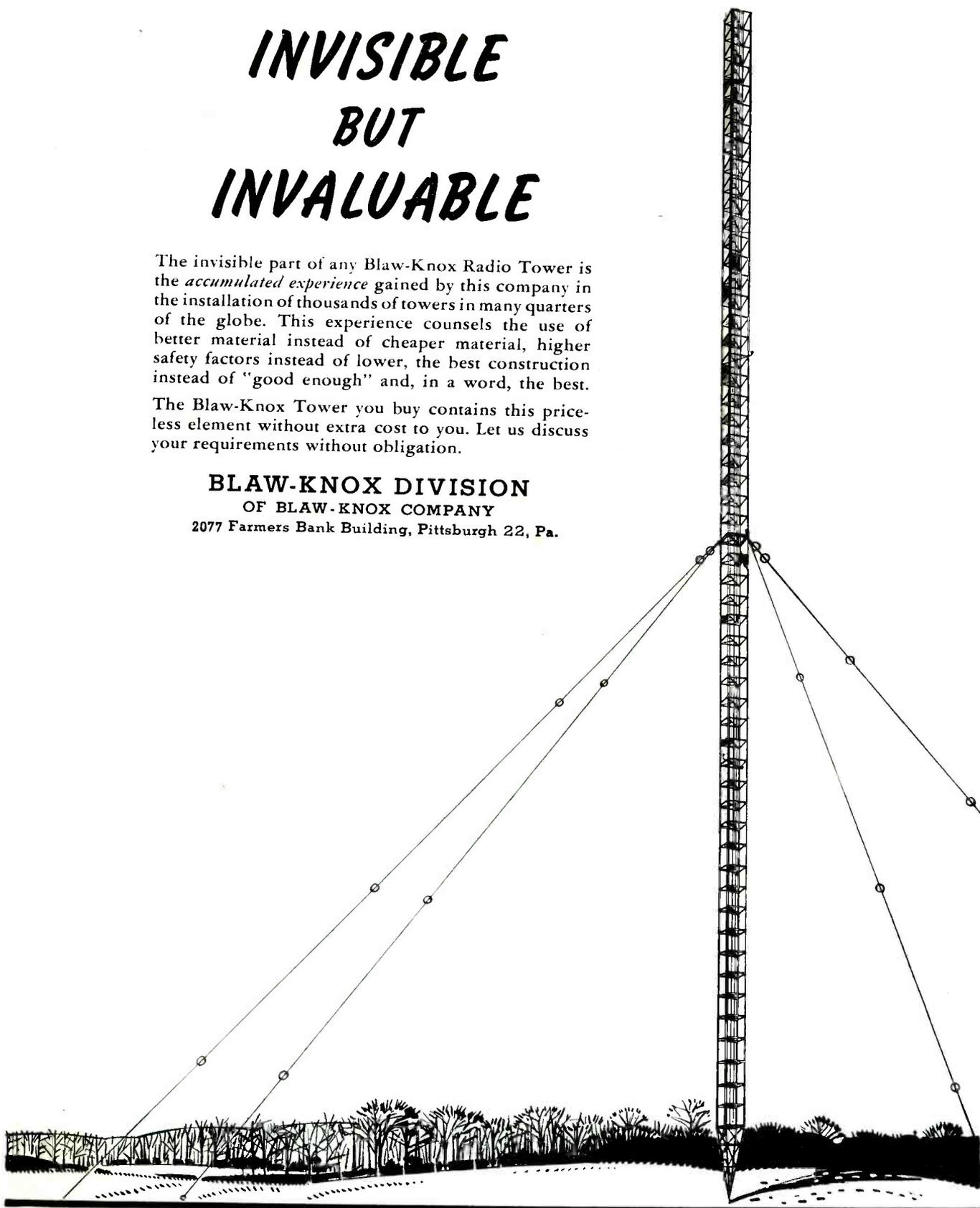
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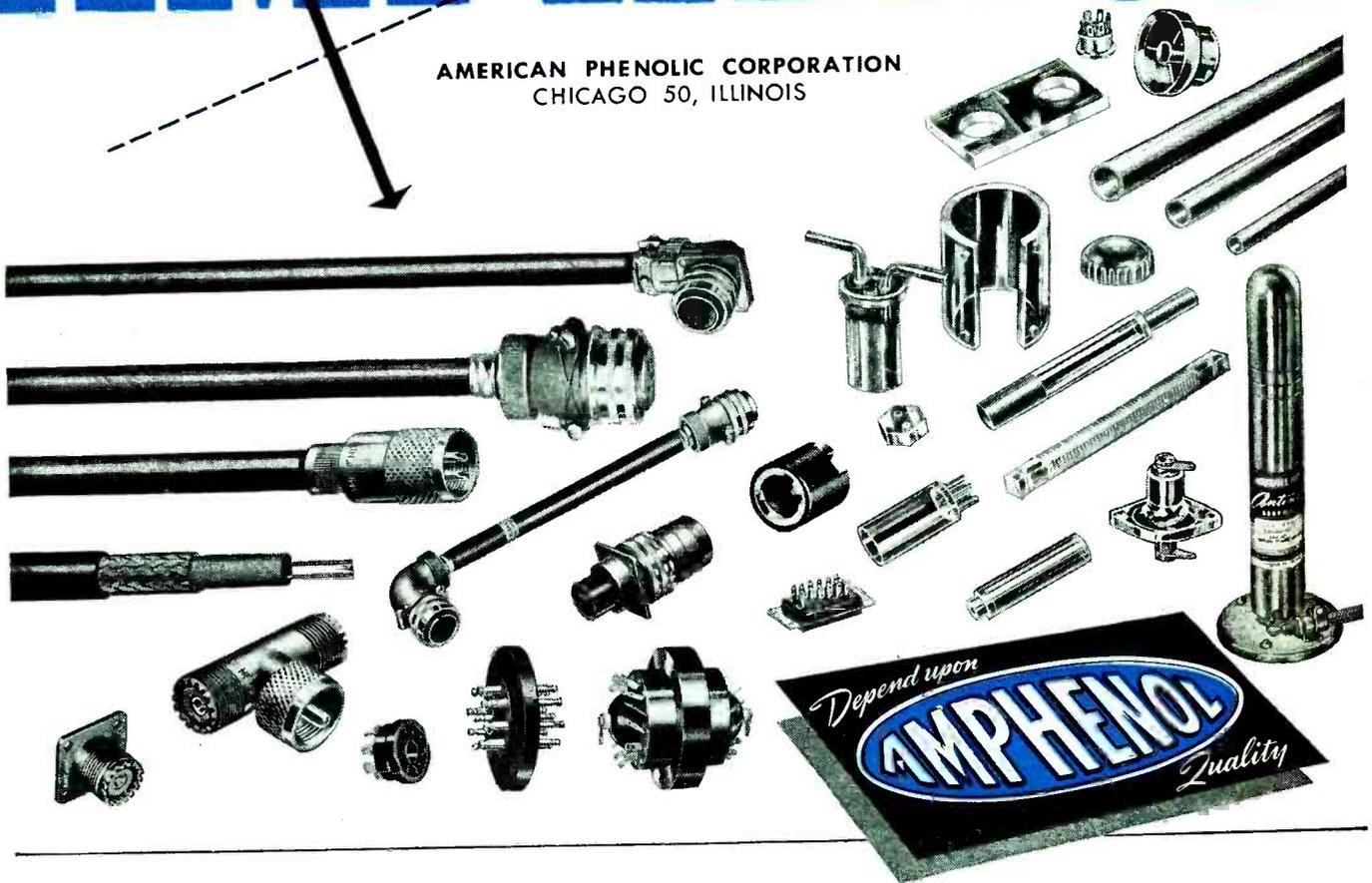
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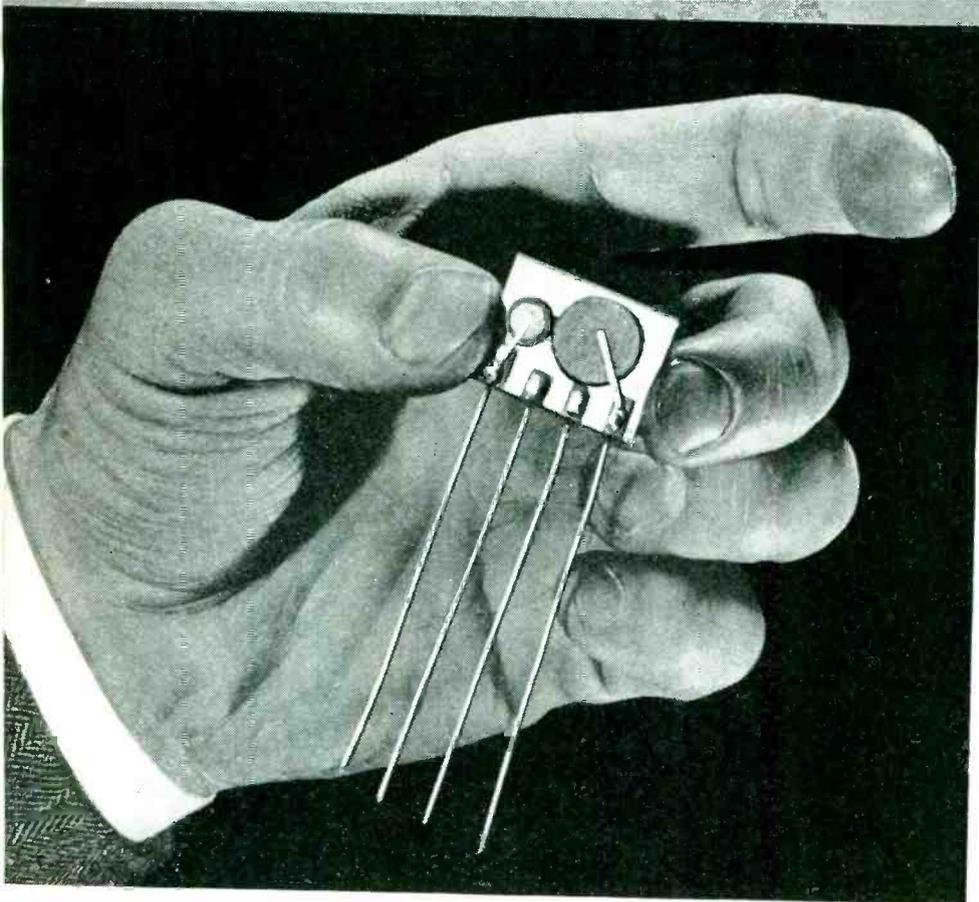
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**COAXIAL CABLES AND CONNECTORS • INDUSTRIAL CONNECTORS, FITTINGS AND CONDUIT • ANTENNAS • RADIO COMPONENTS • PLASTICS FOR ELECTRONICS**

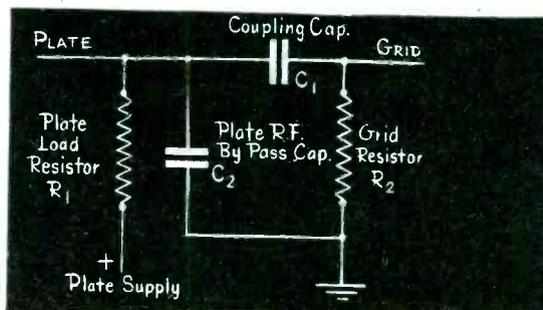
# LOOK TO **Centralab**

First in component research that means lower costs for the electronic industry.

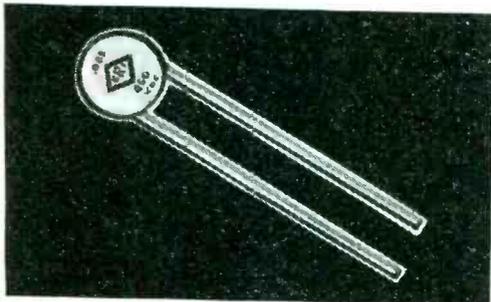


## Here are Exclusive New **CENTRALAB** Developments

NEW Multi-Unit "Couplate" assures fast, precision wiring on interstage couplings. First commercial application of the "printed circuit", the *Couplate* is a complete interstage coupling circuit which combines into one compact unit the plate load resistor, the grid resistor, the plate by-pass capacitor and the coupling capacitor.



Each *Couplate* is an integral assembly of "Hi-Kap" capacitors and resistors closely bonded to a ceramic plate and mutually connected by metallic silver paths "printed" on the base plate.

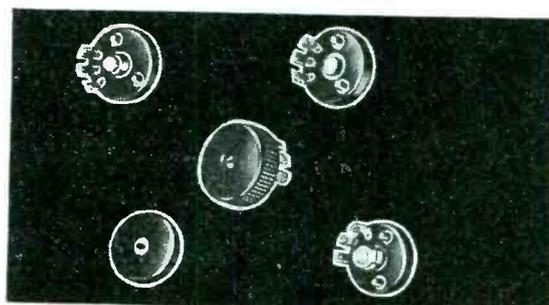


|                        |                  |
|------------------------|------------------|
| Diameter (Max. O. D.)  | $\frac{5}{16}$ " |
| Thickness (Maximum)    | $\frac{5}{32}$ " |
| W. V. D. C.            | 450              |
| Guaranteed Min. Capac. | .005             |
| Flash Test V. D. C.    | 900              |
| Weight (Average)       | 1 gm. .035 oz.   |

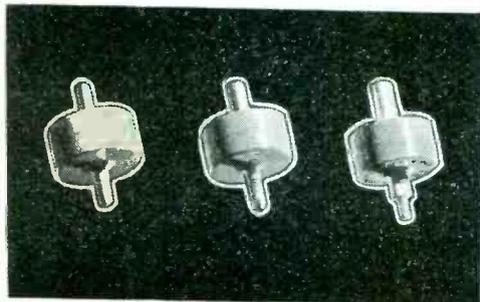
Other capacity values available. Inquire now!

In addition, Centralab has just announced a sensational new quality line of miniature ceramic disc capacitors. "Hi-Kap" permanent Ceramic-X stability assures utmost reliability in small physical size and low mass weight.

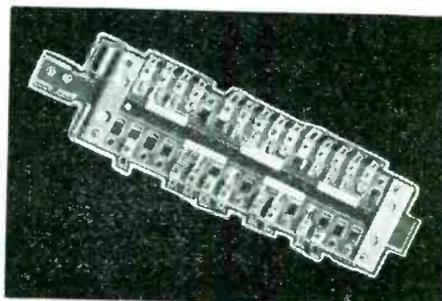
"Hi-Kaps" are rated at a guaranteed minimum capacity for applications where close tolerances are unnecessary. Lowest minimum capacity will be exceeded by a substantial amount in all units.



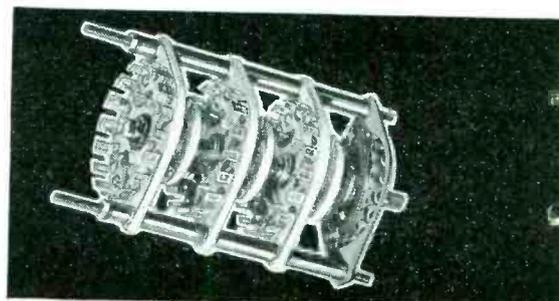
Centralab's newest control is designed for miniature receivers, amplifiers, and hearing aids. No bigger than a dime, high quality performance is assured. It's perfect companion for sub-miniature tubes, batteries, etc.



For television units, "Hi-Vo-Kaps" offer high voltage, small size . . . as filter and by-pass capacitors in video amplifiers for high DC voltages with small component AC voltages. Choice of three terminal types.



Revolutionary, new CRL Slide Switch saves space, allows short leads, convenient location to coils, reduced lead inductances for increased efficiency in low and high frequencies. Maximum reliability and long service life assured.



Specially designed for transmitters, power supply converters, X-ray equipment, etc., CRL medium-duty Power Switch gives efficient performance up to 20 megacycles. Minimum life operation of 25,000 cycles without failure.

# BUY FROM **Centralab**

Makers of a complete line of components for the electronic industry.

**SWITCHES . . . complete line featuring high quality, rugged construction for every type of electronic and industrial application.**

- 1) **"F" Index:** for simple band change or radio-phono operations or general switching applications. V-spring. Life test — 5 positions — 10,000 cycles.
- 2) **"G" Index:** ideal for industrial applications. Coil spring replaceable without removing switch. Life test — 5 positions — 250,000 cycles.
- 3) **"H" Index:** (at right) primarily for band change and general tap switch applications. Spring and ball mechanism. Life test—5 positions—10,000 cycles.
- 4) **Tone Switch:** 3-4-6-8-9 or 10 clips available in tone switch group. All rated at 6 watts. Contact resistance less than  $2\frac{3}{4}$  milliohms.
- 5) **Lever Switch:** features coil spring mechanism with index spring replaceable without removal of switch from chassis. Life test — 50,000 cycles.
- 6) **Power Switch:** designed for special industrial and electronic uses. Efficient performance up to 20 megacycles. Life test — 25,000 cycles.



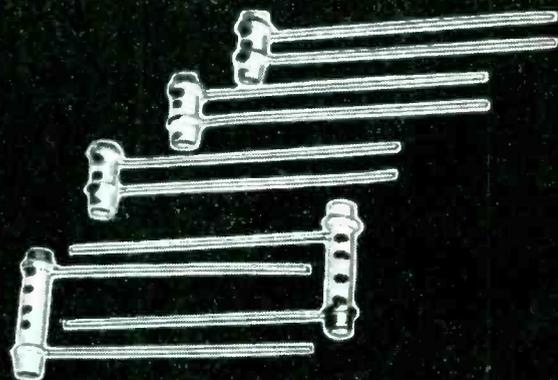
**CONTROLS . . . full line featuring dependable performance, long life, low noise level and wide range of possible variations.**

- 1) **"R" Radiohms:** two types — wire wound rated at 3 watts, composition rated at 1 watt. Both types can be twinned. Available with AC line switch.
- 2) **"E" Radiohms:** Composition type. Rubbing contact. 6 different resistance tapers. Rated at  $\frac{1}{4}$  watt. Available with AC line switch.
- 3) **"M" Radiohms:** most versatile control of all. Composition type. Rated at  $\frac{1}{2}$  watt. Can be twinned, tripled—twinned with switch or with concentric shaft.
- 4) **"I" Radiohms:** no bigger than a dime, for miniature receivers, amplifiers. Rating  $\frac{1}{10}$  watt. Low noise level, shielded from dust, lint, etc.
- 5) **Switch Covers:** five types for "R" Radiohms, 4 types for "M" Radiohms, 1 type for "E" Radiohms. Rated at 3 amp, 125 volts, 1 amp, 250 volts.
- 6) **Rheostats:** for commercial use such as small motor speed controls, charging rate adjusters, etc. Two sizes available: 25 and 50 watt.



**CAPACITORS . . . made with Centralab's high dielectric constant Ceramic-X, combining economy, convenient size and extreme dependability.**

- 1) **TC Tubulars:** stable, having no appreciable change with aging, humidity or temperature. 4 sizes, capacity from 860 to 1 mfd., rated at 500 WVDC.
- 2) **BC Tubulars:** for use where temperature compensation is unimportant. Four tube sizes. Capacity from .000010 to .01 mfd., 500 WVDC.
- 3) **High Accuracy:** for rigid frequency control applications. Capacity tolerance,  $\pm 5\%$ . Standard working voltage 500 volts DC.
- 4) **High Voltage:** Capacity tolerance  $\pm 10\%$ . Five sizes from 5000 to 15,000 WVDC. Flashover voltage from 10,000 to 30,000 VDC.
- 5) **Disc:** miniature disc capacitors combining utmost reliability with small physical size, low mass weight. Diameter  $\frac{5}{8}$ ". Thickness  $\frac{5}{32}$ ".
- 6) **Trimmers:** four basic types. Working voltages 500 DC. Flash test 1100 VDC. Power factor, less than 0.2% at 1 megacycle.



**CERAMICS . . . engineered for special industrial and electrical applications requiring specific properties of hardness, coefficient of expansion, porosity.**

- 1) **Steatite:** Uniform white, high dielectric strength, high mechanical strength, low dielectric loss at high frequencies. Impervious to moisture and common acids, does not warp in use, will withstand high temperature and its characteristics remain stable with age.
- 2) **Centradite:** For use where low thermal expansion and high resistance to heat shock is desired. Composed chiefly of Cordierite, a magnesium aluminum silicate crystalline material. White in color and low in porosity. Variations available for specific design and production needs.
- 3) **Zirconite:** Has low coefficient of expansion and good thermal shock properties plus high strength characteristics. Recommended for extruded or wet-pressed shapes. Variations of this material also available to meet specific design and production requirements.

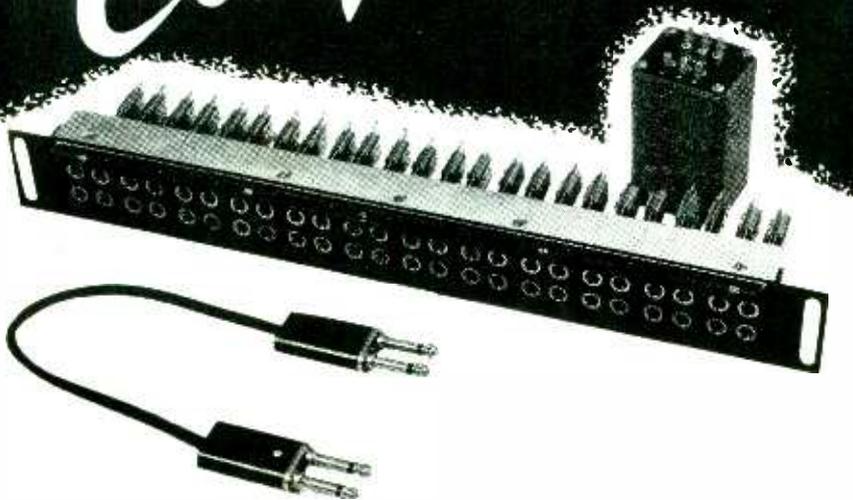


**CENTRALAB**

Division of GLOBE-UNION INC. • Milwaukee, Wis.

# ADC

# Components



## JACK PANELS • PATCH CORDS TRANSFORMERS • JACKS

**ADC** components have proved their efficiency and reliability by many years of uninterrupted trouble-free service. Careful engineering, precision workmanship, thorough inspection and laboratory testing guarantee long life for all **ADC** communication components.

**ADC JACK PANELS** are made of molded plastic, steel reinforced for strength and rigidity. Slotted brackets for mounting on standard 19" relay rack. Standard double plug spacing.

**ADC PATCH CORDS** have proven their ability to "take it" through years of usage. The plugs are well designed. Simple, rugged construction. Shielded cords made from the finest stranded, tinned copper, two-conductor wire.

**ADC TRANSFORMERS.** Two new transformer lines are now available. Quality-plus transformers and Industrial transformers. Quality-plus transformers provide the flattest response characteristics of any stock transformers available. Our catalog lines as well as custom-built transformers incorporate many hidden features that result in expected performance and long life, insuring satisfied customers.

Hermetically sealed transformers built to Army-Navy Specifications are being made regularly in quantities both large and small.

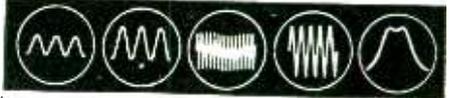
**ADC JACKS** are of welded box type construction assuring alignment of all parts. Silver alloy contacts riveted through non-ferrous springs. Standard dimensions.

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# Audio Development Co.

2833 13th AVE. S., MINNEAPOLIS 7, MINN.



## Electronic Equipment for Schools

DEMONSTRATIONS WITH

- Multi-meters
- Signal Generators



- Oscillographs
- Radio Kits

By **S. D. PRENSKY**  
60 Page Demonstration  
Experiment Manual

Supplied to purchasers of test equipment at no extra cost. To obtain separately, send \$2.00 which is refunded when test equipment is purchased.

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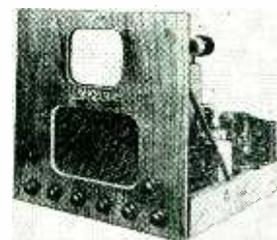
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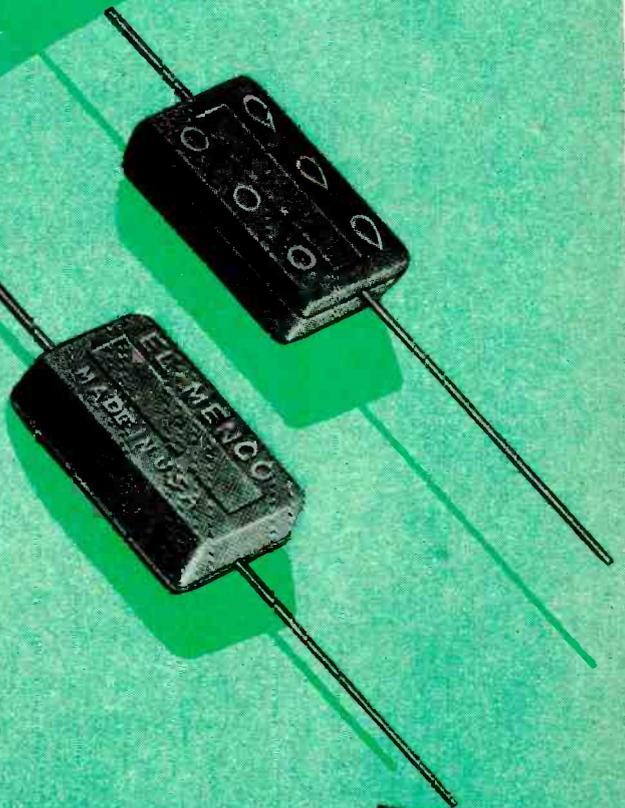
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**M**ANUFACTURERS WHO ARE PROUD  
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**M**ost manufacturers guarantee their products, and will make good on their guarantees when called upon. But makers of famous-name products try to *anticipate* every failure possibility, thus preserving their prestige and eliminating costly come-backs. When they choose capacitors, their choice is invariably El-Menco — known the world over for absolute reliability under all operating conditions.



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# "RAISED-LAY"\*

## The **NEW** material for Electrical Bar Contacts

This new material consists of one or more strips of precious metal bonded to the base metal in the form of a ridge or bar.

This new method of lamination provides a great advantage to manufacturers of many contact assemblies, in that an arm or leaf can be blanked out with the contact already attached. The precious-metal ridge constitutes a bar-shaped contact.

By specifying the width and height of the precious-metal strip, any electrical current requirements can be met. Costly assembly operations are reduced to blanking costs. The precious metal that was wasted in the shank of a rivet can be saved.

We have standardized on a number of strip widths and thicknesses for both single, double and double-double combinations in "Raised-Lay." We are also prepared to furnish contact material in the form of "Inlay," "Edgelay," and "Overlay." In addition to supplying these materials, we offer a blanking service to your specifications.

Your inquiries are cordially invited.

\*Patents applied for covering both the material and the method of manufacture.



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with**

## **D. E. MAKEPEACE COMPANY**

Main Office and Plant, **ATTLEBORO, MASSACHUSETTS**  
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**LAMINATED PRECIOUS METALS**  
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FABRICATED PARTS AND ASSEMBLIES  
BAR CONTACT MATERIAL  
PRECIOUS METAL SOLDERS

# The Complete **E-V** Line Assures the Right Microphone for Every Need

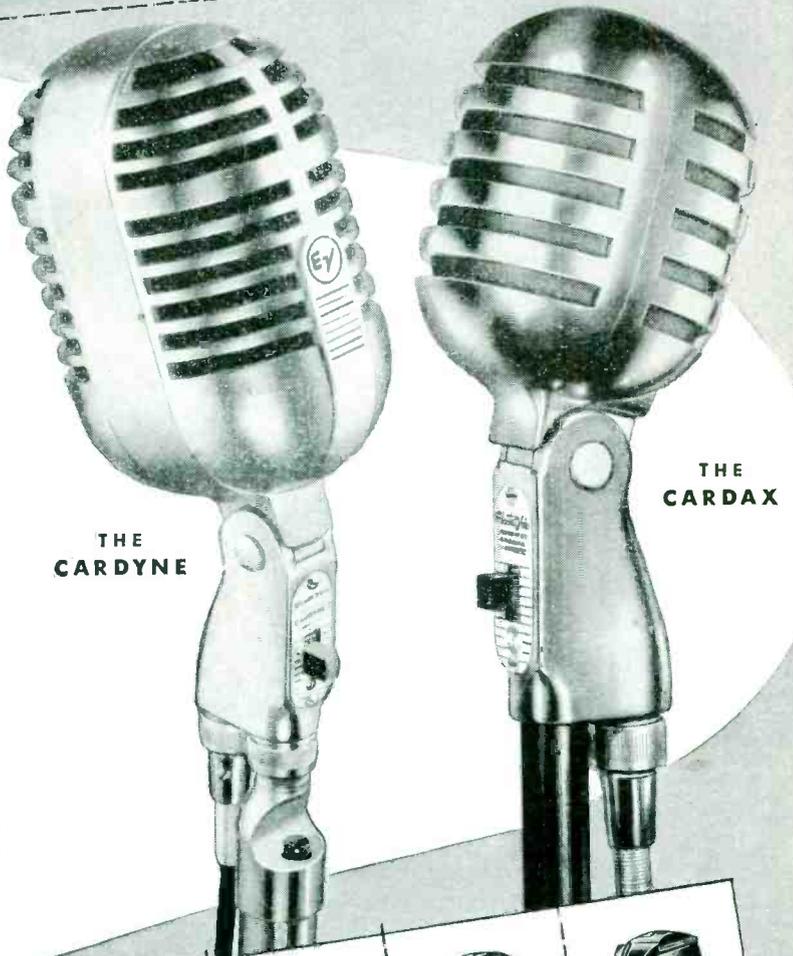
● Only ELECTRO-VOICE provides such a complete line of microphones. With outstanding developments in Unidirectional, Differential†, Bi-directional, and Non-directional types . . . in Dynamic, Crystal, Carbon and Velocity models . . . you can more easily obtain the microphones best suited to your needs.

● Proved in critical service, E-V Microphones are widely used today by leading manufacturers and sound engineers in all kinds of applications. They are produced from finest materials under E-V quality control. Consult our engineers.

**THE CARDYNE**—True cardioid unidirectional dynamic microphone, with exclusive E-V *Mechanophase\** principle, *Aconstalloy* diaphragm, smooth, wide range response, and high output.

**THE CARDAX**—The only high level cardioid crystal microphone with Dual Frequency response for high fidelity voice and music, or rising characteristic for extra crispness of speech.

†Patent No. 2,350,010 \*Electro-Voice Patents Pending



**Send for Catalog No. 101**  
This illustrated catalog gives complete data and information on E-V Microphones. Includes helpful selection guide. Write for it today.



V-3, V-2, V-1  
Velocity



640  
Dynamic



630  
Dynamic



605 Dynamic  
905 Crystal



610 Dynamic  
910 Crystal



600-D Dynamic  
210-S Carbon  
602 Differential



205-S  
Differential



606  
Differential



Comet Crystal  
Comet-D Dynamic

A portion of  
the Complete  
E-V Line is  
shown here

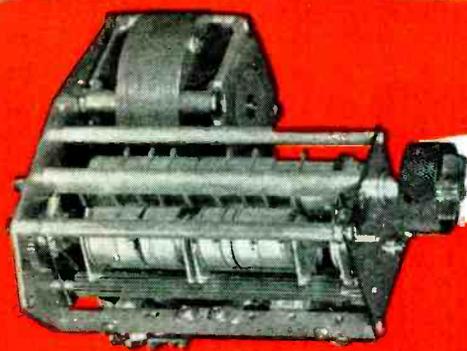
NO FINER  
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## Electro-Voice

ELECTRO-VOICE, INC., BUCHANAN, MICHIGAN

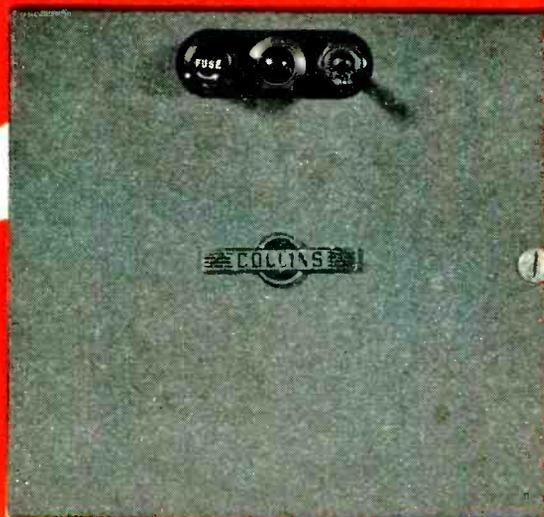
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Crystal Microphones  
licensed under Brush patents



Collins Type 496E Autotune

341A-1 Servo Mechanism



## Collins Expands Its

In addition to its products for broadcasting, communication, and aircraft radio, the Collins Radio Company has enlarged its engineering staff and expanded production facilities to provide new additional types of equipment for industry and aviation. Included with newly developed products are mechanical and electrical control systems, an aircraft navigation system, and radioteletype communication equipment.

The list of Collins quality-built products now includes:

1. AM and FM broadcast transmitters in all power classifications.
2. Complete AM and FM studio equipment and accessories, and transmitter accessories.
3. Commercial airline and executive aircraft transmitters, receivers, and aircraft navigation components.
4. AM and FM multi-frequency communication transmitters, receivers, and systems covering a

power range of 50 watts to 5,000 watts.

5. Amateur radio transmitters, exciters, and receivers.
6. Components and control systems typical of which are those described on these pages.

**The Collins Autotune** is an automatic repositioning mechanism for precise control of shafts having either rotary or linear movement. The Autotune can be used as a single unit or in groups, with each unit individually adjustable and with a single control for the entire system. Any combination of variable components can be returned to any one of a number of preadjusted positions in a very few seconds. Autotune units are available in a torque range of 1 to 25 inch-pounds. As a control device, the Autotune is currently utilized in many government and industrial applications.

The Type 496E, illustrated above, is especially suitable for application as an automatic tuning device for home radio receivers. It provides the consistently reliable push-button tuning essential for

Type 197A-1 D-C Amplifier



## Services To Industry

high quality all-wave AM-FM receivers. Reset accuracy is within one part in 36,000. The 496E is a low cost packaged unit complete with motor drive and control elements. Installation is simple, requiring only one direct connection. The output torque is one inch-pound. A 115 V. a-c power source is utilized.

The Autotune is adaptable readily to any application for which its power is sufficient. The control switch or push-button rack can be located at a remote point. The Autotune does not require special attention. Initial settings and desired changes can be performed by unskilled personnel. Accuracy is independent of normal wear and changes in operating conditions.

**The Type 341A-1 Servo Mechanism** is one of a series of packaged servo equipments that can be utilized to fulfill a wide range of service requirements, thus eliminating the cost in time and money of making special designs each time a new application problem is encountered. Each servo equip-

ment includes an amplifier and a controlled motor drive unit. The drive motor is responsive to changes in the control signal of plus or minus 20 millivolts. Collins servo units can be supplied for operation from either a-c or d-c signals.

These mechanisms have been applied to such diverse applications as remote tuning systems, automatic control of drilling operations in oil fields, and for automatic monitoring and centering of the localizer portion of aircraft instrument landing systems.

\* \* \*

**The 197A-1 D-C Amplifier** unit consists of two separate amplifiers in one case. Each unit has a gain of approximately 40 db, and will amplify a small d-c potential to an output sufficient to drive a recording meter of the Esterline-Angus 5 ma type. Amplifier gain is adjustable in fixed steps; output is a linear function of the input. The input impedance of the 197A-1 is 10,000 ohms.

An example of the usefulness of this d-c amplifier

*(Please turn page)*

## Electric Tuner for Radio Compass



is its function in the testing of aircraft radio navigation systems. A graphic record can be made of a plane's deviation from a desired flight course, taking the information from the terminals of a cross pointer indicator. The 197A-1 equipment is mounted in a dual unit arrangement, thus providing amplifiers for simultaneous glide path and localizer checking.

Collins d-c amplifiers can be built to operate from either d-c or a-c power sources.

\* \* \*

The 340A-1 remote electric tuner is representative of Collins instruments designed and manufactured for a specific purpose but with wide application possibilities. This unit is used for remote tuning of a radio compass, on either a dual or single control basis. It is a servo equipment utilizing a control device, an amplifier, and an electric follower. The amplifier includes damping circuits for the prevention of hunting or overshooting.

\* \* \*

The Collins Type 550A-1 R $\Theta$  Airborne Navigation System is indicative of the close coordination between the Collins development program and prog-

ress in aircraft navigation. This equipment includes the 51R navigation receiver, distance measuring equipment, and an automatic computer. Utilizing data obtained from the Omni Directional Range (ODR) and Distance Measuring Equipment (DME), the 550A-1 system enables the pilot to follow a cross pointer indicator and distance indicator to any desired destination.

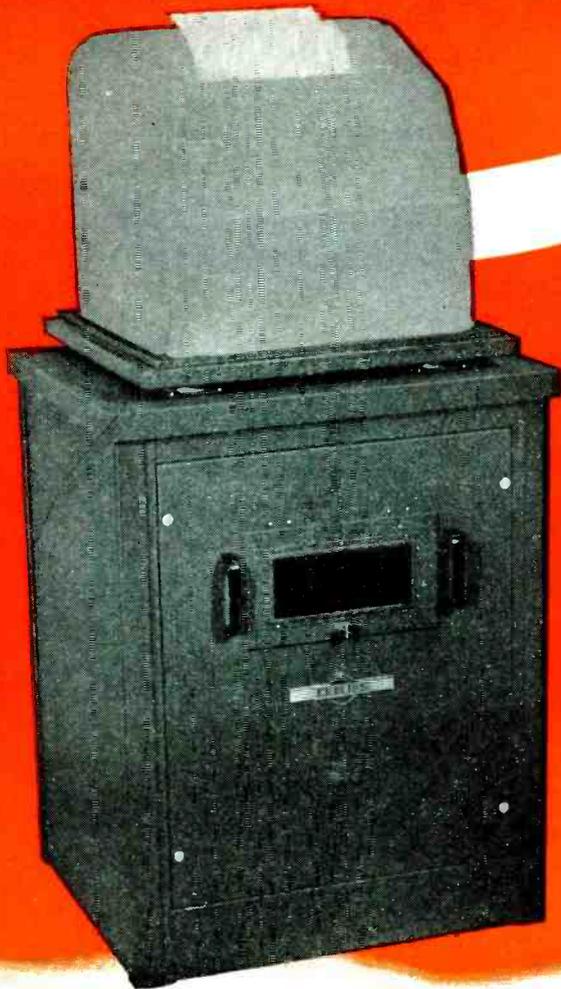
\* \* \*

The Collins Model 700 radioteletype equipment offers a new and improved method of transmitting and receiving typed messages by radio. The 700A converter unit will operate in conjunction with any receiver having an IF between 450 kc and 500 kc. This converter accommodates all frequency shift keying having a frequency differential of 250 cps to 1,000 cps.

The complete group includes transmitter, FSK unit, receiver, converter, and necessary accessories. Automatic frequency control is applied to the receiving equipment.

\* \* \*

Special oscillators for frequency control purposes are available in several frequency ranges.



Collins Teletype Equipment



Collins r-f oscillator

Developed originally for exacting military aviation requirements, these units are designed for accuracy and stability under the difficult and constantly changing operating conditions in a wide variety of uses, including Civil Aircraft Communications. Permeability tuning is employed, with its inherent advantages in stability and accuracy of calibration, and reductions in size and weight. Linear or special calibration can be furnished to fit any purpose. Complete tooling and facilities permit ready production of either large or small quantities.

These oscillators can be sealed as in most military applications, thus providing additional protection

against changing service conditions. The Type 70E-1 is such a unit. It has a frequency range of 10.-1.5 mc, linear tuning, and an overall accuracy of 0.04%.

\* \* \*

A large section of the Collins engineering staff is available for consultation and advice with regard to any applications being considered for these and other instruments and component units. Engineering models for your particular application are made available quickly and at reasonable prices. We will welcome your inquiries on any problem concerning broadcast, communication, navigation, instrumentation, or controls. Write for further information.

IN RADIO COMMUNICATIONS, IT'S . . .



**COLLINS RADIO COMPANY, Cedar Rapids, Iowa**

11 West 42nd Street, New York 18, N. Y.

458 South Spring Street, Los Angeles 13, California

# Adlake PLUNGER-TYPE MERCURY RELAYS

They have proved their value to American industry by their efficient handling of tough and unusual jobs.

If you have a knotty operating problem, Adlake engineers stand ready at all times to recommend—and if necessary, develop—the relay best suited to your needs. There's no obligation. Due to limited space on these two pages, we can show only a few typical Adlake Relays, but *all* have these advantages in common:

1. Mercury-to-mercury contact assures positive, trouble-free action; chatterless, silent; impervious to burning, pitting or sticking.
2. Contacts are *hermetically sealed* in glass or metal cylinders—dust, dirt, moisture or oxidation can never interfere with operation.
3. Armored against outside vibration or impact; designed for either stationary or moving equipment.
4. Because they are hermetically sealed, Adlake Relays require no servicing, maintenance or periodic cleaning of contacts; they are dependable, efficient . . . *always*.

## TYPE 1040 TIME DELAY RELAY FOR A. C. ENERGIZATION

Maximum time delay . . .  
up to 30 minutes

Time delay limits . . .  
10% unless otherwise specified\*

Coil voltage . . .  
up to 110 v. A.C.  
(25-50 and 60 cy.)

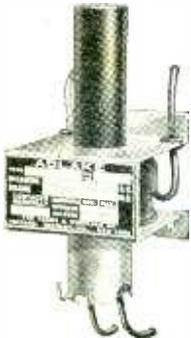
Coil—watts input . . .  
3.5 to 8 watts  
(depending on frequency)

Contact arrangement . . .  
single pole normally open  
or closed

Available in . . .  
slow operate—quick release  
slow operate—slow release  
quick operate—slow release

(Contact Normally Open)

\*Greater tolerance is required for time delays above ten minutes.



## CONTACT RATINGS

### TIME DELAY— CONTACT NORMALLY OPEN

|                             | 110 VOLTS |         | 220 VOLTS |         |
|-----------------------------|-----------|---------|-----------|---------|
|                             | A.C.      | D.C.    | A.C.      | D.C.    |
| Slow operate Non-inductive  | 15 amp    | 1.5 amp | 5 amp     | .5 amp  |
| Quick release Inductive     | 10 amp    | 1 amp   | 3 amp     | .3 amp  |
| Slow operate Non-inductive  | 5 amp     | .5 amp  | 1.5 amp   | .15 amp |
| Slow release Inductive      | 2.5 amp   | .15 amp | .8 amp    | .1 amp  |
| Quick operate Non-inductive | 5 amp     | .5 amp  | 1.5 amp   | .15 amp |
| Slow release Inductive      | 2.5 amp   | .15 amp | .8 amp    | .1 amp  |

### WHEN TIME DELAYS:

|                   |                    |
|-------------------|--------------------|
| .5 to 10 seconds  | Loads as above     |
| 11 to 60 seconds  | 50% of above loads |
| 61 to 120 seconds | 25% of above loads |
| Over 120 seconds  | 10% of above loads |

### TIME DELAY— CONTACT NORMALLY CLOSED

|                             | 110 VOLTS |         | 220 VOLTS |         |
|-----------------------------|-----------|---------|-----------|---------|
|                             | A.C.      | D.C.    | A.C.      | D.C.    |
| Slow operate Non-inductive  | 5 amp     | .5 amp  | 1.5 amp   | .15 amp |
| Quick release Inductive     | 2.5 amp   | .15 amp | .8 amp    | .1 amp  |
| Slow operate Non-inductive  | 5 amp     | .5 amp  | 1.5 amp   | .15 amp |
| Slow release Inductive      | 2.5 amp   | .15 amp | .8 amp    | .1 amp  |
| Quick operate Non-inductive | 15 amp    | 1.5 amp | 5 amp     | .5 amp  |
| Slow release Inductive      | 10 amp    | 1 amp   | 3 amp     | .1 amp  |

### WHEN TIME DELAYS:

|                   |                    |
|-------------------|--------------------|
| .5 to 10 seconds  | Loads as above     |
| 11 to 60 seconds  | 50% of above loads |
| 61 to 120 seconds | 25% of above loads |
| Over 120 seconds  | 10% of above loads |



Type 1040  
Time Delay Relay  
(Contact Normally Closed)  
For A.C. Energization

## TYPE 1110 QUICK-ACTING RELAY FOR A. C. ENERGIZATION

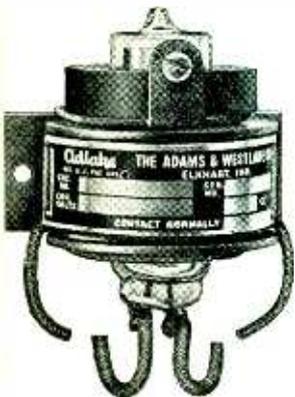
Coil voltage . . .  
to 110 v. A.C.  
(25-50 and 60 cy.)

Coil—watts input . . .  
3.5 to 6 watts  
(depending on frequency)

Contact arrangement . . .  
single pole normally open

Contact rating . . .  
15 amp. non-inductive  
at 110 v. A.C.

Note: This relay can be used on higher coil voltages and D.C. when an external resistor is placed in series with the coil.



## TYPE 1200 TIME DELAY RELAY FOR D. C. ENERGIZATION

Maximum time delay . . . . . up to 30 minutes

Time delay limits . . . . . 10% unless otherwise specified\*

Coil voltage . . . . . to 130 v. D.C.

Coil—watts input . . . . . 3.0 to 5.5 watts

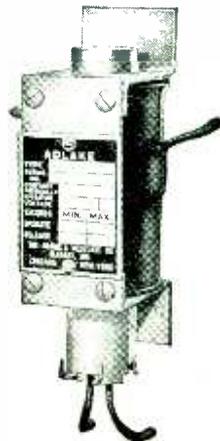
Contact arrangement . . . . . single pole normally open or normally closed

Contact ratings . . . . . identical to type 1040 above

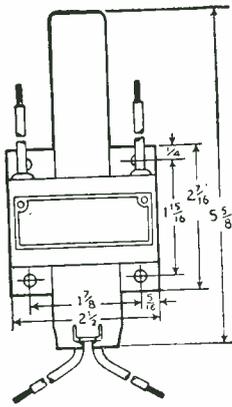
Available in . . . . . slow operate—quick release  
slow operate—slow release  
quick operate—slow release

Note: This relay may be used on higher D.C. voltages if an external resistor is placed in series with the coil.

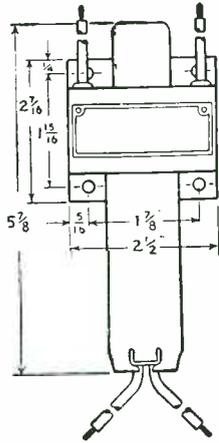
\*Greater tolerance is required for time delays above ten minutes.



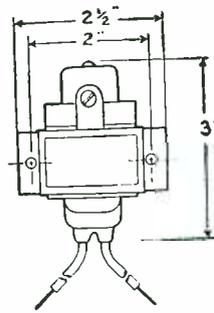
# DIMENSIONAL DIAGRAMS



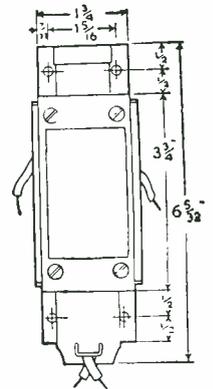
PROJECTION 2 9/16"  
No. 1010 normally open relay



PROJECTION 2 9/16"  
No. 1010 normally closed relay



PROJECTION 2 1/16"  
No. 1110 normally open load relay



PROJECTION 2 1/2"  
No. 1200 relay normally open or normally closed

## OPTIONAL TERMINAL BOARD ARRANGEMENTS



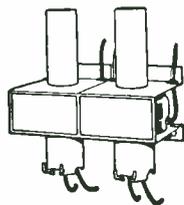
Type No. 1010 Normally open time delay or quick-acting relay with front panel mounting.

Type No. 1010 Normally open time delay or quick-acting relay with back panel mounting.



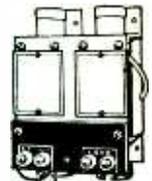
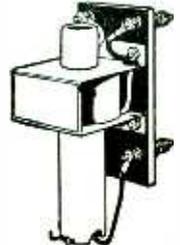
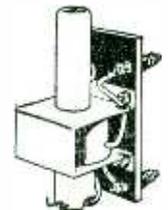
Type No. 1010 Normally closed time delay or quick-acting relay with front panel mounting.

Type No. 1010 Normally closed time delay or quick-acting relay with back panel mounting.



Type No. 1010 Double unit normally open relay assembly. Time delay and load relay—two-time delays or two-load relays. Normally closed construction not shown but is available.

Type No. 1200 Double unit normally open or normally closed relay assembly. Time delay or load relay combinations, or two-load relays, or time delay relays.



# THE ADAMS & WESTLAKE COMPANY

ESTABLISHED IN 1857

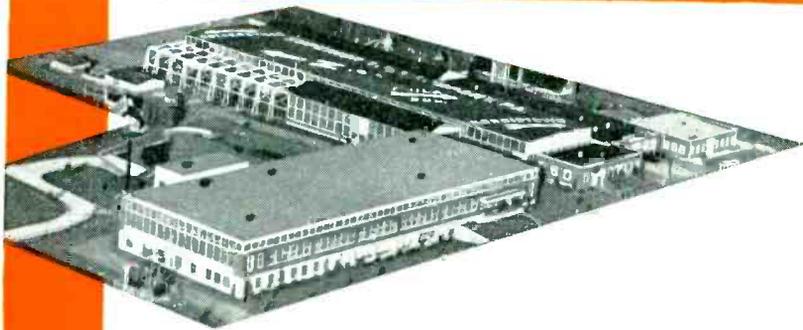
ELKHART, INDIANA

NEW YORK · CHICAGO

MANUFACTURERS OF ADLAKE HERMETICALLY SEALED MERCURY RELAYS FOR TIMING, LOAD AND CONTROL CIRCUITS

ELECTRONICS BUYERS' GUIDE — June, 1947 — MID-MONTH

# Superior TUBE COMPANY...



*Aerial photograph of the Superior Tube Company plant—the Electronics Division building is in the foreground.*

## ELECTRONIC TUBING—

### "TAILORED TO YOUR NEEDS"

The Electronics Division of Superior supplies manufacturers of all types of electron tubes with cathodes, anode and grid cylinders, and any other tubular parts that are used inside the envelope of such tubes. In addition, random length tubing is produced for fabrication by the user. To insure that these critical items are handled in a way that will make them most satisfactory for the user, a modern and well equipped laboratory is constantly working on research and production problems.

Some of the electron tubes using the above types of metal tubing are the following:

- ... Radio receiving and transmitting tubes
- ... Television picture and pick-up tubes
- ... Photo tubes
- ... Gaseous discharge and control tubes
- ... Industrial electronic tubes, such as thyratrons
- ... Rectifier tubes
- ... Neon tubes
- ... Radar tubes
- ... Special purpose tubes, such as voltage regulators



### Products for Electronic Industry

*The picture on the left demonstrates very well that Superior is equipped to supply tubes flanged, flared, one or both ends rolled, angle cut or straight cut, one end expanded, as well as bent and flattened tubes, etc.*

## NICKEL CATHODES

**SEAMLESS**—Standard production calls for an O.D. range of .010" to .120", inclusive, with wall thicknesses from .0015" to .003", inclusive. (Most generally used wall specification is .002/.0025".) Cathodes with larger diameters and heavier walls can, of course, be produced and full information will be given upon inquiry. The International Nickel Company's #220 grade of seamless nickel is the most widely used material. These cathodes can be cut to almost any length required, with bead (emboss), if called for, located at practically any position on the cathode, .040" minimum. Available in round, oval, elliptical, or rectangular shape. Close tolerances are maintained—for detailed information write for Specification EM-2.

**LOCKSEAM†**—These cathodes are produced from *nickel strip* especially rolled for the purpose. The standard range of sizes is .040" to .100" O.D., inclusive, with wall thicknesses of .002" ±.0001" and .0025" ±.0001", and lengths from 11.5 mm. to 42 mm., inclusive. Various analyses of nickel strip are used, depending on the tube characteristics required. For further details on the analyses of cathode materials write for Data Memorandum #5. Beads can be located at practically any position on the cathodes, .040" minimum. Available in round or oval shape.

**VERTICALLY EMBOSSED LOCKSEAM† CATHODE SLEEVES**—a significant new development. Write for complete data.

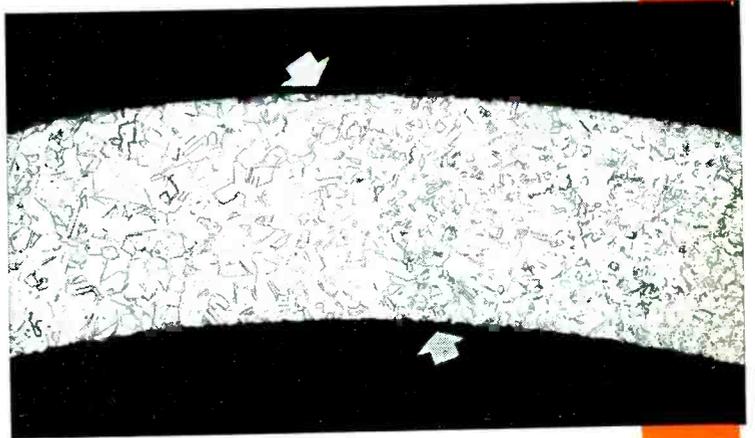
FINE SMALL TUBING IN MANY METALS

# ... ELECTRONICS DIVISION

## METAL TUBING FOR ELECTRON TUBES OF ALL TYPES

ANODE GRID CYLINDERS AND OTHER TUBULAR PARTS FOR CATHODE RAY AND TELEVISION TUBE GUN STRUCTURES

The standard specification is .500" + .0015" - .0005" I.D. x .010" ± .001" or .015" ± .0015" wall, in lengths according to your requirements, with a tolerance of ±.005". Most widely used material is WELDRAWN\* (welded and drawn) 18-12 Stainless. Nickel, Monel and Inconel are sometimes used for these applications.



*Photomicrograph of transverse section of WELDRAWN\* stainless tubing showing complete recrystallization in weld area.*

### THE DISC CATHODE



ACTUAL SIZE

THE DISC CATHODE, another outstanding Superior development, consists of a nickel tubular shank, a ceramic insulator, and an emitting cap welded to the shank. Through the use of integral beads (embosses) on the tubing, the insulator is firmly held, yet with much less heat loss than with other designs.

### ELECTRONIC TYPE TUBING IN RANDOM LENGTHS

Superior furnishes lengths of tubing (random or cut) in many Carbon Steel, Alloy Steel, Stainless Steel, and Glass Sealing Alloy analyses for various applications in the electronic industry. Write for Data Memorandum #1.

You can be certain that your requirements in Electronic tubing, whether for standard applications or developmental specialties, will be accurately produced under the rigid inspection and positive manufacturing control of Superior's Electronics Division — your inquiry will receive prompt attention.

†Produced under Superior Patents.

\*Registered Trademark Superior Tube Company.  
Inconel and Monel are Registered Trademarks International Nickel Company.

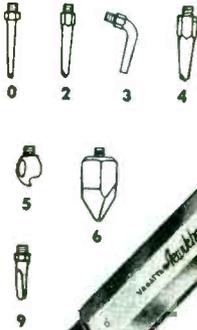


# Superior

SUPERIOR TUBE COMPANY  
ELECTRONICS DIVISION  
2504 Germantown Avenue  
Norristown, Pa.

# FASTER-BETTER SOLDERING!

## SEVEN TIP STYLES



A scientifically engineered thermostat built into each Kwikheat Iron automatically maintains the proper temperature for maximum soldering efficiency. Not only that, but each Kwikheat Iron gets hot . . . ready for use . . . within 90 seconds after plugging in. Seven different tip styles adapt the iron to almost any job . . . the handle design protects the hand from contact with hot metal parts. Not since 1883, when soldering irons were first electrified, have there been so many improvements in one soldering tool.

See Kwikheat Demonstrated

HOT IN 90 SECONDS  
45 90

# KWIKHEAT

**THERMOSTATIC SOLDERING IRON**

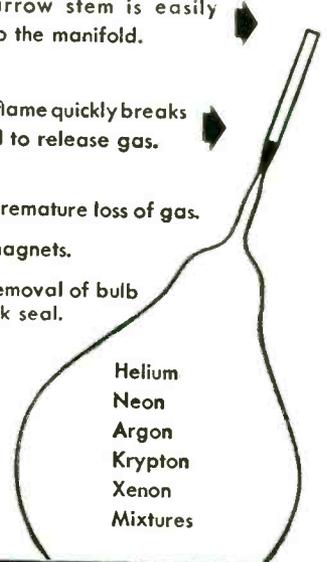
Sound Equipment Corp. of Calif. • 3903 San Fernando Rd., Glendale 4, Calif.

## Linde Introduces the Bulb with the Quick-Release Seal

The narrow stem is easily fused to the manifold.

Match-flame quickly breaks the seal to release gas.

- No premature loss of gas.
- No magnets.
- No removal of bulb to break seal.



Helium  
Neon  
Argon  
Krypton  
Xenon  
Mixtures

THE LINDE AIR PRODUCTS COMPANY  
Unit of Union Carbide and Carbon Corporation  
30 East 42nd St. UCC New York 17, N. Y.  
In Canada:  
Dominion Oxygen Company, Limited, Toronto

# Engineered TRANSFORMERS

To make a transformer that will successfully meet your most exacting requirements, call for engineering of the highest order.

Engineering transformers for every kind of application, ordinary or unique, is the day to day business of Electronic Engineering Company. The finest engineering talent and most complete electronic laboratories are ready today to consult with and help you.

"SPECIALIZED  
*Transformer*  
ENGINEERS"

**ELECTRONIC  
Engineering  
COMPANY  
INC.**

3223 WEST ARMITAGE AVENUE

CHICAGO 47, ILL.

\*\*\*

# DKE

## CAPS AND BASES

..for precision  
application!

Dependable DKE electronic tube components are used extensively by many of the leading manufacturers. A wide variety of standard designs are available, with exceptional economies resulting from complete DKE tooling facilities. Special bases, caps and clips can be produced to exacting specifications on short notice with low unit cost.

INQUIRIES INVITED

**THE ENGINEERING CO.**

DANIEL KONDAKJIAN  
27 WRIGHT ST., NEWARK, N. J.

# A NEW ECONOMICAL RESISTOR LINE

## PERMANENT LOW UNIT COST

## CLOSE TOLERANCE LIMITS

## PROMPT DELIVERY

## QUALITY

# IN-RES-CO



### TYPE ALA — 3 WATTS

MAX. RES: 25,000 Ohms (Nichrome)  
MAX. RES: 5,000 Ohms (Manganin)  
BODY SIZE: 1 1/2" Lg. by 3/8" Dia.  
MOUNTING: By Axial Leads  
TERMINALS: No. 18 Tinned Copper Leads, 2 Inches Long  
TOLERANCES: Standard 3% (1% at Slight Extra Cost)

### TYPE ACA — 6 WATTS

Same as Type ALA except coated with high temperature cement.

### TYPE BLA — 5 WATTS

MAX. RES: 50,000 Ohms (Nichrome)  
MAX. RES: 10,000 Ohms (Manganin)  
BODY SIZE: 1 3/4" Lg. by 3/8" Dia.  
MOUNTING: By Axial Leads  
TERMINALS: No. 18 Tinned Copper Leads, 2 Inches Long  
TOLERANCES: Standard 3% (1% at Slight Extra Cost)

### TYPE BCA — 10 WATTS

Same as Type BLA except coated with high temperature cement.

Types ALA, ACA, BLA, BCA can be supplied with non-inductive winding with 50% reduction in maximum resistance. Add suffix "N" to code when specifying non-inductive types (ALAN, ACAN, BLAN, BCAN).



## Dependable!

This new line of resistors—designed to meet current demands for small, low-cost, quality units of close tolerance—is immediately available. They cover the full range from 1 watt to 10 watts and 1 ohm to 1 megohm. Designed for long life and stability, these components have hard soldered connections between resistance wire and terminals, assuring permanent noiseless, trouble-free units. These new resistors are engineered for the manufacturer who desires to retain a reputation of top quality and performance in his equipment. Like all IN-RES-CO products they are produced under rigid control by modern facilities. Write for details.

### TYPE BX — 1 WATT

NON-INDUCTIVE



MAX. RES: 1 Megohm (Nichrome)  
MAX. RES: 30,000 Ohms (Manganin)  
BODY SIZE: 1-3/16" Lg. by 9/16" Dia.  
TOLERANCES: Standard 3%  
(To 1/10% at Slight Extra Cost)

### TYPE CX — 1 WATT

NON-INDUCTIVE



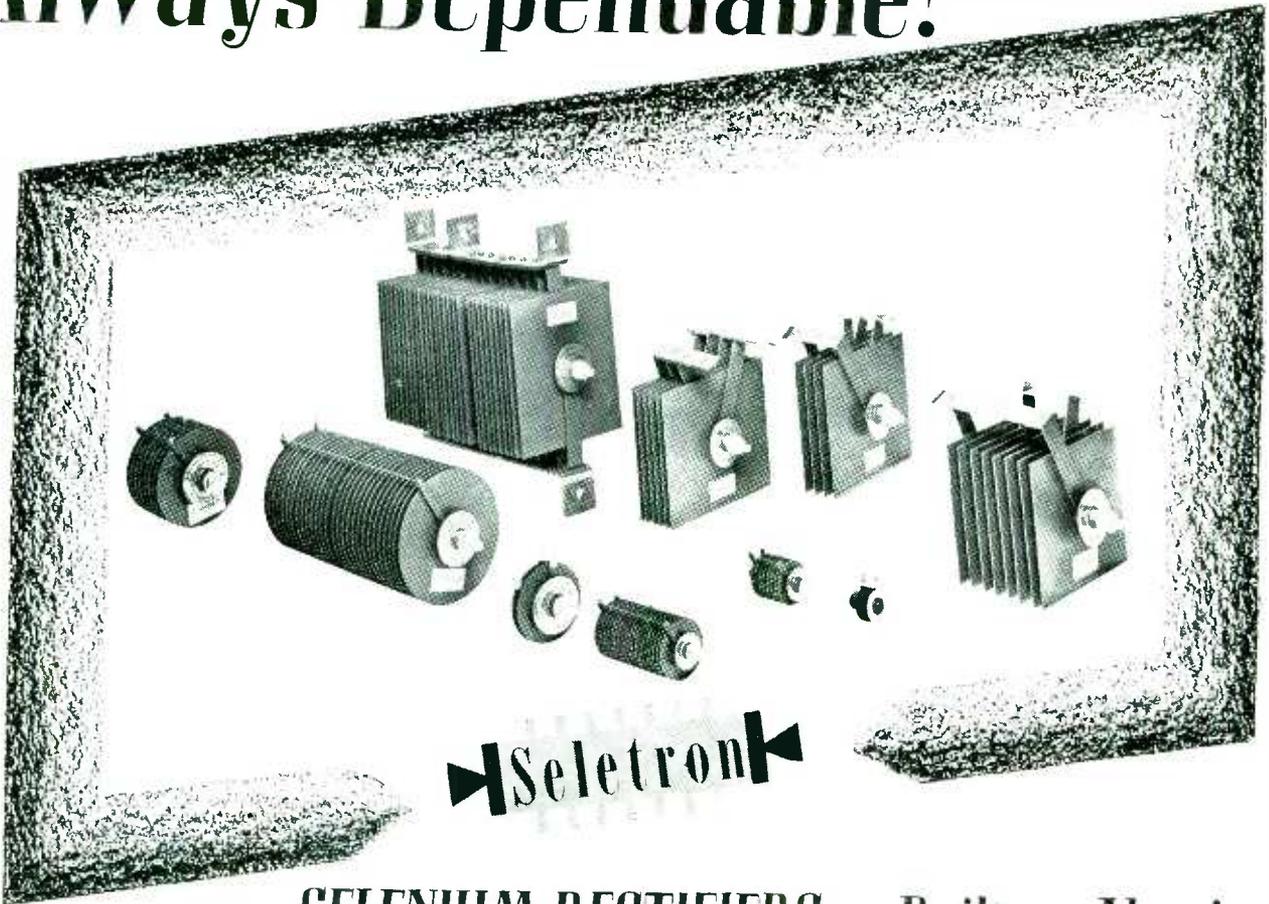
MAX. RES: 500,000 Ohms (Nichrome)  
MAX. RES: 15,000 Ohms (Manganin)  
BODY SIZE: 3/4" Lg. by 9/16" Dia.  
TOLERANCES: Standard 3%  
(To 1/10% at Slight Extra Cost)



## INSTRUMENT RESISTORS CO.

1036 COMMERCE AVENUE, UNION, NEW JERSEY

# Always Dependable!



## SELENIUM RECTIFIERS... Built on Aluminum

| LARGE OR SMALL WE BUILD THEM ALL |                                |                         |              |              |
|----------------------------------|--------------------------------|-------------------------|--------------|--------------|
| CODE NO.                         | CIRCUIT                        | MAX. R.M.S. INPUT VOLTS | OUTPUT VOLTS | OUTPUT AMPS. |
| A1C1S1B                          | 1 Phase Center Tap             | 24                      | 8            | .220         |
| B2B1S1B                          | 1 Phase Bridge                 | 48                      | 36           | .30          |
| C5B1S1B                          | 1 Phase Bridge                 | 120                     | 90           | .6           |
| D1C1S1B                          | 1 Phase Center Tap             | 24                      | 8            | 1.6          |
| E2B1S1B                          | 1 Phase Bridge                 | 48                      | 35           | 2.4          |
| F7B1S1B                          | 1 Phase Bridge                 | 168                     | 120          | 4.0          |
| G2B1S1B                          | 1 Phase Bridge                 | 48                      | 35           | 6.0          |
| H1B1S1B                          | 1 Phase Bridge                 | 24                      | 17           | 10.0         |
| FH1C3S1B                         | 1 Phase Center Tap, Fan Cooled | 24                      | 6            | 60.0         |
| FH1HA9S1B                        | 3 Phase Half Wave, Fan Cooled  | 13.8                    | 9            | 250.0        |

The above ratings for 35°C ambient continuous duty resistive inductive load.  
Other combinations manufactured to meet your requirements.

For AC-DC conversion where minimum maintenance costs and maximum efficiency are required, circuit designers write SELETRON into their specifications . . . right at the start!

These advanced type selenium rectifiers built on aluminum are engineered for long life, minimum weight, compactness and maximum heat dissipation. Ten standard sizes of discs provide outputs ranging from 50 milliamperes to thousands of amperes. Arrangement of discs in infinite series and parallel combinations makes possible stacks to meet specific requirements for voltage and current.

Consultation with our engineers on any problem is invited. Their services and advice are yours without any obligation. Write TODAY for our informative bulletin on SELETRON Selenium Rectifiers and for the SELETRON application data sheet.

Address Dept. S-36.

### FOR RADIO APPLICATIONS . . .

Specify SELETRON

Miniature Selenium Rectifiers



- STARTS INSTANTLY
- RUNS COOL
- WILL NOT BREAK
- BOOSTS PERFORMANCE
- LASTS LIFE OF SET
- EASILY INSTALLED

5L1

75 mil 5-plate stack  
7/8" x 7/8" x 7/8"

5P1

150 mil 5-plate stack  
1 1/8" x 1 1/8" x 7/8"

5M1

100 mil 5-plate stack  
1" x 1" x 7/8"

5Q1

200 mil 5-plate stack  
1 1/2" x 1 1/2" x 7/8"



**SELETRON DIVISION**  
**RADIO RECEPTOR CO., Inc.**

Since 1922 in Radio and Electronics

251 WEST 19th STREET

NEW YORK 11, N. Y.





# BALLANTINE ELECTRONIC VOLTMETERS



The **INDICATING METER** used on all **BALLANTINE VOLTMETERS** features a single logarithmic voltage scale and uniform decibel scale. Makes readings especially easy. Accuracy of indication is 2% at any point on the scale.



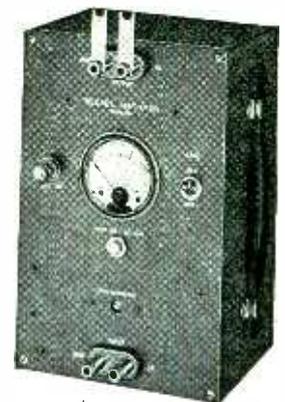
**MODEL 300 ELECTRONIC VOLTMETER.** For the precise measurement of AC voltages from 1 millivolt to 100 volts over a frequency range of 10 cycles to 150,000 cycles. Accuracy of voltage readings is within 2%. Output jack and output control provided so that instrument can be used as highly stable amplifier, with 70 DB gain, flat within 2% over entire frequency range. Input impedance is 1/2 megohm. Special circuits insure permanent and highly accurate calibration, not affected by variation in line voltage or tube replacement. A high quality instrument for laboratory use — note the several accessories listed below which further increase utility of voltmeter.

**MODEL 304 R.F. VOLTMETER.** This instrument measures AC voltages over a range of 1 millivolt to 100 volts from 30 cycles to 5.5 megacycles. Probe type input connector attached by a flexible cable provides true indication of voltages at point of origin in circuits. Accuracy of voltmeter readings are within 5%. Input impedance is 1 megohm shunted by 9 mmfds. Can be used as wide-band amplifier. Especially useful for reading millivolts in television and FM intermediate frequency amplifier circuits, RF heating apparatus, carrier current systems and in particular for extending useful frequency range of ordinary oscilloscopes to beyond 5 megacycles.



**Model 402A (x10) MULTIPLIER.** An Accessory for use with Models 300 and 302 Voltmeters. Extends upper range of voltmeters from 100 to 1,000 volts. Also increases input impedance of voltmeters to 4 megohms.

**Model 402B (x100) MULTIPLIER.** An accessory for use with Models 300 and 302 Voltmeters. Extends upper range of voltmeters from 100 to 10,000 volts. Also increases input impedance of voltmeters to 40 megohms.



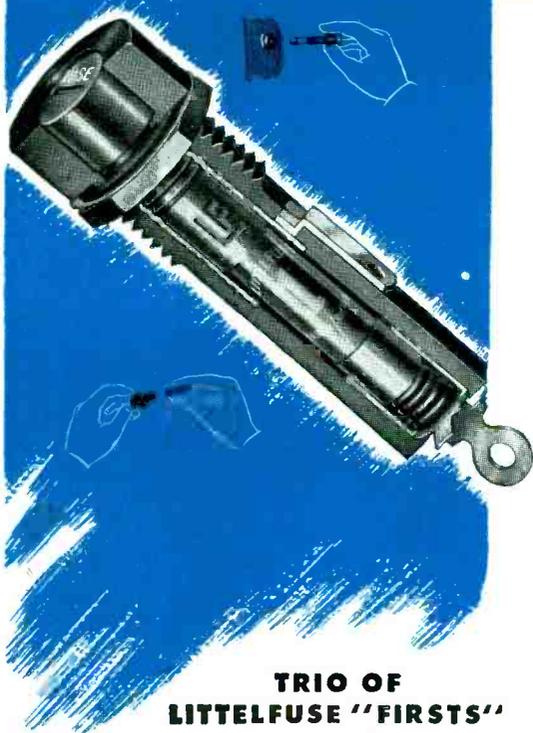
**MODEL 302 ELECTRONIC VOLTMETER.** This Sensitive Electronic Voltmeter is portable and operates from lightweight batteries contained within carrying case. Reads AC voltages from 1 millivolt to 100 volts over frequency range of 5 cycles to 150,000 cycles. Accuracy 2% at any point on scale. Can be used as highly stable amplifier. Input impedance 1/2 megohm. Uses standard Eveready or Burgess batteries. Battery life over 150 hours.

**MODEL 220 DECADE AMPLIFIER.** An accessory designed for use with Model 300 and Model 302 Voltmeters to permit the measurement of AC voltages below one millivolt. A highly stable amplifier giving accurately standardized gains of 10x and 100x over a frequency range of 10 to 100,000 cycles. Operates from batteries contained within case. When used with Ballantine Voltmeters, AC voltages down to 0.00001 volt (10 microvolts) can be measured. Calibrated gain is independent of battery voltage, circuit constants and tubes, within 2%.

TECHNICAL BULLETIN IS AVAILABLE COMPLETELY DESCRIBING ABOVE INSTRUMENTS

**BALLANTINE LABORATORIES, INC.**  
BOONTON, NEW JERSEY, U. S. A.

# TWO *Happy Endings* TO FUSE-MOUNTING PROBLEMS



**TRIO OF  
LITTELFUSE "FIRSTS"  
IN FUSES...**

These Littelfuse 3AG fuse mountings offer sharply increased safety and convenience. Typical of the complete Littelfuse line of fuses, mountings and accessories, they represent smooth coordination of sound engineering and original thinking. This assures effective circuit protection and lasting satisfaction.

**LITTELFUSE 3AG EXTRACTOR POSTS** eliminate unsightly exterior fuse clips on appliances, equipment or instruments. The fuse is held in the end of the removable knob. Unscrew it, and the fuse is safely changed without irritating inconvenience. Their dead front construction prevents accidental electrical shocks. Extractor Posts are easy to install. They conserve space in panel layouts—can be ganged in rows with a common bus.

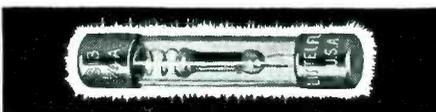
Littelfuse 3AG Extractor Posts are available in finger-operated types with and without 3 1/2" flexible cord or "keep chain," and in a screwdriver type.

**STEEL-COVERED 3AG SIZE FUSE MOUNTINGS** prevent accidental damage to fuses, prevent injury by exposed terminals. Available with convenient hinged cover in single and double pole types, and in single pole and spare fuse holder combinations, these mountings all have fatigue-resistant nickel plated phosphor bronze clips. A double-pole type with removable non-hinged cover also is offered.

Both types meet Underwriters' requirements, and solve your fuse-mounting problems with thrift and efficiency. Send for your new Littelfuse catalog number 9 today!



**QUICK-ACTING 3AG** Littelfuses for low time-lag applications. Elements of fractional ampere fuses are protective coated to prevent oxidation, and promote a clean break.



**SLO-BLO 3AG** Littelfuses have high time-lag to withstand heavy surges—quick on shorts. Anti-fatigue construction. In 1/100 to 20 amp. ratings.



**"TINY-MIGHTY" 3AG** Littelfuses are bakelite-enclosed, arc-quenching, powder-filled fuses. In 10, 12, and 15 amp. ratings. The smallest Underwriters' Laboratories approved fuses in ratings this high.

**LITTELFUSE**



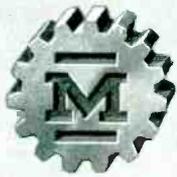
*Incorporated*

4785 RAVENSWOOD AVE.

CHICAGO 40, U.S.A.

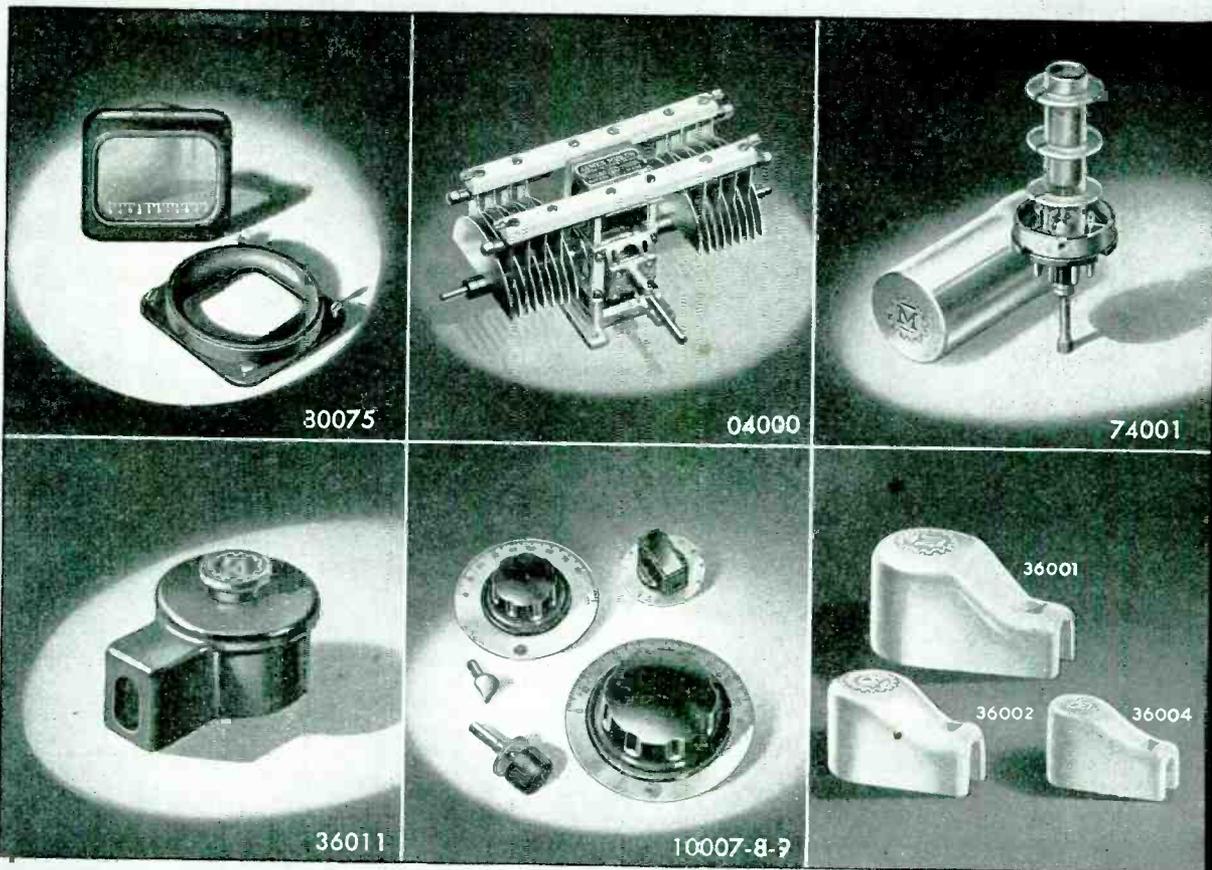
MITE-T-LITE • SWITCH LITE • IGNITION FRITZ • NEON INDICATORS • SWITCHES • CIRCUIT BREAKERS • FUSES, MOUNTINGS AND ACCESSORIES

*Designed for*



*Application*

Millen "Designed for Application" components are different! As a designer and manufacturer for many years of complex electronic and communication equipment, we are our own best customer for component parts. Consequently, we have to perform an outstanding job of designing and manufacturing such parts in order to satisfy our own applications. Our parts are "different", also, because as symbolized by the "Gear wheel" of our registered trade mark, they are designed by mechanical engineers working in close cooperation with our electronic circuit group. Below are illustrated a typical half dozen of the thousand-odd items we manufacture.



Illustrated above, left to right; Top row: The No. 80075 cathode ray tube Bezel, the No. 04000 series of adjustable shaft angle, center drive variable transmitting condensers and the No. 74001 permeability tuned shielded plug-in coil form. Bottom row: The No. 36011 snap lock multiple finger contact plate caps, the small panel dials and finally the Ceramic insulated plate caps.

**JAMES MILLEN MFG. CO., INC.**

MAIN OFFICE AND FACTORY

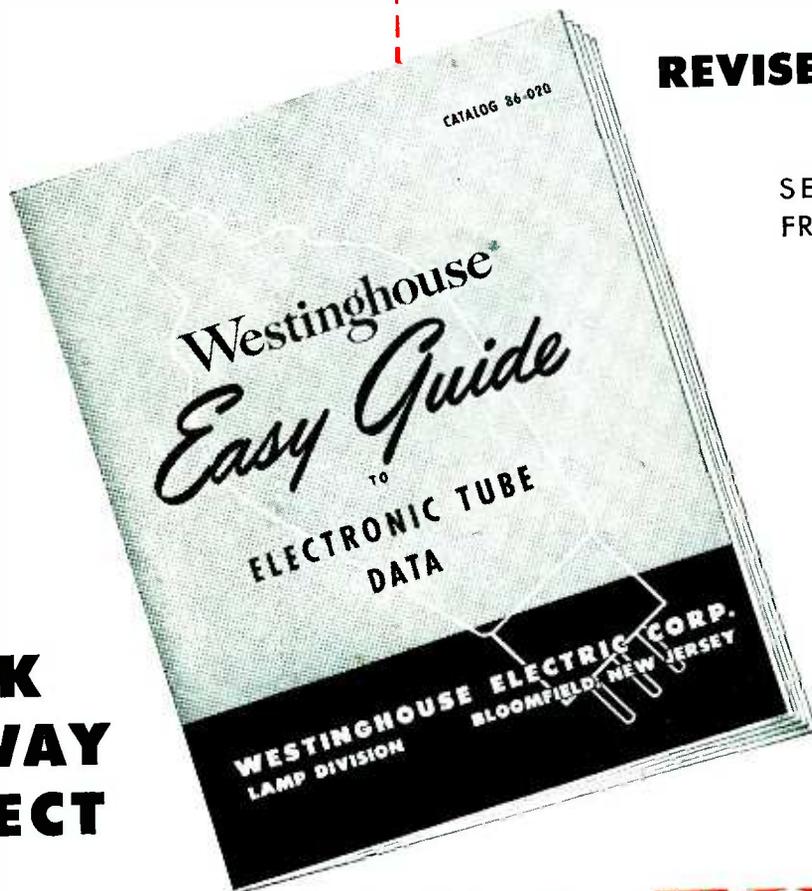
**MALDEN  
MASSACHUSETTS**

SALES OFFICES  
IN ALL  
PRINCIPAL CITIES

CANADIAN SALES  
ASTRAL ELECTRIC CO.  
SCARBORO BLUFFS (TORONTO)

**REVISED EDITION**

SEND FOR YOUR  
FREE COPY TODAY



**A QUICK  
EASY WAY  
TO SELECT**

# ELECTRONIC TUBES

Westinghouse offers you the right combination in electronic tubes:

**1. A complete line.** Westinghouse provides *Quality Controlled* tubes for industrial and communications applications.

**2. The Easy Guide.** This newly revised edition gives you a simple, quick way of selecting the proper Westinghouse tube for your purpose. It gives essential technical data on each tube and includes an interchangeability chart

for selecting the appropriate Westinghouse tube for various competitive designations.

**3. Replacement tube service.** Westinghouse gives you prompt and efficient service through its district warehouses and distributors throughout the country. "One call does it all."

If you do not have your copy of the Easy Guide, send for one today. Electronic Tube Sales Dept., Westinghouse Electric Corp., Bloomfield, N. J.

**Westinghouse**  
*Quality Controlled Electronic Tubes*

#### DISTRICT SALES OFFICES

ATLANTA 2, GA..... 1299 Northside Drive, N. W.  
BOSTON 10, MASS..... 10 High Street  
CHICAGO 6, ILL..... 20 North Wacker Drive  
NEW YORK 5, N. Y..... 40 Wall Street  
PHILADELPHIA 4, PA..... 3001 Walnut Street  
PITTSBURGH 30, PA..... Union Bank Building  
SAN FRANCISCO 4, CALIF..... 1 Montgomery Street  
ST. LOUIS 1, MO..... 411 North 7th Street

Sales information and tubes also available from Westinghouse Electronic Tube Distributors throughout the country.

# For precise, positive linkage between instrumentation and control



**INDUCTION GENERATOR:** when fed from AC source produces voltage proportional to speed of rotation. Used in circuits as velocity control component.

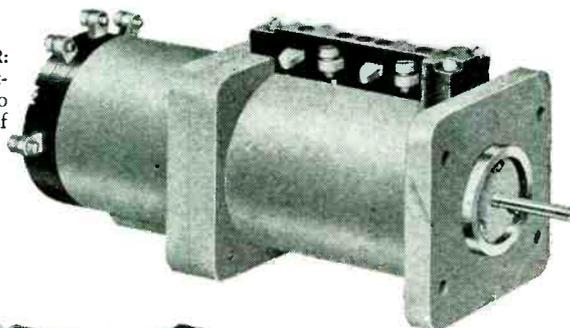


**PERMANENT MAGNET GENERATOR:** designed as AC potential source. Produces sinusoidal wave form with harmonic content under 2%.



**INDUCTION GENERATOR:** type designed particularly for use where low residual voltage is required.

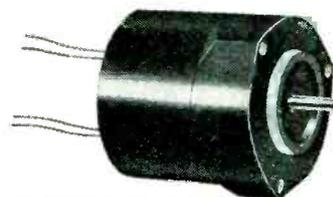
**MOTOR DRIVEN INDUCTION GENERATOR:** powered by 2-phase, low-inertia induction motor. Used as fast reversing servo motor where maximum stall torques of less than 7 oz. in. are required.



**TELETORQUE UNIT — below left:** a precision-built, non-motoring, self synchronous unit for remote indication. Accurate to  $\pm 1$  degree.



**CIRCUTROL UNIT:** Useful as a resolver, phase shifter, rotatable and control transformer or phase indicator.



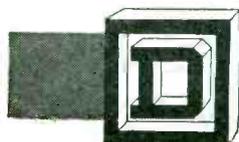
**INDUCTION MOTOR:** Low inertia, two-phase squirrel cage unit for use as precision servo motor.

## KOLLSMAN OFFERS A LINE OF SPECIAL PURPOSE AC UNITS

To meet the varying needs of the electronics engineer in linking instrumentation up to control, Kollsman offers a group of units with sufficiently varied functions to solve a wide range of control problems. In nearly every case, units are available for operation at various voltages and frequencies to fit widely diversified electronic control and remote indication applications. These Kollsman units are the outgrowth of long development in aircraft instrumentation and control and — more recently — Kollsman's considerable work in this field for naval and military applications. They are light in weight, compact, and highly precise, so that engineers working with exact quantities will find them reliable to a high degree. Complete data on any or all of these units may be had upon request. Kollsman Instrument Division, Square D Company, 80-08 45th Avenue, Elmhurst, N. Y.

## KOLLSMAN AIRCRAFT INSTRUMENTS

PRODUCT OF



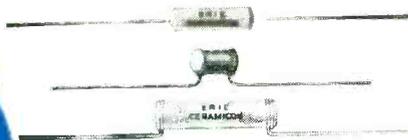
**SQUARE D COMPANY**

ELMHURST, NEW YORK

GLENDALE, CALIFORNIA



# ERIE RESISTOR



**Temperature Compensating  
Molded Insulated Ceramicons**  
0.5 MMF—550 MMF

**Temperature Compensating  
Dipped Insulated Ceramicons**  
0.5 MMF—15,000 MMF

**Temperature Compensating  
Non-Insulated Ceramicons**  
0.5 MMF—1,770 MMF



**Types 504B, 1/2 Watt—518B, 1 Watt  
Resistors**  
10 ohms—22 megohms

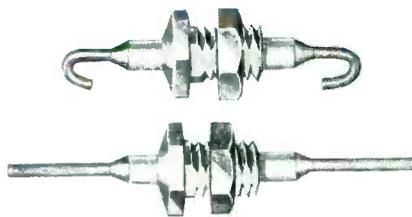


**Erie "GP" Molded Insulated Ceramicons**  
10 MMF—5,000 MMF

**Erie "GP" Dipped Insulated Ceramicons**  
0.5 MMF—15,000 MMF

**Erie "GP" Non-Insulated Ceramicons**  
10 MMF—10,000 MMF

**Custom Injection Molded  
Plastic Knobs, Dials,  
Bezels, Name Plates,  
Coilforms, etc.**



**Feed-Thru Ceramicons**  
3 MMF—1,000 MMF  
3 MMF—1,500 MMF



**Types L-4, L-7, S-5 Suppressors  
for Spark Plugs and Distributors**



**Button Mica Condensers**  
15 MMF—6,000 MMF



**High Voltage Double Cup  
and plate Condensers**  
10,000 VOLTS WORKING



**Cinch-Erie Plexicon Tube Sockets with  
1,000 MMF built in by-pass condensers**



**Type 554  
Ceramic  
Trimmer**  
3-12 MMF  
5-25 MMF  
5-30 MMF  
8-50 MMF

**Type 557  
Ceramic  
Trimmer**

**Type TS2A Ceramicon Trimmer**  
1.5-7 MMF 3-13 MMF 4-30 MMF  
3-12 MMF 5-20 MMF 7-45 MMF



**Type 720A**

**Types 323 and  
324 Insulated**

**Type  
2322**

**Type  
2336**

**Erie Stand-Off Ceramicons**

**MAKERS OF QUALITY**

*Electronic Components*

ERIE RESISTOR has developed and manufactured a complete line of Ceramic Condensers for receiver and transmitter applications; Silver-Mica and Foil-Mica Button Condensers; Carbon Resistors and Suppressors; Custom Injection Molded Plastic Knobs, Dials, Bezels, Nameplates and Coil Forms. Complete technical information will be sent on request.

*Electronics Division*  
**ERIE RESISTOR CORP., ERIE, PA.**

LONDON, ENGLAND · TORONTO, CANADA

skilled springmakers . .  
AND practical,  
experienced engineers,  
**SPECIALISTS**  
in spring design  
and manufacture

*At Accurate*



It takes people to make springs. Ours are specialized, highly trained, long-experienced people—well qualified to give you the finest in spring craftsmanship.

Q Our engineers too, are an important reason why you'll like Accurate Spring Service. They're old hands at spring-making . . . they've developed manufacturing systems and procedures that enable us to handle your jobs with the greatest speed and efficiency. These Accurate engineers are at your service on spring design problems. You will benefit from their practical assistance in designing exactly the right spring for your application.

Q Why not try Accurate on your next job.

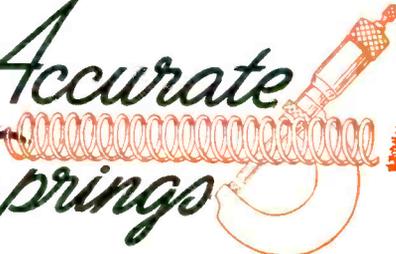
Send for your copy of the new Accurate Spring Handbook. It's full of data and formulae which you will find useful. No obligation of course.

**ACCURATE SPRING MFG. CO.**

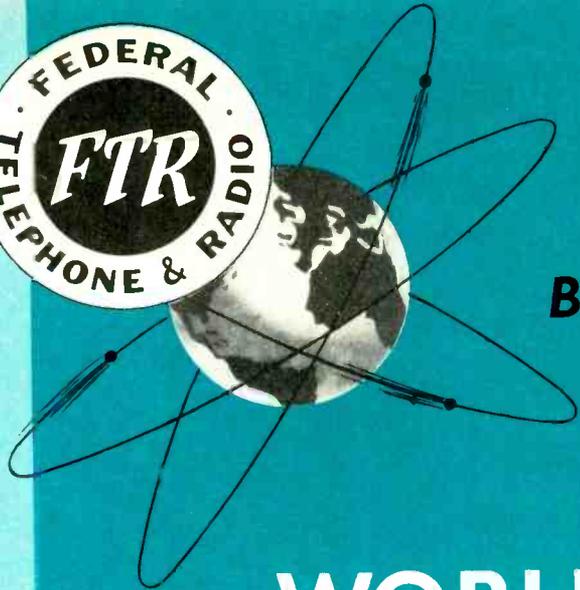
3830 W. Lake Street

Chicago 24, Illinois

SPRINGS • WIREFORMS • STAMPINGS

*Accurate*  
  
*Springs*

**FEDERAL MAKES:**



**Back of This  
Trademark  
is a**

# **WORLD OF ACHIEVEMENT**

**in Communications  
and Electronics**

**...it's your assurance of performance  
and dependability in all Federal products**

Behind the familiar Federal trademark, is IT&T's world-wide manufacturing and operating organization, with 60 years of history-making achievement in all fields of communications and electronics. This background enables Federal to offer you the finest equipment available anywhere in the world—equipment which has proved its merit by years of manufacturing and operating experience.

*Federal Telephone  
and  
Radio Corporation*

**AN IT&T ASSOCIATE**

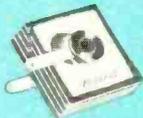
**100 KINGSLAND ROAD, CLIFTON, NEW JERSEY**



**ELECTRONIC  
TUBES**



**SELENIUM  
RECTIFIERS**



**HIGH-FREQUENCY  
WIRE AND CABLE**



**TRANSFORMERS  
AND REACTORS**



**TELEPHONE  
AND  
TELEGRAPH  
CARRIER  
SYSTEMS**



**MOBILE FM  
RADIOTELEPHONE  
SYSTEMS**



**— AND A  
COMPLETE  
LINE  
OF:**



**FM AND AM BROADCAST EQUIPMENT  
NAVIGATION AND COMMUNICATION AIDS FOR AIRCRAFT  
TELEPHONE SWITCHING EQUIPMENT**

*Complete Data on All Products Available on Request*

# ELECTRONIC TUBES for FM

# Federal Telephone and Telegraph

## 1-Kw Transmitting Triode — 7C26

Maximum output up to ..... 150 MC  
 Maximum plate dissipation.. 3000 Watts  
 Filament voltage ..... 9 Volts  
 Filament current ..... 28 Amp.  
 Amplification factor ..... 17  
 Mutual conductance ..... 20,000 Umhos  
 Overall height, 4 1/4": overall diameter 2 1/2"  
 Type of cooling ..... Forced air



7C26

## 3-Kw Transmitting Triode — 7C27

Maximum output up to ..... 110 MC  
 Maximum plate dissipation.. 3000 Watts  
 Filament voltage ..... 16 Volts  
 Filament current ..... 28.5 Amp.  
 Amplification factor ..... 30  
 Mutual conductance ..... 20,000 Umhos  
 Overall height, 8": overall diameter 3 1/2"  
 Type of cooling ..... Forced air

7C27

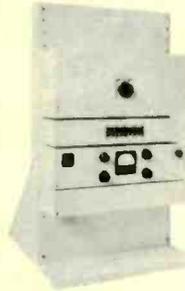


# TELEPHONE AND TELEGRAPH

## FTR 9-A-1

### Single channel carrier

Gives one additional speech channel over existing open-wire lines. Normal range — up to 300 miles without repeaters.



## FTR 9-B-1

### Three channel carrier

Gives three additional speech channels over existing open wire lines. Normal range — up to 200 miles without repeaters.



## FTR 9-C-1

### Speech-Plus-Duplex Telegraph Carrier

Gives duplex teleprinter channel over telephone or radio circuit (two over carrier telephone channel) retaining speech facilities — up to 100 words per minute — distortion minimized by frequency modulation.



## for AM

New triodes for 50 Kw transmitters . . . with THORIATED TUNGSTEN FILAMENTS

Water cooled—9C28 and 9C30  
 Forced Air Cooled—9C29 and 9C31

### DATA FOR WATER-COOLED TYPES

|                        | 9C28     | 9C30     |
|------------------------|----------|----------|
| Filament voltage....   | 15 Volts | 15 Volts |
| Filament current....   | 135 Amp. | 135 Amp. |
| <i>Maximum Ratings</i> |          |          |
| Plate voltage.....     | 15,000 V | 15,000 V |
| Plate current.....     | 10 Amp.  | 8 Amp.   |
| Plate input .....      | 100 Kw   | 120 Kw   |
| Plate dissipation .... | 40 Kw    | 40Kw     |
| Overall height .....   | 26"      | 26"      |



9C28  
Water Cooled

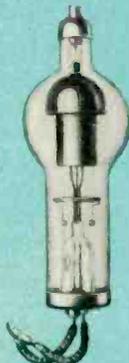
9C31 Forced Air Cooled

## for RECTIFICATION

### Mercury Vapor Tube F-857-B

Filament voltage ..... 5 Volts  
 Filament current ..... 30 Amp.  
 Maximum peak current ..... 40 Amp.  
 Maximum peak inverse voltage\*... 22,000 Volts  
 Overall height, 28": overall diameter ..... 7 1/4"

\*For plate potentials in excess of 10,000 V peak inverse, temperature-regulated forced air cooling must be used.



F-857-B

## for INDUSTRIAL APPLICATION

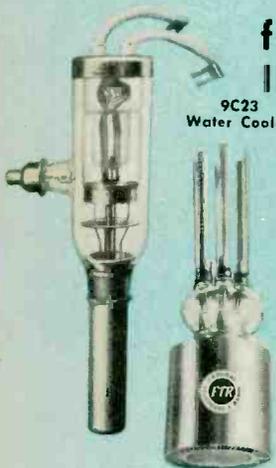
### 9C23 Water Cooled

#### Power Triode — 9C23

Filament voltage..... 22 Volts  
 Filament current..... 82 Amp.  
 Max. ratings for max. frequency of 20 MC  
 DC plate voltage ..... 15,000 Volts  
 DC plate current ..... 4.0 Amp.  
 Plate dissipation ..... 20 Kw  
 Overall height ..... 26"  
 Type of cooling ..... water cooled

#### Power Triode — 7C25

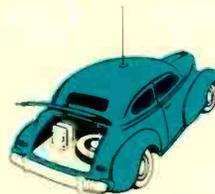
Filament voltage..... 11 Volts  
 Filament current..... 27.5 Amp.  
 Max. ratings for max. frequency of 50 MC  
 DC plate voltage ..... 4500 Volts  
 DC plate current ..... 1.25 Amp.  
 Plate dissipation ..... 2.5 Kw  
 Overall height, 7": Overall diameter, 3 1/2"  
 Type of cooling ..... forced air cooled



7C25  
Forced Air Cooled

These are just a few typical examples of Federal's advanced tube design. In every one of the wide variety of tubes in Federal's complete line you can be sure of long tube life and hard-to-beat electrical performance—backed by 38 years of research and experience.

# Mobile FM



## For Emergency Service and Tie-in with Telephone Operating Companies

Federal's Mobile 2-way and 3-way FM Radiotelephone equipment offers the last word in convenience and economy for police and fire departments, taxicabs, buses, and service cars of all kinds. Finer static-free operation, and better coverage, mean closer coordination, faster action in emergencies. All models available with selective calling, which enables headquarters to contact any one car in the fleet — or all cars at once. Small size, interchangeable unit construction, and low battery drain hold operating and upkeep costs to the minimum.

Now, by using Federal's mobile radio-telephone units to tie-in with telephone operating companies — personal and professional cars can have regular telephone service *wherever they go!*

**Mobile Units** — Transmitter and receiver sections slide in and out like a desk drawer — can be replaced in a matter of minutes. Complete with tubes and crystals, battery and central cables, antenna, dashboard control, microphone and speaker or telephone handset. 25 to 50 watts RF output, 30-44 MC to 152-162 MC.



### Stacked Model

12" high, 9 1/4" wide,  
13 1/2" deep



### Side-by-side Model

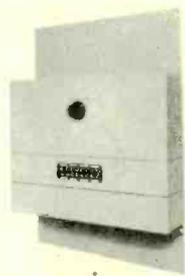
6 1/2" high, 17 1/2" wide,  
13 1/2" deep

## CARRIER SYSTEMS

### FTR 9-D-1

#### Voice Frequency Telephone Repeaters

Permit extending range of telephone lines by amplifying attenuated signals. Complete intermediate or terminal repeaters available in any combination of components — to meet all operating requirements, for 2-wire or 4-wire cable or open-wire circuits. Component parts obtainable separately, or rack-mounted and completely wired.



### FTR 9-F-1

#### Single-Channel Carrier, Second Story

Gives one additional speech channel on top of existing single channel carrier system. Similar to 9-A-1, but operates at higher frequencies. Normal range — up to 200 miles without repeaters.

This complete line of Federal carrier systems offers you 5 ways to increase circuit capacity without the expense and delay of new line construction. Features include — hermetically sealed units, compact construction, flexibility of operation, ease of installation, and service-proved dependability.

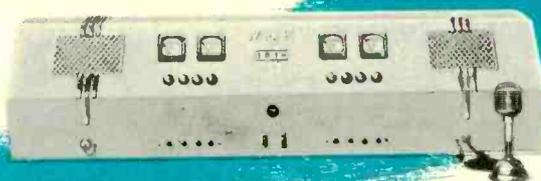
## Radiotelephone Systems

### Central Station Transmitters

Compact construction, with full length hinged doors at front and back, simple to operate and maintain. Complete electrical and mechanical interlocks are designed to assure safety of operating and maintenance personnel. Available in 50 watt and 250/350 watt power outputs for the 30-44 MC range, and in 25 watt or 250 watt outputs in the 152-162 MC range. Cabinet size — 68 $\frac{3}{4}$ " high, 22 $\frac{1}{2}$ " wide, 15 $\frac{3}{4}$ " deep.



### Deluxe Remote Control Console



Federal's remote control console is available for remote operation of the central-station transmitter at distances up to 20 miles, over a single pair of telephone lines. Consoles can be supplied complete with modern all metal desk and cabinet assemblies. For use where transmitter and antenna can not conveniently be installed at the dispatchers' headquarters.

## SELENIUM RECTIFIERS

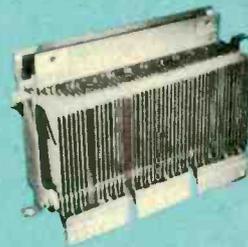


### Miniature Selenium Rectifier 403D2625

Designed to replace the rectifier tube in radio and television receivers and many other types of electronic circuits — simplifies design and construction, gives longer life, eliminates transformers. And it's smaller than a tube, reduces weight and cost, and is practically unbreakable. Size 1 $\frac{1}{4}$ " x 1 $\frac{1}{2}$ " x  $\frac{3}{8}$ ". 130 volts max., 100 ma DC.

### New Heavy-Duty Stack

For use in equipment where heavy DC loads must be supplied from an AC source. Double mounting studs for increased rigidity; double current-collection points, for higher current capacity; double center-contact construction, for increased resistance to corrosion. Maximum reverse voltage, 26 volts per plate. Unusually resistant to shock and vibration.



### D-C Power Supplies

Designed to furnish a dependable and constant source of D-C power for industrial or laboratory use. Standard equipments available in ratings from 1 to 50 amp. DC, at 2 to 115/230 volts.

### General Purpose Battery Chargers

Available in 14 standard ratings — for charging batteries of from 3 to 24/48 cells, at from 1 to 40 amp. DC. Operate from 1-phase 115 or 115/230 volt AC power source.

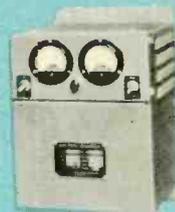


### Industrial Truck Battery Chargers

Compact heavy-duty equipments, with automatic "high" and "low" charging rates. Standard ratings for charging 6 to 12-18 lead cells and 10 to 13-25 Edison cells, at from 50-15 to 200-50 amp. DC.

### Central Station Battery Chargers

Fully automatic or manually-controlled equipments, with "high" and "low" charging rates. Standard ratings for charging banks of up to 60 cells. Operate from 115/230 volt, 1-phase AC power source.



### Telephone Battery Chargers

Filtered, automatically-controlled equipments keep batteries fully charged at all times. Eleven standard ratings, for charging 12 to 60 cells. DC outputs range from 2.4 to 16 amp.

### Electroplating Equipments

These heavy-duty equipments have efficiencies of more than 70% at full load, for minimum operating costs. Instant starting eliminates stand-by losses. Available in basic standard equipments with DC outputs of 500 amp. at 6 volts, and 2000/1000 amp. at 6/12 volts.



### Cathodic Protection Equipments

Outdoor-type units provide direct current for protecting underground pipes, cables or metal structures against electrolytic corrosion. Standard equipments available in ratings from 2 to 50 amp. DC.

All of these equipments are powered by Federal Selenium Rectifiers. Unit stacks or complete equipments — all offer the advantages of low-cost power conversion, practically unlimited life, quiet operation, and Federal's exclusive Center Contact construction — made by America's oldest and largest manufacturer of Selenium Rectifiers.

## TRANSFORMERS and REACTORS

Federal offers you a complete range of transformers and other iron-core magnetic components for all radio, electronic and industrial applications—from audio transformers of a few milliwatts to power supply transformers of 2.5 kilowatts.

Custom-built components—designed by Federal to meet your individual needs—assure you of the finest performance, the utmost dependability—backed by 38 years of engineering and production know-how. Production facilities are available for producing custom-built units in quantities of 5000 or more.

Typical transformer and reactor types are illustrated here.

- A. Open-frame type—minimum weight, for installation in enclosed equipment.
- B. Enclosed type—dust-tight and moisture-resistant construction, suitable for most built-in applications.
- C. Semi-enclosed type—only core laminations are exposed, for maximum cooling efficiency.
- D. Standard semi-enclosed power transformer, with flexible cable leads.
- E. Small hermetically-sealed audio transformer with glass bead terminals fused into cover. Maximum resistance to moisture and corrosion.



## HIGH FREQUENCY CABLES . . . Low-Loss, Flexible Type

Federal's "Intelin"® cables, for high-frequency transmission lines and antenna leads, are skillfully engineered and manufactured to assure minimum attenuation losses—maximum uniformity and dependability. They're extra flexible, too—and have outstanding resistance to abrasion, weathering and corrosion.

**COAXIAL** cables with single inner conductor, dielectric material, one or two copper braids, and a synthetic-resin outer jacket—and, in some cases, a protective armor of metal braid.

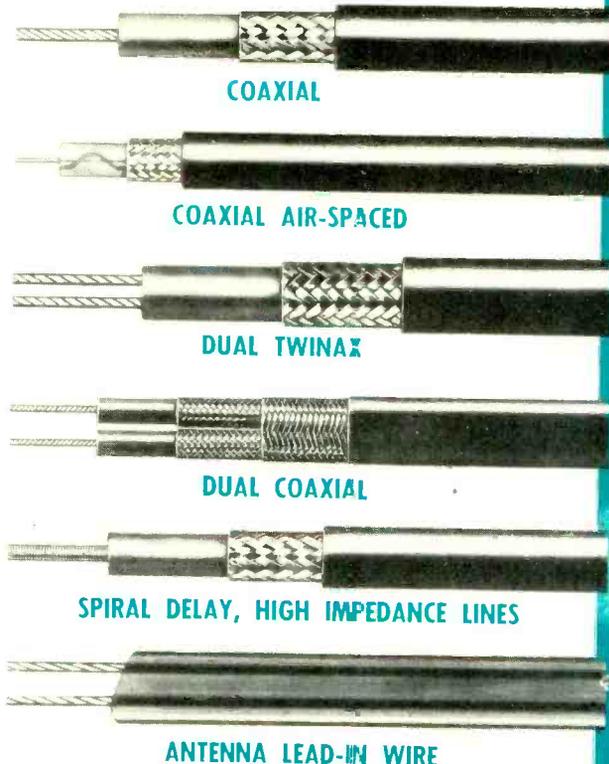
**COAXIAL AIR-SPACED** cables, designed for low capacitance. Similar to solid-dielectric types, except that *air* is made a portion of the dielectric.

**DUAL TWINAX** cables, similar to solid-dielectric types, except with *two* accurately-spaced inner conductors.

**DUAL COAXIAL** cables—consist of *two* single-conductor coaxial lines, encased in an overall braid and outer protective jacket.

**SPIRAL DELAY, HIGH IMPEDANCE LINES**—have an inner conductor spiral-wrapped around a central dielectric core, covered with dielectric, wire braid, and outer jacket.

**ANTENNA LEAD-IN WIRE** with two accurately-spaced conductors, enclosed in an extruded dielectric of elliptical cross-section. For FM and Television receiving equipment.



**OTHER FEDERAL WIRE PRODUCTS include:** Building wire—Hook-up and Appliance Wire—Inside Telephone Wire—Distributing-frame Wire—Telephone Drop Wire—Aircraft Antenna Wire for Suppression of Precipitation Static.

\*Reg. U. S. Pat. Off.

**Federal Telephone and Radio Corporation**

100 KINGSLAND ROAD, CLIFTON, NEW JERSEY

In Canada: — Federal Electric Manufacturing Company, Ltd., Montreal.  
Export Distributors: — International Standard Electric Corp., 67 Broad St., N. Y. C.

**KEEPING FEDERAL YEARS AHEAD...** is IT&T's world-wide research and engineering organization, of which the Federal Telecommunication Laboratories, Nutley, N. J., is a unit.

# FENWAL THERMOSWITCH\*

## Controls

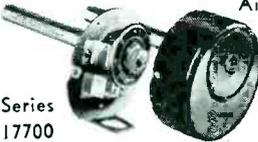
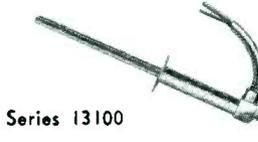
**The Short Cut to Efficient, Economical and Accurate Temperature Control**

Industry has found in the various types of Fenwal THERMOSWITCH\* Controls the answer to the problem of correct Temperature Control and Detection. Fenwal THERMOSWITCH Controls are available in many models for countless applications of Temperature Control and Detection.



CARTRIDGE  
TYPE 17000

The Cartridge Thermoswitch Control is the basic unit of most THERMOSWITCH models. Available types with temperature ranges of  $-100^{\circ}\text{F}$  to  $+400^{\circ}\text{F}$ , and  $+100^{\circ}\text{F}$  to  $+600^{\circ}\text{F}$ . The Series 17000 and 18000 THERMOSWITCH Controls provide a compact, lightweight, rugged unit which is highly sensitive. Other series are available for specialized applications.

|   |  |   |  |
|---|--|---|--|
| <p><b>HEX HEAD</b></p>  <p>Series 17100</p>      | <p>Furnished with a <math>\frac{1}{2}</math>" (or <math>\frac{3}{4}</math>") standard pipe thread. Ideal for inserting in a tapped hole.</p> | <p><b>JUNCTION BOX —</b></p>  <p>Air</p> <p>Series 17700</p>        | <p>The basic Cartridge unit with an extended shell and electrical conduit junction box, with terminal block, graduated dial and knurled brass knob.</p>  |
| <p><b>BLOCK HEAD</b></p>  <p>Series 17200</p>   | <p>Provided with a suitable mounting to allow for the easy attachment of a dial and knob and armored lead wire cable, if desired.</p>        | <p><b>JUNCTION BOX —</b></p>  <p>Immersion</p> <p>Series 17800</p> | <p>Similar to Air Type but with hexagon section with standard pipe thread.</p>   |
| <p><b>FLANGE HEAD</b></p>  <p>Series 17300</p> | <p>A mounting flange with three tapped holes provides for ease of mounting against any flat surface.</p>                                     | <p><b>COUPLING HEAD</b></p>  <p>Series 18000</p>                  | <p>Employs a hexagon mounting section with male pipe threads at each end.</p>  |
| <p><b>SUBMERSION</b></p>  <p>Series 17400</p>  | <p>Completely sealed to provide a moisture proof unit for submersion operation.</p>  | <p><b>HIGH TEMPERATURE</b></p>  <p>Series 13100</p>               | <p>Designed for controlling temperature within the range <math>300^{\circ}\text{F}</math> to <math>1100^{\circ}\text{F}</math>. Various mounting facilities available.</p>   |
| <p><b>ALL PURPOSE</b></p>  <p>Series 17500</p> | <p>Offers great flexibility for experimental and laboratory test work.</p>   | <p><b>APPLIANCE</b></p>  <p>Series 30000</p>                      | <p>For electrical appliances and control of temperature of flat surfaces. Available in two models for high temperature (<math>175^{\circ}\text{F}</math> to <math>600^{\circ}\text{F}</math>) applications and for low temperature (<math>50^{\circ}\text{F}</math> to <math>300^{\circ}\text{F}</math>) applications.</p> |

The many modifications and special features available provide for almost every application of Temperature Control and Detection.

*A copy of the complete Fenwal catalog will be sent upon request.*

\*THERMOSWITCH is a registered trade-mark designating thermal responsive controls or switches made exclusively by Fenwal Incorporated.

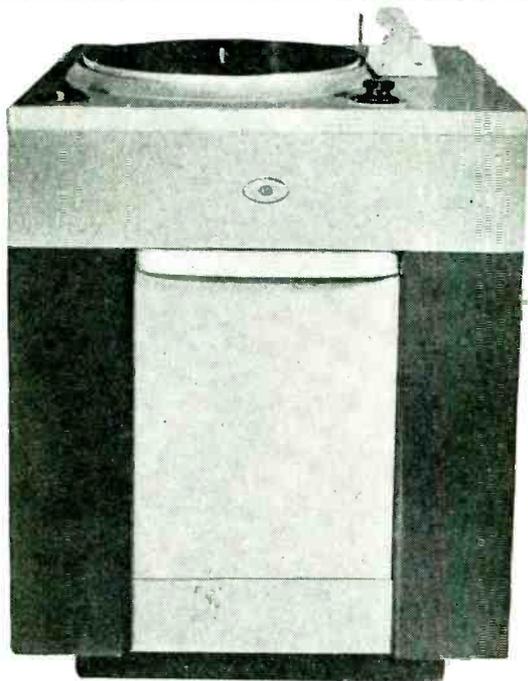


**FENWAL INCORPORATED**

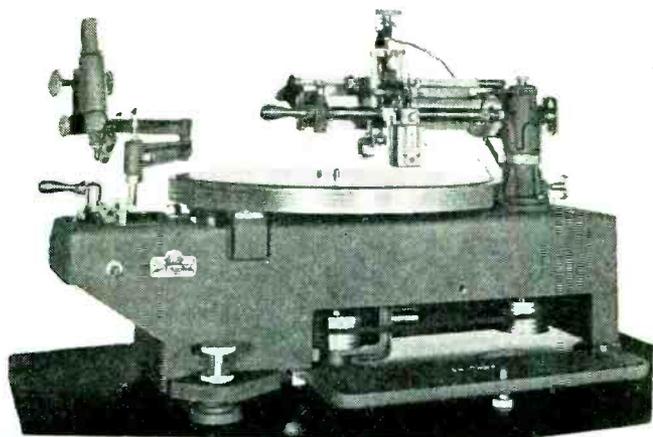
43A PLEASANT STREET

**ASHLAND MASSACHUSETTS**

Thermotechnics for Complete Temperature Regulation



**64A Transcription Turntable** incorporates exclusive features which are of great interest to the broadcast station. The Turntable is directly gear driven at both  $33\frac{1}{3}$  and 78 rpm. A separate motor is employed for each speed. Error in total speed regulation is completely absent, and mechanical disturbance is reduced to a new minimum. Change in speed is accomplished by turning a double throw mercury switch—the usual mechanical shift is eliminated. At  $33\frac{1}{3}$  rpm, full speed is attained within about one-twelfth revolution.



**The 8D and 8D-G Recorders (16")** are similar in many respects. The 8D is a conventional rim driven unit while the 8D-G is directly gear driven at both  $33\frac{1}{3}$  and 78 rpm, employing a separate motor for each speed. Total speed error in the 8D-G is completely eliminated. The recorder itself which is common to both models is of unusually heavy construction and includes, such features as a cantilever type overhead, reversing gear on the feed screw, and belt driven feed drive with seven different feed pitches. Presto automatic equalizer and microscope are included.

## You've got to be GOOD if you want to be first!

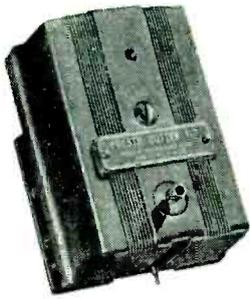
**W**ITH every engineer it's the performance that counts. That's the reason engineers acknowledge that Presto is first in the recording equipment field. This is true because Presto has a record of many firsts in creative engineering, and because that creative engineering is so well translated into enduring equipment through precision manufacture.

We let this record speak for itself when we describe our equipment to engineers through the

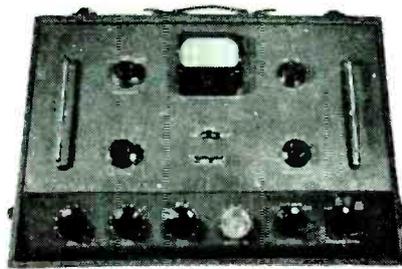
printed word. When you add up the facts you're bound to reach this same conclusion: Engineers prefer Presto for performance.



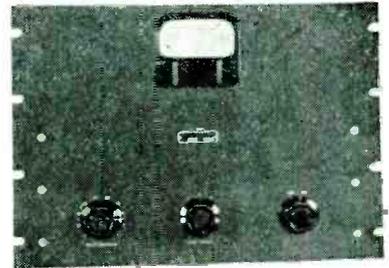
*WORLD'S LARGEST MANUFACTURER OF INSTANTANEOUS SOUND RECORDING EQUIPMENT & DISCS*



**1-D Cutting Head** provides stability, uniformity, and sensitivity with low distortion for recording transcriptions having specified response characteristics such as flat, NAB, etc. Response: 50-10,000 cps. Crossover at 500 cps. Response and level not affected more than  $\pm 2\frac{1}{2}$  db between 60° and 95° Fahrenheit.



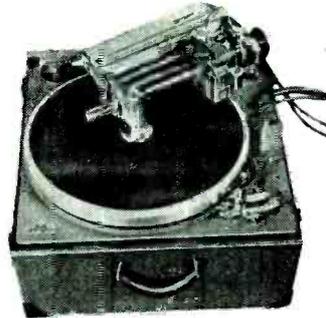
The **50-A Portable Recording Amplifier** unit incorporates the following: three channel mixing preamp. and line input—response: NAB, 78 rpm, and for (30-15,000 cps)—high and low frequency equalizers—outputs for one or two turntables or a line.



**88A Recording Amplifier** is a 50 watt amplifier with a frequency response of 20 to 17,000 cps. Both flat and NAB characteristics may be had by turning a switch. Used direct, gain is 85 db; bridging input, 70 db. This amplifier will handle program level peaks without undesirable distortion.



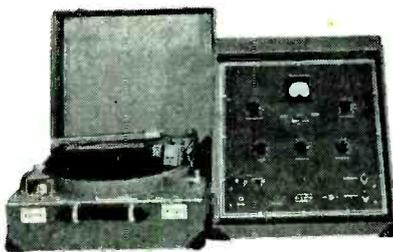
**8N Recorder (16")** is well known to broadcast and recording engineers. It is a rim driven unit employing a heavy cast iron turntable and an overhead mechanism of unusually solid construction which is driven from the center of the turntable. Change of feed pitch and direction is accomplished by changing feed screws.



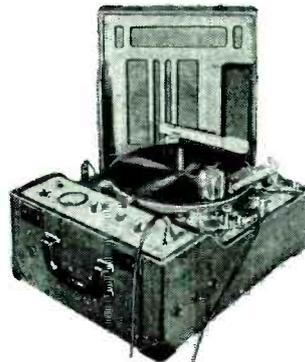
**6N Recorder (16")** has proven ideal for most broadcast stations and recording studios because of its high quality and relatively economical cost. It is supplied in carrying case for portable and remote assignments as well as in a cabinet. Its design is of the conventional rim driven type with overhead feed mechanism.



**62A Transcription Turntable** has been widely used by broadcast stations and recording studios during the past five years. It is rim driven through a machined rubber tire at the outer diameter of the turntable, providing a very simple and quiet drive.



The **Y Recorder (16")** is the lightest portable recorder having all the features necessary for high quality recordings. The turntable is driven by a synchronous motor through a machined rubber tire on the outer diameter of the turntable. The 10 watt amplifier is equipped with two microphone inputs, connections for double turntables, high and low frequency equalizers and 10" speaker.



**K8 Recorder (12")** is complete with amplifier and speaker, operates at both 78 and 33 $\frac{1}{3}$  rpm, outside-in and inside-out. It is equipped with a high frequency equalizer. Fifteen minutes of voice quality may be recorded on a single side of a 13 $\frac{1}{4}$ " disc. This unit is used by many schools, colleges, broadcast stations and recording studios.



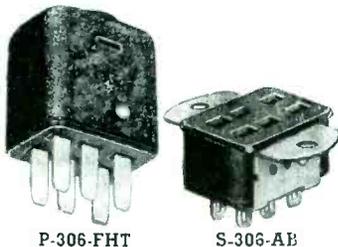
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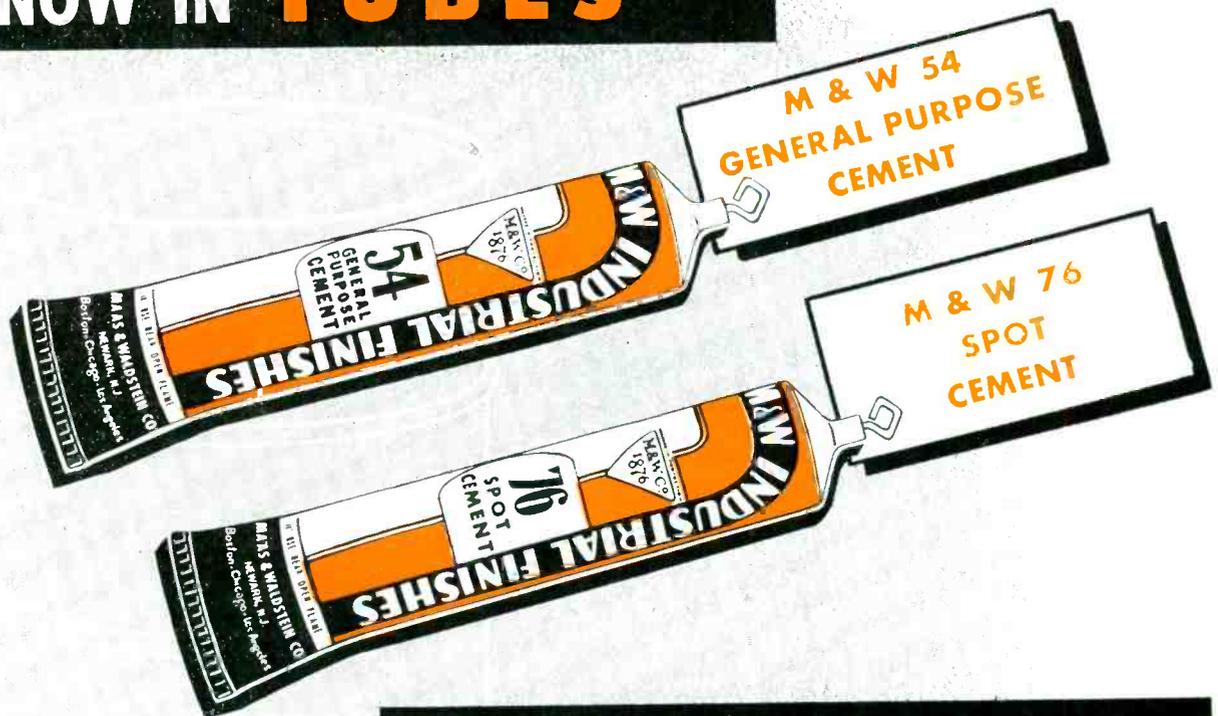
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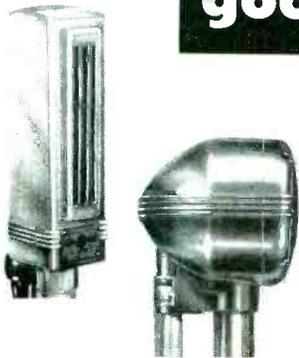
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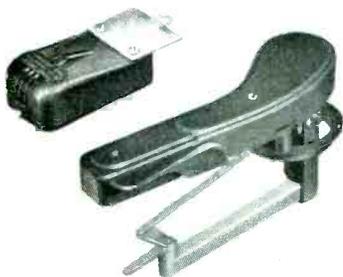
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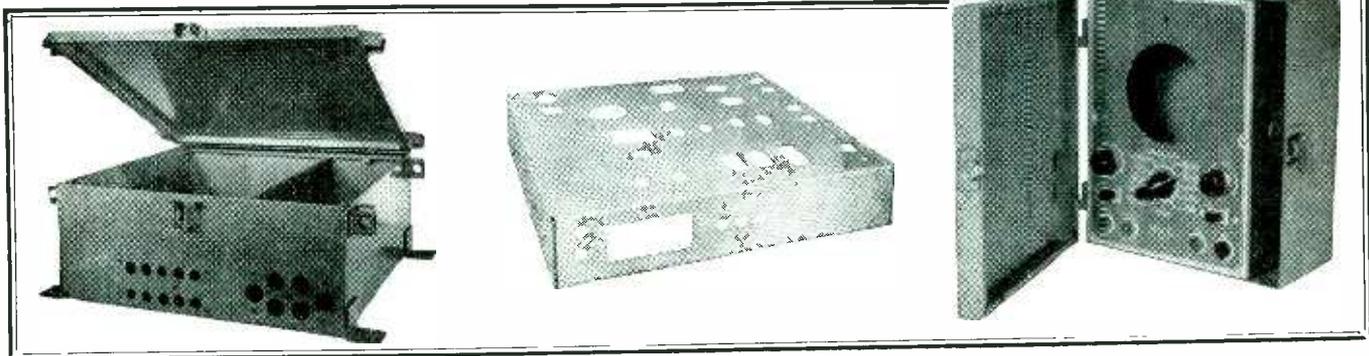
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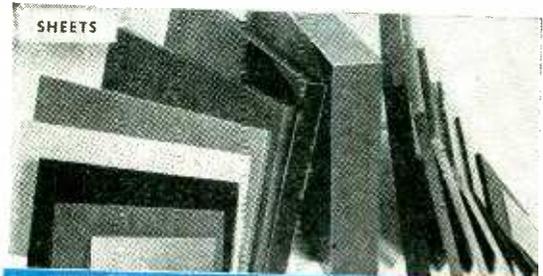


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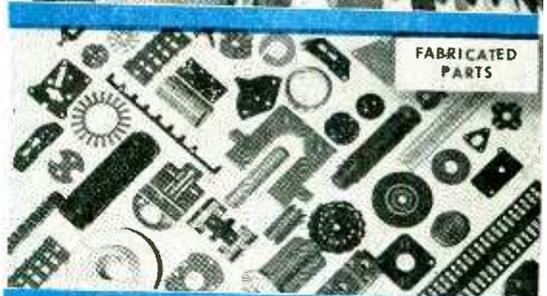


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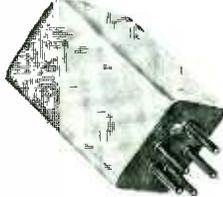
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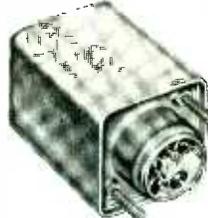
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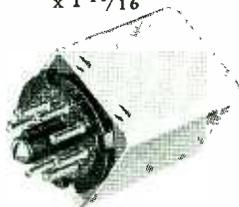


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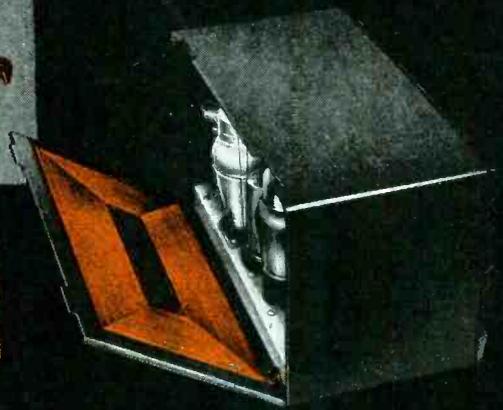
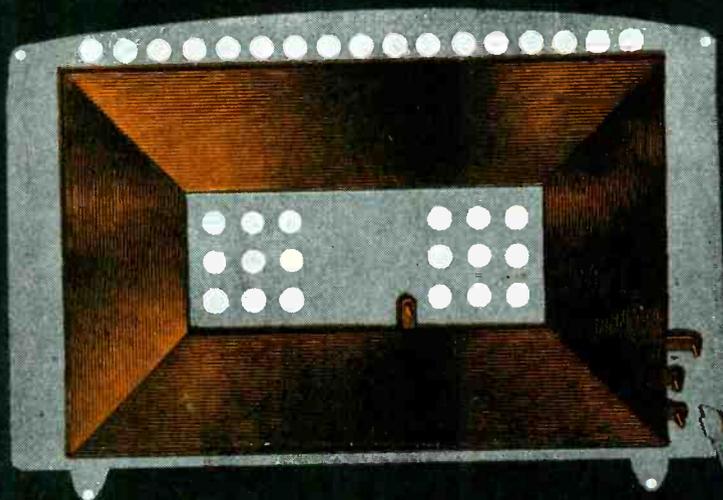
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*In addition to having unusually tough, practically age-proof insulation, all Synkote wire is designed to meet specific electronic needs.*

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**TYPE SRIR:** Approved by the Army-Navy Electronics Standards Bureau (under Spec. JAN-C-76) for Radio Hook-up use where the voltage does not exceed 1,000 V. Sizes: 24 Solid to 6 Stranded.

**TYPE SRHV:** Designed for Radio Hook-up use where voltage does not exceed 2,500 V. Has same A-N approval as SRIR. Sizes: 24 Solid to 8 Stranded.

These two types of Radio Hook-up wire are recommended for communications and industrial electronic control applications. They have proved superior to push-back and rubber insulated types because the Synkote insulation is almost totally impervious to water, oils, acids, alkalis, sunlight, cold, and fungus growths. It is vermin-proof, unusually resistant to abrasion, flexing, and tearing, and will not support combustion. In addition, it has extremely high dielectric breakdown strength and low dielectric leakage. In tests performed by the Bureau of Ships, TYPE SRIR did not breakdown under 12,000 V., and TYPE SRHV under 18,000 V. Both types can be shielded to any specifications (see "SHIELDING" below).

**TYPE WL:** Also approved by Army-Navy E. S. B. (under Spec. JAN-C-76) for voltages up to 600 V. Nylon jacketed, unusually resistant to abrasion, flexing, tearing, and heat, TYPE WL is available in sizes from 24 Solid to 6 Stranded, and can be shielded to any specifications. Ideally suited for lead-in wire where coils are subjected to high temperatures before installation, it is unaffected by temperatures up to 120°C. (248°F.).

**TYPE TF:** Approved by the Underwriters' Laboratories for Fixture Hook-up purposes. Sizes 18 and 16 (Solid and Stranded) have 2/64 insulation for 600 volt use (at temperatures up to 60°C.) and both can be shielded to any specifications.

**TYPE AW:** Approved by the Underwriters' Laboratories as Radio Hook-up wire under the category of Appliance Wiring Material. Sizes 26, 24, 22, 20, 18, and 16 (Solid and Stranded) have 2/64 insulation for 600 volt use at temperatures up to 80°C. All sizes can be shielded to any specifications.

Many other types of Hook-up Wire, to meet special requirements, can be manufactured on short notice—in practically any quantity desired. For complete information, consult our Engineering Department.

## "Synkote" ANTENNA WIRE . . .

Specifically designed for use in the radio industry, this low voltage wire comes in Sizes 24 and 22 Solid, with an extremely thin wall of insulation (approx. 10 mils). It is used in tremendous quantities by some of the foremost manufacturers of small table-top radios as antennae leads.

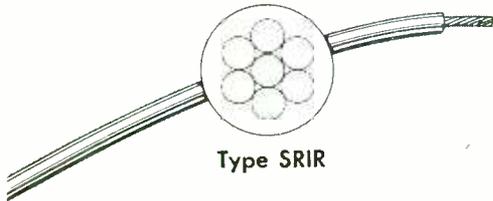
## "Synkote" TWO-CONDUCTOR PARALLEL CORD . . .

This wire has Underwriters' approval (as type POT) for power supply purposes in cord sets. It has numerous applications in the communications, appliance, and electronics fields. Manufactured in 15 distinctive, lasting colors, these extremely tough, yet light and flexible cords will not collect dust and will remain shiny and clean.

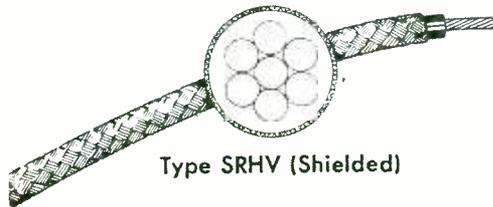
## PLASTOID PLUGS . . .

Molded in one solid piece, an integral part of the above Two-Conductor Cord, these plugs cannot be broken or detached. They are made of a tough, resilient, polyvinyl chloride compound similar to the cord insulation, and, like the cord, have Underwriters' approval.

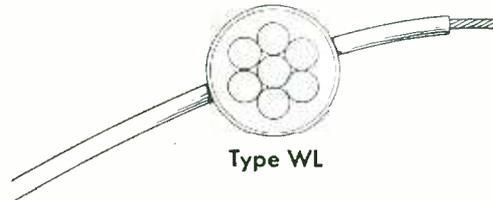
**SHIELDING:** A braid of tinned or bare copper—to cut out interfering fields. Can be woven loose or tight, to any specified degree of coverage. Gauge of strands varies according to individual requirements.



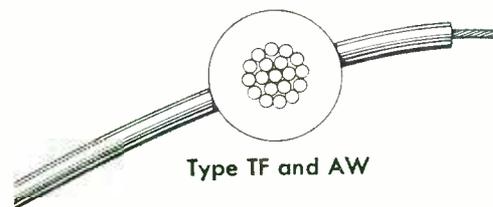
Type SRIR



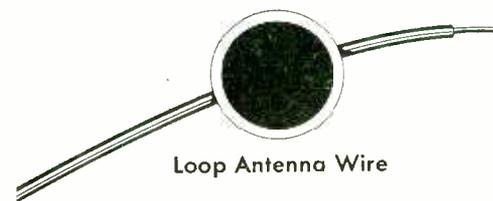
Type SRHV (Shielded)



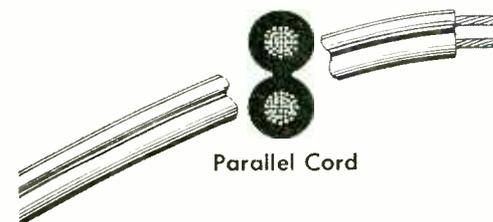
Type WL



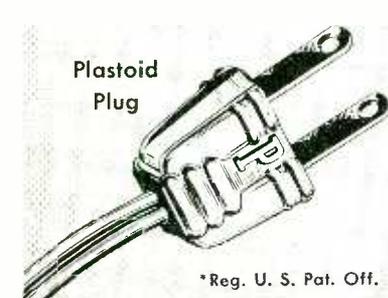
Type TF and AW



Loop Antenna Wire



Parallel Cord



Plastoid Plug

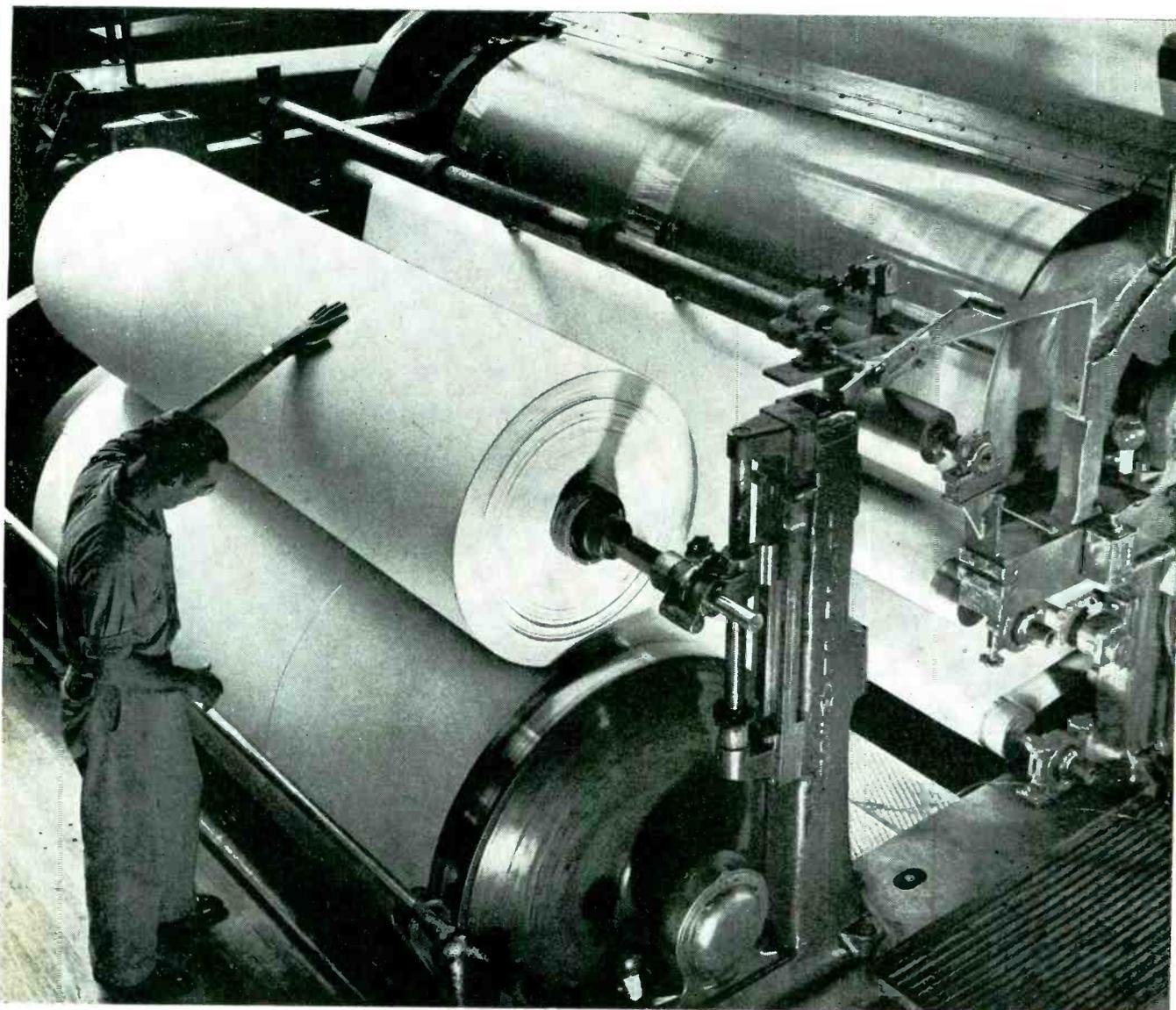
\*Reg. U. S. Pat. Off.



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Corporation

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West Coast: Electrical Specialty Company, 316 Eleventh Street, San Francisco 3, Calif.

# Browning Instruments

for TESTING, MEASURING  
AND IMPROVING

## IN THE LABORATORY

### MODEL OL-15 OSCILLOSCOPE

Designed for observing phenomena requiring extended range amplifiers and a wide variety of time bases, the Browning Model OL-15 incorporates improvements that make it useful in numerous applications where ordinary oscilloscopes are inadequate. For instance, the Browning OL-15 is particularly adaptable to television, radar and facsimile work where it is desirable to know actual r.f. waveform composition. The transient response is such that a 100KC square wave which rises or falls at 500 volts per micro second is faithfully reproduced.

WRITE FOR DESCRIPTIVE LITERATURE



## IN THE LABORATORY



### MODEL RH-10 STANDARD FREQUENCY CALIBRATOR

Full, accurate use of station WWV, the world's finest primary frequency and time standard, is obtained from the Browning Model RH-10 Standard Frequency Calibrator. The standard Browning RH-10 is pre-tuned for 5 and 10 megacycles-per-second reception, at sensitivities better than 1/2 microvolt on either band. A dual filter system provides selection of either 440 or 4000 cycle modulation of WWV for use as a primary frequency standard.

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## IN SPECIAL RADIO SERVICES

### MODEL S-4 FREQUENCY METER

Especially designed for testing transmitters of marine,

police, fire and other special service radio operators, the Browning S-4 Frequency Meter incorporates many postwar refinements. Using 110-115 volt A.C. or D.C. current, the crystal-controlled, custom-built S-4 checks both AM and FM equipment with an accuracy of  $\pm .0025\%$ .

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## IN HAM RADIO SHACKS

### MODEL MJ-9 FREQUENCY METER

Designed especially for radio amateurs, the Model MJ-9

Frequency Meter checks all operating frequencies with an accuracy of .05%. It provides a direct, frequency-reading dial on seven ham bands and audio detection of zero beat. Can be used to measure frequency of remote transmitters and for calibration of receivers within ham bands or ham band harmonics. Also an accurate ECO with an output comparable to a crystal for driving an exciter.

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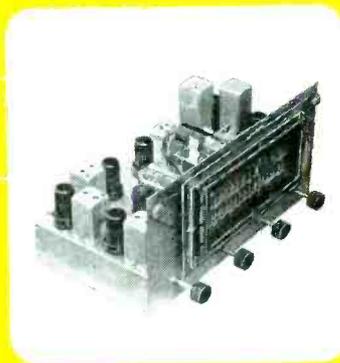
## FOR BROADCAST RECEPTION

### MODEL RJ-12 FM-AM TUNER

The Model RJ-12 FM-AM

Tuner provides noise-free reception in the new FM band; also quality reception in the AM broadcast band. It has separate RF and IF systems on both bands with one antenna serving both. Eye shows correct tuning. Two-stage cascade limiting employing the Armstrong FM circuit. Phono position on the channel selector switch, with phono input connector in back.

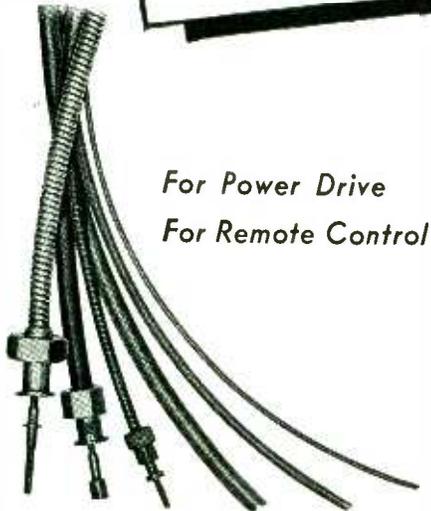
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# BROWNING

LABORATORIES, INC.  
WINCHESTER, MASS.

# S.S. WHITE PRODUCTS AND SERVICES FOR THE ELECTRONIC INDUSTRY



For Power Drive  
For Remote Control

## FLEXIBLE SHAFTS

S.S. White Flexible Shafts, in both power drive and remote control types, come in a large selection of sizes and characteristics for a wide range of requirements. Combinations of selected flexible shaft, flexible casing and end fittings are made up to user's specifications in any length, ready for connection. Applications include **power drive** of instruments and accessories—**remote control** of commercial, automobile and home radios, radio and direction finding and radar equipment in aircraft and ships—"coupling" of condensers, resistors, and other variable elements to their control dials in electronic equipment.

WRITE FOR THIS 260-PAGE HANDBOOK

It contains full details and engineering data about flexible shafts and how to apply them. A complimentary copy will be sent to any engineer who writes for it direct to us on his business letterhead and indicates his position.



TYPE 65X

Actual Size  
Other types available  
in the lower values

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The "All-Weather" Resistors

**STANDARD RANGE**—1000 ohms to 10 megohms  
Individually tested for low noise level

**HIGH VALUES**—15 to 1,000,000 megohms

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FLEXIBLE SHAFTS • FLEXIBLE SHAFT TOOLS • AIRCRAFT ACCESSORIES  
SMALL CUTTING AND GRINDING TOOLS • SPECIAL FORMULA RUBBERS  
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# CRYSTALS



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**TYPE BH5**  
4000-11,000kc



Midget holder with aluminum plated crystal mounted between spring contacts on wire supports. Hermetically sealed metal case protects assembly. Recommended for use only with low power oscillator tubes and circuits where space is at a premium.

**TYPE MC9**  
3000-11,000kc



Compact holder for multichannel portable equipment where space is a factor. Gasket sealed against moisture and humidity. Suggested for all vehicular and air-borne equipment having low power oscillator tubes and circuits.

**TYPE SR5**  
3500-11,000kc



This unit is prototype of crystal stabilizer used in majority of AAF equipment. Case is gasket sealed at all openings for maximum protection. Suggested for multichannel operation in air-borne equipment.

**TYPE MC7**  
1700-11,000kc



Gasket sealed holder with pressure airgap crystal assembly. Ideal for multichannel applications. Accommodates quartz plate up to .7" x .9" for adequate activity in medium power circuits. Used widely in marine radio-telephone equipment.

**TYPE KV3**  
100-500kc



Compact unit features low drift, silver plated crystal mounted between wire supports soldered to plated surfaces. Design assures exceptional frequency stability. Recommended for use in low power oscillators where regeneration is employed.

**TYPE ART**  
3000-11,000kc



Constant temperature oven and crystal assembly in compact case. Heater current 1 ampere at 6.3 volts. Stabilizes crystal temperature at 70° C for close tolerance requirements in VHF services.

**TYPE TC92**  
TEMPERATURE STABILIZER



Precision temperature control oven operates on 6.3 volts A.C., heater current 0.16 amperes. For use with type MC7, MC85, MO21 and AR Series crystals. Suggested for Broadcast Services, Frequency Monitors and Standards.



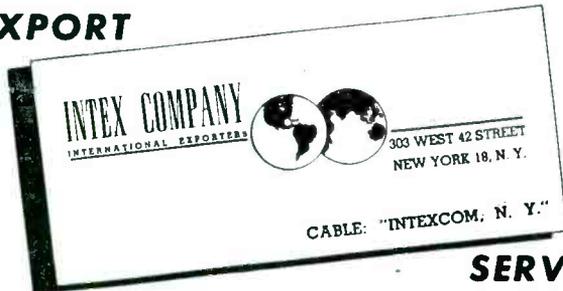
BLILEY ELECTRIC COMPANY • UNION STATION BUILDING, ERIE, PENNSYLVANIA

ELECTRONICS BUYERS' GUIDE — June, 1947 — MID-MONTH

# EXPORT • ATTENTION MANUFACTURERS

Are you interested in having your products sold in the foreign markets of the world?

## EXPORT



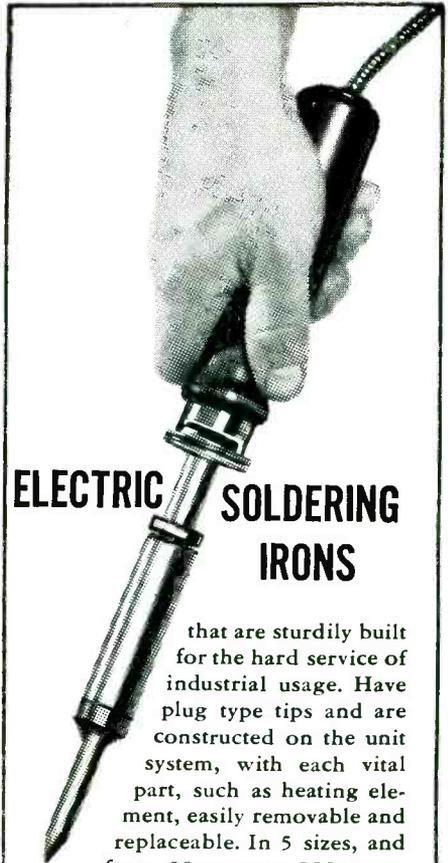
## SERVICE

The Intex Company acts as direct factory export representative for a number of allied and non-competitive manufacturers in the Radio, Electronic, Electrical and associated fields and we handle all details, such as:

- Financing
- Sales Promotion
- Export Packing
- Permits
- Shipping
- Foreign Correspondence

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**INTEX COMPANY** 303 W. 42nd St. New York 18, N. Y.  
Cable: "Intexcom, N. Y."



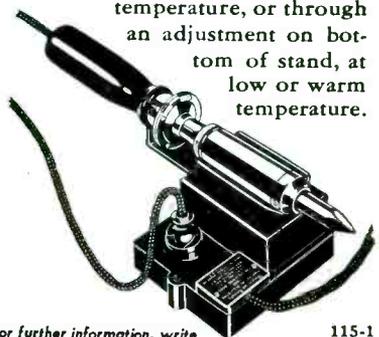
## ELECTRIC SOLDERING IRONS

that are sturdily built for the hard service of industrial usage. Have plug type tips and are constructed on the unit system, with each vital part, such as heating element, easily removable and replaceable. In 5 sizes, and from 50 watts to 550 watts.

# American Beauty

## TEMPERATURE REGULATING STAND

This is a thermostatically controlled device for the regulation of the temperature of an electric soldering iron. When placed on and connected to this stand, iron may be maintained at working temperature, or through an adjustment on bottom of stand, at low or warm temperature.



For further information, write

115-1

**AMERICAN ELECTRICAL HEATER COMPANY**  
DETROIT 2, MICHIGAN  
established 1894

## MODEL 204A — REGULATED POWER SUPPLY

0-500 Volts D.C. at 300 Ma. with Positive or Negative Ground

The Model 204A Regulated Power Supply will provide from 0-500 volts of well regulated and well filtered D.C. The output voltage is continuously variable without switching and either positive or negative side may be grounded.

### Specifications:

#### OUTPUT VOLTAGE

High Voltage: 0-500 Volts D.C. continuously variable (Without switching). Current: 300 Ma.

Low A.C. Voltage: 6.3 Bolts A.C. at 6 amps. center-tapped, unregulated.

#### REGULATION

Within 1% for voltage between 30-500 volts, from no load to full load.  
Within 1% for line voltage variations from 105 to 125 volts at full load current for any voltage between 30-500 volts and within 2% at 10 volts.

Detailed specifications will be forwarded upon request.

## ELECTRONIC MEASUREMENTS COMPANY

RED BANK • NEW JERSEY

#### HUM VOLTAGE

Within 10 Millivolts at any voltage or load with ratings.

#### LINE INPUT

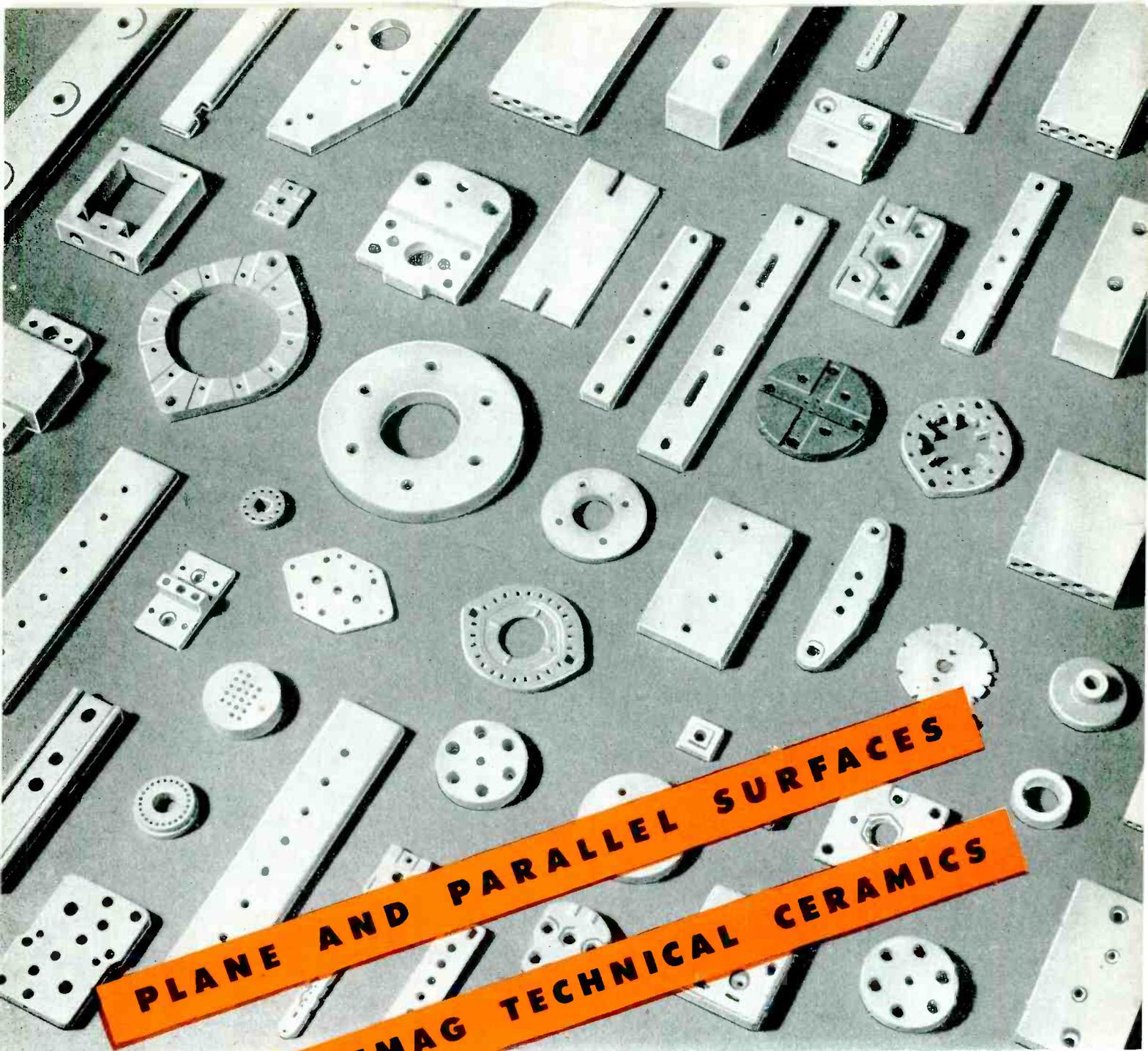
105-125 Volts A.C. 50-60 cycles.

#### OUTPUT TERMINATIONS

High and low voltage outputs available from front and rear of unit. Positive or negative terminal of high voltage output may be grounded as desired.

MODEL 204A





**PLANE AND PARALLEL SURFACES**

**ON ALSIMAG TECHNICAL CERAMICS**

To obtain truly plane and parallel surfaces on ALSiMag ceramics, we at American Lava Corporation have equipped our grinding department with the latest grinding equipment, of the type used for the production of quartz crystals or optical flats. It is possible to supply ceramic plates ground flat and parallel within .0001".

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of the high mechanical strength and rigidity of our various ceramic materials. Ground to precision, the ceramic will maintain alignments regardless of strains or pressure. "Fatigue" or "cold flow" is unknown in the vocabulary of American Lava Corporation.

Here is just one instance where war production has taught us to produce something better at lower cost.

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# Cannon Plugs

**CANNON PLUGS**  
for Electrical and  
Electronic Circuits



## TYPICAL FITTINGS IN EACH TYPE SERIES

### Type "AN" ARMY-NAVY AERONAUTICAL SPECIFICATIONS CONNECTORS for aircraft, instruments, radio, etc.

Seven designs in 15 shell sizes and diameters from .250" to 2.550", with more than 200 insert arrangements of contacts for Nos. 20, 16, 12, 8, 4, 0 and 4/0 wire; amperages—5, 10, 25, 50 and 200. Maximum operating voltages up to 500 V. Cable clamps, dummy receptacles, dust caps, junction shells. Write for "AN" Bulletin.



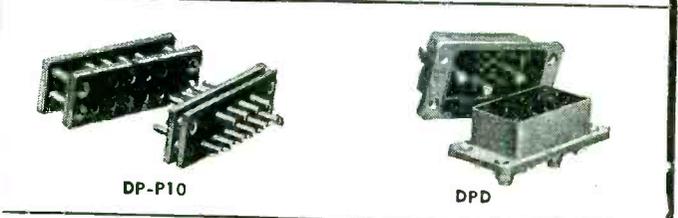
### Type "K" & "RK" CONNECTORS for aircraft, instruments, motors, radio and general electronic applications

Available in 3 basic shell styles, 8 shell sizes or diameters and 200 insert arrangements, including coaxials. Conduit and cable clamp entries. Contacts for 16, 14, 10, 8, 6, 4, 2 and 0 wire for 10-, 15-, 30-, 40-, 60-, 80-, 115-, and 200-amp. Max. flashover voltages 1150 to 6500 V. Ask for "K" Bulletin.



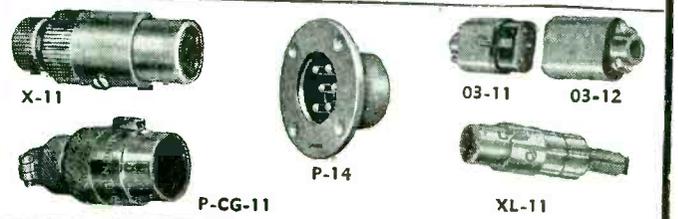
### Type "DP" CONNECTORS for radio rack and panel mounting assemblies with coaxial contacts

Designed for rack and panel radio equipment in many styles and wire combinations, including coaxials. Types with and without shells. Up to 195 contacts per fitting. "DP" Bulletin available.



### Types "P", "O", "X", "XK" CONNECTORS for radio, microphones, general sound and telephonic applications

INCLUDING NEW TYPE "XL". Type "P" is available in 2, 3, 4, 5, 6 and 8 contacts of 15- and 30-amp. Type "O" in 3 30-amp. "X" and "XK" in 3 insert arrangements of 10- and 15-amp. contacts. Latchlock device on "XL" and "P". Coupling nut on "XK". "P&O" Bulletin available.



### Type "AP" CONNECTORS for radio, telephone and sound circuits

Type "AP" is more rugged than Type "P" and has threaded coupling nut construction. The 6 insert arrangements are same as in Type "P". Provision is made for sealing off insert for weatherproofing requirements. Cable clamp entries only in plugs. New "AP" Bulletin upon request.



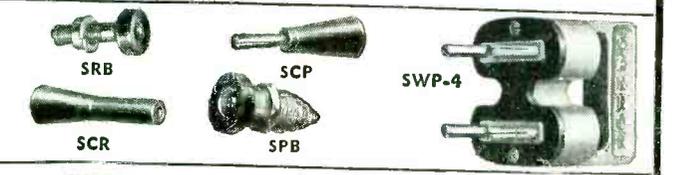
### Type "TQ" COAXIAL CONNECTORS for electronic low level circuits

Type "TQ" is a shielded coaxial plug for low level circuits, having a standard 10-amp. contact. A tapered skirt of provided to which the shielding is soldered. Ceramic insulation.



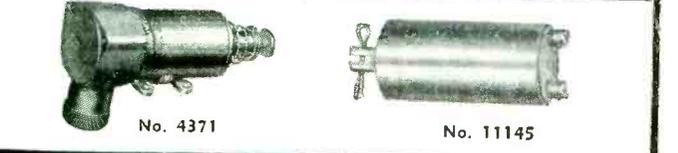
### LAB & SWITCHBOARD CONNECTORS

Lab and Switchboard connectors are designed for experimental switchboards and lab use, dispatcher board indicators and automatic separation panels, 30- and 60-amp. contacts. Ask for Lab. & Switchboard Bulletin.



### D-C SOLENOIDS

Direct current solenoids only are available in 3 standard sizes in various combinations of voltage, pull, armature travel, duty cycle and amperage. For operating hydraulic valves, mechanical clutches, retarding magnetos, etc. Bulletin available.



**CANNON ELECTRIC DEVELOPMENT COMPANY** 3209 HUMPHOLDT STREET  
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TELEPHONE CAPITOL 4271



**A**DVANCING the art of television is a major project at G. I. and all its subsidiaries. We realize that the future of this infant industry will depend in large part on the simplification of components and the streamlining of manufacturing procedure with its attendant economies. A sizable part of our staff has long been engaged in furthering this objective. In fact, at this time our subsidiary, the F. W. Sickles Co., of Chicopee, Mass., is already manufacturing vastly improved components for television application.

VIDEO is part of your future . . .  
and we would like to be part of your future in VIDEO.

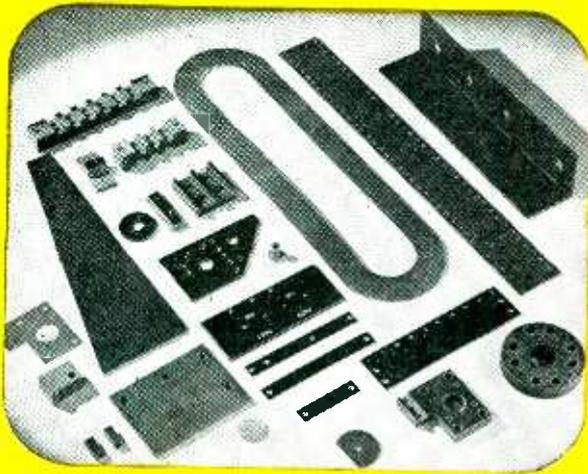


**GENERAL INSTRUMENT CORPORATION**

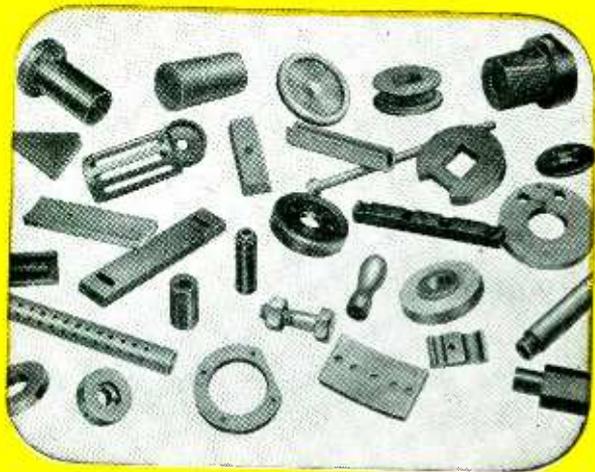
**WORLD'S LARGEST MANUFACTURERS OF RADIO COMPONENTS**

829 NEWARK AVENUE • ELIZABETH 3, N. J.

VARIABLE CONDENSERS • AUTOMATIC RECORD CHANGERS • RADIO SPEAKERS • RADIO FREQUENCY COIL



*Dilecto* insulating parts used in various types of electrical equipment.



*Diamond Vulcanized Fibre*, a general purpose non-metallic.

## *Here's Engineering Help in Meeting Your* **ELECTRICAL INSULATION PROBLEMS**



There's little need for you to waste time experimenting with various types of electrical insulating materials. C-D technicians have been at that job for years, developing and testing dielectrics for a wide range of applications. They have accumulated and made available the "know-how" which has helped many a manufacturer over the rough spots in selecting the proper type and grade of Continental-Diamond insulating material for a given use.

Each insulation job is treated individually at Continental-Diamond—every C-D material is engineered for the specific purpose intended. As a result, we have developed a line of six different in-

sulating materials subdivided into grades or combinations of grades to fit them for your specific electrical requirements. They incorporate the electrical and physical properties needed to provide maximum performance.

If you are looking for an increase in load limits, higher arc resistance, lower loss factors or similar advantages, it will pay you well to investigate C-D laminated plastics, fibre and mica products. Our technicians will start from scratch in designing to meet your requirements—or work with your engineers to come up with a practical solution to your problem. Write, phone or wire the nearest C-D office—and a C-D technician will get on the job.



SCC—46

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WEST COAST REPRESENTATIVES: MARWOOD LTD., SAN FRANCISCO 3 • IN CANADA: DIAMOND STATE FIBRE CO. OF CANADA, LTD., TORONTO 6

**Continental - Diamond** FIBRE COMPANY

Established 1895.. Manufacturers of Laminated Plastics since 1911—NEWARK 16 • DELAWARE

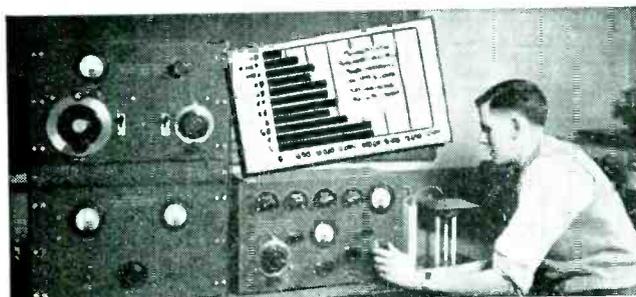


*Micabond*, all desirable characteristics of Mica in its most usable form.

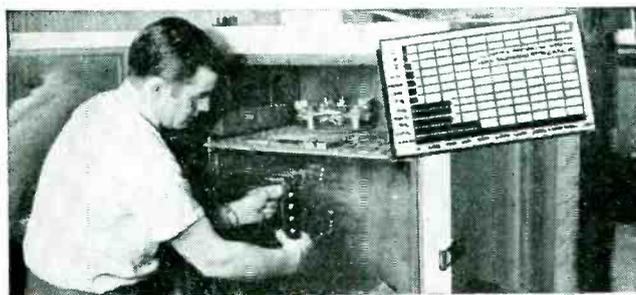


*Celoron*, similar to Dilecto but molded into desired shapes.

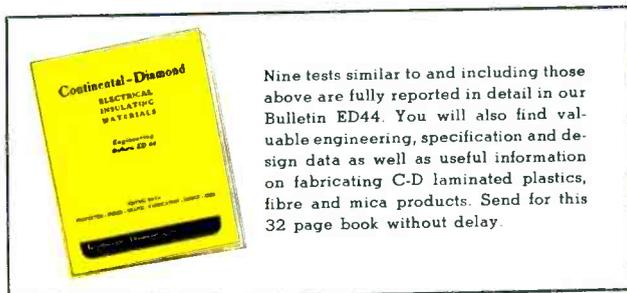
**EFFECTIVE YARDSTICKS** by which you can predetermine the performance of C-D insulating materials



**Power Factor Test on Standard Dilecto Grades**—The standard test method is called the Resonant Circuit Resistance Variation Method. Measurements are at  $10^6$  cycles per second. Equipment for this test consists of a stable high frequency generator, a vacuum tube voltmeter, decade resistors, and a Standard Precision Type Variable Air Condenser.



**Insulation Resistance Test on Various Grades of Dilecto**—This is one of several test procedures necessary to evaluate an insulating material, and for classifying various types and grades of such material. The test serves also to establish the relative uniformity of the material.



Nine tests similar to and including those above are fully reported in detail in our Bulletin ED44. You will also find valuable engineering, specification and design data as well as useful information on fabricating C-D laminated plastics, fibre and mica products. Send for this 32 page book without delay.

## C-D PRODUCTS

### THE PLASTICS

- DILECTO—Thermosetting Laminates.
- CELORON—A Molded Phenolic.
- DILECTENE—A Pure Resin Plastic Especially Suited to U-H-F Insulation.
- HAVEG—Plastic Chemical Equipment, Pipe, Valves and Fittings.

### THE NON-METALLICS

- DIAMOND Vulcanized FIBRE.
- VULCOID—Resin Impregnated Vulcanized Fibre.
- MICABOND—Built-Up Mica Electrical Insulation.

### STANDARD and SPECIAL FORMS

Available in Standard Sheets, Rods and Tubes; and Parts Fabricated, Formed or Molded to Specifications.

### DESCRIPTIVE LITERATURE

Bulletin GF gives Comprehensive Data on all C-D Products. Individual Catalogs are also Available.



# HEINEMANN ELECTRIC COMPANY

Established 1888

150 PLUM STREET

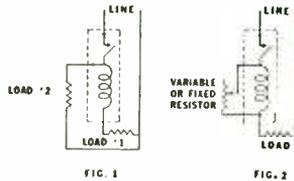
TRENTON, NEW JERSEY

Agents in Most Principal Cities

## SHORT CIRCUIT and OVERLOAD PROTECTION

Fully Electro-Magnetic Circuit Breakers—Instantaneous and Time Delay Types

### Typical Wiring Diagrams

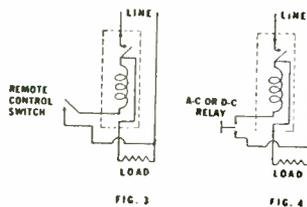


### CALIBRATING TAP

Figure 1 illustrates two separate loads wired to a single pole calibrating tap Circuit Breaker. Both load #1 and load #2 are disconnected when an overload occurs in load #1.

Figure 2 illustrates the use of a variable or fixed resistor in parallel with the trip coil to gain an adjustable variation in the rating or different fixed ratings giving a wide range of calibration of the tripping point.

Innumerable combinations can be obtained by use of 2 and 3 pole Circuit Breakers.

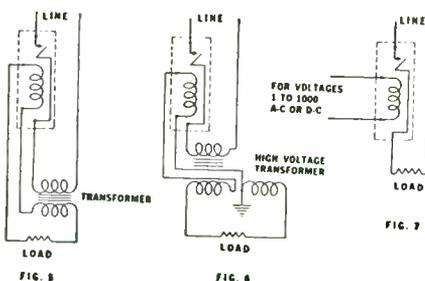


### SHUNT TRIP

Figure 3 illustrates a shunt trip Circuit Breaker that can be tripped at some remote station.

Figure 4 illustrates a shunt trip Circuit Breaker that can be operated by an AC or DC relay operating a set of contacts upon which the line voltage is impressed.

These Circuit Breakers must be reclosed manually.



### RELAY TRIP

Figure 5 illustrates a relay trip Circuit Breaker protecting a transformer by limiting the current in the secondary. When the Circuit Breaker is tripped the primary of the transformer is open circuited.

Figure 6 illustrates a relay trip Circuit Breaker protecting a high voltage transformer by having the relay coil inserted between the two secondary windings at the grounded terminal. When the Circuit Breaker is tripped the primary of the transformer is open circuited.

Figure 7 illustrates a relay trip Circuit Breaker operated by an independent source of current, either AC or DC, and for voltages of 1 to 1000.

### Circuit Breakers

in ratings from 50 milliamperes to 50 amperes operating on circuits to 460 volts AC or 250 volts DC.

A complete line of circuit breakers furnished in both Instantaneous Trip and Time Delay types. The former trips instantly on short circuits and sudden overloads, opening the circuit even before an ammeter could indicate the amount of current.

The Time Delay Type also opens instantly on short circuits but eliminates unnecessary opening of the circuit on harmless overloads of short duration—such as that caused by inrush current when starting motor.

Time delay breakers are available in any one of 3 inverse time delays that match the characteristics of almost any circuit. The magnetic trip unit is hermetically sealed to prevent tampering. All breakers are calibrated, set and adjusted at the factory.

These breakers are available in single, two and three pole designs as illustrated; bakelite enclosed or in steel cabinets or explosion proof housings.

Send for NEW Catalog with complete engineering data.



1 Pole Breaker



2 Pole Breaker



3 Pole Breaker



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No. 11C11961—1-1/2"



OCTAL  
No. 9905—1-5/16" Black  
No. 51A12272—Mica



OCTAL  
No. 9977—1-1/2" Black  
No. 51B11936—Mica



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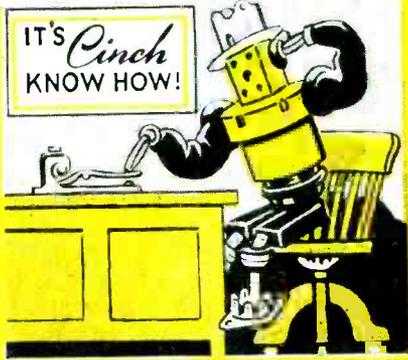


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No. 53C12360—Mica



MINIATURE  
No. 9337—Black  
No. 53A12364—Mica

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No. 54A11957—7 Prong



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LOKTAL  
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Chassis clinch  
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No. 8134



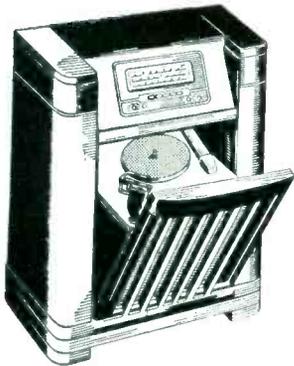
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No. A154—7 Prong (large)  
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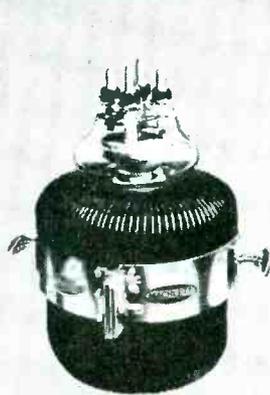
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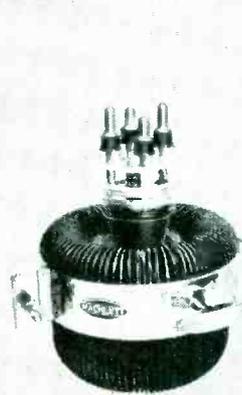
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ML-893A



ML-889RA



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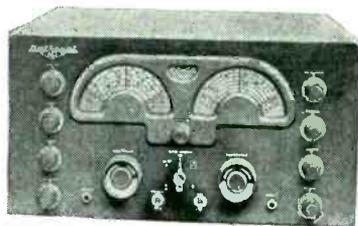
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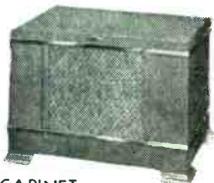
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NEW NC-173 RECEIVER



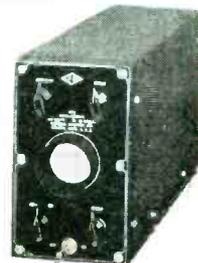
HRO-5A1 RECEIVER



NDC-2  
SPEAKER CABINET



POWER SUPPLY



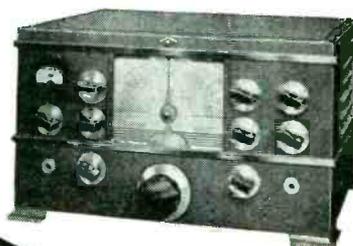
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CRU WITH PANEL



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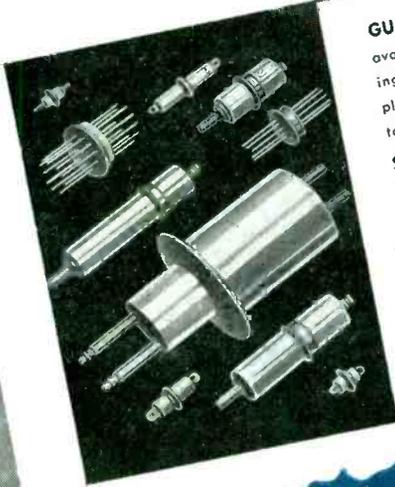


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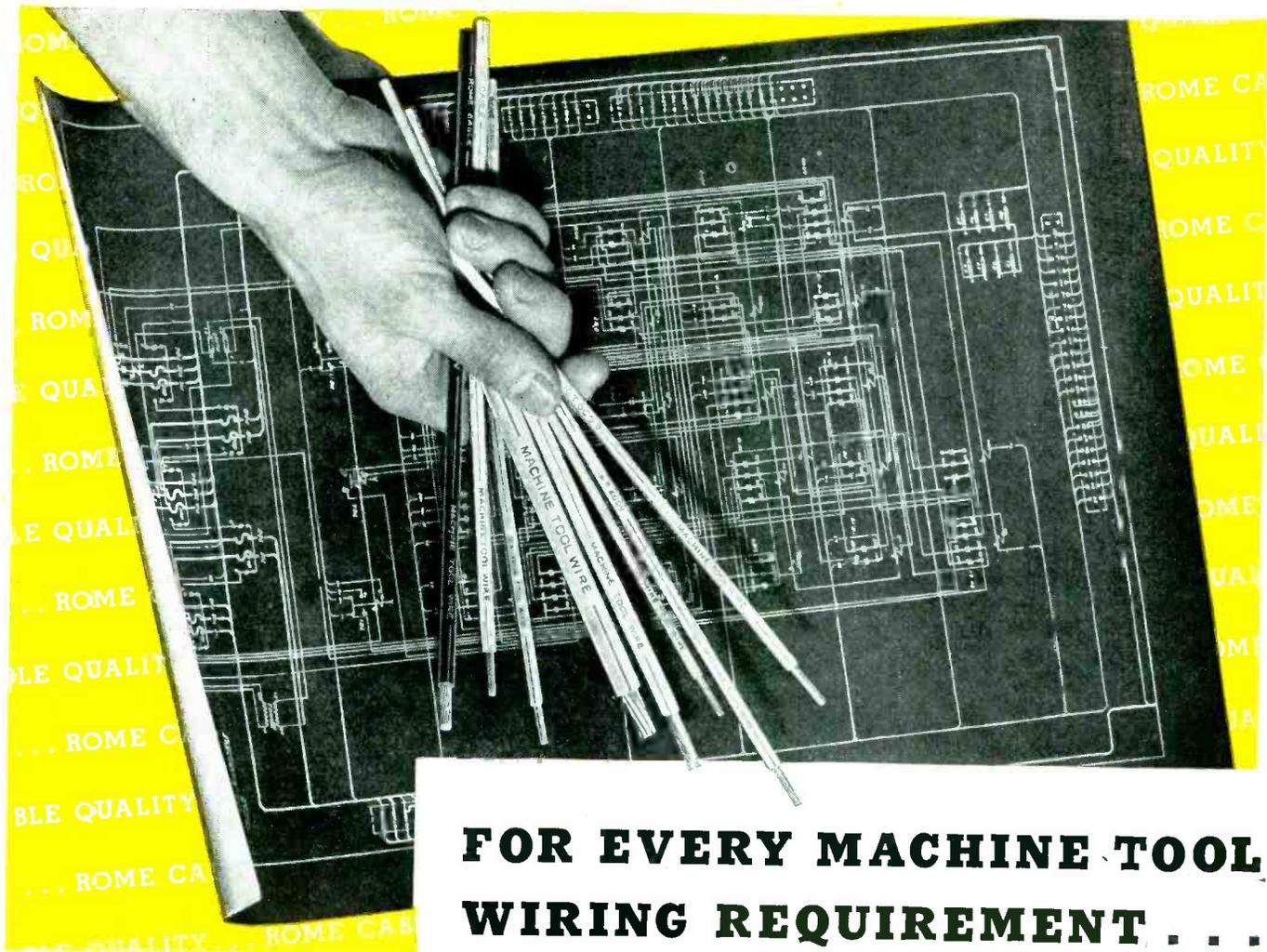
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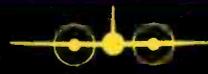
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**LORAN:** Enables the navigator to obtain a vessel's position accurately in from two to six minutes at any time, day or night, in any weather. Direct-reading Time-Difference Meter makes operation simple and prevents errors.

**GYRO-COMPASSES:** Standard Mark 14 for large vessels

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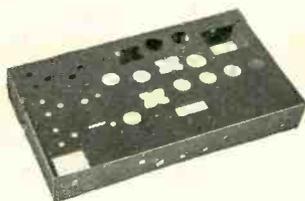
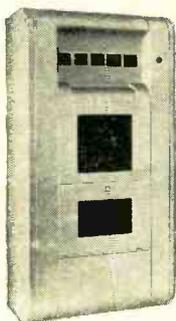
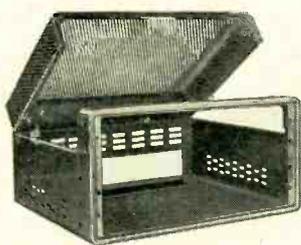
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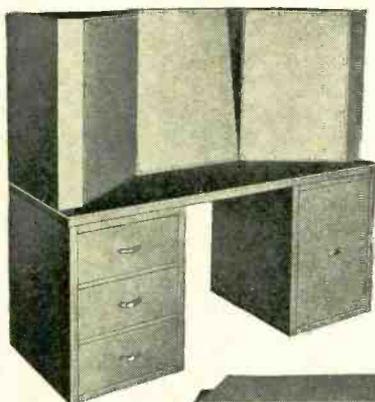
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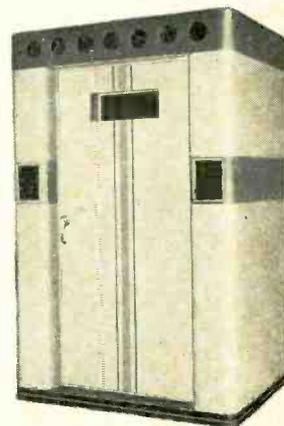
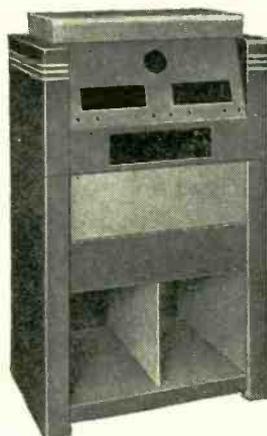
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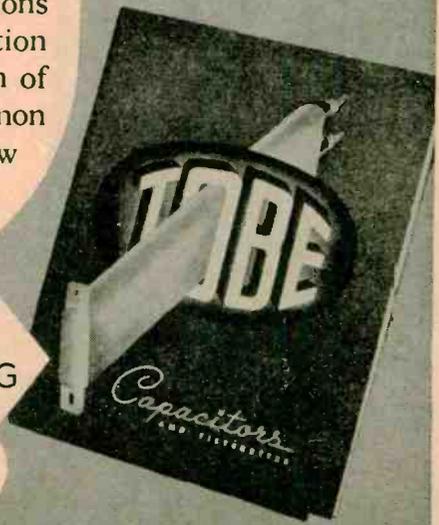
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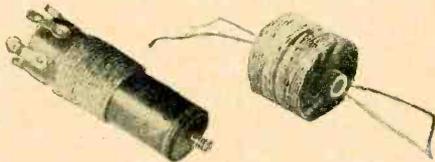
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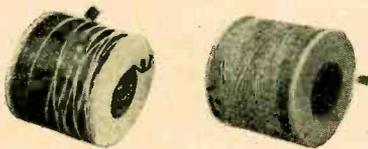
### No. 84 Winding Machine

| Model | Wire Range | Max. Dia. | Traverse     | RPM     | No. Coils at Once | HP  | Floor Space |
|-------|------------|-----------|--------------|---------|-------------------|-----|-------------|
| 84    | #19-42     | 5"        | 1/32"-1 1/2" | 400-650 | 1, 2, 3 or 4      | 1/4 | 26" x 31"   |

"Gainer mechanism" and calibrated "strap-type" tensions insure accurate, uniform winding, also quick change-over. Simple design, rugged construction assure long life.

## LAYER-WOUND COILS

Cotton-Interwoven or Non-Insulated



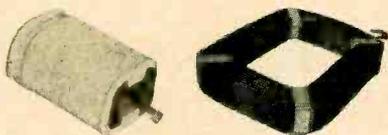
### Nos. 96 and 103 Winding Machines

| Model | Wire Range       | Max. Dia. | Traverse     | RPM      | No. Coils at Once | HP  | Floor Space |
|-------|------------------|-----------|--------------|----------|-------------------|-----|-------------|
| 96    | #19 to 42,<br>46 | 6"        | 1/16"-3 1/4" | 500-1500 | 1 or 2            | 1/4 | 30" x 26"   |
| 103   | #18-38, 46       | 7"        | 1/2"-8"      | 200-1200 | 1 or 2            | 1/2 | 40" x 36"   |

Wire and cotton mechanically guided. Automatic counter. Quick change-over. Adjustable for wide range of coil sizes.

## GUTTER-WOUND COILS

for Heavy Duty



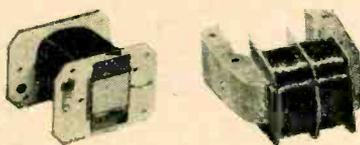
### No. 98 Winding Machine

| Model | Wire Range | Max. Dia. | Traverse | RPM    | No. Coils at Once | HP  | Floor Space  |
|-------|------------|-----------|----------|--------|-------------------|-----|--------------|
| 98    | #8-20, 30  | 1 1/2"    | 1/4"-12" | 35-135 | 1 or 2            | 3/4 | 4'9" x 3'10" |

Automatic guiding. Wire turns placed in grooves formed by preceding layers — for maximum density. Automatic stop at end of coil or end of each layer, as required.

## SPOOL-WOUND COILS

No insulation between layers



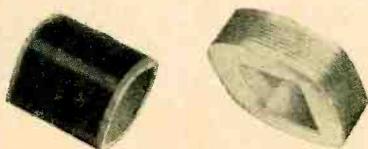
### No. 102 Winding Machine

| Model | Wire Range | Max. Dia. | Traverse | RPM      | No. Coils at Once | HP  | Floor Space         |
|-------|------------|-----------|----------|----------|-------------------|-----|---------------------|
| 102   | #19-46     | 3 1/4"    | 1/16"-3" | 500-2500 | 1, 2, 3, 6 heads  | 1/4 | 51" x 24" (3 heads) |

1, 2, 3, or 6 individually operated winding heads. Output is synchronized on basis of handling time per coil. Wire-layer length quickly adjusted. Automatic stop.

## PAPER-INSULATED COILS

Round and Rectangular

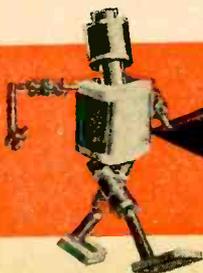


### Nos. 104 and 105 Winding Machines

| Model | Wire Range | Max. Dia. | Traverse | RPM      | No. Coils at Once | HP  | Floor Space |
|-------|------------|-----------|----------|----------|-------------------|-----|-------------|
| 104   | #19-40     | 4 1/2"    | 1/16"-5" | 500-2500 | 3 to 14           | 1/2 | 48" x 35"   |
| 105   | #19-40     | 4 1/2"    | 1/16"-5" | 500-2500 | 10-28             | 1   | 76" x 36"   |

Coils wound in stick form — 3 to 14 on No. 104; 10 to 28 on No. 105. Sensitive "strap-type" tensions insure smooth flow of finest wires. Paper automatically inserted. Uniform overlap at all diameters. Adjustable traverse mechanism. Automatic stop. Rapid transfer of wire turns.

238-6-4



LEESONA

FOR WINDING COILS IN QUANTITY  
ACCURATELY . . . AUTOMATICALLY  
USE UNIVERSAL WINDING MACHINES



# MYCALEX The Low Loss High Frequency Insulation

Mycalex, the highly advanced glass-bonded mica insulation, is playing a major role in today's new electrical and electronic apparatus. Backed by more than a quarter century of research, Mycalex combines all the important properties to meet today's and tomorrow's more exacting needs. The name Mycalex is a registered trade mark identifying the glass-bonded mica insulating materials of Mycalex Corporation of America. This concern, 100% American in ownership and operation, is not affiliated with any other firm or corporation. It obtained its patents from the parent firm of Great Britain and owns exclusively U. S. patents and patent applications. Mycalex is made by exclusive formulae and exclusive patented processes.

Product designers everywhere are taking full advantage of Mycalex and its unique combination of characteristics: low loss factor, particularly at ultra high frequencies; imperviousness to water and oil . . . dimensional stability and high dielectric strength . . . freedom from carbonization and from cold flow . . . its affinity for bonding with metals, adaptation to molding and precise machinability.

Mycalex is available in 3 Types, as follows:

## COMPARISON OF MYCALEX

| requirement   | insulating materials |          |                 |                          |                  |                            |
|---|----------------------|----------|-----------------|--------------------------|------------------|----------------------------|
|   | Porcelain            | Steetite | Thermoplastics* | Thermo-setting Plastics* | Electrical Glass | Mycalex 400<br>Mycalex 410 |
| Loss factor less than 0.016 at 1 megacycle . . . . .                | no                   | yes      | yes             | no                       | yes              | yes                        |
| Volume resistivity greater than $1 \times 10^{12}$ ohm-cm . . . . . | yes                  | yes      | yes             | yes                      | yes              | yes                        |
| Dielectric strength greater than 300 v/mil . . . . .                | no                   | no       | yes             | yes                      | yes              | yes                        |
| Sp gr less than 3.0 . . . . .                                       | yes                  | yes      | yes             | yes                      | yes              | no                         |
| No dimensional change on aging . . . . .                            | yes                  | yes      | no              | no                       | yes              | yes                        |
| Moldability or machinability to close tolerances . . . . .          | no                   | no       | yes             | yes                      | no               | yes                        |
| Flexural strength greater than 12,000 psi . . . . .                 | no                   | yes      | no              | no                       | no               | yes                        |
| Water absorption less than 0.1% (48 hrs) . . . . .                  | no                   | yes      | yes             | no                       | yes              | yes                        |
| Freedom from carbonization . . . . .                                | yes                  | yes      | no              | no                       | yes              | yes                        |
| Metal inserts molded into insulator . . . . .                       | no                   | no       | yes             | yes                      | yes†             | yes                        |
| Operating temp above 600° F. . . . .                                | yes                  | yes      | no              | no                       | yes              | yes                        |
| Average rating . . . . .  | 45%                  | 73%      | 64%             | 45%                      | 82%              | 91%                        |

\* The type which most closely meets requirements listed.  
† Usually special alloys.

## MYCALEX 400

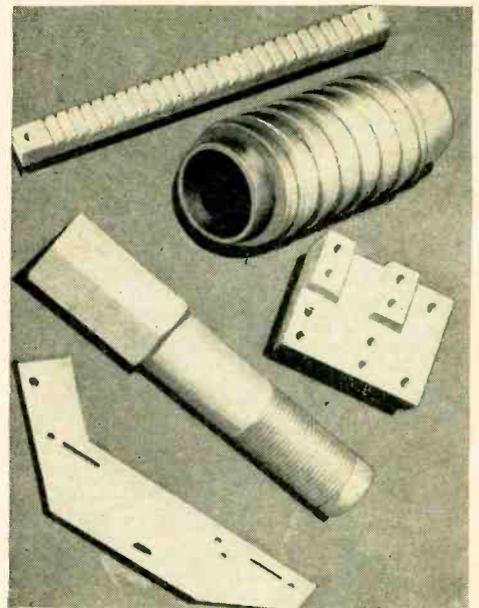
### Compression Molded For High Frequency Use

Mycalex 400 is particularly suited to high frequency applications. Even at 10 cycles its loss factor is well within requirements for operation in this portion of the electromagnetic spectrum. An outstanding characteristic is the long frequency range over which the loss factor is a minimum.

With its unusually fine and uniform texture Mycalex 400 has great strength and ability to withstand vibration. It is readily machinable to close tolerances.

**VERSATILE IN APPLICATION**—There is scarcely any limit to the exacting uses to which Mycalex 400 can be put. In tropical climates its exceptional electrical and physical properties are unimpaired. Hence it is ideal for insulation of radio transmitters and receivers, panels for communications apparatus, switchboard panels for coal mines, arc shields in high tension switches, relay contact supports, brush holders and X-Ray equipment.

**FORMS AVAILABLE**—Sheets 14 by 18 inches, usual thicknesses of 1/8 to 1 inch. Special orders in thicknesses of 3/32 and 1/16 inch. Rods 18 inches long have diameters from 1/4 to 1 inch.



### ELECTRICAL PROPERTIES

|                                       |                    |
|---------------------------------------|--------------------|
| grade L-4 in accordance with JAN-1-10 |                    |
| Power factor,* 1 megacycle            | 0.0018             |
| Dielectric constant,* 1 megacycle     | 7.4                |
| Loss factor,* 1 megacycle             | 0.013              |
| Dielectric strength, volts/mil        | 500                |
| Arc resistance, ASTM seconds          | 300                |
| Volume resistivity, ohm-cm            | $2 \times 10^{15}$ |
| Surface resistance†, meg-ohms         | 300,000            |

\* Measured after 48 hours immersion in distilled water.  
† After 96 hours at 85° F. and 85% relative humidity, with 1-inch electrode spacing.

### MECHANICAL PROPERTIES

|  |        |
|--|--------|
| Density, lb./cu. in.   | 0.11   |
| Specific gravity   | 3.0    |
| Impact strength (Charpy)—<br>1/4 x 1/4 in. specimen, ft. lb. | 0.098  |
| Tensile strength, psi  | 6,000  |
| Compressive strength, psi                                    | 35,000 |
| Transverse strength, psi                                     | 15,000 |
| Hardness, Brinell  | 50     |
| Water absorption, 48 hours: less than                        | 0.1%   |
| Thermal conductivity, Btu./sq. ft./hr./°F./in                | 3.5    |
| Maximum safe operating temperature, °C                       | 400    |

### SIZES AND WEIGHTS

| sheets: 14 in. x 18 in. |             | rods: 18 in. long |             |
|-------------------------|-------------|-------------------|-------------|
| Thickness, in.          | Weight, lb. | Diameter, in.     | Weight, lb. |
| 1/8                     | 3.5         | 1/4               | 0.093       |
| 3/16                    | 5.2         | 3/8               | 0.21        |
| 1/4                     | 6.9         | 1/2               | 0.36        |
| 3/8                     | 10.1        |                   |             |
| 1/2                     | 13.8        | 5/8               | 0.60        |
| 5/8                     | 17.2        | 3/4               | 0.86        |
| 3/4                     | 20.5        | 7/8               | 1.16        |
| 7/8                     | 24.0        |                   |             |
| 1                       | 27.3        | 1                 | 1.51        |

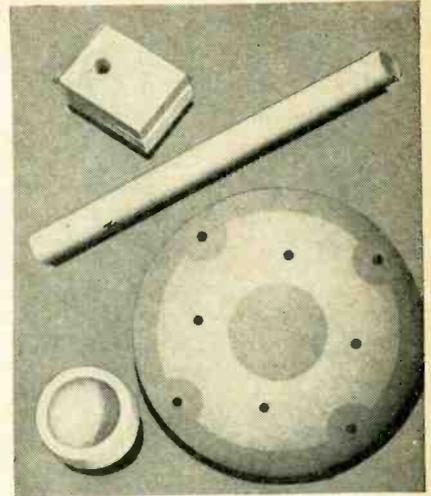
# MYCALEX K series

## Ceramic Capacitor Dielectrics

Many ceramic materials offer low power factor, negligible moisture absorption, high dielectric strength, absence of cold flow and ability to withstand high temperatures. But few combine these advantages with a dielectric constant greater than 7 or 8 at radio frequencies. Still fewer also provide flat surfaces of large dimensions without warpage or rods to close tolerances.

Mycalex K capacitor dielectrics combine all the above advantages. Moreover, Mycalex K is available in almost any form desired: sheets, rods or irregular shapes with or without metal inserts.

Power factors of Mycalex K series vary from 0.002 to 0.004 at one megacycle. Temperature coefficients vary from positive to zero to negative.



| SHEETS, RODS  |      |                     | IRREGULAR SHAPES  |       |                     | PROPERTIES OF K-10   |                      |
|---|------|---------------------|---|-------|---------------------|--|----------------------|
| Sheets 14 by 18 inches in area and from 1/8 to 1 inch thick, and rods 18 inches long with diameters of 1/4 to 1 inch are available in the following compositions: |      |                     | Mycalex KM gives the engineer a greatly enlarged choice of designs. In the following series it presents a group of irregular or complex shapes which may or may not incorporate metal inserts directly into the dielectric: |       |                     | grade H1C5H4, in accordance with JAN-1-12                  |                      |
| Composition   |      | dielectric constant | Composition   |       | dielectric constant | Dielectric constant, 1 megacycle                           | 10.6                 |
| Mycalex   | K-8  | 8.5                 |   | KM-10 | 10.5                | Q-factor, 1 megacycle                                      | 310                  |
|   | K-10 | 10.6                |   | KM-15 | 15.5                | Loss factor, 1 megacycle                                   | 0.034                |
|   | K-15 | 14.6                |   | KM-20 | 20.2                | Volume resistivity, ohm-cm                                 | $3.0 \times 10^{14}$ |
|   | K-20 | 19.7                |   | KM-30 | 29.5                | Dielectric strength, volts/mil (0.10 in. thickness)        | 270                  |
| (dielectric constants at frequency of 1 megacycle)  |      |                     |   | KM-40 | 35.8                | Fractional decrease of capacitance with temperature change | 0.0056               |
| All of the above compositions are machinable by the same methods used for Mycalex 400.  |      |                     |   | KM-50 | 48.3                | Fractional increase of capacitance with temperature change | 0.0076               |
|   |      |                     | Mycalex   | KM-60 | 61.0                | Porosity (dye penetration after 6 hours at 10,000 psi.)    | 0                    |
|   |      |                     |   | KM-80 | 83.8                | Modulus of rupture, psi                                    | 9,000                |
|   |      |                     |   |       |                     | Density, lb./cu. in.                                       | 0.116                |
|   |      |                     |   |       |                     | Specific gravity   | 3.22                 |
|   |      |                     |   |       |                     | Maximum safe operating temperature, °C                     | 400                  |

# MYCALEX 410

## Injection Molded

This form of Mycalex is useful in three cases:

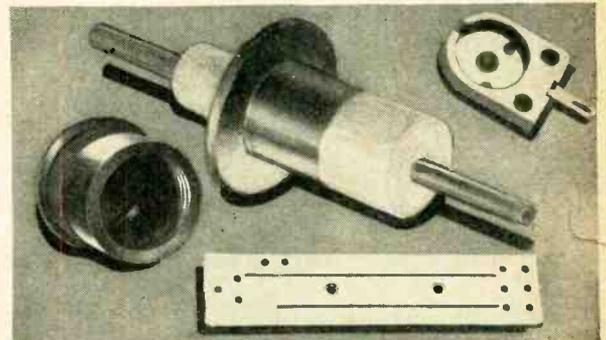
- When the shape of a required part is too intricate to permit fabrication by machining.
- When design is simple enough for machining, but quantities needed necessitate high production and low cost.
- When metal inserts must be incorporated into the insulator.

**INSERTS**—May be made of any common metal that can withstand temperatures of about 1200° F and that has a coefficient of thermal expansion of the order of 100 to 175 x 10<sup>-7</sup> per degree C. Included are cold rolled steel, copper, nickel, aluminum, Monel, Inconel, etc.

**SEAL**—One of the most important developments is a Mycalex-metal seal that withstands air pressure of 90 psi. This seal is useful in such application as terminals and multi-terminal headers for transformers, capacitors, vibrators and crystal holders.

### MYCALEX FABRICATION

The Mycalex Corporation of America—pioneer in insulation advancement—machines Mycalex to customers' exact specifications in its new plant. Covering 55,000 square



| ELECTRICAL PROPERTIES                  |                      |
|--|----------------------|
| Power factor, 1 megacycle, dry         | 0.0015               |
| Dielectric constant, 1 megacycle       | 8.3                  |
| Volume resistivity, ohm-cm             | $6.0 \times 10^{17}$ |
| Arc resistance, ASTM seconds           | 250                  |
| Dielectric strength, volts/mil         | 400                  |
| MECHANICAL PROPERTIES                  |                      |
| Flexural strength, psi                 | 13,000               |
| Tensile strength, psi                  | 6,000                |
| Compressive strength, psi              | 20,000               |
| Hardness, Brinell                      | 150                  |
| Modulus of elasticity, psi             | $8 \times 10^6$      |
| Maximum safe operating temperature, °C | 400                  |
| Density, lb./cu. in.                   | 0.136                |
| Specific gravity                       | 3.8                  |

feet, this factory is especially tooled for large volume of a wide variety of parts. It affords precision workmanship, reduced costs and prompt deliveries. Tell us your insulation problems. We invite your inquiries.

# MYCALEX CORPORATION OF AMERICA

"Owners of 'MYCALEX' Patents"

Plant and General Offices CLIFTON, N. J.

Executive Offices, 30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

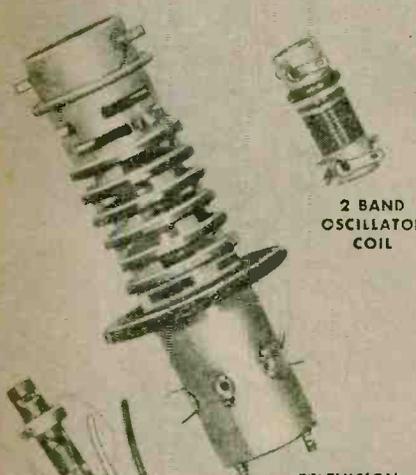
# Super

ELECTRIC PRODUCTS CORP.

## PRECISION COMPONENTS *for the* ELECTRONIC INDUSTRY

These electronic components are examples of the superiority of SUPER design and craftsmanship techniques. Built into each is the kind of durable quality and performance that compliment the units in which they are used.

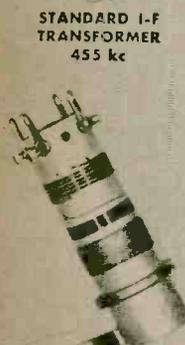
In addition to the components described, SUPER will build to customer specification.



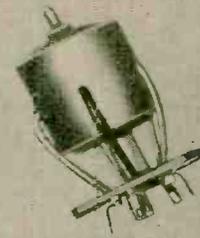
2 BAND  
OSCILLATOR  
COIL



TELEVISION  
HI-VOLTAGE COIL



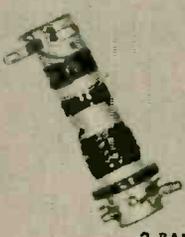
STANDARD I-F  
TRANSFORMER  
455 kc



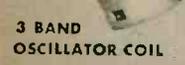
OSCILLATOR  
TRANSFORMER  
35-50 kc



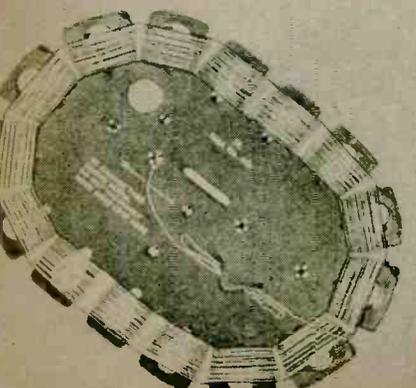
3 BAND  
ANTENNA  
COIL



2 BAND  
ANTENNA  
COIL



3 BAND  
OSCILLATOR COIL



LOOP ANTENNA

| USE OF THE FOLLOWING<br>SUPER ELECTRIC CO.<br>COMPONENTS<br><i>Indicated by dots</i> | 420 mmf RMA STANDARD GANG |                |                  | 365 mmf RMA STANDARD GANG |                |                 | 35 mmf        |            |
|--|---------------------------|----------------|------------------|---------------------------|----------------|-----------------|---------------|------------|
|  | TUNING RANGE              |                |                  | TUNING RANGE              |                |                 | TUNING RANGE  |            |
|  | 535-<br>1620 kc           | 1.6-<br>5.6 mc | 5.6-<br>19.25 mc | 535-<br>1620 kc           | 2.0-<br>6.0 mc | 6.0-<br>18.0 mc | 88-<br>112 mc | TELEVISION |
| OSCILLATOR COIL  | •                         | •              | •                | •                         | •              | •               | •             | •          |
| LOOP ANTENNA   | •                         |                |                  | •                         |                |                 |               |            |
| ANTENNA COIL   | •                         | •              | •                | •                         | •              | •               |               | •          |
| R-F INTERSTAGE<br>TRANSFORMER  | •                         | •              | •                | •                         | •              | •               | •             |            |
| BAND PASS ANTENNA<br>COIL (Double Tuned)   | •                         |                |                  | •                         |                |                 |               |            |
| BAND PASS R-F COIL<br>(Double Tuned)   | •                         |                |                  | •                         |                |                 |               |            |

### STANDARD I-F TRANSFORMERS 455 kc

### STANDARD F-M COILS

I-F 10.7 mc (3/4" x 3/4" and 1 1/4" x 1 1/4" Square Can)  
COMBINATION AM-FM I-Fs, 455 kc and 10.7 mc

### TELEVISION COILS

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VIDEO I-F ASSEMBLIES CENTER FREQUENCY 23.52 mc  
SOUND I-Fs 21.9 mc

### SOUND DISCRIMINATOR — 21.9 mc

### VIDEO PEAKING AND FILTER COILS

## LOOP ANTENNAS *by* SUPER

1. MULTI-BAND COMBINATION LOOP ANTENNA AND RADIO BACK
2. BROADCAST LOOP ANTENNA AND RADIO BACK COMBINATION WITH PHONE JACK, OUTSIDE ANTENNA CONNECTION, ALIGNING TRIMMER
3. HIGH Q LOOP ANTENNA, POLYETHYLENE INSULATED WIRE
4. BASKET WEAVE LOOP ANTENNA

# SUPER ELECTRIC PRODUCTS

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1057 Summit Avenue

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# Insulation Manufacturers Corporation

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 Permacel Acetate Cloth Electrical Tapes  
 Texcel (Cellophane) Transparent Adhesive Tapes  
 Permacel Coated Cloth Electrical Tape (formerly Electape)  
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### PRODUCTS PLUS ENGINEERING SERVICE

Insulation Manufacturers Corporation is the distributor in the industrial mid-west for products of the manufacturers listed. A staff of insulation specialists will be glad to help you apply these materials efficiently to solve your insulation problems. Write for data sheets or phone the nearest representative.

Mica Cloth, Mica Paper, Cellophane-Mica and Other Mica Combinations  
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 Fibreglas-Mica Combinations in Sheets, Rolls, or Tapes  
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 OWENS-CORNING FIBREGLAS CORPORATION  
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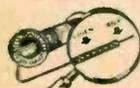
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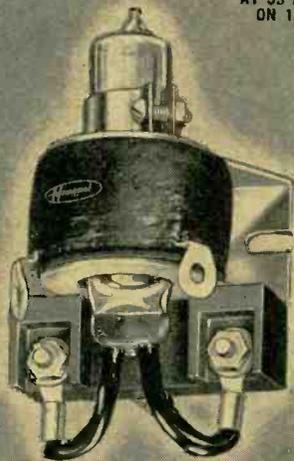
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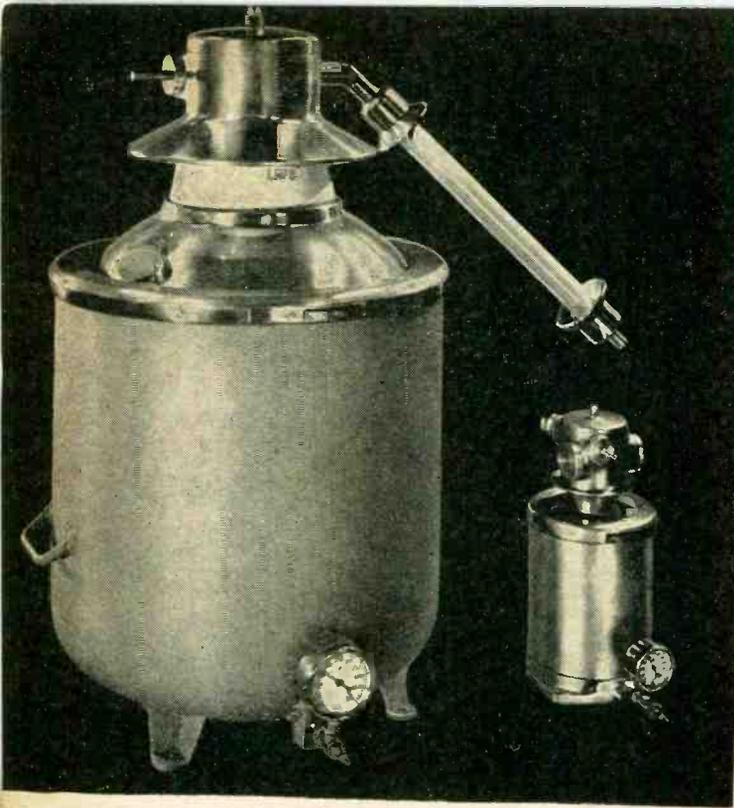


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# FOR HIGH-FREQUENCY POWER SOURCES



## LAPP GAS FILLED CONDENSERS

In any electronic circuit, wherever lump capacitance is needed, Lapp condensers will save space, save power and save trouble. Available for duty at almost any useable voltage rating and capacitance, they bring to any application notable mechanical and electrical advantages: non-deteriorating dielectric, small space requirement, non-failing, puncture-proof design, constant capacitance under temperature variations. Variable, adjustable and fixed capacitors are available. Fixed condensers have been made with capacitance up to 60,000 mmf., variable and adjustable up to 16,000 mmf. Current ratings range up to 500 amperes R. M. S., and voltage ratings up to 60 Kv peak.

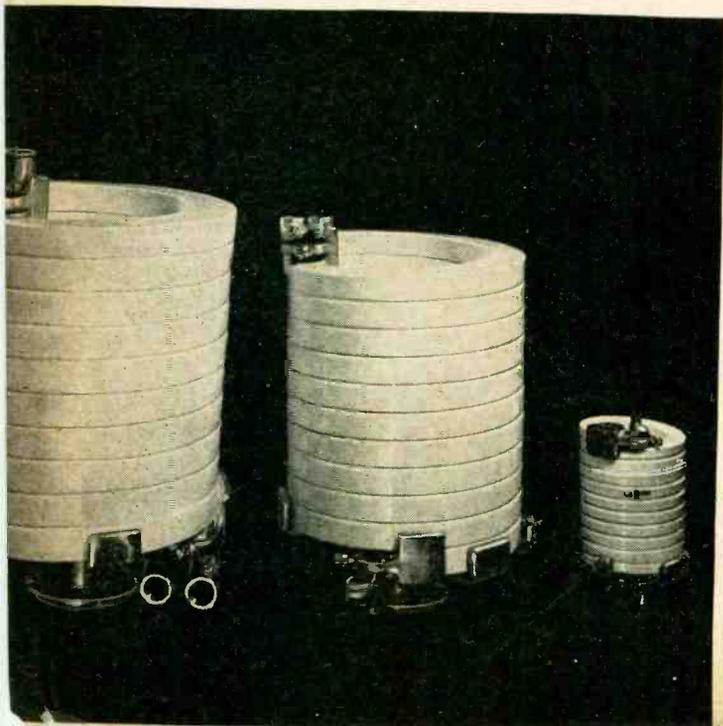
For high-power, high-frequency circuits, the Lapp specialties shown on these pages provide electrical and mechanical characteristics that mean improved efficiency, dependability and reduced maintenance.

For more than 25 years Lapp has been insulating radio-frequency circuits. The first vertical radiators in the broadcast industry were insulated by Lapp porcelain; Lapp water coils first eliminated water sludging and improved performance for water-cooled tubes; the Lapp gas-filled condenser offered first completely-dependable performance in a puncture-proof constant-capacitance unit.

Today Lapp has considerable specialized capacity for production of porcelain and steatite pieces as well as the associated metal parts. And with it the skilled, sensible engineering that creates parts that will do their jobs—right. *Lapp Insulator Co., Inc., LeRoy, N. Y.*

## LAPP PORCELAIN

**WATER COILS** For cooling of high-frequency tubes in radio transmitters and other electronic power sources, Lapp porcelain water coils have been widely used. With nothing about the porcelain to deteriorate, sludging is eliminated, and with it the need for cleaning and water changes. Porcelain pipe and fittings in any needed size are also available as catalog items.



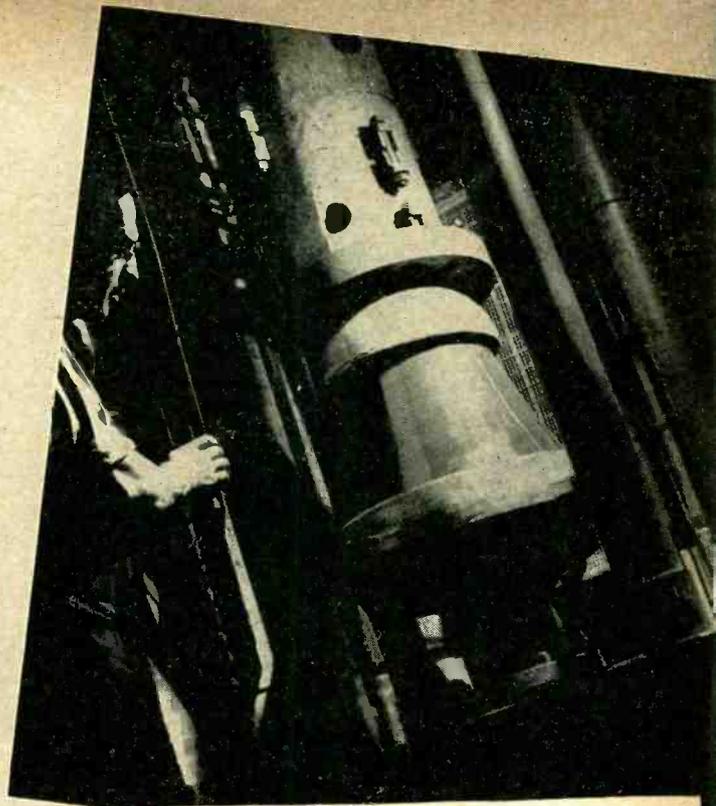
★ Radio Broadcast  
 ★ Radio Communication  
 ★ Industrial Radio-Frequency Heating



**STANDOFF, BOWL, ENTRANCE INSULATORS** Standoff, bowl, entrance and other special-purpose insulators are available in wide range as standard catalog items. Other insulators for special duty or of special design are easily produced by Lapp methods, in porcelain or steatite.



**ANTENNA STRUCTURE INSULATORS** Footing, sectionalizing and guy insulators—for self-supporting towers and guyed masts—are available from Lapp in more than 100 designs. With Lapp insulators, antenna structures can be insulated for any electrical or mechanical service,



*"A million pounds on a teacup." This Lapp compression cone is a supporting insulator for a guyed-mast radiator. With a wall thickness of 2½ inches of porcelain, it is proof-tested at 1,500,000-lb. loading. The unit withstood 3,000,000 lbs. on design test.*

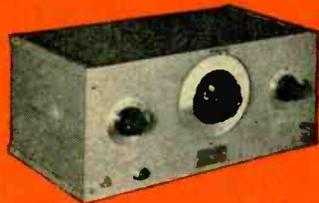


*All Lapp footing and guy insulators incorporate the Lapp patented curved-side compression cone (right). With the same dimension and same wall thickness, the curved-side cone has double the strength of the straight-side cone (left).*

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-hp- 330B Noise and Distortion Analyzer



-hp- 400A Vacuum Tube Voltmeter



-hp- 450A Amplifier

-hp- precision instruments combine in one compact unit, the essential qualities of speed, accuracy and versatility. They are ideal for use anywhere...in laboratory, broadcasting, production or amateur radio.

## AUDIO OSCILLATORS

## AUDIO SIGNAL GENERATORS

## LOW FREQUENCY STANDARD SQUARE WAVE GENERATOR WAVE ANALYZER

## DISTORTION ANALYZERS

## ATTENUATOR

## VACUUM TUBE VOLTMETERS

## AMPLIFIER ELECTRONIC FREQUENCY METER

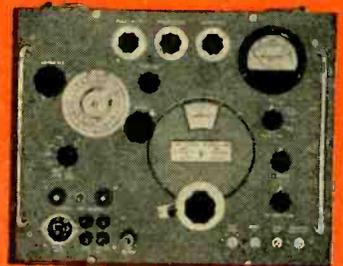
## ELECTRONIC TACHOMETER

## UHF SIGNAL GENERATORS

## REGULATED POWER SUPPLY

| INSTRUMENT   | FREQUENCY        | CALIBRATION  |
|--------------|------------------|--|
| <b>200A</b>  | 35 cps to 35 kc  | Dial Scale—35-350 cps Calibration Points—48 Ranges—3 (1, 10, 100 times dial calibration)   |
| <b>200B</b>  | 20 cps to 20 kc  | Dial Scale—20-200 cps Calibration Points—41 Ranges—3 (1, 10, 100 times dial calibration)   |
| <b>200C</b>  | 20 cps to 200 kc | Dial Scale—20-200 cps Calibration Points—41 Ranges—4 (1, 10, 100, 1000 times dial calibration)   |
| <b>200D</b>  | 7 cps to 70 kc   | Dial Scale—7-70 cps Calibration Points—78 Ranges—4 (1, 10, 100, 1000 times dial calibration)   |
| <b>202D</b>  | 2 cps to 70 kc   | Dial Scale—7-70 cps Calibration Points—78 Ranges—4 (1, 10, 100, 1000 times dial calibration) Dial Scale A—2-50 cps Calibration Points—91   |
| <b>2001</b>  | 6 cps to 6 kc    | Dial Scale A—6-20 cps Calibration Points—168 Ranges—3 (1, 10, 100 times dial calibration) Dial Scale B—20-60 cps Calibration Points—109 Ranges—3 (1, 10, 100 times dial calibration) |
| <b>201B</b>  | 20 cps to 20 kc  | Dial Scale—20-200 cps Calibration Points—95 Ranges—3 (1, 10, 100 times dial calibration)   |
| <b>205A</b>  | 20 cps to 20 kc  | Dial Scale—20-200 cps Calibration Points—80 Ranges—3 (1, 10, 100 times dial calibration)   |
| <b>205AG</b> | 20 cps to 20 kc  | Dial Scale—20-200 cps Calibration Points—80 Ranges—3 (1, 10, 100 times dial calibration)   |
| <b>205AH</b> | 1 kc to 100 kc   | Dial Scale—1-10 kc Calibration Points—130 Ranges—2 (1, 10 times dial calibration)  |

| FUNCTION  | INSTRUMENT  | FREQUENCY   | ACCURACY  |
|---|-------------|---|---|
| <b>LOW FREQUENCY STANDARD SQUARE WAVE GENERATOR WAVE ANALYZER</b> | <b>100A</b> | Output—100 kc, 10 kc, 1 kc, 100 cps   | ±0.01% over room temperature variation of 33° C                                 |
|   | <b>100B</b> | Output—100 kc, 10 kc, 1 kc, 100 cps   | ±0.001% from -10° C to +50° C   |
|   | <b>210A</b> | Input—20 cps to 100 kc  | Square within ±1% from 20 cps to 10 kc  |
| <b>DISTORTION ANALYZERS</b>                                       | <b>300A</b> | Measurement Range—30 cps to 16 kc   | Frequency—±3% Voltage overall—±5%   |
|   | <b>320A</b> | Measures at—400 cps and 5 kc  | Less than ±5% (at distortions of 30% or less)                                   |
|   | <b>320B</b> | Measures at—50 cps, 100 cps, 400 cps, 1 kc, 5 kc and 7.5 kc   | Less than ±5% (at distortions of 30% or less)                                   |
| <b>ATTENUATOR</b>   | <b>325B</b> | Measures at—30 cps, 50 cps, 100 cps, 400 cps; 1 kc, 5 kc, 7.5 kc, 15 kc                                   | Voltmeter overall—±3% Distortion—Less than ±5% (at distortion of 30% or less)   |
|   | <b>330B</b> | Measurement Range—20 cps to 20 kc   | Voltmeter overall—±3% Distortion—±3% for distortion levels as low as 0.5%       |
|   | <b>350A</b> | Max. input—100 kc   | Each Resistor—±0.5% Response—Accumulative Error at 100 kc approx. 1 db in 30 db |
| <b>VACUUM TUBE VOLTMETERS</b>                                     | <b>400A</b> | Measurement Range—10 cps to 1 mc  | 10 cps to 100 kc—±3% 100 kc to 1 mc—±5%   |
|   | <b>410A</b> | Measurement Range—20 cps to 700 mc  | ±3% AC and DC Frequency Response flat within 1 decibel 20 cps to 700 mc         |
| <b>AMPLIFIER ELECTRONIC FREQUENCY METER</b>                       | <b>450A</b> | 10 cps to 10,000,000 flat within ±½ db  | 40 or 20 db gain ±½ db  |
|   | <b>500A</b> | Measurement Range—5 cps to 50 kc in 10 ranges   | ±2% of full scale   |
| <b>ELECTRONIC TACHOMETER</b>                                      | <b>505A</b> | An Electronic Frequency Meter and a Tachometer Assembly calibrated to measure speeds up to 3,000,000 RPM. |   |
| <b>UHF SIGNAL GENERATORS</b>                                      | <b>610A</b> | 500 to 1350 mc  | ±1 db over entire range   |
|   | <b>616A</b> | 1800 to 4000 mc   | ±1 db over entire range   |
|   | <b>710A</b> |   |   |



-hp- 616A UHF Signal Generator

| FREQUENCY RESPONSE   | STABILITY                          | ACCURACY OF CALIBRATION   | POWER OUTPUT INTO RATED LOAD | LOAD IMPEDANCE   | DISTORTION AT RATED OUTPUT                                  | HUM LEVEL BELOW RATED OUTPUT   |
|--|------------------------------------|---|------------------------------|--|---|--|
| ±1 decibel, 20 cps to 15 kc  | ±2%                                | ±2%   | 1 watt                       | 500 ohms   | less than 1%  | 60 db  |
| ±1 decibel, 20 cps to 15 kc  | ±2%                                | ±2%   | 1 watt                       | 500 ohms   | less than 1%  | 60 db  |
| ±1 decibel, 20 cps to 150 kc   | ±2%                                | ±2%   | 100 milliwatts               | 1000 ohms  | less than 1%<br>20 cps to 20 kc                             | 60 db  |
| ±1 decibel, 7 cps to 70 kc   | ±2%                                | ±2%   | 100 milliwatts               | 1000 ohms  | less than 1%<br>10 cps to 20 kc                             | 60 db  |
| ±1 decibel, 7 cps to 70 kc<br>±2 decibels, 2 cps to 7 cps  | ±2%                                | ±2%   | 100 milliwatts               | 1000 ohms  | less than 2%<br>7 cps to 70 kc                              | 60 db  |
| ±1 decibel, 6 cps to 6 kc  | ±2% or ±1%<br>with Standardization | ±2%   | 100 milliwatts               | 1000 ohms  | less than 1%<br>10 cps to 6 kc                              | 60 db  |
| ±1 decibel, 20 cps to 20 kc  | ±2% or ±1%<br>with Standardization | ±2%   | 3 watts                      | 600 ohms   | less than 1%<br>at 3 watts<br>(less than 1.5%<br>at 1 watt) | 60 db  |
| Down 2.0 decibels at 20 cps<br>Down 1.0 decibel at 20 kc<br>at full output   | ±2% or ±1%<br>with Standardization | ±2%   | 5 watts                      | 50, 200, 500, 5000 ohms<br>(all ct)  | less than 1%<br>30 cps to 20 kc<br>at rated output          | 60 db below output or<br>90 db below zero level<br>whichever is larger |
| Generator—down 2.0 db at 20 cps<br>Down 1.0 db at 20 kc at full output<br>Voltmeter—within ±0.2 db of 400 cps<br>ref. from 20 cps to 20 kc             | ±2% or ±1%<br>with Standardization | ±2%   | 5 watts                      | Generator—50, 200, 500, 5000<br>ohms (all ct)<br>Voltmeter—5000 ohms input<br>Impedance  | less than 1%<br>30 cps to 20 kc<br>at rated output          | 60 db below output or<br>90 db below zero level<br>whichever is larger |
| ±1 db from 10 kc ref. 1 kc to 100 kc<br>at full output   | ±1% after 1½ hour<br>warm-up       | ±2%   | 5 watts                      | 50, 200, 500, 5000 ohms<br>(all ct)  | less than<br>1% at 1 watt<br>3% at 5 watts                  | 65 db below output or<br>65 db below zero level<br>whichever is larger |
| VOLTAGE  |                                    | IMPEDANCE   |                              | MISCELLANEOUS CHARACTERISTICS  |   |  |
| Output—5 volts into 1000 ohms  |                                    | Load—Not less than 1000 ohms  |                              | Wave Shape—Sinusoidal—<br>total distortion not more than 4% on open circuit  |   |  |
| Output—5 volts into 1000 ohms  |                                    | Load—Not less than 1000 ohms  |                              | Wave Shape—Sinusoidal—<br>total distortion not more than 4% on open circuit  |   |  |
| Input—min. 2; max. 200<br>Output—60 v peak to peak on open circuit   |                                    | Input—25,000 ohms<br>Internal—Each side, 500 ohms to ground   |                              | Wave Shape—Square (1 microsecond to 90% of maximum)<br>Attenuator—70 db in 5 db steps  |   |  |
| Input—1 mv to 500 v  |                                    | Input—200,000 ohms  |                              | Variable Selectivity at 40 db down from resonance: max. selectivity is 30<br>cps, min. selectivity is 145 cps. Dial Calibration Points—62  |   |  |
| Max. Input—100 v   |                                    | Analyzer Input—20,000 ohms<br>Detector Input—Should be not less<br>than 100,000 ohms  |                              | Max. Attenuation: Fundamental—more than 60 db (1%), Second and<br>higher harmonics—less than 5%. Filters—Tuned to nominal frequencies<br>within ±5% (non-adjustable). Attenuator—70 db in 1 db steps.  |   |  |
| Max. Input—100 v   |                                    | Analyzer Input—20,000 ohms<br>Detector Input—Should be not less<br>than 100,000 ohms  |                              | Max. Attenuation: Fundamental—more than 60 db (1%), Second and<br>higher harmonics—less than 5%. Filters—Tuned to nominal frequencies<br>within ±5% (non-adjustable). Attenuator—70 db in 1 db steps.  |   |  |
| Voltmeter Measurement<br>Range—.01 v to 300 v in 9 ranges<br>Distortion—min. input 1 v for 1% distortion<br>Noise—min. input .003 volts for full scale |                                    | Amplifier Input—200,000 ohms<br>shunted by approx. 24 mmfd<br>Voltmeter Input—1 megohm (min.)<br>shunted by approx. 32 mmfd |                              | Max. Attenuation: Fundamental—more than 60 db (1%), Second and<br>higher harmonics—less than 5%. Filters—Tuned to nominal frequencies<br>within ±5% (adjustable—1%). Voltmeter—Average Reading (calibrated<br>in rms volts and in db above a 1 mw, 600 ohm level). |   |  |
| Voltmeter measurements—<br>.01 v to 300 v in 9 ranges<br>Distortion—min. input 1 v for 1% distortion<br>Noise—minimum input .00003 v for full scale    |                                    | Amplifier Input—200,000 ohms<br>shunted by approx. 24 mmfd<br>Voltmeter Input—1 megohm (min.)<br>shunted by approx. 32 mmfd |                              | Max. Attenuation: Fundamental—more than 60 db (0.1%)<br>Second and higher harmonics—less than 10%<br>Voltmeter—Average reading (calibrated in rms volts<br>and db above a 1 mw, 600 ohm level)   |   |  |
| Maximum Input—50 v   |                                    | Input—500 ohms—one side grounded<br>Output—500 ohms—one side grounded   |                              | Attenuation—110 db in 1 db steps   |   |  |
| Measurement Range—<br>.03 v to 300 v in 9 ranges   |                                    | Input—1 megohm (min.)<br>shunted by approx. 16 mmfd   |                              | Voltmeter—Average Reading (calibrated in rms volts and in<br>db above a 1 mw, 600 ohm level)   |   |  |
| Measurement Range—<br>1 to 300 VAC in 6 ranges<br>1 to 1000 VDC in 7 ranges  |                                    | Input—AC—8 megohms in parallel with 1.3<br>mmfd at frequencies below 10 mc<br>Input—DC—100 Megohms                          |                              | AC Voltmeter—Peak reading instrument will indicate voltage to 3000 mc<br>Ohmmeter: 0.2 ohms to 500 megohms in 7 ranges   |   |  |
| Output 10 volts 1% distortion  |                                    | Input—1 megohm<br>Output—3000 ohms or more  |                              | Increases sensitivity of 400A, 100 times   |   |  |
| Input—0.5 v to 200 v   |                                    | Input—50,000 ohms   |                              | Separate External Attachments—1. Photocell Input (jack provided),<br>2. Esterline-Angus 1 ml, 1400 ohm Automatic<br>Recorder (jack provided)   |   |  |
| Output 0.1 microvolts to 0.1 volts   |                                    | 50 ohm line coaxial type N connector  |                              | Internal pulse modulation. External pulse and amplitude modulation.  |   |  |
| Output 0.1 microvolts to 0.1 volts   |                                    | 50 ohm line coaxial type N connector  |                              | Internal pulse and FM modulation. External pulse modulation.   |   |  |
| 180 to 360 VDC (regulated)<br>6.3 VAC ct (unregulated)   |                                    |   |                              | Output constant within approx. 1% for loads from 0 to 75 ma and for line-<br>voltage variations of ±0%. Noise and hum less than 0.005 v.   |   |  |



HP-410A Vacuum Tube Voltmeter

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# In every field of radio

## LOOK TO THE GENERAL ELECTRIC COMPANY



**AM** Among the first to design, build and operate transmitters in the AM field, General Electric has always maintained its interest in advancing the art and technical development of this phase of broadcasting. The 250 watt AM transmitter shown here is the first of a completely new line that includes all types, from the lowest to the highest power ratings.



**FM** As a pioneer and leader in the development of FM broadcasting, General Electric has acquired the background and experience which have proved invaluable to owners and operators of new FM stations. General Electric has a complete line of FM transmitters for stations of every size.

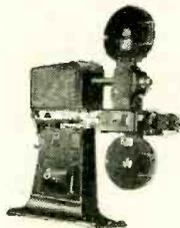
## COMMUNICATIONS



In communication equipment design, General Electric has placed emphasis on quality, reliability and simplicity. Since many of the applications for radio communications equipment are in the nature of public services, extreme care has been exercised to design each unit for maximum utility. Complete systems for these services are provided, both station and mobile.



**AVIATION** To the pilot, the radio equipment is the most valuable instrument in his plane, since his life may depend upon it. In designing the complete General Electric line of Aviation Electronic Equipment, reliability far beyond accepted standards was demanded. The high quality that is being built into these entire lines is assurance of dependability under the most critical conditions.



**TELEVISION** For many years General Electric has been in the forefront in the development of television. Station WRGB has provided outstanding facilities for experiment both in technical development and in programming. This union of engineering with studio production provides General Electric with a background of experience that is of incomparable value to those entering the television field.



**MARINE RADIO** During the war General Electric was one of the largest producers of radar for the Armed Forces. Many of these developments have been refined and simplified for use in peace. The G-E Electronic Navigator, a peace-time marine radar, is now safeguarding merchant vessels from collision in fog and darkness, and saving shipping time. Other equipment now being developed will aid in saving untold tonnage and numbers of lives in the future.

FOR COMPLETE INFORMATION ON GENERAL ELECTRIC RADIO EQUIPMENT, WRITE OR CALL ANY OF THESE G-E OFFICES:

**ATLANTA 3, GA.**  
187 Spring Street, N. W.

**BOSTON 1, MASS.**  
140 Federal Street

**CHICAGO 54, ILL.**  
1122 Merchandise Mart

**CINCINNATI 2, OHIO**  
215 West Third St.

**CLEVELAND 4, OHIO**  
4966 Woodland Avenue

**DALLAS 2, TEX.**  
1801 North Lamar Street

**DENVER 2, COLO.**  
650 17th Street

**KANSAS CITY 6, MO.**  
106 West 14th Street

**LOS ANGELES 54, CAL.**  
212 No. Vignes Street

**MINNEAPOLIS 2, MINN.**  
12 Sixth Street

**NEW YORK 22, N. Y.**  
570 Lexington Avenue

**PHILADELPHIA 2, PA.**  
1405 Locust Street

**SAN FRANCISCO 4, CAL.**  
235 Montgomery Street

**SCHENECTADY, N. Y.**  
Building 267—Room 105

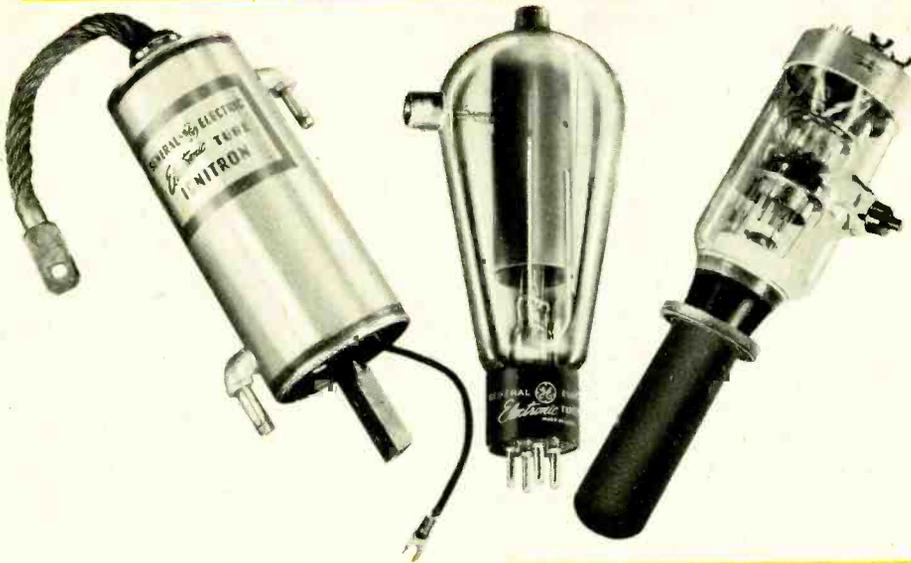
**SEATTLE 4, WASH.**  
710 Second Avenue

**WASHINGTON 5, D. C.**  
806 15th Street, N. W.

LEADER IN RADIO, TELEVISION AND ELECTRONICS

# GENERAL ELECTRIC

There's a G-E Electronic Tube for every purpose . . .



. . . and complete data available on every tube!

Designed for and by technical men, the new G-E Electronic Tube Manuals pictured below are complete with technical and mechanical information for every tube use. Let their easy-to-read graphs and tube outlines help to solve your application problems.

For prices and further information write Electronics Department, General Electric Company, Schenectady 5, N. Y.



GENERAL ELECTRIC TRANSMITTING AND INDUSTRIAL TUBES

| CATHODE RAY TUBES   | KENOTRONS   | PHOTOTUBES  | PHANOTRONS   | VACUUM CAPACITORS   | GLOW TUBES   |
|---|---|---|--|---|--|
| GL-2AP1-A<br>GL-3AP1-A<br>GL-3BP1-A<br>GL-3DP1-A<br>GL-5BP1-A<br><br>GL-5BP4<br>GL-5CP1-A<br>GL-5CP7-A<br>GL-5FP7-A<br>GL-5FP14<br><br>GL-7BP1<br>GL-7BP7-A<br>GL-9GP7-A<br>GL-9LP7<br>GL-12AP4<br><br>GL-12DP7-A<br>GL-12GP7-A<br>MW22-2<br>GL-914 | GL-2B22<br>GL-2B23<br>2X2A/879<br>KC-4<br>5R4-GY<br><br>FP-85-A<br>GL-217-C<br>GL-218<br>GL-219<br>FP-400<br><br>GL-411<br>GL-836<br>GL-1616<br>GL-1641<br>GL-8013-A<br><br>GL-8016<br>GL-8020<br>GL-9004<br>GL-9005<br>GL-9006 | GL-1P29/FJ-401<br>PJ-22<br>FJ-405<br>GL-441<br>GL-868/PJ-23<br><br>GL-917<br>GL-918<br>GL-919<br>GL-920<br>GL-921<br><br>GL-922<br>GL-923<br>GL-927<br>GL-929<br>GL-930<br><br>GL-931-A<br>GL-935 | FG-166<br>FG-190<br>GL-266-B<br>FG-280<br>GL-441<br>GL-575-A<br><br>GL-673<br>GL-816<br>GL-857-B<br>GL-866-A/866<br>GL-869-B<br><br>GL-870-A<br>GL-872-A/872<br>GL-5558/FG-32<br>GL-5561/FG-104<br>GL-8008 | GL-1L21<br>GL-1L22<br>GL-1L23<br>GL-1L24<br>GL-1L25<br><br>GL-1L31<br>GL-1L32<br>GL-1L33<br>GL-1L36<br>GL-1L38<br><br><br><br><br><br><br><br><br><br><br>VACUUM SWITCHES<br>GL-1521<br>FA-6<br>FA-15 | GL-OA3/VR-75<br>GL-OB3/VR-90<br>GL-OC3/VR-105<br>GL-OD3/VR-150<br>GL-874<br><br><br><br><br><br><br><br><br><br><br>VACUUM GAGES<br>FA-13<br>FA-14 |

| IGNITRONS                                  |                                      |                                      |  |
|--|--------------------------------------|--------------------------------------|--|
| GL-427<br>GL-5550/GL-415<br>GL-5551/FG-271 | GL-5552/FG-235-A<br>GL-5553/FG-258-A | GL-5554/FG-259-B<br>GL-5555/FG-238-B |  |

| MAXIMUM RATINGS                     |   |                                     |                          |
|-------------------------------------|---|-------------------------------------|--------------------------|
| KVA DEMAND                          | CORRESPONDING AVERAGE ANODE CURRENT, AMPS | MAXIMUM AVERAGE ANODE CURRENT, AMPS | CORRESPONDING KVA DEMAND |
| Peak amperes = 30, Ave. amperes = 5 |   |                                     |                          |
| 300                                 | 12.1                                      | 22.4                                | 100                      |
| 600                                 | 30.2                                      | 56.0                                | 200                      |
| 1200                                | 75.6                                      | 140                                 | 400                      |
| 2400                                | 192                                       | 355                                 | 800                      |
| 1200                                | 75  | 113                                 | 600                      |
| 2400                                | 135                                       | 207                                 | 1105                     |

| BALLAST TUBES  | THYRATRONS   |
|--|--|
| B-6<br>B-25<br>B-46<br>B-47<br>FB-50<br><br><br><br><br><br><br><br><br><br>PHASITRON<br>GL-2H21 | GL-2D21<br>GL-3C23<br>GL-3C45<br>FG-27-A<br>FG-33<br>FG-41<br>FG-81-A<br>FG-97<br>FG-98-A<br>FG-105<br>FG-154<br>FG-172<br>FG-178-A<br>GL-393-A<br><br>GL-414<br>GL-502-A<br>GL-546<br>GL-627<br>GL-672<br>GL-678<br>GL-884<br>GL-885<br>GL-2050<br>GL-2051<br>GL-5545<br>GL-5557/F-17<br>GL-5559/F-57<br>GL-5560/F-95 |

| PLIOTRONS   |  |
|---|--|
| GL-2C39<br>GL-2C40<br>GL-2C43<br>GL-3C22<br>GL-4C21<br><br>PJ-7<br>GL-7C29<br>GL-7D21<br>GL-9C21<br>GL-9C22<br><br>GL-9C24<br>PJ-21<br>FP-54<br>FP-62<br>GL-146<br><br>GL-152<br>GL-159<br>GL-169<br>GL-203-A<br>GL-204-A<br><br>GL-207<br>GL-211<br>GL-242-C<br>FP-265<br>GL-276-A<br><br>FP-285<br>GL-473<br>GL-592<br>GL-800<br>GL-801-A<br><br>GL-802<br>GL-803<br>GL-805<br>GL-806<br>GL-807 | GL-809<br>GL-810<br>GL-811<br>GL-812<br>GL-813<br><br>GL-814<br>GL-815<br>GL-826<br>GL-828<br>GL-829-B<br><br>GL-830-B<br>GL-832-A<br>GL-833-A<br>GL-835<br>GL-837<br><br>GL-838<br>GL-842<br>GL-843<br>GL-845<br>GL-849<br><br>GL-851<br>GL-858<br>GL-862-A<br>GL-880<br>GL-889-A<br><br>GL-889-R-A<br>GL-891<br>GL-891-R<br>GL-892<br>GL-892-R<br><br>GL-893-A<br>GL-893A-R<br>GL-895<br>GL-895-R<br>GL-898-A<br><br>GL-954<br>GL-955<br>GL-956<br>GL-957<br>GL-959<br><br>GL-1603<br>GL-1612<br>GL-1613<br>GL-1614<br>GL-1619<br><br>GL-1620<br>GL-1621<br>GL-1622<br>GL-1623<br>GL-1624<br><br>GL-1625<br>GL-1629<br>GL-1633<br>GL-1851<br>GL-5513<br><br>GL-5518<br>GL-5549<br>GL-5556/PJ-8<br>GL-8000<br>GL-8002<br><br>GL-8002-R<br>GL-8005<br>GL-8009<br>GL-8010A-R<br>GL-8012-A<br><br>GL-8025-A<br>GL-9001<br>GL-9002<br>GL-9003 |

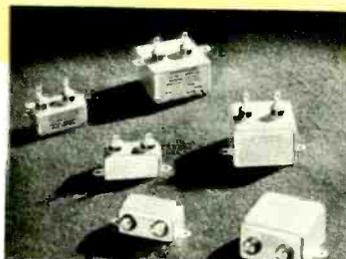
**GENERAL ELECTRIC**

FIRST AND GREATEST NAME IN ELECTRONICS

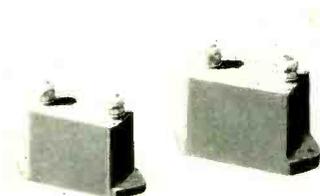
# APPARATUS DEPARTMENT

# GENERAL ELECTRIC

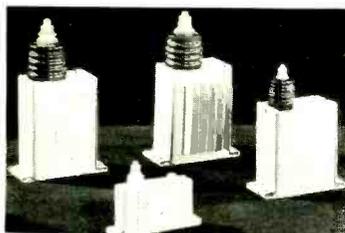
SCHENECTADY, N. Y.



D-C Capacitors



Electrofilm Capacitors



Fixed-Paper Dielectric Capacitors



A-C Pyranol Capacitors

## G-E CAPACITORS

**PYRANOL CAPACITORS** . . . Small a-c Pyranol capacitors are recommended for use with motors, industrial control, and other equipment. Use of Pyranol as a treating material, because of its high dielectric strength, high permittivity, and exceptional stability, has made possible a marked reduction in physical size, as well as a far superior capacitor. Three styles of mounting brackets are available and supplied separate from the units. Units may be operated in any position. WRITE FOR BULLETIN GEA-2027.

### STANDARD RATINGS\*

| Rated Voltage<br>60 Cycles | Fabricated<br>Rectangular | Drawn<br>Rectangular | Drawn<br>Cylindrical | Shallow<br>Drawn | Oval<br>Drawn |
|----------------------------|---------------------------|----------------------|----------------------|------------------|---------------|
| 220                        | 1-15 muf                  | .....                | .....                | .....            | 2-6 muf       |
| 250                        | .....                     | .....                | .....                | .....            | .....         |
| 330                        | 1-50 muf                  | 1-17.5 muf           | 2.5-11 muf           | 2-3.5 muf        | 2-3.5 muf     |
| 440                        | 1-28 muf                  | .....                | .....                | .....            | 2-4 muf       |
| 660                        | 1-15 muf                  | .....                | .....                | .....            | 1.75 muf      |

\*Represents only a list of standard ratings. Ratings other than these listed will be supplied when required.

## HIGH-FREQUENCY CAPACITORS

**ELECTROFILM:** Designed for radio-frequency blocking and by-pass applications where "Q" and temperature coefficient of capacitance are not critical. High capacity values provide low impedance desirable in blocking and by-pass applications. Generous r-f current rating. Dependable operation at ambients of -40 C to 75 C. Mechanically interchangeable with mica capacitors to Jan-C-91 both case sizes. WRITE FOR BULLETIN GEA-4295.

**CLASS HFP:** Liquid-filled, parallel-plate capacitors specifically designed for use in the resonant circuit, or "tank circuit" of high-frequency electronic oscillators, such as those used in electronic-heater equipments. WRITE FOR BULLETIN GEA-4365.

| STANDARD RATINGS - Case 65 type |                               |
|---------------------------------|-------------------------------|
| D-c Working Voltage             | Capacitance, Micromicrofarads |
| 3000                            | 100                           |
| 3000                            | 1000                          |
| 1000                            | 10,000                        |
| 500                             | 100,000                       |
| Case 70 type                    |                               |
| 5000                            | 100                           |
| 5000                            | 1000                          |
| 2000                            | 10,000                        |
| 750                             | 100,000                       |

| STANDARD RATINGS                     |                   |   |
|--------------------------------------|-------------------|---|
| Max. Permissible Rms Working Voltage | Microfarad Rating | Max. Permissible Rms Working Current in Amp at 540 Kc |
| 2000                                 | 0.025             | 170   |
|                                      | .030              | 204   |
|                                      | .034              | 230   |
| 2500                                 | .020              | 170   |
|                                      | .0165             | 168   |
|                                      | .01               | 204   |
|                                      | .0085             | 190   |
|                                      | .0070             | 178   |
| 8000                                 | .0067             | 182   |
|                                      | .0029             | 88  |
|                                      | .0035             | 107   |
| 9000                                 | .005              | 153   |
|                                      | .0056             | 171   |
|                                      | 10,000            | .0045   |

## OTHER G-E CAPACITORS

- D-C CAPACITORS (Pyranol Fixed-Paper-Dielectric) . . . . . Bulletin GEA-2621
- D-C CAPACITORS (Joint Army-Navy Specification JAN-C-25) . . . . . Bulletin GEA-4357
- ENERGY-STORAGE DISCHARGE CAPACITORS . . . . . Bulletin GEA-4646
- CAPACITOR NETWORKS . . . . . Detailed Data Sent On Request

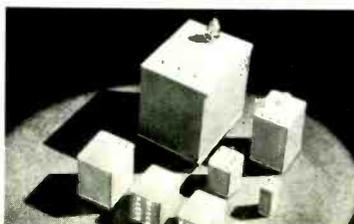
## G-E TRANSFORMERS

**DRY TYPE . . . HERMETICALLY SEALED:** Compound-filled and hermetically sealed against the entrance of moisture. Designed to meet U. S. Navy salt-water immersion tests. Standard hermetic-case types range from very small units up to units of 200 v-a physical size. **CONVENTIONAL COMPOUND-FILLED:** Moisture-resistant but not immersion-proof. Wide application in the Frequency-Modulation field. Top or bottom mounting for open or under-deck wiring. Standard case types include units up to 250 v-a physical size. **CORE-AND-COIL:** Usually applied where moisture resistance is not a factor, and where size and weight must be minimized. Standard core laminations are utilized in core-and-coil units 50 kva and smaller (physical size). Special construction is employed for larger units. WRITE FOR BULLETIN GEA-4280.

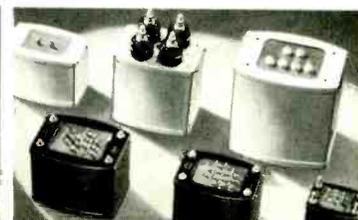
**LIQUID-FILLED . . .** General Electric also manufactures liquid-filled transformers in two types. (1) Oil Immersed, Bulletin GEA-2600 (2) Pyranol Filled, Bulletin GEA-2048. Both are used in higher power, high voltage applications.



Core-and-coil units

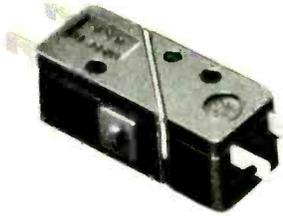


Hermetically sealed units



Conventional compound-filled units

## GENERAL ELECTRIC



**G-E SWITCHETTES . . .** Snap-action, double-break construction and a wide variety of terminal and contact arrangements makes the G-E Switchette a versatile contact mechanism suitable for many applications. These small switch mechanisms lend themselves particularly to applications where space is limited. The switches are operated by movement of the spring-return button located in the housing. The buttons can be actuated by a lever, bellows, or other means. Available in two sizes: Size 1, 10 amps, 115/230 volts; Size 2, 25 amps, 115/230 volts. WEIGHT: Size 1—0.02 lb., Size 2—0.125 lb.; PLUNGER TRAVEL DIFFERENTIAL: Size 1—0.020 in.  $\pm$  0.007 in., Size 2—0.040 in. Write for Bulletins GEA 3818D and GEA-4259.

## G-E CALROD\* SOLDERING IRONS

This new and improved line of G-E Calrod soldering irons, designed for industrial use, offers these important advantages: High-speed soldering. Uniform performance. Long life and low maintenance. Convenient and low-cost tip renewal. For light, medium and heavy intermittent or high-speed soldering, such as radio assembly and repair and installation, switchboard, ignition, wiring devices, meters and instruments. Write for Bulletin GEA-4519.

\*Trade-mark reg. U. S. Pat. Off.



| Cat. No. | Watts | Tip Diam. Inches |
|----------|-------|------------------|
| 6A161    | 75    | 3/8 & 1/2        |
| 6A162    | 100   | 3/8 & 1/2        |
| 6A200    | 100   | 3/4              |
| 6A201    | 200   | 1                |
| 6A202    | 300   | 1 1/4            |
| 6A210    | 25    | 1/4              |
| 6A212    | 25    | 1/4              |
| 6A318    | 650   | 1 3/8            |
| 6A319    | 1250  | 2                |



**ADVANTAGES: TAKES LESS SPACE**—Because of its construction, the winding-space factor of Formex wire is considerably higher than for other types. **EASY TO WIND**—The softness and smoothness of Formex wire, permit the turns of the coil to readily fall into place. **MORE FEET PER POUND**—Because there are more feet of wire in a pound of Formex wire than of any other type, except enameled wire, important savings are effected. **FACILITATES MANUFACTURE**—With its tough and resistant covering, Formex will stand up under the severe treatment of high-speed winding and assembly operations. Types available—round Formex, ultrafine Formex, rectangular Formex, colored Formex. Bulletin GEA-3911.

## FORMEX\* MAGNET WIRE

The result of years of study of the problem of improving the insulation of magnet wire. Insulated with a thin film of synthetic resin embodying polyvinyl-acetal, it is superior in many respects to wire insulated with conventional enamels. It is now in extensive production and use.

\*Trade-mark reg. U. S. Pat. Off.

## G-E INDUSTRIAL ELECTRONIC CONTROLS

Industrial electronic controls as produced by G-E are completely assembled equipments engineered to meet the requirements of particular industrial applications. A few of the control systems and products available are:

AUTOMATIC WEIGHING CONTROL  
PACKAGING CONTROL  
CLOTH FINISHING CONTROL  
AUTOMATIC COUNTERS  
ELECTRONIC TIME DELAY  
PAINT-SPRAYING CONTROL  
SIDE-ALIGNMENT CONTROL  
THREAD-BREAK DETECTION  
ELECTRONIC TIMER

GENERAL-PURPOSE RELAY  
REGISTER CONTROLS  
ELECTRONIC RELAY  
PHOTOELECTRIC PYROMETER  
RESISTANCE-WELDING CONTROLS  
SPOT-WELDER CONTROL  
WELDING TIMERS  
CONTROL RECTIFIERS  
THY-MO-TROL DRIVES

### Additional G-E Products for Electronic Fields

Ask for Bulletin giving complete information

Amplidyne control  
Autotransformers, variable-voltage  
Bushings, glass  
Cement  
Circuit breakers  
Gear-motors  
Generators  
Inductrols  
Insulation materials  
Motors  
Oscillographs  
Oscilloscope  
Plastics

Resistors, enamelled  
Rheostats  
Selsyns  
Solenoids  
Strain gages  
Test sets  
Thermostats  
Thickness gages  
Transformers, control & signal  
Voltage stabilizers  
Voltmeters  
Wires and cords

G-E APPARATUS SALES OFFICES LOCATED IN ALL PRINCIPAL CITIES • CONSULT YOUR PHONE BOOK FOR LOCAL ADDRESS

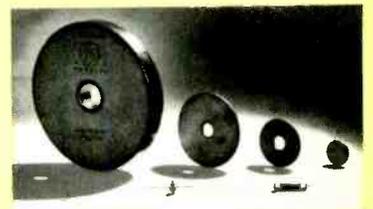
## ELECTRIC INSTRUMENTS



**SMALL PANEL . . .** These general-purpose panel instruments are particularly suitable for use in radio and communications equipment where accuracy and quality are required and space is at a premium. D-c, r-f, and a-f instruments operate on the permanent-magnet, moving-coil principle; alternating-current (a-c) instruments, on the moving-iron principle. 1 1/2 in. and 2 1/2 in. instruments find wide usage where minimum frontal dimensions and depth behind the panel are essential requirements.

In the permanent-magnet moving-coil types, minimum depth is obtained by use of a unique single-unit high-torque element, in which pivots are solidly mounted on inside of armature shell. In 3 1/2-inch and larger size the mechanism is similar to that used in larger switchboard types, except built on a smaller scale. Accuracy of these instruments is 2% of full scale, except in audiofrequency (rectifier) types, where accuracy is 5% of full scale. Voltmeters, ammeters, milliammeters, and microammeters available in all required ratings. All instruments are unshielded, but external magnetic shields can be furnished.

**SWITCHBOARD . . .** These new modern instruments, combining the advantages of long scale and small size, are designed for general switchboard service. They are ideally suited to use on large transmitters, miniature switchboards, special test equipment, and all installations where space is limited. Small and compact, yet they have the same accuracy as the larger designs, and have a longer and more readable scale. Panel space occupied by one of these concentric-scale instruments is only 4 1/4 by 4 1/4 in.



### THYRITE\*

A nonlinear resistance material possessing unique electrical property whereby the current varies approximately as a fourth power of the applied voltage. Some of its many applications are: For protective purposes (to limit voltage surges) • As a stabilizing influence on circuits supplied by rectifiers • As a potentiometer (the division of voltage can be made substantially independent of load current) • For the control of voltage-selective circuits, either independent of, or in combination with, electronic devices. Write for Bulletin GEA-4138A.

\*Reg. U. S. Pat. Off.



# ATLAS - The Seal of Sound Supremacy



| MODEL            | DR-32       | DR-42      | DR-54      | DR-72     |
|------------------|-------------|------------|------------|-----------|
| AIR COLUMN       | 2 ft. 8 in. | 3 1/2 ft.  | 4 1/2 ft.  | 6 ft.     |
| DISPERSION ANGLE | 70          | 80         | 90         | 100       |
| LOW FREQUENCY    | 175 c.p.s.  | 135 c.p.s. | 105 c.p.s. | 85 c.p.s. |
| BELL DIAMETER    | 13 1/2 in.  | 20 in.     | 25 in.     | 30 in.    |
| LENGTH           | 12 in.      | 14 1/2 in. | 18 in.     | 25 in.    |
| LIST PRICE       | \$23.50     | \$28.00    | \$40.00    | \$62.50   |

## SUPER POWER DRIVER UNITS

Seal-tite water-proofing . . . highest conversion efficiency . . . uniform power response . . . unbreakable phenolic diaphragm . . . precision guide pin alignment . . . twelve month guarantee . . . Full advantage has been taken of all new materials and processes which have recently been made available for commercial application. Materials such as beryllium copper, thermal-setting phenolics, high temperature resistant adhesives, magnetic steels, high energy content magnets, etc., all serve to full advantage in the design of the New Atlas Driver Units. Both models have a standard 1 3/8" - 18 male thread to fit the coupling thread of all "DR" Projectors.

## P. M. BOOSTER SPEAKERS Model HU-15

|                      |                      |
|----------------------|----------------------|
| Voice Coil Impedance | 8 ohms               |
| Diaphragm            | Unbreakable Phenolic |
| Input Power          | 12 Watts             |
| Bell Diameter        | 8 1/2 inches         |
| Overall Depth        | 8 1/2 inches         |
| Finish               | Grey Enamel          |
| List Price           | \$34.00              |

Complete with driver unit and bracket—Miniature . . . re-entrant high efficiency . . . weatherproof . . . excellent for "talk-back" applications. Mounting bracket permits both vertical and horizontal adjustment.

## RADIAL DRIVER UNIT PROJECTORS

Non-resonant Construction . . . 100% Stormproof . . . Centralized Sound Source . . . Uniform 360° Coverage . . . Dependable Overhead Mounting Bracket . . . Easy Installation. The new "RC" Radial Driver Unit Projectors are often the answer to the most difficult acoustic and sound coverage problems. The advantage of 360° coverage often permits the use of one speaker where normally a multiple of directional projectors would be required for smooth and uniform coverage.

## REENTRANT PROJECTORS

Non-resonant . . . uniform response . . . sturdy . . . storm-proof . . . compact. The various sections of all "DR" Projectors are joined by a husky cast metal central support which securely holds the heavy driver unit, mounting bracket, and spinnings in a manner that will resist all mechanical stress and strain. The sturdy mechanical reinforced cork-insulated, assembly and rubber rim on the bell edge also eliminate resonance or vibration of the various projector sections.

| MODEL                        | PD-8       | PD-5       |
|------------------------------|------------|------------|
| AVERAGE POWER CAPACITY       | 25 watts   | 25 watts   |
| FREQUENCY RESPONSE           | 60 to 7500 | 80 to 6000 |
| ELECTRO-ACOUSTIC SENSITIVITY | 204        | 181        |
| VOICE COIL IMPEDANCE         | 16 ohms    | 16 ohms    |
| NET WEIGHT                   | 9 1/2 lbs. | 5 1/2 lbs. |
| LIST PRICE                   | \$50.00    | \$37.00    |

## PARABOLIC Baffles

Three Sizes: for 6", 8", 12" CONES. All models incorporate the new exclusive vibration-proof . . . interlocking . . . watertight seal between sections.



| Model | Bell Diam. | Overall Length | List Price |
|-------|------------|----------------|------------|
| SM-6  | 12 inches  | 10 1/2 inches  | \$12.00    |
| SM-8  | 18 inches  | 14 inches      | 13.50      |
| SM-12 | 20 inches  | 18 inches      | 14.50      |

| MODEL             | RC-36   | RC-48   |
|-------------------|---------|---------|
| AIR COLUMN LENGTH | 3 ft.   | 4 ft.   |
| BELL DIAMETER     | 24 in.  | 28 in.  |
| OVERALL HEIGHT    | 18 in.  | 21 in.  |
| LIST PRICE        | \$36.00 | \$40.00 |

## VELVET ACTION

No Slipping . . . No Scratching . . . No Rattle . . . No Noise . . . "Full-Grip" Clutch Adjustment "Non-tip" functionally designed base. Velvet Action Telescoping . . . is the exclusive feature of all ATLAS microphone stands. Single-hand control is possible after Clutch has been adjusted to weight of microphone. Clutch mechanism is inner-lined with a wear-proof bakelite collet. Microphone thread size is standard 5/8" 27 male. Tube finish is Super-Chrome.

## "Velvet Action" MICROPHONE STANDS

\*Models MS20 & MS24 DeLuxe type use 1 1/8" Diam. Fixed & 7/8" Diam. telescoping tube.

| MODEL       | MS-12C       | MS-11C      | *MS-20       | *MS-24       | **CS-1      |
|-------------|--------------|-------------|--------------|--------------|-------------|
| BASE FINISH | Grey Crackle | Full Chrome | Grey Shrivel | Grey Shrivel |             |
| BASE DIAM.  | 10"          | 10"         | 12"          | 17"          | Collapsible |
| HEIGHT ADJ. | 35" to 65"   | 35" to 65"  | 42" to 72"   | 42" to 72"   | Average     |
| WEIGHT      | 12 lbs.      | 12 lbs.     | 15 lbs.      | 24 lbs.      | 5 lbs.      |
| LIST PRICE  | \$9.60       | \$11.40     | \$14.00      | \$19.50      | \$15.00     |

\*\*Minimum Collapsed length 23 inches.



## "Velvet Action" DESK STANDS

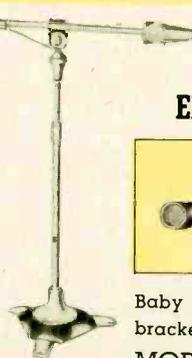
Bases identical, grey shrivel finish, tubes chrome plated. Felt base pads protect desk tops. Threads 5/8" - 27 male.



| MODEL | TYPE           | LIST PRICE |
|-------|----------------|------------|
| DS-5  | Non-Adjustable | \$2.75     |
| DS-7  | Adjustable     | 4.50       |

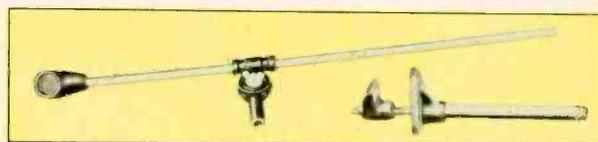
## Professional BOOMSTAND

Maximum vertical extension 72" minimum 48". Length of horizontal boom arm 63". Base diameter, at floor contact points, 17". Total Weight 35 lbs. Tube diameters 1 1/8" and 7/8" brass, triple "super-chrome" plated. Base finished in gun-metal shrivel. MODEL BS 35 LIST \$55.00.



All Prices Subject to Change Write for Complete Catalog

## "BABY BOOM" EXTENSION ARM and BRACKET CLAMP

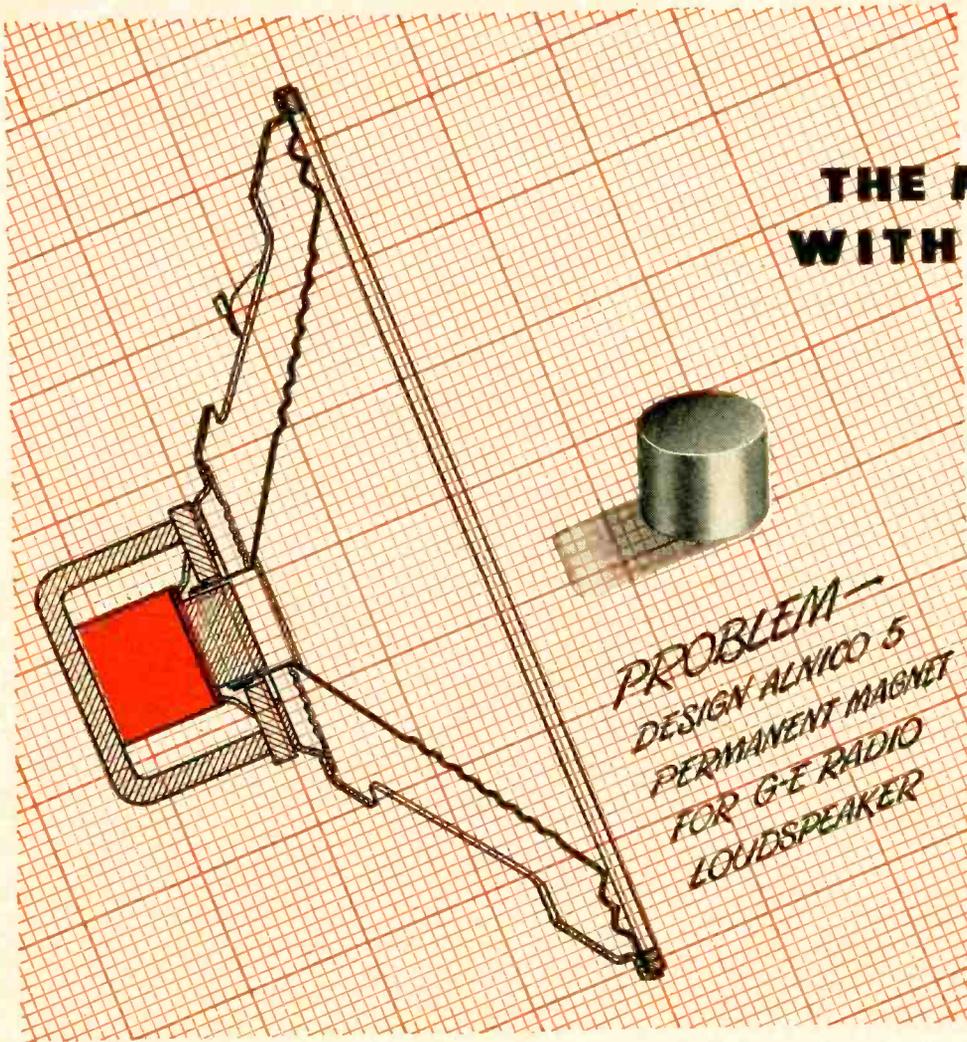


Baby Boom may be attached to any microphone stand or to bracket clamp. Boom 32" long, bracket clamp 6" high. MODEL BB-1 BABY BOOM ARM . . . LIST \$7.00 MODEL BC-1 BRACKET CLAMP . . . LIST \$3.00

ATLAS SOUND CORP., 1450 39th Street, Brooklyn 18, New York

YOU GET QUALITY PLUS ENGINEERING SERVICE WITH G-E PERMANENT MAGNETS

## THE MAGNET WITH A VOICE



*PROBLEM—  
DESIGN ALNICO 5  
PERMANENT MAGNET  
FOR G-E RADIO  
LOUDSPEAKER*



*A voice coil wound on an aluminum base moving in the field of an ALNICO 5 permanent magnet—that's the heart of the modern G-E loudspeaker. Current passing through the coil in the magnetic field causes the coil and attached cone to vibrate in proportion to the applied alternating voltage, thus producing sound waves. ALNICO 5 offers maximum energy with reduced size and weight, minimum losses and increase of sensitivity and power.*

General Electric's precise quality control methods used throughout magnet production, plus accurate testing and rigid inspection assure you of receiving magnets of the highest uniform quality for your application.

Greater flexibility of magnet design is possible with the many G-E permanent magnet materials now available. The large group of sintered and cast ALNICO alloys has been augmented by the lightweight, non-metallic mixture, VECTOLITE, and by the ductile permanent magnets, CUNICO, CUNIFE and SILMANAL. From such a wide choice of materials, you may now find a magnet better suited for your application or a material which will make possible new designs heretofore impractical or impossible.

General Electric engineers, backed by research and application experience, have acquired years of "know-how" in selecting the best permanent magnet material and properly designing magnets for thousands of products. These engineers are at your service. *Metallurgy Division, Chemical Dept., General Electric Co., Pittsfield, Mass.*



**PERMANENT  
MAGNETS**

**GENERAL  ELECTRIC**

CD47-JA3

### SEND FOR NEW BULLETINS ON G-E PERMANENT MAGNETS

We shall be glad to send you upon request our new bulletins, CDM-1, "Permanent Magnets," and CDM-2, "Cast and Sintered Alnico, Catalog Supplement," both specifically designed to help you with your permanent magnet problems.

CDM-1 contains information about the characteristics and properties of G-E permanent magnet materials, their application and design. Listed in the catalog supplement, CDM-2, are sintered and cast Alnico permanent magnets available from stock. Proposed R.M.A. standard speaker magnets are included.

For your copies, please fill out the coupon below.



METALLURGY DIVISION  
SECTION BG-6  
CHEMICAL DEPARTMENT  
GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASS.

Please send me your new bulletins, CDM-1 and CDM-2, on G-E Permanent Magnets.

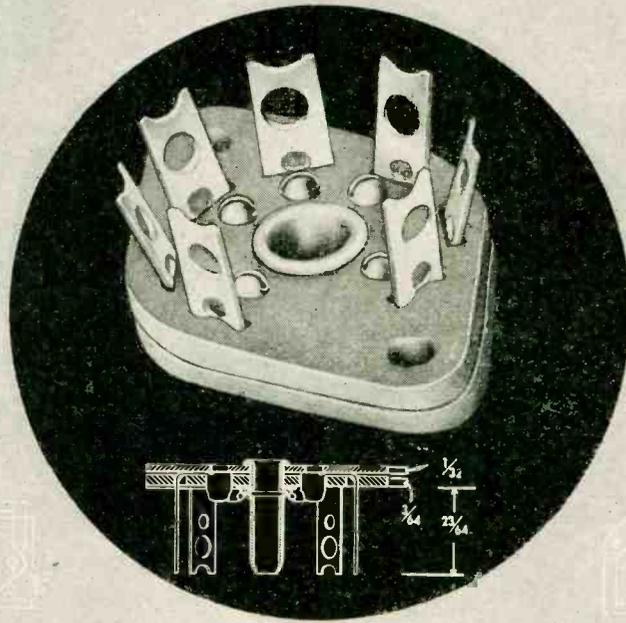
NAME.....  
TITLE.....  
COMPANY.....  
ADDRESS.....  
CITY..... STATE.....

# *new Franklin* MINIATURE SOCKETS

INCORPORATING NEW CONTACTS OF REVOLUTIONARY DESIGN  
AND EMBODYING FEATURES NOT AVAILABLE HERETOFORE

**57 A 23** for  $\frac{7}{8}$ " mounting centers and available with center shield and with or without ground strap, also with brass anti-microphonic cushion.

**57 A 11** for 1" mounting centers and available with center shield and with or without ground strap.



**57 A 12** for  $1\frac{1}{16}$ " mounting centers is interchangeable with regular Octal sockets enabling chassis design for use with either and available with center shield and with or without ground strap.

**57 A 13** for new NOVAL 9 pin tubes,  $1\frac{1}{8}$ " mounting centers.

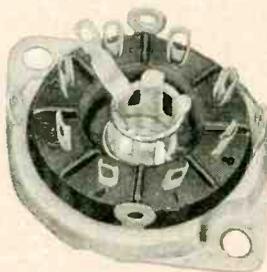
Each socket, in Franklin's new series 57, is the development of studied research to solve the problems of tubes falling out in transit, intermittent contact, difficulty of soldering due to confined space, etc.

The solution to these problems was the development of the new Franklin contact which assures positive constant contact because it grips and holds the tube securely without the need for locking devices. The tails of these new

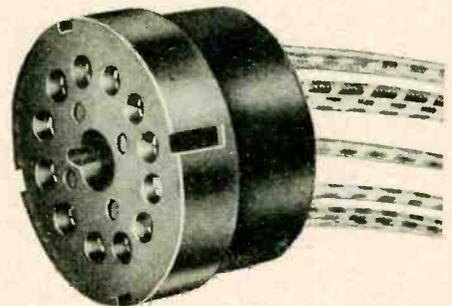
contacts are longer and spaced wider apart to permit quick and easy soldering.

These new, series 57 miniature wafer, sockets will find high favor with engineering departments for their positive constant contact . . . with production departments for their ease of soldering and elimination of locking devices and with purchasing departments for their extremely low prices.

**NEW FRANKLIN LOCK-IN SOCKET** molded—acclaimed by one of the largest LOCK-IN TUBE manufacturers as the best socket developed to date—incorporates the new Franklin contact which combines positive grip on the tube pins with ease of soldering. Its improved center lock permits easy insertion of the tube and positive retention under heavy vibration or shock. The molded body has high barriers on the top and bottom isolating each contact while permitting ample float in all directions. The saddle is of heavy steel, hot tinned, with four ground tabs. This saddle provides extreme rigidity when assembled to the chassis.



and for TELEVISION FRANKLIN FEATURES the DUO DECAL



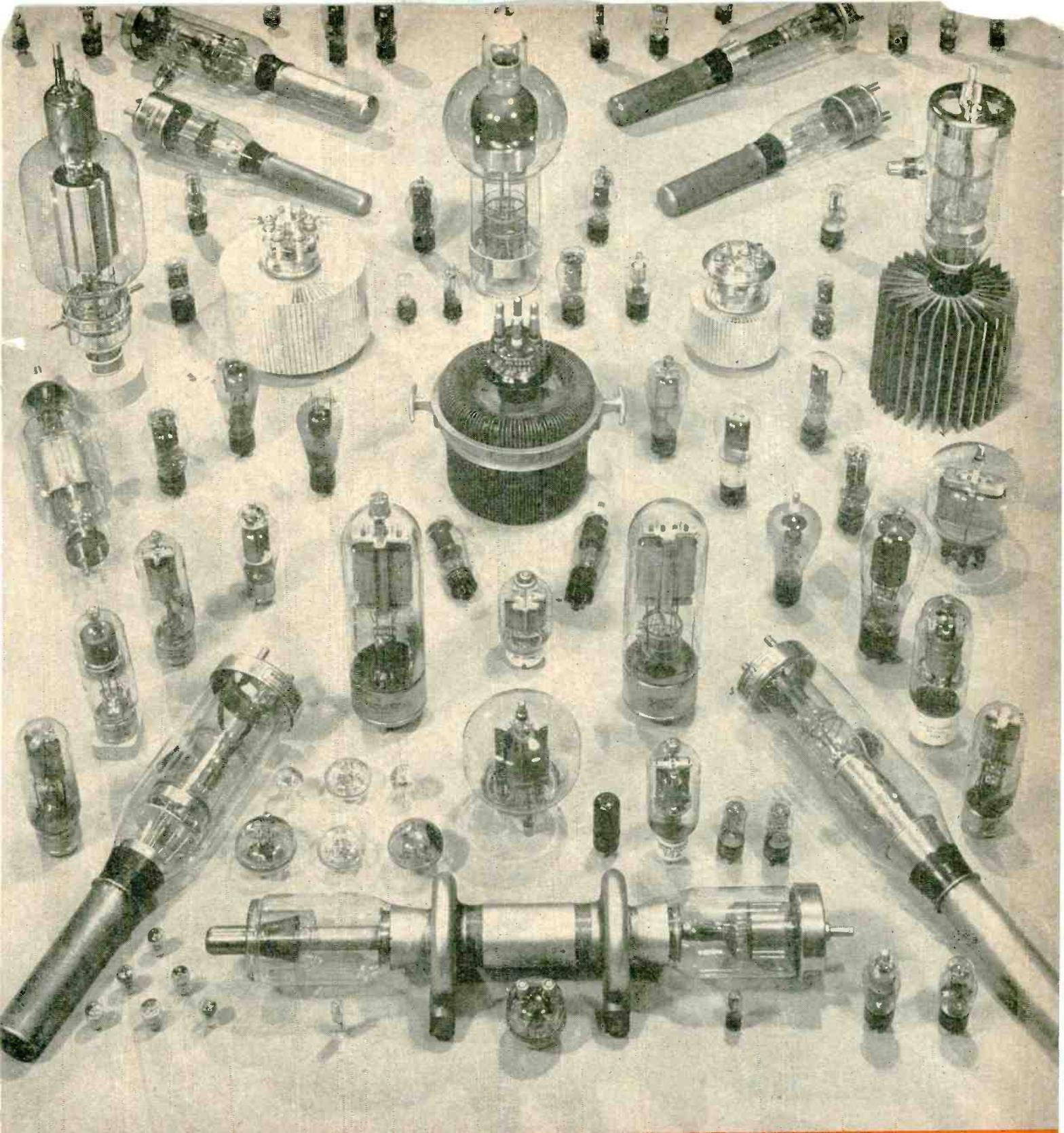
TO MEET MOST EXACTING REQUIREMENTS FOR HIGH VOLTAGE OPERATION



## A. W. FRANKLIN MFG. CORP.

MANUFACTURERS OF A COMPLETE LINE OF RADIO AND TELEVISION TUBE SOCKETS

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# REFERENCE DATA

## electronics 1947 Buyers' Guide Issue

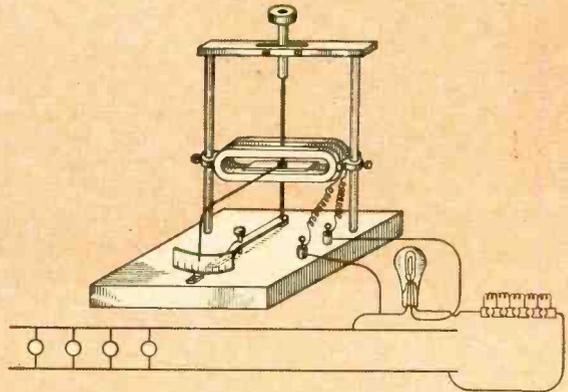
**I**N THE FOLLOWING PAGES the editors of **ELECTRONICS** have assembled information of lasting reference value. Included, for example, are data on the electrical, mechanical and chemical characteristics of low-loss insulating materials; an easy-to-use

listing of popular receiving tubes; information valuable to those who employ crystal rectifiers; a compilation of wartime code words and their meanings; and brief notes on important technical books published during the last year.

## SIGNIFICANT DATES

- 1881** Edison disclosed in U. S. patent No. 307, 331, October 21, 1884, expiring October 21, 1901 that electric current flowed through a vacuum
- 1885** Sir William Preece, *London Electrician*, April 4, pointed out that a reversal of the anode potential resulted in decreased Edison current
- 1889** Elster and Geitel stated that current was due to negative ions, now known as electrons
- 1890** Sir Ambrose Fleming described his experiments with the Edison effect in *London Electrician*, February 21 and 28
- 1897** J. W. Howell, an associate of Edison, at an AIEE meeting pointed out that rectification took place in the tube, that is, a conversion of alternating to pulsating current
- A. E. Kennelly, at the same meeting, said "a vacuum tube . . . is capable of supplying alternating current from continuous current, [and] also continuous current from alternating current"
- 1900** Lenard in *Annalen der Physik* showed that the electron flow inside a tube could be controlled by electrostatic forces near the cathode
- 1903** Wehnelt showed the effect of increasing the current emission by coating the cathode with oxides of the alkaline earths, in *Physikalische Medizinische Societat*
- 1905** Fleming patented the use of the Edison tube as a detector of wireless waves, both as a single- and full-wave rectifier. U. S. Patent No. 803,684, November 7, expiring November 7, 1922
- 1906** Von Lieben, German patent No. 179,807, filed March 4, issued November 19, 1906, disclosed how a control element could govern the electron stream through the tube and, hence, the current through a local relay circuit; how small energy in the input would "release current oscillations of large energy" in the output
- 1906** DeForest filed U. S. patent No. 841,387, October 25, granted January 15, 1907, showing that the control element could be either inside or outside the tube. This is the famous deForest patent
- 1907** Stone and Cabot filed U. S. patent No. 884,110, January 4, issued April 7, 1908, showing a sieve-like grid
- 1911** Von Lieben and Riesz filed U. S. patent No. 1,038,910, January, issued September 17, 1912, showing how the introduction of a small amount of gas increased the current capacity of a tube
- 1911** Von Lieben and Riesz, French patent No. 13,726, filed April, issued June 17, 1911, described a two-tube cascade amplifier
- 1913** Langmuir multi-grid tube, U. S. patent No. 1,558,437, issued October 29, 1913
- 1915** White, in U. S. patent No. 1,159,307, November 2, 1915, showed use of getter
- 1916** Schottky, issued U. S. patent No. 1,537,708, May 13, 1916, screen-grid tube
- 1917** Langmuir, U. S. patent No. 1,244,216 October 23, 1917, thoriated filament
- 1919** Nicholson, U. S. patent No. 1,459,412, September 10, issued June 19, 1923, indirectly-heated cathode

# The ROOTS



Drawing taken from Edison's U. S. patent No. 307,031

By KEITH HENNEY

**A**LTHOUGH electronics is young as an industry, its roots go deep. Drawing sustenance from distinguished prior arts developed by many of the greatest scientists of history, it is solidly based. Many early workers and their accomplishments are shared with other branches of engineering endeavor; some are peculiarly electronics' own.

Founded on highly complex natural phenomena, its literature leaning heavily on the language of the mathematician, electronics can be said barely to have started on its climb upward on the growth curve characterizing new industries. Significant are the facts that there are now 30,000 subscribers to **ELECTRONICS** where there were only 6,000 in 1930; that the amounts of power used in electronic heating alone are already greater than the quantities consumed by broadcast stations.

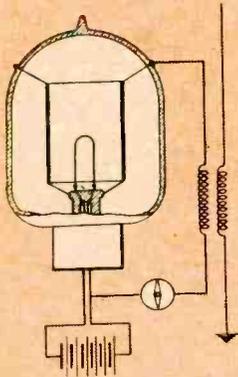
### DEFINITION

A few of the significant inventions, discoveries and facts making up the groundwork on which electronics stands are listed here in a recital which is overly brief and which ends at the period when the disputes arose as to who invented what and when.

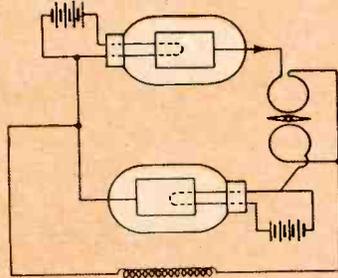
First, however, just what is electronics?

Proposed definitions depend upon one's point of view. To a physicist, interested in digging out basic facts and not in their application, electronics starts and ends with a search for facts about the electron itself and its interrelations with other fundamental

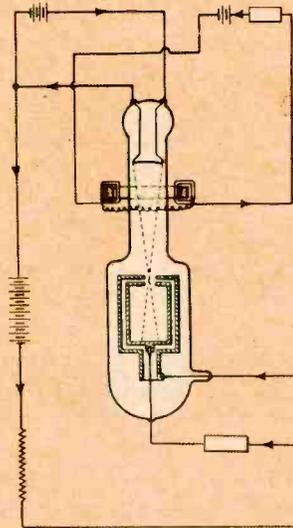
# of ELECTRONICS



Fleming patented the use of Edison's tube as a detector for wireless signals. Drawing taken from his U. S. patent No. 803,684



Fleming showed in his patent granted in 1904 the use of two tubes as a full-wave rectifier



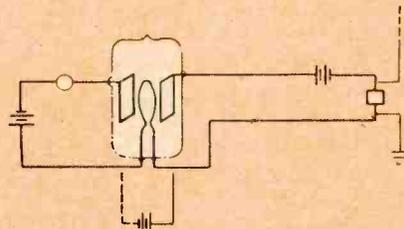
This drawing from the von Lieben German patent No. 179,807 showed an oxide coated cathode, a control element and an external relay circuit through which amplified current flowed

building blocks of nature. The engineer, however, is only mildly interested in such basic information; he is more vitally concerned with ways and means of using the facts ascertained by the physicist.

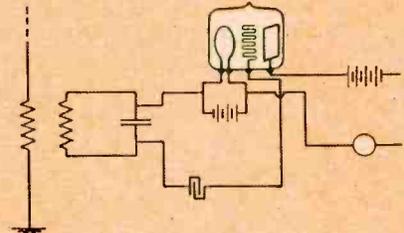
Engineers seem to be well satisfied with a definition that encompasses the development and use of devices and circuits which depend upon the motion of free electrons, particularly in and through vacuum and gaseous tubes. Since tubes enter into the communication art so thoroughly today, all types of communication systems, even though using no tubes, have come to be thought of as part of electronics. Thus there are no hard and fast boundaries. The tubes, the components tying them together into circuits, and the application of these assemblies to any purpose, all form part of the field called electronics.

Without digging too deeply into the subsoil of history, one can say that the real roots of electronics are the discoveries of Ampere, Oersted, Gauss, Henry, and Faraday, the inventions of Morse and Bell (1848 and 1875 respectively). Practical usage of electronics can be traced directly to Maxwell, whose celebrated equations were set forth in 1873, and Hertz' brilliant experiments in 1881, both regarded as classroom curiosities for a half century.

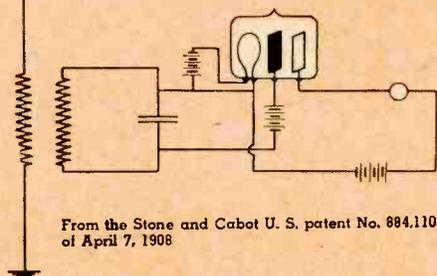
Electronics, strictly speaking, began with Edison's monumental discovery that uni-directional current would flow across an evacuated space inside one of his incandescent lamps. This he patented in 1884. There was a considerable time lapse before the Edison effect was put to use, but after this incubation period events moved somewhat faster as fundamental facts were amassed.



An illustration from deForest U. S. patent No. 841,387 showing a control element adjacent to the cathode but on the opposite side from the anode



Taken from deForest's U. S. patent No. 879,532 granted February 18, 1908



From the Stone and Cabot U. S. patent No. 884,110 of April 7, 1908

# ELECTRONIC APPLICATIONS

A breakdown of the present and potential future market for 119 basic types of electronic equipment in each of 28 major industries defined below. Chart on following three pages shows present general use by a solid dot, and slight or future use by a hollow dot

By JOHN MARKUS

## Classification of Industries

The following definitions give the scope assumed for each of the 28 industries represented in the accompanying chart of electronic equipment usage

- AIR TRANSPORTATION**—operation and maintenance of all types of aircraft, including communication and navigation
- CERAMICS**—manufacture of all products made from earth by agency of fire, except glass
- CHEMICAL**—manufacture of all chemical products not separately listed here, including drugs and medicines, and industrial processing with chemicals
- COMMUNICATION**—transmission of intelligence in visual or audible form, by radio waves, light beams, ultrasonic waves, infrared beams, wires, etc.
- CONSTRUCTION**—building roads, bridges, buildings, tunnels, and other fixed structures
- COSMETICS**—manufacture of all products intended to beautify and improve the human skin, complexion, hair, etc.
- ELECTRONIC & ELECTRICAL MANUFACTURING**—production of electrical equipment such as motors and generators, all equipment using electron tubes, and all tubes and electrical components used therein or in general manufacturing
- ENTERTAINMENT**—operation and maintenance of equipment used in broadcasting, television, facsimile, sound recording and reproduction, sound films, and electronic musical instruments
- FOOD**—growing of all basic foodstuffs and processing for consumption, not including packaging
- GLASS**—production and fabrication of all types of glass, and manufacture of glass products
- HIGHWAY TRANSPORTATION**—operation and maintenance of all vehicles moving on the highways or across-country without guidance of rails, including communication
- LABORATORY**—research, development, or training laboratories in industry and schools, but not medical laboratories
- MANUFACTURING, GENERAL**—all industrial production other than electronic and electrical
- MARINE TRANSPORTATION**—operation and maintenance of all craft moving on or under water, including communication and navigation
- MEDICAL**—research in schools and laboratories, diagnosis, treatment, and surgery
- METAL PRODUCING**—all operations associated with conversion of mined ore to billets, ingots, and other shapes of raw stock, including foundries, smelters, refineries, furnaces, rolling mills, etc.
- METAL WORKING**—conversion of raw metal stock to finished form by rolling, extrusion, casting, spinning, punching, drilling, welding, machining, etc., but not including assembly of metal parts into finished products (see manufacturing, general)
- MINING**—extraction of metallic and nonmetallic solid materials from the earth by mining, quarrying, or other means; extraction from sea water; geophysical prospecting for location of ore-bearing bodies
- NUCLEONICS**—everything related to research into atomic energy and its utilization
- PACKAGING**—batching, weighing, measuring, filling containers, wrapping, labeling, inspection of the packaged output, and all other operations associated with preparation of finished products for sale
- PAPER & PRINTING**—papermaking and all forms of printing on paper and on other materials, and control of machinery used
- PETROLEUM**—geophysical prospecting for oil and natural gas, drilling and operating wells, refining and production of petroleum products, and transportation and distribution of petroleum products by pipe lines, vehicles, and other means
- PLASTICS**—production, processing, molding, and fabrication of all types
- RAIL TRANSPORTATION**—operation and maintenance of all equipment running on rails, including railroad communication
- RUBBER**—production of both natural and synthetic types, processing, and conversion to finished products
- TEXTILE**—production of threads, fabrics, ribbons, etc.; manufacture of wearing apparel and other textile products
- UTILITIES**—operation and maintenance of electric power systems, gas systems, waterworks, and sewage disposal plants
- WOODWORKING**—conversion of standing trees to dressed lumber, processing of lumber, and production of all kinds of products and structures made from lumber

# INDUSTRY

## ELECTRONIC EQUIPMENT USED

|                                 | Air Transportation | Ceramics | Chemical | Communication | Construction | Cosmetics | Electronic & Elec. Mfg. | Entertainment | Food | Glass | Highway Transportation | Laboratory | Manufacturing, General | Medical | Metal Producing | Metal Working | Mining | Nucleonics | Packaging | Paper & Printing | Petroleum | Plastics | Rail Transportation | Rubber | Textile | Utilities | Marine Transportation | Woodworking |
|---------------------------------|--------------------|----------|----------|---------------|--------------|-----------|-------------------------|---------------|------|-------|------------------------|------------|------------------------|---------|-----------------|---------------|--------|------------|-----------|------------------|-----------|----------|---------------------|--------|---------|-----------|-----------------------|-------------|
| Amplifier, audio.....           | ●                  | ●        | ●        | ●             | ●            | ●         | ●                       | ●             | ●    | ●     | ●                      | ●          | ●                      | ●       | ●               | ●             | ●      | ○          | ●         | ●                | ●         | ●        | ●                   | ●      | ●       | ●         | ●                     | ●           |
| Amplifier, d-c.....             | ●                  | ●        | ●        | ●             | ●            | ●         | ●                       | ●             | ●    | ●     | ●                      | ●          | ●                      | ●       | ●               | ●             | ●      | ○          | ●         | ●                | ●         | ●        | ●                   | ●      | ●       | ●         | ●                     | ●           |
| Amplifier, r-f.....             | ●                  | ○        | ●        | ●             | ○            | ●         | ●                       | ●             | ●    | ●     | ●                      | ●          | ●                      | ●       | ●               | ●             | ●      | ○          | ○         | ●                | ●         | ●        | ●                   | ●      | ●       | ●         | ●                     | ●           |
| Balancing machine.....          | ●                  |          |          |               |              |           | ●                       |               |      |       | ●                      |            | ●                      |         |                 | ●             | ○      |            |           |                  |           |          | ○                   |        | ●       | ●         | ○                     |             |
| Batching control.....           |                    | ●        | ●        |               | ○            | ●         | ●                       |               | ●    | ○     |                        | ○          | ●                      |         |                 | ○             |        |            | ●         |                  | ●         |          | ○                   |        | ○       |           |                       | ○           |
| Break detector.....             |                    |          |          |               |              |           | ●                       |               |      |       |                        |            | ●                      |         | ●               | ●             |        |            | ●         | ●                |           |          |                     |        | ●       | ●         |                       | ●           |
| Capacitance-change control....  |                    | ○        |          |               |              |           | ○                       | ●             |      | ○     |                        | ○          | ●                      |         |                 | ●             | ○      |            |           |                  | ○         |          |                     |        |         |           | ●                     |             |
| Carrier current communication.. |                    |          |          | ●             | ●            |           |                         | ●             |      |       |                        |            |                        | ●       | ○               | ○             |        |            |           |                  | ○         |          |                     | ●      |         |           | ●                     |             |
| Carrier current control.....    |                    |          | ●        | ●             | ●            |           |                         | ●             |      |       |                        |            |                        | ●       | ●               |               |        |            |           |                  |           |          | ●                   |        |         | ●         |                       | ○           |
| Coating thickness gage.....     |                    | ○        | ●        |               |              | ○         | ●                       |               |      | ○     |                        | ●          | ●                      |         |                 | ●             |        |            |           |                  | ○         |          |                     |        | ●       |           |                       | ○           |
| Coil tester.....                |                    |          |          | ●             |              |           | ●                       | ●             |      |       |                        | ●          |                        |         |                 |               |        |            |           |                  |           |          |                     |        |         |           | ●                     |             |
| Color comparator.....           |                    | ●        | ●        |               |              |           | ●                       | ●             |      | ●     | ●                      | ●          | ●                      | ●       | ●               | ●             |        | ○          |           |                  | ●         | ●        | ●                   |        | ●       | ●         | ●                     | ●           |
| Color control.....              |                    | ●        | ●        |               |              |           | ●                       |               | ○    | ●     |                        | ●          | ●                      |         | ○               | ○             |        |            |           |                  | ○         | ○        | ○                   |        |         | ●         |                       | ○           |
| Combustion control.....         |                    | ●        | ●        |               |              |           | ●                       | ●             |      | ●     | ○                      | ●          | ●                      |         | ●               | ●             | ○      | ○          | ○         | ○                | ○         | ○        | ○                   | ○      | ○       | ○         | ○                     | ○           |
| Computer.....                   |                    | ○        | ●        |               |              | ○         |                         |               |      |       |                        | ●          | ●                      |         | ○               | ○             | ○      | ○          |           |                  |           | ●        | ○                   |        | ○       |           | ○                     | ○           |
| Conductivity control.....       |                    | ○        | ●        |               |              |           | ●                       |               | ●    |       |                        | ●          |                        | ○       | ●               | ●             |        |            |           |                  |           |          |                     |        | ○       |           | ○                     |             |
| Contour control.....            |                    |          |          |               |              |           | ○                       |               |      |       |                        |            | ●                      |         |                 | ●             |        |            |           |                  |           |          |                     |        |         |           |                       | ●           |
| Counter, decade.....            |                    | ○        | ●        |               |              |           | ○                       | ○             |      | ○     | ○                      | ●          | ○                      | ●       | ○               | ●             | ○      | ●          | ●         | ●                | ○         | ●        | ○                   |        | ○       | ○         | ○                     | ○           |
| Counter, Geiger-Muller.....     |                    |          | ●        |               |              |           |                         |               |      |       |                        | ●          | ○                      | ●       | ●               |               | ●      | ●          |           |                  |           | ●        |                     |        |         |           | ●                     | ○           |
| Counter, moving objects.....    |                    | ●        | ●        |               | ○            | ○         | ●                       |               | ●    | ●     | ●                      | ○          | ●                      | ○       | ●               | ●             | ●      | ○          | ●         | ●                | ○         | ●        | ○                   | ○      | ○       | ○         | ○                     | ○           |
| Curve tracer.....               |                    | ○        | ●        |               |              |           | ○                       | ○             |      |       |                        | ○          | ●                      |         |                 | ●             |        |            |           |                  |           |          |                     |        |         |           |                       | ●           |
| Densitometer.....               |                    |          | ●        |               |              |           | ●                       | ●             |      | ●     | ●                      |            | ●                      | ●       | ○               | ○             |        | ○          | ○         |                  |           | ●        | ●                   | ●      | ●       | ●         | ○                     | ○           |
| Dielectric heating.....         | ○                  | ○        | ●        |               |              |           | ●                       | ●             |      | ○     | ○                      | ●          | ●                      | ●       | ○               | ●             | ○      | ○          | ○         | ○                | ○         | ○        | ○                   | ○      | ○       | ○         | ○                     | ○           |
| Dielectric measurement.....     |                    | ●        | ●        | ○             |              |           | ○                       | ○             |      | ○     |                        | ○          | ●                      |         | ○               | ●             |        |            |           |                  |           |          |                     |        |         |           | ●                     | ○           |
| Dimension control.....          |                    | ●        | ○        |               |              |           | ○                       | ●             |      | ○     | ○                      | ○          | ●                      |         | ○               | ●             |        |            |           |                  | ●         |          |                     |        | ○       | ○         |                       | ○           |
| Door opener.....                | ○                  | ●        | ●        |               | ○            | ●         | ●                       | ●             | ●    | ●     | ○                      | ●          | ●                      | ●       | ●               | ●             | ●      | ○          | ○         | ○                | ○         | ○        | ○                   | ○      | ○       | ○         | ○                     | ○           |
| Electrometer.....               |                    |          | ●        |               |              |           | ○                       | ○             |      |       |                        | ○          | ○                      | ●       |                 |               |        |            | ○         |                  |           | ○        | ○                   |        | ○       |           |                       | ○           |
| Electron microscope.....        |                    | ●        | ●        |               |              |           | ●                       | ○             |      | ●     | ○                      | ●          | ○                      | ●       | ●               | ●             | ●      | ○          | ○         | ○                | ○         | ○        | ○                   | ○      | ○       | ○         | ○                     | ○           |
| Electronic switch.....          |                    |          |          |               |              |           | ●                       |               | ●    |       |                        | ●          | ●                      |         |                 | ○             | ●      | ○          |           |                  |           |          |                     |        |         |           | ●                     | ○           |
| Electrostatic attraction.....   |                    | ●        | ●        |               |              |           | ●                       | ●             |      | ●     | ○                      | ●          | ●                      | ●       | ●               | ●             | ●      | ○          | ○         | ○                | ○         | ○        | ○                   | ○      | ○       | ○         | ○                     | ○           |
| Elevator leveling control.....  |                    | ●        | ●        | ●             | ○            | ●         | ●                       | ●             | ●    | ●     |                        | ●          | ●                      | ●       | ●               | ●             | ●      | ○          | ○         | ○                | ○         | ○        | ○                   | ○      | ○       | ○         | ○                     | ○           |
| Facsimile.....                  | ○                  |          |          |               | ○            |           |                         | ○             |      |       | ○                      |            |                        |         |                 |               |        |            |           |                  |           |          |                     | ○      |         |           |                       | ○           |
| Fire detector.....              | ○                  | ○        | ○        | ○             | ○            | ○         | ○                       | ○             | ○    | ○     | ○                      | ○          | ○                      | ○       | ○               | ○             | ○      | ○          | ○         | ○                | ○         | ○        | ○                   | ○      | ○       | ○         | ○                     | ○           |
| Flash photography unit.....     | ○                  | ○        | ●        |               | ○            | ○         | ●                       |               | ○    | ○     | ○                      | ○          | ○                      | ○       | ○               | ○             | ○      | ○          | ○         | ○                | ○         | ○        | ○                   | ○      | ○       | ○         | ○                     | ○           |
| Flaw detector.....              |                    | ●        | ●        |               | ○            | ●         | ●                       |               | ●    | ●     |                        | ○          | ●                      |         | ●               | ●             |        |            | ○         | ○                | ○         | ○        | ○                   | ○      | ○       | ○         | ○                     | ○           |
| Flow control.....               | ○                  | ●        | ●        | ●             | ○            | ○         | ●                       | ●             |      | ○     |                        | ○          | ●                      | ○       | ○               | ○             | ○      | ○          | ○         | ○                | ○         | ○        | ○                   | ○      | ○       | ○         | ○                     | ○           |
| Frequency changer.....          |                    |          | ○        | ●             | ○            |           | ●                       | ●             |      |       |                        | ●          | ●                      | ○       |                 | ●             | ●      |            |           |                  |           |          |                     |        |         |           | ○                     | ○           |
| Frequency meter.....            | ●                  | ○        | ●        | ●             | ○            | ○         | ●                       | ●             |      | ○     | ○                      | ●          | ●                      | ○       | ○               | ○             | ○      | ○          | ○         | ○                | ○         | ○        | ○                   | ○      | ○       | ○         | ○                     | ○           |
| Gas analyzer.....               | ●                  | ●        | ●        |               | ○            | ○         | ○                       |               | ○    | ○     | ○                      | ○          | ○                      | ○       | ○               | ○             | ○      | ○          | ○         | ○                | ○         | ○        | ○                   | ○      | ○       | ○         | ○                     | ○           |
| Geophysical prospecting.....    |                    | ○        |          |               | ○            |           |                         |               |      |       |                        |            |                        |         |                 |               |        | ●          | ●         |                  |           | ●        |                     |        |         |           |                       |             |

● Used Now

○ Potential Future Use

INDUSTRY  
ELECTRONIC  
EQUIPMENT  
USED

|                            | Air Transportation | Ceramics | Chemical | Communication | Construction | Cosmetics | Electronic & Elec. Mfg. | Entertainment | Food | Glass | Highway Transportation | Laboratory | Manufacturing, General | Medical | Metal Producing | Metal Working | Mining | Nucleonics | Packaging | Paper & Printing | Petroleum | Plastics | Rail Transportation | Rubber | Textile | Utilities | Marine Transportation | Woodworking |
|----------------------------|--------------------|----------|----------|---------------|--------------|-----------|-------------------------|---------------|------|-------|------------------------|------------|------------------------|---------|-----------------|---------------|--------|------------|-----------|------------------|-----------|----------|---------------------|--------|---------|-----------|-----------------------|-------------|
| Hardness measurement.....  |                    | ●        |          |               | ●            |           | ●                       |               |      | ●     |                        | ●          | ●                      |         | ●               | ●             | ●      |            |           |                  |           |          |                     |        |         |           |                       |             |
| Humidity control.....      |                    | ○        | ○        |               |              | ●         | ●                       | ○             | ○    | ○     |                        | ●          | ●                      | ○       | ○               | ○             | ○      | ○          | ○         | ○                | ○         | ○        | ○                   | ○      | ○       | ○         | ○                     | ○           |
| Illumination control.....  | ○                  | ○        | ●        | ○             | ○            | ○         | ●                       | ●             | ○    | ○     | ○                      | ○          | ○                      | ○       | ○               | ○             | ○      | ○          | ○         | ○                | ○         | ○        | ○                   | ○      | ○       | ○         | ○                     | ○           |
| Impedance measurement..... |                    |          |          |               |              |           | ●                       |               |      |       |                        | ●          | ●                      |         |                 | ●             |        |            |           |                  |           |          |                     |        |         |           |                       |             |
| Induction heating.....     |                    |          | ●        |               | ●            |           | ●                       |               | ○    | ●     |                        | ●          | ●                      |         | ●               | ●             | ●      | ○          | ○         |                  |           | ○        |                     | ○      | ○       | ○         | ○                     | ○           |
| Insulation tester.....     |                    |          |          | ●             | ○            |           | ●                       | ●             |      |       |                        | ●          |                        |         |                 | ●             | ○      |            |           |                  |           | ○        | ●                   | ○      | ○       | ○         | ○                     | ○           |
| Intercommunicator.....     | ●                  | ●        | ●        | ●             | ●            | ●         | ●                       | ●             | ●    | ●     | ●                      | ●          | ●                      | ●       | ●               | ●             | ●      | ●          | ●         | ●                | ●         | ●        | ●                   | ●      | ●       | ●         | ●                     | ●           |
| Intrusion detector.....    | ●                  | ●        | ●        | ●             | ●            | ●         | ●                       | ●             | ●    | ●     | ●                      | ●          | ●                      |         | ●               | ●             | ●      | ●          | ●         | ●                | ●         | ●        | ●                   | ●      | ●       | ●         | ●                     | ●           |
| Inverter.....              | ●                  |          | ○        | ●             | ○            | ○         | ●                       | ●             |      |       | ●                      | ●          | ○                      |         | ●               |               |        |            |           |                  |           |          | ○                   |        |         | ●         | ○                     | ○           |
| Leak detector.....         |                    | ○        | ●        |               | ○            | ○         | ●                       |               | ●    | ○     |                        | ●          |                        |         | ●               | ●             | ●      | ●          |           |                  |           | ○        |                     | ○      |         | ●         |                       | ○           |
| Level control.....         |                    | ●        | ●        |               | ●            | ●         | ○                       |               | ●    | ●     |                        | ○          | ○                      | ○       | ○               | ○             | ○      | ○          | ○         | ○                | ○         | ○        | ○                   | ○      | ○       | ○         | ○                     | ○           |
| Limit control.....         |                    | ●        | ●        | ●             | ●            | ●         | ●                       | ●             | ●    | ●     | ○                      | ○          | ○                      | ○       | ○               | ○             | ○      | ○          | ○         | ○                | ○         | ○        | ○                   | ○      | ○       | ○         | ○                     | ○           |
| Load control.....          |                    | ○        | ●        |               | ○            |           | ●                       |               |      |       | ○                      | ○          |                        |         | ●               |               | ○      |            |           |                  |           |          |                     |        |         |           |                       | ●           |
| Loop control.....          | ○                  |          | ●        | ●             | ●            |           | ●                       | ●             |      |       | ○                      | ○          |                        |         | ●               | ●             |        |            | ●         | ●                |           |          |                     | ●      | ●       |           |                       |             |
| Loran.....                 | ●                  |          |          |               |              |           |                         |               |      |       |                        |            |                        |         |                 |               |        |            |           |                  |           |          |                     |        |         |           |                       |             |
| Magnetic tester.....       | ○                  |          |          | ●             | ●            |           | ●                       | ●             |      | ○     | ●                      | ●          |                        |         | ●               | ●             | ●      | ●          |           |                  |           | ○        |                     | ●      |         | ●         | ○                     | ○           |
| Mass spectrometer.....     |                    | ○        | ●        |               |              | ○         |                         |               |      | ○     |                        | ●          | ●                      |         | ●               | ●             | ●      | ●          |           |                  |           | ○        |                     | ●      |         | ●         |                       | ○           |
| Metal detector.....        |                    | ●        | ●        |               | ●            | ●         |                         | ●             | ●    |       | ○                      | ○          | ○                      | ○       | ○               | ○             | ○      | ○          | ○         | ○                | ○         | ○        | ○                   | ○      | ○       | ○         | ○                     | ○           |
| Moisture control.....      |                    | ○        | ●        |               | ○            | ○         |                         |               | ○    | ○     |                        | ○          | ○                      |         | ○               |               | ○      |            |           | ○                | ○         | ○        |                     | ○      | ○       | ○         | ○                     | ○           |
| Motor speed control.....   | ○                  | ●        | ●        |               | ●            | ●         | ○                       | ○             | ○    | ○     | ○                      | ○          | ○                      | ○       | ○               | ○             | ○      | ○          | ○         | ○                | ○         | ○        | ○                   | ○      | ○       | ○         | ○                     | ○           |
| Oscillator.....            | ○                  |          | ●        | ●             |              | ○         | ○                       | ○             | ○    | ○     | ○                      | ○          | ○                      | ○       | ○               | ○             | ○      | ○          | ○         | ○                | ○         | ○        | ○                   | ○      | ○       | ○         | ○                     | ○           |
| Oscillograph.....          |                    | ○        | ○        | ●             |              | ○         | ○                       | ○             |      | ○     | ○                      | ○          | ○                      | ○       | ○               | ○             | ○      | ○          | ○         | ○                | ○         | ○        | ○                   | ○      | ○       | ○         | ○                     | ○           |
| Oscilloscope.....          |                    | ●        | ●        | ●             | ○            | ●         | ●                       | ●             | ●    | ●     | ○                      | ○          | ○                      | ○       | ○               | ○             | ○      | ○          | ○         | ○                | ○         | ○        | ○                   | ○      | ○       | ○         | ○                     | ○           |
| Phase meter.....           |                    |          |          | ●             |              |           | ●                       |               |      |       | ○                      | ○          |                        |         | ○               | ○             | ○      | ○          | ○         | ○                | ○         | ○        | ○                   | ○      | ○       | ○         | ○                     | ○           |
| pH meter.....              |                    | ●        | ●        |               | ○            | ○         | ○                       | ○             | ○    | ○     | ○                      | ○          | ○                      | ○       | ○               | ○             | ○      | ○          | ○         | ○                | ○         | ○        | ○                   | ○      | ○       | ○         | ○                     | ○           |
| Photoelectric control..... | ●                  | ●        | ●        | ●             | ●            | ●         | ●                       | ●             | ●    | ●     | ●                      | ●          | ●                      | ●       | ●               | ●             | ●      | ●          | ●         | ●                | ●         | ●        | ●                   | ●      | ●       | ●         | ●                     | ●           |
| Positioning control.....   | ●                  | ●        | ●        |               |              | ●         |                         | ○             |      |       | ○                      | ○          |                        |         | ○               | ○             | ○      | ○          | ○         | ○                | ○         | ○        | ○                   | ○      | ○       | ○         | ○                     | ○           |
| Power factor meter.....    |                    |          | ○        | ●             | ●            |           | ○                       |               |      |       | ○                      | ○          |                        |         | ○               | ○             | ○      | ○          | ○         | ○                | ○         | ○        | ○                   | ○      | ○       | ○         | ○                     | ○           |
| Pressure control.....      | ○                  | ●        | ●        |               | ●            | ●         |                         |               | ○    | ○     | ○                      | ○          |                        |         | ○               | ○             | ○      | ○          | ○         | ○                | ○         | ○        | ○                   | ○      | ○       | ○         | ○                     | ○           |
| Public address system..... | ●                  | ●        | ●        | ●             | ●            | ●         | ●                       | ●             | ●    | ●     | ●                      | ●          | ●                      | ●       | ●               | ●             | ●      | ●          | ●         | ●                | ●         | ●        | ●                   | ●      | ●       | ●         | ●                     | ●           |
| Radar.....                 | ●                  |          |          | ○             |              |           |                         |               |      |       |                        |            |                        |         |                 | ○             |        |            |           |                  | ○         |          |                     |        |         |           |                       | ○           |
| Radio receiver.....        | ●                  |          |          | ●             | ●            |           | ●                       | ●             |      | ●     | ●                      | ●          | ●                      |         | ●               | ○             |        |            |           |                  | ○         |          | ●                   |        | ●       | ●         | ●                     | ●           |
| Radio, two-way.....        | ●                  |          |          | ●             | ●            |           | ●                       |               |      | ●     |                        |            |                        |         |                 | ●             |        |            |           |                  | ○         |          | ●                   |        | ●       | ●         | ●                     | ●           |
| Radium-type gage.....      |                    |          | ●        |               |              | ○         | ○                       |               |      | ○     |                        | ○          | ○                      | ○       | ○               | ○             | ○      | ○          | ○         | ○                | ○         | ○        | ○                   | ○      | ○       | ○         | ○                     | ○           |
| Recorder, quantities.....  | ○                  | ●        | ●        | ●             | ●            | ●         | ●                       | ●             | ●    | ●     | ●                      | ●          | ●                      | ●       | ●               | ●             | ●      | ●          | ●         | ●                | ●         | ●        | ●                   | ●      | ●       | ●         | ●                     | ●           |
| Recorder, sound.....       | ○                  | ○        | ○        | ○             | ○            | ○         | ○                       | ○             | ○    | ○     | ○                      | ○          | ○                      | ○       | ○               | ○             | ○      | ○          | ○         | ○                | ○         | ○        | ○                   | ○      | ○       | ○         | ○                     | ○           |
| Rectifiers.....            | ●                  | ●        | ●        | ●             | ●            | ●         | ●                       | ●             | ●    | ●     | ●                      | ●          | ●                      | ●       | ●               | ●             | ●      | ●          | ●         | ●                | ●         | ●        | ●                   | ●      | ●       | ●         | ●                     | ●           |
| Register control.....      |                    | ○        | ●        |               |              |           | ●                       | ●             |      |       |                        | ●          |                        |         | ○               | ○             |        |            | ○         | ○                | ○         | ○        |                     | ○      | ○       | ○         | ○                     | ○           |
| Reflection meter.....      |                    | ●        | ●        |               | ●            |           |                         |               | ○    |       | ○                      | ○          |                        |         | ○               | ○             |        |            |           | ○                | ○         | ○        |                     | ○      | ○       | ○         | ○                     | ○           |
| Remote control.....        | ○                  |          | ●        | ●             | ○            |           | ●                       |               | ○    |       | ○                      |            |                        | ○       | ○               | ○             | ○      | ○          | ○         | ○                | ○         | ○        | ○                   | ○      | ○       | ○         | ○                     | ○           |



# Radio

# FREQUENCY VS UTILITY

## GROUND-WAVE PROPAGATION

refers to a wave which is guided along the surface of the earth, accompanied by conduction currents in the earth beneath

## SKY-WAVE PROPAGATION

refers to a wave which is radiated upward into space above the earth and is refracted or reflected back to earth by the ionosphere

## OPTICAL PROPAGATION

refers to a wave which is transmitted between two points within optical (or radio-optical) line of sight, consisting of a direct ray between transmitting and receiving points and one reflected from the intervening earth, the received signal being the vector sum of these rays

## DIFFRACTION BEYOND THE OPTICAL

line of sight occurs in a region corresponding to partial shadow. In this region the signal gradually vanishes as distance beyond the horizon increases

**T**HIS CHART shows the relative utility of the four useful types of wave propagation for the present-day radio spectrum. By using utility as ordinate, it is possible to indicate the relative service value of the different propagation means. Zero utility means that the particular method of propagation is useless. Maximum

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utility means that the method of propagation is the best available for practical operation of a radio service. The intermediate values of utility indicate various degrees of service utility, from marginal to good. Utility varies with frequency, for all types of propagation, and also with many empirical conditions for each particular application. Thus the limits of the curves and their slopes are somewhat arbitrary.

The curves indicate utility. They do not in any way indicate the relative efficiency of propagation as between the various types of propagation. In the case of sky-wave transmission, the propagation efficiency is maximum as propagation approaches the critical frequency beyond which its utility would fall to zero over a given circuit on a given day and hour. The efficiency of propagation by diffraction beyond the horizon might be very low at some frequency but, if diffraction is the only way in which a signal can be propagated to the point and a serviceable signal can be delivered, the method must be regarded as of maximum or high utility. Within line-of-sight, frequencies which are too high to be propagated by sky-wave may be still too low to provide efficient optical propagation for available heights, yet the

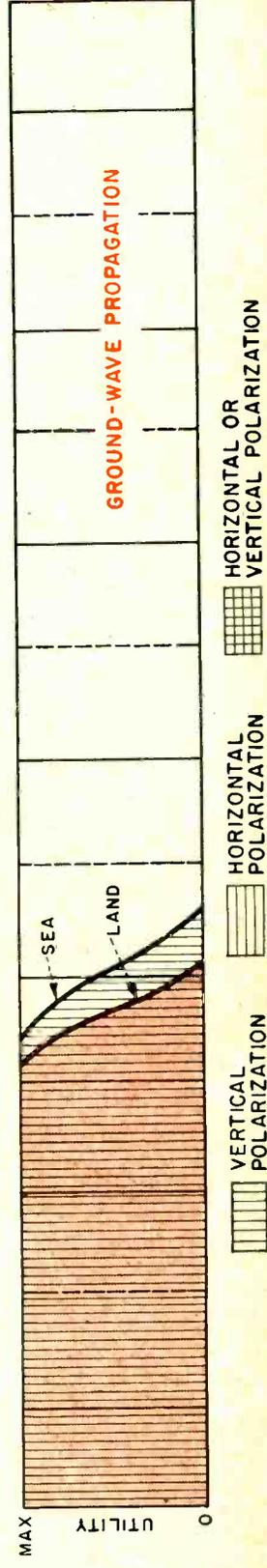
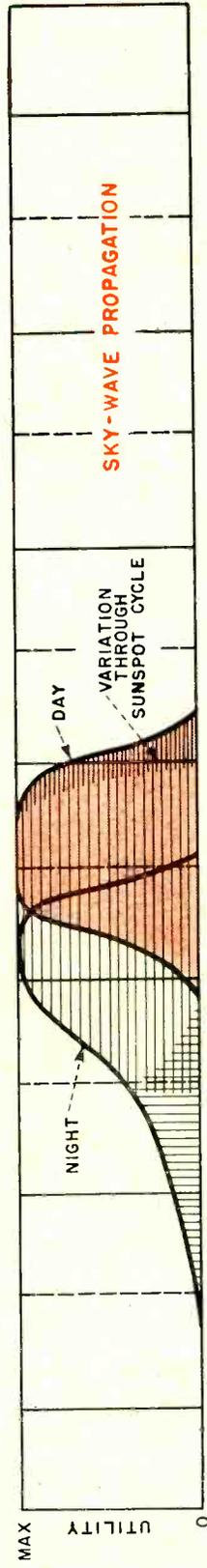
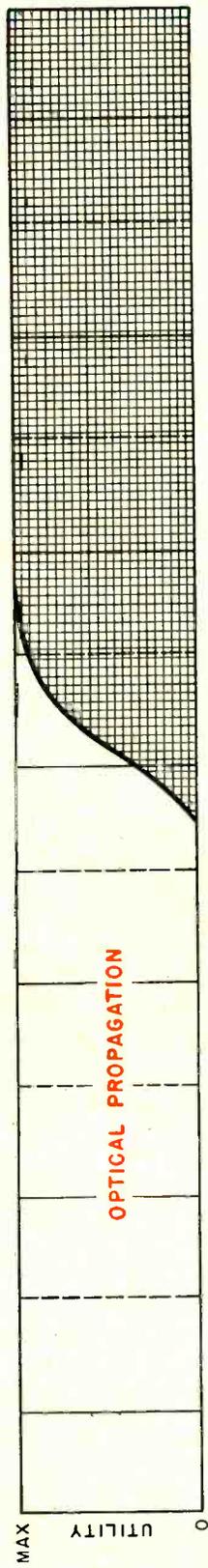
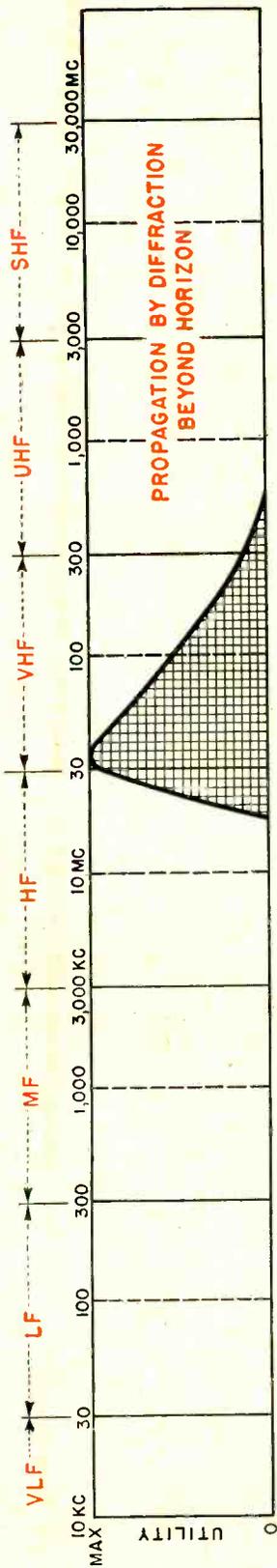
optical method may be the only useful one and its utility must be considered high.

Strangely enough, there is not great overlap of the various types of propagation, so that each is dominant in utility within various frequency ranges. The greatest overlap is between ground-wave and sky-wave propagation. In the European low-frequency broadcast band between 150 and 400 kc, sky-wave transmission at night provides a substantial increase in coverage over daytime ground-wave propagation. In the same frequency range, for navigational and direction-finding facilities, this overlap is detrimental and undesirable. At the medium and low frequencies, sky-wave transmission efficiency is generally low and varies over a very great range, night to night. However, since there is considerable service value in sky-wave coverage of medium-frequency broadcast stations, it must be rated as having utility.

There are other types of wave propagation but these are not shown because their utility is questionable and one would not be able, at least from known conditions, to base a reliable radio service on their use. The chart shows the wave polarization which provides best utilization of each propagation medium at each frequency.



# RADIO PROPAGATION - UTILITY CHART



# WARTIME WORDS

Concise definitions of nearly six hundred code names, abbreviations, slang, and technical terms added to the language of electronics during the war years

**A**N ENTIRELY new electronic slang came out of World War II as a direct result of the rapid advances in electronic equipment and techniques. In many instances, nicknames or code names were necessary for military security reasons. In others, they were the product of the surprisingly facile minds of physicists turned design engineers through circumstance.

Some of these terms, like loran, were coined from the initial letters of the words describing its purpose: Long Range Navigation. Capital letters are used in the definitions to indicate this origin of a term. Others, like tuba, were inspired by the physical appearance of the device. Still others, like Diana, carry a literary connotation, the name in mythology having been assigned to the goddess of hunting and the moon, and in technology to the Signal Corps project for shooting the moon with radar.

The following glossary is an attempt to identify and preserve a few of the more colorful and more or less familiar terms, some of whose origins are already vague and indefinite. Army, Navy, Air Force, the editorial department of **ELECTRONICS**, and other sources were used in collecting this information; the compiler, however, wants to acknowledge particularly the help of the Library, Evans Signal Laboratory.

In general, unpronounceable terms coined from initial letters of words are all caps; pronounceable words of this type have only the first letter capitalized, with a few exceptions like radar, loran, and sonar that have attained sufficiently widespread general use to be all lower case. Truly descriptive technical terms like plumbing, radome, and responder beacon are not capitalized. Code and foreign words and proper names having no technical significance are capitalized.

- A/S AntiSubmarine.  
 AC AntiClutter.  
 ACE Altimeter Control Equipment.  
 ADE Audible Doppler Enhancer.  
 ADP Ammonium Dihydrogen Phosphate, a piezoelectric material.  
 AEW Airborne Early Warning radar.  
 AGL Airborne Gun Laying radar.  
 AGS Airborne Radar Gunsight.  
 AI Airborne Interception (or Interceptor), an airborne radar for locating other aircraft.  
 AIA Airborne Interception of Aircraft.  
 AIL Airborne Instruments Laboratory, Mineola, N. Y.  
 AJ AntiJamming; equipment or procedures for defense against enemy jamming.  
 ALSOS Intelligence mission to Germany.  
 AMTI Airborne Moving Target Indicator.  
 Angel Corner reflector suspended from a free small balloon or flown on small captive balloon or kite to simulate radar targets and deceive enemy radar sets.  
 Anrac Aids to Navigation Radio Control.  
 Antidiver SCR-584 used against buzz bombs.  
 ARA Airborne Radar Attachment.  
 ARL Aircraft Radio Laboratory, Wright Field, Dayton, Ohio.  
 ARO Airborne Range Only; light-weight fire control radar for installation in aircraft turrets; provides gunner with range of attacking aircraft.  
 ARSB Anchored Radio SonoBuoy.  
 ART Automatic Range Tracking.  
 Asdic AntiSubmarine Detection Investigating Committee; British for sonar.  
 Aspen. American S-band Oboe using British PENwiper airborne receiver; a line-of-sight blind bombing system that utilizes two ground stations and airborne equipment. Range of the aircraft is determined simultaneously by the two ground stations using airborne transmitter to augment the signals. One station obtains range and the other the bomb release point.  
 Aspex Aspen with Pepperbox instead of Penwiper receiver.  
 Aspirin Countermeasure for German Knickebein (Headache).  
 ASV Air-to-Surface Vessel; airborne radar for detecting objects on the surface of the sea.  
 ASVC Canadian ASV.  
 ASW AntiSubmarine Warfare.  
 AT loran Air-Transportable loran.  
 ATR AntiTR, a TR box for utilizing the same antenna for transmitting and receiving in microwave radar.  
 ATW Aircraft TailWarning; radar installed in the tail of aircraft to warn of approaching aircraft.  
 AW Aircraft Warning.  
 Azon AZimuth ONLY; radio-controlled missile. By means of radio transmitter in the dropping aircraft, the bomb can be moved in azimuth (see Razon).  
 Babs Blind Approach Beacon System; pulse-type ground navigation beacon used for runway approach at airfields.  
 Bagpipe Jammer which sounds like its name.  
 balun Bazooka, a device for transforming from BALanced Line to UNbalanced line.  
 Bantam Light-weight homing beacon, designed to be dropped by parachute for use on the ground.  
 barrage A type of jamming in which a number of frequency bands are jammed simultaneously.  
 BAS Beacon, Airborne, S-band. Used as a Rooster for air-to-air homing.  
 Bat Navy radar guided missile, similar to SRB.  
 BAX Beacon, Airborne, X-band.  
 Bazooka Coupling unit between a coaxial (unbalanced) and an open or balanced transmission line.  
 BBL Beacons and Blind Landing.  
 BDI Bearing Deviation Indicator for sonar.  
 Beacon Interrogated radar for position fixing.  
 Beagle Automatic search jammer.  
 Beaver Ground-based radar jamming system used against German early-warning radar.  
 Beavertail Ground-based air-transportable radar for height-finding. Also radar antenna beam, wide in the horizontal but flat in the vertical plane. It is swept up and down for height-finding.  
 Bedspring Broadside array with flat reflector.  
 Beechnut Ground to air communication system.  
 Benito Ground control of range and azimuth of an aircraft (German).  
 Bernhard German navigation system for intercepting night bombers.  
 Bernhardine Bernhard.  
 BGS Beacon, Ground, S-band. A fixed ground radar navigational beacon.  
 Billboard Broadside array with flat reflector.  
 Birdnest Cluster of chaff.  
 blip British term for pip; a deflection or break in a c-r tube display, caused by a radar echo, produced as a range marker, or for calibrating a range scale.  
 blister A streamlined housing on an aircraft for a radar antenna (scanner or dish); official name is radome.  
 Block General term for television equipment, (includes camera, transmitter, and receiver) used with guided missiles.  
 boffin Civilian technical consultant attached to a military unit.  
 Boiler A guided missile.

# and Their Meanings

By CHARLES DeVORE

Signal Corps Publications Agency  
Fort Monmouth, New Jersey

- Bolingbroke** Attack plane for experimental radar.
- bootstrap** Regenerative cathode-loaded amplifier.
- Bo Peep** A low-altitude bombing attachment for ASV.
- Box Cars** Long pulses separated by very short intervals.
- BPP** Beacon, Portable, Packset.
- BPS** Portable beacon.
- BRLG** Bomb, Radio, Longitudinal, Generator-powered; a radio Doppler-reflection fuze for causing a bomb to burst a predetermined distance from the ground.
- Broadloom** Airborne tunable magnetron jammer, similar to Carpet.
- Broom** Search jammer, automatic.
- BRS** Radar marker float.
- BRTG** Bomb, Radio, Transverse, Generator-powered; similar to BRLG (except it provides the higher burst needed for chemical bombs).
- BTO** Bombing Through Overcast equipment.
- BUPS** Beacon, UltraPortable, S-band; pack-type radar beacon, portable by one man.
- BUPX** Beacon, UltraPortable.
- Butterfly** Moving-vehicle detector.
- Calais Anlage** Seetakt.
- Carpet** Noise-modulated airborne radar jamming transmitter. (For barrage jamming).
- Carpet Checker** Frequency meter and output monitor.
- Carpet Tester** R-f pulse generator.
- Cash Register** An electrical calculator.
- Cat** Ground Oboe station which controls the aircraft at constant range (see Mouse).
- CCB** Close Control Bombing.
- CD** Coast Defense radar for detecting surface vessels (British).
- CD/CHL** Coast Defense radar set using CHL type equipment (British).
- CDU** Coastal Defense radar for detecting U-boats (British).
- CH** Chain Home; British fixed-station, long range aircraft warning radar, operating in the 30-mc band.
- Chaff** American version of British Window; name suggested by shape of material, long thin strips (for spot jamming).
- Charlie** A lightweight radar for warning and fire control against surface craft.
- CHB** Chain Home Beamed; a small CH with 25-ft towers for inaccessible locations.
- CHEL** Chain Home Extra Low; British 10-cm radar for detecting low-flying aircraft.
- CHL** Chain Home Low; British radar for detecting low-flying aircraft; operates in 200-mc band.
- CIC** Combat Information Center; "combined communication board" of Navy.
- clamp** Circuit to hold base line of a waveform or pulse to a given potential or current value.
- clutter** Undesired indications on a cathode-ray tube caused by fixed echoes, enemy or friendly transmissions, abnormal atmospheric conditions, etc.
- CMH** CentiMeter Height finder; ground radar set to determine height or altitude only, of aircraft.
- CNT** Celestial Navigation Trainer.
- CO** Chain Overseas; CH stations for installation outside of Great Britain.
- cobs** Bell-shaped deflections produced on a cathode-ray tube by f-m jamming.
- COL** Chain Overseas Low; CHL station for installation outside of Great Britain.
- Confuser** Mechanical noise generator.
- Consol** British code word for Sonne.
- COP** NDRC Committee On Propagation.
- Cousin** Maud AI station homing beacons.
- Corkscrew** Another name for Fanny.
- corner reflector** Metallic reflector specially constructed to give strong radar reflections nearly independent of azimuth. Used for calibration and for navigation.
- Crown of Thorns** Type of magnetron.
- Curtain** Type of vhf homing equipment.
- Cynthia** Code name for Signal Corps project for communication by reflecting radio signals from the moon.
- Daisy Mae** Australian height finder.
- DCG** Doppler-Controlled Gain.
- dead time** Period after reception of a signal during which a beacon cannot be triggered.
- Decca** British radio navigation system using continuous waves rather than pulses.
- Decoder** Device for deciphering coded signals.
- Derax** Earlier term used for radar.
- d-f** Direction finding; determination of azimuth.
- Diana** Code name for Signal Corps project for securing radar echoes from the moon.
- Dina** DIrect Noise Amplifier; a noise-modulated radar jammer.
- Dinamate** A monitor receiver for low-frequency Dina.
- diplexer** System to allow radar and a communication transmitter to use same antenna.
- dish** A shallow paraboloidal reflector for microwave use. Corresponding British term is mirror.
- Diskus** German radar navigation and bombing system.
- DMH** DeciMeter Height finder; ground radar similar to CMH, except for frequencies employed.
- Dodar** Determination Of Direction And Range by supersonic waves. (Similar to Sodar.)
- Dog** Ground beacon; looking for the dog means that the radar operator in an aircraft turns on his AI to home on a ground beacon.
- Dolphin** Torpedo fire control.
- door knob** R-f coupling device; also an early high-frequency tube.
- Dora** German rotating figure-eight radio beacon.
- drift station** Shoran parlance for Cat beacon.
- drone** Radio-controlled aircraft or waterborne craft.
- Duckegg** A transmitter for repeating the position of an aircraft, obtained by Gee, back to a ship, shore station, or another aircraft.
- duct** Troposphere waveguide-like formation accounting for abnormal uhf and shf transmission.
- Dueppel-Streifen** German term for window.
- Dumbo** ASV radar.
- duplexer** Combination of TR switch and transmission line.
- duplexing** Use of single antenna for transmission and reception on a radio system, the requisite switching operation being performed automatically by other than mechanical means.
- Eagle** High-resolution 3-cm airborne radar bombsight.
- EAR** Electronic Aural Responder.
- EAS** Electronic Automatic Switch.
- EDI** Echo Doppler Indicator.
- echo box** High-Q cavity for echoing a received pulse.
- Edward** British radio-controlled tank.
- Egon** Ruebezahl.
- Electra** German navigation system using radio beacons.
- Elephant** Shipborne jammer.
- Elmer** Communications net deceiver.
- Elsie** SLC; searchlight-control radar.
- Emil-Emil** German code name for AI.
- Emma** Airborne audible mountain-warning device. Gives notice of proximity to high terrain. Also called Mountain Goat.
- Eniac** Electronic Numerical Integrator And Computer.
- Enzian** German supersonic radio-controlled missile.
- Erika** Beacons similar to Knickebein.
- ERSB** Expendable Radio Sono Buoy.
- ESMWT** Engineering Science Management War Training program.
- Ether Scanner** A panoramic search receiver with c-r tube presentation.
- Eureka** Pulse-type ground responder homing beacon for aircraft equipped with Rebecca interrogator. Especially useful for landing troops in invasion areas.
- EW** Early Warning (radar).
- Expendable** Same as Lewisite.
- Falcon** AN/APG-13 range-only fire-control radar.
- Fanny** Attachment for airborne search receivers to permit homing on jamming or radar signals.
- Father** Blind approach beacon.

## WARTIME WORDS (Continued)

- FAW** Forward Area Warning.
- Felix** Guided missile, using standard 1,000 or 2,000 lb bomb covered by streamlined case containing heat-seeking equipment in the nose and rudders and elevators with control mechanism on the tail. Intended for use against targets giving off heat, such as coke ovens, steel mills, etc.
- Fence** Equipment developed for aircraft detection over mountainous terrain, using Doppler effect.
- Firefly** Moving vehicle indicator.
- Fishing Fleet** A fleet of boats carrying radar, operated off shore for early warning.
- Fishline** Tinsel rope.
- Fishpond** Use of H2S as a warning of the approach of enemy aircraft fix. A determination of location.
- Flasher** Corner reflector.
- flip-flop** Slang for circuit similar to multivibrator.
- Florosa** Use of window against German radar.
- Flute** Low-power tunable c-w magnetron.
- Fox** A 10-cm radar beacon system for following drones from shipboard or shore-based radar sites.
- Freya** German early-warning radar.
- Fritz** German version of Razon.
- Fruit Machine** Electrical calculator for CH radars, converting range and goniometer readings (of azimuth) into grid reference numbers.
- Fuge** German intercept receiver.
- GAA** Ground AntiAircraft control (also GL).
- gantry** British term for radar antenna array.
- gap** Space between radiation lobes of a radar antenna where the field strength is low, resulting in incomplete radar coverage.
- gap filler** An auxiliary radar antenna used to cover gaps in the main radar antenna pattern.
- Gardening** Laying mines from aircraft.
- GARF** Ground Approach Radio Fuze (same as BRTG).
- Gargoyle** A 1,000-lb armor-piercing glide bomb, controlled by radar from the launching place and containing a target-seeking device.
- Gaston** U. S. development of tinsel, a modulator for airborne communications jammers.
- GB** Glide Bomb.
- GCA** Ground Controlled Approach. Radar used to track friendly aircraft and direct them by voice radio into a position for making a safe landing. A talkdown system.
- GCI** Ground Controlled Interception. Radar system by means of which a controller at the radar may direct a fighter plane to make an interception of enemy aircraft.
- GCL** Ground Control Landing (for aircraft). GCA.
- Gee** British hyperbolic pulse navigation system, 40 to 90 mc, differing from loran only in frequency employed.
- Gee H** Combination of Gee and H navigation systems.
- George** An antijamming device for radar receivers, using low-level blanking.
- Germonica** German version of Monica, airborne tail warning radar.
- GFCS** GunFire Control System.
- Girl Friend** Searchlight control apparatus.
- GL** Gun Laying radar equipment used to direct gunfire; supplies range, bearing, and elevation data.
- Glomb** 4,000-lb. Navy Glide bomb with television control.
- GCMC** Guided Missile Counter-Measure.
- Goldmark** Recording search-receiver, 90 to 1,000 mc.
- Goldammer** Stendal B.
- Gorgon** Navy air-to-air rocket controlled by radio and fitted with target-seeking device.
- GPI** Ground Position Indicator; ground position is determined by adding ground speed and drift readings to air position data.
- GPL** Glide Path Landing system.
- GPR** General Purpose Radar.
- Grass** Clutter.
- Greenbottle** Device for homing on U-boat radar.
- Grocer** Ground-based jammer for German AI radar on 480 mc.
- GS** General Search (radar) from ground.
- GSV** Ground-to-Surface Vessel search (radar).
- guillotine** Attenuator
- Gulls** Balloon-supported radar reflectors to simulate targets similar to Angels and Kites.
- Gutteral** An airborne jammer hunter using a modified AI receiver.
- Gymnast** Project name for radar search and analysis expeditions.
- H** British pulse-type air navigation system using an airborne interrogator and two ground responder beacons, the range to each being measured accurately to about ¼ mile. Uses same principle as Rebecca-Eureka and shoran.
- Halstead system** Scheme for low-frequency secure radio communication between control tower and aircraft on the ground at an airport, using buried cables for radiating elements.
- hash** Grass; continuous electrical noise; usually refers to disturbance on A scope.
- Hawkeye** Schnorkel detector.
- Hayrack Jr.** Radar beacon and homing device.
- Headache** British name for Knickerbein, a German radio beam navigation system (see Aspirin).
- Hen** Expendable broadcast transmitter.
- Hepcat** Unit permitting the display of jitterbug pulses on a servoscope screen in such a manner that the maximum and minimum pulse intervals can be measured.
- h-f** 3 to 30 mc; 100 to 10 meters.
- HFDF** High-Frequency Direction Finding; Huff-Duff.
- Hiccough Circuit** which elevates a time base at a desired time.
- Hoardings** Mammut.
- Hodge-podge** A jamming transmitter, 85-105 mc.
- HPG** High Power Ground (radar); 10-cm radar height finder.
- HR** Hand Radar; extremely portable radar set.
- H2S** Home Sweet Home; 10-cm airborne navigational and blind bombing radar set; British predecessor of American H2X.
- H2X** American version of H2S; similar, except it operates in X-band.
- Huff-Duff** High-frequency direction finding.
- HUSL** Harvard Underwater Sound Laboratory.
- Hyperbel** German version of Gee.
- hyperbolic** Pulse-type navigation systems, in which two or more synchronized ground stations transmit pulses. An aircraft or ship receives the pulses and records the difference in their time of arrival, which is a measure of the difference in its distance from the two ground stations and determines its location on a particular hyperbolic curve. A second reading from another pair of stations, or from the same master and a different slave station, will select a different hyperbolic curve, the intersection of which with the first curve will give the position or fix. Systems using this principle are the British Gee and the American loran.
- ICH** Intermediate Chain Home.
- ICU** Interception Control Unit (ground trainer).
- iff** Identification, Friend or Foe. System of pulse type interrogation and reply, generally used in connection with radar, for identifying aircraft.
- IFL** Induction Field Locator.
- IJAJ** Intentional Jitter, AntiJamming. A random jittering of recurrence rate to prevent the enemy from locking jamming signals to our own radar.
- IJJU** Intentional Jitter Jammer Unit. Jitters entire c-r tube trace so that only desired echoes remain stationary. Uses colored filter.
- Infection** Distribution of radar signal reflectors (Chaff) throughout an area by jettisoning from aircraft.
- Inquisitor** Airborne interrogator-responder for iff or beacons.
- interrogator** Pulse-type transmitter used for triggering responders, thus causing them to transmit pulses in reply. The receiver for picking up the replies is called a responder or responder.
- IR** Interrogator-Responder (or responder), an interrogator and responder built in a single unit.
- iris** Any flat piece of metal applied across the plane section of a wave guide.
- IRRAD** Infra Red Range And Direction detection equipment.
- IRT** Interrogator - Responder-Transponder, a combined unit capable of acting as interrogator-responder and as transponder.
- IU** Interference Unit; a small synthetic noise generator to increase the realism of radar trainers.
- Jackal** Airborne barrage jammer against enemy radio communications.
- jamming** Transmission of interfering

- radio or radar signals with the object of rendering the use of enemy equipment impossible or greatly decreasing its effectiveness.
- Jayhut system** An air-to-ground pulse communication system.
- JBBL** Jamming Beacons and Blind Landing.
- Jellyfish** A seaborne responder beacon in the form of a buoy, to be laid from aircraft or boats. Used as a marker in antisubmarine patrol and for general navigation.
- Jiggs** Shore bombardment beacon.
- JK** Navy designation for crystal listening hydrophone.
- jitter** Instability of time base on c-r tube.
- Jitterbug** Pulse generator with random repetition rate.
- Jostle** British airborne jammer against enemy tank and paratroop communications.
- Jukebox** An airborne automatic selective jammer, requiring no operator. The receiver controls four jamming transmitters in the 38 to 42-mc band.
- K-band** 11,000-33,000 mc; 2.73-0.91 cm.
- KDP** Potassium Dihydrogen Phosphate, a piezoelectric material.
- King Class** A remote radio control system.
- Kite** Angel, airborne.
- Knickerbein** German long-range Lorenz navigational beams for blind landing, crossing over the target. Also see Headache and Aspirin.
- L-band** 390-1550 mc; 17-19.35 cm.
- LAB** Low Altitude Bombing radar attachment for low-altitude, high-precision blind bombings.
- Lady** Searchlight control apparatus.
- Lawn Mower** A machine to cut Chaff.
- leaky pipe** Slotted coaxial line or waveguide.
- Lewisite** Expendable parachute-borne jammer, dropped from aircraft for use against enemy radar in the 550-580 mc band. Also called Expendable.
- l-f** 0.03 to 0.3 mc; 10,000 to 1,000 meters.
- LFDF** Low Frequency Direction Finding.
- l-f loran** Low-frequency loran.
- LHTR** Light House (tube) Transmitter Receiver; combines modulator, transmitter, and receiver.
- Little Abner** Light-weight pack radar set particularly designed for use in mountainous terrain for aircraft warning. Weighs approximately 1,100 lb, but can be broken up into packages that can be carried by one man. Gives range, azimuth, and elevation up to approximately 50 miles.
- Little Joe** Proximity fuze bomb controlled by radio from launching position.
- Little Screw** Ground radio installation used to control fighter aircraft from a German GCI.
- lobe switching** Process in which the direction of the beam of an antenna is shifted slightly to the left and to the right of the dead-ahead position, and the received signal strengths compared. The entire antenna can then be turned until equal signals are received from both lobes, thereby accurately measuring the azimuth of the target without an impracticably narrow beam width. This process is used in many ground and shipboard gun laying radars and in the low-frequency airborne radars and beacons of iff interrogators.
- Lobster** An airborne device for homing on enemy jamming or radar transmissions.
- Lobster Tail** Lobster.
- loran** Long Range Navigational system, similar in principle to the British Gee, but operating on 1,950 kc.
- Lorelei** A decoy which simulates a shipboard radar in search.
- LRASV** Long Range ASV radar.
- LRN** Loran.
- Lucero** British interrogator-responder used for both iff and Eureka-Rebecca.
- LW** Light Warning, a small portable British early warning radar for use on beaches and at advance air bases.
- Leopard** Type of jamming.
- LWASV** Light Weight ASV radar.
- MABS** Magnetic Approach Bomb release.
- Maccaboy** A jammer hunter similar to Gutteral but designed for installation in Mosquito aircraft.
- MAD** Magnetic Airborne Detector; coils mounted in an aircraft for detecting changes in the earth's magnetic field caused by the presence of a submarine.
- Madame X** Proximity fuze radar.
- Maggie** Adaption of SLC for fire control. Also slang for magnetron.
- Magic Tee** Directional waveguide coupler.
- Main Bang** Large signal on A scope caused by the transmitted pulse.
- Mammut** German early warning radar.
- Mandrel** Airborne barrage jammer against enemy early warning radar; uses noise modulation.
- Margery** Mobile searchlight control set used to determine favorable locations.
- Maroo** Jammer for enemy naval radio communications.
- MARS** Military Airborne Radar Systems.
- Mary** An antijamming device for radar receivers, using high-level blanking.
- master** The central station of Gee, (or loran) which triggers the slave stations and causes them to transmit.
- Mate** Receiver attachment for tuning Dina.
- Mattress** Vertical half-wave dipoles arranged in horizontal rows with the rows one above the other. A flat sheet-metal reflector behind the array prevents back radiation. Also known as Bedspring and Billboard.
- MDS** Minimum Detectable Signal.
- Meandering** Synchronized tracking transmitter and receiver.
- Measles** German radio-controlled missiles.
- MEW** Microwave Early Warning. A high-power, long range, 10-cm early warning radar with a number of indicators, giving high resolution and large raid-handling capacity.
- m-f** 0.3 mc to 3.0 mc; 1,000 to 100 meters.
- MFDF** Medium Frequency Direction Finder.
- MHF** Microwave Height Finder. Same as HPG.
- Mickey** Another name for H2X.
- Mickey Mouse** SCR-547, a 10-cm range-only radar for antiaircraft gunnery. Distinguishing feature of set was two scanners extending horizontally from main pedestal.
- Micro-H** Precision radar beacon navigation and bomber system.
- Microflash** High intensity short-duration light source for photography.
- Milly** Sniperscope.
- MIMO** Miniature IMage Orthicon. mirror British term for dish.
- Molly** Sniperscope.
- Monica** Airborne tail warning radar to warn off approach of other aircraft, especially night fighters.
- Monoray locator** Determines range to enemy guns by recording time between flash and sound.
- Moth** A bomb which will home on and destroy enemy radar stations.
- Mother** AI station homing device.
- Mountain Goat** Same as Emma.
- Mouse** Ground Oboe station which gives the signal for bomb release.
- MRU** Mobile Radio Unit, a mobile version of the British CH radar.
- MTB** Maintenance of True Bearing in echo ranging.
- Musa** Multiple Unit Steerable Antenna.
- Muff** A guided missile.
- Mush** Noise level on time base of c-r tube.
- NAB** Navigational Aid to Bombing; another name for H2X.
- NALOC** Naval Aids to Landing Operations Committee.
- NDRC** National Defense Research Committee.
- NEL** Navy Electronics Laboratory.
- Nickelodeon** A panoramic receiver covering 15 to 75 mc with c-r tube.
- NOL** Naval Ordnance Laboratory.
- NRL** Naval Research Laboratory.
- Nachtfee** German system for communicating with fighter aircraft over radar signals.
- Nancy** Infrared signalling device.
- Navar** Aircraft traffic control using radar.
- neutrode** Type of magnetron.
- Oboe** British ground-controlled system for blind bombing, similar to Aspen. One ground station (the Cat) interrogates a high-power transponder (Peacock) in the aircraft and codes its transmissions so that the aircraft can steer a course at constant range from the Cat along a circle which will intersect the target. The other ground station (Mouse) takes continuous range measurements on the Peacock and gives the signal for release at the proper time. Accuracy is of the order of 100 yards at 200 miles.
- Octopus** 10-cm r-f assembly.
- Oculist** Traffic German broadcast of aircraft warning radar plots.
- Opposition** An airborne jammer hunter, 100-124 mc.
- Orange Squeezer** Jamming operation carried out against a particular U. S. air defense system.
- Oscar** A small jammer, 60-240 mc, used for AJ training.
- OSRD** Office of Scientific Research and Development.

## WARTIME WORDS (Continued)

- Otto Airborne self-recording radar intercept receiver, 80-1,000 mc.
- P band 225-390 mc; 133-77 cm.
- Pad U. S. Navy airborne communications jammer, 21-34 mc, used against Japanese walkie-talkies.
- Panda PANoramic aDAPTER for search receivers.
- panoramic A type of search reception in which the received signals are displayed on a c-r tube at different positions, according to their frequencies. Thus a panorama of all signals within the frequency sweep of the receiver is obtained.
- PDB Radio-controlled, Power-Driven Bomb.
- PDI Pilots' Direction Indicator.
- PE Permanent Echo (from stationary object, such as mountain, building, etc) on c-r tube.
- Peacock High-power airborne transponder used in Oboe.
- Pelican Guided projectile.
- Penwiper A 10-cm receiver used in the Peacock of Oboe.
- Pepperbox An improved Penwiper.
- Perfecto Airborne radar to trigger German IFF.
- Peter Pan Radar jammer.
- PF Proximity Fuze.
- PFM Pulsed Frequency Modulation.
- PGP Pulsed Glide-Path landing system.
- PI Pilot Indicator (for AI).
- pibal Pilot Balloon.
- pillbox Parallel-plate transmission line.
- Pimpernel Jammer with monitoring receiver to enable continuous adjustment to enemy radar frequency for jamming.
- ping Pulse signal from echo-ranging sonar apparatus.
- Ping Pong British d-f set for locating coast radars.
- pip Radar echo on c-r tube (same as British Blip).
- Pip-squeak Clock-operated mechanism for airborne vhf transmitters. Clock turns the transmitter on for 15 seconds out of every minute, enabling the ground direction-finding stations to locate the position of friendly fighters once every minute and thus direct the aircraft.
- PIU Pilot Indicator Unit.
- plumbing R-f line.
- poop Slang for pulse.
- Polyrod Polystyrene antenna.
- Popi Post Office Position Indicator; British radio navigation method depending on phase measurements.
- Porcupine B-29 with jammer equipment.
- Pork Chop Attenuator.
- ppi Plan Position Indicator, a c-r tube presenting a complete 360-degree picture of the surrounding area, obtained by continuously rotating the antenna.
- PPPI or PI Prevision Plan Position Indicator, an expanded segment of the ppi display shown on a B scope. Also projection ppi, similar to British Skiatron.
- Prep U. S. Navy time-modulated pulse communication system.
- presentation Form in which radar signals appear on c-r tube.
- Pretty Method of interception.
- PRF Pulse Recurrence Frequency.
- proximity fuze Fuze set off by the capacitance effect between shell and plane.
- Pterodactyl Automatic Vulture.
- pulse Doppler A scheme for detecting moving objects by pulse methods in the presence of ground clutter.
- pulse power Peak power output of a pulse transmitter in kw.
- Pup A low-power barrage jammer against enemy radio communications.
- PWM Pulse Width Modulation.
- QB Echo-ranging sonar using Rochelle salt transducer.
- QC Echo-ranging sonar using magnetostriction transducer.
- RAA Radar Aircraft Altitude calculator.
- Rabbit A target.
- racon Term including both Radar beacons and responder beacons.
- radar RADIO Direction And Ranging. Pulse transmitters and receivers for detecting and tracking aircraft and ships and for air navigation.
- radar beacon Transponder which receives pulses from airborne or shipborne radars and transmits suitably coded pulses in reply. Range and azimuth of the beacon are measured at the radar in the same way as normal echoes, except that the beacon usually replies on a different frequency, requiring the radar receiver to be detuned for beacon reception.
- radome Official term for radar blister or antenna housing.
- Railing Pulse jamming at high recurrence rates. The effect on a c-r tube resembles fence railings.
- Raspberry A jammer modulator generating a 1,000-cycle tone, modulated at about 50 cycles per second.
- Raven General term for airborne RCM.
- rawin Radio WIND flight; radiosonde.
- rate station Shoran parlance for Mouse beacon.
- Raydist—A lightweight c-w phase comparison system, similar to Decca, suitable for surveying and propagation studies.
- Razon Radio-controlled missile similar to Azon, but controllable both in range and azimuth.
- RCM Radio CounterMeasures; a term covering all actions against enemy radio and radar, and the equipment used for this purpose. This includes deliberate interference (jamming), the interception and analysis of enemy signals, and a wide variety of deceptive measures.
- RCM Radio Controlled Mines.
- RDF British equivalent of Radar. In America, while the letters signify Radio Direction Finding, the term has no connection with radar.
- Rebecca The airborne interrogator-responder of Rebecca-Eureka, a responder-beacon system for air navigation, used principally by troop carrier aircraft to navigate to the exact spot marked by a ground Eureka beacon for the purpose of dropping paratroops or supplies. Range to the beacon can be measured directly, allowing the aircraft to arrive on an accurate time schedule and to drop supplies within 100 yards of the beacon.
- Reintochter German rocket with proximity fuze, autopilot, and radio control.
- relay radar Transmission of radar display from air to ground.
- responder beacon A receiver-transmitter used to receive pulses from a beacon interrogator and to transmit appropriately coded pulses in reply.
- responzor The receiver used with an interrogator to receive the replies from transponders.
- Rex A pulse control system for guided missiles.
- RGL Radar GunLaying.
- RGP Radar Glider Positioning system.
- RHB Radar Homing Bomb, a missile designed to home on and destroy an enemy naval target which has been illuminated by airborne radar.
- RGP Radar Glide-Positioning system.
- RHI Range-Height Indicator.
- Rhubarb The operation of jamming German coast-watching radar on 380 mc.
- Rising Sun Type of magnetron.
- RLBI Right-Left Bearing Indicator.
- RLS Rotating Lighthouse System for radio navigation.
- RO Range Only radar.
- Road Drill A form of railing jamming signal, so-named because of the sound of the modulation.
- Roc A Navy radio-guided, television-controlled missile. Also called Dragon.
- roller fading Type of signal variability.
- Rope 400-ft long metallic ribbon for jamming.
- Rooster An airborne transponder used to enable an airborne striking force equipped with radar with special interrogators to home on a patrol aircraft which is shadowing enemy navy patrol forces.
- Rosebud Airborne range coded beacon.
- Rosie Slang for MEW station.
- RRL Radio Research Laboratory.
- RRLG Rocket, Radio, Longitudinal, Generator-powered; similar to BRLG, but for use with rocket projectiles.
- RRP Radio Ripple Proximity; a fuze fired by radio reflections from the target.
- Ruebezahl German bomber-control navigation system. Also called Egon.
- Ruffian German radio blind bombing scheme using multiple beams. See Bromide.
- Ruhrstahl German 700-mph missile controlled by wire from mother airplane.
- Rug An airborne barrage jammer for use against enemy radar in the 200-250-mc band.
- Rug Practice Jammer Practice jammer for Navy low-frequency radar.

**Running Rabbits** Unlocked cobs interference on a c-r tube, caused by f-m jamming.

**S-band** 1,550-5,200 mc; 19.35-5.77 cm.

**Sanborn** A bench trainer for AI (SCR-520) radar.

**sand load Attenuator** for coaxial line or waveguide. Uses sand.

**Sandra** Searchlight system.

**Sandy** An airborne receiver and selective jammer for use against enemy communications in 14-50 mc band.

**Saxophone** Vertex-fed linear array antenna.

**SBA** Standard Beam Approach; a British radio blind approach system using Lorenz beams and marker beacons.

**SBB** Shore Bombardment Beacon scanner Spinner.

**scatter** Spurious echoes due to reflections from ionized layers of the upper atmosphere.

**Scent Spray** H2S for landing craft (clue: see Stinky).

**Schmetterling** German rocket controlled by radio or radar.

**Schwanboje** German floating target beacons.

**Schwarzschild** High-speed scanning antenna used with MPG-1 radar.

**SCI** Ship Controlled Interception; similar to GCI but installed on aircraft carriers.

**scope** An oscilloscope or cathode-ray tube indicator.

**sea return** Clutter on an airborne radar c-r tube due to sea reflection.

**searchlighting** Directing a radar beam steadily on a target, either manually or automatically.

**Seetakt** German ground radar coast-watcher.

**selective** A type of jamming in which a single channel only is jammed. See barrage.

**shf** 3000 to 30,000 mc; 0.1 to 0.01 meter.

**shoran** SHORt RANge Navigation aid; similar to loran. An H navigation system with sufficient accuracy (high-frequency operation) for blind bombing.

**Serrate** Airborne homing equipment for use against enemy AI radar.

**silver bullet** Silver-plated bullet-shaped coaxial line connector.

**Skiatron** Dark trace projection ppi.

**skip keying** Reduction of radar prf to a submultiple of that normally used, to reduce mutual interference between radars or to increase the length of the c-r tube time base.

**slave** One of the ground stations of Gee or loran, which transmits only when triggered by a master.

**SLC** SearchLight Control; a type of ground radar for aiming searchlights.

**slicer** Type of amplifier.

**Sniffer** Radar for automatic bomb release.

**Sniperscope** Infrared image translator.

**Snoop** An iff interrogator-responder mounted in a vehicle, for use at an airport in checking the operation of iff transponders in aircraft as they take off.

**Snooperscope** Sniperscope.

**Snow** Noise on a ppi or B scope.

**Snowflake** A rocket used to project

packets of Window up to several thousand feet.

**SOD** Small Object Detector.

**Sodar** Acoustic (SOUND) raDAR (Bell Labs project).

**Sofar** SOUND Finding And Ranging (U.S. Navy).

**sonar** SOUND Navigation And Ranging. General designation for underwater sound devices for listening, echo ranging, and locating obstacles.

**Sonne** German navigation system.

**Space Hat** Lossy cavity used in testing.

**Spaniel** A rocket projectile, radio-controlled, fired from a fighter aircraft.

**spike** Leakage pulse from t-r tube.

**spinner** A rotating antenna and reflector for microwave radars; includes mount, motors, etc. Also called scanner.

**split** British term for lobe switching.

**split-can antenna** Antenna consisting of a cylinder split lengthwise along one side.

**Squeeze** Slotted sections in wave guides arranged so that width of the guide can be compressed to vary velocity of wave and hence apparent length of section.

**squegger** Oscillator in which start and termination of oscillations are determined by the constants of the grid circuit. English term.

**SRB** Send-Receiver-Bomb; a radar homing bomb which includes its own radar for illuminating the target.

**SS** General Search from Ships.

**SS loran** Sky-wave Synchronization loran.

**SSV** Ship-to-Surface vessel.

**stack** Sonar chassis assembly in sound room.

**stalo** STABLE-Local Oscillator.

**Stendal B** German antijammer.

**Stinky** Another name for H2S. Clue: H<sub>2</sub>S is symbol for hydrogen sulfide.

**SubSig** Submarine Signal Co.

**SWR** Standing Wave Ratio.

**SWVR** Standing-Wave Voltage Ratio.

**Tail** Homing receiver attachment.

**tail** Small pulse following main pulse and in same direction.

**TBS** Talk-Between-Ships communication system.

**TCG** Time Controlled Gain.

**TCI** Terrain Clearance Indicator; an absolute altimeter.

**TDI** Target Doppler Indicator.

**Tea** Shipborne jammer for use against guided missiles.

**Teleran** TELEvision and RADAR Navigation system.

**Terry** Automatic air-to-ground range-only radar AN/APG-21.

**TGI** Tail Gunner Indication.

**Tinsel** An airborne radio communications transmitter, used for jamming operations.

**Tinsel rope** Tuned rope made for Tinsel.

**Tramlines** A form of jamming; c-w modulated with a low-frequency waveform.

**transponder** A receiver-transmitter which responds to received pulses by sending coded pulses in reply.

**t-r box** Transmit-Receive box; a device for utilizing the same antenna for radar transmitting and receiving.

**TRE** Telecommunications Research Establishments (England).

**trigatron** Enclosed triggered spark-gap radar pulse modulator tube.

**trigger** To cause a transponder to transmit pulses.

**trombone** Line stretcher.

**TRU** Transportable Radio Unit; transportable CH radar.

**Truhe** Similar to Hyperbel.

**Tuba** High-powered American Grocer jamming transmitter, 30-kw, noise-modulated, named for its huge parabolic antenna.

**Tuft** Target identification beacon.

**Turkey** An iff set.

**Turnstiles** Jammers made of three half-wave dipoles connected to each other at centers.

**TVL** Time Variations of Loss.

**TW** Tail Warning; a light-weight airborne radar for warning of the approach of enemy aircraft from the rear.

**twog** Classified material.

**uhf** 300-3000 mc; 1.0-0.1 meter.

**Uncle** Blind approach beacon.

**URBS** Unified Radar Bomb Sight.

**VDI** Visual Doppler Indicator.

**vlf** 30-300 mc; 10-1 meters.

**VHFDF** Very High Frequency Direction Finding.

**VIP** Very Important Person.

**Visar** Nosmo—Mark II.

**Vixen** S-band attenuator.

**vogad** Voice Operated Gain Adjusting Device.

**VSO** Voltage-Sensitive Oscillator.

**VTDC** Vacuum Tube Development Committee of NDRC.

**Vulture** Automatic range finder. Overland Falcon.

**Walter** A light-weight pulse transmitter for use in aircraft dinghies for aiding in sea-rescue by aircraft equipped with ASV.

**Wasserfall** German guided rocket.

**Watson effect** Short, bright horizontal line descending from top of a strong echo.

**Weary Willie** War-weary plane used as guided missile.

**Whirling Dervish** Mortar location radar.

**Willie Orphan** Drone beacon.

**Window** British designation for metalized or tinfoil strips thrown from aircraft to give misleading or distracting radar echoes (see Chaff).

**Wolf** Light-weight receiver detonator to be carried by a dog, for the destruction of enemy bunkers.

**Wonter** Device to prevent improper response in a decoder.

**Wuerzburg** German fire control radar.

**Wurzlaus** German antijammer.

**Yagi** Type of antenna used on long-wave radar sets. Named for its designer, Professor Hidetsugi Yagi, of the Tohokue Imperial University, Sendai, Japan.

**X-band** 5,200-11,000 mc; 5.77-2.73 cm.

**Yado** Modified Oboe system.

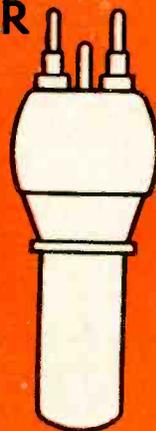
**Yehudi** Trigger used in beacon transmitter to tune beacon to proper frequency.

**Zero Catcher** A wide-band airborne radar warning receiver.

**Zyklop (Cyclop)** Similar to Knicker-bein.

Prepared by the  
Electron Tubes  
Group of NEMA,  
the Joint Elec-  
tron Tube Engi-  
neering Council,  
and Electronics

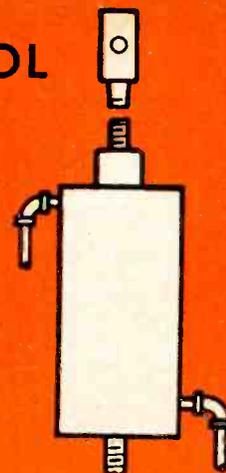
## POWER



### Oscillators, Amplifiers, Rectifiers

High-frequency heating, dust precipitation, generation of variable-frequency a-c, development of test voltages, d-c from a-c power lines . . .

## POOL



### Rectification, Control, Frequency Multiplication

D-c from a-c power lines, resistance-welding contactors, generation of power for high-frequency heating . . .

# Handling and Maintenance of INDUSTRIAL

## RECEIPT

Examine shipping container for visible damage before opening<sup>1</sup>

Unpack tube and examine for loose or broken parts<sup>2</sup>

Test large types electrically in special equipment, or in apparatus in which they are to be used<sup>3</sup>

Use crane or dolly when lifting or moving exceptionally heavy types

## STORAGE

Use oldest tubes first

Operate or test large types every three to six months<sup>3</sup>

Store in original cartons if possible

Keep mercury-vapor and large power types in upright position

Protect against chemicals and fumes, water, and extreme or rapid temperature change

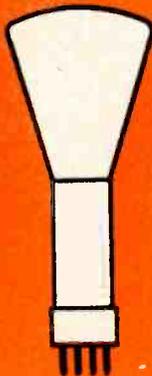
## FOOTNOTES

(1) If damage in shipment is evident, sign carrier's receipt "accepted subject to hidden damages"

(2) If tubes have been damaged in shipment file claim with the carrier within time limit specified (usually 15 days) and notify supplier

(3) Cathode-ray, receiving, and small power tubes need not be periodically tested if they are placed in service within one year but should be tested before the manufacturer's warranty expires. Seasoning of large mercury-vapor rectifiers and high-vacuum power tubes is normally accomplished by operating them in the equipment in which they are to be used, starting with reduced plate voltage and finally operating them for one hour or more at full plate voltage and rated load

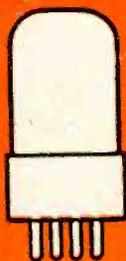
## CATHODE-RAY



### Visual Indication, Measurement

Laboratory and production testing, indication and measurement of all kinds of transients . . .

## PHOTO



### Control, Measurement

Lighting controls, talking motion pictures, door openers, light and color measurements and comparisons, production inspections, counting and sorting . . .

## GAS



### Rectification, Control

Timers, motor speed control, welding control, battery charging, machine cycling . . .

# ELECTRON TUBES

## OPERATION

Read operating instructions

Start new tubes, or tubes which have been idle for several months, at reduced power<sup>3</sup>

Measure power-line variations and adjust filament transformer tap so that rated filament voltage range is never exceeded

Be sure maximum ratings are not exceeded under load

Keep air-cooled tubes and radiator fins free of dust

Check water flow, temperature, and purity when water-cooled types are employed

Protect mercury-vapor types against extreme temperature variation

Apply filament voltage to new mercury-vapor tubes for at least 30 minutes before initial operation

## RECORDS

Record power output of equipment at regular weekly or monthly intervals

Note gradual reduction of power output, indicating approach of end of tube life when other circuit conditions are normal

Note that decreased sensitivity of phototube or cathode-ray tube equipment may denote approach of end of tube life

Check for end of tube life by substituting tubes known to be good and comparing power output or sensitivity of equipment

## CLAIMS

The supplier should be notified if tubes are initially defective for reasons other than damage in transit or fail within the warranty period in order that credit may be claimed within the warranty period

Service report forms should be carefully filled out since most manufacturers require this information

A return authorization should always be obtained before returning tubes

Returned tubes should be packed in the original or equivalent shipping containers

# Low-Loss

# PLASTIC INSULATION MATERIALS

**M**UCH NEW INFORMATION on plastics useful as h-f insulating materials has become available since the outbreak of the war. Some of the materials were unknown here before the war; new tests on others have disclosed hitherto unavailable data. Properties of those plastics which have power factors less than 0.001 at 1 mc are tabulated here and are briefly described.

Table I gives comparable data on physical, mechanical, thermal, electrical and chemical resistance properties at room temperatures or, in some cases, ranges of values are given.

Table II gives other pertinent data more concerned with economic factors, methods of working, and basic forms.

Except for engineers who are well versed in the plastics field, the final selection of a material should not be entirely based on the tables of data such as here presented for three reasons: (1) The A.S.T.M. tests presently used on plastics are often comparative and not absolute. (2) Test values will vary from laboratory to laboratory due to differences in testing equipment and personnel. (3) Variations are possible in the basic resin molecule size and structure. Such tables as these

should be regarded as starting points for further investigation—and not used alone to make final choices.

**POLYSTYRENE** — Commercially available in the United States since 1937, it is only in the last several years that polystyrene has become widely popular. Its early difficulties of machining and surface cracking (“crazing”) resulting during and after working and in aging, caused either by residual volatiles or from physical strain effects have been largely overcome by improved methods of manufacturing both the extrusion and molding powders, and by the development of annealing methods. It is the “workhorse” of the nonrubbery h-f insulators.

Polystyrene’s electrical properties remain nearly constant over a wide range of frequencies, temperatures and humidities. Chemical resistance, low water absorption, optical clarity and dimensional stability are other outstanding properties. At the present time, it is the most available and lowest priced of the materials discussed in this article. It is commercially available in a wide range of forms, including injection and compression molded parts and in extruded shapes such as rods that range from fibers to

6-inch diameter slugs, and sheets from less than 0.001 inch to several inches in thickness. Tubing from small coaxial sizes to 4 or 5 inches in diameter can also be obtained.

Polystyrene molecules can be oriented. When the sheeting has been two-directionally oriented by stretching, a flexible, tough sheet is obtained with a tensile strength about twice that of unoriented sheeting. This material can be obtained in thicknesses from 0.001 to 0.020 inch and it is laminated under heat and pressure to give thicknesses from 0.020 to 0.094 inch. It is low in price and can be punched or sheared in the thinner gauges without difficulty. The oriented material retains the excellent electrical properties of the unoriented material.

**MODIFIED POLYSTYRENE** — The maximum use-temperature of polystyrene is usually considered to be about 175 F. Much work has been done to produce other materials which have equivalent or nearly equivalent electrical properties, but which can be used at higher temperatures. Addition of chlorinated diphenyl materials to polystyrene results in such a material, sold under the name of Styramic. This material can be used at temperatures

By **J. H. PARLIMAN**

*Plaz Corporation  
Hartford, Conn.*

**Electrical, mechanical, and chemical properties of commercially available low-loss plastic insulation materials suitable for use in high-frequency circuits are tabulated for quick reference. Text explains significance of properties tabulated**

about 10 F higher than polystyrene. Along with its improved heat resistance, it is noninflammable and has excellent machining qualities.

**MODIFIED STYRENE RESIN**—Marbon S-1 is a modified styrene resin used principally with synthetic rubbers to improve processing and certain mechanical properties such as hardness, stiffness, tear and abrasion resistance. It is used as insulation for telephone wires, submarine cables, ignition cables and underground cables. Its mechanical, electrical and chemical resistance properties should suggest other applications in the extrusion and molding fields. Marbon S-1 is light amber in color, is available in commercial quantities at low prices.

**POLYDICHLOROSTYRENE**—Another modification of polystyrene developed during the war, is polydichlorostyrene. In this case, the heat distortion point was increased to above 230 F, without raising the h-f electrical power losses above those of regular polystyrene. It is transparent, with a slightly yellow color. The water absorption of polydichlorostyrene is lower than polystyrene. High cost restricts its uses at the present time. It is available in semicommercial quantities.

**CROSS-LINKED STYRENE COPOLY-**

**MERS**—These materials are of a thermosetting nature and, although they have distortion temperatures ranging from 217 to 235 F, they will withstand temperatures considerably above 300 F for short periods of time under light loads without ill effects.

The available forms are restricted to cast rods and sheets, from which parts may be machined to close tolerances. These materials are priced somewhat higher than regular polystyrene, but considerably lower than the polydichlorostyrenes.

**STYRENE ELASTOMER**—A group of flexible, rubberlike styrene elastomer resins (trade name Styraloy), met a wartime need for a cable sheathing with low power h-f losses yet possessing good durability and flexibility under wide temperature ranges. These resins are flexible in thin sections and yet are fairly rigid in thick sections.

The power losses of the Styraloy resins are higher than the other styrene materials here discussed, and yet are low enough to be classified with them. They possess excellent abrasion resistance, and remain strong and flexible during long exposures to temperatures from minus 90 F to 212 F. Other properties are excellent resistance

to corona attack at the reduced pressures of high altitudes, stability to oxygen and ozone, and ease of fabrication.

The styrene elastomers are usually dark blue-gray colored and are available in production quantities in the low cost range.

**POLYETHYLENE**—Polyethylene was first developed in England and was first used both in England and the United States as a dielectric material for flexible coaxial cables.

Polyethylene theoretically closely approaches the ideal high-frequency insulation material in structure; and actually, its electrical properties are excellent. Its power factor and dielectric constant remain nearly constant over almost the complete electrical spectrum. Its volume and surface resistivity, arc resistance, and dielectric strength properties are excellent. In appearance, polyethylene is milky white, translucent, and wax-like. It has good flexibility in thin sheets, while in thick sections it is quite stiff and rigid.

Its distortion temperature under 66 psi load is 122 F, its softening range between 220 and 240 F, and it has been successfully used under low loads at temperatures considerably above 122 F.

The resistance of polyethylene to water and chemicals is outstanding. The standard water absorption figures usually given are between zero and 0.01 percent for 24-hour immersion. This material resists the action of all acids, alkalis, inorganic chemicals and has no known solvents at room temperature. Three months immersion will only produce slight swelling by such active solvents as ethyl acetate, methyl isobutylketone, carbon tetrachloride, and trichlorobenzene. At temperatures above 60 to 70 C, it will dissolve in a number of common sol-

**TABLE I — H-F PLASTIC INSULATION MATERIALS. PHYSICAL, MECHANICAL, AND THERMAL PROPERTIES**

| POLYSTYRENE  | MODIFIED POLYSTYRENE               | MODIFIED STYRENE RESIN               | POLY-DICHLORO-STYRENE               | CROSS LINKED STYRENE COPOLYMER                 | STYRENE ELASTOMER  | POLYETHYLENE   | POLYTETRA-FLUORO-ETHYLENE                                | POLYVINYL CARBAZOLE  | POLYISOBUTYLENE (APPROX 100,000 MOL WT) | CYCLORUBBER                       | PROPERTY   |
|--|------------------------------------|--------------------------------------|-------------------------------------|--|--|--|--|--|---|-----------------------------------|--|
| 1.05-1.07<br>26.3-25.9<br>0.04-0.06                        | 1.358<br>20.4<br>0.046             | 1.05<br>26.3<br>0.19<br>(7 days)     | 1.38-1.40<br>20.1-19.9<br>0.00±0.03 | 1.04-1.05<br>26.6-26.3<br>0.02-0.05            | 0.95-0.97<br>28.9-28.4<br>0.2-0.5                            | 0.92<br>30.1<br>0.00±0.005   | 2.1-2.3<br>13.2-12.4<br>0.00±                            | 1.2<br>23.0<br><0.1  | 0.90-0.92<br>30.8-30.1<br>0±0.1         | 0.97<br>28.5<br><0.1<br>(24 days) | <b>PHYSICAL</b><br>Specific Gravity<br>Specific Volume: cu in/lb<br>Water Absorption 24 hr %<br><br>Machinability<br>Effect of Sunlight  |
| Fair to Good<br>Yellows<br>Slightly                        | Excellent<br>Very Slight           |                                      | Good<br>Yellows<br>Slightly         | Good<br>Negligible                             | Excellent<br>Darkens   | Fair to Good<br>No discoloration   | Good   | Fair<br>Slight discoloration   | Poor<br>Slight                          |                                   |  |
| 5,500-<br>7,000<br>8,000-<br>19,000<br>1.7-4.7             | 3,000-<br>3,500<br>6,000-<br>7,000 | 4,800<br>6,900<br>3.8                | 4,500-<br>8,500<br>9,000-<br>15,000 | 7,000-<br>10,000<br>13,000-<br>18,000<br>2.4   | 900-1,200  | 1,700-1,900  | 2,000-4,500  | 4,000-6,000*   | 300-700                                 | 4,800                             | <b>MECHANICAL</b><br>Tensile Strength: psi<br>Flexural Strength: psi<br><br>Modulus of Elasticity in Tension psi x 10 <sup>5</sup><br>Compressive Strength psi<br>Impact Strength Izod: ft lbs per in of notch<br>Rockwell Hardness<br>Shore Hardness "D" Scale<br>Elongation, percent             |
| 11,500-<br>15,200<br>0.26-0.6                              | 10,000-<br>12,000<br>0.3           | 0.28                                 | 13,000-<br>20,000<br>0.3-0.5        | 18,500-<br>19,000<br>0.25-0.35                 | 3,000<br>1.5-2.0   | 4,000<br>>3  | 1,700<br>4.0   | 4,900  | Very Low<br>Very Low                    |                                   |  |
| M80-M95  | M72                                | 87                                   | M90-M103                            | M68-M95  | 66-70*   | R35-R40<br>45-54   | 55-70  | 0.5-1.0  | Very High                               | 85-90                             |  |
| 1.5-3.5  | 0.97                               | <10                                  |                                     | 2.9-3.3  | 10-250   | 50-600   | 300-400  | Very Low   | 750-1,500                               |                                   |  |
| 168-176<br>220-240   | 184-187                            | 117-126*                             | 230-250                             | 217-235<br>Thermo-setting                      | 140-149  | 122 (66psi)<br>219-239   | 266 (66psi)<br>No true softening point<br><-100<br>>400  | 284-320  | <32                                     | 158-194*                          | <b>THERMAL</b><br>Distortion Temperature: F<br>Softening Point: F<br><br>Brittleness Temperature: F<br>Resistance to Heat<br>Continuous: F<br>Specific Heat: cal/gm/C<br>Expansion per C x 10 <sup>-3</sup><br>Thermal Conductivity: cal/sec/sq cm/C/cm x 10 <sup>-4</sup><br>Burning Rate: in/min |
| 150-180  |                                    |                                      | 212-230                             |  | -90<br>140-200   | <-90<br>185  | 0.25   |  | -80                                     |                                   |  |
| 0.32<br>6-8  |                                    |                                      |                                     | 5.9-9  | 0.40-0.56<br>18-23   | 0.5-0.68<br>18-24.8  | 0.25   | 0.3<br>4.5-7.5   | 0.45                                    |                                   |  |
| 1.9  |                                    |                                      |                                     | 2.5-4  | 4-7  | 6.0-8.0  | 6  | 3.0-5.5  | 3                                       | 0.79                              |  |
| 0.75-1.5   | Chars slightly<br>Will not burn    | 0.6-1.9                              | Self-Extinguishing                  | Very Slow                                      | 2.4  | 1.1-1.4  | Non-Inflammable  |  | Fast                                    |                                   |  |
| 10 <sup>17</sup> -10 <sup>19</sup><br>2 x 10 <sup>15</sup> |                                    | 10 <sup>15</sup><br>10 <sup>14</sup> |                                     | >5 x 10 <sup>18</sup><br>>5 x 10 <sup>16</sup> | 10 <sup>15</sup> -10 <sup>16</sup><br>2.2 x 10 <sup>16</sup> | 10 <sup>16</sup> -10 <sup>17</sup><br>10 <sup>13</sup> -10 <sup>14</sup> | >10 <sup>15</sup><br>3.5 x 10 <sup>13</sup>              | 10 <sup>15</sup> -10 <sup>18</sup><br>10 <sup>14</sup> -10 <sup>16</sup> | 10 <sup>16</sup>                        | 2.5 x 10 <sup>11</sup>            | <b>ELECTRICAL</b><br>Volume Resistivity: ohm-cm<br>Surface Resistivity: ohm<br>Continued   |
|  |                                    | * Special Testing Method             |                                     |  | * Type "C"   |  | * No detectable change in out-door exposure for one year | * For films, lower for thick pieces                                      |   | * Special Testing Method          |  |

**TABLE I — Continued — H-F PLASTIC INSULATION MATERIALS. ELECTRICAL AND CHEMICAL PROPERTIES**

| POLYSTYRENE                      | MODIFIED POLYSTYRENE             | MODIFIED STYRENE RESIN  | POLY-DICHLORO-STYRENE            | CROSS LINKED STYRENE COPOLYMER | STYRENE ELASTOMER                | POLYETHYLENE                  | POLYTETRA-FLUORO-ETHYLENE | POLYVINYL CARBAZOLE     | POLYISOBUTYLENE (APPROX 100,000 MOL. WT) | CYCLORUBBER   | PROPERTY  |
|----------------------------------|----------------------------------|---|----------------------------------|--------------------------------|----------------------------------|-------------------------------|---------------------------|-------------------------|--|---|---|
| 120-135                          |                                  | 62-75   | Low                              | 95                             | 92                               | 130                           | >100                      | Low                     |  | No Carbonization  | <b>ELECTRICAL—Continued</b><br>..... Arc Resistance secs            |
| 500-700                          | 500-800                          |   | 370                              | 450-550                        | 600                              | 460-700                       | 500 (0.080 in. thick)     | 750 (1/16 in. thick)    | 400-750                                  | 650   | Dielectric Strength—Short time 1/8 in. thickness volts/mil          |
| 450-600                          |                                  |   |                                  |                                |                                  | 450-600                       |                           |                         |  |   | Dielectric Strength—step by step 1/8 in. thickness volts/mil        |
| 3,500 (0.005 in. thick)          |                                  | 1,050-1,090 (0.040-0.045 in. thick)                             |                                  | >1,790 (0.032 in. thick)       | 3,000 (0.005 in. thick)          | 1,000-1,100 (0.075 in. thick) | 1,500 (0.005 in. thick)   | 3,000 (0.001 in. thick) |  |   | ..... Dielectric Strength: ..... volts/mil Thin sheets              |
| 2.5-2.6                          | 2.55                             |   | 2.64-2.66                        | 2.4-2.5                        | 2.4                              | 2.25-2.3                      | 2.0                       | 2.9-3.0                 | 2.2-2.4                                  |   | ..... Dielectric Constant 60 cps                                    |
| 2.5-2.6                          | 2.55 (300 kc)                    | 2.7-2.9   | 2.62                             | 2.4-2.5                        | 2.4-2.5                          | 2.25-2.3                      | 2.0                       | 2.9-3.0                 | 2.2-2.4                                  |   | 1000 cps  |
| 2.5-2.6                          |                                  |   | 2.6                              | 2.4-2.5 (uhf)                  | 2.4-2.5                          | 2.25-2.3                      | 2.0                       | 2.9-3.0                 |  |   | 1 mc  |
| 2.5-2.6                          |                                  |   | 2.6                              | 2.4-2.5                        | 2.4-2.5                          | 2.3                           | 2.0                       | 2.9-3.0                 |  |   | 100 mc  |
| 2.57                             |                                  |   | 2.6                              | 2.4-2.51                       | 2.6                              | 2.3                           | 2.0                       | 2.9-3.0                 |  |   | 300 mc  |
| 0.0001-0.0003                    |                                  |   | 0.0003-0.0008                    | 0.0003                         | 0.0012                           | 0.0002-0.0005                 | <0.0002                   | 0.0005-0.001            | 0.0002-0.0005                            |   | ..... Power Factor 60 cps   |
| 0.0001-0.0003                    |                                  |   | 0.0002                           | 0.00012-0.00015                | 0.00025-0.00075                  | 0.0002-0.0005                 | <0.0002                   | 0.0004-0.001            | 0.0002-0.0005                            |   | 1,000 cps   |
| 0.0001-0.0003                    | 0.0004 (300 kc)                  | 0.0003-0.0006   | 0.0002                           | 0.00025                        | 0.0009-0.0015                    | 0.0005                        | <0.0002                   | 0.0004-0.001            | 0.0005                                   |   | 1 mc  |
| 0.0001-0.0003                    |                                  |   | 0.00015                          | 0.0004                         | 0.0050-0.0060                    | <0.0005                       | <0.0002                   | 0.0004-0.001            |  |   | 100 mc  |
| 0.0001-0.0003                    |                                  |   | 0.0002                           | 0.0005-0.0009                  | 0.0043                           | <0.0005                       | <0.0002                   | 0.0006                  |  |   | 300 mc  |
| 0.0001-0.0003                    |                                  |   | 0.0003                           | 0.0005-0.0009                  | 0.0032                           | <0.0005                       | <0.0002                   | 0.0005-0.001            |  |   | 3,000 mc  |
| None Attacked by Oxidizing Acids | None Attacked by Oxidizing Acids | None H <sub>2</sub> SO <sub>4</sub> and HNO <sub>3</sub> attack | None Attacked by Oxidizing Acids | None None                      | None Attacked by Oxidizing Acids | None None                     | None None                 | None Attacked           | None None                                | None H <sub>2</sub> SO <sub>4</sub> and HNO <sub>3</sub> attack | <b>CHEMICAL EFFECT OF</b><br>..... Weak Acids<br>..... Strong Acids |
| None                             | None                             | None  | None                             | None                           | None                             | None                          | None                      | None                    | None                                     |   | ..... Weak Alkalies   |
| None                             | None                             | None  | None                             | None                           | None                             | None                          | None                      | None                    | None                                     |   | ..... Strong Alkalies   |
| None                             | None                             | None  | None                             | None                           | None                             | None                          | None                      | None                    | None                                     |   | ..... Alcohols  |
| None                             | None                             | Slight Effect   | None                             | Swells                         | Swells                           | Slightly Swells               | None                      | Swells or dissolves     | Soluble                                  | Slightly Soluble  | ..... Esters  |
| Soluble                          | Attacked                         | Swells  | Soluble                          | None                           | Swells                           | Practically None              | None                      | Insoluble               | Soluble                                  | Soluble   | ..... Aliphatic Hydrocarbons  |
| Considerable to none Soluble     | Soluble                          | Swells  | Soluble                          | Swells                         | Swells                           | Swells                        | None                      | Swells or dissolves     | Soluble                                  | Soluble   | ..... Aromatic Hydrocarbons   |
| Soluble                          | Soluble                          | Swells  | Soluble                          | Swells                         | Swells                           | Slightly Swells               | None                      | Swells or dissolves     | Soluble                                  | Soluble   | ..... Chlorinated Hydrocarbons                                      |
| Resists                          | None                             | None  | None                             | None                           | Swells                           | Slightly Swells               | None                      | Insoluble               | Soluble                                  | Soluble   | ..... Mineral Oils  |

**TABLE II—H-F PLASTIC INSULATION MATERIALS. ECONOMIC FACTORS, AND WORKABILITY**

| TRADE OR GENERIC NAMES                              | MANUFACTURERS  | COMPARATIVE COSTS | ELECTRICAL USES  | BASIC FORMS AVAILABLE  | METHODS OF WORKING  | OUTSTANDING PROPERTIES  |
|---|--|-------------------|--|--|---|---|
| Bakelite<br>Chemaco<br>Koppers<br>Loalin<br>Lustron | Bakelite Corp.<br>Chemaco Corp.<br>Koppers Co.<br>Catalin Corp.<br>Monsanto Chemical Co.<br>Dow Chemical Co. | Low               | Battery separators and cases, condenser housing, coil forms, condenser foil, electrolating equipment, insulators, cable spacers, socket bases.   | Extrusion and molding powders, rods,* sheets,* tubes,* film,* fibers.*   | Extrusion, compression, injection, transfer and blow molding, machining.  | <b>POLYSTYRENE</b><br>Dimensional stability, optical clarity, arc resistance, resistance to corrosive chemicals, volume resistivity.  |
| Styron<br>Styramic                                  | Monsanto Chemical Co.<br>Marbon Corp.  | Medium<br>Low     | Insulation parts such as stand-off insulators.   | Extrusion and molding powders, sheets,* rods,* and tubes.*<br>Granules, master batched with various synthetic rubbers. | Extrusion, injection, and compression molding, machining.<br>Milling and extrusion molding.   | <b>MODIFIED POLYSTYRENE</b><br>High temperature resistance, non-inflammability.<br><b>MODIFIED STYRENE RESIN</b><br>Chemical resistance and compatibility with other materials.                   |
| "DCS"   | Mathieson Alkali Works   | High              | Coaxial cables, aircraft ignition cables, submarine cables, underground cables, auto ignition cables.<br>Terminal blocks, battery parts, tube bases, coil forms, capacitor parts, connector plugs. | Extrusion and molding powders, rods,* sheets,* and tubes.*   | Extrusion, injection and compression molding, machining.  | <b>POLYDICHLOROSTYRENE</b><br>High temperature resistance, surface hardness, dimensional stability at high temperatures, low water absorption.  |
| Textolite 1421<br>Textolite 1422                    | General Electric Co.<br>General Electric Co.   | Medium            | Connector beads, coil forms, stand-off insulators, rigid coaxial spacers, terminal strips.   | Cast rods and sheets.  | Machining.  | <b>CROSS LINKED STYRENE COPOLYMER</b><br>High temperature resistance, mechanical strength, chemical resistance.   |
| Styron Q 200-5<br>Styraloy                          | Dow Chemical Co.<br>Dow Chemical Co.   | Low               | Cable sheathing, wire insulation, antenna insulators, communication cables, aircraft ignition cables, lead-in wires.   | Extrusion and molding powders, rods,* sheets,* tubes,* tapes.*   | Extrusion, injection, compression molding, machining, calendaring, wire coating.  | <b>STYRENE ELASTOMER</b><br>Shock and abrasion resistance, corona resistance, low temperature flexibility.  |
| Polythene<br>Bakelite                               | E. I. du Pont de Nemours & Co.<br>Bakelite Corp.   | Low               | Coaxial cable, telephone drop wire, insulators, cable jackets.   | Extrusion and molding powders, rods,* sheets,* tubes,* films,* fibers.*  | Extrusion, injection, compression, and blow molding, calendaring, wire coating, machining, heat sealing.<br>Extrusion, wire coating, machining. | <b>POLYETHYLENE</b><br>Chemical resistance, low water absorption, low temperature properties, low specific gravity.   |
| Teflon  | E. I. du Pont de Nemours & Co.   | High              | Wire insulation, aircraft ignition wiring, insulators.   | Rods, tubes, sheets.   | Extrusion, wire coating, machining.   | <b>POLYTETRAFLUOROETHYLENE</b><br>Chemical resistance, low water absorption, high heat resistance, non-inflammability.<br>High temperature resistance.  |
| Polectron   | General Aniline & Film Corp.   | High              | Condenser dielectrics, insulators.   | Molding powders, Monomer powder.   | Injection and compression molding, impregnation, machining.   | <b>POLYVINYL CARBAZOLE</b><br>High temperature resistance.  |
| Vistanex  | Enjay Co. Inc.   | Low               | Wire and cable insulation, condenser dielectrics.  | Fluids to rubber-like materials, depending on molecular weight.  | Milling and extrusion with other materials.   | <b>POLYISOBUTYLENE</b><br>Low water absorption, compatibility with other materials, low temperature properties, low specific gravity.<br>Chemical solubility, compatibility with other materials. |
| Marbon B  | Marbon Corp.   | Low               | Coaxial cable, aircraft ignition cables, submarine cables, underground cables, auto ignition cables.   | Granules, master batched with various synthetic rubbers.   | Milling and extrusion molding.  | <b>CYCLORUBBER</b>  |

\* Available in these forms only from intermediate manufacturers, such as extruders, etc.

vents. Polyethylene is commercially available in a wide variety of forms and is low priced.

**POLYTETRAFLUOROETHYLENE** — This material known as Teflon is a remarkable resin that possesses mechanical toughness over a wide range of temperatures and excellent electrical properties over a wide band of frequencies. Teflon is extremely chemically inert and has high heat resistance. Teflon has no true melting point, but undergoes a solid-phase transition at 620 F. At about 420 F small amounts of fluorine containing gases are given off, and at 750 F it decomposes slowly. While its heat distortion temperature is 266 F, it can be used over the temperature range of -100 F, to 480 F.

The losses of Teflon are substantially constant from 60 cps to 3,000 mc and are as low or lower than either polystyrene or polyethylene. Its resistance to surface arc-over is high and on failing it melts and vaporizes and does not leave a carbonized conducting path.

Except for molten alkali metals, Teflon is resistant to all materials. Boiled in aqua regia, hydrofluoric acid, or fuming nitric acid, it has no change in weight or properties. The effect of strong alkalis and absorption of organic materials is almost zero, and outdoor weathering gives no detectable change in a one-year test.

It can be extruded in the form of rods and tubes or as a wire coating, though with present methods, the speeds are very slow compared to conventional extrusion speeds. Compression molding of simple articles can be done, but at present it is usually necessary to form more complicated shapes by machining standard shapes. Teflon can be machined easily with regular wood or metal working tools if they are kept sharp. Sheet stock can be punch pressed. So far, no usable cements have been found.

Teflon's properties suggest uses for all types of insulation, and as a dielectric in coaxial cable for radar and television equipment. Applications in electronic tire patching heaters, and for holding preforms in electronic heaters also seem likely.

Although Teflon is still in the

pilot plant stage of development, limited quantities are available. Difficulty in fabrication, and high cost coupled with a specific gravity of 2.1—2.3 are limiting factors at this time. However, it is likely that the cost will be reduced with quantity production, and modifications of the material are being developed, to provide materials which can be fabricated with less difficulty.

**POLYVINYL CARBAZOLE**—Polyvinyl carbazole was first developed in Germany prior to the War as a mica and asbestos substitute. It is produced in this country under the name of Polecron. The outstanding property of Polecron is its high heat distortion temperature of 284 to 320 F. Its limitations are low mechanical strength properties and it is therefore used where mechanical properties are secondary to electrical and thermal properties. To obtain tougher molded parts, it can be first oriented by extrusion under strong pressure, then broken into coarse fiberlike pieces; these can in turn be compression molded into parts which will still retain some of the orientation and will, therefore, be comparatively strong. It can also be injection molded, and can be cast from a solution of tetrahydrofuran into thin films for use as condenser dielectrics.

**POLYISOBUTYLENE** — Polyisobutylene was first made in Germany under the name of Oppanol, and later introduced here under the trade name of Vistanex. It is made in a wide range of molecular weights and varies from low molecular weight fluids, which are used as lubricants, to tough rubberlike polymers of high molecular weights.

Vistanex is not used alone as an electrical insulation material because it undergoes considerable cold flow and has little structural strength. However, it is compatible with a wide variety of other materials and is used to change and improve their properties. Also, its structural difficulties can be materially improved by compounding with a variety of fillers.

Polyisobutylene differs from natural rubbers in that it cannot be vulcanized. It is essentially completely saturated and, therefore, has good resistance to strong chemicals and ozone.

It is used in cable insulation and sheathing and is available in commercial quantities at low prices.

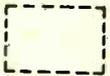
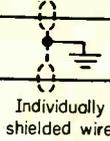
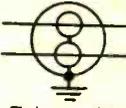
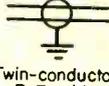
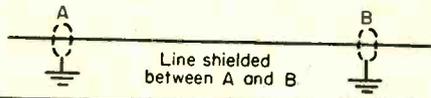
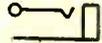
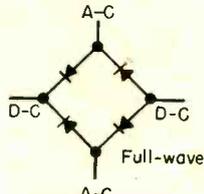
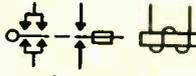
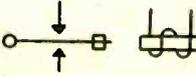
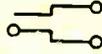
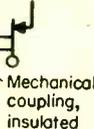
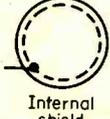
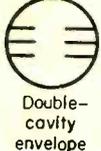
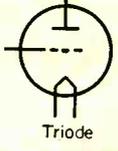
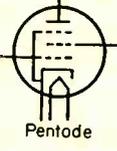
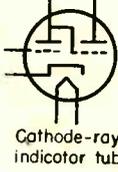
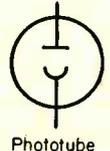
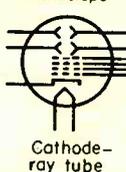
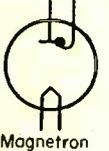
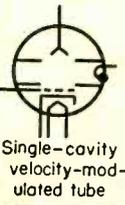
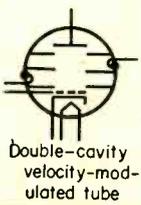
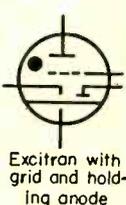
**CYCLORUBBER**—The cyclorubbers vary from tough flexible materials to brittle resins with lower power factors than the original rubbers from which the insulation is made. Cyclorubbers are compatible with natural and synthetic rubbers and many resins. They are also soluble in a wide variety of hydrocarbon solvents, including aliphatic and aromatic hydrocarbons, chlorinated hydrocarbons and some of the higher ethers. Typical uses are wire and cable insulation. Like Vistanex, cyclorubbers are commercially available in the low price brackets.

**RECENT DEVELOPMENTS** — The Monsanto Chemical Company has recently introduced an improved type of polystyrene called Lustron B. It has excellent moldability in standard injection and extrusion machines. Its heat distortion temperature is about 15 F higher than regular polystyrene. It has higher strength and quicker setting characteristics than conventional polystyrene. It is available now only in experimental quantities, but is expected to be commercially available later this year.

Enjay Company, an affiliate of Standard Oil Company of N. J., is producing two styrene type copolymers called S-50 and S-60. They are elastic and resinous, are excellent electrically, are very processable, and have good moisture-vapor resistance. These materials are now available in semi-commercial quantities in the medium price brackets, although the price should be lowered with possible future quantity production.

Another copolymer of polystyrene is being produced by Goodyear Tire and Rubber Company under the name of Pliolite S-3. This copolymer is a thermoplastic resin with excellent oxygen and chemical resistance and is composed of approximately 15 parts of butadiene and 85 parts of styrene. It is compatible with natural and most synthetic resins and is now used as a fortifying material by rubber manufacturers, as the copolymer improves the physical and electrical qualities, and gives better processing characteristics.

# Graphical Symbols

|   |   |  |  |  |  |  |  |
|---|---|--|--|--|--|--|--|
| <p><b>PHONE</b></p>  <p>Single, or hearing aid receiver</p>  <p>Double</p>  | <p><b>PICKUP or CUTTING HEAD</b></p>  <p>General</p>  <p>Electromagnetic</p>  <p>Crystal</p>  | <p><b>ALARM</b></p>  <p>Buzzer</p>  <p>Bell</p>  |  |  |  |  |  |
| <p><b>CRYSTALS</b></p>  <p>Detector</p>  <p>Piezoelectric</p>   | <p><b>SHIELDING</b></p>  <p>General</p>  <p>Individually shielded wires</p>  <p>Shielded pair</p>  <p>Coaxial</p>  <p>Twin coaxial</p>  <p>Twin-conductor R-F cable</p>  <p>Line shielded between A and B</p> | <p><b>JACK</b></p>     |  |  |  |  |  |
| <p><b>RECTIFIER (Dry disk)</b></p>  <p>Half-wave</p> <p>Arrow points in direction of low resistance</p>  <p>Full-wave</p>  | <p><b>VIBRATOR</b></p>  <p>Synchronous</p>  <p>Nonsynchronous</p>  | <p><b>PLUG</b></p>    |  |  |  |  |  |
| <p><b>THERMO-COUPLE</b></p>    | <p><b>THERMOELEMENT</b></p>  <p>Indirectly heated</p>  <p>Directly heated</p>   | <p><b>SOLENOID</b></p>  <p>Plunger-type</p>   |  |  |  |  |  |
| <p>Abstracted from American Standards Association publications Z32.10-1944 and Z32.5-1944. Note that all lines are the same thickness. Leads can come out of symbols any convenient way.</p>  |   | <p><b>RELAY (Deenergized)</b> Show contacts in deenergized positions</p>  <p>Make</p>  <p>Break</p>  <p>Mechanical coupling, insulated</p> | <p><b>CONTACTORS</b></p>  <p>Normally open</p>  <p>Normally closed</p> |  |  |  |  |
| <p><b>TUBES</b></p>  <p>Filament</p>  <p>Indirectly heated cathode</p>  <p>Cold cathode</p>  <p>Photo-electric cathode</p>  <p>Loop coupling</p>  <p>Gas filled</p>  <p>Pool cathode</p>  <p>Grid</p>  <p>Deflecting electrode</p>  <p>Anode</p>  <p>X-ray target</p>  <p>Dynode</p>  <p>Ignitor</p>  <p>Excitor</p>  <p>Internal shield</p>  <p>Single-cavity envelope</p>  <p>Double-cavity envelope</p>  <p>Triode</p>  <p>Pentode</p>  <p>Cathode-ray indicator tube</p>  <p>Cold-cathode gas diode</p>  <p>Phototube</p>  <p>Cathode-ray tube</p>  <p>Magnetron</p>  <p>Split magnetron</p>  <p>Single-cavity velocity-modulated tube</p>  <p>Double-cavity velocity-modulated tube</p>  <p>Multiplier phototube</p>  <p>Ignitron with grid</p>  <p>Excitron with grid and holding anode</p> |   |  |  |  |  |  |  |

# for Electronic Diagrams

|   |   |   |
|---|---|---|
| <p><b>RESISTOR</b></p> <p>Fixed<br/>With terminals<br/>Tapped<br/>Variable</p>  | <p><b>COIL</b></p> <p>Air-core<br/>Tapped<br/>Variable coupling<br/>Magnetic-core<br/>One winding shielded<br/>Auto-transformer<br/>Variable transformer<br/>One movable coil<br/>Variable core</p> |   |
| <p><b>CAPACITOR</b></p> <p>Curved plate represents outer foil (ground), lower r-f potential, negative of electrolytics, and moving element of variable units. Show polarity for electrolytics</p> <p>Fixed<br/>Variable<br/>Variable differential<br/>Mechanical linkage<br/>Trimmer<br/>Split stator</p> | <p><b>LOUDSPEAKER</b></p> <p>General<br/>Magnetic<br/>P-M dynamic<br/>Electrodynamic</p>  |   |
| <p><b>ANTENNA SYSTEM</b></p> <p>Antenna<br/>Counterpoise<br/>Loop<br/>Ground</p>  | <p><b>MICROPHONE</b></p> <p>General<br/>Single button<br/>Double button<br/>Capacitor<br/>Moving-coil<br/>Velocity<br/>Crystal</p>  |   |
| <p><b>BATTERY</b></p> <p>Long line is always positive</p> <p>One cell<br/>Multicell</p>   | <p><b>WIRING</b></p> <p>Connections<br/>Terminal, contact, or pivot point<br/>No connection</p>   | <p><b>A-C VOLTAGE SOURCE</b></p>  |
| <p><b>SWITCH</b></p> <p>On-off<br/>Multiposition<br/>Key</p>  | <p><b>MOTOR OR GENERATOR</b></p> <p>Use only with identifying notation</p>  | <p><b>LAMP</b></p>  |
| <p><b>FUSE</b></p>  | <p><b>METER</b></p>   | <p><b>Meter designations</b></p> <p>A - Ammeter<br/>MA - Milliammeter<br/><math>\mu</math>A - Microammeter<br/>V - Voltmeter<br/>W - Wattmeter<br/>G - Galvanometer<br/>VA - Volt-ammeter<br/>AH - Ampere-hour<br/>WH - Watt-hour<br/>PF - Power factor<br/>F - Frequency<br/>TT - Total time</p> |
| <p><b>HEATER ELEMENT</b></p>  | <p><b>BALLAST</b></p>   | <p><b>METER</b></p>   |
| <p><b>GENERAL</b></p> <p>Place legend in or near box</p>  |   |   |

**NEW SYMBOLS PROPOSED BY IRE**

Powdered iron core  
Nonferrous metal core  
Butterfly  
Semi butterfly or cylinder  
Multiple-cavity anode  
Tunable multiple-cavity anode  
Variable cores  
(Circle on arrow indicates variability of core)  
Thermistor  
Dipole  
Disk or surface seals for uhf  
Split anode  
Waveguide  
Waveguide output  
Coaxial output  
Coaxial waveguide output

NOMENCLATURE

$(C/N)_{f_c}$  is ratio of peak carrier to peak fluctuation noise in transmission channel  $f_c$  cycles per second wide.

$(S/N)_{f_m}$  is ratio of peak signal in output channel to peak noise (due to fluctuation noise) in output channel  $f_m$  cycles per second wide.

$f_d$  is maximum deviation frequency of frequency-modulated carrier in cycles per second.

$f_m$  is maximum frequency component in modulating wave in cycles per second.

$f_t$  is frequency bandwidth that is transmitted; that is, it is the bandwidth of the modulated carrier that is passed by the system.

$\Delta f_m$  is frequency interval between lowest and highest frequency components in modulating wave.

$m_p$  is maximum deviation angle of phase-modulated carrier in degrees.

$m_w$  is maximum width modulation factor for pulse width modulation.

$l_m$  is pulse displacement produced by pulse modulation, in seconds.

$t_p$  is duration of transmitted pulse in seconds, for frequency in cycles per second.

$\phi$  is peak phase deviation in radians of phase-modulated carrier.

# MODULATION

## Types and

modulation and other forms of modulation is that the signal is instantaneously sampled periodically and the sample so obtained used in the modulation. Thus in pulse modulation the carrier is varied in accordance with the instantaneous value of the modulating wave at the moment of sampling. Furthermore, as usually employed, the carrier is a chain of uniform, regularly repeated pulses instead of a continuous sine wave. This pulse chain constitutes a subcarrier that modulates the transmitted (sinusoidal) carrier for use in radio and wire transmission.

The pulse chain (subcarrier) has parameters of height, width, repetition rate, and displacement from normal occurrence of individual pulses. Each of these parameters can be modulated. In addition, such secondary parameters as displacement between pairs of pulses or number or density of pulses can be modulated. Width modulation can be such as to symmetrically vary pulse width or to modulate only its leading or trailing edge. Thus there are a great variety of pulse modulations. Simpler ones are shown in the illustration and included in the chart. Regardless of how pulses of

**M**ODULATION is the process of modifying a wave (called carrier), some characteristic of which is made to vary as a function of the instantaneous value of another wave (called modulating wave or signal). Carrier can be a direct current, an alternating current (provided its frequency is above the highest frequency component in the modulating wave), or a series of regularly repeating, uniform pulses (provided the repetition rate is at least twice that of the highest frequency to be transmitted) called a pulse chain.

Minimum bandwidth that must be transmitted by carrier circuits, and signal-noise ratio that can be expected from unavoidable fluctuation (thermal) noises, are given in the chart. Fluctuation noise level depends on effective temperature of the transmission path. Significance of symbols used in the chart is indicated in the accompanying table of nomenclature.

A recently applied modulation method uses pulses. The fundamental difference between pulse

APPROXIMATE BANDWIDTH AND NOISE

| MODULATION METHOD  | TRANSMISSION BANDWIDTH  | SIGNAL / NOISE   |
|--|---|--|
| <b>AMPLITUDE (a-m)</b><br>double sideband and carrier<br>single sideband and carrier<br>single sideband  | $2 f_m$<br>$f_m$<br>$\Delta f_m$  | $(S/N)_{f_m} = (C/N)_{f_c}$  |
| <b>FREQUENCY (f-m)</b><br>wideband ( $f_m < f_d$ )<br>narrowband ( $f_m > f_d$ )<br>frequency shift - Usually at least the third harmonic of the keying frequency $f_k$ must be transmitted, thus $f_m = 3 f_k$ , using this value of $f_m$ see above. | $2 f_d$<br>$2 f_m$  | $(S/N)_{f_m} = \sqrt{3} (C/N)_{f_c} (f_d/f_m)$   |
| <b>PHASE (p-m)</b><br>double sideband and carrier<br>$m_p < 60^\circ$<br>$m_p > 60^\circ$<br>single sideband and carrier<br>$m_p < 60^\circ$   | $2 f_m$<br>Required transmission bandwidth increases greatly as depth of modulation is increased beyond about 60 degrees<br>$f_m$   | $(S/N)_{f_m} = \phi (C/N)_{f_c}$   |
| <b>PULSE</b><br>height --- (p <sub>h</sub> m)<br>width --- (p <sub>w</sub> m)<br>rate --- (p <sub>r</sub> m)<br>number --- (p <sub>n</sub> m)<br>displacement (p <sub>d</sub> m)<br>(pulse displaced either in position or time)                       | Depends on repetition rate, wave-shape, and duration of pulse: for approximations use $2/t_p$ where if $t_p$ is duration of pulse in microseconds, transmitted bandwidth is in megacycles per second. | $(S/N)_{f_m} = m_w t_p (C/N)_{f_c}$<br>$(S/N)_{f_m} = l_m f_t (C/N)_{f_c}$   |
| <b>PULSED</b><br>amplitude (p <sub>a</sub> m)<br>frequency (p <sub>f</sub> m)<br>phase (p <sub>p</sub> m)  | $8 f_m$   | Inferior to unpulsed modulations of like type unless pulse rate is very high and transmitted bandwidth is very wide. |

# Characteristics

the chain are modulated, the signal sampling itself remains unaltered in both rate and timing in pure pulse modulation.

Signal-noise ratio obtainable with pulse modulation can be greatly improved by clipping and limiting circuits, and depends in a complex manner on transmission bandwidth. The transmission bandwidth in turn depends on pulse shape as well as pulse rate and method and degree of modulation. Relations given indicate orders of magnitudes. More detailed equations are beyond the scope of this presentation.

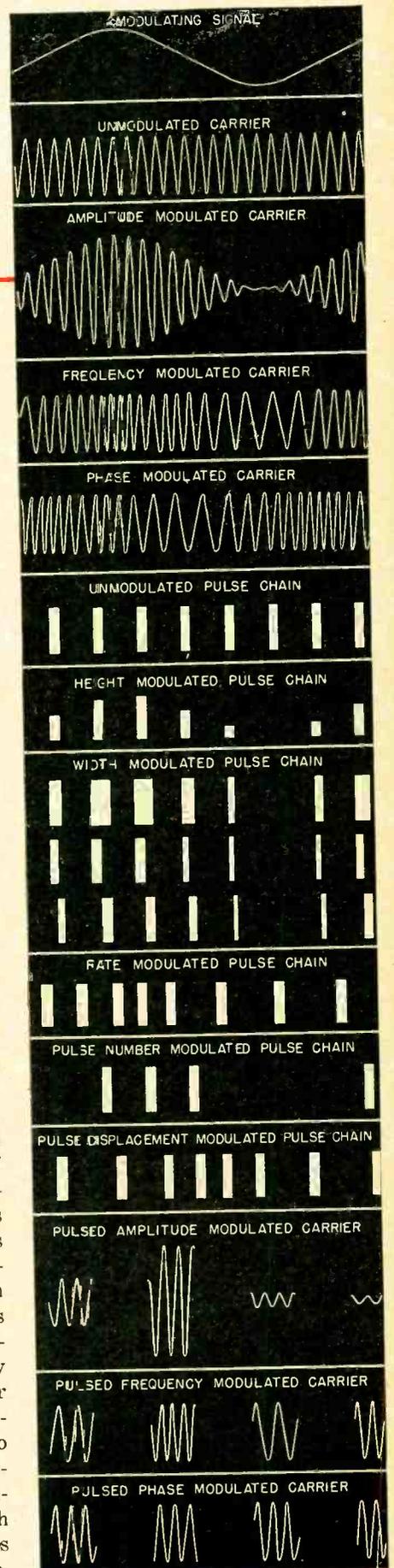
The pulse chain is not used directly as carrier; it modulates the r-f carrier, usually in amplitude. At the bottom of the illustration are shown the three ways in which the pulse can modulate the r-f carrier. To illustrate the modulation, height-modulated pulses are assumed. These patterns illustrate the sampling nature of pulse modulation; modulation is constant during the pulse at the value determined by the modulating wave at the time of sampling.

The advantage of pulse modulation is that energy is transmitted only for short intervals. This advantage is usually retained in pulsed carrier modulation, although that is not necessary; the carrier could equally well return to its unmodulated state between pulses rather than be interrupted.

Uses of a-m, f-m, and p-m are familiar. Pulse height modulation is not greatly used, although it is readily produced, because the pulsed equipment must be linear and operate at an average of only 50 percent of its maximum capabilities. Pulse width modulation is commonly used in modulating and

demodulating other pulse modulations. If it is differentiated or gated, pulse displacement modulation is obtained. If a pwm chain is passed through a low-pass filter, the signal will be removed directly. Thus pwm is a convenient intermediary. However, pwm involves a variation of duty cycle that lowers operating efficiency of the equipment. A combination of pulse width and rate modulation has been suggested as a means of holding the duty cycle constant to avoid this drawback. Pulse rate modulation also suffers from change of duty cycle during the modulating cycle and so is not commonly used. Pulse displacement modulation, called interchangeably pulse time or pulse position modulation, is widely used in microwave time division multiplex because it permits interlacing several pulse chains without confusion. Other pulse modulations present like possibilities if depth of modulation is limited.

Usually 100 percent pulsed-amplitude carrier modulation is used because it is the simplest method for modulating magnetrons and klystrons. Furthermore, because of wide bandwidths (despite high selectivity, absolute bandwidth is large at uhf, and frequency drifts of equipment prohibit very high selectivity) of uhf communication systems, pulsed modulation may as well be employed to utilize the available bandwidth. Pulsed frequency modulation, in the form of carrier shift, is used, and has been suggested for introducing the audio channel into the video carrier between television lines. Pulsed-amplitude carrier modulation with width-modulated pulse chain has also been used for this application.



# CONTEMPORARY

By JOHN D. ASKEW

Atlanta, Georgia

## Standard Receiving Tubes

INDEX NO.

STANDARD RECEIVING TUBES  
EQUIVALENT TYPES, BY FILAMENT  
CURRENT AND STYLE OF BASE

| OLD STYLE |       | OCTAL BASE   |              |        | LOCTAL BASE |        | MINIA-TURE     |
|-----------|-------|--------------|--------------|--------|-------------|--------|----------------|
| 2.5 V     | 6.3 V | 0.3 A        |              | 0.15 A | 0.3 A       | 0.15 A | 0.15 to 0.45 A |
|           |       | Double Ended | Single Ended |        |             |        |                |

### 0 Diode Detectors

|   |            |  |  |  |     |      |  |             |      |
|---|------------|--|--|--|-----|------|--|-------------|------|
| 1 | Twin Diode |  |  |  | 6H6 | 12H6 |  | 7A6         | 6AL5 |
| 2 | One Diode  |  |  |  |     |      |  | 7C4<br>12O3 | 9006 |

### 10 Diode and Amplifier

|    |                                 |     |     |     |      |             |             |             |               |
|----|---------------------------------|-----|-----|-----|------|-------------|-------------|-------------|---------------|
| 11 | Twin Diode and Triode $\mu=8$   | 55  | 85  | 6V7 |      |             |             |             |               |
| 12 | Twin Diode and Triode $\mu=16$  |     |     | 6R7 | 6SR7 | 12SR7       | 7E6         |             |               |
| 13 | Twin Diode and Triode $\mu=70$  |     |     | 6Q7 |      | 6T7<br>12Q7 |             |             | 6AQ6          |
| 14 | Twin Diode and Triode $\mu=100$ | 2A6 | 75  | 6B6 | 6SQ7 | 12SQ7       | XXFM<br>7B6 | 7C6<br>14B6 | 6AT6<br>12AT6 |
| 15 | Twin Diode and Pentode          | 2B7 | 6B7 | 6B8 |      | 12C8        | 7E7<br>7R7  | 14R7        |               |
| 16 | One Diode and Pentode           |     |     |     | 6SF7 | 12SF7       |             | 14AF7       |               |

### 20 Converters and Mixers

|    |                                    |     |     |     |      |             |     |      |               |
|----|------------------------------------|-----|-----|-----|------|-------------|-----|------|---------------|
| 21 | 3 Grid Leads; (For Mixer Only)     |     |     | 6L7 |      |             |     |      |               |
| 22 | 4 Grid Leads; (2 Between K and SG) | 2A7 | 6A7 | 6A8 |      | 12A8<br>6D8 | 7B8 | 7A8  |               |
| 23 | 4 Grid Leads; (1 Between K and SG) |     |     |     | 6SA7 | 12SA7       | 7Q7 | 14Q7 | 6BE6<br>12BE6 |
| 24 | Triode-Hexode                      |     |     | 6K8 |      |             | 7S7 | 14S7 |               |
| 25 | Triode-Heptode                     |     |     | 6J8 |      |             | 7J7 |      |               |

### 30-40 Voltage Amplifiers

|    |                         |    |               |              |                        |                |              |             |             |
|----|-------------------------|----|---------------|--------------|------------------------|----------------|--------------|-------------|-------------|
| 31 | Triode $\mu=14$         | 56 | 76            |              | 6P5                    | 6L5            |              |             |             |
| 32 | Triode $\mu=20$         |    |               |              | 6C5<br>6J5             | 12J5           | 7A4          | 7E5<br>14A4 | 9002<br>6C4 |
| 33 | Triode $\mu=70$         |    |               | 6K5          |                        |                |              |             |             |
| 34 | Triode $\mu=100$        |    |               | 6F5          | 6SF5                   | 12F5<br>12SF5  | 7B4          |             |             |
| 35 | Twin Triode $\mu=20$    |    |               | $\Delta$ 6F8 | 12SN7<br>$\Delta$ 6SN7 |                | $\Delta$ 7N7 |             |             |
| 36 | Twin Triode $\mu=35-38$ | 53 | $\square$ 6A6 | 6C8          | $\square$ 6N7          |                |              |             | 6J6         |
| 37 | Twin Triode $\mu=70$    |    |               |              | 6SC7<br>6SL7           | 12SC7<br>12SL7 | 7F7          | 14F7        |             |

### 40 Triple-grid Det-Amp (Sharp Cutoff)

|    |                                     |    |                  |     |                |             |                                       |              |              |
|----|-------------------------------------|----|------------------|-----|----------------|-------------|---------------------------------------|--------------|--------------|
| 41 | $G_m=1250$ , $I_p=2ma$ , $R_p=1meg$ | 57 | $\frac{77}{6C6}$ | 6J7 |                | 6W7<br>12J7 | 7C7                                   | 12O4<br>14C7 | 9001         |
| 42 | $G_m=2400$ , $I_p=9ma$ , $R_p=8000$ |    |                  |     | 6SJ7           | 12SJ7       |                                       |              |              |
| 43 | $G_m=3100$ to 6000                  |    |                  |     | 6SH7           | 12SH7       | 7L7<br>$\dagger$ 7G7<br>$\dagger$ 7W7 |              | 6AG5<br>6AK5 |
| 44 | $G_m=9000$ to 12000                 |    |                  |     | $\dagger$ 6AC7 |             |                                       |              | 6J4          |

### 45 Triple Grid Super Control (Remote Cutoff)

|    |  |    |                           |            |                |                      |     |                     |               |
|----|--|----|---------------------------|------------|----------------|----------------------|-----|---------------------|---------------|
| 45 | $G_m=1500$ , $I_p=8ma$ , $E_c=-3V$             | 58 | $\frac{39/44}{78}$<br>6D6 | 6K7<br>6U7 | 6SK7           | 12SK7<br>6S7<br>6SS7 | 7A7 | 12B7<br>7B7<br>14A7 | 9003          |
| 46 | $G_m=4000$ , $I_p=10ma$ , $E_c=-1\frac{1}{2}V$ |    |                           |            | 6SG7           | 12SG7                | 7H7 | 14H7                | 6BA6<br>12BA6 |
| 47 | $G_m=5000$ , $I_p=13ma$ , $E_c=-3V$            |    |                           |            | $\dagger$ 6AB7 |                      |     |                     |               |

$\Delta$  0.6 A Filament.

$\square$  0.8 A Filament.

$\dagger$  0.45 A Filament.

\* 0.075 A Filament.





## INDEX BY TUBE TYPES

| Tube Type | Index No. |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 1A4P      | 145       | 1T4       | 145       | 6C4       | 32        | 6V6       | 74        | 12BA6     | 46        | 25B6      | 67        |
| 1A4T      | 149       | 1T5GT     | 171       | 6C5       | 32        | 6V7       | 11        | 12BE6     | 23        |           |           |
| 1A5GT     | 163       |           |           | 6C6       | 41        |           |           |           |           | 25L6      | 71        |
| 1A6       | 122       | 2A3       | 61        | 6C8       | 38        | 6W7       | 41        | 12C8      | 15        |           |           |
| 1A7GT     | 122       | 2A5       | 66        |           |           |           |           |           |           | 25Y5      | 92        |
|           |           | 2A6       | 14        | 6D6       | 45        | 6X5       | 95        | 12F5      | 34        |           |           |
| 1B4P      | 142       | 2A7       | 22        | 6D8       | 22        |           |           | 12H6      | 1         | 25Z5      | 92        |
| 1B5       | 112       |           |           |           |           | 6Y6       | 73        |           |           | 25Z6      | 92        |
| 1B7GT     | 122       | 2B7       | 15        | 6E5       | 101       | 6ZY5      | 93        | 12J5      | 32        | 35A5      | 71        |
|           |           |           |           |           |           |           |           | 12J7      | 41        |           |           |
| 1C5GT     | 163       | 2E5       | 101       | 6F5       | 34        | 7A4       | 32        |           |           | 35L6      | 72        |
| 1C6       | 122       |           |           | 6F6       | 66        | 7A5       | 71        | 12Q7      | 13        |           |           |
| 1C7G      | 122       | 3A8GT     | 118       | 6F7       | 52        | 7A6       | 1         |           |           | 35Y4      | 99        |
|           |           |           |           | 6F8       | 35        | 7A7       | 45        | 12SA7     | 23        |           |           |
| 1D5GP     | 145       | 3LF4      | 171       |           |           | 7A8       | 22        |           |           |           |           |
| 1D5GT     | 149       |           |           | 6G6       | 33        |           |           | 12SC7     | 37        | 35Z3      | 99        |
| 1D7G      | 122       | 3Q4       | 163       |           |           | 7B4       | 34        |           |           | 35Z4      | 99        |
| 1D8GT     | 119       | 3Q5GT     | 171       | 6H6       | 1         | 7B5       | 35        |           |           | 35Z5      | 99        |
|           |           |           |           |           |           | 7B6       | 14        | 12SF5     | 34        |           |           |
| 1E4G      | 132       | 3S4       | 163       |           |           | 7B7       | 45        | 12SF7     | 16        | 39        | 45        |
| 1E5GP     | 142       |           |           | 6J4       | 44        | 7B8       | 22        |           |           |           |           |
| 1E7G      | 169       | 5T4       | 83        | 6J5       | 32        |           |           | 12SG7     | 46        | 41        | 65        |
|           |           |           |           | 6J6       | 36        | 7C4       | 2         |           |           | 42        | 66        |
| 1F4       | 163       | 5U4G      | 83        | 6J7       | 41        | 7C5       | 74        | 12SH7     | 43        | 43        | 64        |
| 1F5G      | 163       |           |           | 6J8       | 25        | 7C6       | 14        |           |           | 47        | 65        |
| 1F6       | 115       | 5V4G      | 97        |           |           | 7C7       | 41        | 12SJ7     | 42        |           |           |
| 1F7G      | 115       |           |           | 6K5       | 33        | 7E5       | 32        |           |           | 50A5      | 71        |
|           |           | 5W4       | 81        | 6K6       | 65        | 7E6       | 12        | 12SK7     | 45        | 50B5      | 71        |
| 1G4G      | 131       |           |           | 6K7       | 45        | 7E7       | 15        |           |           |           |           |
| 1G5G      | 163       | 5X4       | 83        | 6K8       | 24        |           |           | 12SL7     | 37        | 50L6      | 71        |
| 1G6G      | 162       |           |           |           |           | 7F7       | 37        | 12SN7     | 35        |           |           |
| 1H4G      | 131       | 5Y3       | 82        | 6L5       | 31        |           |           |           |           | 53        | 36        |
| 1H5GT     | 113       | 5Y4       | 82        | 6L6       | 75        | 7G7       | 43        | 12SQ7     | 14        | 55        | 11        |
| 1H6G      | 112       |           |           | 6L7       | 21        |           |           |           |           | 56        | 31        |
|           |           | 5Z3       | 83        |           |           | 7H7       | 46        | 12SR7     | 12        | 57        | 41        |
| 1J6G      | 162       | 5Z4       | 96        | 6N7       | 36        | 7J7       | 25        | 12Z3      | 98        | 58        | 45        |
|           |           |           |           |           |           |           |           |           |           | 59        | 65        |
| 1L4       | 141       | 6A3       | 61        | 6P5       | 31        | 7L7       | 43        |           |           | 75        | 14        |
|           |           | 6A4       | 63        |           |           |           |           | 14A4      | 32        | 76        | 31        |
| 1LA4      | 163       | 6A6       | 36        | 6Q7       | 13        | 7N7       | 35        | 14A7      | 45        | 77        | 41        |
| 1LA6      | 122       | 6A7       | 22        |           |           |           |           | 14AF7     | 16        | 78        | 45        |
| 1LB4      | 163       | 6A8       | 22        | 6R7       | 12        | 7Q7       | 23        |           |           |           |           |
|           |           | 6AB5      | 101       |           |           |           |           | 14B6      | 14        | 80        | 82        |
| 1LC5      | 143       | 6AB7      | 47        | 6S7       | 45        | 7R7       | 15        |           |           | 83V       | 97        |
| 1LC6      | 122       | 6AC7      | 44        | 6SA7      | 23        |           |           |           |           | 84        | 95        |
|           |           | 6AD6      | 102       | 6SC7      | 37        | 7S7       | 24        | 14F7      | 37        | 85        | 11        |
| 1LD5      | 116       | 6AD7      | 51        | 6SF5      | 34        | 7T7       | 15        |           |           | 117Z6     | 91        |
| 1LE3      | 132       | 6AF6      | 102       | 6SF7      | 16        |           |           | 14H7      | 46        | 1203      | 2         |
| 1LH4      | 113       | 6AG5      | 43        | 6SG7      | 46        | 7Y4       | 94        | 14Q7      | 23        | 1204      | 41        |
| 1LN5      | 141       | 6AG7      | 63        | 6SH7      | 43        |           |           |           |           | 9001      | 41        |
|           |           | 6AK5      | 43        | 6SJ7      | 42        | 7Z4       | 95        | 14R7      | 15        | 9002      | 32        |
| 1N5GT     | 141       | 6AK6      | 63        | 6SK7      | 45        |           |           |           |           | 9003      | 45        |
| 1N6G      | 117       | 6AL5      | 1         | 6SL7      | 37        | 12A8      | 22        | 14S7      | 24        | 9006      | 2         |
|           |           | 6AQ6      | 13        | 6SN7      | 35        | 12AT6     | 14        |           |           |           |           |
| 1P5GT     | 143       | 6AT6      | 14        | 6SQ7      | 14        |           |           | 25A6      | 64        |           |           |
|           |           |           |           | 6SR7      | 12        |           |           |           |           |           |           |
| 1Q5GT     | 171       | 6B4G      | 61        | 6SS7      | 45        |           |           |           |           |           |           |
|           |           | 6B6       | 14        |           |           | 12B7      | 45        |           |           |           |           |
| 1R5       | 123       | 6B7       | 15        | 6T7       | 13        |           |           |           |           |           |           |
|           |           | 6B8       | 15        |           |           |           |           |           |           |           |           |
| 1S4       | 163       | 6BA6      | 46        | 6U5       | 101       |           |           |           |           |           |           |
| 1S5       | 116       | 6BE6      | 23        | 6U7       | 45        |           |           |           |           |           |           |

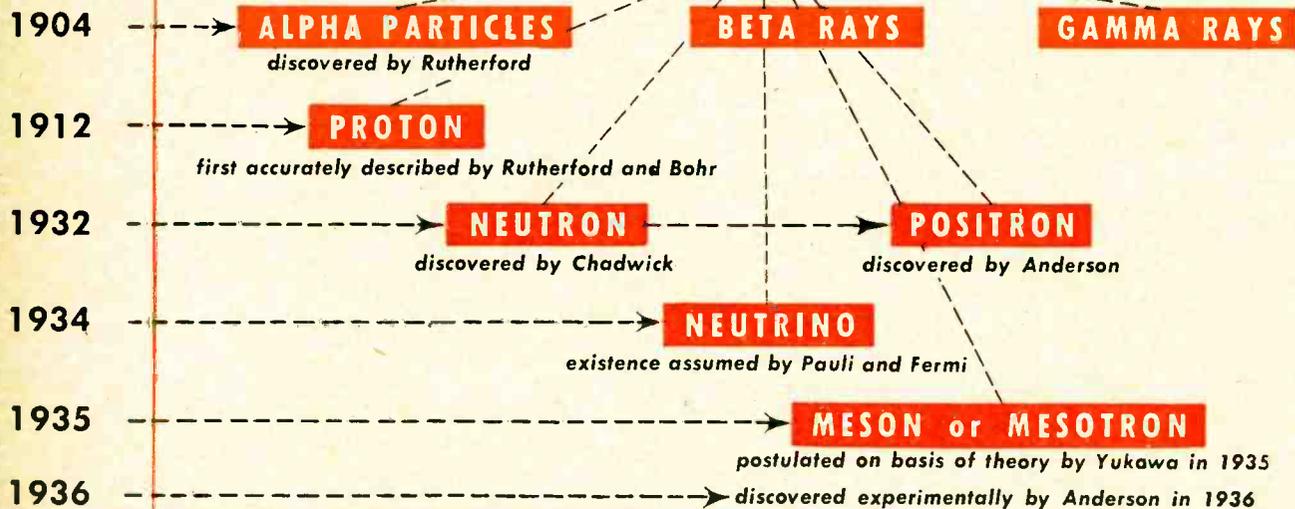
### HONORABLE MENTION

EIGHT historic tube types that are not listed are the 24A, 26, 27, 35/51, 37, 38, 45 and 71A. Although these are some of the grand-daddies of those listed and although they are still functioning to a highly satisfactory degree in many older equipments, their characteristics are not sufficiently similar to their modern progeny and their use too limited to warrant special treatment

1896 → **RADIO ACTIVITY**  
discovered by BECQUEREL

1897 → **ELECTRONS**  
discovered by J. J. THOMSON

# NUCLEONICS



## OTHER HISTORIC DEVELOPMENTS

1912 WILSON develops cloud chamber



1912 Radioactive tracers first used by von HEVESY and PANETH



1913 RUTHERFORD and BOHR describe atom with all positive charge and mass in nucleus



1919 RUTHERFORD transmutes nitrogen to oxygen



1919 ASTON develops mass spectrograph



1928 GEIGER and MULLER develop their counter



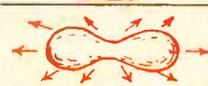
1932 Van de GRAAFF electrostatic particle accelerator



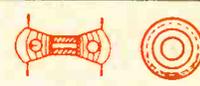
1932 The cyclotron first described by LAWRENCE



1938 Uranium fission discovered by HAHN and STRASSMANN



1941 Betatron developed by KERST



1942 FERMI uranium pile operated successfully



1944 Synchrotron developed by VEKSLER



1945 Atomic bomb dropped on Japan



| THE NUCLEONIC "PARTICLES"   | MASS   | CHARGE  | HOW PRODUCED  | TYPICAL NUCLEAR REACTIONS   |
|---|--|---|---|---|
| <b>BETA RAYS</b><br>$\beta^+$ and $\beta^-$<br>High speed + and - electrons created by conversion of protons into neutrons and vice-versa | $5.45 \times 10^{-4}$ relative to oxygen = 16  | $-(4.8029 \pm 0.0005) \times 10^{-10}$ esu  | Emitted by natural and artificial radioactive atoms; also produced by bombardment of nuclei by protons, neutrons, alpha particles, gamma rays | ${}_{7}\text{N}^{13} \rightarrow {}_{6}\text{C}^{13} + \beta^+$ $\beta^+ + \beta^- \rightleftharpoons \gamma$<br>${}_{11}\text{Na}^{24} \rightarrow {}_{12}\text{Mg}^{24} + \beta^-$                                  |
| <b>PROTON</b><br>Hydrogen nucleus<br>${}_{1}\text{H}^1$   | 1.0089   | $+(4.8029 \pm 0.0005) \times 10^{-10}$ esu  | Produced by bombardment of nuclei by alpha particles, deuterons, neutrons, etc.; also believed to be main component of primary cosmic rays    | ${}_{3}\text{Li}^6 + {}_{1}\text{H}^1 \rightarrow {}_{2}\text{He}^4 + {}_{2}\text{He}^3$<br>${}_{20}\text{Ca}^{44} + {}_{1}\text{H}^2 \rightarrow {}_{21}\text{Sc}^{44} + {}_{0}\text{N}^1$                           |
| <b>NEUTRON</b><br>Uncharged particle<br>${}_{0}\text{n}^1$  | 1.0089   | 0   | Produced by bombardment of nuclei by protons, alpha particles, gamma rays, etc.; also product of nuclear fission                              | ${}_{13}\text{Al}^{27} + {}_{0}\text{N}^1 \rightarrow {}_{13}\text{Al}^{28} + h\nu (= \gamma \text{ photon})$<br>${}_{92}\text{U}^{238} + {}_{0}\text{N}^1 \rightarrow {}_{92}\text{U}^{239} + \gamma \text{ photon}$ |
| <b>DEUTERON</b> ${}_{1}\text{H}^2$<br>Proton and Neutron strongly bound together  | 2.0147   | $+(4.8029 \pm 0.0005) \times 10^{-10}$ esu  | Produced by bombardment of nuclei by protons, neutrons, alpha particles   | ${}_{11}\text{Na}^{23} + {}_{1}\text{H}^2 \rightarrow {}_{11}\text{Na}^{24} + {}_{1}\text{H}^1$<br>${}_{6}\text{C}^{12} + {}_{1}\text{H}^2 \rightarrow {}_{7}\text{N}^{13} + {}_{0}\text{n}^1$                        |
| <b>POSITRON</b> $\beta^+$<br>Positive electron  | $5.5 \times 10^{-4}$   | $+(4.8029 \pm 0.0005) \times 10^{-10}$ esu  | Ejected from nuclei by cosmic rays; nuclear bombardment by gamma rays, alpha particles, etc.  | ${}_{29}\text{Cu}^{62} \rightarrow {}_{28}\text{Ni}^{62} + \beta^+$<br>$\gamma \text{ photon} \rightleftharpoons \beta^+ + \beta^-$   |
| <b>ALPHA PARTICLE</b> ${}_{2}\text{He}^4$<br>Helium nucleus   | 4.004  | $+2(4.809 \pm 0.0005) \times 10^{-10}$ esu  | Emitted by natural and artificial radioactive atoms; nuclear bombardment by protons, deuterons, etc.  | ${}_{13}\text{Al}^{27} + {}_{2}\text{He}^4 \rightarrow {}_{14}\text{Si}^{30} + {}_{0}\text{n}^1 + \beta^+$<br>${}_{13}\text{Al}^{27} + {}_{2}\text{He}^4 \rightarrow {}_{15}\text{P}^{30} + {}_{0}\text{n}^1$         |
| <b>NEUTRINO</b>   | Too small to detect directly, but strong indirect evidence, experimental and theoretical, for its existence          | 0   | Assumed to accompany beta ray disintegration of nuclei to explain energy distribution of beta rays  | ${}_{9}\text{F}^{17} \rightarrow {}_{8}\text{O}^{17} + \beta^+ + \text{neutrino}$<br>${}_{47}\text{Ag}^{111} \rightarrow {}_{48}\text{Cd}^{111} + \beta^- + \text{neutrino}$  |
| <b>GAMMA RAYS</b><br>$\gamma$   | Photons of energy = $h\nu$<br>$\nu$ = frequency<br>$h$ = Planck's constant<br>$6.56 \times 10^{-27}$                 | No charge   | Emitted by natural and artificial radioactive atoms; also produced by nuclear bombardment   | ${}_{1}\text{H}^2 + \gamma \rightarrow {}_{1}\text{H}^1 + {}_{0}\text{n}^1$<br>${}_{4}\text{Be}^9 + \gamma \rightarrow {}_{4}\text{Be}^8 + {}_{0}\text{n}^1$  |
| <b>MESON or MESOTRON</b><br>When ejected from nucleus is radioactive with mean life of 2 microseconds                                     | 202 electron masses<br>Lighter mesons are also believed to exist but have not been measured because of shorter lives | $-(4.8029 \pm 0.0005) \times 10^{-10}$ esu<br>and<br>$+(4.8029 \pm 0.0005) \times 10^{-10}$ esu<br>and<br>0 | Produced by action of primary cosmic rays on atmosphere   | Primary cosmic ray particle + atom in atmosphere $\rightarrow$ meson + other disintegration products  |

# CONSULTING ENGINEERS

**E**LECTRONICS presents, in this directory of consulting engineers active in its field, the results of a survey.

The first column lists names and addresses. An asterisk after a name indicates that patent matters are handled, in addition to the work noted in subsequent columns.

The second and third columns indicate the type of consult-

ing work done. Numbers in these columns provide a further breakdown, and are explained at the bottom of this page. Some types of work have been consolidated. For example: test equipment consultants are listed under instrumentation (5), and radiation consultants are listed under wave propagation (11).

| Name   | Commu-<br>nications | Indus-<br>trial | Design Models | Area     |
|--|---------------------|-----------------|---------------|----------|
| ABISLAIMAN, ALBERT<br>P. O. Box 4, Havana, Cuba  | 1-4                 |                 | •             | Cuba     |
| ADAIR, S. E.<br>4500 Thorndale, Chicago, Ill.  | 1-2-5               | 1-2-5           | • •           | national |
| AERO-MARINE RADIO LABORA-<br>TORY*<br>Foster Field, Stonington, Conn.<br>Ed. P. York   | 17                  | 17              | •             | 50 miles |
| AIRBORNE INSTRUMENTS<br>LABORATORY, INC.<br>319 Northern Pkway, E. Hempstead,<br>N. Y.<br>F. C. Cahill   | 10                  | 1-6             | •             | national |
| AIRCRAFT ELECTRONICS<br>ASSOCIATES<br>17 Lafayette Ave., E. Hartford, Conn.<br>Sydney E. Warner  | 4                   | 17              | •             | national |
| AGRICULTURAL AVIATION CO.<br>Colusa, Calif.<br>L. A. Otterson  |                     | 2               | •             | national |
| AKERLOF, G. C.*<br>4405 5th Ave., Pittsburgh, Pa.  |                     | 5               | • •           | national |
| ALLIED RESEARCH, INC.*<br>8130 E. Palmer Ave., Detroit, Mich.<br>J. E. Thorp   |                     | 1-5-6           | • •           | national |
| ALLISON ASSOCIATES*<br>7822 Vicksburg St., Los Angeles, Calif.<br>Donald K. Allison<br>Frederick G. Suffield<br>Aubrey W. Vose<br>James P. Westcott<br>Albert H. Palmes                    | •                   | 1-2-5           | •             | national |
| AMERICAN INVENTORS SERVICE<br>CO.<br>656 Spitzer Bldg., Toledo, Ohio<br>R. Cornwell  |                     | 1-2             | • •           | national |
| AMY, ACEVES & KING, INC.*<br>132 Nassau St., New York, N. Y.<br>E. V. Amy<br>F. King<br>J. Aceves  | 1-2-3-5             |                 | •             | national |
| ANDERS, JOHN F.<br>Kitchawan, N. Y.  |                     | 5               | •             | national |
| ANDERSON, LOUIS L.<br>1858 Overlook Ter., Louisville, Ky.  | 1-2                 |                 | • •           | national |
| ANDREW CO.<br>114 Northgate Rd., Riverside, Ill.<br>W. F. Kean, Ch. Cons. Engr.<br>J. W. McLeod, Ch. Cons. Eng.-B*Cast<br>Anten. Des.<br>C. H. Meyer, Ch. Cons. Eng.-Sta.<br>Des & Instal. | 4                   |                 | •             | national |
| APPLICATION ENGR. CO.<br>Box 83, Tufts College, Mass.  |                     | 1-2             | •             | state    |
| ARCHETTI, ALDO<br>464 Woodcliff Ave., Hudson Heights,<br>N. J.   | 1-4                 |                 | •             | 20 miles |
| ARDNER & ARDNER<br>2625 N. Meridian St., Indianapolis, Ind.  |                     | 1-2             | • •           | state    |
| ARNOLD-STUBENBORD, INC.<br>220 Myrtle Dr., San Antonio, Tex.<br>J. Barto Arnold<br>J. J. Stubenbord  | 1                   | 1               | • •           | national |

| Name  | Commu-<br>nications | Indus-<br>trial | Design Models | Area       |
|---|---------------------|-----------------|---------------|------------|
| ATOMIC RESEARCH CORP.*<br>3706 N. 11th St., Milwaukee, Wisc.<br>Chas. C. Kruse                            |                     | 22              | •             | national   |
| AUDIOPHONE<br>325-19th St., Oakland, Calif.<br>I. Ganic   | 4                   |                 | •             | 50 miles   |
| AUSTIN, A.<br>Box 109, Barberton, Ohio  | 7                   |                 | • •           | national   |
| AUTOMATIC DEVELOPMENT CO.,<br>15113 Huston St., Sherman Oaks, Calif.<br>D. J. Ward                        |                     | 5               | •             | 200 miles  |
| AUTOMATIC ELECTRIC CO.<br>320 Lewis Ave., Lombard, Ill.   | 17                  | 17              | •             | national   |
| BACON, J. W.<br>2001 Bay View Dr.,<br>Hermosa Beach, Calif.   | 1                   |                 | • •           | 50 miles   |
| BALCO RESEARCH LABS.*<br>580 Market St., Newark, N. J.<br>Lewis Balamuth<br>M. U. Cohen                   | 1                   | 6               | • •           | national   |
| BANKER ELECTRONICS<br>688 Main Ave., Passaic, N. J.   | 5                   | 5-17            | •             | national   |
| BARNARD, S.*<br>23-28 41st Ave., Long Island City, N. Y.  |                     | 2               | •             | national   |
| BARNES & REINECKE<br>230 E. Ohio St., Chicago, Ill.<br>J. O. Reinecke                                     |                     | 2               | •             | national   |
| BARRET, W.<br>909 Giddens Lane Bldg., Shreveport, La.   | 1                   |                 | •             | 1000 miles |
| BARRON, JOHN<br>301 N. Edison St., Arlington, Va.<br>John H. Barron<br>George E. Gautney<br>Clyde H. Bond | 4                   |                 | •             | national   |
| BARTON CO., THE<br>17 Knollwood Rd., W. Hartford, Conn.<br>Arthur T. Hatton<br>John E. Stoddard           | •                   | 1-2             | •             | 200 miles  |
| BATCHELOR, JOHN C.*<br>52 Wall St., New York, N. Y.   | 8                   | 8               | • •           | national   |
| BATCHER, RALPH R.<br>240-02 42nd Ave., Douglaston, N. Y.  |                     | 5               | • •           |            |
| BEARDSLEY, W. S.<br>Box 573, La Porte Texas   | 10                  | 9               | •             | 100 miles  |
| BERKELEY SCIENTIFIC CO.*<br>601 Nevin Ave., Richmond, Cal.  |                     | 1-2-5-<br>8-11  |               | national   |
| BERRY, JAMES S.*<br>P. O. Box 308, Savannah, Tenn.  |                     | 1-2             | • •           | state      |
| BETHLEHEM STEEL CO.<br>440 Market St., Lemoyne, Pa.<br>William A. Smiley*                                 | •                   | 1-2-5           | • •           | national   |
| BINDI, FRANCIS<br>Box 1182, Trenton, N. J.  | 4                   |                 | •             |            |
| BLAIR, W.<br>Locust Point Rd., Locust, N. J.  | 1                   |                 | •             | 200 miles  |
| BLOEMSA, IR. J.*<br>551 Mient, The Hague, Holland   | 1                   | 3               | •             | Holland    |

- (1) Electrical (2) Mechanical (3) Hydraulic (4) Broadcasting (5) Instrumentation (6) Chemical  
(7) Insulation (8) Applied Physics (9) Geophysics (10) Communications (11) Wave Propagation (12) Radio Receiver  
Design (13) Recording (14) Welding (15) General (16) X-Ray (17) Electronic Control (18) Plotting Equipment  
(19) Aircraft Antennas (20) Production Engineering (21) Automatic Weapons (22) High Speed Photography (23) Spectrograph  
(24) Components (25) Television (26) Radar (27) Medical (28) Ceramics (29) Dielectric Heating (30) Acoustics  
\*Handle Patents

| Name   | Comm-<br>nications | Indus-<br>trial | Design Models | Area               |
|--|--------------------|-----------------|---------------|--------------------|
| BOHR, EDWIN<br>N. Chattanooga, Tenn.   | 13                 |                 | •             | 150 miles          |
| BOND RES. LABORATORIES<br>80-84 Winslow Ave., Somerville, Mass.<br>Guaraldi, L.  |                    | 2-6             | •             | state              |
| BOSSARD, G.*<br>21350 Lorain Rd., Cleveland, Ohio  |                    | 1-2-5           | • •           | national           |
| BOYCE, H. JAY*<br>01 Fairfield Ave., Danbury, Conn.  |                    | 5               | •             | 150 miles          |
| BOZOMAN, M.<br>702 S. 5th St., Ann Arbor, Mich.  |                    | 5               | • •           | 500 miles          |
| BREON, K.<br>1520 Evergreen Rd., Williamsport, Pa.   | 1                  | 1               | •             | state              |
| BROWN, C.<br>66 Westgate, Cambridge, Mass.   |                    | 5               | •             | 20 miles           |
| BROWNELL, H.<br>188 W. 4th St., New York, N. Y.  | 5                  | 5               | • •           | 500 miles          |
| BRUCKMAN, F. E.<br>R. F. D. Rt. No. 1, Norwood, N. Y.  |                    | 1-2             | •             | state              |
| BRYANT, F. D.*<br>173 Longvue Dr., Wethersfield, Conn.   |                    | 1-2             | • •           | state              |
| BURCHETT, C. W.<br>172 Golden Gate Ave., San Francisco,<br>Cal.  | 1                  | 1               | •             | state              |
| BURDEN, B. C.<br>Box 931, Lincoln, Nebraska  | 1                  |                 | •             | national           |
| BUCK, G.<br>305 Monroe St. S., Hutchinson, Minn.   | 4                  | •               |               | state              |
| CAIN, L. H.<br>3610 S. Barrington Ave., Los Angeles,<br>Cal.   | 4                  |                 | •             | state              |
| CALIFORNIA LABS.*<br>452 Clifton St., Oakland, Calif.<br>Scientific Staff: Andrew Guthrie<br>John M. Harding<br>Harold F. Weaver       |                    | 5               | •             | state              |
| CANALE ING. MANUEL R.<br>ELECTRONICAL ENGINEERING<br>CO.<br>Box 1547, Nogales, Ariz.<br>Ing. Hector Compy                              | 1-4                |                 | •             | national           |
| CANADIAN RES. INSTITUTE<br>46 St. George St., Toronto, Ont., Canada  | 4                  | 1-5-6           | •             | national           |
| CANISTEO ELECTRONIC IN-<br>STRUMENT LAB.<br>30 E. Main St., Canisteo, N. Y.<br>Clyde E. Ingalls  | 4                  | 1-5             | • •           | national           |
| CANON & LYTLE<br>1523 Woodbine Ct., Deerfield, Ill.<br>Hartman B. Canon  |                    | •               | •             | 200 miles          |
| CARL, M. R.*<br>83 McAllister St., San Francisco, Cal.   |                    | 2               | •             | 250 miles          |
| CARTER, WILLIAM H., JR.<br>1309 Marshall Ave., Houston, Texas  |                    | 17              | •             | inter-<br>national |
| CHAPMAN, R.<br>Rt. 6, Box 41, Ft. Worth, Texas   | 4                  |                 | •             | 750 miles          |
| CHILDS, EARL<br>2822 N. Broadway, Los Angeles, Calif.  |                    | 5               | •             | 60 miles           |
| CIRCUITO CMQ<br>Havana, Cuba<br>R. Lopez Guiral<br>Ventura Montes  | 4                  |                 | • •           | national           |
| CLEARY, LEO H.<br>2726 Conn. Ave., N. W., Washington,<br>D. C.   |                    | 1               | •             | 1000 miles         |
| COLES, W. A.<br>412 Spruce Ave., Upper Darby, Pa.  |                    | 1-2             | • •           | national           |
| COLLUP, DOYLE<br>3300 Mt. Vernon, Ft. Worth, Texas   | 4                  |                 | •             | 500 miles          |
| COLTON & FOSS, INC.<br>927 15th St., NW, Washington, D. C.<br>Roger B. Colton<br>William L. Foss<br>Russell C. Coile<br>John A. Moffet | 4                  |                 | • •           | national           |
| COLWELL, R. W.<br>518 W. Maple St., Deshler, Ohio  |                    | 5               | •             | state              |

| Name  | Comm-<br>nications | Indus-<br>trial | Design Models | Area           |
|---|--------------------|-----------------|---------------|----------------|
| COMMERCIAL AMPLIFIER CO.<br>6629 Drexel Ave., Chicago, Ill.<br>Harold Van Baber   | 10                 |                 | •             | state          |
| COMMONWEALTH ENGINEERING<br>CO. OF OHIO<br>1771 Springfield St., Dayton, O.<br>J. Hush*   |                    | 15              | •             | national       |
| COMMUNICATIONS ENGINEERING 4<br>CO.<br>452 Clifton St., Oakland, Calif.<br>F. S. Manov  | 4                  | 4               | •             | 200 miles      |
| CHAMBERS & GARRISON<br>6307 Tecumseh Pl., Berwyn Heights, Md.<br>Marion F. Cook, Millard M. Garrison,<br>Joseph A. Chambers                                 | 4                  |                 | •             | national       |
| CONSOLIDATED MANAGEMENT<br>CONSULTANTS<br>521 5th Ave., New York, N. Y.<br>(Mitchell Fein)  | •                  | 1-2             | •             | national       |
| CONTROL ENGINEERING CO.*<br>7631 Jos Campau, Detroit, Mich.<br>A. D. Benson<br>D. O. Good   |                    | 1               | •             | national       |
| CORNELL, HOWLAND, HAYES &<br>MERRYFIELD<br>212 Rennie Bldg., Corvallis, Ore.  | •                  | 1-3-6           | •             | Pacific<br>NW  |
| COWLES, JOHN*<br>349 E. Cliveden St., Philadelphia, Pa.   |                    | 1-2-3-<br>5-6   | • •           | national       |
| CRAWFORD, THOMAS J.*<br>3726 Kipling Ave., Berkley, Mich.   |                    | 14              | •             | 1000 miles     |
| CROSSLEY, A.<br>549 W. Randolph St., Chicago, Ill.  |                    | 5               | •             | national       |
| A. EARL CULLUM, JR.-CONSULT-<br>ING RADIO ENGINEERS<br>Dallas, Texas<br>D. Peterson<br>A. Earl Cullum<br>C. M. Daniell<br>R. L. Hammett<br>J. G. Rountree   | 4                  |                 | •             | national       |
| DAVIES LABORATORIES, INC., THE 15<br>5009 Calvert Rd., College Park, Md.<br>Gomer L. Davies<br>Charles B. Pear, Jr.<br>Samuel Scrivener, Jr.<br>Harriet Lee |                    | •               | •             | 50 miles       |
| DAVIS, E. S.<br>422 N. E. River Dr., Ft. Lauderdale, Fla.   |                    | 5               | •             | national       |
| DAVIS, GEORGE C.<br>504 Munsey Bldg., Washington, D. C.<br>Kendrick H. Lippitt<br>Julius Cohen<br>Joe W. Collier<br>Albrecht P. Barsis                      | 4                  |                 | •             | national       |
| DAVIS, R. L.<br>535 Fountain St., Grand Rapids, Mich.   |                    | 1-2             | •             | state          |
| DAY & ZIMMERMAN, INC.<br>817 Packard Bldg., Philadelphia, Pa.   |                    | 1               | •             | national       |
| deHOLZER, R.*<br>28 Landford Rd., London, SW 15,<br>England   |                    | 5               | •             | world-<br>wide |
| DELAWAR, G. W.<br>Kingston Yarnells Hill, Oxford, England   |                    | 15              | •             | national       |
| DE MORNAY BUDD, INC.*<br>475 Grand Concourse, New York, N. Y.   | •                  | 1-2             | • •           | national       |
| DE RYDER, H.<br>104 Demarest Ave., Bloomfield, N. J.  | •                  | 1-6             | •             | 500 miles      |
| DESIGNERS FOR INDUSTRY<br>53 Westchester Rd., Newton, Mass.<br>George Morton  | •                  |                 |               |                |
| DESIGNERS FOR INDUSTRY, INC.*<br>2915 Detroit Ave., Cleveland, Ohio   | • •                | 1-2-3-<br>5     | • •           | national       |
| DINHOFFER, M.<br>150 W. 82d St., New York, N. Y.  | •                  | 2               | •             |                |
| DISTECHE, E. R. A.*<br>36 Ave., Side Gaher Cleopatra, Les Bains<br>Alexandria, Egypt  |                    | 1-2-3<br>4-5    | •             | Egypt          |
| DIVER, M. L.<br>Box 1016, San Antonio, Texas  |                    | 2               | •             | state          |
| DOEH DEVELOPMENT CO.<br>1688 Sterling Pl., Brooklyn, N. Y.<br>M. Ruderfer   |                    | 1               | •             | national       |

# CONSULTING ENGINEERS continued

| Name   | Comm-<br>nications | Indus-<br>trial | Design Models | Area       |
|--|--------------------|-----------------|---------------|------------|
| DOELCAM CORP.<br>437 Cherry St., W. Newton, Mass.<br>Donald McDonald   |                    | 5               | •             | national   |
| DONALDSON ELECTRONICS<br>LABORATORY*<br>P. O. Box 1466, San Antonio, Texas<br>Charles A. Donaldson             | •                  | 5               | •             | state      |
| DRAUGHONS SCHOOL OF RADIO & 10<br>ELECTRONICS<br>Little Rock, Ark.<br>Louis F. Muench, Ch. Radio Engr.         |                    |                 |               |            |
| DRESSEN, DON D.<br>Camp Baldy, Calif.  | 5                  | 5               | •             | state      |
| EASTERN DEVELOPMENT CO.*<br>15 E. 22nd St., New York, N. Y.<br>C. Chedister                                    |                    | 1-2             | •             | national   |
| EDWARDS, BOWER & POOL<br>(Patent attorneys)<br>63 Wall St., New York, N. Y.                                    | •                  | 1-5             |               | national   |
| EHRlich, CHARLES N.*<br>130 W. 12th St., New York, N. Y.   | •                  | 3               | •             | 100 miles  |
| EILENBERGER, S.*<br>6309 27th Ave., Kenosha, Wisc.   |                    | 1-2-5           | •             | national   |
| ELECT. COMMUNICATION CO.<br>765 Clementina St., San Francisco, Cal.<br>E. H. Cogill<br>D. H. Kister<br>J. Plaa | 10                 | •               | •             | national   |
| ELECTRONIC DEVELOPMENT<br>LABORATORY<br>2655 W. 19th St., Chicago, Ill.<br>W. Schliesinger                     | •                  | 5               | •             | national   |
| ELECTRONIC ENGINEERING*<br>So. 175 Wall St., Spokane, Wash.<br>Lee Klos  | •                  | 15              | •             | 150 miles  |
| ELECT. ENGR. & SUPPLY CO.<br>Box 178, Burlington, Iowa<br>Robert E. Mefford<br>James Applegate                 | 4                  | 16              | •             | 1000 miles |
| ELECTRO-MECH. RES. INC.*<br>Ridgefield, Conn.  | •                  | 1-2-5           | •             | national   |
| ELECTRONIC ASSOCIATES, INC.*<br>61 Brighton Ave., Long Branch, N. J.   | •                  | 5-17-<br>23     | •             | 1000 miles |
| ELECTRONIC DEVELOPMENTS<br>(PTY.) LTD.<br>17 Scotch Corner, Rockey St.,<br>Johannesburg, S. Africa             | 13                 | 1-2             | •             |            |
| ELECTRONIC RES. ASSOC.*<br>Box 333, S. San Francisco, Calif.   | •                  | 1               | •             | national   |
| ELECTRONICS ENGR. CO.<br>106 Cromwell St., Montgomery, Ala.<br>P. W. Ussery<br>Owen A. Lehr                    | 4                  | 1               | •             | 300 miles  |
| ELECTRONICS RESEARCH, INC.*<br>519 Vine St., Evansville 8, Ind.<br>H. Kees                                     | 19                 |                 | •             | national   |
| ELECTRON-MACHINE CO.*<br>2 East End Ave., New York, N. Y.<br>Carl A. Vossberg, Director                        | •                  | 5               | •             | 1000 miles |
| ELLINGTON, W. M.<br>724 Chestnut St., Jackson, Miss.   | 4                  |                 | •             | state      |
| ELLIOTT, H.*<br>70 Kingsley Ave., Palo Alto, Calif.  | 1-2                |                 | •             | national   |
| ELLIS, R.<br>Hylawn, Warners, N. Y.  |                    | 5               | •             | 50 miles   |
| EMPIRE LABS<br>39-01 Main St., Flushing, N. Y.<br>Joseph Lorch<br>Michael T. Harges                            | •                  | 1-5             | •             | national   |
| EMPIRE PROJECTOR CORP.<br>60 Mc Clean Ave., Yonkers, N. Y.<br>L. Morse   | •                  |                 | •             | national   |
| ENGINEERING DEVELOPMENT<br>LABORATORY<br>2326 S. Michigan Ave., Chicago, Ill.<br>R. Paul Ireland               |                    | 2-22            | •             | national   |

| Name  | Comm-<br>nications | Indus-<br>trial       | Design Models | Area   |
|---|--------------------|-----------------------|---------------|--|
| ENGINEERING LABORATORIES,<br>INC.*<br>Box 349, Tulsa, Okla.   |                    | 5                     | •             | national   |
| ENGINEERING RES. & DEVEL. CO.*<br>P. O. Box 166, Hinsdale, Ill.<br>J. S. Bogen  |                    |                       | •             | national   |
| ENGINEERING RESEARCH<br>ASSOCIATES, INC.<br>1129 Vermont Ave., N. W., Washington,<br>D. C.<br>1902 W. Minnehaha Ave., St. Paul, Minn.<br>Royal C. Bryant<br>Louis Y. Chaloux<br>Arnold A. Cohen<br>John M. Coombs<br>Howard L. Daniels<br>Hugh S. Duncan<br>Howard T. Engstrom<br>James W. Fitzgerald<br>Robert P. Gutterman<br>Marshall Hall, Jr.<br>Raymond E. Hazelberger<br>John L. Hill<br>John H. Howard<br>Robert M. Kalb<br>Robert E. Kilham<br>Bertil H. T. Lindquist<br>Wesley Matey<br>Richard McGee<br>Joseph Kahnke<br>Donald M. Menzel<br>Robert E. Miller<br>Walter J. Moe<br>Arthur G. Montgomery<br>Herbert G. Nilles<br>David L. Noble<br>William C. Norris<br>Earl C. Olofson<br>Robert K. Patterson<br>Robert L. Perkins<br>Donald H. Raudenbush<br>Sidney M. Rubens<br>Arthur W. Sloan<br>Donald M. Stanier<br>Lawrence R. Steinhardt<br>Charles B. Tompkins<br>James H. Wakelin | •                  | 1-2-3-<br>4-5-6<br>30 | •             | national   |
| FANNING W. N.<br>1539 Morton, Alameda, Calif.   |                    | 21                    | •             | national   |
| FISK ENGINEERING CO.<br>18 W. Passaic St., Rochelle Park, N. J.   | •                  | 5                     | •             | national   |
| FITZGERALD, G. C.<br>1658 Lucile Ave., Los Angeles, Calif.  | •                  | 5                     | •             | 100 miles  |
| FLEMING, H. B.<br>117 Park Rd., Burlingame, Calif.  |                    | 5                     | •             | state  |
| FORBES, K.*<br>Box 817, Erie, Mich.   |                    | 2                     | •             | national   |
| FRANCIS, J.*<br>343 S. Dearborn St., Chicago, Ill.  | •                  | 2                     | •             | national   |
| FRANKS, C. J.<br>Box 92, Boonton, N. J.   | •                  | 5                     | •             | 100 miles  |
| FRAZIER-SIMPLEX, INC.<br>436 E. Beau St., Washington, Pa.<br>J. E. Frazier  |                    | 2                     | •             | national   |
| GALANTY, HAROLD<br>287 Conklin Ave., Hillside, N. Y.  |                    | 1                     | •             | national   |
| GANZ, ALBERT F., INC.<br>511 5th Ave., New York, N. Y.<br>Charles Meyerherm   |                    |                       | •             | national   |
| GEFFNER, JOS., COMPANY<br>Weirton, W. Va.   |                    | 23                    | •             | 100 miles  |
| GENERAL DEVELOPMENT CO.<br>54 Rue Du Pepin, Bruxelles<br>J. C. van Reysschoot, Managing Dir.  | 4                  | 1-2                   | •             | Belgian<br>Congo<br>Belgium<br>France<br>Holland |
| P. E. GERST & CO.*<br>205 W. Wacker Dr., Chicago  | •                  | 1                     | •             | national   |
| GILLE BROS.<br>1108 N. Lillian Way, Hollywood, Cal.<br>Benson D. Gille<br>C. E. Taylor  | 4                  | 8                     | •             | West<br>Coast                                    |
| GLOVER, Ralph P.<br>1024 Superior St., Oak Park, Ill.   | •                  | 1-6-24<br>-30         | •             | national   |

| Name   | Commu-<br>nications | Indus-<br>trial | Design | Models | Area               |
|--|---------------------|-----------------|--------|--------|--------------------|
| PAUL GODLEY CO.*<br>P. O. Box J., Upper Montclair, N. J.<br>Paul F. Godley<br>Murray G. Crosby   | 4                   | 1-5             | •      | •      | national           |
| GOLDSMITH, A. N.*<br>597 5th Ave., New York, N. Y.   | •                   | 1-22            | •      |        | national           |
| GLOBE DEVELOPMENT CO.*<br>1970 E. 18th St., Brooklyn 29, N. Y.<br>E. Golub   | 4                   |                 |        | •      | state              |
| CLAUD S. GORDON CO.<br>3000 S. Wallace St., Chicago, Ill.  |                     | 5               | •      |        | national           |
| GRAHAM CROWLEY & ASSOC.,<br>INC.*<br>Main off. & lab., 407 S. Dearborn St.,<br>Chicago 5, Ill.<br>Branch off. & res. lab., 473 York Rd.<br>Jenkintown, Pa.                                       |                     | 6               | •      |        | national           |
| GRANER, L. P.*<br>40 E. 49th St., New York, N. Y.  | 4                   | 1-2-5-<br>6     |        |        | export             |
| GREENGARD, A. WILLIAM<br>811 N. Westknoll Dr., W. Hollywood,<br>Cal.   | 4                   |                 | •      |        | national           |
| GREER, WILLIAM N.<br>P. O. Box 4919, San Juan, Puerto Rico<br>Office: 257 Tetuan St., Rm. 10<br>Hector J. DeFelix<br>Manuel D. Autran  | 4                   | 15              | •      | •      | Central<br>Amer.   |
| GREIBACH RESEARCH AND<br>DEVELOPMENT LABS.*<br>80 Pryor Terr., New Rochelle, N. Y.<br>E. H. Greibach   | •                   | 1               | •      | •      | 100 miles          |
| GRIER, M. B.<br>18337 Arminta St., Reseda, Calif.  | •                   | 1               | •      |        | 30 miles           |
| HAHN, G.<br>1515 Halsted St., Chicago Heights, Ill.  | 1                   |                 | •      |        | 50 miles           |
| HALL, J. E.*<br>Box 4, E. Stanwood, Wash.  |                     | 1-3             | •      | •      | state              |
| HALL, R. BENSON*<br>6431 Euclid Ave., Hammond, Ind.  |                     | 2               | •      |        | 100 miles          |
| HALL, V. C.<br>835 Hope St., Springdale, Conn.<br>N. Bishop  |                     | 1               |        | •      | national           |
| HANSEN, W. W.*<br>515 Gerona Rd., Stanford U., Calif.  | 1                   |                 | •      |        | national           |
| HALL, LESLIE R.<br>9 Shepley St., Auburn, Maine  | 4                   |                 |        |        | 500 miles          |
| HARDEN, PAUL A.<br>529 E. Colorado St., Pasadena, Calif.   | 4                   |                 |        | •      | Pacific<br>Coast   |
| Harimatsu, D. T.<br>4351 N. Hermitage Ave., Chicago, Ill.  |                     | 5               | •      |        | state              |
| HARRY HALINTON, ENGINEERS<br>612 North Michigan Ave., Chicago, Ill.  |                     | 5-6-17          |        |        |                    |
| HARROLD, W.<br>101 N. 45th St., Seattle, Wash.   |                     | 8               | •      | •      | national           |
| HARVEY, H. L.<br>2935 St. Paul St., Baltimore, Md.   |                     | 5-22            | •      | •      | national           |
| HATHAWAY INSTRUMENT CO.<br>Box 4178, Denver, Colo.   |                     | 5               | •      | •      | national           |
| HAWKINS, D. W.<br>Box 1747, Brownsville, Texas   | 1-10                |                 |        | •      | state              |
| HAYNES, A.<br>2227 S. 10th Ave., Broadview, Mayview,<br>Ill.   |                     | 15              | •      |        | national           |
| HAZELTINE ELEC. CORP.*<br>1775 Broadway, New York, N. Y.<br>W. Grinditch   | 12                  | 1               | •      | •      | national           |
| HOLEY & HILLEGAS<br>2836 Tupelo St., S. E., Atlanta, Ga.<br>C. Hanson  | 4                   |                 |        | •      | national           |
| HAUSNER, HENRY H.<br>155 Riverside Drive, New York, N. Y.  |                     | 1-28            | •      |        | national           |
| HEILAND-RESEARCH CORP.<br>Box 380, Denver, Colo.<br>J. C. Hollister  |                     | 5               | •      | •      | national           |
| HELVEY, OLIVER J.<br>5110 Deane Ave., Los Angeles, Calif.  |                     |                 | •      | •      | national           |
| HENDERSON ELECTRIC ENGR.<br>CO.<br>Box 2615, Greenville, Miss.<br>J. E. Henderson  |                     | 1-2-3-<br>5-17  | •      |        | state              |
| HERBOLD, ROBERT J.<br>2510 S. Columbine St., Denver, Colo.   | •                   | 5               | •      | •      | national           |
| HIGGINS, JAMES A., ENGR.<br>535 S. Arthur, Pocatello Idaho<br>M. Sims  |                     | 1-2-3           | •      |        | state              |
| HILLYER ENGINEERING CO.<br>120 E. 13th St., New York, N. Y.  | •                   | 5               |        | •      | national           |
| HOBBS, MARVIN<br>2414 W. Lawrence Ave., Chicago, Ill.  |                     | 1-10-<br>20     |        | •      | national           |
| HOEHLIN, F. W.*<br>121-17 12th Ave., College Pt., N. Y.  |                     | 1-2-3-          | •      |        | 25 miles           |
| W. R. HOLWAY & ASSOC.<br>302 E. 18th St., Tulsa, Okla.<br>D. K. Holway, Partner  | •                   | 1               |        |        | national           |
| HORNER, G. EDWARD<br>188 Paine Ave., Irvington, N. J.  | 1-2                 | •               | •      |        | 10 miles           |
| HOUSTON CORP.<br>11801 W. Olympic Blvd., W. Los Angeles,<br>Cal.<br>J. Knaul   | 26                  |                 |        | •      | national           |
| HOWELL, B.<br>5321 Mt. Helena Ave., Los Angeles, Cal.  | •                   | 1-2             | •      |        | 50 miles           |
| HOWEY, W. C.*<br>5 Winthrop Sq., Boston, Mass.   | 1-13                |                 | •      | •      | inter-<br>national |
| HUBER ENGINEERING CO.<br>5 E. 3rd St., Cincinnati, O.  | •                   | 17              |        | •      | national           |
| HUFFMAN LABORATORIES*<br>17 Watchung Plaza, Montclair, N. J.<br>C. E. Huffman  | 10-25               | •               | •      | •      | national           |
| HULBERT ENGINEERING CORP.<br>903 Clyman St., Watertown, Wisc.<br>E. Hulbert  |                     | 2               |        | •      | national           |
| HURST LABS.<br>514-37th St., N., St. Petersburg, Fla.<br>Thomas F. Hurst   |                     | 1-5-6           | •      | •      | state              |
| HUTCHESON, GUY C.<br>1100 W. Abram St., Arlington, Texas   | 4                   |                 |        | •      | national           |
| INDUSTRIAL CONSULTANTS, INC.<br>320 Broadway, New York, N. Y.<br>E. Stieri   |                     | 2               |        | •      | 250 miles          |
| INDUSTRIAL RES. LABS.<br>2412 Aisquith St., Baltimore, Md.<br>G. Philip Stout, Pres.   | •                   | 1-2-5           | •      | •      | national           |
| INST. OF INDUST. RESEARCH*<br>1804 Milan Bldg., San Antonio, Texas   | •                   | 15              |        | •      | national           |
| INTERCONTINENT ENGINEER-<br>ING CORP.<br>37 Wall St., New York, N. Y.<br>E. Smith  | 1-2                 |                 |        | •      | inter-<br>national |
| INSTRUMENT ENGINEERING<br>CORP.<br>5690 N. Delaware St., Indianapolis, Ind.<br>F. Finehout   | •                   | 1-2-5           | •      | •      | national           |
| I. B. M. CHUNG CHIN KAO,<br>HOTEL CROYDEN<br>12 E. 86th St., New York, N. Y.   | 10                  |                 |        | •      | China              |
| INT. ELECTRONICS LABORA-<br>TORIES*<br>15 W. 47th St., New York, N. Y.<br>Alfred P. Huchberger   | •                   | 1-2-5           |        | •      | national           |
| INVEX, INC.*<br>610 S. Armenia Ave., P. O. Box 2023,<br>Tampa, Florida<br>Carl D. Brorin, Pres.<br>Palmer H. Craig, Ph.D., Vice Pres.<br>George B. Howell, Treas.<br>George S. Lenfestey, Secty. | •                   | 1               | •      |        | national           |
| IVINS, H. Y.<br>111 Ullery St., South Bend, Indiana  | 10                  |                 |        | •      | 150 miles          |
| JACKSON & MORELAND<br>31 St. James Ave., Boston, Mass.   |                     | 15              |        | •      | national           |
| JARVIS, KENNETH W.<br>1140 Cherry St., Winnetka, Ill.  | 10                  | 12              | •      | •      | national           |

# CONSULTING ENGINEERS continued

| Name  | Commu-<br>nications | Indus-<br>trial | Design Models | Area               |
|---|---------------------|-----------------|---------------|--------------------|
| JETER, G.*<br>276 Bay Ave., Glen Ridge, N. J.   | •                   | 15              | •             | 200 miles          |
| JOHNSON, G. R.<br>Box 9, Estevan Sask., Canada  | 26                  |                 | •             | national           |
| JOHNSON, J. KELLY<br>Suite 208, 55 W. 42nd St., New York,<br>N. Y.  | 1-12                | •               | •             | national           |
| JOHNSTON, RICHARD<br>351 N. Woodward, Birmingham, Mich.   |                     | 30              | •             | 20 miles           |
| JONES, CARY B.<br>P. O. Box 1059, Palo Alto, Calif.   | •                   | 8               | •             | national           |
| JUPE, JOHN H., A. M. I. E. E.<br>8 Clock House Forty Hill, Enfield, Eng.  | •                   | 1               |               | inter-<br>national |
| KASS, S.<br>36 Rutland Rd., Brooklyn, N. Y.   | 5-10                | 16              | •             | 50 miles           |
| KEEFE, F. M.<br>75 Berkshire St., Indian Orchard, Mass.   |                     | 5               | •             | 100 miles          |
| KEINATH, GEORGE*<br>36 Knollwood Dr., Larchmont, N. Y.  |                     | 5               | •             | national           |
| KELLEY, LEO A.<br>34-38 87th St., Jackson Heights, N. Y.  | •                   | •               |               | national           |
| KELLEX CORP.<br>Box 345, Silver Spring, Md.<br>William J. Thomas, III.  | •                   | 15              | •             | •                  |
| KENYON INSTRUMENT CO.<br>1345 N. Y. Ave., Huntington, N. Y.<br>Clifton M. Tuttle  |                     | 2-3-5           | •             | national           |
| K. & K. ENGINEERING CO.<br>Bolton, N. Y.<br>B. Knauth   |                     | 5               | •             | national           |
| KNOBEL, MAX*<br>677 Beacon St., Boston, Mass.   | 1                   | 2               | •             | national           |
| KNORR-HARLAN ELECTRONIC<br>LAB.<br>6389 TuJunga, North Hollywood, Calif.<br>W. Harlan   | 5                   | 5               | •             | So. Calif.         |
| KOKOMO ENTERPRISES*<br>102½ S. Main St., Box 270, Kokomo, Ind.  | •                   | 22              | •             | national           |
| KRAMER, M.<br>5 W. 86th St., New York, N. Y.  |                     | 27              | •             | national           |
| KRUEGER, A. M.<br>2033 Gates Ave., Brooklyn, N. Y.  |                     | 17              | •             | state              |
| K-V TRANSFORMER CORP.<br>1697 1st Ave., New York, N. Y.   | 1-4-5               |                 | •             | national           |
| LABORATORY FOR ELEC-<br>TRONICS, INC.<br>610 Newbury St., Boston, Mass.<br>Sims McGrath<br>A. D. Cole<br>J. Vance Holdam, Jr. | •                   | 17              | •             | national           |
| LABORATOIRE INDUSTRIEL<br>D'ELECTRICITE<br>41 Rue Emil Zola, Montreuil Sous Bois<br>Seine, France                             | 4                   | 5               | •             | France             |
| LAB. RADIOELECTRIQUES, INC.<br>12 Rue Grouselle, Paris, France  |                     | 5               | •             | France             |
| LA HUE, PHILIP*<br>3215 E. 34th Ave., Denver, Colo.   |                     | 1               | •             | state              |
| LANE, R.<br>R. 3, W. Main St., Midland, Mich.   |                     | 1               |               | state              |
| LANGE, E.*<br>3608 Forest Hill Rd., Baltimore, Md.  | •                   | 1               | •             | 400 miles          |
| LANGLAND, G.W.H. & ASSOC.*<br>P. O. Box 405, Mill Valley, Cal.  |                     | 2               | •             | state              |
| LANNERD ENG. CO.<br>4551 College Ave., Indianapolis, Ind.<br>C. E. Beghtel  |                     | 1-2             | •             | national           |
| LARSON, THOR.<br>2851 9th Ave. N.,<br>St. Petersburg, Fla.  |                     | 1               | •             | state              |

| Name  | Commu-<br>nications | Indus-<br>trial | Design Models | Area      |
|---|---------------------|-----------------|---------------|-----------|
| LAWTON PRODUCTS CO.<br>624 Madison Ave., New York, N. Y.<br>Fallert, Robert J.  | 5-25                | 5               | •             | national  |
| LEBEL, C. J.*<br>370 Riverside Drive, New York, N. Y.   | 4-5-13              | 5-30            | •             | national  |
| LECTRONIC RESEARCH LABS.<br>Howell & Hegerman Sts., Philadelphia,<br>Pa.  | •                   | 5               |               | national  |
| LEE, M.<br>148 Lafayette Ave., Brooklyn, N. Y.  | 4                   | •               |               | national  |
| LENT, W. C.<br>1319 F. St., N. W., Washington, D. C.  | 4-5                 |                 | •             | national  |
| LEWIS, EDWARD<br>1319 E. Cota St., Santa Barbara, Cal.  |                     | 17              | •             | 500 miles |
| LEWIS, G. A.<br>120 Boylston St., Room 448,<br>Boston, Mass.  |                     | 8               | •             | local     |
| LINCOLN, E.*<br>501 5th Ave., New York, N. Y.   |                     | 1               | •             | national  |
| G. B. LINDERMAN CORP.*<br>4767 Indiana Lane, N. W., Washington,<br>D. C.<br>G. Linderman  |                     | 2               |               | 300 miles |
| ARTHUR D. LITTLE, INC.*<br>30 Memorial Dr., Cambridge, Mass.  | 15                  | •               | •             | national  |
| LOEW, T.<br>Room 2608, 350 5th Ave., New York,<br>N. Y.   |                     | 2               | •             | 500 miles |
| LOHNES & CULVER<br>Munsey Bldg., Washington, D. C.<br>George M. Lohnes (Partner)<br>Ronald H. Culver (Partner)<br>Edward W. Deeters<br>Robert W. Beatty |                     | 4               | •             | national  |
| LONGORIA, ANTONIO<br>6007 Euclid Ave., Cleveland, O.  | •                   | 1               | •             | national  |
| LUBBERT, G.*<br>5609 Merville Ave., Baltimore, Md.  |                     | 1-5             | •             | national  |
| LUDWIG, WILLIAM H.<br>656 Bushwick Ave., Brooklyn, N. Y.  |                     | 1               |               | state     |
| LUKE, H. N.*<br>2113 Somerset Place, Oklahoma<br>City, Okla.  |                     | 9-17            | •             | national  |
| LYON, HENRY H.<br>4004 Jefferson St., Hyattsville, Md.  | 4                   |                 | •             | 250 miles |
| MAGGIO, C.<br>6420 New Utrecht Ave., Brooklyn, N. Y.  | •                   | 5               | •             | 40 miles  |
| MASS. INST. OF TECHNOLOGY<br>Cambridge, Mass.<br>D. Eckhardt  | 5                   | 5               | •             | national  |
| MC CREARY, H. J.*<br>320 Lewis Ave., Lombard, Ill.  | 1                   |                 | •             | national  |
| MCINTOSH, FRANK H.<br>710 14th St., N. W., Washington, D. C.  | 4                   | •               | •             | national  |
| W. L. MAXSON CORP.*<br>460 W. 34th St., New York, N. Y.<br>J. A. Vaughan, Chief Engineer  |                     | 1-2             | •             | national  |
| MCNARY & WRTHALL*<br>983 National Press Bldg., Washington,<br>D. C.   | 10                  |                 | •             | national  |
| MCNEAL, J. D.<br>Bristol St., Short Beach, Conn.  | •                   | 1               | •             | 50 miles  |
| MARSHALL, T.<br>73 Vaughan St., Portsmouth, N. H.   | 4                   |                 | •             | 50 miles  |
| MAST DEVELOPMENT CO., INC.<br>2110 E. 11th St., Davenport, Iowa   |                     | 1-2-5           | •             | 300 miles |
| MELPAR, INC.<br>718 5th St., N. W., Washington, D. C.<br>Thomas Meloy<br>Wm. L. Worthen (Electro-Mech.<br>Des. & Devel.)                                | 1                   |                 | •             | national  |

| Name  | Commu-<br>nications | Indus-<br>trial | Design/Models | Area                         |
|---|---------------------|-----------------|---------------|------------------------------|
| <b>METCALF &amp; EDDY</b><br>1762 Commonwealth Ave., Brighton,<br>Mass.<br>A. J. Leavitt  |                     | 1               | •             | national                     |
| <b>MESURES</b><br>79 Champs Elysees, Paris, France<br>J. Vivie  |                     | 5               | •             | France                       |
| <b>METCALF, M. C.*</b><br>38 Memorial Dr., Cambridge, Mass.   |                     | 20              | •             | 30 miles                     |
| <b>MILLER, H.</b><br>Box 1076, Santa Fe, New Mexico   |                     | 5               | •             | national                     |
| <b>MILWAUKEE COUNTY H'WAY<br/>COMMISSION</b><br>Courthouse, Milwaukee, Wis.<br>N. S. Rich   |                     | 15              | •             | 25 miles                     |
| <b>MITTELMANN, E. E.</b><br>649 West Washington Blvd., Chicago,<br>Ill.   |                     | 8-17-29         | •             | national                     |
| <b>MODEV CO.</b><br>2039 Salem Ave., Dayton, Ohio<br>William D. Evans   |                     | 1-5             | •             | national                     |
| <b>MODIE, E.</b><br>Barnesville, Ohio   |                     | •               |               |                              |
| <b>MOEN, ESTEN</b><br>Fosston, Minn.  | 1                   |                 | •             | 1 mile                       |
| <b>MORRISON, M.*</b><br>153 5th Ave., New York, N. Y.   | •                   | 1-2-5           | •             | 1000 miles                   |
| <b>MOSES, H.</b><br>36-35 167th St., Flushing, N. Y.  | 4                   |                 | •             |                              |
| <b>NATIONAL ELECT. LABS. INC.</b><br>200 King St., Alexandria, Va.  | 10                  | •               | •             | national                     |
| <b>NATIONAL RADIO RESEARCH<br/>LABORATORIES</b><br>74 W. 68th St., New York, N. Y.<br>Joseph H. Chislow—Comm. &<br>Laboratory Equipment | 1-4-5               |                 | •             | national                     |
| <b>NEUMAN, LEONARD J.*</b><br>943 Mellie Esperson Bldg., Houston,<br>Texas  | •                   | 9               | •             | national                     |
| <b>NEW PRODUCTS ENGR. CO.*</b><br>631 Wayne Ave., Dayton, Ohio  |                     | 2-5             | •             | national                     |
| <b>NIKIRK, THOMAS</b><br>649 S. Berkeley Ave., Pasadena, Cal.   | 4-10                |                 | •             | state                        |
| <b>NOEL MFG. CO., THE</b><br>136-138 E. 122nd St., New York, N. Y.<br>Noel J. Lituchy   |                     | 1-2             | •             | national                     |
| <b>NORRIS &amp; ELLIOTT, INC.</b><br>370 Lexington Ave., New York, N. Y.<br>George H. Elliott<br>O. A. Ewing                            | •                   | 20              | •             | U. S.<br>Mexico              |
| <b>NORTH AMERICAN AVIATION,</b><br>4232 W. 167th St., Lawndale, Cal.<br>W. Bullock  | 10                  |                 | •             | national                     |
| <b>NORTH AMERICAN RESEARCH<br/>LABORATORIES, INC.</b><br>156 Harold Ave., Fanwood, N. J.<br>R. Goodyear                                 | •                   | 1-5-6           | •             | national                     |
| <b>OCCHIOGROSSO, T.</b><br>84 Barker Ave., Eatontown, N. J.   | 25                  |                 | •             | 50 miles                     |
| <b>O'REILLY, R.*</b><br>3404 Beach Dr., Seattle, Wash.  | •                   | 1-2             | •             | Alaska<br>and state-<br>wide |
| <b>OSWALT, A. K.</b><br>620 7th Ave., N., Texas City, Texas   | 4                   | 5               | •             |                              |
| <b>OSTERMOOR, A. G.</b><br>Whaley Lake Apairies, Holmes, N. Y.  | 30                  |                 | •             |                              |
| <b>MESSRS. OXLEY DEVELOPMENT<br/>CO., LTD.*</b><br>28 Meeting House Lane<br>Ulverston, Lancs, England<br>H. F. Oxley, Esq.              | 10                  |                 | •             | national                     |
| <b>PACIFIC ELECTRONICS</b><br>1612 N. Hill Ave., Pasadena, Cal.<br>D. F. Packard  | 4                   | 5               | •             | inter-<br>national           |
| <b>HARVEY S. PARDEE &amp; ASSOC.*</b><br>549 W. Washington Blvd., Chicago, Ill.   |                     | 15              | •             | national                     |

| Name  | Commu-<br>nications | Indus-<br>trial | Design/Models | Area               |
|---|---------------------|-----------------|---------------|--------------------|
| <b>PARISH, W. R.</b><br>34 A Navy Homes, Grinnell, Iowa   | 1                   |                 | •             | 25 miles           |
| <b>C. J. PATTERSON CO.</b><br>4722 Broadway, Kansas City, Mo.<br>C. J. Patterson<br>R. W. Selman<br>R. J. Sumner—Cereal Chemistry<br>W. R. Lewis—Indus. Elec. & Comm. | 10                  | 5               | •             | national           |
| <b>PERCO, INC.*</b><br>1133 S. High St., Columbus, O.<br>Kenneth Goodman  |                     | 22              | •             | state              |
| <b>PERRIN, JOSEPH*</b><br>95 Liberty St., New York, N. Y.   | 3                   |                 | •             | 100 miles          |
| <b>PETRY, S. H.</b><br>3016 Central St., Evanston, Ill.   |                     | 2               | •             | 140 miles          |
| <b>PICKARD &amp; BURNS</b><br>66 Needham St., Newton Hghlds., Mass.<br>G. W. Pickard<br>L. P. Wheeler<br>H. S. Burns<br>H. B. Whittemore<br>C. M. Capen               | 11                  |                 | •             | inter-<br>national |
| <b>PIONEER ELEC. &amp; RES. CORP.</b><br>7216 Circle Ave., Forest Park, Ill.<br>Charles S. Linell   |                     | 1               | •             | national           |
| <b>PITMAN, E.</b><br>Norumbega, Camden, Maine   | •                   | 5               |               | national           |
| <b>POLYTECHNIC RESEARCH &amp;<br/>DEVELOPMENT CO.</b><br>216 Ryder Ave., Malverne, N. Y.<br>F. Gaffney  | •                   | 5               | •             | national           |
| <b>POMPILTO, M.</b><br>Box 172, Livermore, Cal.   | •                   | 15              | •             |                    |
| <b>PRECISION ELECTRONICS, INC.*</b><br>5717 Melrose Ave., Chicago, Ill.<br>W. Grommes, Pres.<br>Engrs; Albert Hart<br>Harold Freeman                                  | •                   | 5               | •             | national           |
| <b>PRESTON LABS.</b><br>Box 847, Butler, Pa.<br>John M. McCornish   |                     | 5               | •             | national           |
| <b>PRESTON ELECTRONIC LABS.<br/>INC.</b><br>58 Summer St., Malden, Mass.<br>George D. Preston   | 1                   | 5               | •             | state              |
| <b>PULLEN, F. L.</b><br>246 Westmoreland Dr., Baton Rouge, La.  | 1                   | •               | •             | state              |
| <b>RACHINSKY, K. K.</b><br>1902 S. Benecia Ave., Los Angeles, Cal.  | 4                   |                 |               | national           |
| <b>RACK, EDGAR C.*</b><br>1800 Columbus Ave., Waco, Texas   |                     | 2               | •             | state              |
| <b>RADIO COMMUNICATION CO.*</b><br>6909 A. Templeton St., Huntington<br>Park, Calif.<br>H. Vaughn Harvey  | 10                  |                 | •             | state              |
| <b>RADIO ENGR. CO.</b><br>8 State St., New York, N. Y.<br>Albert Danizer  |                     | 12              | •             | 200 miles          |
| <b>RASH, W.</b><br>Rose Hill, New Castle, Del.  |                     | 1-2-5-<br>6     | •             | state              |
| <b>RATHSBURG, JOHN</b><br>4140 Van Dyke Ave., Detroit, Mich.  | •                   | 1               | •             | state              |
| <b>RAYMOND, H. H.</b><br>Smith St., Middletown, Conn.   | •                   | 1-2             | •             | national           |
| <b>RAYMOND ENG. LAB., INC.</b><br>Smith St., Middletown, Conn.<br>H. H. Raymond, Pres., Lisc. Engr.<br>P. Bliss, Lisc. Engr.<br>P. J. Campbell, Lisc. Engr.           |                     | 1-2             | •             | 150 miles          |
| <b>RAMSEY, H. M.</b><br>1428 South Cloverdale, Los Angeles,<br>Calif.   | 1                   |                 | •             | 100 miles          |
| <b>RAYTHEON MFG. CO.</b><br>Waltham, Mass.<br>J. Farrington   | •                   | 1               | •             | 500 miles          |
| <b>RAZEK, JOS.</b><br>202 Darby Rd., Llanerch, Havertown,<br>Pa.  | •                   | 1-2-5           | •             | national           |

# CONSULTING ENGINEERS continued

| Name  | Commu-<br>nications | Indus-<br>trial | Design Models | Area               | Name  | Commu-<br>nications | Indus-<br>trial | Design Models | Area         |
|---|---------------------|-----------------|---------------|--------------------|---|---------------------|-----------------|---------------|--------------|
| REED RESEARCH*<br>1048 Potomac St., N. W., Washington,<br>D. C.   | •                   | 1-2-3-<br>5-6   | •             | • national         | SCOTT, R. C.<br>340 Common St., Belmont, Mass.  |                     | 5               | •             | • national   |
| RIEBER, F.*<br>127 E. 73rd St., New York, N. Y.   | •                   | 5               | •             | • national         | SEAYER, F. HARMON<br>212 S. 4th St., Delevan, Wisc.   | •                   | 1-2             | •             | • national   |
| RING & CLARK<br>Munsey Bldg., Washington, D. C.<br>Partners: A. D. Ring<br>R. L. Clark (inactive)<br>Assoc.: Howard T. Head<br>Stephen W. Kershner<br>Allan L. Bohn<br>Daniel B. Hutton<br>Bascon E. Porter | 4                   |                 | •             | • national         | SEMPLE, PARLAN<br>328 Passaic Ave., W. Caldwell, N. J.  |                     | 11              | •             | • 100 miles  |
| PREMIER CRYSTAL LABORA-<br>TORIES<br>53-63 Park Row, New York, N. Y.  | Quartz<br>Crystals  |                 | •             | • national         | SENSITROL, INC.*<br>4128 Wilshire Blvd., Los Angeles, Cal.<br>Carl Hemmer<br>Robert Bartlett<br>Steward Tongret   |                     | 1-2-3-<br>6-17  | •             | • 100 miles  |
| R. M. S. ASSOCIATES, INC.<br>125 Halstead Ave., Mamaroneck, N. Y.<br>A. D. Vollenweider, Pres.  | 10                  | 5               | •             | • national         | SERDEX, INC.*<br>91 Cambridge St., Boston, Mass.<br>Donald C. Bradford  |                     | 5               | •             | • national   |
| W. C. ROBINETTE CO.*<br>802 Fair Oaks, Ave., South<br>Pasadena, Calif.  |                     | 5-17            |               |                    | SHAW, GEORGE S.<br>Box 1033, St. Cloud, Fla.  | 11                  | 11              |               | 1000 miles   |
| ROHNER, GERRIT, J.<br>Sampson College, Sampson, N. Y.   |                     | 1-2             | •             | New<br>England     | SHAW, S. J.<br>Empire Bldg., Pittsburgh, Pa.  | 10                  | •               |               | 300 miles    |
| ROLAB PHOTO SCIENCE LABS.*<br>Sandy Hook, Conn.   |                     | 15              | •             | • national         | SHERMAN INDUS., ELECTRON.<br>CO., Inc.<br>503 Washington Ave., Belleville, N. J.<br>V. W. Sherman, Pres. & Ch. Eng.<br>H. L. Grosswendt, V. P. & Sls. Mgr.<br>A. Noar, V. P. & Prod. Mgr. |                     | 17              | •             | 100 miles    |
| PAUL ROSENBERG ASSOCIATES<br>Woolworth Bldg., New York, N. Y.   | •                   | 15              | •             | • national         | SHERRON ELECTRONICS CO.*<br>1201 Flushing Ave., Brooklyn, N. Y.<br>Mr. Barasch  | 4-10-25             | 1               | •             | • national   |
| ROWE RADIO RES. LAB. CO.*<br>2422 Pulaski Rd., Chicago, Ill.  | 4                   | 1-2-3-<br>5     | •             | • national         | F. H. SHEPARD, JR., CONSULT-<br>ING ENGINEER<br>31 Union Place, Summit, N. J.<br>R. A. Dinzi  | •                   | •               | •             | 1000 miles   |
| RUGEY CONSULTING LABS.*<br>511 E. 48th St., Brooklyn, N. Y.<br>I. Auerbach  | 1                   |                 | •             | • 250 miles        | SIEVERS, GUS<br>Route 1, Box 182, Mission, Texas  |                     | 1-2             | •             | • state      |
| RUTEMILLER, OREN G.<br>515 Rose Hill Ave., St. Bernard,<br>Cincinnati, Ohio   |                     | 17              | •             | • 300 miles        | SISSON, H.<br>2617 Pine St., San Francisco, Cal.  | 4                   |                 | •             | • 50 miles   |
| SANBORN, PAUL<br>2602 Riverview Dr., Parkersburg, W. Va.  |                     | 28              |               | inter-<br>national | SMITH, A. H. REESOR*<br>277 Sherwood Dr., Ottawa, Canada  |                     | 5-6             | •             | • national   |
| SARKES TARZIAN ENG. CON-<br>SULTANTS*<br>321 W. Dodds St., Bloomington, Ind.<br>Electronic: M. L. Weigel<br>Alarico Valdettero<br>Walter Sutton<br>Mechanical: Miles Blazec                                 | •                   | 2               | •             | • national         | SMITH, J. C.<br>117 E. 24th St., New York, N. Y.  | 2-4                 |                 | •             | • state      |
| SAVADELIS, I. C.<br>Y. M. C. A., Greenwich, Conn.   | •                   | 1-5             | •             | • 300 miles        | SOUTHERN RES. INST.*<br>917 S. 20th St., Birmingham, Ala.<br>L. White   | •                   | 15              | •             | • 1000 miles |
| SCHICK, R.<br>14 St. Francis St., Melbourne,<br>Australia   |                     | 1               | •             | • Australia        | SOWTER, G. A. V.<br>18, Bushey Way, Beckehnam, Kent, Eng.   | •                   | 1               | •             | • national   |
| SCHMITT, F.<br>193-10 99th Ave., Hollis, N. Y.<br>F. J. Schmitt<br>Allen Fay<br>Howard Hoefuer  |                     | 2               | •             | • 300 miles        | SPAWN, COY U., JR.*<br>1209 Cleburne, Houston, Texas  |                     | 15              | •             | • state      |
| SCHMITT, W.*<br>2440 Lake View Ave., Chicago, Ill.  |                     | 1               | •             | • national         | SPECTRUM ENGR., INC.<br>S. E. Cor. Preston & Filbert Sts.,<br>Philadelphia, Pa.   | •                   | 2               | •             | • 100 miles  |
| SCHNELL, L.<br>P. O. Box 56, Santa Barbara, Cal.  | 10                  |                 | •             | • 500 miles        | SPEER & KOENIG<br>4550 Main, Kansas City, Mo.   | 2                   |                 | •             | • 400 miles  |
| SCHOTTLAND, FREDERIC D.<br>104-18 Metropolitan Ave., Forest Hills,<br>N. Y.   | 4                   | 5               | •             | • national         | STACEY, DAVID<br>Box 26, Estes Park, Colo.  | 5                   | 5               | •             | • national   |
| SCHUTTIG & CO.<br>9th & Kearney Sts., N. E., Washington,<br>D. C.<br>W. Williams  | 10                  |                 | •             | • national         | STAND. ELEC. RES. CORP.<br>(X-RAY ELEC. CORP.)<br>2 East End Ave., New York, N. Y.<br>Dr. F. Fua*   | •                   | 1-2-6-<br>13    | •             | • national   |
| SCIENTIFIC RES., INC.*<br>5430 Horrocks St., Philadelphia, Pa.<br>William J. Kroeger<br>Henry P. Manning  |                     | 2               | •             | • state            | STAVID ENGR. INC.*<br>40 Somerset St., Plainfield, N. J.<br>Harold O. Bishop<br>David R. Sanders<br>Stanton M. Shackell<br>David H. Rowland   | 4-10                | 17              | •             | • national   |
| SCOTT INSTRUMENT LABORA-<br>TORY<br>4859 68th St., San Diego, Calif.<br>J. E. Scott   |                     | 5               | •             | • 100 miles        | STEEL, LT. COL. W. A.*<br>298 Sherwood Dr., Ottawa, Ont. Canada   |                     | 1-4             | •             | • national   |
|   |                     |                 |               |                    | STEELE, O. A.<br>1506 S. W. Montgomery St., Portland,<br>Ore.   | •                   | 5               | •             | • national   |
|   |                     |                 |               |                    | STEINER, WILLIAM W.<br>656 31st St., at Grove, Oakland, Cal.  |                     | 1               | •             | • 200 miles  |
|   |                     |                 |               |                    | STERLING, HOWARD T.<br>70 Morningside Drive, New York, N. Y.  | 5                   | 5               | •             | • 100 miles  |

| Name  | Comm-<br>nications | Indus-<br>trial | Design | Models | Area       |
|---|--------------------|-----------------|--------|--------|------------|
| STEVENS, ROBERT*<br>615 W. Ferry St., Buffalo, N. Y.  |                    | 2-3             | •      | •      | 60 miles   |
| STEVENS-ARNOLD CO., INC.*<br>22 Elkins St., S. Boston, Mass.  | 10                 | 1-2             |        | •      | national   |
| STINER, H. WRAY<br>701 Investment Bldg., Pittsburgh, Pa.  |                    | 1-2             | •      |        | 300 miles  |
| STROBO RESEARCH<br>4351 N. 35th St., Milwaukee, Wisc.<br>Edward R. Farber<br>Frank J. Scherschel<br>Robert Dumke  |                    | 22              |        |        | 200 miles  |
| SYSTEMS RES. FIELD LAB.<br>Beavertail Point, Jamestown, R. I.   | •                  | 5               |        | •      | national   |
| TANNENBAUM, W.*<br>125 Elliot Ave., Yonkers, N. Y.  | •                  | 5               | •      | •      | national   |
| TECHLIT CONSULTANTS, INC.<br>140 Naseau St., New York, N. Y.  |                    | 1               | •      |        | 1000 miles |
| TELEVISION ELECTRONICS CO.<br>305 Teshwood Drive, N. W.,<br>Atlantic, Ga.   | 17                 | 17              | •      |        | Southeast  |
| THERMIONIC ENGR. CORP.<br>Rt. 23, & Blvd., Pompton Plains, N. J.<br>William P. Foster, Ch. Eng.<br>Joseph A. Zebrowski, Ger. Mgr.   | •                  | 1-5             | •      | •      | national   |
| TIFFANY LABORATORIES*<br>339 So. Alexander Ave., Claremont, Cal.<br>F. Emery Tiffany  |                    | 1-2-5           | •      | •      | national   |
| TRANS-WORLD ELECTRONICS<br>CORP.*<br>475 5th Ave., New York, N. Y.<br>Frederick S. Jackson, Electronics<br>Eric W. Bruse, Mechanics   |                    | 29              | •      | •      | national   |
| TRIPLETT & BARTON, INC.<br>821 Elwood St., N. Hollywood, Calif.   |                    | 1               |        | •      | national   |
| TURNER, RUFUS P.<br>Rd. 4, New Bedford, Mass.   | •                  | 5               | •      | •      | national   |
| UEHLING, F.*<br>P. O. Box 716, Passaic, N. J.   |                    | 5               | •      | •      | national   |
| UNIVERSAL ENGINEERING CO.<br>222 W. Water St., Sandusky, Ohio<br>W. Derrick   |                    | 1               | •      | •      |            |
| U. S. NAVY-HUMM LAB.<br>11 Grant Ave., Toms River, N. J.<br>G. Robison  |                    | 1               | •      | •      | national   |
| U. S. RESEARCH & DEVELOP.<br>CORP.*<br>5151 W. Washington Blvd., Los Angeles,<br>Cal.<br>J. Richards  | 10                 | •               |        | •      | national   |
| U. S. TESTING CO.<br>1415 Park Ave., Hoboken, N. J.   |                    | 1               |        |        | national   |
| V-D INSTRUMENT LABORATORY<br>425 W. Whitmore St., Wilmar, Cal.<br>Orin C. Strathman   |                    | 5               |        | •      | state      |
| VANG PROCESS DEVELOPMENT<br>CO.<br>480 Lexington Ave., New York, N. Y.<br>Alfred Vange—Capacitor Weld.<br>C. H. Strange—Capacitor Weld.                                     |                    | 1               |        | •      | national   |
| VAN WART, ROBERT<br>Kensico Rd., Thornwood, N. Y.   |                    | 1-5             |        |        | national   |
| VINCENT, ANDREW M.<br>300 W. High Ter., Rochester, N. Y.  | •                  | 2               |        | •      | 30 miles   |
| VOSS ENGINEERING SERVICE<br>182 E. 19th St., Brooklyn, N. Y.<br>Walter W. Voss, Owner   | 4                  |                 | •      |        | 50 miles   |
| WALES LABORATORIES*<br>289 South St., Morristown, N. J.<br>N. Wales   |                    | 12-15           |        | •      | 200 miles  |
| WALKUP, J. F.<br>Overland Park, Kansas  |                    | 1-2             | •      | •      | national   |
| WALLACE, PAUL H. & ASSOCIATES<br>Box 451, Kingman, Ariz.<br>Paul H. Wallace, Electrical (E. E.)<br>Joseph S. Shew, Mechanical<br>James C. McGuire, Gasoline Fueling<br>Sys. |                    | 1               | •      |        | 100 miles  |
| WALTON, H. T.<br>113 E. 14th St., Big Spring, Texas   | 5                  | 5               | •      | •      | national   |

| Name  | Comm-<br>nications | Indus-<br>trial | Design | Models | Area      |
|---|--------------------|-----------------|--------|--------|-----------|
| WALUK, PETER P.<br>Parcel Post Sta., Box 47, Worcester,<br>Mass.  | 4                  |                 | •      | •      | state     |
| WARREN, C. L.*<br>Easy Street, Canaan, Maine  | 1-2-4              |                 | •      | •      | national  |
| WARRICK F.<br>8666 Grandville, Detroit, Mich.   |                    | 2               |        | •      | 300 miles |
| WASH. U. RES. FOUNDATION,<br>APP. MATH. DEPT.<br>7443 Cromwell Dr., Clayton, Mo.*<br>Prof. Frank W. Bubb<br>" John R. Moore<br>" David G. Soergel<br>" Wm. A. Orr<br>Prof. J. W. Koopman<br>" W. R. Evans<br>" A. W. Lindberg |                    | 1-2-17          | •      | •      | national  |
| WEBBER, J. T.<br>R. 2, 4171 Flint Rd., Kalamazoo, Mich.   | 10                 |                 |        | •      | national  |
| WEISS, IRVING*<br>26 Cornelison Ave., Jersey City, N. J.  | 1-2-4-5            |                 |        | •      | national  |
| WELLINGTON, H.<br>2178 N. 57th St., Milwaukee, Wisc.  |                    | 1               |        |        | 100 miles |
| WELLS, W.*<br>307 E. 44th St., New York, N. Y.  | 1-23               | 15-17           | •      | •      | state     |
| WELTRONIC CO.<br>Detroit, Mich.<br>C. Ryzdewski   |                    | 14              |        | •      | 200 miles |
| WESTERN ELECTRIC & BELL<br>TEL. LAB.<br>47-St. Marks Pl., Brooklyn, N. Y.<br>Anton Muller   | •                  | 15              | •      | •      | national  |
| WHIPPLE & CO., CONSULT.<br>ENGRS.<br>114 Liberty St., N. Y. C.  | •                  | 1-2-3           | •      | •      | national  |
| WICKS ENGRG. & CON-<br>STRUCTION CO.<br>12th & Ferry, Camden, N. J.<br>John R. Lewis, Ch. Elec. Engr.   | 1                  |                 |        |        | national  |
| WIEDEMAN, GUSTAVE*<br>122 E. 22nd St., Rm. 1403, New York<br>N. Y.  |                    | 1               |        | •      | state     |
| WILKINSON, JOHN K.<br>3906 1st St., S. E., Washington, D. C.  | 30                 |                 |        | •      | state     |
| WILLIAMSON, PAUL, D.Sc. Fel.<br>AAAS*<br>5201 Danneel St., New Orleans, La.<br>Asst. Consult.: F. J. Leblanc<br>J. D. M. Williamson   | •                  | 9               | •      | •      | national  |
| WILMOTTE, RAYMOND M., INC.*<br>236 W. 55th St., New York, N. Y. & 1469<br>Church St., N. W., Washington,<br>D. C.<br>Paul A. De Mars (communica-<br>Wash. off.)<br>C. E. Enjel (Indut. Electronics,<br>N. Y. off.)            | 4                  | 17              | •      | •      | national  |
| WILSON, HERBERT L. &<br>ASSOCIATES<br>Presidential Gardens, Garfield Bldgs.<br>Alexandria, Va.<br>Herbert L. Wilson, Washington, D. C.<br>Karl Gerhard<br>George T. Conrad  | 4                  |                 |        | •      | national  |
| WRIGHT, R. E.<br>1623 5th Ave., San Diego, Calif.   | •                  | 13              |        | •      | national  |
| WYSE LABORATORIES, INC.*<br>211 S. Ludlow St., Dayton, Ohio   |                    | 1-2-5           |        | •      | national  |
| YARDENY LAB. CO., INC.*<br>105 Chambers St., New York, N. Y.  |                    | 15-17           |        | •      | national  |
| ZENIER, HOWARD AND<br>ASSOCIATES<br>617 Main St., Lewiston, Idaho<br>Howard R. Zenier<br>Robert S. Dole<br>Raymond V. Harland<br>Robert W. Retherford   | •                  | 1               | •      | •      | 300 miles |
| ZENOR, H. M.<br>Box 7415, Houston, Texas  |                    | 5               | •      | •      | national  |
| ZOTTU, PAUL D.*<br>95 Country Club Rd., Newton Center,<br>Mass.<br>Bruce K. Heick, E. E.<br>Wifrid L. Atwood, E. E.<br>Herbert B. Reed, M. E.   |                    | 17              | •      | •      | national  |

# Applications of SONIC and ULTRASONIC VIBRATIONS

Subaudible, audible, and superaudible mechanical vibrations are now finding widespread utilization in industrial testing and processing, communication, and navigation. Among the new uses for vibrations, particularly in the superaudible or ultrasonic range, are destructionless testing, killing germ life, emulsifying immiscible liquids, and measuring vibrational strains in structural members

By A. A. McKENZIE and FRANK ROCKETT

## DEFINITIONS

Subaudible: below the limit of hearing  
Superaudible: above the limit of hearing  
Sonic: utilizing sound waves  
Ultrasonic: utilizing sound waves for purposes other than hearing

## APPLICATIONS OF SONICS AND ULTRASONICS

- |   |  |  |
|---|--|--|
| Measuring elastic and dissipative properties of solids                            | Acceleration in ageing wines and spirits   | Freeing fused metals from gas inclusion  |
| Engine (gas and steam) pressure indication and detonation                         | Acceleration of chemical reactions   | Coagulating aerosols   |
| Detecting noise and vibration in engines and machinery                            | Transformation of chemical compounds   | Precipitation of industrial smokes   |
| Measuring vibrational strains in structural members                               | Stimulation or destruction of bacteria in food products                                  | Testing metals for hardness  |
| Determination of pressure zones in pillars  | Underwater signaling   | Testing metals for defects   |
| Measuring elasticity of yarns   | Echo depth sounding  | Increasing virulence of bacteria   |
| Detection of schools of fish  | Treating seeds to stimulate plant growth   | Decreasing virulence of bacteria   |
| Geophysical prospecting   | Increasing plant yield   | Disintegration of cells to release endotoxins, enzymes, polysaccharides, and hemoglobin under aseptic conditions |
| Measurement of fluid depth in wells   | Flocculation of suspended particles or gas bubbles in liquids                            | Treatment of plastics for clothing   |
| Hydrographic surveying  | Transformation of crystal structures   | Treating paint for smoother, more durable finish and decreased drying time                                       |
| Sonar—sound navigation and ranging  | Killing of small fish and frogs  | Distribution of photographic emulsions for fine-grain film   |
| Induction of molecular rearrangement  | Heating of media that absorb supersonic waves  | Liquefaction of iron hydroxides  |
| Determination of physical properties of liquids and gases                         | Movements of particles into nodes of standing wave systems                               | Measurement of metal thickness   |
| Detecting air bubbles in aircraft bearings  | Mixing of metals to produce alloys   | Tinning aluminum sheet   |
| Killing staphylococci bacteria and bacteriophage                                  | Detection of imperfections in castings   | Production inspection of metal sheet   |
| Breaking sulfathiazole crystals for faster reaction                               | Emulsification of oil and water  | Opening garage doors   |
| Development of antibodies by jarring antigens loose from shattered germs          | Emulsification of mercury and water mixtures   | Production of cavitation   |
| Mixing powdered metals in manufacture of cemented carbide tools                   | Drilling glass with another piece of glass   | Vibration testing of airplates   |
| Detecting separations in bonded metal strips                                      | Dispersion of metal from a cathode during electrolysis (manufacture of catalytic agents) | Dispersion of fog  |
| Mercury delay line  | Increasing oxidation reactions   | Determination of saline and silt levels in hydrography   |
| Detecting icebergs  | Changing starch into dextrine  | Absolute altimeter   |
| Homogenization of milk  | Decomposing gums and gelatin   | Bias for magnetic recording  |
| Emulsification for giving smoother ice cream, mayonnaise, and other food products | Speeding solidification of molten tin and aluminum                                       | Television light valve   |
|   | Producing finer-grain metals   | Inaudible superimposed radio signaling   |
|   | Speeding uniform cooling and hardening of steel  | Compression and expansion of media through which the ultrasonic waves pass                                       |
|   | Degassing of liquids   | Subsea geophysical prospecting   |
|   |  | Radar and loran trainers   |
|   |  | Examination of automobile tires for flaws  |

## SONIC AND ULTRASONIC FREQUENCY PHENOMENA

| <b>MEGA-CYCLES</b>   | 100  | Killing Germ Life In Canned Foods  | <b>SUPERAUDIBLE</b> |  |
|--|--|--|---------------------|--|
|  | 20   | Upper Range General Motors Sonigage  |                     |  |
|  | 15   | Radar Trainer — MIT Velocity and Absorption Studies In Liquids   |                     |  |
|  | 14   | Interferometer Studies with Televiso Ultrason  |                     |  |
|  | 12   | Upper Range Sperry Reflectoscope   |                     |  |
|  | 10   | German Aircraft Bearing Testing  |                     |  |
|  | 7.5  | Practical Upper Limit Televiso Ultrason  |                     |  |
|  | 5  | Upper Range Sperry Thruray   |                     |  |
|  | 2.8  | Upper Range Branson' Audigage  |                     |  |
|  | 2.25   | Middle Frequency Sperry Thruray  |                     |  |
| <b>KILOCYCLES</b>  | 2  | Vacuum Tube Arc In Air By Palaiologos  | <b>AUDIBLE</b>      |  |
|  | 1.6  | Upper Radio-Frequency Limit of Standard Broadcast Band   |                     |  |
|  | 1.5  | Upper Range Crystalab Ultra-Sonorator  |                     |  |
|  | 1.4  | Lower Range Branson Audigage   |                     |  |
|  | 1  | G.E. Materials Tester — Lower Range Sperry Thruray — Upper Range Brush Hypersonic Analyzer — Penicillin Production |                     |  |
|  | <b>1 MEGACYCLE</b>   |  |                     |  |
|  | <b>1,000 KILOCYCLES</b>  |  |                     |  |
|  | 835  | Biological Experiments with Focused Ultrasonic Waves   |                     |  |
|  | 780  | Paulsen Arc In Gas by Dieckmann  |                     |  |
|  | 612  | Tests on Susceptibility of Lower Animal Forms to Ultrasonic Waves  |                     |  |
| 600  | Highly Polymerized Molecules can be Split  |  |                     |  |
| 540  | Lower Radio-Frequency Limit of Standard Broadcast Band   |  |                     |  |
| 500  | Lower Range Sperry Reflectoscope — Hydrogen Whistle by Hartmann  |  |                     |  |
| 450  | Standard Frequency of Televiso Ultrason  |  |                     |  |
| 400  | Lower Range Crystalab Ultra-Sonorator — Upper Range for Forming Emulsions  |  |                     |  |
| 300  | Quartz Transducer — Oil Bath Experiments of Wood and Loomis — Lower Range of Emulsion, Hg, Sn, S, Cu, Pb, Bi, Ag, Paraffins — Spark Gap Generator by Altberg, 1907 — Lower Range General Motors Sonigage |  |                     |  |
| 120  | Air Current Generator by Hartmann, 1922  |  |                     |  |
| 100  | Upper Range Galton Whistle by Edelman, 1900  |  |                     |  |
| 90   | Tuning Forks by Koenig, 1899   |  |                     |  |
| 70   | Upper Limit Ranging Signal of Bats   |  |                     |  |
| 65   | Upper Limit Sonar JP   |  |                     |  |
| 50   | Lower Range Brush Hypersonic Analyzer  |  |                     |  |
| 40   | Upper Range Components of Grasshopper Noise  |  |                     |  |
| 33   | Friction-Excited Vibrating Tube by Holtzmann   |  |                     |  |
| 30   | Upper Limit Sonar QCS/T and QJA — Common Midrange of Bias for Magnetic Recording   |  |                     |  |
| 28   | Brown Cricket  |  |                     |  |
| 25   | Small Meadow Grasshopper — Ultrasonic Garage-Door Opener   |  |                     |  |
| 21.5   | Submarine Signal Co. Type 738A Magnetostriction Depth Sounder  |  |                     |  |
| 20.8   | Early Magnetostriction Projector for Submarine Signals   |  |                     |  |
| 20   | Upper Range Flocculating Aerosols — Common Meadow Grasshopper  |  |                     |  |
| 17.4   | Brown Cricket  |  |                     |  |
| 17   | Lower Limit Echo Ranging Sonar QCS/T   |  |                     |  |
| <b>16 — PRACTICAL UPPER LIMIT OF YOUNG ADULT HUMAN HEARING</b> |  |  |                     |  |
| <b>CYCLES</b>  | 15   | Early Underwater Signal Experiments by Langevin — Black Pole Warbler — Newly Hatched Robins                        | <b>SUBAUDIBLE</b>   |  |
|  | 14.2   | Common Meadow Grasshopper  |                     |  |
|  | 12   | Aluminum Sheets Tinned In Zinc Bath  |                     |  |
|  | 10   | Lower Range Tests of Flocculating Aerosols — Upper Range Ship's Propeller at 1,000 Yards — Lower Limit Sonar QJA   |                     |  |
|  | 9.3  | Staphylococci Bacteria Killed  |                     |  |
|  | 9  | Submarine Signal Co. Laboratory Oscillator   |                     |  |
|  | 8.3  | Brown Cricket  |                     |  |
|  | 8  | Lower Limit Sonar JP   |                     |  |
|  | 7.1  | Common Meadow Grasshopper  |                     |  |
|  | 7  | Tone of Bats (1/4-Second Pulses)   |                     |  |
| 5  | Ammonium Chloride Smoke Flocculation Experiments   |  |                     |  |
| 4.186  | Upper Limit Standard Piano   |  |                     |  |
| 4  | Tone Broadcast by Radio Station WWV  |  |                     |  |
| 3.5  | Nandillon Sonic Altimeter, 1928  |  |                     |  |
| 2.5  | Upper Range Chesapeake Bay Croakers  |  |                     |  |
| 2  | Lower Range Snapping Shrimp In Coral Waters — Upper Range Sea Robins — Delsasso Sonic Altimeter  |  |                     |  |
| 1.1747   | Upper Range Soprano, D Two Octaves Above Middle C  |  |                     |  |
| 1.5  | Dubois-Laboreur Sonic Altimeter, 1932  |  |                     |  |
| <b>1 KILOCYCLE</b>   |  |  |                     |  |
| <b>1,000 CYCLES</b>  |  |  |                     |  |
| 540  | Fessenden Oscillator In Underwater Navigating Device, 1907   |  |                     |  |
| 440  | Standard Musical Pitch A (Broadcast by National Bureau of Standards Station WWV)   |  |                     |  |
| 360  | Submarine Signal Co. Sonic Oscillator for Homogenizing Milk  |  |                     |  |
| 261.63   | Middle C — Bottom-Dwelling Toadfish  |  |                     |  |
| 200  | Echoscope Sonic Altimeter, 1936 — Lower Range Sea Robins   |  |                     |  |
| 100  | Lower Range Ship's Propeller at 1,000 Yards  |  |                     |  |
| 87.31  | Lower Range Bass, F Second Octave Below Middle C   |  |                     |  |
| 80   | Small Meadow Grasshopper   |  |                     |  |
| 60   | Common Meadow Grasshopper — Upper Range, Buzz of Bats  |  |                     |  |
| 27.5   | Lower Limit Standard Piano   |  |                     |  |
| <b>16 — LOWER LIMIT NORMAL HUMAN HEARING</b>                   |  |  |                     |  |
| 12   | Lower Range, Buzz of Bats  |  |                     |  |
| 0  |  | <b>SUBAUDIBLE</b> →  |                     |  |

# BOOKS about Electronics

Approximately 125 books relating to electronics and electronic applications that have been issued during the past year are grouped under the broad topical headings. Short annotations are given for each book

By FRANK ROCKETT

## DICTIONARIES

**Electronics Dictionary**—By Nelson M. Cooke and John Markus, *McGraw-Hill Book Co., New York, 1945, 433 pages, \$5.00.* Up-to-date, concise technical definitions and generally used abbreviations are given for over 6,000 terms used in electronic and allied fields.

**English-French and French-English Technical Dictionary**—By F. Cusset, *Chemical Publishing Co., Brooklyn, N. Y., 1946, 590 pages, \$5.00.* Phrases as well as words are given in this dictionary; vocabulary covers, among other technologies, electricity.

**Concise Chemical and Technical Dictionary**—Edited by H. Bennett, *Chemical Publishing Co., Brooklyn, N. Y., 1947, 1055 pages, \$10.00.* A vocabulary of approximately 50,000 words covers chemical and nucleonic terms; trade names, abbreviations, and tables are included.

**German-English Science Dictionary**—By Louis De Vries, *McGraw-Hill Book Co., 1946, 2nd ed., 558 pages, \$4.50.* Vocabulary is chiefly in fields of biology; an extensive list of German abbreviations and their English meanings is appended.

**German for the Scientist**—By Peter F. Wiener, *Chemical Publishing Co., Brooklyn, N. Y., 1946, 238 pages, \$3.50.* Using current technical German writings to illustrate points, this text directs one's efforts toward quickly acquiring a reading knowledge of the language.

**Hackh's Chemical Dictionary**—Edited by Julius Grant, *The Blakiston Co., Philadelphia, Pa., 3rd ed., 1946, 925 pages, \$8.50.* Over 57,000 technical definitions of chemical and allied terms, together with numerous tables and diagrams, include terms from electronics and nuclear physics.

**Russian-English Scientific-Technical Dictionary**—By A. Bray, *International Universities Press, New York, 1945, 551 pages, \$10.00.* Vocabulary includes words from science, technology, and industry

## HANDBOOKS, TABLES & BIBLIOGRAPHIES

**Bibliography of Statistical Quality Control, A**—By Grant I. Butterbaugh, *University of Washington Press, Seattle, Wash., 1946, 114 pages, \$1.50.* Annotated bibliography is a guide to 712 articles, manuals, and books on the subject covering 1924 to 1945, listed chronologically with author cross index.

**Electronic Engineering Master Index, 1935-1945, The**—By Frank A. Petraglia, *Macmillan Co., New York, 1946, 209 pages, \$6.00.* The second part of the complete work is published.

**Electronic Engineering Master Index, The**—By Frank A. Petraglia, *Electronics Research Publ. Co., New York, 1945, 318 pages, \$17.50.* Electronic articles from numerous periodicals appearing from January 1925 to June 1945 are indexed under subject headings in this definitive guide to radio-electronic literature.

**Electronic Engineering Microfilm Library**—Published by *Electronics Research Publ. Co., New York, N. Y.* Microfilm rolls (100 ft. of 35 mm. microfilm each) of Communications, Jan. 1942 to Dec. 1946 (2 rolls), *Electronic Industries*, Nov. 1942 to Dec. 1945 (2 rolls), *ELECTRONICS* April 1930 to Dec. 1945 (9 rolls), and *FM & Television* (3 rolls) are made available by cooperative effort of magazine publishers through *Electronics Research Publ. Co.* at \$11.50 per roll.

**Engineering Handbook of the National Association of Broadcasters**—Published by the *N. A. B., Washington, D. C., 1946, 432 pages, \$10.00.* Selected papers are reprinted on design, operation, and maintenance of stations; tables and charts.

**FM and Radio Handbook: 1946 Edition**—Edited by Milton B. Sleeper, *FM Company, Great Barrington, Mass., 1946, 174 pages, \$4.00 (paper bound \$2.00).* Chapters prepared by or based on works of experts cover theory, construction, and practical operation of f-m broadcasting and communicating equipment.

**Index of Mathematical Tables, An**—By A. Fletcher, J. C. P. Miller, and L. Rosenhead, *McGraw-Hill Book Co., New York, and Scientific Computing Service, London, 1946, 450 pages, \$16.00.* The index is a working tool for those engaged in numerical computations; it lists types of tables, their ranges, and means of interpolation.

**Radio Amateur's Handbook, The**—By The Headquarter's Staff of the A. R. R. L., *American Radio Relay League, Hartford, Conn., 1946, 688 pages, \$1.00.* The 23rd edition includes timely sections on vhf equipment.

**Radio Tube Vade-Mecum**—By P. H. Brans, 1946, 6th ed., 232 pages, \$2.50, *Algemeene en Technische Boekhandel, Antwerpen, Belgium. Distributed by Editors and Engineers, Ltd., 1300 Kenwood Road, Santa Barbara, Calif.* Tubes are indexed by type number and by characteristics; covers foreign and domestic types; tables give static characteristics and comparative data; there is an English introduction.

**Radioman's Handbook**—By the Technical Staff of Coyne Electrical School, *Coyne Electrical School, Chicago, Ill., 355 pages, \$3.25.* Elementary theory, nomographs and similar material of use to radio shop technicians are presented.

**Reference Data for Radio Engineers**—Published by *Federal Telephone and Radio Corp., New York, 2nd ed., 1946, 536 pages, \$2.00.* By charts, tables and compilations of useful equations and characteristics much reference material is concisely presented.

**Tables of Associated Legendre Functions**—By Mathematical Tables Project of National Bureau of Standards, *Columbia University Press, New York, 1945, 306 pages, \$5.00.* Functions and their first derivatives are given to about six significant figures at intervals of 0.1 in 14 major tables and five supplementary tables giving more exact values of certain functions.

**Tables of Functional Powers**—Mathematical Tables Project sponsored by National Bureau of Standards, *Columbia University Press, New York, 1946, 486 pages, \$7.50.* Values of  $A$  to the  $x$  for  $A$  from 0.01 to 10 and  $x$  from 0.001 to 0.99 (including  $A$  equal Phi), and  $x$  to the  $a$  for  $a$  equal  $1/4, 1/3, 1/2,$  and  $2/3$  and  $x$  from 0 to 9.99 are given.

## SCIENCE

**Diffraction of X-Rays and Electrons by Free Molecules, The**—By M. H. Pirene, *Cambridge University Press, Cambridge, England, and The Macmillan Co., New York, 1946, 160 pages, \$3.00.* Experimental evidence and theoretical inferences of the subject are reviewed.

**Electricity and Magnetism**—By F. W. Sears, *Addison-Wesley Press, Cambridge, Mass., 1946, 448 pages, \$5.00.* Modern physical concepts and recent instruments of the science are presented for second year college students.

**Electron and Nuclear Counters**—By Serge A. Korff, *D. Van Nostrand Co., New York, 1946, 212 pages, \$3.00.* For the graduate student and other specialists using G-M counters and their associated circuits, this book presents constructional information together with a bibliography and a list of manufacturers of counters.

**Electrons, Atoms, and Molecules**—By A. C. Grehore, *Christopher Publishing House, Boston, Mass., 1946, 135 pages, \$3.75.* With substantiating material the author presents his basis for hypothesizing a stable atom.

**Uranium and Atomic Power**—By Jack DeMent and H. C. Dake, *Chemical Publishing Co., Brooklyn, N. Y., 2nd ed., 343 pages, \$4.00.* Introductory and concluding sections have been added to this manual of the chemistry of uranium to bring it up to date.

**Scientific Instruments**—Edited by Herbert J. Cooper, *Chemical Publ. Co., Brooklyn, N. Y., 1946, 305 pages, \$6.00.* A broad survey is made of British instruments of all types, but without much design or operational information.

**Piezoelectricity**—By Walter Guyton Cady, *McGraw-Hill Book Co., New York, 1946, 806 pages, \$9.00.* Physical properties of piezoelectricity with a background of crystallography is presented for research worker and application engineer; bibliography.

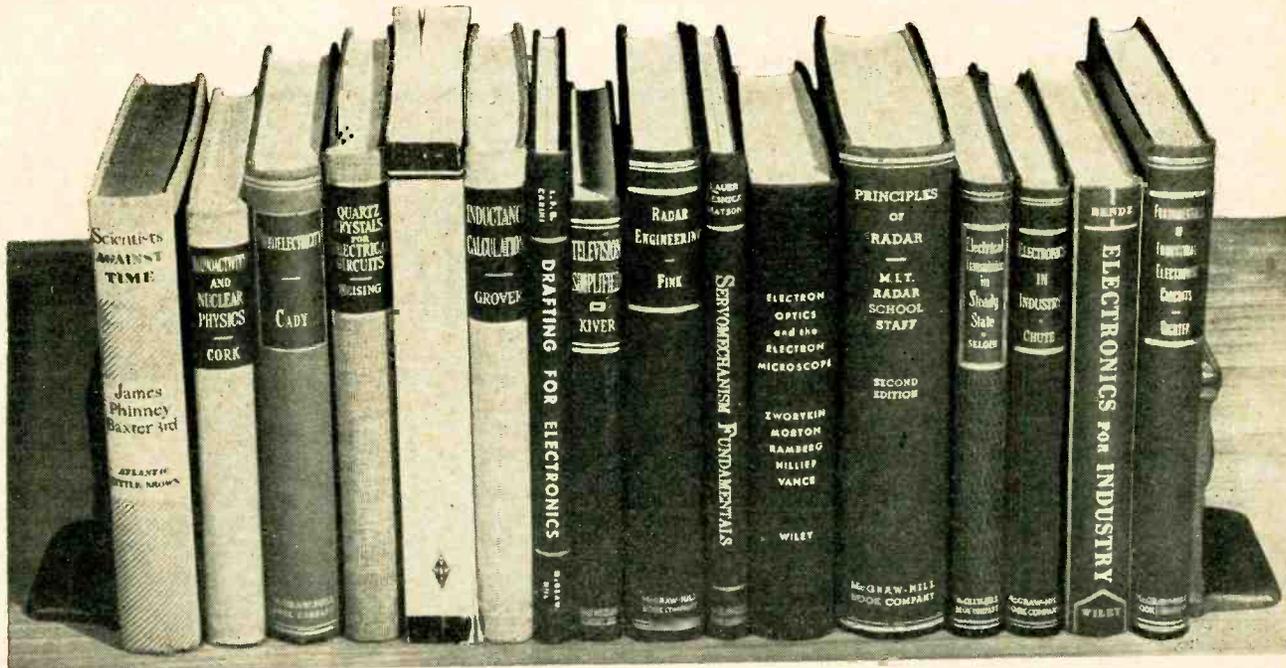
**Radioactivity and Nuclear Physics**—James M. Cork, *D. Van Nostrand Co., New York, 1947, 313 pages, \$4.00.* Primarily a descriptive survey of fundamental nuclear physics and applications, and stressing experimental evidence and historic literature, this fundamental textbook was written for advanced undergraduates and should be easy reading for electronic engineers.

## MATHEMATICS

**Applied Mathematics for Engineers and Physicists**—By Louis A. Pipes, *McGraw-Hill Book Co., New York, N. Y., 1946, 618 pages, \$5.50.* Advanced mathematical techniques are presented with illustrative examples from electronic and other engineering problems.

## TABLE OF CLASSIFICATION

Dictionaries  
Handbooks, Tables and Bibliographies  
Science  
Mathematics  
Electrical Engineering  
Electronics  
Radio  
Television  
Radar, Uhf & Propagation  
Allied Components  
Industrial Electronics  
Popular



**Basic Mathematics for Radio Students**—By F. M. Colebrook, *Iliffe & Sons, London, England, 1946, 270 pages, 10/6.* Fundamental ideas found most useful in radio calculations are clearly presented.

**Calculus**—By Frederick H. Miller, *John Wiley & Sons, New York, 1946, 2nd ed., 416 pages, \$3.50.* This general college introduction to calculus methods has been revised slightly to conform with notation used in current scientific writings.

**Heaviside's Electric Circuit Theory**—By H. J. Josephs, *Chemical Publ. Co., New York, 1946, 115 pages, \$2.25.* In this monograph, ladder networks and transmission lines are analysed using a theorem reconstructed from Heaviside's papers and other techniques.

**Mathematical Aids for Engineers**—By Raymond W. Dull, *McGraw-Hill Book Co., 1946, 346 pages, \$4.50.* Elementary methods used in solutions of mathematical engineering problems are surveyed in reference form.

**Pulsed Linear Networks**—By Ernest Frank, *McGraw-Hill Book Co., New York, 1945, 267 pages, \$3.00.* Numerous usually encountered linear circuits are analysed by methods of classical calculus as a means of familiarizing engineers with this technique of dealing with circuit response to rectangular pulses.

**Simple Calculation of Electrical Transients, The**—By G. W. Carter, *Macmillan Co., New York, 1945, 120 pages, \$1.75.* Transient problems in lumped, linear electrical circuits are solved by Heaviside's operational method.

**Trigonometry**—By H. K. Hughes and G. T. Miller, *John Wiley & Sons, New York, 1946, 2nd ed., 175 pages, \$2.50.* This text is directed toward college freshmen.

**Trigonometry Refresher for Technical Men**—By A. Albert Klaf, *McGraw-Hill Book Co., New York, N. Y., 1946, 629 pages, \$5.00.* Plane, and some spherical, trigonometry are presented in graphic form.

**Waveform Analysis, A Guide to the Interpretation of Periodic Waves Including Vibration Records**—By R. G. Manley, *John Wiley & Sons, New York, Chapman & Hall, London, 1945, 275 pages, \$4.00.* This guide provides a groundwork for properties of complex waves; envelope method of analysis presented in detail.

#### ELECTRICAL ENGINEERING

**Basic Electrical Engineering**—A. E. Fitzgerald, *McGraw-Hill Book Co., New York, 1945, 443 pages, \$3.75.* For engineering and science students not majoring in electrical engineering, this book presents circuit theory, rotating machines, electronics instrumentations, and motor control.

**Circuit Analysis by Laboratory Methods**—By Carl E. Skroder and M. Stanley Helm, *Prentice-Hall, New York, 1946, 288 pages, \$5.35.* This laboratory instruction manual is suitable for trade school and college freshman laboratory courses in d-c and a-c circuits.

**Electrical Transmission in Steady State**—By Paul J. Selgin, *McGraw-Hill Book Co., New York, 1946, 427 pages, \$5.00.* Fundamental concepts of power flow through four terminal networks, on which basis most circuits are analysed, are re-examined for the engineer to refresh and deepen his grasp of his analytical tools.

**Fundamentals of Electrical Engineering**—By F. H. Pumphrey, *Prentice-Hall, New York, 1946, 367 pages, \$5.35.* Principles of industrial applications of electricity are explained for the operator or serviceman.

**Network Analysis and Feedback Amplifier Design**—By H. W. Bode, *D. Van Nostrand Co., New York, 1945, 551 pages, \$7.50.* In addition to the title subject this book covers extensively basic network theory and wideband amplifiers.

#### ELECTRONICS

**Electron Microscope, The**—By E. F. Burton and W. H. Kohl, *Reinhold Publ., New York, 2nd ed., 325 pages, \$4.00.* Principles and applications of the subject are described with the aid of clever illustrations for the laboratorian.

**Electron Microscope, The**—By D. Gabor, *Hullon Press, London, 193 pages, price 4/6.* Major factors to be considered in designing electron microscopes are concisely and clearly presented.

**Electron Optics and the Electron Microscope**—By V. K. Zworykin, G. A. Morton, E. G. Ramberg, J. Hillier, and A. W. Vance, *John Wiley & Sons, New York, and Chapman & Hall, London, 1946, 766 pages, \$10.00.* In this comprehensive treatment of the electron microscope, Part I presents practical aspects of electron optics and electron microscopy and Part II presents theoretical aspects of electron optics as encountered in the electron microscope.

**Electronics for Electricians and Radio Men**—By the Technical Staff of Coyne Electrical School, *Coyne Electrical School, Chicago, Ill., 1945, 426 pages.* Material in this work is presented to give the technician a practical start into the industrial applications of electronics.

**Electronics for Engineers**—By John Markus and Vin Zeluff, *McGraw-Hill Book Co., New York, 1945, 390 pages, \$6.00.* The 142 articles from ELECTRONICS that have been in greatest demand for their reference value have been arranged by broad subject headings and presented in book form.

**Elementary Engineering Electronics**—Andrew W. Kramer, *Instruments Publ. Co., Pittsburgh, Pa., 1945, 344 pages, \$2.00.* Fundamentals of vacuum tubes are presented by mechanical and hydraulic analogies for benefit of non-electrical engineer seeking an introduction to electronics.

**Gas-Filled Triode, The**—By G. Windred, *Hullon Press, London, 1946, 72 pages, price 2/6.* Characteristics and uses of gas filled tubes are presented simply for those unfamiliar with the subject.

**Inside the Vacuum Tube**—By John F. Rider, *John F. Rider Publisher, 1945, 425 pages, \$4.50.*

Fundamentals of electronics are presented for the beginning technician.

**Introduction to Electronics**—By R. G. Hudson, *Macmillan Co., New York, 1946, 97 pages, \$3.00.* Science and application of electronics are explained for the nonelectronic technician or engineer.

#### RADIO

**Aviation Radio**—By Henry W. Roberts, *William Marrow and Co., 1945, 637 pages, \$5.00.* Non-technical explanation of currently used equipment and systems is presented for operators.

**Principles for Radio Operators**—By Ralph Atherton, *Macmillan Co., New York, 1945, 345 pages, \$3.75.* A grounding in practical fundamentals of components and circuits is provided by this well illustrated beginner's textbook.

**Principles of Radio**—By Keith Henney, *John Wiley & Sons, New York, 1945, 5th ed., 534 pages, \$3.50.* Material is presented for self study of the beginner.

**Radio Sound Effects**—By Joseph Cramer and William B. Hoffman, *Ziff-Davis Publ. Co., New York-Chicago, 1945, 71 pages, \$1.50.* This syllabus of study for broadcast dramatists and sound technicians introduces the reader to the practices and psychology of the subject.

**Radio Test Instruments**—By Rufus B. Turner, *Ziff-Davis Publ. Co., New York-Chicago, 1945, 228 pages, \$4.50.* Construction and operation of commonly used test instruments for electronic circuits are described for amateurs, technicians, and home experimenters.

**Radio's Conquest of Space**—By Donald McNichol, *Murray Hill Books, New York, 1946, 374 pages, \$4.00.* Chronological survey of milestones of various phases of radio communications shows how the technique grew.

**Two-way Radio**—By Samuel Freedman, *Ziff-Davis Publ. Co., Chicago, Ill., 1946, 506 pages, \$5.00.* Equipment and practices of municipal and private automotive, marine, and aircraft voice radio communication are described.

#### TELEVISION

**American Television Directory, The 1946**—Published by American Television Society, *New York, First Annual Ed., 144 pages, \$5.00.* Advertising and programming aspects of television are summarized by some 50 authors active in the field.

**Servicing of Television Receivers, The**—Published by Philco Corp., *Philadelphia, Pa., 1946, 140 pages, \$2.25.* Styled after the well illustrated wartime instruction manuals, this maintenance book covers receivers and antennas.

**Telecasting and Color**—By Kingdon S. Taylor, *Harcourt, Brace and Co., New York, 1946, 213 pages, \$2.75.* CBS color television system is described nontechnically.

**Television, The Eyes of Tomorrow**—By William C. Eddy, *Prentice-Hall, New York, 1945, 330 pages, \$3.75.* Circuits and program production practices

# BOOKS about Electronics— continued)

are summarized, the emphasis being on staging and production.

**Television Show Business**—By Judy DuPuy, *General Electric Co., Schenectady, N. Y., 246 pages, \$2.50.* The experience in programming gained at WRGB is reported for those familiar with basic requirements of television production.

**Television Simplified**—By Milton S. Kiver, *D. Van Nostrand Co., New York, 1946, 375 pages, \$4.75.* Dealing for the most part with receivers, this book explains to the technician how television circuits function and can be serviced, and what part they play in the complete system.

## RADAR, UHF & PROPAGATION

**Currents in Aerials and High-Frequency Networks**—By F. B. Pidduck, *Clarendon Press, Oxford, England, Oxford University Press, New York, 1946, 97 pages, \$2.50.* Theory for dealing with transmission lines, feeders, and antennas is developed.

**Directional Antennas**—By Carl E. Smith, *Cleveland Institute of Radio Electronics, Cleveland, Ohio, 1946, 300 pages, \$15.00.* About 20,000 patterns are presented systematically for two and three element arrays.

**Introduction to Microwaves**—By Simon Ramo, *McGraw-Hill Book Co., New York, 1945, 138 pages, \$1.75.* For those familiar with electrical concepts at power-line frequencies, this book serves as a stepping stone to electromagnetic concepts used at ultrahigh frequencies.

**Principles of Radar**—By Members of the Staff of the Radar School of M. I. T., *McGraw-Hill Book Co., 1946, 2nd ed., 887 pages, \$5.00.* System and circuit operation of microwave radar equipment are explained constituting a comprehensive reference on pulse and microwave techniques.

**Radar, What It Is**—By John F. Rider and G. C. Baxter Rowe, *John F. Rider Publ., New York, 1946, 72 pages, \$1.00.* By acoustical and mechanical analogies the functioning of radar systems and their uses are described for the layman.

**Radar, What It Is and How it Works**—By Orrin E. Dunlap, Jr., *Harper & Brothers, New York, 1946, 208 pages, \$2.50.* Popular aspects of radar are described for the layman.

**Radar Engineering**—By Donald G. Fink, *McGraw-Hill Book Co., 1947, 644 pages, \$7.00.* Engineering aspects, component parts, and circuit operation of radar systems are presented in organized form. Basic engineering aspects and theory of operation are developed in first part; second part describes characteristics of typical parts, circuits, and systems.

**Transmission Lines, Antennas and Wave Guides**—By Ronald W. P. King, Harry Rowe Minno, and Alexander H. Wing, *McGraw-Hill Book Co., New York, 1945, 347 pages, \$3.50.* This textbook gives students a fundamental understanding of the electromagnetic viewpoint as applied to microwave circuit components and propagation.

**UHF Radio Simplified**—By M. S. Kiver, *D. Van Nostrand Co., New York, 1945, 238 pages, \$3.25.* Microwave equipment and techniques are explained by development from low-frequency concepts.

**Understanding Microwaves**—By Victor J. Young, *John F. Rider Publ., New York, 1946, 400 pages, \$6.00.* A clear development of concepts, guides, and vacuum tubes used at ultrahigh frequencies, as well as explanations of uses of these components, is presented for the technician.

**Wave Propagation in Periodic Structures**—By Leon Brillouin, *McGraw-Hill Book Co., New York, 1946, 247 pages, \$4.00.* The several types of physical waves that can be mathematically treated in the same way are theoretically examined.

## ALLIED COMPONENTS

**ASTM Standards on Electrical Insulating Materials**—ASTM Committee on Electrical Insulating Materials, *American Society for Testing Materials, 1945, 545 pages, \$3.25.* Specification and tests for insulating and related materials are presented.

**ASTM Standards on Plastics**—Published by the *American Society for Testing Materials, Philadelphia, Pa., 1945, 3rd ed., 542 pages, \$2.75.* Of the approximately 100 specifications and tests, 24 apply to insulators.

**Capacitors, Their Use in Electric Circuits**—By M. Brotherton, *D. Van Nostrand Co., New York, 1946, 107 pages, \$3.00.* Properties and their natures that need to be considered in engineering a capacitor to particular applications, especially from the viewpoint of the circuit designer, are described.

**Drafting for Electronics**—By L. F. B. Carini, *McGraw-Hill Book Co., New York, N. Y., 1946, 211 pages, \$2.50.* Written for draftsmen and trade school students specializing in electronics, this book presents mechanical aspects of schematic circuit layout and drawing.

**Electrolytic Capacitors**—By A. M. Georgiev, *Murray Hill Books, New York, 1945, 191 pages, \$3.00.* This subject is discussed from design through application.

**Electronic Equipment and Accessories**—By R. C. Walker, *Chemical Publ. Co., Brooklyn, N. Y., 393 pages, \$6.00.* Running the gamut from electronic tubes to switchgear, the latter comprising one-sixth of the book, this British book presents operation and application of the equipment used in industrial control.

**Handbook of Dry Plate Rectifier Applications, A**—By G. A. Culbertson, *Calco, Montrose, Calif., 1946, 16 pages, \$0.50.* Circuits and operating details of subject are described.

**High Vacuum Technique**—By J. Yarwood, *John Wiley & Sons, New York, Chapman & Hall, London, 2nd ed., revised, 1945, 140 pages, \$2.75.* Tools and techniques for producing vacuum, especially those used in the electronics industry, together with tables and bibliography, are presented.

**Inductance Calculations**—By Frederick W. Grover, *D. Van Nostrand Co., New York, 1946, 286 pages, \$5.75.* Design of inductors has been reduced by the author to simple procedures yet with accuracies of one part in a thousand by simplification of formulas and compilation of tables.

**Luminous Tube Lighting**—By Henry A. Miller, *Chemical Publ. Co., Brooklyn, N. Y., George Newnes Ltd., London, 1945, 143 pages, 10/6.* Principles and practices of gaseous discharge and fluorescent lamps are described.

**Metallizing Non-Conductors**—By Samuel Wein, *Metal Industry Publishing Co., New York, 62 paper-bound pages, \$2.00.* Methods of forming metallic films on any surface are surveyed, references being given where the presentation is short.

**Metallized Paper Capacitors**—Published by the Office of the Publication Board, Dept. of Comm., Washington, D. C., also *Hobart Publ. Co., Washington, D. C., 1946, 50 pages, \$3.00.* The Bosch method of making metallized paper capacitors developed in Germany is described.

**Modern Plastics Encyclopedia**—*Plastics Catalogue Corp., New York, 1945, 1,389 pages, \$6.00.* In this standard compendium of information, qualities, preparation, design, and applications of plastic parts are described.

**Plastics for Electrical and Radio Engineers**—By W. J. Tucker and R. S. Roberts, *Technical Press, Ltd., Surrey, England, 1946, 148 pages, 12s.* Applications, molding, and insulation testing of plastics are among the topics discussed for the electronics engineer; tables of physical properties are presented.

**Quartz Crystals for Electrical Circuits**—By Raymond A. Heising and others, *D. Van Nostrand Co., New York, 1946, 563 pages, \$6.50.* Research, production, and application of quartz crystals are described for the engineer.

**Relay Engineering**—By Charles A. Packard, *Struthers-Dunn, Philadelphia, Pa., 1945, 640 pages, \$3.00.* Relay application and operation are presented for the engineer and serviceman in this pocket manual.

## INDUSTRIAL ELECTRONICS

**Cathode Ray Oscillograph in Industrial Electronics**—By Harold W. Ranney and Malachi Whelan, *Published by New York State Vocational and Practical Arts Association; distributed by Delmar Publ., 49 Sheridan Ave., Albany, N. Y., 1946, 96 pages, \$3.00.* Photographs of waveshapes obtained across rectifiers are presented with descriptive servicing text.

**Electronic Control Handbook**—By Ralph R. Batcher and William E. Moulic, *Caldwell-Clements, 1946, 344 pages, \$4.50.* Typical systems considerations, design, equipment, transducers, and components of automatic controllers are presented.

**Electronics for Industry**—By W. I. Bendz and C. A. Scarlott, *John Wiley & Sons, New York, and Chapman & Hall, London, 1947, 501 pages, \$5.00.* Applications of electronics to industrial problems, especially heating and controlling, are presented against a background of basic electronics.

**Electronics in Industry**—By George M. Chute, *McGraw-Hill Book Co., New York, 1946, 461 pages, \$5.00.* Users of packaged electronic equipment, either engineers beginning their study of electronics or technicians, will find this presentation of principles and functions quite readable.

**Fundamental Theory of Servomechanisms**—By LeRoy A. MacColl, *D. Van Nostrand Co., New York, 1945, 130 pages, \$2.25.* General theory of linear, continuously operating servomechanisms is studied by analysing their behavior as feedback amplifiers having phase and frequency response.

**Induction Heating**—By H. B. Osborn and others, *American Society of Metals, Cleveland, Ohio, 1945, 172 pages, \$3.00.* Lecturers delivered at the National Metal Congress covering principles, circuits, and applications of h-f heating are presented.

**Industrial Electric Control**—By E. S. Lincoln, *Essential Books, Duell, Sloane and Pearce, New York, 1945, 374 pages, \$3.00.* This manual for study describes fundamentals and operation of available equipment.

**Instruments and Process Control**—Published by *New York State Vocational and Historical Arts Association, Albany, N. Y., distributed by Delmar Publishers, Albany, N. Y., 1945, 233 pages, \$2.75.* Principle of and special equipment for process control are described for the technician.

**Principles of Industrial Process Control**—By Donald P. Eckman, *John Wiley & Sons, New York, 1945, 240 pages, \$3.50.* Theoretical behavior of controls in process plants is analysed by the principle of regular oscillations.

**Servomechanism Fundamentals**—By Henri Lauer, Robert Lesnick, and Leslie E. Matson, *McGraw-Hill Book Co., New York, 1947, 277 pages, \$3.50.* Operation of typical components are described and various types of servomechanisms are analysed; basic electrical and mechanical principles are reviewed, and basic control principles developed.

## POPULAR

**Birth and Death of the Sun, The**—By George Gamow, *Penguin Books, New York, 1945, 219 pages, \$0.25.* Technical discussions are given of atomic theory, radioactivity, and transmutation as learned from a study of our sun.

**Cavendish Laboratory, The**—By Alexander Wood, *Cambridge University Press, Cambridge, England, and Macmillan Co., New York, 1946, 59 pages, \$1.00.* The work of Maxwell, Rayleigh, Thomson, Rutherford, and others at the Cavendish Laboratory, work of fundamental interest to electronic engineers, is told briefly.

**Communication Through the Ages**—By Alfred Still, *Murray Hill Books, 1946, 201 pages, \$2.75.* Early developments of techniques for communicating over great distances are related.

**Chronological History of Electric Development, A**—Published by *National Electrical Manufacturers Association, New York, 143 pages, \$2.00.* This reference work begins at 600 B. C. with Thales and ends in 1944.

**Electrons in Action**—By James Stokley, *Whittlesey House, New York, 320 pages, \$3.00.* Electronics in the vacuum tube, and the applications of electronic tubes are described in popular vein.

**Nucleonics**—Based on official material prepared under the auspices of the U. S. Navy Department, *Progress Press, Washington, D. C., 1946, 38 pages, \$1.00.* In nontechnical, descriptive terms, fundamentals of nuclear physics are presented for interested laymen.

**Scientists Against Time**—By James Phinney Baxter, *Little Brown, Boston, Mass., 1946, 473 pages, \$5.00.* Among other wartime developments described in this official history of the activities of the OSRD are radar, loran, and proximity fuze.

**Soul of Loadstone**—By Alfred Still, *Murray Hill Books, New York, 1946, 233 pages, \$2.40.* A non-technical review of the early concepts of magnetism, especially those of the Middle Ages, giving a human-interest insight into the gropings for knowledge preceding this age of electricity.

# College Courses in ELECTRONICS

The colleges and universities listed below answered affirmatively when asked "do you offer courses in 'electronics' as distinct from courses in electrical engineering?"

## ALABAMA

Alabama Polytechnic Institute, Auburn  
University of Alabama, University

## ARIZONA

Arizona State College, Tempe  
University of Arizona, Tucson

## ARKANSAS

University of Arkansas, Fayetteville

## CALIFORNIA

California Institute of Technology, Pasadena  
Stanford University, Stanford  
University of California, Berkeley  
University of Santa Clara, Santa Clara  
University of Southern California, Los Angeles

## COLORADO

University of Colorado, Boulder  
University of Denver, Denver

## CONNECTICUT

University of Connecticut, Storrs  
Yale University, New Haven

## DELAWARE

University of Delaware, Newark

## DISTRICT OF COLUMBIA

Catholic University of America, Washington  
George Washington University, Washington  
Howard University, Washington

## FLORIDA

University of Florida, Gainesville

## GEORGIA

Georgia School of Technology, Atlanta

## IDAHO

University of Idaho, Moscow

## ILLINOIS

University of Illinois, Urbana  
Northwestern University, Evanston

## INDIANA

Indiana Technical College, Fort Wayne  
Purdue University, Lafayette  
University of Notre Dame, Notre Dame

## IOWA

Iowa State College, Ames  
State University of Iowa, Iowa City

## KANSAS

Kansas State College, Manhattan

## KENTUCKY

University of Kentucky, Lexington

## LOUISIANA

Louisiana State University, Baton Rouge  
Southwestern Louisiana Institute, Lafayette  
Tulane University, New Orleans

## MAINE

University of Maine, Orono

## MARYLAND

Johns Hopkins University, Baltimore  
University of Maryland, College Park

## MASSACHUSETTS

Harvard University, Cambridge  
Massachusetts Institute of Technology, Cambridge  
Northeastern University, Boston

## MICHIGAN

Michigan State College, East Lansing  
University of Michigan, Ann Arbor

## MINNESOTA

University of Minnesota, Minneapolis

## MISSISSIPPI

Mississippi State College, State College

## MONTANA

Montana State College, Bozeman

## NEW HAMPSHIRE

Dartmouth College, Hanover

## NEW JERSEY

Stevens Institute of Technology, Hoboken

## NEW MEXICO

University of New Haven, Albuquerque

## NEW YORK

Clarkson College of Technology, Potsdam  
Columbia University, New York City  
Cornell University, Ithaca  
New York University, New York City  
Polytechnic Institute of Brooklyn, Brooklyn  
Pratt Institute, Brooklyn  
Rensselaer Polytechnic Institute, Troy

## NORTH CAROLINA

Duke University, Durham  
University of North Carolina, Raleigh

## OHIO

Case School of Applied Science, Cleveland  
Ohio Northern University, Ada  
Ohio State University, Columbus  
Ohio University, Athens

## OKLAHOMA

Oklahoma A & M College, Stillwater

## OREGON

Oregon State College, Corvallis

## PENNSYLVANIA

Carnegie Institute of Technology, Pittsburgh  
Drexel Institute, Philadelphia  
Lehigh University, Bethlehem  
Penn State College, State College  
University of Pennsylvania, Philadelphia  
Bucknell University, Lewisburg

## RHODE ISLAND

Rhode Island State College, Kingston

## SOUTH CAROLINA

University of South Carolina, Columbia

## SOUTH DAKOTA

South Dakota School of Mines, Rapid City  
South Dakota State College, Brookings

## TENNESSEE

University of Tennessee, Knoxville  
Vanderbilt University, Nashville

## UTAH

University of Utah, Salt Lake City

## VERMONT

University of Vermont, Burlington

## VIRGINIA

University of Virginia, Charlottesville  
Virginia Polytechnic Institute, Blackstone

## WASHINGTON

State College of Washington, Pullman  
University of Washington, Seattle

## WISCONSIN

University of Wisconsin, Madison

## WYOMING

University of Wyoming, Laramie

# Silicon and Germanium RECTIFIERS

**A** MODERN CRYSTAL RECTIFIER consists of a small-area contact between a tungsten whisker and a suitable semiconductor. It should not be confused with copper-oxide or selenium rectifiers.

Developed as imperative components for microwave radar systems, the electrical characteristics and mechanical stability of the new crystal rectifiers makes them attractive to designers of modern electronic equipment. Point-contact rectifiers offer many possibilities in addition to the present uses as microwave converters, second detectors, beacon detectors and low-frequency diodes. They can replace many diodes with a saving in volume, weight, and filament power consumption. The low capacitance of the contact makes their use in uhf and shf applications desirable. Special kinds, such as welded-point crystals and silicon high back voltage crystals, are capable of still further development and use.

The table at the top shows uses and major characteristics of most currently available crystals. Those registered with the RMA Data Bureau are designated by an asterisk. The radar band in which each was used has been indicated in column "λ". After selecting a crystal type according to gross characteristics, the design engineer can find its exact characteristics in one of the two larger tables.

An analysis of physical composition; theory, and test procedures is given in an article, Crystal Rectifiers, by W. E. Stephens, *ELECTRONICS*, p 112, July 1946.

|                               |              | 1N21 (obs) | 1N21A | 1N21B*  |
|-------------------------------|--------------|------------|-------|---------|
| Center frequency              | (mc)         | 3,060      | 3,060 | 3,060±5 |
| Max. i-f impedance            | (ohms)       | .....      | ..... | 800     |
| Min. i-f impedance            | (ohms)       | .....      | ..... | 200     |
| Max. conversion loss          | (db)         | 8.5        | 7.5   | 6.5     |
| R-f signal input              | (milliwatts) | 0.5        | 0.5   | 0.5     |
| Mod. freq. load imp.          | (ohms)       | .....      | ..... | 400     |
| D-c load resistance           | (ohms)       | .....      | ..... | 100±10  |
| Max. output noise ratio       |              | 4.0        | 3.0   | 2.0     |
| R-f signal input              | (milliwatts) | .....      | ..... | 0.5     |
| Reference resistance          | (ohms)       | .....      | ..... | 400     |
| D-c load resistance           | (ohms)       | .....      | ..... | 100±10  |
| Approx. rect. crystal current | (ma)         | .....      | ..... | 0.6     |

## VIDEO RECTIFIERS

|                           |              | 1N27*    | 1N29*   | 1N30*    |
|---------------------------|--------------|----------|---------|----------|
| Center frequency          | (mc)         | 3,295±40 | 3,060±5 | 9,375±30 |
| Max. video freq.          | (mc)         | 5.0      | .....   | 5.0      |
| Min. video freq.          | (cps)        | 500      | .....   | 500      |
| Max. video impedance      | (ohms)       | 4,000    | .....   | 21,000   |
| Max. forward voltage      | (millivolts) | 1        | .....   | .....    |
| Min. video impedance      | (ohms)       | .....    | 6,500   | 7,000    |
| Max. forward voltage      | (millivolts) | .....    | 40      | 5.0      |
| Min. figure of merit      |              | 60       | .....   | 55       |
| Max. r-f power input      | (microwatts) | 5        | .....   | 5        |
| Crystal circuit constant  | (ohms)       | 1,200    | .....   | 1,200    |
| Max. conversion loss      | (db)         | .....    | 8.0     | .....    |
| R-f signal input power    | (milliwatts) | .....    | 0.5     | .....    |
| Reference resistance      | (ohms)       | .....    | 400     | .....    |
| D-c load resistance       | (ohms)       | .....    | 100±10  | .....    |
| Rectified crystal current | (ma)         | .....    | 0.6     | .....    |

## USES AND MAJOR CHARACTERISTICS

| FUNCTIONS AND CHARACTERISTICS | Con-verter | Video | Diode | Instrument Rectifier | 2nd Detector | Least Sensitive | Moderate Sensitivity | High Sensitivity | Most Sensitive | High Burn-out | Medium High Burn-out | High Back Voltage | D-C Restorer | $\lambda$ (cm) |
|-------------------------------|------------|-------|-------|----------------------|--------------|-----------------|----------------------|------------------|----------------|---------------|----------------------|-------------------|--------------|----------------|
| <b>TYPE NUMBERS</b>           |            |       |       |                      |              |                 |                      |                  |                |               |                      |                   |              |                |
| 1N21 (obs)                    | •          |       |       |                      |              | •               |                      |                  |                |               |                      |                   |              | 10             |
| 1N21A                         | •          |       |       |                      |              |                 | •                    |                  |                |               |                      |                   |              | 10             |
| 1N21B*                        | •          |       |       |                      |              |                 |                      | •                |                |               |                      |                   |              | 10             |
| 1N21C                         | •          |       |       |                      |              |                 |                      |                  | •              |               |                      |                   |              | 10             |
| 1N22                          |            |       |       | •                    |              |                 |                      |                  |                |               |                      |                   |              | 3              |
| 1N23                          | •          |       |       |                      |              | •               |                      |                  |                |               |                      |                   |              | 3              |
| 1N23A                         | •          |       |       |                      |              |                 | •                    |                  |                |               |                      |                   |              | 3              |
| 1N23B*                        | •          |       |       |                      |              |                 |                      | •                |                |               |                      |                   |              | 3              |
| 1N24 (obs)                    | •          |       |       |                      |              | •               |                      |                  |                |               |                      |                   |              | 1              |
| 1N25*                         | •          |       |       |                      |              | •               |                      |                  |                | •             |                      |                   |              | 30             |
| 1N26*                         | •          |       |       |                      |              |                 | •                    |                  |                |               |                      |                   |              | 1              |
| 1N27*                         | •          | •     |       |                      |              |                 | •                    |                  |                |               |                      |                   |              | 10             |
| 1N28                          | •          |       |       |                      |              |                 | •                    |                  |                | •             |                      |                   |              | 10             |
| 1N29*                         |            | •     |       |                      |              |                 |                      |                  |                |               |                      |                   |              | 10             |
| 1N30*                         |            | •     |       |                      |              |                 |                      |                  |                |               |                      |                   |              | 3              |
| 1N31*                         |            | •     |       |                      |              |                 |                      |                  |                |               |                      |                   |              | 3              |
| 1N32*                         |            | •     |       |                      |              |                 |                      |                  |                |               |                      |                   |              | 10             |
| 1N33                          |            | •     |       |                      |              |                 |                      |                  |                |               | •                    |                   |              | 10             |
| 1N34*                         |            |       | •     |                      |              |                 |                      |                  |                |               |                      | •                 |              |                |
| 1N35*                         |            |       | •     |                      |              |                 |                      |                  |                |               |                      | •                 |              |                |
| WE D171561                    |            |       |       |                      | •            |                 |                      |                  |                |               |                      | •                 |              |                |
| WE D171612                    |            |       |       |                      |              |                 |                      |                  |                |               |                      | •                 |              |                |
| WE D172925                    |            |       |       |                      |              |                 |                      |                  |                |               |                      | •                 |              |                |

### CONVERTER RECTIFIERS

| 1N21C | 1N23  | 1N23A | 1N23B*     | 1N24 (obs) | 1N25*      | 1N26*       | 1N28  |
|-------|-------|-------|------------|------------|------------|-------------|-------|
| 3,060 | 9,375 | 9,375 | 9,375 ± 30 | 24,000     | 1,000 ± 10 | 24,000 ± 60 | 3,060 |
| ..... | ..... | ..... | 600        | .....      | 400        | 600         | ..... |
| ..... | ..... | ..... | 150        | .....      | 100        | 300         | ..... |
| ..... | 10.0  | 8.0   | 6.5        | 8.5        | 8.5        | 8.5         | 7.0   |
| 0.5   | ..... | ..... | 1.0        | .....      | 1.25       | 1.0         | ..... |
| ..... | ..... | ..... | 400        | .....      | 200        | 500         | ..... |
| ..... | ..... | ..... | 100 ± 10   | .....      | 100 ± 5    | 100 ± 10    | ..... |
| 1.5   | 3.0   | 2.7   | 2.7        | 2.5        | 2.5        | 2.5         | 2.0   |
| ..... | ..... | ..... | 1.0        | .....      | 0.9        | 1.0         | ..... |
| ..... | ..... | ..... | 300        | .....      | 200        | 300         | ..... |
| ..... | ..... | ..... | 100 ± 10   | .....      | 20 ± 2     | 100 ± 10    | ..... |
| ..... | ..... | ..... | 1.2        | .....      | 1.2        | .....       | 0.4   |

### DIODE RECTIFIERS

| 1N31*      | 1N32*  | 1N33   |   | 1N34* | 1N35* |
|------------|--------|--------|---|-------|-------|
| 9,375 ± 10 | 3,000  | 2,880  | Max. peak inverse voltage (v)           | 50    | 50    |
| 5.0        | 5.0    | .....  | Max. peak anode current (ma)            | 60    | 60    |
| 500        | 500    | .....  | Max. average anode current (ma)         | 22.5  | 22.5  |
| 24,000     | 20,000 | 10,000 | Max. surge current (ma)                 | 200   | 200   |
| .....      | .....  | .....  | Max. reverse current (Eb = - 50 v d-c)  | 2.0   | 2.0   |
| 6,000      | 5,000  | 2,000  | Operating range (mc)                    | 0-100 | 0-100 |
| 5.0        | 5.0    | .....  | Units matched in pass direction (%)     | ..... | 10    |
| 55         | 100    | 40     | Units matched in blocking direction (%) | ..... | 20    |
| 5          | 5      | .....  | Typical anode voltage (v, a-c)          | 30    | 30    |
| 1,200      | 1,200  | .....  | Typical load resistance (ohms)          | 500   | 500   |
| .....      | .....  | .....  | Typical minimum load voltage (v, d-c)   | 10    | 10    |
| .....      | .....  | .....  |   |       |       |
| .....      | .....  | .....  |   |       |       |
| .....      | .....  | .....  |   |       |       |

Note: The 1N35 consists of two 1N34's mounted together

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## and their officers

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### **INTERNATIONAL MUNICIPAL SIGNAL ASSOCIATION** 8 East 41st St., New York 17, N. Y.

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### **NATIONAL ASSOCIATION OF BROADCASTERS** 1760 N St., N.W., Washington 6, D. C.

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### **NATIONAL ASSOCIATION OF BROADCAST ENGINEERS AND TECHNICIANS** Rm. 501, 66 Court St., Brooklyn 2, N. Y.

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### **NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION** 155 East 44th St., New York 17, N. Y.

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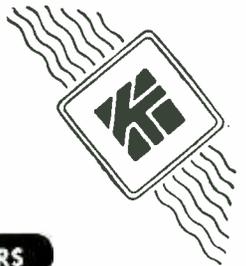
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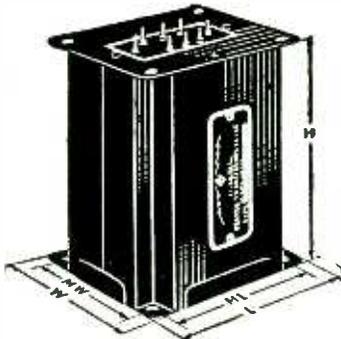
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For High Quality—Depend on Kenyon!



# KENYON "T" LINE TRANSFORMERS



## DIMENSIONS OF "T" LINE TRANSFORMERS

| MOUNTING DIMENSIONS             |                                |                                 | OVERALL DIMENSIONS             |                                |                                 |
|---------------------------------|--------------------------------|---------------------------------|--------------------------------|--------------------------------|---------------------------------|
| Case No.                        | ML                             | MW                              | Length (L)                     | Width (W)                      | Height (H)                      |
| 1A                              | 2 <sup>1</sup> / <sub>32</sub> | 1 <sup>1</sup> / <sub>16</sub>  | 2 <sup>1</sup> / <sub>16</sub> | 2                              | 2 <sup>1</sup> / <sub>16</sub>  |
| 2A                              | 2 <sup>1</sup> / <sub>16</sub> | 1 <sup>1</sup> / <sub>16</sub>  | 2 <sup>1</sup> / <sub>16</sub> | 2 <sup>3</sup> / <sub>16</sub> | 2 <sup>3</sup> / <sub>16</sub>  |
| 3A                              | 2 <sup>7</sup> / <sub>16</sub> | 1 <sup>1</sup> / <sub>16</sub>  | 3 <sup>1</sup> / <sub>16</sub> | 2 <sup>1</sup> / <sub>16</sub> | 3 <sup>3</sup> / <sub>16</sub>  |
| 4A                              | 3 <sup>7</sup> / <sub>16</sub> | 2 <sup>7</sup> / <sub>16</sub>  | 4 <sup>1</sup> / <sub>2</sub>  | 3                              | 3 <sup>7</sup> / <sub>16</sub>  |
| 5A                              | 4 <sup>9</sup> / <sub>16</sub> | 3 <sup>1</sup> / <sub>16</sub>  | 5                              | 3 <sup>7</sup> / <sub>16</sub> | 5                               |
| 5 <sup>1</sup> / <sub>2</sub> A | 4 <sup>9</sup> / <sub>16</sub> | 3 <sup>27</sup> / <sub>32</sub> | 5                              | 4 <sup>1</sup> / <sub>2</sub>  | 5                               |
| 6A                              | 4 <sup>9</sup> / <sub>16</sub> | 4 <sup>1</sup> / <sub>2</sub>   | 5                              | 5 <sup>1</sup> / <sub>16</sub> | 5                               |
| 7A                              | 5 <sup>1</sup> / <sub>2</sub>  | 4 <sup>9</sup> / <sub>16</sub>  | 6 <sup>3</sup> / <sub>16</sub> | 5 <sup>3</sup> / <sub>16</sub> | 6 <sup>3</sup> / <sub>16</sub>  |
| 8A                              | 5 <sup>3</sup> / <sub>4</sub>  | 4 <sup>13</sup> / <sub>16</sub> | 6 <sup>9</sup> / <sub>16</sub> | 5 <sup>1</sup> / <sub>16</sub> | 7 <sup>1</sup> / <sub>16</sub>  |
| 9A                              | 6 <sup>1</sup> / <sub>16</sub> | 5 <sup>3</sup> / <sub>4</sub>   | 7 <sup>3</sup> / <sub>4</sub>  | 6 <sup>5</sup> / <sub>16</sub> | 7 <sup>3</sup> / <sub>16</sub>  |
| 10A                             | 8 <sup>9</sup> / <sub>16</sub> | 7 <sup>1</sup> / <sub>32</sub>  | 9 <sup>1</sup> / <sub>2</sub>  | 8 <sup>1</sup> / <sub>4</sub>  | 10 <sup>5</sup> / <sub>16</sub> |

## LOW IMPEDANCE SOURCE TO GRID TRANSFORMERS

| Type No.                  | From              | Primary Ohms           | Secondary Ohms     | Case No. | Weight      | List Price |
|---------------------------|-------------------|------------------------|--------------------|----------|-------------|------------|
| T-1 (Hum bucking type)    | S.B. or D.B. Mic. | 400-300-200-100-50     | 80,000 Single Grid | 1A       | 1 lb. 1 oz. | \$7.30     |
| T-2 (Hum bucking type)    | Any line          | 500-333-250-200-125-50 | 80,000 Single Grid | 1A       | 1 lb. 1 oz. | 7.30       |
| T-3 (Hum bucking type)    | Any line          | 500-333-250-200-125-50 | 80,000 P. P. Grids | 1A       | 1 lb. 1 oz. | 7.30       |
| T-6 (See Bottom 4th Page) | Any line          | 500-333-250-200-125-50 | 20,000 Single Grid | 1A       | 1 lb.       | 12.95      |

## LINE-TRANSFORMERS—LINE TO LINE AND LINE TO VOICE COIL

| Type No.                | Primary Ohms           | Secondary Ohms         | Maximum Level | Case No. | Weight         | List Price |
|-------------------------|------------------------|------------------------|---------------|----------|----------------|------------|
| T-25                    | 500-200-50             | 500-200-50             | +24 D.B.      | 2A       | 1 lb. 14 ozs.  | \$7.30     |
| T-26 (Hum bucking type) | 500-333-250-200-125-50 | 500-333-250-200-125-50 | +24 D.B.      | 1A       | 1 lb. 10 ozs.  | 7.30       |
| T-28                    | 500-200                | 15-8-4                 | 30 watts      | 4A       | 5 lbs. 10 ozs. | 9.30       |

## INTERSTAGE AUDIO TRANSFORMERS

| Type No.                | From                    | To          | Ratio | Case No. | Weight        | List Price |
|-------------------------|-------------------------|-------------|-------|----------|---------------|------------|
| T-51                    | Single 10,000 ohm plate | Single Grid | 1:4   | 1A       | 1 lb. 4 ozs.  | \$5.65     |
| T-52                    | Single 10,000 ohm plate | P.P. Grids  | 1:4   | 1A       | 1 lb. 4 ozs.  | 5.65       |
| T-54                    | P.P. 10,000 ohm plates  | P.P. Grids  | 1:1.8 | 2A       | 1 lb. 14 ozs. | 7.30       |
| T-55                    | Single 10,000 ohm plate | Single Grid | 1:3   | 2A       | 1 lb. 14 ozs. | 6.65       |
| T-56                    | Single 10,000 ohm plate | P.P. Grids  | 1:2   | 2A       | 1 lb. 14 ozs. | 6.65       |
| T-57 (Hum bucking type) | Single 10,000 ohm plate | Single Grid | 1:2   | 2A       | 1 lb. 7 ozs.  | 7.30       |
| T-58 (Hum bucking type) | Single 10,000 ohm plate | P.P. Grids  | 1:2   | 2A       | 1 lb. 7 ozs.  | 7.30       |

## DRIVER TRANSFORMERS

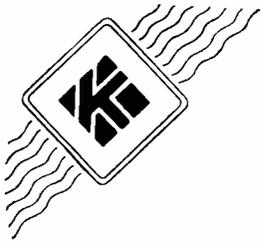
| Type No. | Primary to match             | Class AB or Class B Tubes | Ratio (pri. to 1/2 Sec.) | Case No. | Weight         | List Price |
|----------|------------------------------|---------------------------|--------------------------|----------|----------------|------------|
| T-251    | Single 53, 6A6, 6N7, 56, 6C5 | 53, 6A6, 6N7              | 2.3:1                    | 2A       | 1 lb. 14 ozs.  | \$5.65     |
| T-252    | Single 30, 49, 89            | 19, 30's, 49's            | 1.7:1                    | 1A       | 1 lb. 13 ozs.  | 4.95       |
| T-253    | Single 46, 59                | 46's, 59's, 6F6's         | 2.3:1                    | 2A       | 1 lb. 14 ozs.  | 5.95       |
| T-255    | P.P. 56, 6C5, 53, 6N7        | 6L6's                     | 3.2:1                    | 2A       | 1 lb. 14 ozs.  | 5.65       |
| T-267    | 4-2A3's                      | 354E's, 354F's            | 2.1:1                    | 4A       | 5 lbs. 10 ozs. | 11.60      |
| T-271    | P.P. 45's, 2A3's, 6F6's      | 6L6's, 809's, T4Z0's      | 3.7:1                    | 3A       | 2 lbs. 13 ozs. | 7.95       |

## PREAMPLIFIER OUTPUT TRANSFORMERS

| Type No. | From               | Secondary Ohms | Case No. | Weight       | List Price |
|----------|--------------------|----------------|----------|--------------|------------|
| T-101    | Single 56, 76, 6C5 | 200-500        | 1A       | 1 lb. 4 ozs. | \$5.65     |
| T-102    | P.P. 56, 76, 6C5   | 200-500        | 1A       | 1 lb. 4 ozs. | 5.65       |

## OUTPUT TRANSFORMERS TO 500-200 OR 15-8-4 OHMS

| Type No. | From   | Primary Ohms   | Case No. | Weight        | List Price |
|----------|--|----------------|----------|---------------|------------|
| T-104    | Single 2A5, 6F6, 42, 47, 89                    | 7,000          | 2A       | 1 lb. 14 ozs. | \$6.65     |
| T-105    | Class "A", P.P. 2A5's, 6F6's, 42's, 47's, 89's | 14,000         | 2A       | 2 lbs.        | 7.30       |
| T-317    | Class "AB", P.P. 6L6's                         | 6,600 or 3,800 | 4A       | 5 lbs. 6 ozs. | 11.60      |
| T-319    | Class "AB2", P.P. 6L6's                        | 6,000 or 3,800 | 5A       | 8 lbs. 7 ozs. | 13.55      |
| T-301    | Class "A", P.P. 6L6's, Class AB 45's, 2A3's    | 5,000 or 3,000 | 4A       | 4 lbs. 5 ozs. | 9.95       |



*Kenyon Designs for Any Need... Anywhere*

## KENYON "T" LINE TRANSFORMERS

### KEN-O-DYNE UNIVERSAL OUTPUT TRANSFORMERS

| Type No. |          | Case No. | Weight         | List Price |   |
|----------|----------|----------|----------------|------------|---|
| T-108    | 15 watts | 3A       | 2 lbs. 13 ozs. | \$9.30     | Will match any set of Push-Pull or Push-Pull Parallel or a single plate to 500-200 or speaker voice-coils. Low impedance connection for speaker voice coils range from .5 to 25 ohms. |
| T-109    | 30 watts | 4A       | 5 lbs. 2 ozs.  | 12.95      |   |
| T-110    | 60 watts | 5A       | 10 lbs. 1 oz.  | 15.95      |   |

### KEN-O-TAP MODULATION TRANSFORMERS

Ken-o-Tap Transformers never grow obsolete! Ideal for amateurs who wish to keep up to date with new tube combinations. Will match any Class B tube or tubes to any Class C load.

| Type No. | Audio Output Primary | Class "C" Secondary | Primary Range | Secondary Range | Case No. | Weight         | List Price |
|----------|----------------------|---------------------|---------------|-----------------|----------|----------------|------------|
| T-489    | 15 watts             | 30 watts            | 2000-20000    | 200-20000       | 3A       | 2 lbs. 13 ozs. | \$7.30     |
| T-493    | 40 watts             | 80 watts            | 2000-20000    | 200-20000       | 4A       | 5 lbs. 10 ozs. | 10.60      |
| T-494    | 75 watts             | 150 watts           | 2000-20000    | 200-20000       | 5A       | 9 lbs.         | 15.95      |
| T-495    | 125 watts            | 250 watts           | 500-18000     | 200-19000       | 7A       | 19 lbs. 2 ozs. | 35.25      |
| T-496    | 300 watts            | 600 watts           | 500-18000     | 200-19000       | 8A       | 26 lbs. 4 ozs. | 53.50      |

### PLATE TRANSFORMERS FOR STANDARD AMATEUR DUTY

| Type No. | Secondary Voltage               | D.C. Volts     | D.C.M.A. | Case No. | Weight         | List Price |
|----------|---------------------------------|----------------|----------|----------|----------------|------------|
| T-668    | 1000/750-0-750/1000             | 500/750        | 300      | 5½A      | 12 lbs. 6 ozs. | \$15.20    |
| T-669    | 1460/1180-0-1180/1460           | 1000/1250      | 300      | 7A       | 19 lbs. 2 ozs. | 24.45      |
| T-670    | 2360/2080/1760-0-1760/2080/2360 | 1500/1750/2000 | 300      | 8A       | 31 lbs. 9 ozs. | 33.65      |
| T-671    | 1460/1180-0-1180/1460           | 1000/1250      | 500      | 8A       | 31 lbs. 9 ozs. | 33.65      |

### PLATE TRANSFORMERS FOR HEAVY AMATEUR DUTY

| Type No. | Primary Conn. | SECONDARY NO. 1 |             |           | SECONDARY NO. 2 |             |           | SECONDARY NO. 3 |            |           | Standard — Amateur M.A. D.C. | Case No. | Weight          | List Price |
|----------|---------------|-----------------|-------------|-----------|-----------------|-------------|-----------|-----------------|------------|-----------|------------------------------|----------|-----------------|------------|
|          |               | D.C.            | VOLTS A.C.  | M.A. D.C. | D.C.            | VOLTS A.C.  | M.A. D.C. | D.C.            | VOLTS A.C. | M.A. D.C. |                              |          |                 |            |
| T-664    |               | 600             | 740-0-740   | 150       |                 |             |           |                 |            |           | 200                          | 5A       | 10 lbs. 10 ozs. | \$13.00    |
| T-655    | High          | 450             | 575-0-575   | 250       |                 |             |           |                 |            |           | 325                          | 5A       | 10 lbs. 1 oz.   | 13.65      |
|          | Low           | 350             | 460-0-460   | 250       |                 |             |           |                 |            |           |                              |          |                 |            |
| T-656    | High          | 750             | 925-0-925   | 300       |                 |             |           |                 |            |           | 400                          | 6A       | 15 lbs. 9 ozs.  | 18.70      |
|          | Low           | 600             | 740-0-740   | 300       |                 |             |           |                 |            |           |                              |          |                 |            |
| T-657    | High          | 1000            | 1170-0-1170 | 200       | 1000            | 1170-0-1170 | 200       |                 |            |           | 250                          | 7A       | 21 lbs. 9 ozs.  | 39.35      |
|          | Low           | 750             | 900-0-900   | 200       | 750             | 900-0-900   | 200       |                 |            |           |                              |          |                 |            |
| T-658    | High          | 500             | 650-0-650   | 175       | 560             | 710-0-710   | 175       | 560             | 710-0-710  | 175       | All windings                 | 7A       | 22 lbs. 12 ozs. | 35.85      |
|          | Medium        | 450             | 585-0-585   | 175       | 510             | 640-0-640   | 175       | 510             | 640-0-640  | 175       |                              |          |                 |            |
|          | Low           | 400             | 520-0-520   | 175       | 450             | 570-0-570   | 175       | 450             | 570-0-570  | 175       |                              |          |                 |            |
| T-654    | High          | 470             | 610-0-610   | 250       | 625             | 785-0-785   | 250       | 625             | 785-0-785  | 250       | 20% higher current           | 8A       | 32 lbs. 9 ozs.  | 47.00      |
|          | Medium        | 420             | 550-0-550   | 250       | 560             | 710-0-710   | 250       | 560             | 710-0-710  | 250       |                              |          |                 |            |
|          | Low           | 375             | 490-0-490   | 250       | 500             | 630-0-630   | 250       | 500             | 630-0-630  | 250       |                              |          |                 |            |
| T-659    | High          | 500             | 650-0-650   | 350       | 560             | 710-0-710   | 350       | 560             | 710-0-710  | 350       | 9A                           | 48 lbs.  | 51.10           |            |
|          | Medium        | 450             | 585-0-585   | 350       | 510             | 640-0-640   | 350       | 510             | 640-0-640  | 350       |                              |          |                 |            |
|          | Low           | 400             | 520-0-520   | 350       | 450             | 570-0-570   | 350       | 450             | 570-0-570  | 350       |                              |          |                 |            |
| T-665    | High          | 1250            | 1470-0-1470 | 250       |                 |             |           |                 |            |           | 300                          | 7A       | 23 lbs. 4 ozs.  | 33.65      |
|          | Low           | 1000            | 1180-0-1180 | 250       |                 |             |           |                 |            |           |                              |          |                 |            |
| T-666    |               | 1250            | 1460-0-1460 | 350       |                 |             |           |                 |            |           | 400                          | 8A       | 32 lbs. 2 ozs.  | 40.95      |
| T-667    |               | 1250            | 1460-0-1460 | 500       |                 |             |           |                 |            |           | 600                          | 9A       | 50 lbs.         | 50.45      |
| T-660    |               | 1250            | 1460-0-1460 | 500       | 500             | 630-0-630   | 200       |                 |            |           | 600-400                      | 9A       | 49 lbs. 11 ozs. | 59.35      |
| T-652    | High          | 1750            | 2080-0-2080 | 450       |                 |             |           |                 |            |           | 550                          | 9A       | 50 lbs. 8 ozs.  | 64.45      |
| T-652    | Low           | 1500            | 1760-0-1760 | 450       |                 |             |           |                 |            |           |                              |          |                 |            |
| T-663    |               | 2000            | 2360-0-2360 | 600       |                 |             |           |                 |            |           | 700                          | 10A      | 82 lbs.         | 101.90     |

All power transformers are designed for 115 volt, 50 to 60 cycle operation. For any other voltage 50 to 60 cycle operation add 25% to list prices. For 115 volt 25 cycle operation, add 60% to list prices. For any other voltage 25 cycle operation add 100% to list prices. Case sizes for 25 cycle application are different from those specified for standard 115 volt 50 to 60 cycle operation.

**KENYON TRANSFORMER COMPANY, INC.,**

Dependable Under Every Climatic Condition



# KENYON "T" LINE TRANSFORMERS

## FILTER REACTORS

| Type No. | Inductance Henries | Max. M.A. | D.C. Resistance | Insulation Test | Case No. | Weight          | List Price |
|----------|--------------------|-----------|-----------------|-----------------|----------|-----------------|------------|
| T-155    | 290                | 10        | 4700            | 1000 V          | 2A       | 2 lbs.          | \$5.65     |
| T-156    | 30                 | 25        | 800             | 1000 V          | 1A       | 1 lb. 4 ozs.    | 4.30       |
| T-157    | 20                 | 50        | 200             | 1000 V          | 1A       | 1 lb. 4 ozs.    | 3.65       |
| T-153    | 30                 | 90        | 350             | 1000 V          | 3A       | 2 lbs. 12 ozs.  | 5.65       |
| T-154    | 15                 | 165       | 210             | 1000 V          | 3A       | 3 lbs. 2 ozs.   | 5.95       |
| T-151    | 10                 | 250       | 100             | 1000 V          | 4A       | 5 lbs. 10 ozs.  | 9.30       |
| T-152    | 10                 | 200       | 100             | 1000 V          | 3A       | 2 lbs. 13 ozs.  | 6.65       |
| T-164    | 14                 | 250       | 135             | 1500 V          | 5A       | 10 lbs. 1 oz.   | 12.95      |
| T-166    | 11                 | 300       | 125             | 1500 V          | 5A       | 10 lbs. 1 oz.   | 12.95      |
| T-159    | 12                 | 500       | 77              | 1500 V          | 6A       | 15 lbs. 9 ozs.  | 15.95      |
| T-165    | 10                 | 150       | 275             | 3000 V          | 3A       | 3 lbs. 2 ozs.   | 6.65       |
| T-168    | 13                 | 250       | 125             | 3000 V          | 5A       | 10 lbs. 10 ozs. | 12.95      |
| T-160    | 11                 | 300       | 120             | 3000 V          | 5A       | 10 lbs. 1 oz.   | 14.25      |
| T-167    | 11                 | 400       | 80              | 3000 V          | 6A       | 15 lbs. 9 ozs.  | 16.95      |
| T-175    | 10                 | 200       | 140             | 5000 V          | 4A       | 5 lbs. 10 ozs.  | 9.30       |
| T-176    | 10                 | 300       | 110             | 5000 V          | 5A       | 10 lbs. 11 ozs. | 12.95      |
| T-178    | 10                 | 400       | 90              | 5000 V          | 6A       | 15 lbs. 2 ozs.  | 17.95      |
| T-177    | 12                 | 500       | 95              | 5000 V          | 7A       | 21 lbs. 1 oz.   | 27.60      |
| T-161    | 10                 | 600       | 50              | 5000 V          | 7A       | 21 lbs. 4 ozs.  | 27.60      |

## SWINGING REACTORS

| Type No. | Inductance Henries | Max. M.A. | D.C. Resistance | Insulation Test | Case No. | Weight         | List Price |
|----------|--------------------|-----------|-----------------|-----------------|----------|----------------|------------|
| T-517    | 15-45              | 90-20     | 350             | 1000 V          | 3A       | 2 lbs. 12 ozs. | \$5.65     |
| T-515    | 10-25              | 165-30    | 210             | 1000 V          | 3A       | 3 lbs. 2 ozs.  | 5.95       |
| T-506    | 5-20               | 200-30    | 100             | 1000 V          | 3A       | 2 lbs. 13 ozs. | 6.65       |
| T-501    | 5-15               | 250-30    | 100             | 1000 V          | 4A       | 5 lbs. 10 ozs. | 9.30       |
| T-510    | 6-19               | 300-30    | 125             | 1500 V          | 5A       | 10 lbs. 1 oz.  | 12.95      |
| T-502    | 6-18               | 500-50    | 77              | 1500 V          | 6A       | 15 lbs. 9 ozs. | 15.95      |
| T-509    | 6-19               | 200-30    | 140             | 5000 V          | 4A       | 5 lbs. 10 ozs. | 9.95       |
| T-512    | 5-15               | 300-40    | 110             | 5000 V          | 5A       | 10 lbs. 1 oz.  | 12.95      |
| T-513    | 5-18               | 400-50    | 90              | 5000 V          | 6A       | 15 lbs. 2 ozs. | 17.95      |
| T-521    | 6-21               | 500-60    | 95              | 5000 V          | 7A       | 21 lbs. 1 oz.  | 26.90      |
| T-505    | 5-17               | 600-60    | 50              | 5000 V          | 7A       | 21 lbs. 4 ozs. | 26.25      |
| T-516    | 5-20               | 400-50    | 80              | 3000 V          | 6A       | 15 lbs. 9 ozs. | 16.95      |

## PLATE AND FILAMENT TRANSFORMERS

| Type No. | High Voltage — Volts | M.A. | Filament No. 1 Volts Amps | Filament No. 2 Volts Amps | Filament No. 3 Volts Amps | Filament No. 4 Volts Amps | Case No. | Weight          | List Price |
|----------|----------------------|------|---------------------------|---------------------------|---------------------------|---------------------------|----------|-----------------|------------|
| T-249*   | 235-0-235            | 20   | 6.3 C.T. 0.6              | 6.3 C.T. 0.9              |                           |                           | 2A       | 2 lbs.          | \$6.95     |
| T-245*   | 320-0-320            | 40   | 5 2                       | 6.3 C.T. 2                |                           |                           | 3A       | 2 lbs. 13 ozs.  | 7.90       |
| T-205*   | 350-0-350            | 75   | 5 2                       | 6.3 C.T. 3                |                           |                           | 4A       | 5 lbs. 10 ozs.  | 10.15      |
| T-222*   | 250-0-250            | 50   | 5 2                       | 6.3 C.T. 2                |                           |                           | 3A       | 2 lbs. 13 ozs.  | 8.55       |
| T-206*   | 325-0-325            | 100  | 5 3                       | 6.3 C.T. 3                | 6.3 C.T. 2                |                           | 5A       | 9 lbs.          | 13.00      |
| T-212    | 420-0-420            | 125  | 5 3                       | 6.3 C.T. 3                | 2.5 C.T. 4                |                           | 5A       | 9 lbs. 2 ozs.   | 14.60      |
| T-244*   | 425-0-425            | 165  | 5 3                       | 6.3 C.T. 3                | 6.3 C.T. 3                |                           | 6A       | 13 lbs. 11 ozs. | 17.10      |
| T-248*   | 425-0-425            | 165  | 5 3                       | 2.5 C.T. 6                | 2.5 C.T. 6                |                           | 6A       | 13 lbs. 11 ozs. | 19.05      |
| T-213    | 520-110-0-520        | 180  | 5 3                       | 2.5 3                     | 6.3 C.T. 3                | 6.3 C.T. 3                | 5A       | 10 lbs. 6 ozs.  | 17.10      |
| T-215    | 360-125-0-360        | 200  | 5 3                       | 2.5 C.T. 3                | 2.5 C.T. 10               | 6.3 C.T. 2.1              | 5A       | 10 lbs. 10 ozs. | 17.10      |
| T-247    | 590-0-590            | 200  | 5 3                       | 6.3 C.T. 3                | 6.3 C.T. 3                |                           | 5A       | 10 lbs. 10 ozs. | 17.10      |
| T-216    | 520-85-0-520         | 250  | 5 3                       | 2.5 C.T. 3                | 6.3 C.T. 3                | 6.3 C.T. 3                | 6A       | 15 lbs. 9 ozs.  | 19.65      |
| T-202*   | 0-150                | 20   | 6.3 0.6                   |                           |                           |                           | 1A       | 1 lb. 4 ozs.    | 6.35       |
| T-220*   | 125-0-125            | 200  | 5 3                       | 6.3 C.T. 3                | 6.3 C.T. 3                |                           | 4A       | 5 lbs.          | 9.50       |
| T-246    | 625-0-625            | 250  | 5 3                       | 6.3 C.T. 3                | 6.3 C.T. 3                |                           | 6A       | 15 lbs. 9 ozs.  | 20.60      |
| T-223    | 600-0-600            | 300  | 5 6                       | 6.3 C.T. 3                | 6.3 C.T. 2                |                           | 6A       | 15 lbs. 9 ozs.  | 18.10      |
| T-221    |                      |      |                           |                           |                           |                           | 7A       | 21 lbs. 10 ozs. | 39.35      |

High voltage secondary 520-390 and 300 V. D. C. at 160 M.A.  
 Filament No. 1 5 V.-6A  
 Filament No. 2 5 V.-3A  
 Filament No. 3 2.5 V.-3A  
 Filament No. 4 6.3 V. C.T.-4A  
 Filament No. 5 6.3 V. C.T.-4A  
 105-390-520 to deliver 400 V. D. C. at 400 M.A.

\* Indicates unit designed for condenser input. (All other units should be used choke input.)

## POWER LINE AUTO TRANSFORMERS

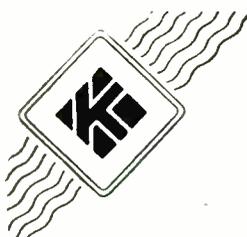
| Type No. | Input           | Output    | Capacity Volt-Amperes | Case No. | Weight        | List Price |
|----------|-----------------|-----------|-----------------------|----------|---------------|------------|
| T-219    | 88 to 130 volts | 115 volts | 500                   | 5A       | 10 lbs. 1 oz. | \$17.10    |

## FILAMENT TRANSFORMERS

| Type No. |                              |              | Case No. | Weight         | List Price |
|----------|------------------------------|--------------|----------|----------------|------------|
| T-388    | 2.5, 5, 6.3 V.—3A            | 1000 V. Test | 1A       | 1 lb. 7 ozs.   | \$4.75     |
| T-379    | 2.5 V.—5 A. C.T.             | 2000 V. Test | 1A       | 1 lb. 6 ozs.   | 5.05       |
| T-352    | 2.5 V.—10 A. C.T.            | 2000 V. Test | 2A       | 1 lb. 14 ozs.  | 5.70       |
| T-360    | 2.5 V.—10 A. C.T.            | 5000 V. Test | 3A       | 2 lbs. 13 ozs. | 7.90       |
| T-389    | 2.5 V.—10 A. C.T.            | 9000 V. Test | 4A       | 4 lbs. 14 ozs. | 11.75      |
| T-354    | 5 V.—3 A. C.T.               | 2000 V. Test | 2A       | 1 lb. 14 ozs.  | 5.70       |
| T-357    | 5.25 V.—12 A. C.T.           | 2000 V. Test | 4A       | 5 lbs. 10 ozs. | 9.50       |
| T-358    | 5.25 V.—20 A. C.T.           | 2000 V. Test | 5A       | 9 lbs. 2 ozs.  | 11.10      |
| T-380    | 5, 5.1, 5.25 V.—8 A. C.T.    | 2000 V. Test | 4A       | 4 lbs. 5 ozs.  | 9.50       |
| T-381    | 5, 5.1, 5.25 V.—10.5 A. C.T. | 2000 V. Test | 4A       | 5 lbs.         | 10.15      |
| T-382    | 5, 5.1, 5.25 V.—16 A. C.T.   | 2000 V. Test | 4A       | 5 lbs. 10 ozs. | 11.40      |
| T-383    | 5, 5.1, 5.25 V.—21 A. C.T.   | 2000 V. Test | 5A       | 9 lbs. 2 ozs.  | 12.70      |

840 Barry Street

New York 59, N. Y.



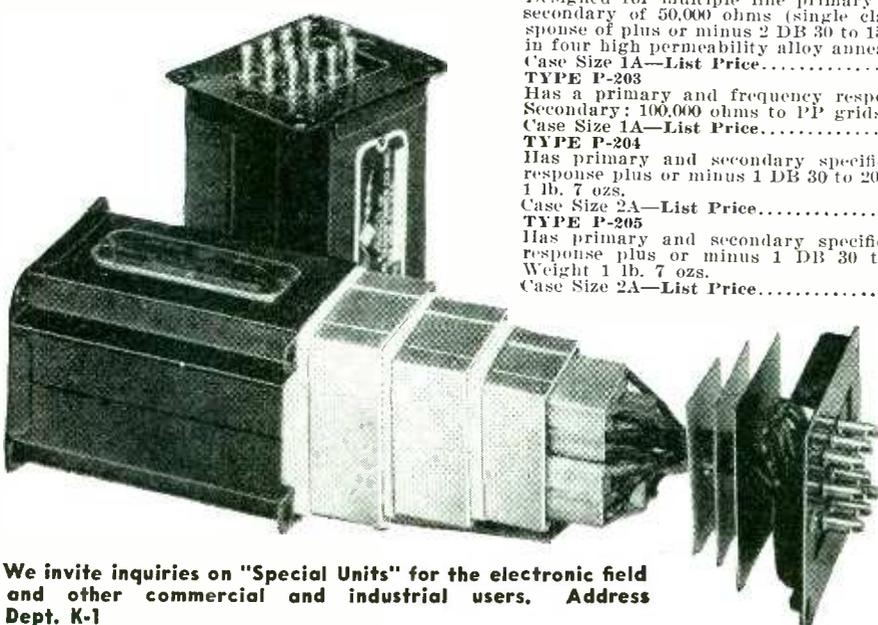
# KENYON "T" LINE TRANSFORMERS

## FILAMENT TRANSFORMERS

| Type No.              | Specifications  | Case No. | Weight         | List Price |
|-----------------------|---|----------|----------------|------------|
| T-390                 | 5 V.-20 A. C.T. 10000 V. Test   | 5½A      | 11 lbs. 9 ozs. | \$21.90    |
| T-351                 | 6.3 V.-3 A. C.T. 2000 V. Test   | 2A       | 1 lb. 14 ozs.  | 5.35       |
| T-378                 | 6.3, 7.5 V.-7 A. C.T. 2000 V. Test  | 3A       | 2 lbs. 13 ozs. | 6.95       |
| T-387                 | 6.3, 6.45, 6.6 V.-8 A. C.T. 2000 V. Test  | 3A       | 2 lbs. 13 ozs. | 6.35       |
| T-392                 | 7.5, 7.7, 7.9 V.-6 A. C.T. 2000 V. Test   | 3A       | 2 lbs. 13 ozs. | 6.65       |
| T-353                 | 7.5 V.-4½ A. C.T. 2000 V. Test  | 2A       | 2 lbs.         | 5.70       |
| T-359                 | 7.5 V.-9 A. C.T. 2000 V. Test   | 4A       | 5 lbs.         | 8.85       |
| T-365                 | 10 V.-4 A. C.T. 5000 V. Test  | 3A       | 2 lbs. 13 ozs. | 7.90       |
| T-361                 | 10 V.-8 A. C.T. 5000 V. Test  | 4A       | 5 lbs. 10 ozs. | 10.15      |
| T-384                 | 10, 10.5, 11 V.-5 A. C.T. 2000 V. Test  | 4A       | 5 lbs.         | 10.15      |
| T-385                 | 10, 10.5, 11 V.-10 A. C.T. 2000 V. Test   | 5A       | 8 lbs. 15 ozs. | 12.70      |
| <b>TWO WINDINGS</b>   |   |          |                |            |
| T-386                 | 6.3 V.-3 A. C.T. 2000 V. Test   | 3A       | 2 lbs. 13 ozs. | \$6.95     |
| T-369                 | 2.5 V.-8 A. C.T. 1000 V. Test   | 4A       | 4 lbs. 11 ozs. | 8.85       |
| T-368                 | 6.3 C.-4 A. C.T. 2000 V. Test   | 4A       | 4 lbs. 11 ozs. | 8.85       |
| T-366                 | 2.5 V.-10 A. C.T. 5000 V. Test  | 4A       | 5 lbs. 10 ozs. | 11.10      |
| <b>THREE WINDINGS</b> |   |          |                |            |
| T-376                 | 6.3 V.-4 A. C.T. 2000 V. Test   6.3 V.-4 A. C.T. 2000 V. Test   5 V.-3 A. 2000 V. Test  | 4A       | 5 lbs. 10 ozs. | \$10.15    |
| T-356                 | 6.3 V.-3 A. C.T. 750 V. Test   5 V.-4 A. C.T. 3000 V. Test   5 V.-8 A. C.T. 3000 V. Test  | 4A       | 5 lbs. 9 ozs.  | 12.35      |
| T-355                 | 5 V.-3 A. C.T. 4000 V. Test   5 V.-3 A. C.T. 4000 V. Test   5 V.-6 A. C.T. 4000 V. Test   | 4A       | 5 lbs. 10 ozs. | 11.10      |
| T-375                 | 2.5 V.-5 A. C.T. 6000 V. Test   2.5 V.-5 A. C.T. 6000 V. Test   2.5 V.-10 A. C.T. 6000 V. Test  | 4A       | 5 lbs. 9 ozs.  | 13.00      |
| <b>FOUR WINDINGS</b>  |   |          |                |            |
| T-367                 | 6.3 V.-5 A. C.T. 2000 V. Test   6.3 V.-5 A. C.T. 2000 V. Test   5 V.-6 A. C.T. 2000 V. Test   5 V.-3 A. C.T. 2000 V. Test                       | 5A       | 10 lbs. 1 oz.  | \$13.65    |
| <b>FIVE WINDINGS</b>  |   |          |                |            |
| T-377                 | 5 V.-3 A. 2000 V. Test   5 V.-3 A. 2000 V. Test   6.3 V.-1 A. C.T. 2000 V. Test   6.3 V.-5 A. C.T. 2000 V. Test   6.3 V.-5 A. C.T. 2000 V. Test | 5A       | 10 lbs. 1 oz.  | \$15.20    |

## TELESCOPIC SHIELDED HUMBUCKING TRANSFORMERS

The core type, humbucking, construction employed in these transformers tends to minimize hum pick-up. In addition, they are mounted in multiple electromagnetic shields of high permeability alloy steel which are annealed after complete construction to remove shearing and bending strains thus assuring maximum permeability upon which depends the efficiency of shielding.



**TYPE P-202**  
Designed for multiple line primary of 500/333/250/200/125/50 ohms and secondary of 50,000 ohms (single class A grid) having a frequency response of plus or minus 2 DB 30 to 15,000 cycles, shielding, 90 db mounted in four high permeability alloy annealed steel cases. Weight 1 lb.  
Case Size 1A—List Price..... \$20.60

**TYPE P-203**  
Has a primary and frequency response the same as type P-202 above. Secondary: 100,000 ohms to PP grids. Weight 1 lb.  
Case Size 1A—List Price..... \$24.90

**TYPE P-204**  
Has primary and secondary specifications same as P-202. Frequency response plus or minus 1 DB 30 to 20,000 cycles. Shielding, 90 DB. Weight 1 lb. 7 ozs.  
Case Size 2A—List Price..... \$29.25

**TYPE P-205**  
Has primary and secondary specifications same as P-203. Frequency response plus or minus 1 DB 30 to 20,000 cycles. Shielding, 90 DB. Weight 1 lb. 7 ozs.  
Case Size 2A—List Price..... \$34.25

**TYPE T-6**  
Designed with a multiple line primary of 500/333/250/200/125/50 ohms and secondary of 20,000 ohms (single class A grid). Frequency response plus or minus 3 db 60 to 10,000 cycles. Shielding, 50 db. Mounted in 2 high permeability annealed alloy steel cases and plain steel outer case. These units are designed for use in low level input circuits where hum-pick-up must be kept to absolute minimum. Weight 1 lb.  
Case Size 1A—List Price.. \$12.95

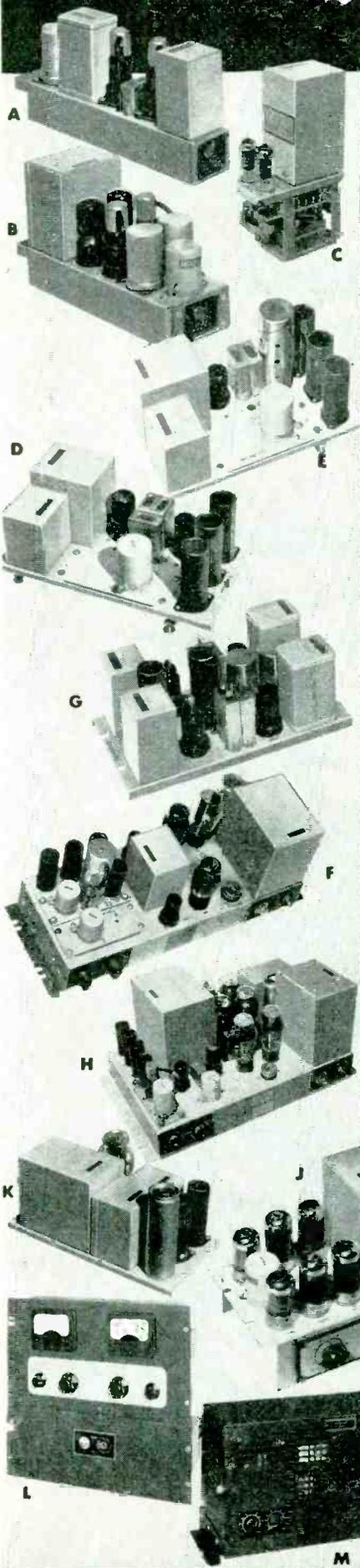
We invite inquiries on "Special Units" for the electronic field and other commercial and industrial users. Address Dept. K-1

**NOTE:**  
All Prices Subject To Change

# KENYON TRANSFORMER CO., Inc. 840 BARRY STREET NEW YORK, U. S. A.

# A GUIDE TO

# AUDIO QUALITY *by* Langevin



| Instrument  | Function   | Output Power (DBM)               | Nominal Input Impedance   | Load Impedance                  | Gain  |
|---|--|----------------------------------|---|---------------------------------|---|
| (A) Type 116-A  | PLUG-IN Pre-amp, booster amplifier   | +18 DBM                          | 30/150 C.T./250/600 C.T. Ohms                                       | 150/600 C.T. Ohms               | 40 db or 34 db  |
| (B) Type 117-A  | PLUG-IN program, monitor or booster amp.   | +30 as program<br>+39 as monitor | 30/150 C.T./250/600 C.T. Ohms                                       | 150/600 C.T. Ohms               | 50 db   |
| (C) Type 118-A  | PLUG-IN Isolation-Bridging Amplifier   | +24 DBM                          | Bridging  | 600 Ohms (150 on special order) | 6 db—after a 6 db pad, will provide 75 db isolation and zero gain                       |
| (D) Type 102-A  | Program, Amplifier   | +28 DBM                          | 30/250/600 Ohms   | 600 Ohms                        | 55 db, provision for 45, 35 db.   |
| (E) Type 106-A  | Pre-amp or booster   | +16 DBM                          | 30/250/600 Ohms   | 600 Ohms                        | 38 db, provision for 28, 18 db.   |
| (F) Type 108 (available in 4 types—see Input Impedance) | Power, monitor, talk-back or buss amplifier  | 20 watts (+43 DBM)               | High Gain Input—30/250 Ohms;<br>Low Gain Input—600 Ohms or Bridging | 500/8 Ohms                      | High Gain Input—102 db; Low Gain Input—61 db matching 600 Ohms, 42 db bridging 600 Ohms |
| (G) Type 111-C<br>Type 111-D                            | Dual Pre-amp, or booster   | +16 DBM                          | C-30/250/600 Ohms<br>D-150/600 Ohms                                 | C-600 Ohms<br>D-150/600 Ohms    | 47 db   |
| (H) Type 121  | Power Amplifier  | 50 watts (+47 DBM)               | High Gain Input—30/250 Ohms;<br>Low Gain Input—600 Ohms or Bridging | 2/4/8/16/32/150/600 Ohms        | High Gain Input—102 db; Low Gain Input—61 db matching 600 Ohms, 42 db bridging 600 Ohms |
| (J) Type 114-A  | AC-DC Monitor, power, utility amplifier  | 4 watts (+36 DBM)                | 600 Ohms or Bridging  | 4 Ohms                          | 61 db matching 600 Ohms, 43 db bridging 600 Ohms  |
| (K) Type 201—A & B Power Supply                         | Supplies plate and filament power for 102, 106, 111 and similar amplifiers. Max. output 75 M.A. at 280 V.; 8 amperes at 6.3 V. The Type 201-B has additional filter stage providing 30 M.A. at .02% ripple; 75 M.A. at .04% ripple.  |                                  |   |                                 |   |
| (L) Type 119-A PROGAR*                                  | A fast acting Peak Limiter preceded by an automatic gain control amplifier with variable time constants. Resulting action of combination of amplifiers, in broadcast applications, is a higher percentage of modulation than can be obtained with a limiter alone. *REG. U. S. PAT. OFF. |                                  |   |                                 |   |
| (M) Type 202-A Cabinet                                  | Designed to house Langevin 108 series amplifiers (see item F). For shelf or wall mounting.   |                                  |   |                                 |   |
| (N) Type 4-A Microphone Floor Stand                     | Heavily chrome plated, cast iron base. Adjustable from 38 to 68 inches. Fits microphone with a 5/8-24 thread. Adaptors available for mounting other microphones.   |                                  |   |                                 |   |
| (O) Type 3-A Mounting Frame and Blank Mat Panel         | Representative of Langevin Rack Mounting Accessories. Complete stock available for mounting all Langevin amplifiers in standard relay type racks. 3-A Frame occupies 10 1/2 inches of rack space.  |                                  |   |                                 |   |
| (P) Type 10-A Rack Mounting Frame                       | For mounting 16-A and 17-A trays containing PLUG-IN amplifiers Types 116-A, 117-A (see items A and B). Mounts six Type 116-A, four Type 117-A, or various combinations of both. Occupies 7" of rack space.   |                                  |   |                                 |   |
| (Q) Type 3-A—Loudspeaker Housing                        | Accommodates any standard 8 inch cone loudspeaker. Provides sufficient back loading for good low frequency response. Provisions for base reflexing. Diameter—20 inches. Depth—9 inches. Housing of spun aluminum, brushed satin finish. Lined with acoustic felt.                        |                                  |   |                                 |   |
| (R) Type L-360 Horn                                     | For speech and paging—provides 360 degree horizontal and 40 degree vertical coverage. Handles power inputs of 25 or 50 watts depending upon number of drive units employed (attachments available). Diameter—23 inches. Overall height—26 inches.  |                                  |   |                                 |   |
| (S) Type 24-A Projector                                 | Exponential type—will handle inputs of 50 and 100 watts depending upon number of drive units employed. Will produce sound level of +94 db with 50 watts input. Freq. Response 110 to 6500 c.p.s., depending upon drive unit. Length—38 inches. Bell diameter—26 inches.                  |                                  |   |                                 |   |
| (T) Type 26-A Loudspeaker Horn                          | Designed for voice reproduction and for use as high frequency element in wide range system. Provides uniform distribution over a horizontal angle of 120 degrees and vertical, 40 degrees. Will handle up to 50 watts power input when equipped with two drive units.                    |                                  |   |                                 |   |

### TRANSFORMERS

- (U) Type 602-A Repeat Coil—A balanced line-isolation coil, electrostatically shielded, with excellent suppression of longitudinal. Freq. Range  $\pm 1$  db from 30 to 20,000 cycles. Maximum operating level +18 DBM. Insertion loss .5 db. Primary to secondary impedance ratios 150/600 Ohms to 150/600 Ohms. Mounting Studs on 1/2" x 1 7/8" centers.
- (V) Type 605-A Line to Voice Coil Transformer—This transformer is representative of a group of line to voice coil units of various ratings; all with low insertion loss and excellent frequency characteristics. The 605-A is a 20 watt unit with primary impedances of 250, 500, 750, 1000 Ohms, secondary 6-8 Ohms.
- (W) Type 609-A Line to Voice Coil Transformer—An inexpensive speaker transformer which can be strapped for various primary impedances from 150 to 7000 Ohms to match voice coils of 3 or 6 Ohms. 2 3/8" between mounting centers.

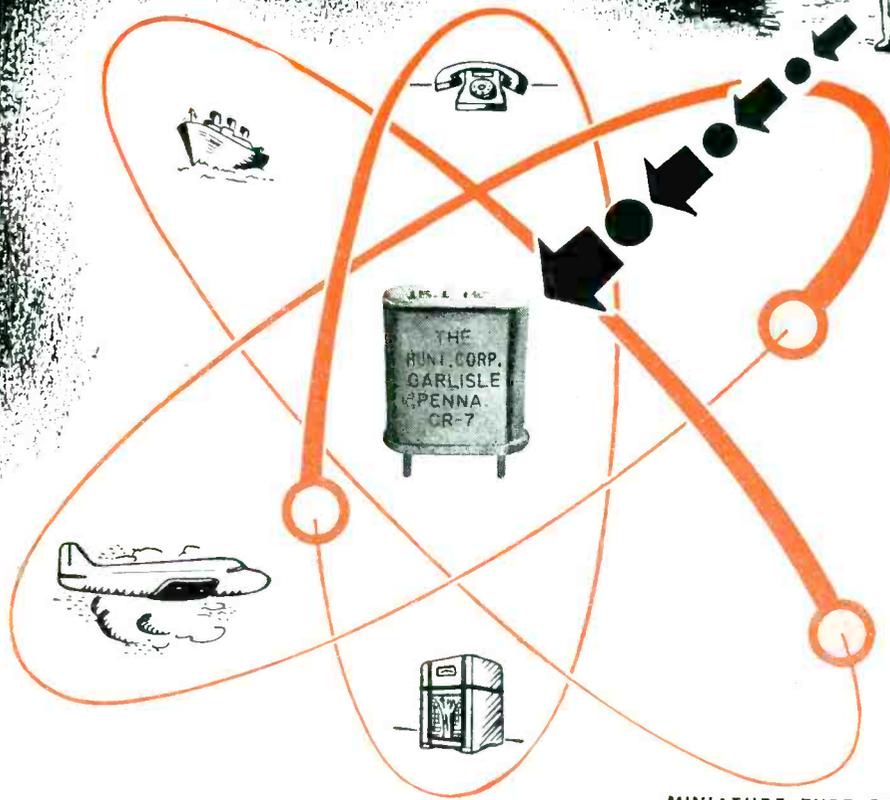
The equipment herein described is licensed under U. S. patents of the A. I. & T. Co. and the Western Electric Company.

**The Langevin Company**  
INCORPORATED

37 WEST 65th STREET, NEW YORK 23, NEW YORK  
SAN FRANCISCO: 1050 Howard St., 3  
LOS ANGELES: 1000 N. Seward St., 38



**CONTINUOUSLY SERVING  
WITH  
HIGHEST QUALITY CRYSTALS**



## **HUNT crystals last longer and give better results**

Precision crystals manufactured by The Hunt Corporation are your assurance of better results and longer life... the result of years of developing and making only the highest quality piezo electric crystal units.

Hunt Crystal Units are made from the finest Brazilian Quartz and made by some of the most experienced, skilled craftsmen in the business. The CR-7 shown here is one of many *high stability, close tolerance, precision crystal units* manufactured by Hunt.

### **MINIATURE TYPE CR-7 CRYSTAL UNIT**

(Center illustration is actual size)  
Hermetic sealed all metal holder.  
Wire mounted plated crystals.  
Average weight .077 oz., CAATC 1335.  
Fundamental operation, AT cut crystal, to 22MC.  
Harmonic mode operation, AT cut crystal, to 110 MC.  
Temperature coefficient:  
± .003% from -35° C to +70° C.  
± .005% from -55° C to +90° C.

For complete information on the high quality crystals you need, write us today. Send along the details of your circuit.

**THE Hunt CORPORATION**  
PRECISION CRYSTALS  
CARLISLE, PA.

# ESPY INSTRUMENTS

## GIVE YOU CONTROL OVER YOUR TEST CONDITIONS

Research and development laboratories are finding that Espy equipment gives them convenient, dependable accuracy in the control of test variables. The exacting standards maintained

in design, workmanship, and materials give you confidence in your test methods. Assure accurate, reliable results by standardizing on Espy instruments for all your lab measurements.



### MODEL P-11 REGULATED POWER SUPPLY

- continuously variable
- 0 to +400 v.d-c, 200 ma
- 0 to -150 v.d-c
- 6.3 v.a-c, 6 amperes
- 1.0% regulation
- metered output

### Model P-12 Regulated Power Supply

- 0 to +600 v. d-c
- 0 to 300 ma d-c
- other features same as Model P-11
- \$375.00 f.o.b. factory

### Model P-14 Regulated Power Supply

- +200 to +1000 v. d-c
- 0 to 500 ma d-c
- other features same as Model P-11
- \$550.00 f.o.b. factory

- cabinet or rack mounting
- voltages available at both front and rear
- 105/125 v.a-c source
- \$250.00 f.o.b. factory
- early delivery

- voltage connections isolated from ground
- SLO-DOWN circuit prevents initial voltage surge
- line and high voltage fuses on front panel

### CUSTOM BUILT REGULATED POWER SUPPLIES

We specialize in custom designed power supplies for such applications as magnetron, klystron, X-ray, and television equipment. Ask for details of our regulated laboratory master power supply system.



### MODEL G-21 AUDIO OSCILLATOR

- 10-20,000 cps
- 5w max. output; 30v across 200 ohms
- 0.5% distortion
- 6 push button frequencies
- incremental dial
- less than 1% hum
- RC oscillator b.f.o. circuit
- cabinet or rack mounting
- $\pm 2\%$  frequency accuracy
- square wave output provided by toggle switch
- 105/125 v. a-c source
- output voltage maintained constant within 1.0 db
- \$350.00 f.o.b. factory

**ESPY RADIO and ELECTRONIC CORPORATION**  
1218 Lincoln Blvd., Santa Monica, California

Formerly AMERICAN Radio Co.

—engineered for Engineers—by **SHURE**



**MODEL "51"**

### —the Sonodyne

**NEW MOVING COIL DYNAMIC MICROPHONE**

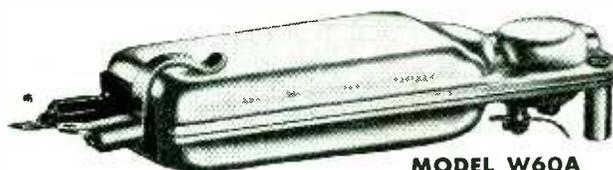
1. *High output!* 52 db below 1 volt per dyne per square centimeter.
2. Multi-Impedance Switch for Low, Medium, or High Impedance.
3. Wide-range Frequency Response, from 70 to 9000 c. p. s.
4. Semi-directional Pickup.
5. Functional design for improved Acoustical Performance—beautiful die-cast pearl gray case.
6. Ideal for public address, recording, communications, and similar applications.

| MODEL | CABLE  | CODE  | LIST PRICE |
|-------|--------|-------|------------|
| "51"  | 20 ft. | RUSON | \$31.00    |

### —the "Muted Stylus"

**NEW QUIET CRYSTAL PICKUP CARTRIDGE**

A smooth-working, soft-riding, silent-tracking cartridge especially designed to overcome problems of surface noise and distortion in home phonographs, coin-operated machines, and in all other applications where shellac and Vinylite pressings are used. The W60A tracks with the low needle force of only 1 oz., yet has a 1.9 volt output. Special feature of the "SIXTY" is the protective guards for the detachable



**MODEL W60A**

permanent-point needle, which is sapphire-tipped, or osmium-tipped. High needle compliance coupled with low needle force gives longer life to both needle and record.

| MODEL           | CASE     | MIN. NEEDLE FORCE | VOLTAGE | SHPG. WGT. | CODE  | LIST PRICE |
|-----------------|----------|-------------------|---------|------------|-------|------------|
| W60A (Sapphire) | Aluminum | 1 oz.             | 1.9     | ¾ oz.      | RUSIS | \$7.50     |
| W60B (Osmium)   |          |                   |         |            | RUSIB | \$6.50     |



**MODEL 718A**

### —the Versatex

**THE NEW VERSATILE CRYSTAL MICROPHONE**

1. Can be used by itself as a desk stand, on a floor stand, or in your hand.
2. High output with 7 ft. cable, 53 db below 1 volt per dyne per square centimeter.
3. Specially engineered speech response for maximum intelligibility.
4. Has special moisture-proofed crystal.
5. Heavy, rich maroon plastic case—eliminates shock hazard.
6. Contains R-F filter to prevent crystal burnout.
7. The cartridge unit is mounted in rubber to provide mechanical isolation from the case, so that the microphone may be handled or carried about without annoying mechanical noise pickup.

| MODEL | CABLE | OUTPUT                                  | CODE  | LIST PRICE |
|-------|-------|---|-------|------------|
| 718A  | 7-ft. | 53 db below 1 volt per dyne per sq. cm. | RUTEX | \$10.00    |

Patents applied for by Shure Brothers. Licensed under the Patents of the Brush Development Company

# SHURE BROTHERS, Inc.

*Microphones and Acoustic Devices*

**225 West Huron Street, Chicago 10, Illinois**

**Cable Address: SHUREMICRO**

# SYLVANIA ELECTRONIC TUBES



## CRYSTAL DIODES



Because of their compactness, resistance to shock and vibration, and elimination of heater supplies, Sylvania Crystal Diodes have found widespread use in many types of circuits.

Germanium Crystal Diodes are used as second detectors and DC restorers in television receivers and frequency discriminators in FM sets, as well as in many other applications up to several hundred Mc.

Silicon Crystal Converters are used as first detectors in superheterodyne receivers. Silicon Video Detector Crystals may be used for detection in video or RF amplifiers.

| GERMANIUM CRYSTAL DIODES | Type                             | Shunt Capacitance  | Peak Inverse Anode Voltage | Avg. Anode Current | Peak Anode Current (AC) | Transient Surge Current |
|--------------------------|----------------------------------|--------------------|----------------------------|--------------------|-------------------------|-------------------------|
|                          | IN34                             | 1.2 $\mu\text{mf}$ | 50 v. max.                 | 0-22.5 ma          | 60 ma max.              | 200 ma max.             |
| IN38                     | 0.9 $\mu\text{mf}$               | 100 v. max.        | 0-22.5 ma                  | 150 ma max.        | 500 ma max.             |                         |
| IN35                     | (Two IN34's assembled as a unit) |                    |                            |                    |                         |                         |

| GERMANIUM VARISTORS        | Varistors IN40 and IN41 consist of four specially selected and matched germanium diodes, balanced within $\pm 2.5\%$ in the forward direction at 1.5 volts. IN40 is of the plug-in type; IN41 is designed for soldered connections. |                  |                 |                    |                  |                             |
|----------------------------|---|------------------|-----------------|--------------------|------------------|-----------------------------|
| SILICON CRYSTAL CONVERTERS | Type  | Design Frequency | Conversion Loss | Output Noise Ratio | Burnout Test     | I. F. Impedance (Resistive) |
|                            | IN21B   | 3,000 Mc         | 6.5 db max.     | 2.0 max.           | $B_s = 2.0$ ergs | 200-800 ohms                |
|                            | IN23B   | 10,000 Mc        | 6.5 db max.     | 2.7 max.           | $B_s = 1.0$ erg  | 150-600 ohms                |
|                            | IN25  | 1,000 Mc         | 8.5 db max.     | 2.5 max.           | $B_p = 30$ watts | 100-400 ohms                |
|                            | IN26  | 25,000 Mc        | 8.5 db max.     | 2.5 max.           | $B_s = 0.1$ erg  | 300-600 ohms                |

| SILICON VIDEO DETECTOR CRYSTALS | Type | Figure of Merit   | Video Impedance   | Burnout Test      | Carrier Frequency | Video Frequency |
|---------------------------------|------|-------------------|-------------------|-------------------|-------------------|-----------------|
|                                 | IN31 | 55 min.           | 6,000-24,000 ohms | $B_p = 0.02$ watt | 10,000 Mc         | 500 cps-5 Mc    |
| IN32                            | 100  | 5,000-20,000 ohms | $B_p = 0.36$ watt | 3,000 Mc          | 500 cps-5 Mc      |                 |

## HYDROGEN THYRATRONS

| Characteristic            | 4C35               | 5C22               |
|---------------------------|--------------------|--------------------|
| Max. Peak Anode Voltage   |                    |                    |
| Forward                   | +8000              | +16000             |
| Inverse                   | -8000              | -16000             |
| Maximum Anode Current     |                    |                    |
| Peak                      | 90 amp.            | 325 amp.           |
| Average                   | 100 ma             | 200 ma             |
| Heater Voltage            | 6.3 v.             | 6.3 v.             |
| Heater Current            | 6.0 amp.           | 10.6 amp.          |
| Max. Peak Grid Voltage    | +200               | +200               |
| Max. Grid Current Rating  |                    |                    |
| Peak                      | 5.0 amp.           | —                  |
| Average                   | 5.5 ma             | —                  |
| Min. Cathode Heating Time | 3 min.             | 5 min.             |
| Pulse Rating              |                    |                    |
| Max. Time                 | 6 $\mu\text{sec.}$ | 6 $\mu\text{sec.}$ |
| Max. Repetition           | 4000 pps           | (Note 1)           |

(1) Max. permissible repetition rate is a function of peak forward anode voltage and peak anode current, according to formula:

$$\text{prf} = \frac{2.8 \times 10^6}{e_{py} \times i_b}$$

Sylvania Hydrogen Thyratrons 4C35 and 5C22 are especially designed for pulsing service at high repetition frequencies, high peak currents and high voltages. An outstanding feature of these tubes is the short deionization time, which permits an unusually high switching rate. Ambient temperatures over a wide range have little effect on their electrical properties.



4C35

Characteristics of the 4C35 and 5C22 are listed in table at left.

Detailed technical information on other types of thyratrons is available on request from Sylvania Electric.

## SELENIUM RECTIFIERS

The Type NC5 Selenium Rectifier is a compact, rugged, lightweight, heaterless, metallic type rectifier. It was developed for a wide variety of rectifier applications, especially in the power supplies of radio receivers. It incorporates between two metallic contact surfaces a chemically and electrically treated selenium layer which permits current flow in one direction but blocks it in the other, thus rectifying the applied AC.



NC5

### ELECTRICAL RATINGS

|                                     |         |
|-------------------------------------|---------|
| Max. Allowable RMS Voltage          | 130 v.  |
| Max. Allowable Inverse Voltage      | 380 v.  |
| Max. Allowable Peak Current         | 1200 ma |
| Max. Allowable DC Output Current    | 100 ma  |
| Approx. Rectifier Voltage Drop      | 5 v.    |
| Max. Operating Temperature          | 75° C.  |
| Min. Peak-current Limiting Resistor | 20 ohms |
| Polarity—Cathode is marked          | "CATH"  |

## TRIGGER TUBES AND STROBOTRONS

Sylvania Triggertube OA5 is a 5-element, inert gas filled, cold cathode tube specially designed for electronic relay applications. Time required to initiate the arc and deionization time are extremely short.

Strobotrons, primarily designed for visual studies, may also be used as electronic relays.



LEFT: ID21

ABOVE: OA5

| TRIGGER TUBE CHARACTERISTICS |                   |                         |                     |                    |                       |
|------------------------------|-------------------|-------------------------|---------------------|--------------------|-----------------------|
| Anode Voltage                | Trigger Grid Bias | Trigger Grid Resistance | Discharge Condenser | Keep-alive Current | Trigger Pulse Voltage |
| 750 v.                       | +90 v.            | 0.25 megohm             | 0.25 $\mu\text{f}$  | 50 $\mu\text{a}$   | 85 v.                 |

| STROBOTRON CHARACTERISTICS |                 |                    |                    |                         |                         |                    |                                      |  |
|----------------------------|-----------------|--------------------|--------------------|-------------------------|-------------------------|--------------------|--------------------------------------|--|
| Type                       | Max. Pulse Rate | Discharge Capacity | Max. Anode Voltage | Max. Avg. Anode Current | Max. Peak Anode Current | DC Grid Volts Max. | Max. Avg. Grid Current (either grid) | Avg. Grid $\approx 2$ Starting Voltage |
| SN4                        | 60              | 2 $\mu\text{f}$    | 350 v.             | 50 ma                   | 5 amp.                  | 70                 | 15 ma                                | 80-125 v.                              |
| ID21                       | 240             | 2 $\mu\text{f}$    | 350 v.             | 50 ma                   | 5 amp.                  | 70                 | 15 ma                                | 80-125 v.                              |

STROBOTRON R4350 is a polychromatic strobotron, capable of giving brilliant flashes of white light. It is therefore especially useful in observing any periodic motion involving color, such as color print-

ing. In a suitable circuit, repetition rates as high as hundreds of flashes per second may be obtained. Duration of each flash is of the order of a few hundred-thousandths of a second.

# SYLVANIA ELECTRIC

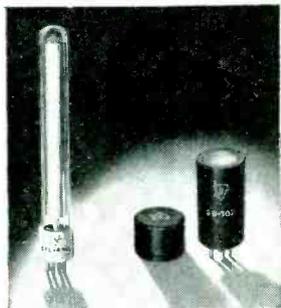
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# SYLVANIA ELECTRONIC TUBES



## GEIGER-MUELLER TUBES



Left: GG-304. Center: Cap for GB-302. Right: GB-302 with cap removed.

The Sylvania Types GB-302 and GG-304 are counter tubes of stable, uniform characteristics, manufactured by vacuum tube production techniques. Other features include long life, dependability and convenience.

GB-302 is a beta-ray counter, utilizing a thin but rugged window of metal foil. It is extremely sensitive to the beta radiation of the majority of available radioactive isotopes. Useful in tracer techniques and in medical diagnostic and therapeutic applications.

GG-304 is the gamma-ray counter, companion to the GB-302. Useful in radiological safety surveys and other applications where gamma radiation must be efficiently measured. Also used for cosmic ray studies.

## ACCELEROMETER TUBES



The accelerometer is a newly developed electronic tube useful in measuring linear acceleration. Operating range — 1 to 100 g's.

SD759A

## SYLVANIA FLASH TUBES



Sylvania Flash Tubes, used with suitable equipment, provide brilliant flashes of blue-white light of extremely short duration. Developed primarily for photographic purposes, Flash Tubes are also used in beacons, obstruction markers and signaling devices.

Illustrated at left: Type R4340

| OPERATING CHARACTERISTICS OF FLASH TUBES |                       |      |                           |                           |                          |                           |                          |
|--|-----------------------|------|---------------------------|---------------------------|--------------------------|---------------------------|--------------------------|
| Type                                     | Forward Anode Voltage |      | Typical Operating Voltage | Max. No. Flashes Per Min. | Max. Wait-sec. Per Flash | Trigger Supply Volts min. | Light Output Peak Lumens |
|  | min.                  | max. |                           |                           |                          |                           |                          |
| R4330                                    | 2000                  | 2500 | 2250                      | 6                         | 100                      | 15,000                    | 12,000,000               |
| R4340                                    | 2000                  | 2500 | 2250                      | 4                         | 400                      | 15,000                    | 12,000,000               |

## GLOW MODULATOR TUBES

Light output of Glow Modulator Tubes R1130B and R1131 varies in an essentially linear manner with the current passing through the tube. Tubes are of crater type, providing high ionization density.

Crater diameter of the R1130B is .050 inch; of the R1130, .093 inch. In other respects the tubes are identical.



R1130B

|                            |                    |
|----------------------------|--------------------|
| Operating Voltage          | 140 volts max.     |
| Operating Current          | 5-35 ma.           |
| Starting Voltage           | 225 volts max.     |
| Modulating Frequency Range | 15-15,000 cps      |
| Useful Light Range         | 3500-6500 Å.       |
| Filament Voltage           | None: cold cathode |

## PIRANI AND THERMOCOUPLE TUBES

Sylvania Pirani Tube R1111 and Thermocouple Tube R1100, used with suitable auxiliary apparatus, provide a means for direct measurement of gas pressures over a range from about  $10^{-1}$  to  $10^{-5}$  mm. With proper care, readings with an accuracy of + 5% can be obtained.

### ELECTRICAL CHARACTERISTICS Pirani Tube R1111

|   |                |
|---|----------------|
| Resistance (cold)                               | 6.6 ohms       |
| Resistance (hot—evacuated tube, 100 ma current) | 15.5-17.0 ohms |
| Operating Voltage                               | 1.5 volts      |

### Thermocouple Tube R1100

|                                |             |
|--------------------------------|-------------|
| Filament Resistance (max.)     | 3.0 ohms    |
| Thermocouple Resistance (max.) | 5.0 ohms    |
| Filament Current (max.)        | 125 ma      |
| Thermocouple Current (max.)    | 250 $\mu$ a |



Left: Thermocouple Tube R1100. Right: Pirani Tube R1111.

## GAS DISCHARGE TUBES

Gas Discharge Tubes are of the externally triggered cold cathode type. Capable of handling high instantaneous currents, they find wide use as electronic switches in high voltage circuits. A common use is as drivers and pulse generators for magnetostriction oscillators in underwater sound equipment.



SS501

| ELECTRICAL RATINGS                |           |            |
|-----------------------------------|-----------|------------|
| Characteristic                    | SS501     | R4410      |
| Operating Voltage                 | 1800-2000 | 1900       |
| Hold-Off (Breakdown) Voltage—min. | 2100      | 2000       |
| Trigger Voltage (min.)            | 15,000    | 15,000     |
| Discharge Capacitance (max.)      | 2 $\mu$ f | 10 $\mu$ f |
| Flashing Rate (max.)              | 12 pps    | 12 pps     |

## COPLANAR TRIODES

Sylvania Coplanar Triodes utilize a radically new type of construction, involving a streamlined cathode assembly and planar grid. Advantages of the new design include higher efficiency, minimum interelectrode capacitances, minimum transit time effect, efficient operation up to 3000 Mc., maximum power output with minimum input power, and low heater drain.

No base is required for mounting these Coplanar Triodes. Inner conductor connects to heater; outer conductor to heater and cathode; straight disc to plate; and cupped disc to grid.

Detailed specifications on Type 2C36 triode oscillator, 2C37 general-purpose triode, and other tubes in this group may be obtained from Sylvania Electric.



2C36

2C37

# SYLVANIA ELECTRIC

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# SYLVANIA TEST EQUIPMENT



## SYLVANIA POLY (MULTI-PURPOSE) METER

| Quantity           | Range                 | Full Scale Ranges                                    |
|--------------------|-----------------------|--|
| Audio, AC voltages | 20-15,000 cps         | 3, 10, 30, 100, 300                                  |
| R-F voltages       | 10,000 cps—300 Mc     | 3, 10, 30, 100, 300                                  |
| DC voltages        | 0.1-1,000 volts       | 3, 10, 30, 100, 300, 1,000                           |
| Direct current     | 0.1 ma-10 amp.        | 3, 10, 30, 100, 300, 1,000 ma and 10 amp             |
| Resistance         | 1/2 ohm-1,000 megohms | 1,000, 10,000, 100,000 ohms and 1, 10, 1,000 megohms |

Sylvania Poly (MULTI-PURPOSE) Meter provides a convenient means of taking a wide variety of electrical measurements with a single compact instrument. Stabilized against errors caused by fluctuations in line voltage or by gas current in tubes. Complete with all accessories, including proximity-fuze type tube built into thumb-size probe for measurement of RF voltages.



Type 134

## SYLVANIA OSCILLOSCOPE

Sylvania's 3-inch cathode ray Oscilloscope Type 131 facilitates the solving of a wide variety of problems encountered in radio and electronic equipment. Controls are easily accessible and clearly marked. Lightweight visor permits use of the instrument in a lighted room. Leather carrying handle is provided for easy portability.

|   |   |   |
|---|---|---|
| Tube  | Sylvania 3AP1 Cathode Ray                           |  |
| Amplifier Frequency Response                | Sine wave uniform within 3 db from 10 cps to 100 Kc |   |
| Deflection Factor Through Amplifiers Direct | 0.5 volts/inch<br>17 volts/inch approx.             | Type 131  |
| Horizontal Sweep Direction                  | Left to right                                       |   |
| Frequency Range                             | 15 to 40,000 cps                                    |   |
| Power Supply Line Voltage                   | 105-125 volts                                       |   |
| Frequency                                   | 50-60 cps   |   |
| Power Consumption                           | 40 watts  |   |

## COUNTER TUBE TESTER



Type 139

The Sylvania Counter Tube Tester Type 139 has been designed for full ease and convenience of use. The instrument tests standard, Lock-In and acorn tubes, and extra sockets and switches have been provided to permit easy adaptation to the testing of new tube types as they appear. All tubes are tested under dynamic conditions. Provision is made for noise test, and shorts test is conducted at voltage low enough to prevent tube damage or faulty indications, while at the same time high enough to give full brilliance on the Shorts Indicator.

### Portable Tube Tester

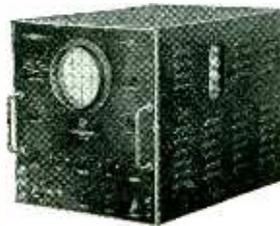
Portable Tester Type 140 incorporates all the advanced features of Type 139, and is provided with steel carrying case and leather handle.

## MODULATION METER



Sylvania Modulation Meter X-7018 provides a simple means for rapid, accurate determination of percentage modulation over an extended useful frequency range.

## SYNCHROSCOPES



Model 5

Sylvania Synchronoscopes consist of a cathode-ray oscilloscope with a fast sweep generator for viewing short video pulses, and means for synchronizing the sweep with the equipment undergoing test. Originally developed for radar, these Sylvania instruments have many other applications in such fields as television and pulse-time-modulation communications.

Four models: Model 5, 5E, P4, and P4E. "E" models incorporate RF detector and video amplifier, for direct examination of envelope of RF pulses or waveforms up to and including microwave region.

| Property  | P4 and P4E  | 5 and 5E  |
|---|---|---|
| Sweep Speeds, $\mu\text{sec./in.}$  | 0.5, 2.0, 6.0 and 25  | 0.2, 0.5, 1.0, 5.0, 20 and 100  |
| Repetition rate of internal trigger generator, pps.                                   | 500, 1000, 2000 and 4000  | 500, 1000, 2000 and 4000  |
| Sweep calibration   | Provision for calibrating 0.5 and 2.0 $\mu\text{sec.}$ sweep                                | None  |
| Output Trigger (from Internal Trigger Generator) for synchronizing external apparatus | Positive pulse of 115 v. peak, 1 $\mu\text{sec.}$ rise time and 4 $\mu\text{sec.}$ duration | Positive pulse rising to 200 v. peak in about 0.3 $\mu\text{sec.}$ and maintaining an amplitude of at least 100 v. for 3 $\mu\text{sec.}$ |
| Adjustable Delay of Output Trigger (with respect to start of sweep)                   | 100 $\mu\text{sec.}$ before to 100 $\mu\text{sec.}$ after start of sweep                    | 75 $\mu\text{sec.}$ before, to 75 $\mu\text{sec.}$ after start of sweep   |
| Delay of Sweep Trigger (with respect to Input Trigger)                                | Adjustable 0 to 100 $\mu\text{sec.}$  | Fixed 90 $\mu\text{sec.}$   |
| Vertical Deflection Sensitivity   | About 55 v./in. on 5-in. cathode ray tube 5LP1  | About 65 v./in. on 5-in. cathode ray tube 5JPI  |
| Line Supply Power Consumption   | 115 v., 60 cps<br>P4: 130 watts<br>P4E: 169 watts   | 115 v., 60 cps<br>5: 200 watts<br>5E: 239 watts   |

Cabinet size for Models 5 and 5E is 16 $\frac{7}{8}$ " high by 15 $\frac{1}{8}$ " wide by 22 $\frac{1}{4}$ " deep. Weight is 110 pounds. Corresponding dimensions for Models P4 and P4E are 14 $\frac{1}{2}$ " by 9" by 21"; weight 45 pounds.

## RECORDING DILATOMETER

The Sylvania Dilatometer (illustrated at right) combines the extreme accuracy in measuring expansion and contraction provided by the concentric quartz tube principle, with automatic recording of the measurements. Measurements are plotted in the form of a complete elongation-temperature curve for an entire 8-hour cycle. No special attention is required to operate.



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# SYLVANIA RADIO TUBES



## LOCK-IN RECEIVING TUBES



In Sylvania Lock-In receiving tubes, the contact pins are sealed into the glass bottom, thus eliminating the need for soldered connections. No top cap connections are used — a feature which contributes to compactness. Many Lock-In types are especially suitable for UHF applications, because of their low lead inductances, low interelectrode capacitances and low dielectric losses.

Lower portion of the tube is fitted with a metal shell and guide pin. This unit acts as a shield, and also makes possible the Lock-In feature. Lock-In tubes remain securely in sockets, assuring good contact at all times.

Detailed specifications on individual types are available on request.

## CATHODE RAY TUBES



Sylvania Tubes 3AP1, 3AP4, 5BP1, 5BP4, 5AP1, 5AP4, 5GP1 and 5GP4 are electrostatically focused, electrically deflected cathode ray tubes. In general, each consists of a gun which forms a beam of electrons directed toward the screen, two sets of deflection plates which scan the beam over the screen, and a fluorescent screen which converts the energy of the beam into a spot of visible light.

Detailed specifications are available on request.

## T-3 TUBES



Introduction of Sylvania's T-3 proximity-fuze type tube opens the way to new concepts in the design of radio and electronic equipment, making possible substantial savings in size and weight. In addition to the extremely small size of the tube itself, still further savings in space and weight are made possible by the elimination of conventional sockets, since the tube leads may be soldered directly into the circuit.

T-3 tubes are exceptionally rugged, have long life, and are especially suitable for operation at the higher frequencies.

T-3 tube shown actual size

## LOCK-IN TRANSMITTING TUBES

First of a new line of Sylvania transmitting tubes featuring the Lock-In base, the 3D24 is a beam power tetrode with 45 watt anode dissipation. Electronic graphite anode allows high plate dissipation for small area and maintains constant interelement relationship and uniform anode characteristics.

The 3D24 may be used at full input up to 125 Mc. Maximum permissible frequency is undergoing study, and most recent test data may be obtained from Sylvania.

### Electrical Characteristics

|                                    |                           |
|------------------------------------|---------------------------|
| Filament Voltage                   | 6.3 volts                 |
| Filament Current                   | 3.0 amp.                  |
| Amplification Factor               | 50                        |
| Direct Interelectrode Capacitances |                           |
| Grid-Plate                         | 0.2 $\mu\mu\text{f}$ max. |
| Input                              | 6.5 $\mu\mu\text{f}$      |
| Output                             | 2.4 $\mu\mu\text{f}$      |



## FOR COMPLETE DATA



Complete information on the entire line of Sylvania receiving tubes is contained in the "Technical Manual" which may be obtained from Sylvania Electric, Radio Tube Division, Emporium, Pa., at a cost of 85¢ a copy.

Over 500 types of tubes are listed. Contents include: Fundamental Properties of Vacuum Tubes; Characteristic Curves; General Tube and Circuit Information, Resistance-Coupled Amplifier Data—in addition to full specifications on all tubes.

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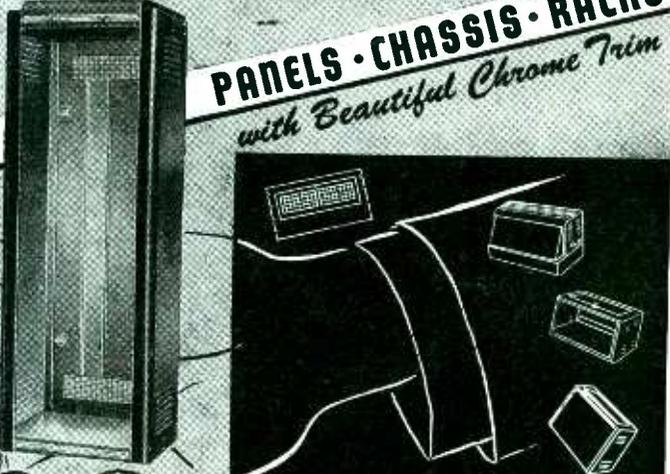
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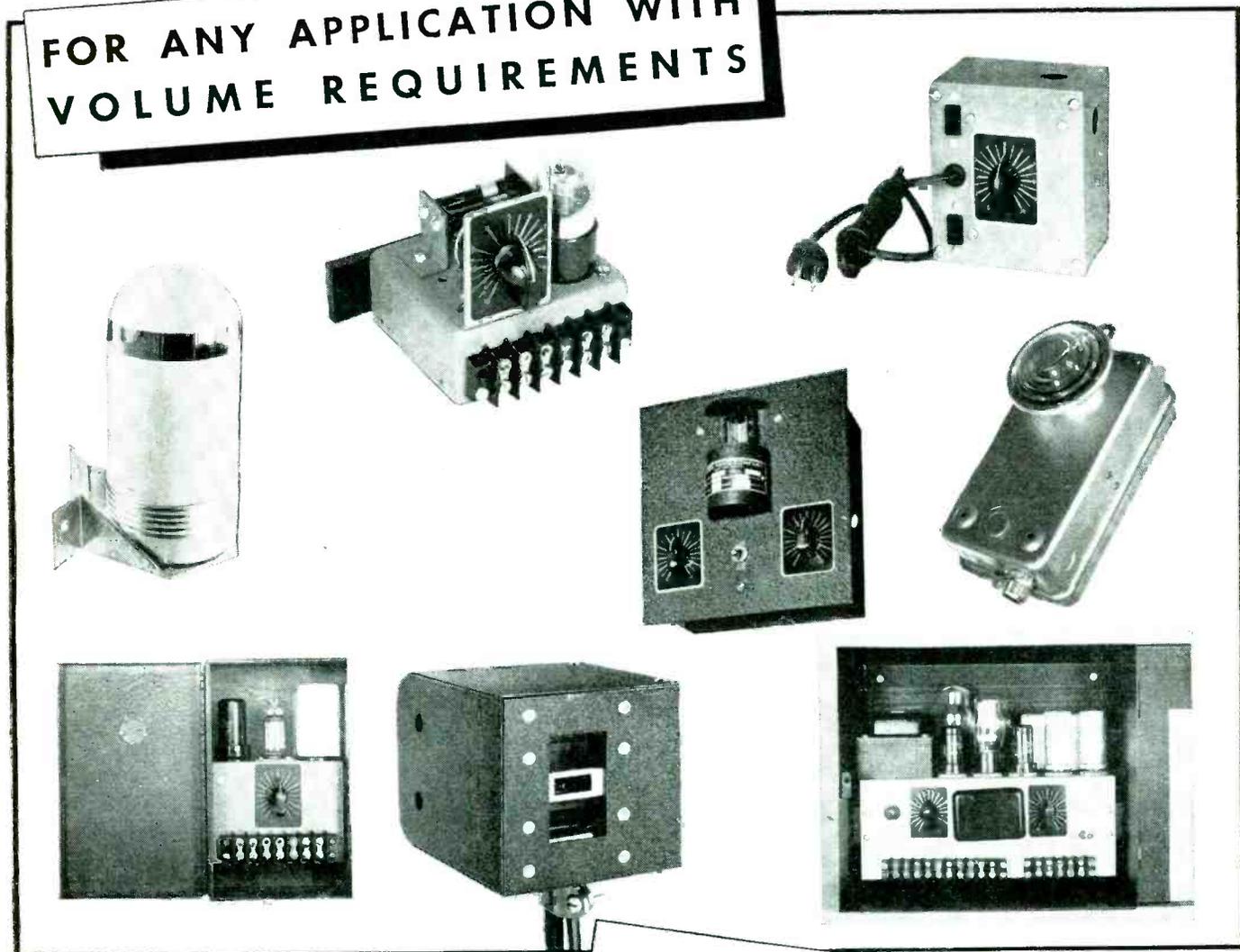
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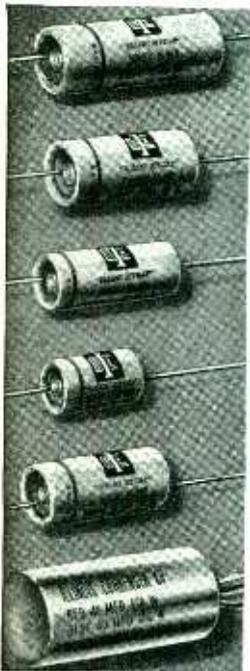
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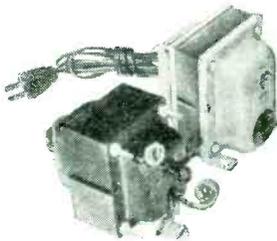


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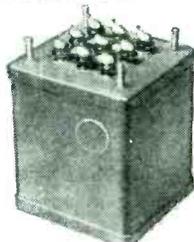


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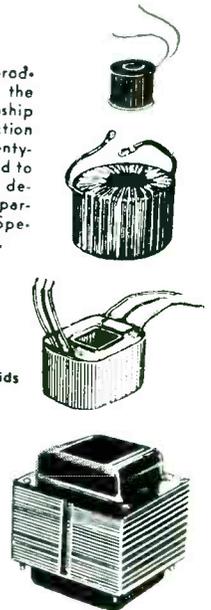
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| <b>"A-B" PACKS FOR PORTABLE RECEIVERS</b>   |                   |            |        |         |                                     |                                     |                  |
| 753   | 7.5 & 9 A<br>90 B | 9 5/8"     | 2 3/8" | 4 1/8"  | Socket —, +7.5 & 9<br>Socket —, +90 | A: 50 m.a.<br>B: 5.0-15.0 m.a.      | 4 lb. 15 oz.     |
| 754   | 7.5 & 9 A<br>90 B | 10 1/8"    | 3 1/4" | 4"      | Socket —, +7.5 & 9<br>Socket —, +90 | A: 50 m.a.<br>B: 5.0-15.0 m.a.      | 6 lb. 8 oz.      |
| <b>"A" BATTERIES FOR HOME RECEIVERS</b>     |                   |            |        |         |                                     |                                     |                  |
| A-1300*                                     | 1.25              | 5 3/8"     | 4 1/8" | 8 5/8"  | Socket —, +1.25                     | 100-600 m.a.                        | 5 lb. 13 1/2 oz. |
| 50 Dry Cells                                | 1.5               | 2 5/8" D   |        | 6 5/8"  | Screw —, +1.5                       | 100-250 m.a.                        | 2 lb. 2 oz.      |
| <b>"B" BATTERY FOR HOME RECEIVERS</b>       |                   |            |        |         |                                     |                                     |                  |
| 487   | 45                | 5 3/8"     | 2 3/8" | 7 1/4"  | Socket —, +22.5, +45                | 7.0-12.0 m.a.                       | 4 lb. 4 oz.      |
| <b>"A" BATTERIES FOR PORTABLE RECEIVERS</b> |                   |            |        |         |                                     |                                     |                  |
| 718   | 6                 | 3 1/8"     | 2 3/4" | 5 1/2"  | Socket —, +6                        | 50 m.a.                             | 2 lb. 13 oz.     |
| 741   | 1.5               | 3 7/8"     | 2 1/8" | 5 3/8"  | Socket —, +1.5                      | 100-350 m.a.                        | 2 lb. 13 oz.     |
| 742   | 1.5               | 2 1/8"     | 2 1/8" | 4"      | Socket —, +1.5                      | 100-250 m.a.                        | 1 lb. 6 oz.      |
| 743   | 1.5               | 3 1/8"     | 2 3/8" | 4 1/2"  | Socket —, +1.5                      | 100-300 m.a.                        | 2 lb. 1 oz.      |
| 744   | 6                 | 2 3/8"     | 2 3/8" | 3 3/8"  | Socket —, +6                        | 50 m.a.                             | 1 lb. 6 oz.      |
| 745   | 1.5               | 3 7/8"     | 1 7/8" | 10 3/8" | Socket —, +1.5                      | 100-350 m.a.                        | 2 lb. 13 oz.     |
| 746   | 4.5               | 3 1/8"     | 1 7/8" | 4 3/8"  | Socket —, +4.5                      | 50 m.a.                             | 1 lb. 4 oz.      |
| 747   | 6                 | 3 7/8"     | 1 7/8" | 10 3/8" | Socket —, +6                        | 50 m.a.                             | 2 lb. 13 oz.     |
| <b>"B" BATTERY FOR PORTABLE RECEIVERS</b>   |                   |            |        |         |                                     |                                     |                  |
| 482   | 45                | 3 1/8"     | 1 3/8" | 5 1/2"  | Socket —, +45                       | 5.0-15.0 m.a.                       | 1 lb. 14 oz.     |
| <b>"A" BATTERY FOR PERSONAL RECEIVERS</b>   |                   |            |        |         |                                     |                                     |                  |
| 950   | 1.5               | 1 21/64" D |        | 2 3/4"  | Flat Contact —, +1.5                | 25-250 m.a.                         | 3 1/2 oz.        |
| <b>"B" BATTERIES FOR PERSONAL RECEIVERS</b> |                   |            |        |         |                                     |                                     |                  |
| 455   | 45                | 2 5/8"     | 1"     | 3 1/8"  | Snap Type —, +45                    | 1.0-10.0 m.a.                       | 8 oz.            |
| 467   | 67.5              | 2 1/8"     | 1 3/8" | 3 3/4"  | Snap Type —, +67.5                  | 1.0-10.0 m.a.                       | 12 oz.           |
| <b>"A" BATTERIES FOR POCKET RECEIVERS</b>   |                   |            |        |         |                                     |                                     |                  |
| 915   | 1.5               | 3 1/64" D  |        | 1 3/8"  | Flat Contact —, +1.5                | 25-100 m.a.                         | 1 1/2 oz.        |
| 1016  | 1.5               | 1 9/64" D  |        | 2 1/64" | Flat Contact —, +1.5                | 25-100 m.a.                         | 1.1 oz.          |
| <b>"B" BATTERIES FOR POCKET RECEIVERS</b>   |                   |            |        |         |                                     |                                     |                  |
| 412   | 22.5              | 1 1/2"     | 5/8"   | 2"      | Flat Contact —, +22.5               | 0.3-1.0 m.a.                        | 1 1/2 oz.        |
| 413   | 30                | 1 3/8"     | 5/8"   | 2 1/8"  | Flat Contact —, +30                 | 0.3-1.0 m.a.                        | 1 2/3 oz.        |
| 420   | 22.5              | 1 1/8"     | 3/8"   | 2 3/8"  | Flat Contact —, +22.5               | 0.5-2.0 m.a.                        | 2 1/2 oz.        |
| 430   | 30                | 1 1/8"     | 1"     | 2 1/8"  | Flat Contact —, +30                 | 0.5-2.0 m.a.                        | 3 oz.            |

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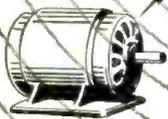
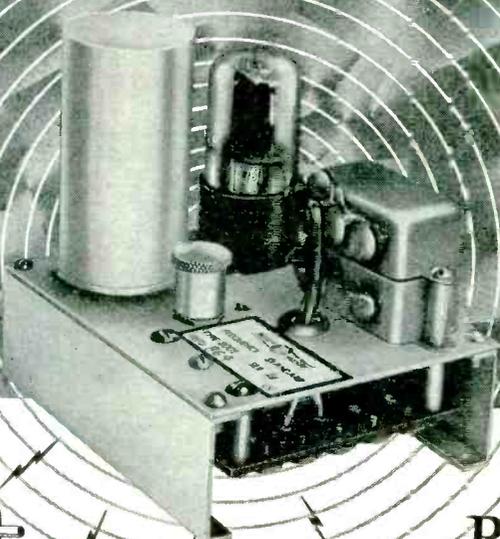
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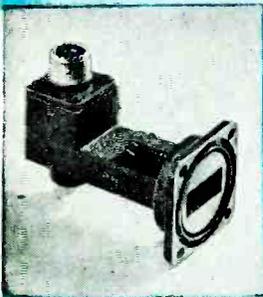
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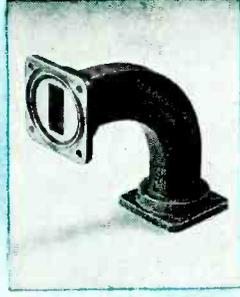
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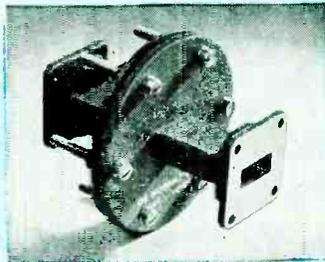
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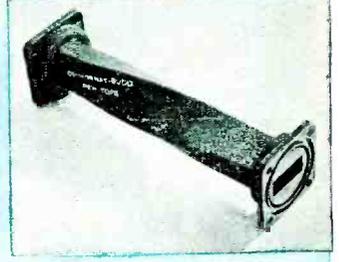
Uni-directional Broad Band Coupler DB-442



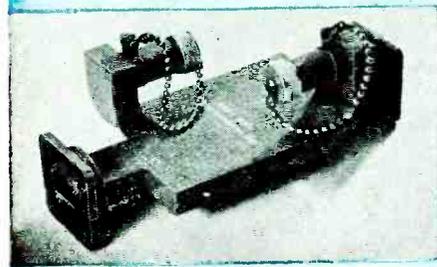
Bulkhead Flange DB-451



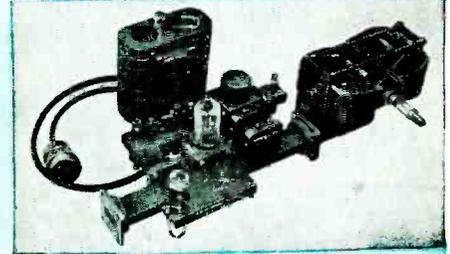
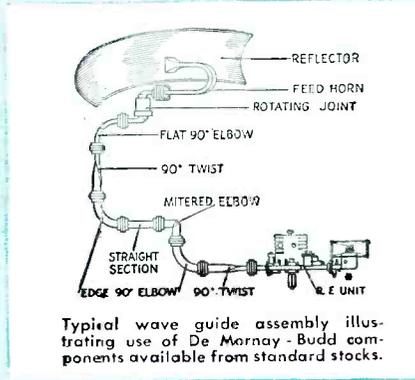
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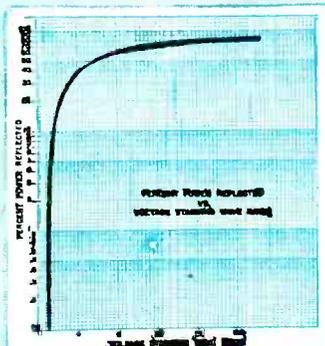
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The curve shows the manner in which the reflected power increases with an increase in the voltage standing wave ratio. The curve is calculated from the following equation:

$$\% \text{ Power Reflected} = \left( \frac{\left( \frac{V_{\max}}{V_{\min}} \right) - 1}{\left( \frac{V_{\max}}{V_{\min}} \right) + 1} \right)^2$$



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# FRACTIONAL H.P. MOTORS

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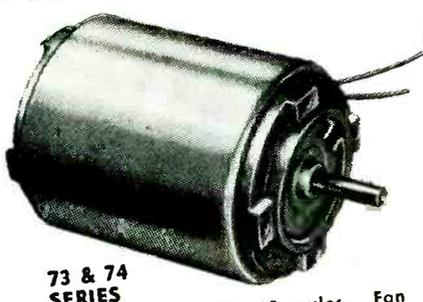
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|-------------|-------------------|---------------|
| Capacitor   | 1/15, 1/20, 1/30  | 1600 & 3200   |
| Shaded Pole | 1/30, 1/50, 1/100 | 1500          |
| Synchronous | 1/50, 1/100       | 1800 & 3600   |



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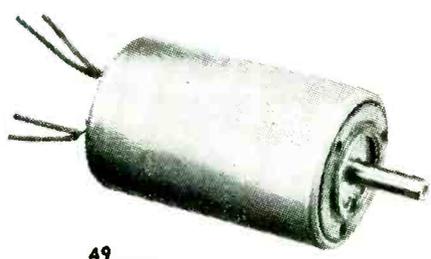
| TYPE        | H.P.               | R.P.M. 60 Cy. |
|-------------|--------------------|---------------|
| Capacitor   | 1/20, 1/30, 1/50   | 1600 & 3200   |
| Shaded Pole | 1/30, 1/50, 1/100  | 1500          |
| Synchronous | 1/50, 1/100, 1/200 | 1800 & 3600   |



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| TYPE        | H. P.                         | R.P.M. 60 Cy. |
|-------------|-------------------------------|---------------|
| Capacitor   | 1/15, 1/20, 1/30, 1/50, 1/100 | 1600 & 3200   |
| Shaded Pole | 1/30, 1/50, 1/100             | 1500          |
| Synchronous | 1/50, 1/100, 1/200            | 1800 & 3600   |



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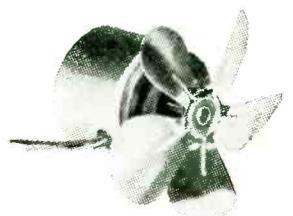
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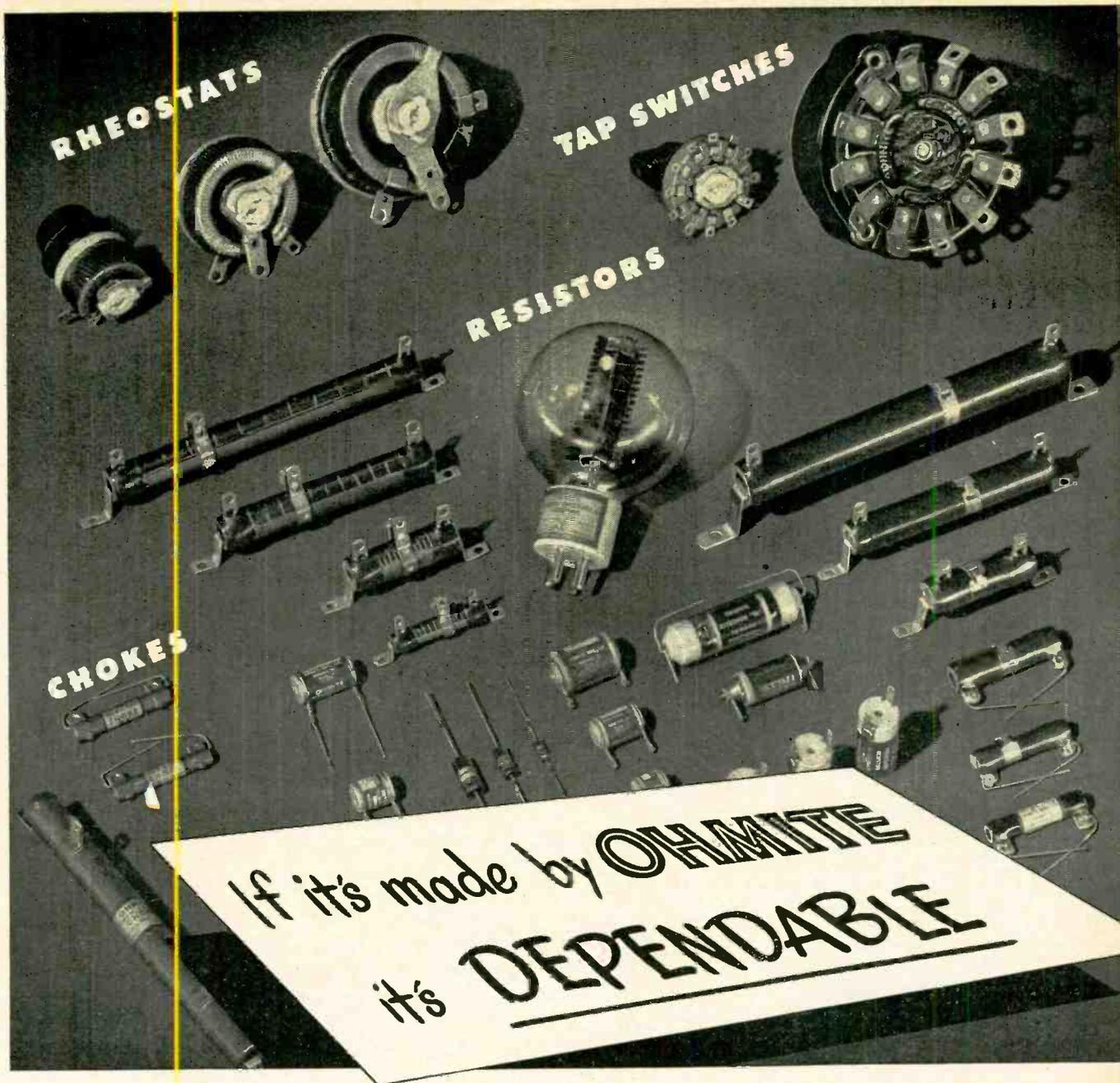
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| Broadcasting Station Components<br>Power Supplies and Transformers,<br>Audio frequency transformers |  |
| Pulse Transformers<br>Blocking Oscillator Transformers<br>Power Transformers<br>Choke Coils         | Open and Hermetic Types<br>Class A, B & C insulation |

*Any or all Types built to individual specifications*  
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*Single Items or Quantity Production*

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2921 WEST OLIVE STREET                      BURBANK, CALIFORNIA

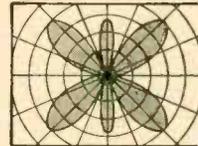
**WIDE BAND • HIGH GAIN  
SUPERECEPTOR**

(CODE FMTV 44216)

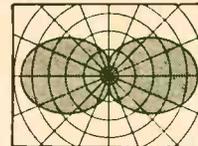


**ANTENNA  
for FM and  
television**

- ★ Blanket coverage 44 to 216 megacycles
- ★ Complete with fittings; transmission line
- ★ Feather weight, polished aluminum



180 mc field pattern



80 mc field pattern

Easy to install, built for years of trouble-free service, it's factory pre-tuned for high gain at all frequencies from 44 to 216 Megacycles—requires no adjustment in the field. Improves the performance of any set. Reflectors available for elimination of "ghosts" and for special directional effects. The FMTV 44216 antenna is available through regular jobber channels.

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PRECISION

CRYSTALS

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**REEVES-HOFFMAN**

factory is equipped to manufacture a very large variety of quartz crystal units, both standard and custom. If you need quartz crystal units for use in the fields of communications, electronic control, ultrasonics, diathermy, instruments, or other special applications, REEVES-HOFFMAN can design and manufacture to fill your needs. Estimates and quotations promptly submitted.

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PLANT: 321 CHERRY STREET, CARLISLE, PA.

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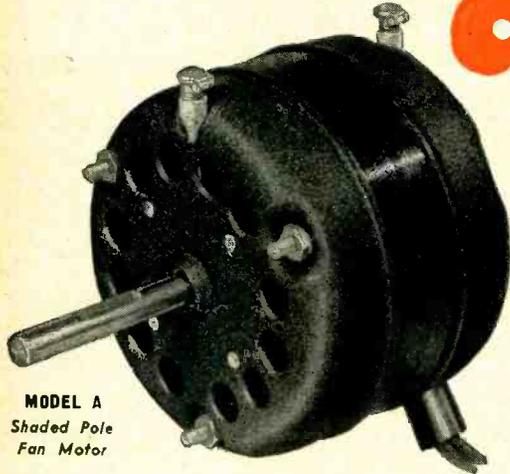
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# alliance

MOTORS IN MIND



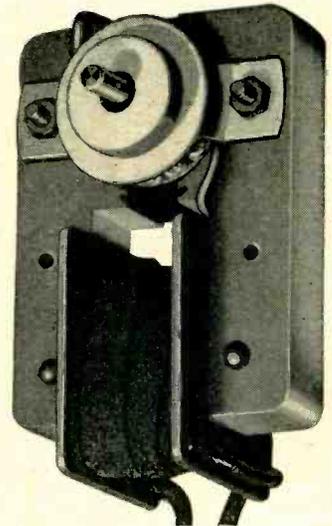
## POWR-PAKT FAN MOTOR

The new Model A shaded pole, induction-type Alliance Powr-Pakt Fan Motor for speeds from 500 to 1050 R.P.M., operates on 50 or 60 cycles at voltages up to 220, 1/30th h.p., size 4 5/8 x 2 3/4 in. Has porous bronze, oilless-type sleeve bearings. Open or fully enclosed construction. Approx. 8 to 40 oz. in full load running torque, depending on stack length. Exceptionally quiet. For continuous or intermittent duty. Runs clockwise or counter clockwise—not reversible.

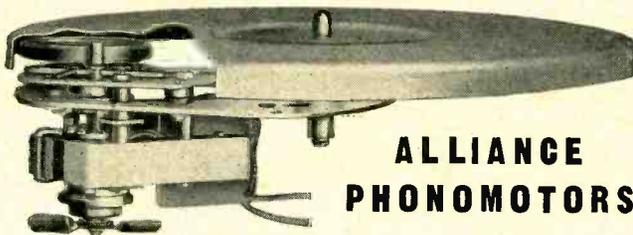
MODEL A  
Shaded Pole  
Fan Motor

## MINIATURE POWER PLANT MODEL MS

Here is a truly miniature power plant for 110 v., 60 cycle operation, so compact and light in weight that it can be used where many designs call for "tailored power." The Model MS has been developed to fill the growing need for small power to increase the motion and utility features of thousands of new products! SPECIFICATIONS: Draws about 25 watts at 3000 R.P.M. no load. The speed is 2500 to 3000 R.P.M. depending on frequency and load. Develops about .006 h.p., 5/32 in. diameter, centerless, round steel shaft. Has latest type graphite bronze oilless bearings, self-aligning and amply proportioned. Motor measures 1 3/4 in. x 2 in. x 3 1/8 in.



MODEL MS



## ALLIANCE PHONOMOTORS

*Motors For Driving  
Turntables, Record Changers, Tuning Devices*

**MODEL 80:** Operates on 110 or 220 v., is made for 40, 50 or 60 cycles, 16 watts input, 78 R.P.M. Has no gears—runs at an even speed—has a smooth, quiet, positive friction-rim drive. Amply proportioned bearings with large reservoirs assure long life. Motor and idler plate shock mounted to minimize vibration transfer to turntable and motor board. Forced ventilation gives cool operation—the slip-type fan avoids any possible injury. Mounting plate maintains correct turntable height, regardless of mounting board thickness. Available with 8, 9 or 10-inch turntable tops. Max. depth below base mounting plate, 2 1/16 in.

**MODEL K 25 CYCLE MOTOR:** A 25 cycle companion to the Model 80. Operates on 110 v., 25 cycles, at 12-watt input, especially designed for 25 cycle operation. It has all the advantages of Model 80. Mounting may be interchanged without any sacrifice in performance. Motor and idler plate are shock mounted to cabinet mounting plate for low vibration transfer to turntable and motor board. Available in 8 or 9 in. turntable sizes only. Max. depth below base mounting plate, 2 1/4 in.

**ALLIANCE MANUFACTURING CO.**

**ALLIANCE, OHIO**

## GRID CONTROL RECTIFIERS (THYRATRONS)



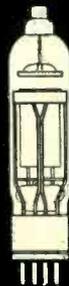
EL C1B

D.C. Output (Amps.) 1.0  
Peak Anode Current 8.0  
Peak Forward Volts.. 450  
Peak Inverse Volts.... 700  
Filament Volts ..... 2.5  
Filament Amperes .... 6.3  
Overall Length .....4½"



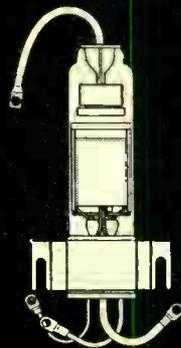
EL C3J

D.C. Output (Amps.) 2.5  
Peak Anode Current 30.0  
Peak Forward Volts.. 750  
Peak Inverse Volts....1250  
Filament Volts ..... 2.5  
Filament Amperes ..... 9.0  
Overall Length .....6⅛"



EL C6J

D.C. Output (Amps.) 6.4  
Peak Anode Current 77.0  
Peak Forward Volts.. 750  
Peak Inverse Volts....1250  
Filament Volts ..... 2.5  
Filament Amperes .... 21.0  
Overall Length ..... 9"



EL C16J

D.C. Output (Amps.) 16.0  
Peak Anode Current 160.0  
Peak Forward Volts..1000  
Peak Inverse Volts....1250  
Filament Volts ..... 2.5  
Filament Amperes .... 31.0  
Overall Length ..... 10"



EL C6C

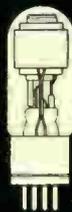
D.C. Output (Amps.) 6.4  
Peak Anode Current 77.0  
Peak Forward Volts..2000  
Peak Inverse Volts....4000  
Filament Volts ..... 2.5  
Filament Amperes .... 24.0  
Overall Length ..... 11"

## RECTIFIERS



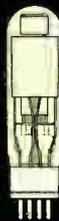
FULL WAVE RECTIFIER  
EL 1C

D.C. Output (Amps.) 1.0  
Peak Anode Current 4.0  
Peak Inverse Volts.. 725  
Filament Volts ..... 2.5  
Filament Amperes .... 6.0  
Overall Length .....5½"



FULL WAVE RECTIFIER  
EL 3C

D.C. Output (Amps.) 2.5  
Peak Anode Current 10.0  
Peak Inverse Volts.... 725  
Filament Volts ..... 2.5  
Filament Amperes .... 11.5  
Overall Length ..... 7"



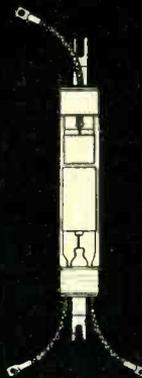
FULL WAVE RECTIFIER  
EL 6C

D.C. Output (Amps.) 6.4  
Peak Anode Current 25.6  
Peak Inverse Volts.... 725  
Filament Volts ..... 2.5  
Filament Amperes .... 17.0  
Overall Length .....7½"



HALF WAVE RECTIFIER  
EL 60B

D.C. Output (Amps.) 50  
Peak Anode Current 300  
Peak Inverse Volts....1250  
Filament Volts  
(Heater type) ..... 115  
Heater Amperes ..... 1.3  
Overall Length ..... 10"  
Metal Envelope,  
Convection Air Cooled



HALF WAVE RECTIFIER  
EL 16F

D.C. Output (Amps.) 16.0  
Peak Anode Current 96.0  
Peak Inverse Volts.... 620  
Filament Volts ..... 2.5  
Filament Amperes .... 36  
Overall Length .....15⅞"

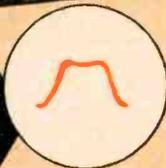
**ELECTRONS INCORPORATED**  
127 SUSSEX AVENUE  
NEWARK, N. J.

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**DISPLAYS PASS BAND**  
Continuous frequency coverage up through the color television bands.



## THE MEGA-SWEEP

Shows at a glance the response of any network or amplifier. Eliminates the tedious point to point analysis. Saves engineering time and stimulates research. Valuable for television production alignment.

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50 kilocycles to 500 megacycles and up.

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From 30 megacycles to 30 kilocycles, throughout the complete spectrum.

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Less than 0.1 DB per megacycle.

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## Wire and Ribbon Resistor and Radio Alloys

### FOR RESISTANCE

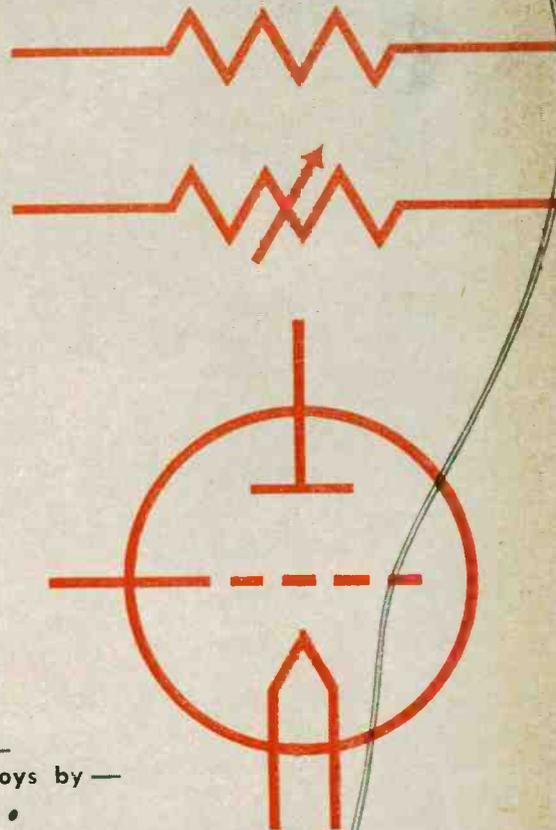
There are Driver-Harris Alloys for every electrical resistance requirement. Most widely used are:

- ... Nichrome\* and Nichrome\* V, for winding large value resistors where overall size is limited, but dependability is a must.
- ... Manganin, when specifications require fixed stability and constant resistance under normally variable operating conditions; examples being precision bobbins, potentiometers, National Bureau of Standards type resistance standards.
- ... Advance\*, most frequently specified for precision resistors in electric meters and laboratory testing devices, because in its finer sizes it has a temperature coefficient of only  $\pm 0.00002/^\circ\text{C}$ .
- ... Plus a total of more than 80 electrical heat and corrosion-resistant alloys which singly, or in combination fill any electrical resistance specifications.

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Always abreast of the latest developments in radio metallurgy, Driver-Harris has been headquarters for Radio Alloys since the earliest days of the industry. In greatest demand are:

- ... Nickel and Nichrome\*, for plate strip. Thin but rigid, they take a tightly adhering heat radiation coat.
  - ... Filnic\* Alloys, in both fine wire and ribbon, take a tightly adhering oxide coat. They are spooled and packed with unusual care to assure retention of original properties in transit.
  - ... Gridnic\* Alloys, having a very low electron emission — especially suitable in tubes where back-emission is involved.
  - ... Cathode Sleeve Material: special melted Nickel Alloys to meet any emission requirements.
- Other widely accepted D-H Alloys, meeting or exceeding most radio specifications are: Nilvar\*, #42 Alloy, #52 Alloy, and Nickel "A", "D", "E", "Z".



For efficiency and dependability —  
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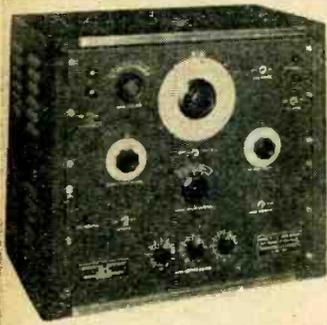
BRANCHES: Chicago • Detroit • Cleveland • Los Angeles • San Francisco • Seattle  
The B. GREENING WIRE COMPANY, LTD., Hamilton, Ontario, Canada



\*Trade Mark Reg. U. S. Pat. Off.

## ITC INCREMENTAL INDUCTANCE BRIDGE MODEL 220

Three Bridge Circuits . . . . OWEN HAY - MAXWELL



Model 220

Meets all requirements of a truly Universal Inductance Bridge. Permits rapid and accurate testing of self-inductance, leakage, inductance and incremental inductance regardless of Q. An over-all accuracy of better than 1% can be obtained. Metal or solid walnut cases. \$475.00

Range . . . 1 MilliHenry—2000 Henrys  
 Test Voltage . . . . .01—300V R.M.S.  
 Superimposed D.C. . . . . 0-1000 M. A.  
 Q . . . . .06-300 at 60 cycles



Model 350

## D. C. POWER SUPPLY and A. C. SIGNAL CONTROL Model 350

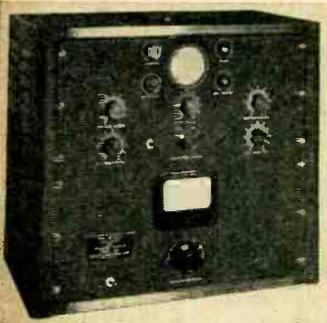
Consists of a well-filtered D.C. supply with high enough voltage to superimpose up to 1 Amp. on the test signal, through the coil under test if the resistance of the coil does not exceed 200 ohms. If resistance is higher the maximum D.C. will be proportionately lower. A multirange D.C. milliammeter is incorporated.

A.C. test signal control consists of a Voltstat and a bridge input transformer. A Voltstat permits adjustment of the value of the test signal and a low-high switch allows even minute voltages to be impressed on the inductance under test by use of the same Voltstat. An adjustable series resistor insures best possible waveform across coil under test. Price Complete \$350.

## NULL DETECTOR OSCILLOSCOPE VACUUM TUBE VOLTMETER

**The Oscilloscope . . .** Has 3" cathode ray tube and is provided with a high gain vertical amplifier, a horizontal amplifier, a saw-tooth generator, necessary supplies and auxiliary equipment. Vertical amplifier readily adjusted for any required gain without changing its input impedance and is provided with 5 frequency selective networks of 60, 120, 400, 800 and 1000 cycle band pass which depresses the second harmonic about 30 dB so that non-linearity of coil under test does not confuse balance. Usual controls for intensity, focus, centering, synchronization, and gain also provided.

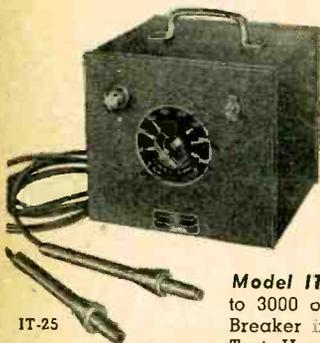
**The A.C. Vacuum Tube Voltmeter . . .** This multirange A.C. vacuum tube voltmeter is provided with a multiplier switch so that full scale deflection can be obtained with .3-1-3-10-30-100 and 300 volts R.M.S. Input impedance is approximately 1 megohm. Although the device is calibrated in R.M.S. value, the reading is proportional to the average value of the voltage across the coil. Price Complete \$425.



Model 380

## INSULATION TEST SETS

**Model IT-25** Features: High Reactance Power Transformer burn-out proof. Neon Lamp permits accurate indication of material under test. Heavy bakelite Shock-proof Test Handles with disappearing points. Eight point switch varies with secondary voltage. Input 115 V 60 Cycle. Rating 500 VA. \$40.00.



IT-25

**Model IT-630** Features: Smooth variable voltages from 0 to 3000 or 0 to 600 volts A.C. Instantaneous trip Circuit Breaker indicates breakdown. Heavy bakelite shockproof Test Handles with disappearing points. Voltmeter indicates output voltages 0-300 or 0-6000 volts. Heavy gauge steel cabinets, gray finish. Input 115 Volts 60 Cycle—Rating 1 KVA. \$125.00.

Model IT-630 Features: Smooth variable voltages from 0 to 3000 or 0 to 600 volts A.C. Instantaneous trip Circuit Breaker indicates breakdown. Heavy bakelite shockproof Test Handles with disappearing points. Voltmeter indicates output voltages 0-300 or 0-6000 volts. Heavy gauge steel cabinets, gray finish. Input 115 Volts 60 Cycle—Rating 1 KVA. \$125.00.

## ITC makes the following TRANSFORMERS . . . . Q. . . . .02-500

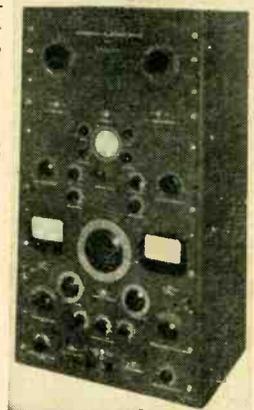
- LABORATORY OUTPUT • HIGH FIDELITY OUTPUT • HIGH FIDELITY DRIVER
- POWER • OUTPUT TRANSFORMER • FILTER REACTORS

Booklets Available on All ITC Products on Request

## Model 226 BRIDGE

A combination of Model 220, Model 380 and Model 350, in a convenient, compact, single cabinet shielded with Mu metal to prevent interaction between the sections. Convenient and easy to handle. Complete Price, \$1850.

RANGE  
 1 MilliHenry--2000 Henrys  
 D.C. SATURATION  
 0-1000 M. A.  
 A.C. TEST VOLTAGE  
 .01-300 R.M.S.

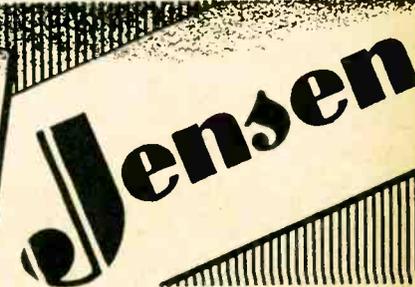
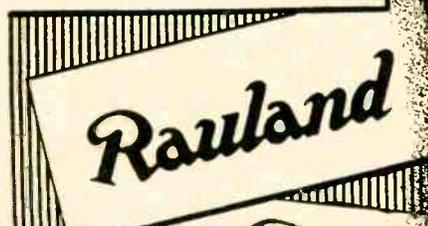


# INDUSTRIAL TRANSFORMER CORP.

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● Regardless whether your inquiry arrives by mail, telephone, telegraph or radio, it receives the same courteous answer and prompt shipment which has made LUKKO a popular *source of supply* for those who require moderate (or even large) quantities of standard radio parts or electronic equipment. A trial will convince you—**TRY US TODAY!**

**LUKKO SALES CORPORATION**  
**5024 WEST IRVING PARK BLVD., CHICAGO**

# ELECTRICAL INSULATING TUBING & SLEEVING

We are insulation specialists—that's all we do. Naturally, we have a complete line of sleeving and tubing—Fiberglas, cotton, and extruded plastic. Listed below are most of our standard items, but if you have some special requirement, let us develop the material for your individual needs.

## VARGLAS—SILICONE

Varglas-Silicone sleeving, tubing, lead wire, and tying cord are recommended for applications involving continuous operating temperatures up to 500° F combined with the following qualities:

1. Low temperature resistance in general. Good resistance to chafing and abrasion in all grades—in some grades down to -85° F.
2. Moisture resistance, including salt water, acids and mild alkalis.
3. Flame resistance—self-extinguishing.
4. Resistance to lubricating oils—samples immersed for two weeks at 160° F show little absorption.
5. Mechanical strength—strongest of the accepted insulating materials.
6. Electrical properties—excellent electrical resistance and low power factors.

Varglas-Silicone insulation is available in seven standard colors at no extra charge.

Varglas-Silicone double wall sleeving and tubing are available for special applications.

Varglas-Silicone materials are available in the following grades:

1. **SILFLEX SLEEVING**—Light saturation of Silicone resin on Fiberglas braid. Abrasion resistance and flexibility excellent under prolonged temperatures from -85° F to 500° F. Extremely flexible. No dielectric guarantee.
2. **VARGLAS-SILICONE SATURATED SLEEVING**—Heavier saturation of Silicone resin on Fiberglas braid. Available in Grades C-1 (average 2500 volts) and C-2 (average 1500 volts).
3. **VARGLAS-SILICONE TUBING GRADES A AND B**—Recommended for applications requiring extremes of heat endurance combined with high dielectric strength. Grade A—average 7000 volts. Grade B—average 4000 volts.
4. **VARGLAS-SILICONE LEAD WIRE AND VARCHROME RESISTANCE WIRE**—Single or multiple walls of Fiberglas braid with Silicone impregnation over solid or stranded copper wire or resistance wire base. Also special constructions to suit your needs.
5. **VARGLAS-SILICONE TYING CORD**—Silicone treatment on continuous filament Fiberglas tying cord. Available in sizes from 1/64" to 1/4" O.D.

## VARGLAS SLEEVING

1. **VARGLAS SATURATED SLEEVING**—Fiberglas braid with impregnation of oleoresinous varnish in A.S.T.M. and VTA Grades C-1, C-2, and C-3. These three grades can also be furnished with lacquer coating if desired.

- Grade C-1—Average dielectric test—2500 volts; minimum dielectric test—1500 volts.  
Grade C-2—Average dielectric test—1500 volts; minimum dielectric test—800 volts.  
Grade C-3—No dielectric guarantee.

2. **VARGLAS NON-FRAY SLEEVING**—

**TYPE H**—For applications where non-fraying and very high temperature endurance are of prime importance, this sleeving is ideal. It has been given a "normalizing" treatment to remove the organic impurities from the Fiberglas, and this process tends to hold the individual fibres together. Because of the lack of any bonding agent it will withstand temperatures as high as the Fiberglas itself—up to 1200° F. It is extremely flexible, yet retains its roundness, simplifying assembly operations. Used where dielectric qualities are not of prime importance.

Furnished in natural color and long lengths. If other colors or short lengths are desired, specify Varglas Non-Fray Sleeving Type HP.  
**TYPE HP**—Similar to Type H except for a dye treatment. Available in colors for coding purposes and in short lengths or coils.

**TYPE HO**—Similar to Type H, employing a normalized Fiberglas braid, but with oleoresinous varnish treatment in addition. Available in colors, and Grades C-1, C-2 and C-3. Good for short pieces, as fraying is minimized.

3. **VARGLAS SLEEVING TYPE P**—Fiberglas braid with vinyl type coating in Grades C-1, C-2 and C-3. This sleeving is more flexible than that on which the conventional oleoresinous varnish coatings are used. Heat endurance is intermediate between lacquer and varnish.

4. **VARGLAS LITETWALL SLEEVING**—A very flexible sleeving furnished either with or without treatment on Fiberglas braid. Available in two wall thicknesses—.008" (Type A) and .006" (Type B). The treated Litewall Sleeving is available in colors, the untreated in white only. Both grades are put up flat on fibre spools.

5. **VARGLAS SLEEVING TYPE RW SYNTHETIC**—Fiberglas braid with a new type of coating of the oleoresinous varnish class but with higher heat resistance than the conventional varnish—up to 500° F. Very flexible. Available in Grades C-1, C-2 and C-3 sleeving and Grades A and B tubing.

## VARGLAS TUBING

1. **VARGLAS TUBING TYPE YS SYNTHETIC**—Grade A or Grade B. It offers you maximum flexibility—even where dielectric requirements are 7000 volts and more—and yet it will withstand short time temperatures as high as 425°-450° F. Applied on a braid made from continuous filament Fiberglas yarns, this synthetic coating prevents fraying and increases dielectric qualities, while the finished product is as flexible as extruded plastic tubing. Will not support combustion. Available in seven colors and in long lengths.

2. **VARGLAS VARNISHED AND LACQUERED TUBING**—Flexible, continuous coatings of flame-resistant varnish or lacquer applied over Fiberglas braid in 8 or more carefully controlled operations. Varnished tubings have thinner walls and greater heat resistance (400°-425° F) than the lacquered tubings, but are slightly less flexible.

Grade B-1—Oleoresinous varnish coating. Average short time dielectric test of not less than 4000 volts and no one of ten puncturing voltages less than 2500 volts.

Grade B-2—Lacquer coating. Same dielectric qualities as Grade B-1.

Grade A-1—Oleoresinous varnish coating. Average short time dielectric test of not less than 7000 volts and no one of ten puncturing voltages less than 5000 volts.

Grade A-2—Lacquer coating. Same dielectric qualities as Grade A-1.

## SYNTHOLVAR EXTRUDED PLASTIC TUBING

Made from a thermoplastic synthetic resin compound, this tubing is particularly suitable for applications where low temperature flexibility is very important. Available in Electrical Grade and HH Grade. Complete data sheets available on request.

## VARFLEX COTTON SATURATED SLEEVING

This sleeving is braided from long staple cotton yarns and is available in Grades C-1, C-2, and C-3. The usual impregnant is oleoresinous varnish, but lacquer coatings are also furnished. See description of the three grades under Varglas Saturated Sleeving.

## VARFLEX COTTON VARNISHED AND LACQUERED TUBING

Varflex Cotton Tubing is available in the same grades as Varglas Varnished and Lacquered Tubing.

Suitable for applications where the superior qualities of the Fiberglas products are not essential.

Send for our new sample folder showing our complete line. Also, our Varglas-Silicone sample folder and the VTA Standards booklet are yours for the asking.

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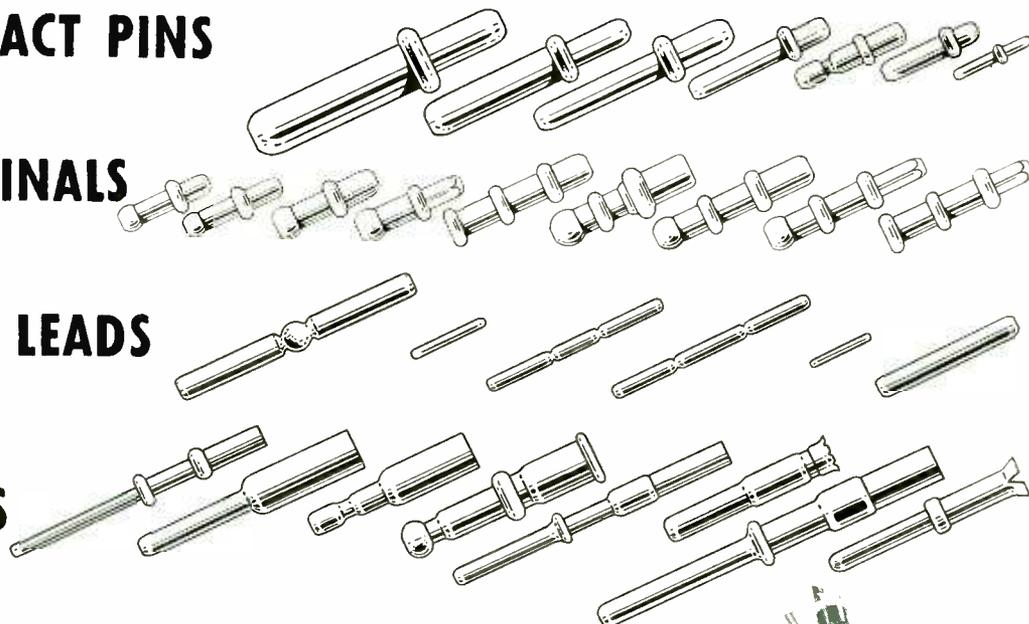
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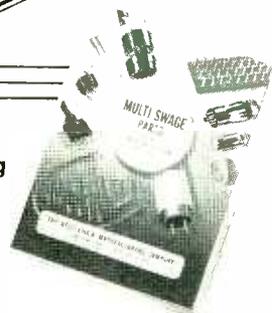
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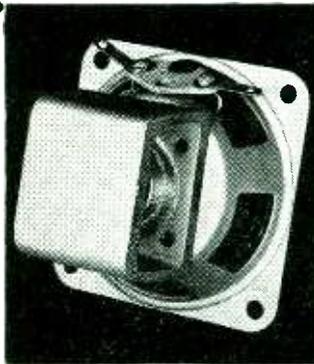
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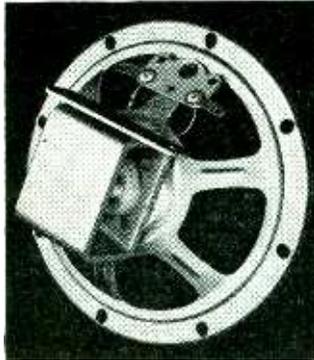
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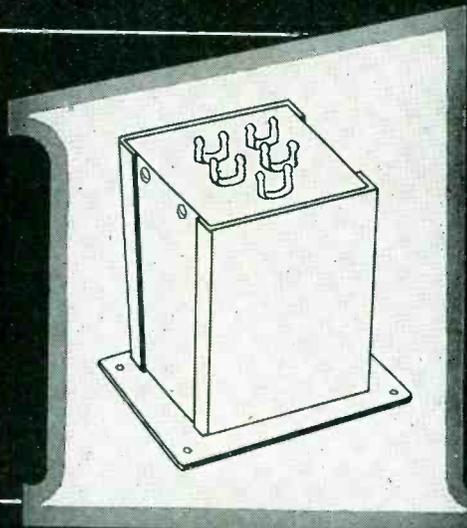
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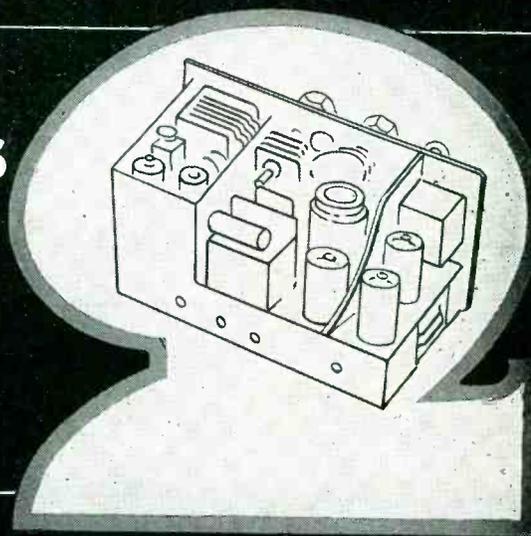
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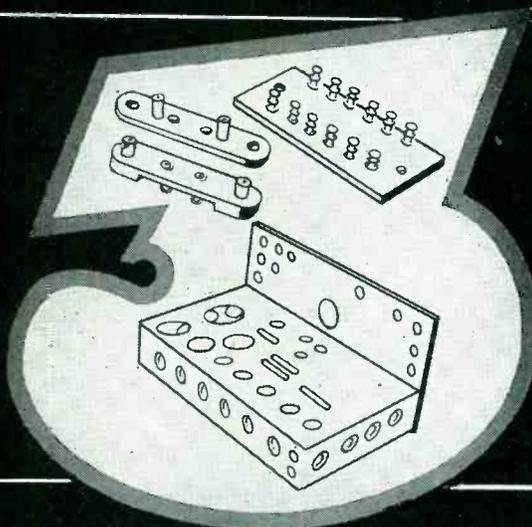


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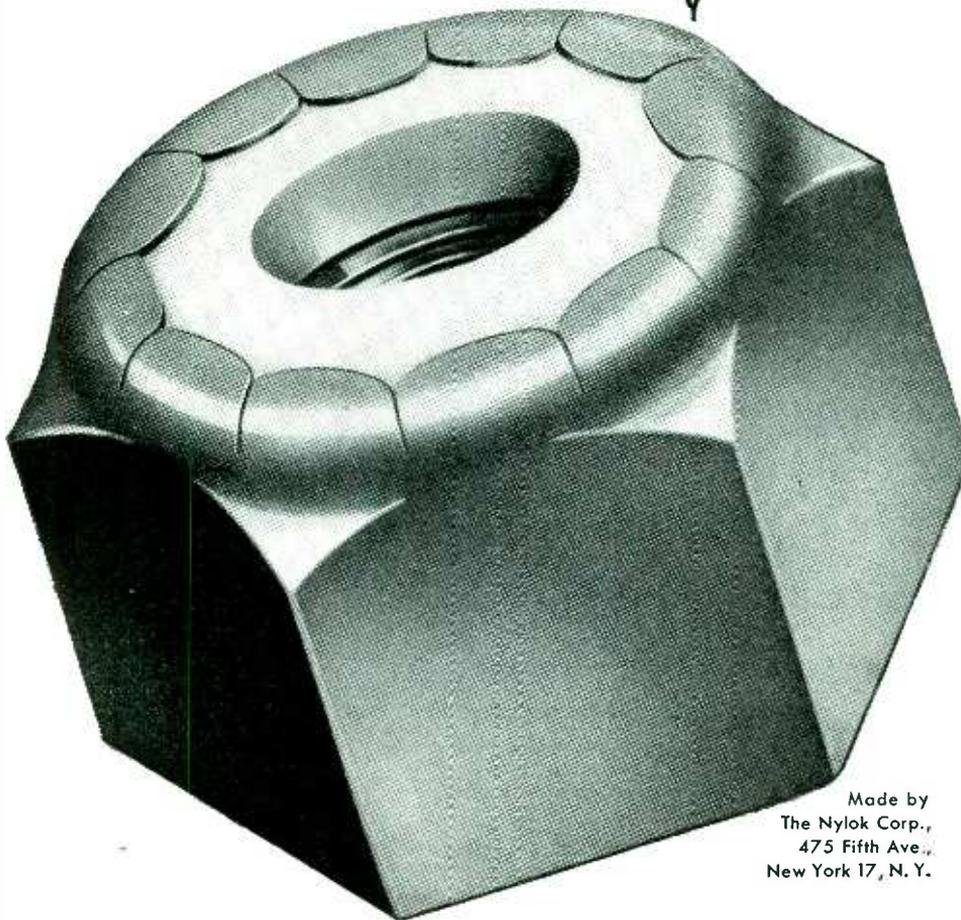
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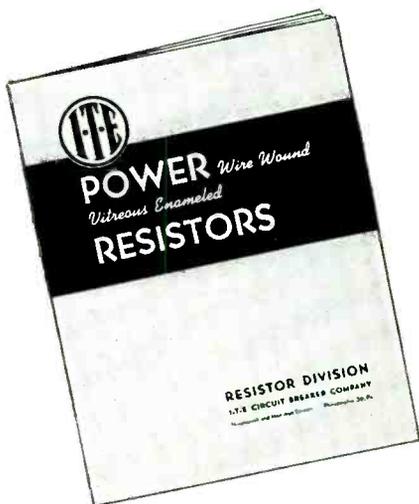
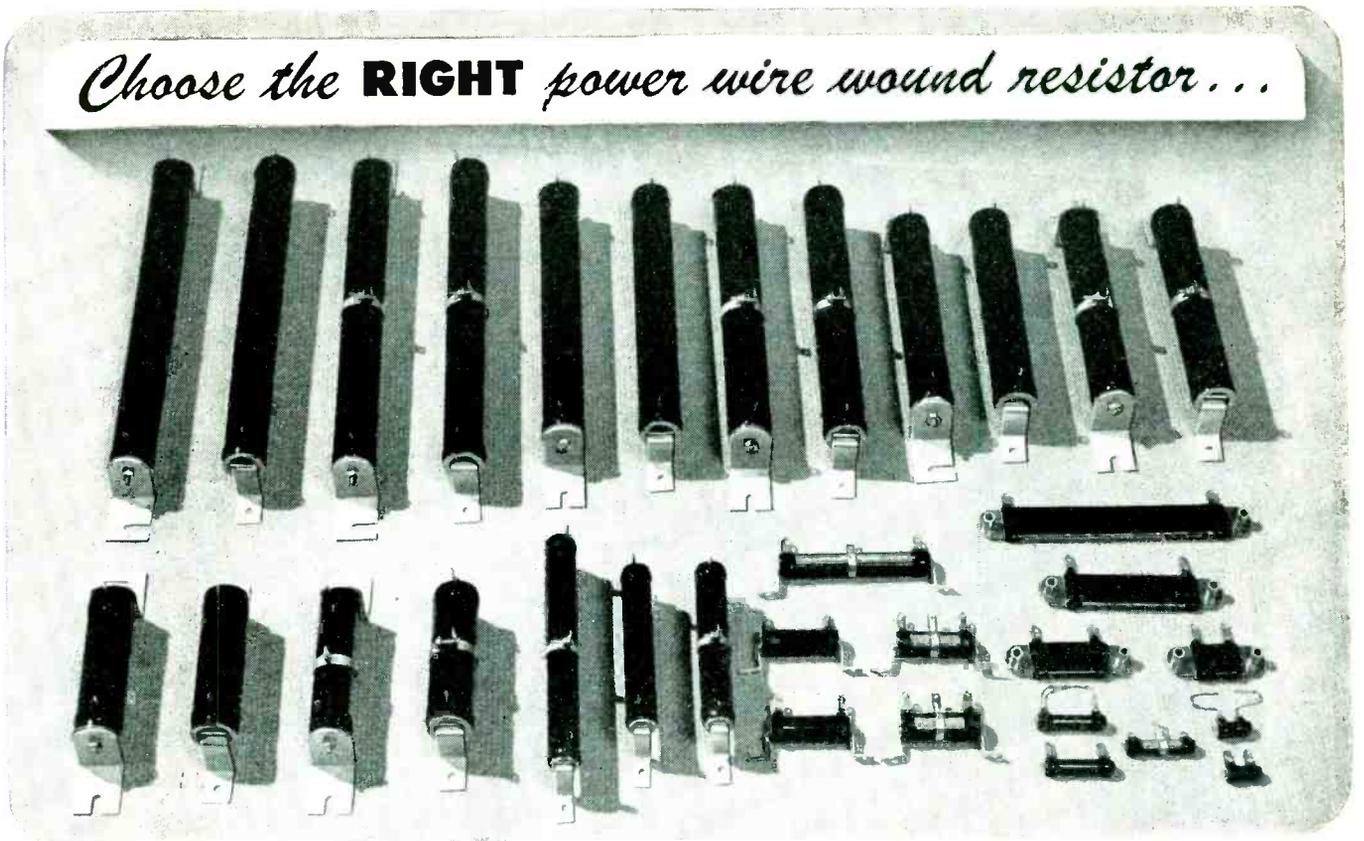
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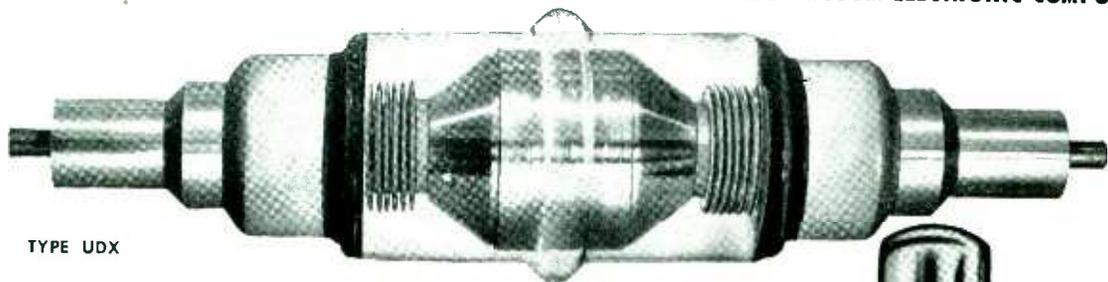
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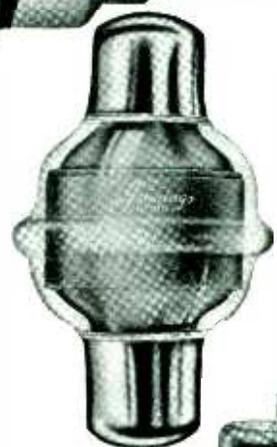
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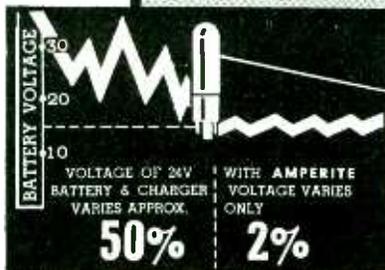
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# Seeburg

## RECORD CHANGERS

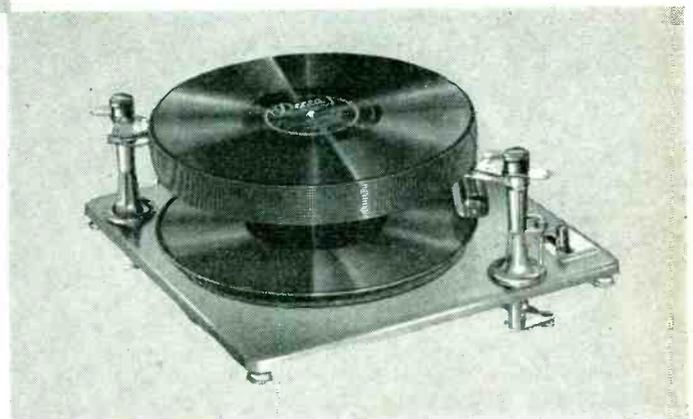
Seeburg changer mechanisms have become standard equipment on so many of America's finer radio-phonograph combinations because manufacturers know how much a dependable changer adds to set performance. By installing Seeburg changers, you are assured of silent operation . . . constant speed . . . freedom from trouble . . . long life.

**THE SEEBURG "M".** A changer to enhance the appeal of the finest combinations. Three-post construction. No arm positioning required for intermix playing. Large record load—plays fourteen 10-inch records, twelve 12-inch records, or twelve 10-inch and 12-inch records intermixed. Automatic shut-off. Four position control switch provides for automatic or manual play and record rejection. Lightweight tone arm. Minimum needle pressure. Quiet, constant speed motor—less than .3 r.p.m. turntable speed reduction for load variation of from 1 to 14 records. Dual trip—closed circle and eccentric. Minimum friction—turntable and record load carried on single ball thrust bearing. Recessed turntable. Size: 14¼ x 14¼ inches.



**THE SEEBURG "L".** Designed for installation in deluxe console combinations. Two-post construction. Synchronized posts permit automatic playing of either 10 or 12-inch records. Plays fourteen 10-inch records or ten 12-inch records. Automatic shut-off. Four-position control switch provides for automatic or manual play and record rejection. Lightweight tone arm. Minimum needle pressure. Quiet, constant speed motor—less than .3 r.p.m. turntable speed reduction for load variation of from 1 to 14 records. Dual trip—closed circle and eccentric. Minimum friction—turntable and record load carried on single ball thrust bearing. Recessed turntable. Size: 14¼ x 14¼ inches.

**THE SEEBURG "K".** A simplified, compactly built mechanism for popularly priced consoles and de luxe table model combinations. Two-post construction. Plays fourteen 10-inch or ten 12-inch records. Four-position control switch provides for automatic or manual play and record rejection. Lightweight tone arm. Minimum needle pressure. Quiet, constant speed motor—less than .3 r.p.m. turntable speed reduction for load variation of from 1 to 14 records. Dual trip—closed circle and eccentric. Minimum friction—turntable and record load carried on single ball thrust bearing. Size: 12½ x 12½ inches.



# Seeburg

**RECORD CHANGERS • MUSIC SYSTEMS**

J. P. SEEBURG CORPORATION  
1500 N. Dayton St., Chicago 22

*Seeburg changers in your radio-phonograph combinations are a guarantee of fine performance—satisfied customers—increased acceptance.*

# Dependable, accurate performance from Standard Pressed Steel Products



## SOCKET SCREW PRODUCTS

Reg. U. S. Pat. Off.



(A) The "Unbrako" Socket Head Cap Screw is a time-saver because the knurled head provides a slip- and fumble-proof grip—though the fingers and head be ever so oily—therefore, it can be screwed-in faster and farther before it becomes necessary to use a wrench. Sizes from #4 to 1-1/2" in diameter.



(B) The knurled cup point of this "Unbrako" Socket Set Screw makes it a Self-Locker—the point digs-in and stays dug—regardless of the most chattering vibration. Yet, it can be backed-out with a wrench and used over and over again. Sizes from #4 to 1-1/2" in diameter.

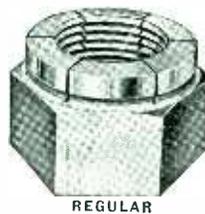


(C) Knurling of this "Unbrako" Socket Set Screw swages the threads and makes it a most excellent Self-Locker—for use where the points such as: flat, dog, cone and oval do not lend themselves to knurling. Sizes from #4 to 1-1/2" in diam.

WRITE FOR  
"UNBRAKO"  
CATALOG

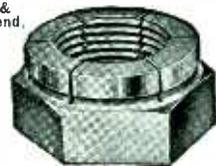
Knurling of Socket  
Screws originated with  
"Unbrako" in 1934.

## FLEXLOC SELF-LOCKING NUTS



REGULAR

Pat'd &  
Pats. Pend.



THIN

Flexloc is of one-piece construction, available in U.S.S. and S.A.E. thread series and can be made in such metals as Steel, Stainless Steel, Brass, Bronze, etc. Every thread—including locking threads—takes its share of the load. Flexloc accommodates itself to a very wide range of thread tolerances . . . can be used over and over again without losing much of its locking torque . . . is not affected by temperatures likely to be met with in the field of Mechanical Engineering . . . being a "stop" nut, it stays locked in any position on the threaded member.

It is made by the manufacturers of the unexcelled "Unbrako" Socket Screw Products—guaranteeing quality. Sizes from #6 to 1" in diameter,—in both "regular" and "thin" types shown above.

.. Millions of Flexlocs now in use.

## HALLOWELL WORK BENCHES OF STEEL



Fig. 732  
Patd. & Pats. Pending  
Drawer Extra

Available in more than 1300 ready-made styles—featuring interchangeable shelf, drawer and cabinet units that assure you of getting just the work bench you require. Built for long, hard wear, these "Hallowell" Work-Benches of Steel are sturdy and stand firm without costly bolting to the floor, because of the flared feet. Five different leg heights, seven different lengths. Benches can be joined end to end to form a workbench of any continuous length. WRITE FOR "HALLOWELL" CATALOG.

## HALLOWELL KEY KITS

with interchangeable tools

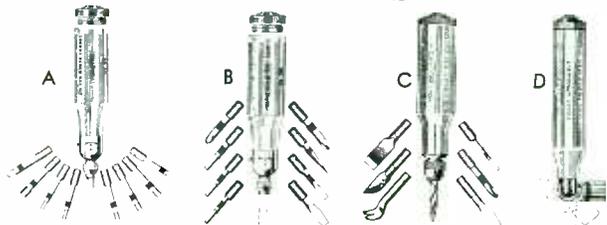
Each Kit contains a carefully chosen assortment of high-grade steel tools . . . all within the tread-grip, hollow, red plastic handle that fits snugly in the palm of your hand. The handles are rugged, durable, non-conductors of electricity and corrosion-resistant. All but the "Home" Kit (C) have a swivel head with bit-chuck or square drive. WRITE FOR FREE, DESCRIPTIVE LITERATURE.

(A) The Hallowell "SOCKET SCREW" Kit contains Phillips, Flat and Hex Bits.

(B) The Hallowell "AUTO" Kit contains Phillips, Flat and Clutch Head Bits and a Tapered Reamer.

(C) The Hallowell "HOME" Kit contains Chisel, Tack Lifter, Phillips and Flat Bits, Gimlet and a Knife.

(D) The Hallowell "SOCKET WRENCH" Kit contains 6 and 12 pt. hex sockets to fit most all hex nuts and bolts from #4 to 1/2".



Kits: Pat's Pend.

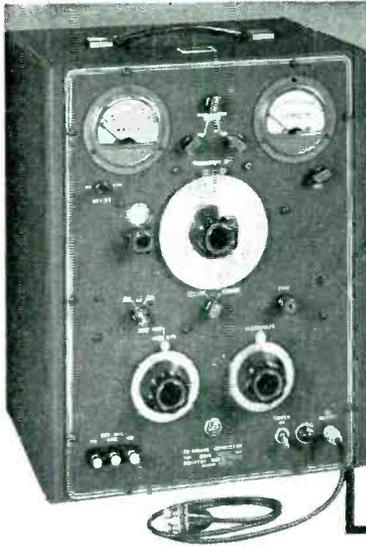
"Unbrako" and "Hallowell" Products are sold entirely through Industrial Distributors.

OVER 44 YEARS IN BUSINESS

# STANDARD PRESSED STEEL CO.

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# PRECISION MEASURING INSTRUMENTS FOR THE RADIO AND ELECTRONIC INDUSTRY



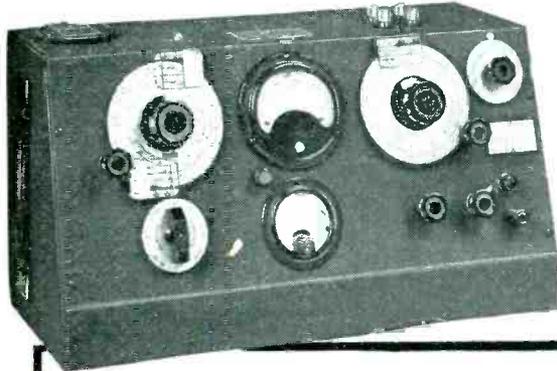
## FM SIGNAL GENERATOR TYPE 202-B

RF COVERAGE: 54—216 megacycles in two ranges; accuracy  $\pm 0.5\%$ .  
 FM DEVIATION: Two ranges, 0—80 kc., 0—240 kc., continuously adjustable.  
 FM DISTORTION: Less than 2% at 75 kc. deviation.  
 AMPLITUDE MODULATION: One range, 0—50%; calibrations at 30% and 50% modulation.  
 INTERNAL MODULATING FREQUENCIES: Eight frequencies from 50 cycles to 15 kc.  
 RF OUTPUT: 0.1 microvolt to 0.2 volt, continuously adjustable by means of 26.5 ohm piston type attenuator.



## UNIVERTER TYPE 203-B

An FM-AM frequency converter accessory with unity gain for use with 202-B FM Signal Generator.  
 RF RANGE: 0.4 mc. to 25 mc.  
 RF INCREMENT DIAL:  $\pm 250$  kc. in 10 kc. increments.  
 RF OUTPUT: 0.1 microvolt to 0.2 volt, calibrated output (approximately 26.5 ohms); 2 volts max. uncalibrated output (470 ohms).

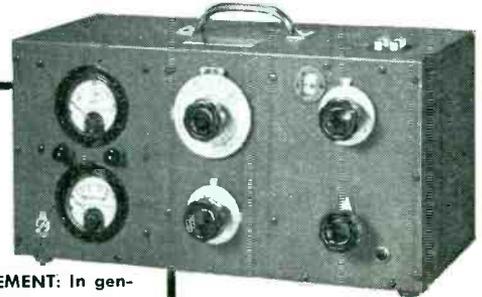


## Q-METER TYPE 160-A

FREQUENCY RANGE: 50 kc. to 75 mc. ( $\pm 1\%$ , 50 kc.—50 mc.;  $\pm 3\%$ , 50 mc.—75 mc.). May be extended down to 1 kc. with external accessory oscillator.  
 RANGE OF Q MEASUREMENTS, COILS: 50—625.  
 ACCURACY OF Q MEASUREMENT: In general,  $\pm 5\%$ .  
 RANGE OF Q TUNING CAPACITOR: Main Section, 30—450 mmf. ( $\pm 1\%$  or  $\pm 1$  mmf., whichever is greater). Vernier Section, plus 3, zero, minus 3 mmf. ( $\pm 0.1$  mmf.).

## Q-METER TYPE 170-A

FREQUENCY RANGE: 30 mc. to 200 mc. ( $\pm 1\%$ ).  
 RANGE OF Q MEASUREMENT: 80—1200.  
 ACCURACY OF Q MEASUREMENT: In general,  $\pm 10\%$ .  
 RANGE OF Q TUNING CAPACITOR: 11—60 mmf. ( $\pm 1\%$  or  $\pm 0.5$  mmf., whichever is greater).



## BEAT FREQUENCY GENERATOR TYPE 140-A

FREQUENCY RANGE: 20 cycles to 5 megacycles in two ranges; LOW RANGE: 20 to 30,000 cycles. HIGH RANGE: 30 kilocycles to 5 megacycles. Accuracy  $\pm 2$  cycles up to 100 cycles,  $\pm 2\%$  above 100 cycles.  
 OUTPUT POWER: One watt, available from a variety of output impedances.  
 ATTENUATOR: 5 steps; X1.0, X0.1, X0.01, X0.001, X0.0001.  
 DISTORTION: 5% or less.

## QX-CHECKER TYPE 110-A

FREQUENCY RANGE: 100 kc. to 25 mc. using accessory plug-in inductors. A calibration sheet is supplied with each inductor, accurate to within  $\pm 3\%$ .  
 RANGE OF COIL CHECKS: Inductors having values between 10 microhenries and 10 millihenries may be checked against a standard to an accuracy of about  $\pm 0.2\%$  provided the Q of the inductor is 100 or greater.  
 CAPACITANCE RANGE: Capacitance values between about 2—1000 mmf. may be checked against standard by direct substitution, with an accuracy of a few tenths of one mmf., provided Q of capacitors is high.



Write for further information



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Corporation

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- Female Plugs—Soreng, Diamond, Woodwin
- Heater Plugs—Cutler-Hammer, Carling
- Feed Thru Switches—Snap-it, Carling, Electric

UNDERWRITERS APPROVED

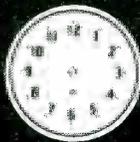
OR—We'll make any special type of cord set, cable or lead you require. Samples made from your prints and prices quoted on request. We guarantee prompt deliveries. We carry stocks of insulated electrical wire in gauges 24 to 00 in a variety of insulations and strandings. Single and multiple conductor cable in addition to items listed may be obtained from our mills. We invite your inquiries. Specify gauge, insulation, stranding and color desired when requesting information.

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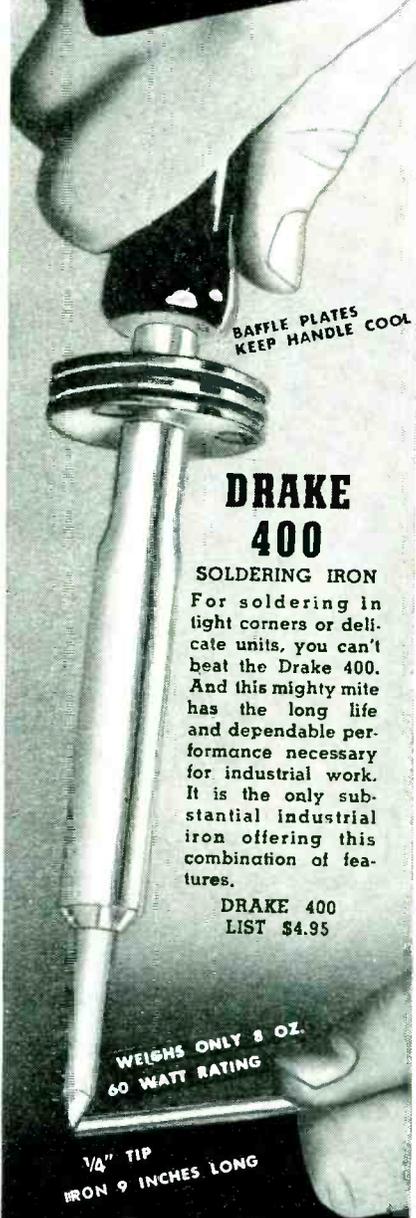
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**MODERN • LIGHTWEIGHT • COMFORTABLE**

Cleverly designed in tough durable Tenite, the TELEX Monoset is quickly replacing old-style, cumbersome headsets because it is made to wear under the chin instead of over the head. Precision-built magnetic receiver assures excellent fidelity.

*The NEW Monosets incorporate a volume control feature that permits the wearer to control volume of sound at the point of reception.*

### *Specifications*

#### **IMPEDANCE**

2000 ohms—Part No. 2568  
500 ohms—Part No. 2569  
128 ohms—Part No. 2570

#### **SENSITIVITY**

18 dynes per square centimeter for 10 microwatt input.

.....  
**Canadian Distributors:  
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**TELEX INC.**

**ELECTRO-ACOUSTIC DIVISION**

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SOUNDCRAFT guarantees maximum high fidelity recordable area for sound reproduction without jeopardizing quality or consistency.

- Because Soundcraft "Broadcaster" discs have no ridge, they are usable out to the very edge. The result? Up to 5% more recording time, and higher fidelity by maximum utilization of highest groove speeds.

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- *The 'Broadcaster'*  
8" 10" 12" 16"

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6½" 8" 10" 12" 16"

- *The 'Audition'*  
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- *The 'Maestro'*  
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# \* RICHARDSON MEANS *Versatility* IN PLASTICS

THE Richardson Company—to our knowledge—is the only plastics manufacturer fully equipped to do both laminating and molding of plastics . . . the molding of rubber and bituminous plastics and the manufacturing of rubber-plastic combinations. Facilities are at hand for all fabricating and finishing operations. Thus, Richardson is free to recommend the operation and material best suited to your requirements.

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Complete machine shop facilities for manufacturing dies, molds and tools.



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Sheets, rods, tubes. Standard NEMA grades; over 100 special grades.



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Rubber and bituminous plastics; and synthetic resin plastics . . . Beetle, Bakelite, Durez, etc.



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Complete equipment for drilling, punching, sawing, turning, milling, etc.

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EICOR engineering starts with load tests and analysis of your power requirements and ends only after proof of satisfactory installation performance. With complete laboratory testing facilities, every phase of design and production is under strict quality control.

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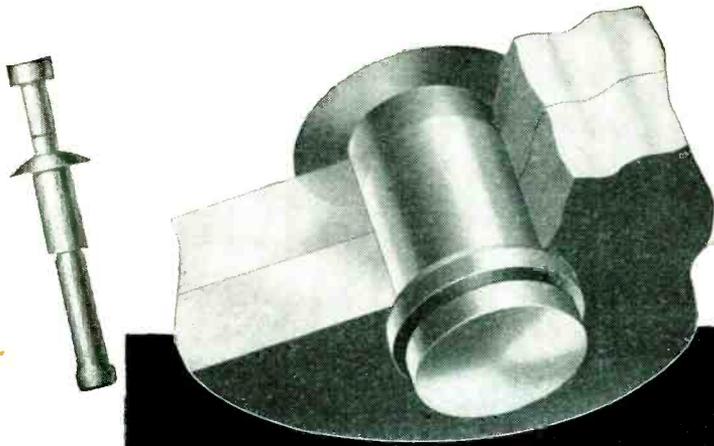
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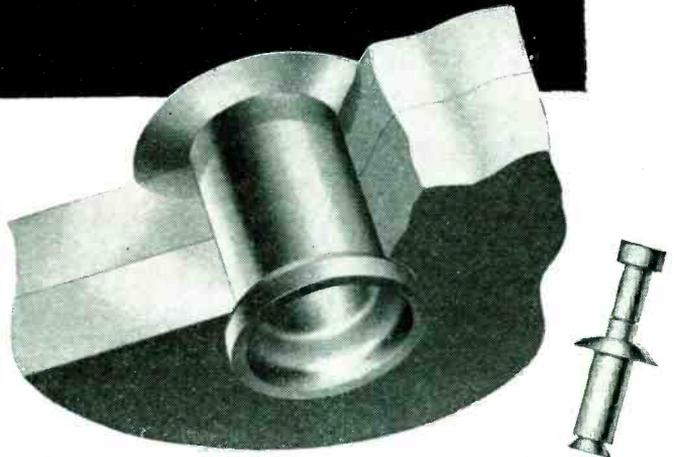


High-strength, self-plugging type Cherry Blind Rivet, showing the perfectly formed blind head and the tight stem-plug.

# CHERRY BLIND RIVETING

*Speed* excelled by no other fastening technique

*Security* equalled only by conventional riveting



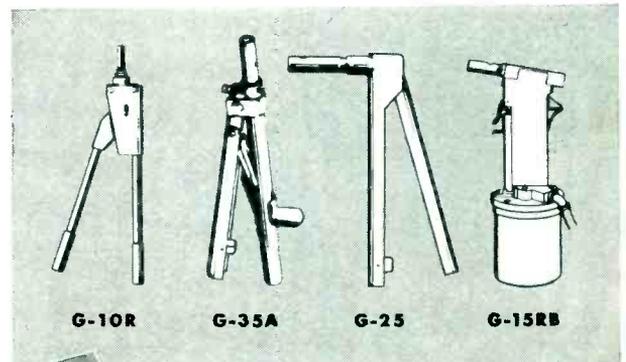
Tight-clinching, pull-through hollow type Cherry Blind Rivet, showing the perfectly formed blind head.

**Cherry Blind Riveting** has stirred up enormous interest since its inception during the war. This remarkable fastening technique is so fast and the results are so uniformly dependable that it has spread from industry to industry at an astonishing rate.

**Installation Speed**—No hammering or bucking. Cherry Blind Rivets are installed with a controlled pull from one side of the work only. Installation is a fast, one-man operation requiring only three simple steps: (1) inserting rivet in hole; (2) engaging the rivet; (3) actuating the gun. This adds up to speed, speed, speed.

**Dynamic Expansion** of rivet shank during installation (greater shank expansion than any other blind fastener) means tight, strong, vibration-resistant joints. Powerful controlled pull of rivet gun draws stem into rivet, forcibly expanding rivet to fill hole *tightly*. Cherry Blind Rivets don't work loose like nuts and screws.

**Monel, Steel, Aluminum** make up the Cherry Rivet materials classification. There are three types, two head styles, a range of diameters and lengths.



A series of special "guns," both pneumatic and hand-operated, have been designed for upsetting Cherry Blind Rivets. All are small, lightweight, easy to handle, positive in action.

Find out all about Cherry Blind Rivets and their many applications. Write Department 120, Cherry Rivet Co., 231 Winston St., Los Angeles 13, Calif.

CHERRY RIVETS. THEIR MANUFACTURE & APPLICATION ARE COVERED BY U. S. PATENTS ISSUED & PENDING

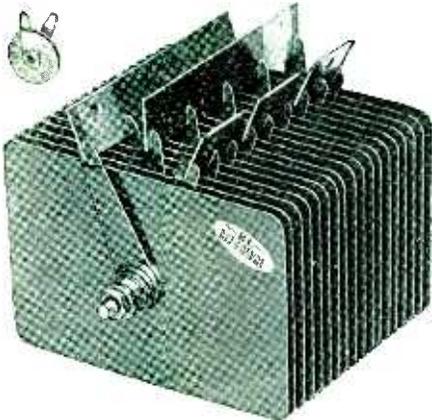
**Cherry Rivet**  
Company  
LOS ANGELES 13, CALIFORNIA

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Division of the Sperry Corporation

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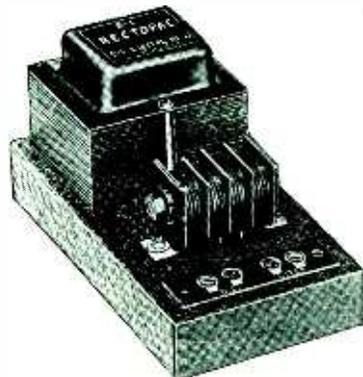
The only manufacturers of both Selenium and Copper Sulphide Rectifiers



(Large Stack) Selenium Rectifier. Three phase bridge, fan cooled. Output rating 100 amperes, 14 volts DC. Size over all 7 $\frac{3}{4}$ " x 5 $\frac{1}{2}$ " x 6".  
(Small Stack) Selenium Rectifier. Single phase DC valve. Blocks 30 volts, passes 0.15 amperes DC. Size over all 1" x 1 $\frac{1}{2}$ " x  $\frac{3}{8}$ ".



(Large Stack) Copper Sulphide. Three phase bridge, fan cooled. Output rating 100 amperes, 7 $\frac{1}{2}$  volts DC. Size over all 8" x 4 $\frac{1}{4}$ " x 3 $\frac{1}{2}$ ".  
(Small Stack) Copper Sulphide. Single phase bridge, convection cooled. Output rating 3.2 amperes, 5 volts DC. Size over all 2 $\frac{1}{2}$ " x 1 $\frac{3}{4}$ " x 1 $\frac{1}{4}$ ".



B-L "RECTOPAC". Copper Sulphide Rectifier assembly. Output rating 10 amperes, 10 volts DC. Operates from 115 volts 50-60 cycles AC. Size 7 $\frac{1}{8}$ " x 4" x 4".



SELENIUM

COPPER  
SULPHIDE

The Benwood-Linze Co. has specialized in the design and manufacture of electrical rectifiers for nearly a quarter century. Our Engineering files provide a wealth of data which is available to our customers without obligation. We have complete facilities for the manufacture of selenium and copper sulphide rectifier elements and assemblies.

## B-L SELENIUM RECTIFIERS

Maximum output voltage per cell — 12 to 20 volts or more. Any voltage available with series combinations . . . High efficiency — 60 - 70% single phase, 70 - 85% 3 phase . . . Low temperature rise — average 20-40° C . . . Excellent moisture and corrosion resistance — protective finishes for any kind of service . . . Minimum aging — negligible in most applications . . . Extremely long life— Outlasts many other assembly components . . . Light weight — up to 400 output watts per pound . . . Wide variety of sizes — range from 1" diameter discs to 4 $\frac{1}{8}$ " x 6" rectangular plates — any arrangement of circuits, series or parallel connections.

## B-L MAGNESIUM COPPER SULPHIDE RECTIFIERS

Low cost — up to 125 continuous watts per dollar . . . Satisfactory operation in high ambient temperatures — normal rectifier operating temperature 85-130 — capable of operating at much higher temperatures . . . Compact, rugged construction — highly resistant to mechanical damage . . . Small size — 4 to 10 continuous watts per cubic inch — much more when operation is intermittent . . . Overload ability — capable of operation at intermittent overloads of several times normal rating . . . Convenient ratio of AC to DC volts — single phase rectifiers available for 220 volt input, 110 volt output — no transformer required . . . Excellent voltage regulation — 5 to 20% depending on application . . . Wide variety of sizes — range from 1/2" to 1 $\frac{3}{4}$ " junctions with various cooling units — any arrangement of circuits, series or parallel connections.

## B-L SPECIAL RECTIFIER ASSEMBLIES

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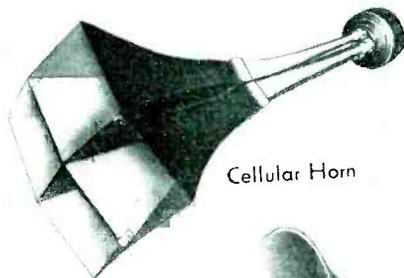
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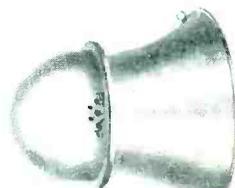
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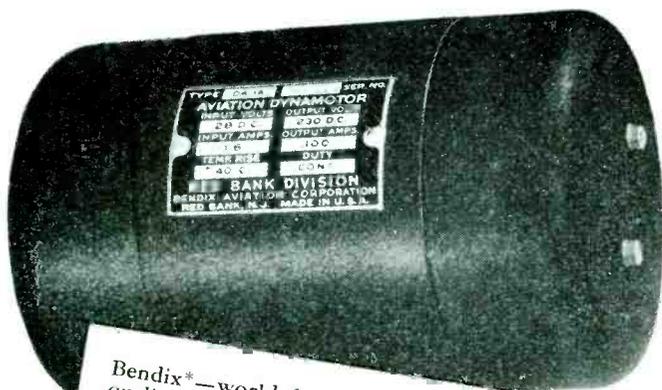
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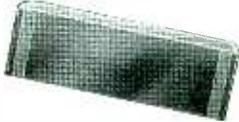
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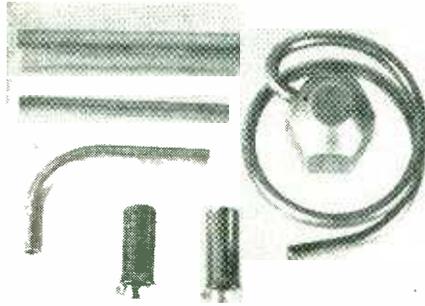
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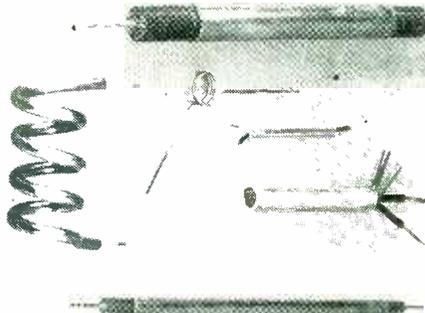
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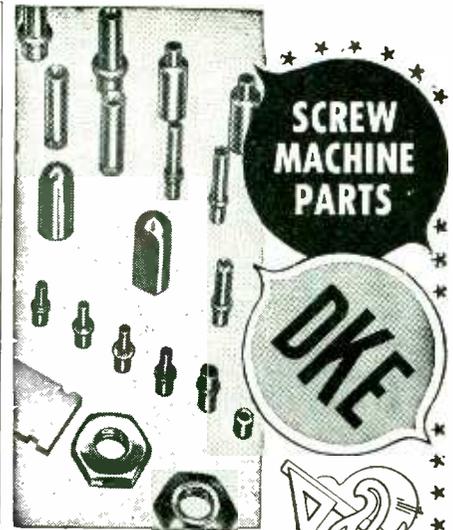
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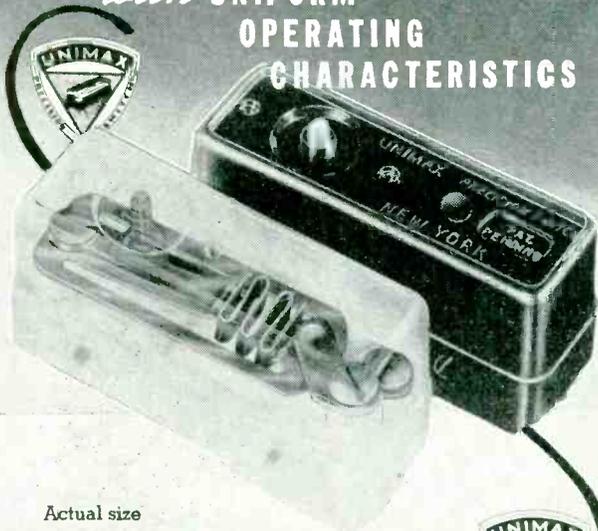
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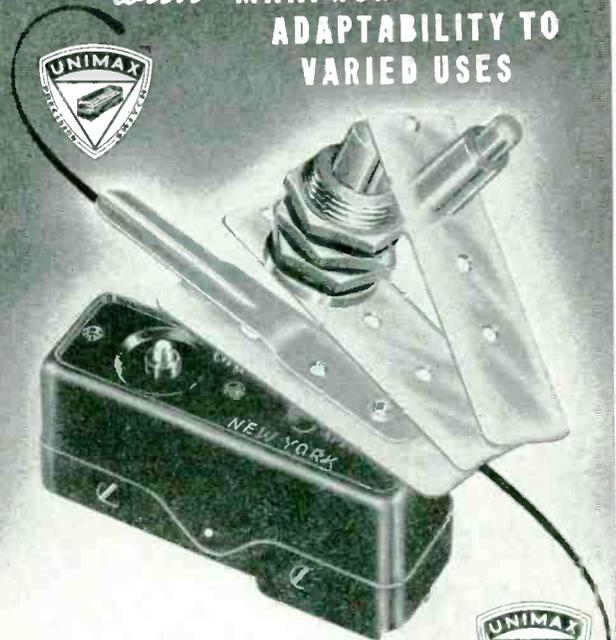
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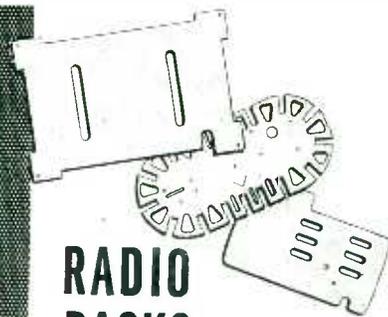
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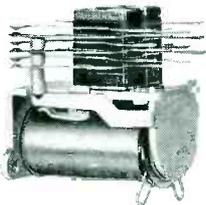
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THE REFERENCE BOOK OF THE ELECTRONIC DESIGN ENGINEER

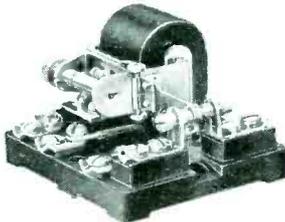
# RELAYS by ALLIED

Shown on this page are some of the types of relays designed, developed and manufactured by Allied. In addition to these, there are many others, plus variations of these types for special applications.



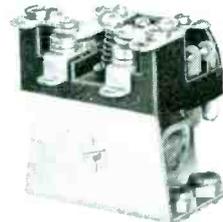
Type SK

The SK relay for DC is an improved version of the small telephone types. As the illustration above indicates although the SK occupies as small an area as most relays of this type it features a larger coil. Another plus feature of the SK is the novel hinge arrangement which improves the magnetic circuit. Various arrangements and several types of insulation are available. Normal power rating .500 watts. Contact rating is 1 ampere at 24 volts DC or 115 volts AC, non-inductive. Approximate maximum weight 2-1/8 ounces. Length 1-19/32" Maximum height 1-17/32". Width 31/32".



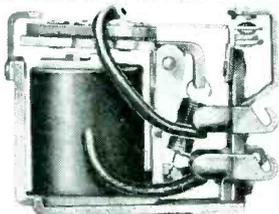
Type B

The B is a single pole sensitive type relay particularly adaptable to applications where the source of power is limited. The base is of wax impregnated molded bakelite. Contact gap and spring tension are adjustable in the field. The magnetic structure of the B relay is a special heat treated alloy. Nominal rating .012 watts. Available AC or DC. Contact arrangement normally open, normally closed or double throw. Contact rating 2 amperes at 24 volts DC or 5 amperes at 115 volts AC. Weight 7 ounces. Length 2-3/4". Height 1-3/4". Width 2-3/8".



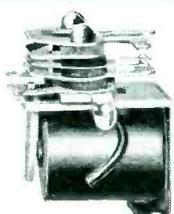
Type BO

The BO relay is an all purpose, industrial type relay. Like other Allied types it is ruggedly designed, yet features compactness and minimum weight. This relay utilizes molded bakelite insulation throughout. The BO can be furnished for AC or DC double pole normally open, normally closed, double throw. Nominal rating 2.5 watts. A three and four pole combination is available which is known as the PO 9 and PO 12. Contact rating 15 amperes of 24 volts AC or 110 volts DC, non-inductive. Weight 4 oz., Length 1-5/8". Height 1-7/8". Width 1-13/32".



Type AS

The AS single pole relay is a small, light, medium power relay. It has a nominal power rating of 1 watt. The AS is insulated from the frame. Another version, the AR, is alike in all characteristics except that it is grounded to the frame. The AS has many applications in all types of controls and is available in AC or DC. Contact arrangement is normally open, normally closed or double throw. Contact rating is 5 amperes at 24 volts DC or 110 volts AC non-inductive. Weight 50 grams. Length 1-5/8". Height 1-3/16". Width 15/16".



Type F

The F relay is a single pole relay for DC particularly adaptable to applications where space is limited. Bakelite insulation is used. May be supplied with other contact combinations. Silver is standard contact material, alloy contacts can be substituted. Contact rating is 3 amperes at 24 volts DC or 115 volts AC non-inductive. Nominal power rating is .750 watts. Weight 1-7/8 ounces. Length 1-3/32". Width 1-3/16". Height 1-11/32".



Type UB

The Type UB relay is an improved multiple-type relay which has many applications because of its ruggedness and ability to operate even under severe service requirements. The UB is available with a number of contact arrangements up to 4 pole double throw and is available in either AC or DC. Nominal power rating is approximately 2-1/2 watts, depending on the pile-up arrangement. Standard contacts are rated at 15 amperes at 24 volts DC or 115 volts AC non-inductive. Weight 6 ounces. Length 2-9/16". Height 2-11/16". Width 1-1/16".

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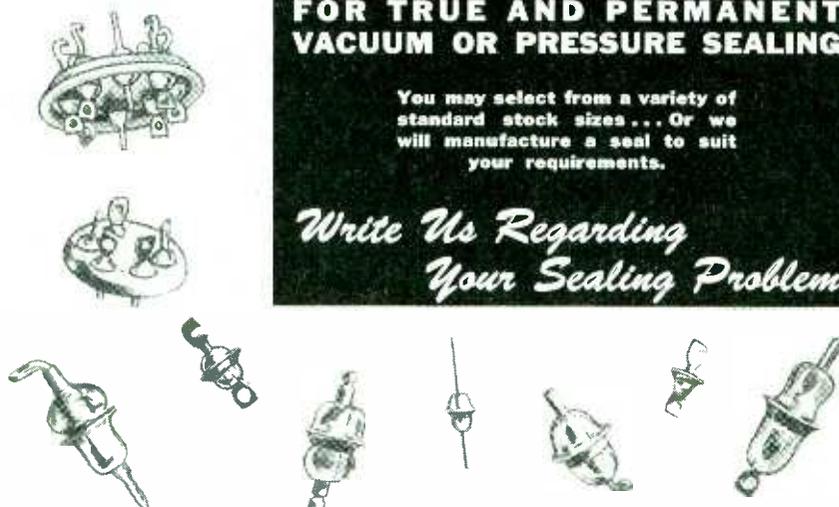


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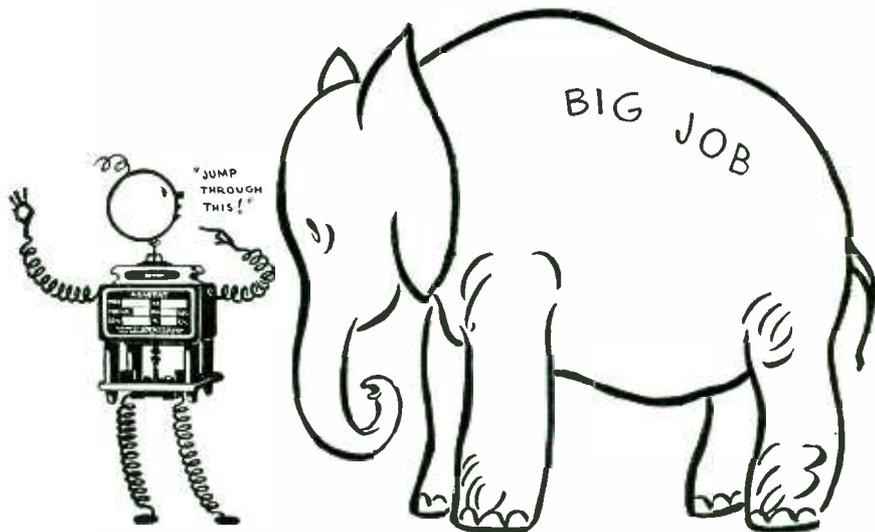
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for direct wire carrier, F.M., A.M., H.F., V.H.F., U.H.F., Optical, Quasi-Optical

## FOLDING HANDSET

Style 197/9197



All-positional lightweight pocket-size folding handset. Replaceable carbon type unit uniform response, moisture-proofed, altitude and temperature-compensated. 300-ohm lightweight receiver of uniflux design, damped response, moisture-proofed. Built-in press-to-talk switch, single pole, single throw. Fully adjustable stainless steel handle. 4' neoprene jacketed 4-conductor cord.

## HEADGEAR

Style 293

This device frees the operator's hands for manual operations. It's Aviometer's exclusively. All-positional anti-noise response, adjustable boom-supported lip microphone.



## HANDSET

Style 333



Handsets of streamlined sturdy construction with replaceable cartridge-type microphones and receiver. Types include carbon, magnetic. Hanger is style 311.

Can be furnished to your specification on short notice.

## HEADSET

Style 109



Aviometer Standard ANB-H-1 uniform response, moisture-proofed, altitude and temperature-compensated headphones. Navy-type headband.

## HAND HELD MICROPHONE

Style 631



Hand held microphone with built-in press-to-talk switch.

A sturdy, light, reliable unit in satin-finish, high-impact strength, molded bakelite case, featuring long life and convenient economical maintenance by use of factory-sealed components. Performs with unusual clarity due to extended frequency response and full modulation of carrier.

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# NATIONAL MOLDITE IRON CORES



*Supplied to your exact specifications!*



## PERMEABILITY TUNING CORES—

Moldite permeability tuning cores are manufactured to meet the most precise requirements. Modern mass production methods of manufacturing perm cores have resulted in increased quality and economy to our customers. Perm cores with screw, wire and hook inserts are produced to smoothly fit the design of all perm-tuning units.

## MOLDED IRON CORES—

Moldite magnetic iron cores are manufactured to exact specification with an exclusive powder mix to fit detailed requirements at audio, broadcast, FM and Television frequencies. New formulae and methods of processing increase Q values; result in greater stability and density. Moldite cores are manufactured under rigid quality control.

### HIGHER Q:

New formulae make possible higher Q at all frequencies.

### PERMEABILITY:

Accurate powder control results in uniform density and higher permeability.

### FREQUENCIES:

Q and permeability exactly as specified for ultra high, high, medium and low frequencies.

### TOLERANCES:

Modern facilities permit rigid adherence to the most critical mechanical and electrical specifications.

### TOOLING:

Tools, dies and fixtures designed and built on the premises for unimpeded, uniform production.

### PRODUCTION:

Modern, automatic production assures high speed economy; guarantees "on time" delivery at all times.

## CLASSIFICATION OF POPULAR MOLDITE IRON CORE MATERIALS

**11A** High permeability with medium Q in the audio and low frequency range. This material can be molded in long pieces and is, therefore, suitable for permeability tuning replacing the expensive variable condenser. Good results in loading coils exhibiting an effective permeability up to 50 and higher.

**12L** An all purpose core material. Medium-high permeability. High Q for use in antenna or R.F. circuits up to and including 5 M.C. Eddy currents and hysteresis losses are kept to a minimum.

**13Y** Medium-low permeability, high Q should be specified when highest Q attainable is required at frequencies above 3 M.C. Excellent heat stability and constancy of permeability.

**15T** A low frequency material with low permeability, medium Q. Used extensively in IF transformers. A low cost core material.

**16Y** Medium-high permeability, high Q especially applicable for use in antenna or R.F. circuits, high quality IF transformers.

**17T** Similar to 16Y. Should be specified when improved Q is required. Particularly suitable for high frequency cores.

**19B** Low permeability, exceptional Q characteristics at high frequencies from 50-150 M.C. especially between 50 and 100 M.C. where high Q and satisfactory permeability is required to cover a bank of 10 M.C.

**20D** High permeability (slightly higher than 23Y). Low Q factor about equal to air. 20D is used in IF transformers and oscillator circuits for push-button controlled receivers. A low frequency material.

**23Y** High permeability (slightly lower than 11A). Medium-low Q. Used for permeability tuning in broadcasting range and in antenna, R.F. and IF for improving Q. Lower in cost than 11A.

**24L** High permeability (slightly higher than 11A), low Q. A low frequency material especially recommended for frequencies below 100 K.C. Low in cost.

**29Y** This powder is used in fixed cores for IF applications where better Q than 23 Y is desired. Permeability equal to 23Y, Q higher.

**30Y** For permeability tuning and fixed cores in frequency range from 1.5 to 50 M.C. Lower in cost than 11A.



### SPECIALIZATION

National Moldite iron cores are produced by specialists engaged exclusively in the manufacturing of iron cores. A complete line of magnetic iron cores for use at all frequencies including television and FM is now available.

### ENGINEERING

It is a simple matter for National Moldite engineers to fit the right core to your particular coil for the best results. Thoroughly familiar with every iron core application, these technicians will be glad to assist you in determining which of these components can best meet requirements.

### SAMPLES

National\* Moldite sample iron cores will be submitted for design, test and pre-production purposes upon receipt of your request. Use Moldite material grade designations to insure prompt and exact duplication of the cores.

## STANDARD MOLDITE IRON CORES OFFER REAL ECONOMY

As a result of long experience in the production of iron cores to hundreds of customers' specifications MOLDITE engineers have been able to standardize many types for volume production. These standard types can, in many cases, be applied in place of a custom designed core and substantial savings realized. The specifications and data below may be conveniently used in checking your requirements against available standard types.

## MECHANICAL SPECIFICATIONS OF MOLDITE STANDARDIZED CORES

### OUTSIDE DIAMETERS

.145 TO .150  
.150 TO .155  
.178 TO .182  
.195 TO .200  
.220 TO .225  
.245 TO .250  
.250 TO .255  
.295 TO .300  
.300 TO .305  
.304 TO .309  
.307 TO .312  
.340 TO .345  
.360 TO .365  
.365 TO .370  
.370 TO .375  
.475 TO .480  
.495 TO .500

AND LARGER

### LENGTHS

Cores With Outside Diameters Listed on This Sheet Are Available in Any Lengths To 1.500" Standard Tolerances on Length Up To .500" Are Plus Or Minus .010"; On Lengths Over .500" Plus Or Minus .015"

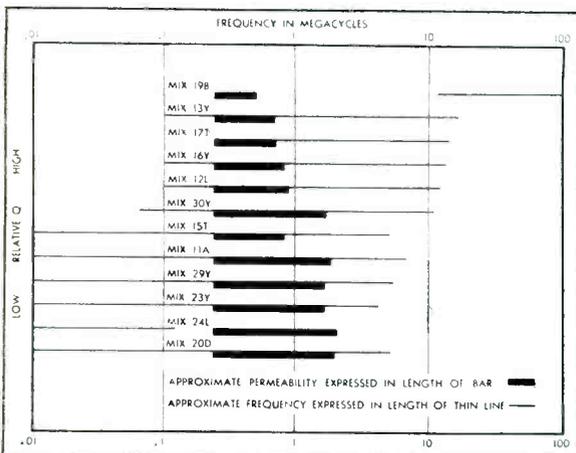
### SCREW SIZES

Class 2 Fit, Length  $\pm 1/32''$   
.182 TO .200 2-56  
.200 TO .250 3-48  
.250 TO .375 4-40  
.312 TO .625 6-32  
Any Screw Length Supplied From 1/2 Inch up in Steps of 1/8 Inch.

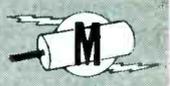
**DRAWING REQUIREMENTS:** This information should be included on your print for practical test purposes: 1.—Physical dimensions and tolerances. 2.—Recommended frequency range. 3.—The Q tolerance. 4.—The Permeability tolerance. 5.—The approximate test frequency.

**TEMPERATURE RANGE:** All Moldite iron cores will withstand a temperature range of 30°F to 275°F and impregnation in standard wax at 275°F without crumbling or change in electrical characteristics.

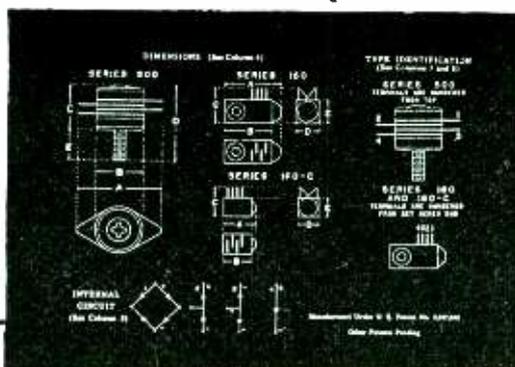
**RUST PROOFING:** All Moldite iron cores are treated so as to prevent rusting after 100 hours in 90% relative humidity test at 100°F.



**NATIONAL MOLDITE COMPANY**  
25 MONTGOMERY STREET, HILLSIDE 5, NEW JERSEY



# Conant Instrument Rectifiers



## SPECIFICATIONS (STANDARD TYPES)

| Type  | Series | Col. 3<br>Internal<br>Circuit | Col. 4<br>Dimensions<br>(Inches) |      |      |      |      | Col. 5<br>Mount-<br>ing<br>Screw<br>Size | Col. 6<br>Weight<br>(Grams) | Col. 7<br>No. of<br>Ter-<br>minals | Col. 8<br>Color,<br>Terminal<br>Number |     |     |    | Col. 9<br>PEAK ELECTRICAL RATINGS |      |                            |      |                          | Col. 10<br>•List<br>Price |        |
|-------|--------|-------------------------------|----------------------------------|------|------|------|------|--|-----------------------------|------------------------------------|--|-----|-----|----|-----------------------------------|------|----------------------------|------|--------------------------|---------------------------|--------|
|       |        |                               | A                                | B    | C    | D    | E    |  |                             |                                    | 1                                      | 2   | 3   | 4  | Volts                             | Mils | Inter-<br>mittent<br>Volts | Mils | Con-<br>tinuous<br>Volts |                           | Mils   |
| M     | 500    | 1                             | .890                             | .500 | .485 | .800 | .328 | 6-32                                     | 13.012                      | 4                                  | red                                    | no  | blk | no | 30                                | 100  | 20                         | 60   | 10                       | 30                        | \$3.50 |
| HS    | 500    | 2                             | .890                             | .500 | .445 | .800 | .360 | 6-32                                     | 9.158                       | 3                                  | red                                    | no  | blk | —  | 15                                | 100  | 10                         | 60   | 5                        | 30                        | 2.70   |
| T     | 500    | 3                             | .890                             | .500 | .445 | .800 | .360 | 6-32                                     | 9.158                       | 3                                  | no                                     | red | no  | —  | 30                                | 100  | 20                         | 60   | 10                       | 30                        | 2.70   |
| H     | 500    | 4                             | .890                             | .500 | .400 | .800 | .392 | 6-32                                     | 7.730                       | 2                                  | red                                    | no  | —   | —  | 15                                | 100  | 10                         | 60   | 5                        | 30                        | 1.50   |
| B     | 160    | 1                             | .595                             | .485 | .375 | .250 | .250 | 2-56                                     | 3.400                       | 4                                  | red                                    | no  | blk | no | 30                                | 15   | 20                         | 10   | 10                       | 5                         | 3.50   |
| BHS   | 160    | 2                             | .625                             | .550 | .375 | .250 | .250 | 2-56                                     | 2.880                       | 3                                  | red                                    | no  | blk | —  | 15                                | 15   | 10                         | 10   | 5                        | 5                         | 2.70   |
| BT    | 160    | 3                             | .625                             | .550 | .375 | .250 | .250 | 2-56                                     | 2.880                       | 3                                  | no                                     | red | no  | —  | 30                                | 15   | 20                         | 10   | 10                       | 5                         | 2.70   |
| BH    | 160    | 4                             | .625                             | .550 | .375 | .250 | .250 | 2-56                                     | 2.700                       | 2                                  | red                                    | no  | —   | —  | 15                                | 15   | 10                         | 10   | 5                        | 5                         | 1.50   |
| B-C   | 160-C  | 1                             | .345                             | .297 | .310 | .220 | .200 | none                                     | 1.743                       | 4                                  | red                                    | no  | blk | no | 30                                | 15   | 20                         | 10   | 10                       | 5                         | 3.50   |
| BHS-C | 160-C  | 2                             | .345                             | .297 | .310 | .220 | .200 | none                                     | 1.385                       | 3                                  | red                                    | no  | blk | —  | 15                                | 15   | 10                         | 10   | 5                        | 5                         | 2.70   |
| BT-C  | 160-C  | 3                             | .345                             | .297 | .310 | .220 | .200 | none                                     | 1.385                       | 3                                  | no                                     | red | no  | —  | 30                                | 15   | 20                         | 10   | 10                       | 5                         | 2.70   |
| BH-C  | 160-C  | 4                             | .345                             | .297 | .310 | .220 | .200 | none                                     | 1.293                       | 2                                  | red                                    | no  | —   | —  | 15                                | 15   | 10                         | 10   | 5                        | 5                         | 1.50   |

Over ninety per cent of all rectifier requirements are served by 12 types—4 basic assemblies in 3 series. These 3 series are the three primary units of Conant rectifiers. Special types, however, can be developed as needed, and you'll find Conant ready to cooperate.

**SERIES 500 UNITS** are for general applications requiring greater output current for meters, relays or other apparatus requiring more than 1 milliamperes. Recommended for all such applications at commercial and the lower audio frequencies. Will also operate up to 50,000 c.p.s. in special applications wherein accuracy of readings is not essential.

**SERIES 160 and 160-C** are for applications requiring good frequency response over the entire commercial and audio range and especially when the meter, relay or other apparatus requires less than 1 milliamperes for operation. In some special applications these units may be operated at frequencies up to 15,000,000 c.p.s. with special circuit treatment.

**SPECIAL TYPES** are available in both series 500 and 160-C. When requesting a quotation on a special type include a sketch of the rectifier required or a circuit diagram showing source and frequency of the input voltage, resistance and kind of load, required load current and the ambient temperatures.

**SERIES 500** Disc diameter .500 inch. Area each disc .15 square inch. Furnished with 3" braided, tinned copper leads. Finished in clear lacquer. Nickel plated end plates.

**SERIES 160** Disc diameter .160 inch. Area each disc .02 square inch. Furnished with 3" stranded, tinned double silk covered copper leads. Nickel plated case. Assembly sealed with specially developed moisture proof compound.

**SERIES 160-C** Disc diameter .160 inch. Disc area, lead wire length and moisture proof seal are identical with Series 160. Dimensions of the nickel plated case have been reduced to the most compact size. These units may be mounted in a standard midget fuse clip.

Conant Instrument Rectifiers are available from leading radio jobbers everywhere—consult your local jobber.



**CONANT**

*Instrument Rectifiers*

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378 Boulevard N. E., Atlanta, Ga.  
4018 Greer Ave., St. Louis, Mo.

1526 Ivy St., Denver, Colo.  
4214 Country Club Dr., Long Beach 7, Cal.  
Export Div., 75 West St., New York 6, N. Y.  
50 Yarmouth Rd., Toronto, Canada

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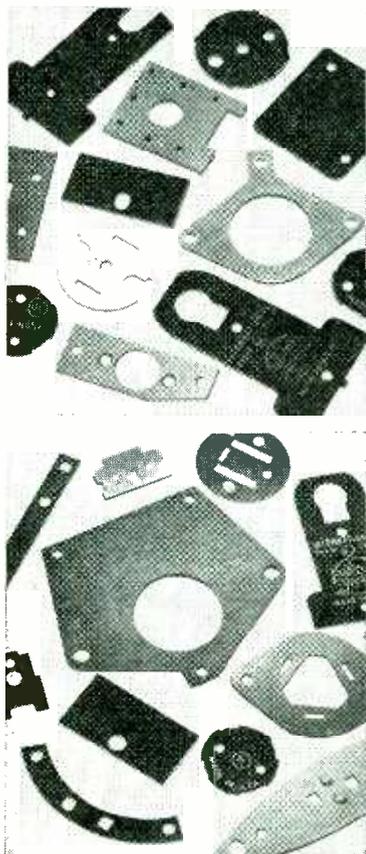
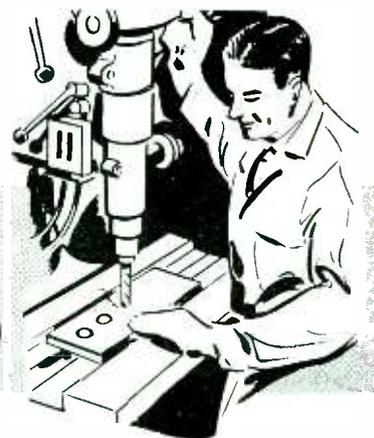
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## PHENOL FIBRE AND VULCANIZED FIBRE FABRICATIONS



BAER facilities are modern and adequate in every respect—stamping, punching, machining, sawing and drilling are accomplished accurately, efficiently and economically. Through long experience and specialization in this field, BAER fibre fabrications embody a high degree of precision and craftsmanship. Complete familiarity with extremely close tolerance operations, strict adherence to specifications, and a thorough understanding of all basic problems involved, typify BAER capabilities. Tools, dies, jigs, etc. are designed and made in the BAER plant by production engineers who "follow through" from blueprint or sketch stage to final production. Check the relative properties and characteristics of vulcanized fibre and phenol fibre for your fabrication purposes. Each offers specific advantages for particular applications. If in doubt, BAER engineers will gladly collaborate in the solution of your problems. Inquiries are invited and estimates will be gladly given without obligation.

### VU5-57 MINIMUM DIELECTRIC STRENGTH OF VULCANIZED FIBRE

| SHEETS<br>Electrical Insulation Grade |               | SHEETS, TUBES AND RODS<br>Bone and Mechanical and Electrical Grades |                    |
|---------------------------------------|---------------|---|--------------------|
| Nominal Thickness<br>in Inches        | Volts per Mil | Nominal Thickness<br>in Inches                                      | Volts per Mil      |
| .004 to .005, incl.                   | 200           | Up to 1/16, incl.   | 175                |
| Over .005 to .015, incl.              | 300           | Over 1/16 to 1/8, incl.   | 150                |
| Over .015 to .040, incl.              | 250           | Over 1/8 to 3/8, incl.  | 100                |
| Over .040 to 1/8, incl.               | 175           | Over 3/8 to 1/2, incl.  | 50                 |
|                                       |               | Over 1/2  | Total 25,000 volts |

### STANDARD GRADES OF PHENOL FIBRE SHEETS

X—Paper base, primarily for mechanical application.  
 P—Paper base, punching grade—moisture and electrical properties superior to grade X.  
 XX—Paper base, suitable to ordinary electrical applications, good machineability.  
 XXP—Paper base, applicable for usual electrical needs, suitable for hot punching.  
 XXX—Paper base, suited to high frequency radio and high humidity conditions. Minimum cold flow characteristics.  
 XXXP—Paper base, similar to XXX except lower dielectric losses—can be hot punched..

C—Fabric base—strong, tough for gears and high impact applications.  
 CE—Fabric base—for electrical applications requiring toughness. Moisture resistant.  
 L—Fabric base—tough, suitable for finely machined parts. Low voltage only.  
 LE—Fabric base—for electrical applications demanding toughness and fine machining. Moisture resistant.  
 A—Asbestos paper base—resistant to flame and heat. Low dielectric strength.  
 AA—Asbestos fabric base—similar to grade A but stronger and tougher.

### STANDARD GRADES of VULCANIZED FIBRE

#### ELECTRICAL INSULATION FIBRE

For general electrical insulation applications has high dielectrical strength and excellent bending qualities. Color is gray or bluish gray. Various thicknesses usually up to and including 1/8 inch.

**MECHANICAL AND ELECTRICAL FIBRE** (commonly called Commercial Fibre) finds extensive application where high mechanical and dielectrical strength are important. Colors—red, gray and black.

#### BONE FIBRE

A harder grade of Mechanical and Electrical Fibre.

#### TRUNK FIBRE

For use in cases, housings, frameworks, etc.

| Grade | Minimum Standard Physical Strength (Lb per sq. in.)<br>Thicknesses 1/16 to 1 in. inclusive |          |                        | Maximum Standard Dielectric Losses at 10 <sup>6</sup> Cycles<br>Thicknesses up to 1 in. inclusive |                     |                        | Minimum Standard Dielectric Strength†<br>Volts per mil<br>Over 1/32 and up to 1/16 in. thick |              | Maximum Standard Water Absorption†<br>(24 hour immersion)<br>Percentage<br>1/16 in. thick |
|-------|--|----------|------------------------|---|---------------------|------------------------|--|--------------|---|
|       | Tensile  | Flexural | Compressive (Flatwise) | Power Factor  | Dielectric Constant | Dielectric Loss Factor | Short Time   | Step by Step |   |
| X     | 10000  | 20000    | None                   | None  | None                | None                   | 500  | 300          | 6.0   |
| P     | 6000   | 11000    | None                   | None  | None                | None                   | 500  | 300          | 5.0   |
| XX    | 8000   | 12000    | None                   | .045  | 5.5                 | .25                    | 500  | 300          | 2.0   |
| XXP   | 6000   | 12000    | None                   | .045  | 5.5                 | .25                    | 500  | 300          | 2.0   |
| XXX   | 6000   | 12000    | None                   | .035  | 5.2                 | .18                    | 500  | 300          | 1.2   |
| XXXP  | 5000   | 12000    | None                   | .030  | 5.2                 | .16                    | 500  | 300          | 1.2   |
| C     | 7500   | 16000    | 35000                  | None  | None                | None                   | None   | None         | 4.4   |
| CE    | 6500   | 13000    | 34000                  | .065  | 6.0                 | .40                    | 1400   | 240          | 1.8   |
| L     | 7000   | 15000    | 30000                  | None  | None                | None                   | None   | None         | 2.5   |
| LE    | 6500   | 15000    | 33000                  | .055  | 5.5                 | .30                    | 400  | 1240         | 1.8   |
| A     | 5000   | 10000    | 30000                  | None  | None                | None                   | None   | None         | 1.5   |
| AA    | 8000   | 16000    | 35000                  | None  | None                | None                   | None   | None         | 1.9   |

† NOTE 1 Dielectric Strength and Water Absorption values vary greatly with thickness. For other thicknesses than 1/16 in. consult standards.

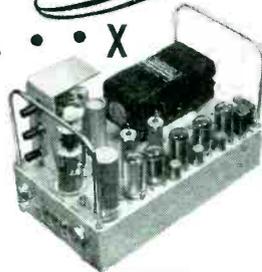
TABLES ARE FROM N.E.M.A. STANDARDS

**N. S. BAER COMPANY**  
 9-11 MONTGOMERY ST. HILLSIDE, NEW JERSEY

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OF A SERIES

**Carter**  
... instant power for  
**GENERAL ELECTRIC**  
30 w Transmitter



**X** marks the spot where INSTANT power starts (in 3/10 second) from the CARTER GENERATOR employed in GENERAL ELECTRIC'S 30 watt, 30-40 mc transmitter. Another example where leading communication manufacturers specify CARTER for reliable power. Only CARTER GENERATOR is guaranteed to deliver over 100,000 service-free transmissions. Write for catalog.

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**METAL STAMPINGS**

**DKE**

DKE stamped metal parts can now be supplied in any quantity on short notice. Twenty years experience in producing all types of cups, sleeves, flanged shapes, and fabrications to specification. Tools, jigs, fixtures produced on premises for precision and economy.

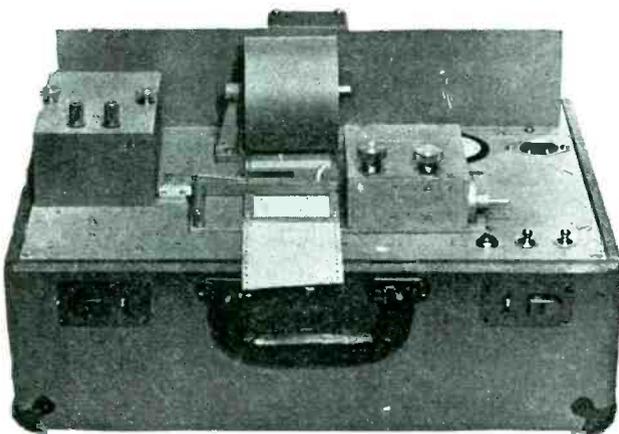
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**THE ENGINEERING CO.**  
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## HIGH SPEED GRAPHIC RECORDER

A unique, versatile instrument for the acoustical engineer. Interchangeable input potentiometers in various ranges (log. DB, linear, phon).



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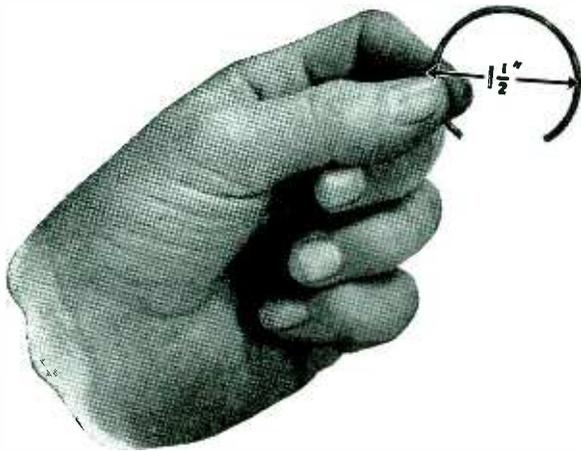
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# Compare!

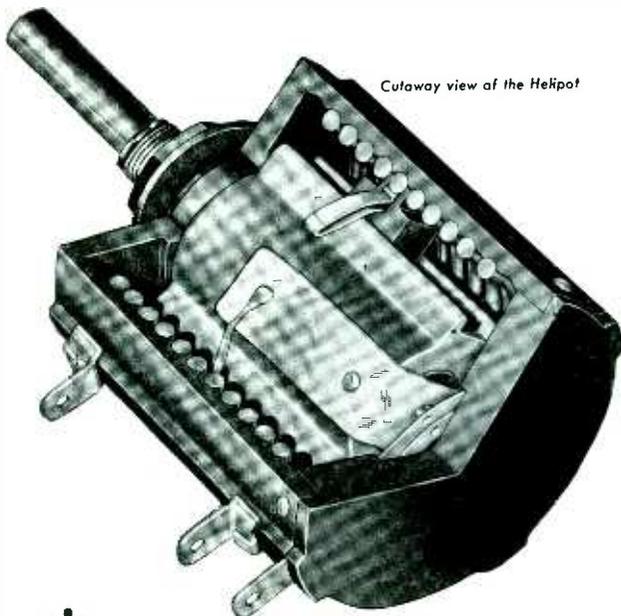
## Here's the Helipot Principle that is Revolutionizing Potentiometer Control in Today's Electronic Circuits



**CONVENTIONAL POTENTIOMETERS** have a coil diameter of approximately 1 1/2" and provide only 4" (about 300°) of potentiometer slide wire control.



**THE BECKMAN HELIPOT** has the same coil diameter, yet gives up to 46" (3600°)\* of potentiometer slide wire control—nearly TWELVE times as much!



Cutaway view of the Helipot

### Some of the multiple Helipot advantages

**E**XTENSIVELY used on precision electronic equipment during the war, the Helipot is today being adopted by more and more manufacturers of quality electronic equipment to increase the accuracy, convenience and utility of their instruments. By coiling the resistance wire into a helix upon which the slider contact travels from end to end as the shaft is rotated, the Helipot permits an unusually long resistance wire to be incorporated into a potentiometer unit that requires no more panel space than conventional single-turn potentiometers.

The Helipot makes possible much finer adjustment of circuits and far greater accuracy in resistance control. Moreover, it permits simplifying control and eliminating extra knobs, extra operations, extra complications on the instrument panel.

Through development of the new Beckman Duodial, resistance measurements with the Helipot are unusually simple. This compact dial fastens directly to the shaft of the Helipot and automatically indicates both the radial position of the slider contact on each individual coil as well as the position of the slider on the coiled helix.

The Helipot is available in a wide range of types and resistances to meet the requirements of many applications, and its versatile design permits ready adaptation of a variety of special features, as may be called for in meeting new problems of resistance control. Let us study your potentiometer-rheostat problems and make recommendations on the application of Helipot advantages to your equipment. No obligation of course. Write today.

### \*HELIPOTS ARE AVAILABLE IN 3 STANDARD SIZES:

**TYPE A**—5 watts, incorporating 10 helical turns and a slide wire length of 46 inches, case diameter 1 3/4", is available with resistance values from 10 ohms to 50,000 ohms.

**TYPE B**—10 watts, with 15 helical turns and 140" slide wire, case diameter 3 1/4", is available with resistance values from 50 ohms to 200,000 ohms.

**TYPE C**—2 watts, with 3 helical turns and 13 1/2" slide wire, case diameter 1 3/4", available in resistances from 5 ohms to 15,000 ohms.

... AND IN SPECIAL SIZES. The Type B is also available in special sizes of 25 and 40 helical turns, with resistances ranging from 100 ohms to 500,000 ohms, and containing more than 100,000 change-of-resistance steps.

\*Data in Heading — for Type A Unit

Send for the New Helipot Booklet. Also ask for information on the new Beckman Duodial!

"Helipot" is the trademark of the HELIcal POTentiometer.

(Registered U. S. Patent Office)



**THE Helipot CORPORATION, 1011 MISSION STREET, SOUTH PASADENA 2, CALIFORNIA**



## ELECTRONICS AT WORK

The science of electronics is so broad and so varied that any definition must depend largely on its specific application. While the basic principle of operation depends on the electron as the source of energy, the application is as varied as the problem to be solved.

Shown here are many Westinghouse electronic devices; more detailed and specific information about equipment and applications can be supplied on request.

### RADIO BROADCAST TRANSMITTERS

**AM TRANSMITTERS.** Twenty-five years of experience in the operation of broadcast stations is incorporated in Westinghouse 5, 10, and 50 kw AM Transmitters. The transmitters feature surge-proof metal rectifiers, minimizing tube replacement; equalized audio feedback; supervisory control with indicator lamps showing operating condition at all times; completely fuseless overload protection, with automatic reset after interruptions; air-cooled tubes, with cooling system operation from a single blower; fireproof and explosion-proof transformers and reactors. Cubicle construction simplifies installation of the transmitters—5 and 10 kw transmitters consist of three cubicles and the 50 kw transmitter of eight cubicles which may be installed "in-line" or in unit groups to meet layout requirements.

**FM TRANSMITTERS.** Designed to meet operators' requirements, Westinghouse 1, 3 and 10 kw FM transmitters are backed by many years' experience in operating five FM broadcast stations. Outstanding features include accessibility of all tubes from front of transmitter; self-contained transmitter, with no external parts; aluminum cubicle, improving shielding and reducing weight; Class "B" temperature insulated transformers; two complete crystal oscillators; completely electronic frequency control, without moving parts or critically tuned circuits; and an individual meter in each important circuit.

**ACCESSORY EQUIPMENT.** FM antennas and transmission lines, transmitter consoles, speech input equipment, antenna phasing, branching, and coupling equipment, tower lighting, and spare parts are also available.

### POWER LINE CARRIER

Power Line Carrier is a specialized adaptation of radio wherein high frequency (50 to 150 kc) currents are sent over transmission lines without impairing normal flow of power. Power line carrier is used for communications, relaying, telemetering, load control and supervisory control. Features include full-length, swing-out type control panel to permit complete and easy access to all internal components from the front of cabinet, and single sideband circuit, doubling the number of carrier channels, reducing the signal to noise ratio 8 to 1 over standard AM carrier, and eliminating corona modulation by absence of carrier wave. Individual application requirements are met with the new type JY equipment, which is built up from co-ordinated units to give great flexibility. Single sideband power line carrier is an exclusive Westinghouse product.

### RAILROAD RADIO

Railroad radio provides instant three-way communication between engine, wayside station, and another train. Recent applications to tugboats have also proved highly efficient and economical. Improved FM circuits and automatic controls assure noise-free, undistorted communication. No wayside wires are needed. Westinghouse railroad radio is unaffected by adverse weather conditions such as extreme heat, ice, sleet, rain, or snow. Equipment operates from 117 volts a-c, with rotary converters provided for mobile units. Transmitter and receiver chassis are fully interchangeable between fixed and mobile stations, thus simplifying replacement problems.

### X-RAY

"Micronex" is the latest development in Westinghouse industrial x-ray units. It is designed for ultra-high-speed radiography, taking pictures at .000001 of a second, with sufficiently high intensity to photograph through one inch steel plate. Micronex converts low voltage (power available at a standard outlet) to high-energy, short-duration surge to actuate the x-ray tube. Micronex is portable, can be moved easily on large rubber-tired casters. It is used in ballistics for the study of projectile flight and impact, investigating internal conditions of high speed motors, and in the study of high rpm rotating equipment and dust in flight.

### RADIO FREQUENCY GENERATORS

Standard Westinghouse radio frequency generators suitable for either induction or dielectric heating are made in 2, 5, 10 and 20 kw ratings as stock items—with 50, 100 and 200 kw standard designs built to order. Most applications can be met with stock generators, and Westinghouse engineers will work out problems where higher capacities are needed. All units have automatic timing controls to permit adjustment of the load cycle to a predetermined time which may be repeated with absolute accuracy by simply pressing a button. All equipment is shielded to minimize radiation losses, air-cooled to reduce maintenance, and shock mounted to assure maximum tube life and quiet operation.



5 KW AM Transmitter

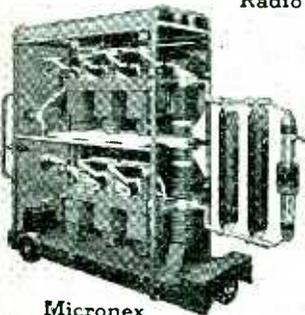


1 KW FM Transmitter

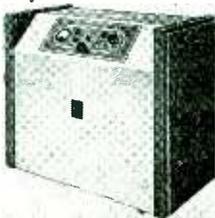
Power Line Carrier



Railroad Radio

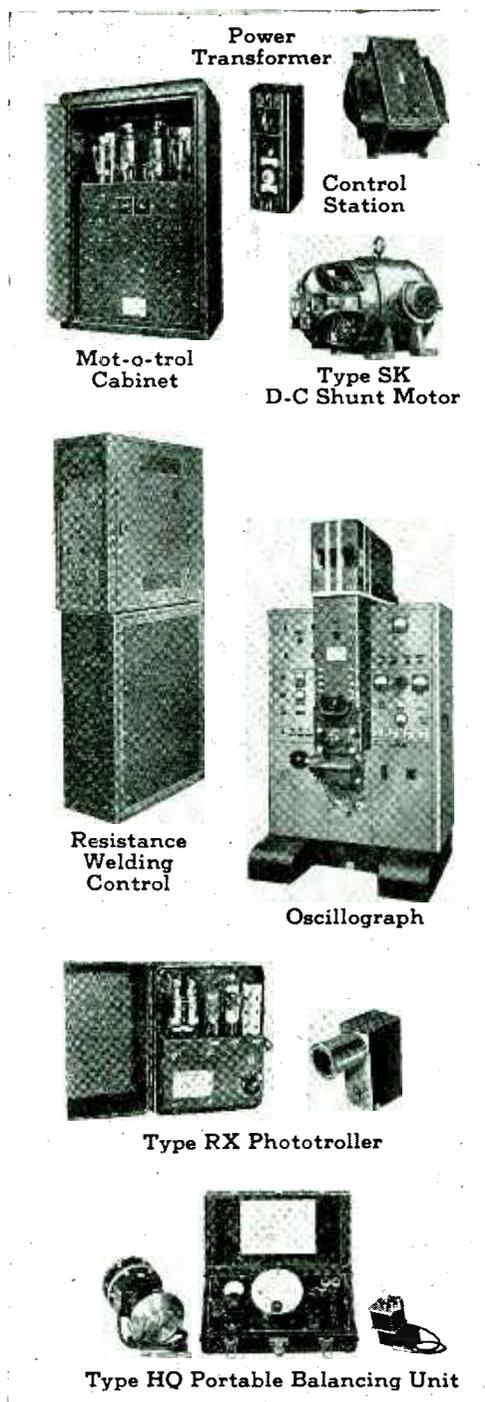


Micronex X-Ray Unit



2 KW RF Generator

## WESTINGHOUSE ELECTRIC CORPORATION



### MOT-O-TROL (Motor Speed Control)

Mot-o-trol employs the precision of electronics to provide a wide (80:1) stepless range of speed control for d-c motors from an a-c source. The system is based on a thyatron tube, which takes power from an a-c input and rectifies it to d-c for use by a regular shunt wound d-c motor. The Mot-o-trol provides smooth, rapid acceleration to preset speed, stepless control over a wide range of speeds with excellent regulation over the entire range, dynamic braking, and reversing. Control for speed variations, starting, stopping and reversing are on the control station. Four pieces are involved—power transformer, electronic control cabinet, control station, and the d-c motor.

### RESISTANCE WELDING CONTROL

The Westinghouse Type AC fully electronic resistance welding control for welder side mounting combines in a single unit exceptionally accurate and precise control for seam, pulsation-spot, and spot welding. Heat selecting dial gives stepless adjustment of the welding current from 20% to 100% of maximum current on 440 to 550 volts, and 40% to 100% on a 220 volt supply. The normal time adjustment is from 1 to 30 cycles in 1 cycle steps for "weld" and "off" time in seam welding and "heat" and "cool" time in pulsation or spot welding. From 1 to 15 pulsations may be selected for pulsation welding.

### OSCILLOGRAPH

The Electronic Oscillograph is an instrument recording extremely short, single electrical transients with respect to time, or two electrical phenomena with respect to each other. The new streamlined unit is completely self-contained and consists of a cabinet which houses all the energizing and control circuits. In addition to the fluorescent screen for direct observation, the instrument contains a stationary film for recording electrical phenomena lasting 1/100,000 of a second or less. For phenomena lasting from 1/1000 to 1/10 of a second, where longer oscillograms are desired, a rotating film drum is used.

### PHOTO-TROLLER (Photo-electric Relays)

Photo-trollers are general purpose photo-electric relays operated by an increase or decrease in the amount of light falling on a phototube. They are arranged to initiate an electrical sequence in response to changes of illumination caused by partially or completely breaking a light source. Type RX-1 (illustrated) is for general purpose indoor industrial applications where the change in light on the phototube is more than 50% and where less than 150 operations per minute with equal "off-on" periods are required. It may be used up to 40 feet maximum distance.

### BALANCING EQUIPMENT

Dynamic and Dynetric Balancing Apparatus accurately indicates the amount and location of unbalance in two or more selected planes of a rotating machine, determining the amount of correction necessary to balance the equipment.

**TYPE HQ** (Dynamic) portable unit (illustrated) employs velocity type vibration pickup with dynamometer type wattmeter and sine wave generator.

**TYPE U** (Dynetric)\* uses an electromagnetic pickup with wattmeter and generator.

**TYPE S** (Dynetric)\* stroboscopically locates unbalance and indicates amount of correction to be made.

\*Information on dynetric equipment may be obtained from Gisholt Machine Company, Madison, Wisconsin

### OTHER WESTINGHOUSE ELECTRONIC DEVICES

**NAVIGATIONAL RADAR.** Provides navigational and anti-collision protection in fog, darkness, and all other varieties of bad weather for deep water vessels of both freight and passenger types. It has a range of 100 yards to 32 miles.

**STROBOGLOW.** A power unit and a lamp unit with electronic amplifier and timing tubes which literally "freezes" motion and makes rapidly rotating objects stand still so that they can be studied and visualized.

**STRAIN GAUGE.** Vibration fatigue equipment generates from 10 to 10,000 electronic impulses per second to test the resonant frequency of structural and rotating parts.

**FURNATRON.** Electronic control system for electric resistance heated furnaces—maintains required constant temperature level.

**PINHOLE DETECTOR.** A phototube application for spotting and marking holes as small as 1/64 of an inch.

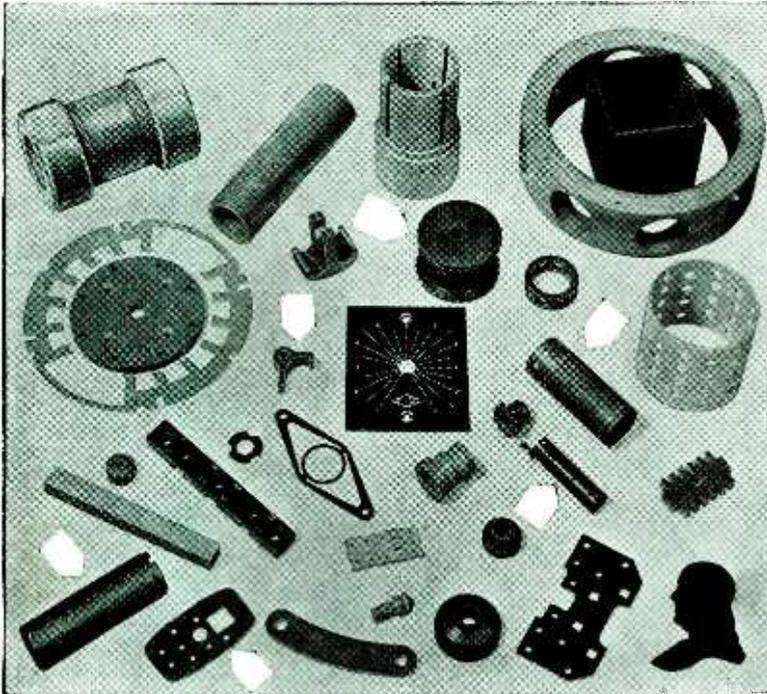
**PRECIPITRON\*.** An electrostatic air-cleaner which will remove upwards of 85% of airborne dirt and dust.

**IGNITRON RECTIFIER.** A power conversion electronic device utilizing the rectifying property of the mercury vapor arc.

**VISICODE SUPERVISORY CONTROL.** Remote control for various kinds of substations such as those used on electric power transmission and distribution systems.

\*Trade mark registered.

## LAMITEX Affords the Best Combination In Both High Dielectric and Mechanical Strength



Indicated by arrows:

- ★ LINEN LAMITEX precision sprocket for motion picture developing apparatus is used extensively immersed in developing hypos without affecting its dimensional stability. High mechanical strength of small teeth, and their resistance to wear, is a particular advantage.
- ★ LINEN LAMITEX automotive distributor breaker-arm not only provides electrical insulation and inherent resistance to wear, but also reduces to a minimum wear of companion steel cam.
- ★ LAMITEX GRADE XXXP coil forms used in communication and radio circuits where Low Moisture Absorption and high dielectric strength is a vital factor.
- ★ LAMITEX GRADE XXP punched base for automotive cut-out in battery-generator circuit. Provides suitable mechanical and high dielectric qualities for this important application.

## FRANKLIN LAMITEX and VULCANIZED FIBRE

... In Sheets, Rods and Tubes, Fabricated or Molded Parts

Low moisture absorption is only one of many advantages you get when FRANKLIN'S LAMITEX is specified for your job. This versatile material is highly machineable, or if you lack the proper facilities we will fabricate the parts for you. Both LAMITEX and FIBRE can be drilled, tapped, turned, threaded, punched, shaved, bored, reamed, sawed, milled or completely fabricated into automatic screw machine parts.

Send for Catalog Containing Complete Data

Check these FRANKLIN LAMITEX Characteristics

• High dielectric strength • Low power factor • Low moisture absorption • Remarkable dimensional stability • High mechanical strength • Low co-efficient of thermal expansion • Low in weight (about half that of aluminum) • Unaffected by solvents and oils, most organic acids, dilute mineral acids or salt solutions.

FIBRE  
HARD  
VULCANIZED



# FRANKLIN

## FIBRE-LAMITEX CORP.

FRANKLIN FIBRE-LAMITEX CORP.  
WILMINGTON, DEL. • 187 LAFAYETTE ST., NEW YORK 13



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You can  
find the  
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**QUICKLY**  
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**electronics  
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guide**

*Use it for  
Quick  
Reference  
as you work*

**B**UILDERS OF COMMUNICATIONS EQUIPMENT, MEASURING INSTRUMENTS FOR COMMERCIAL AND INDUSTRIAL USE, AND OTHER ELECTRONIC DEVICES— PRODUCTS WHERE PRECISION PERFORMANCE LARGELY DEPENDS UPON TIME AS A FACTOR OF CONTROL — KNOW THEY

can rely on

**Cramer**  
DESIGN  
QUALITY  
ACCURACY



**RUNNING TIME METERS**

Synchronous motor driven. Register automatically and cumulatively total operating or idle time on circuits, machines, systems.



**TIME DELAY RELAYS**

Provide adjustable or fixed time delay between operation of a control circuit and subsequent opening or closing of a load circuit.



**SYNCHRONOUS MOTORS**

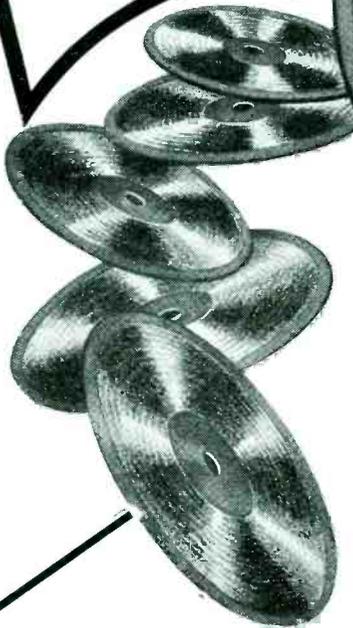
Permanent magnet type for applications requiring a constant speed at a given frequency. Small size. 30" ounce torque. Twenty-eight speeds from 60 rpm to 1/24 rph.

For a wide range of standard timers and controls... or special adaptations for specific applications... consult R. W. CRAMER CO., Box No. 3, Centerbrook, Conn.

**Cramer**  
SPECIALISTS IN TIME  
AS A FACTOR OF  
CONTROL

INTERVAL • DELAY • CYCLE • IMPULSE • PERCENTAGE

Uniformly good-



**FOR THE  
UTMOST IN  
HIGH FIDELITY  
REPRODUCTION**

Allied Professional Recording Discs are manufactured to exacting standards by one of the pioneers in the field of instantaneous recording equipment. The accumulated knowledge of years of experience have been engineered into Allied Discs. TRY them.

**Also ALLIED RECORDING EQUIPMENT**

The Allied Recording Machine (illustrated) combines the Allied Transcription Turntable and Allied Overhead Cutting Assembly, which are also sold separately. Like Allied Discs, this equipment is of highest precision quality, good for long, trouble-free service.



**ALLIED**  
**RECORDING PRODUCTS CO.**  
21-09 43rd AVENUE

LONG ISLAND CITY 1, NEW YORK  
WRITE FOR NEW DESCRIPTIVE BULLETIN

# TURBO means protection..

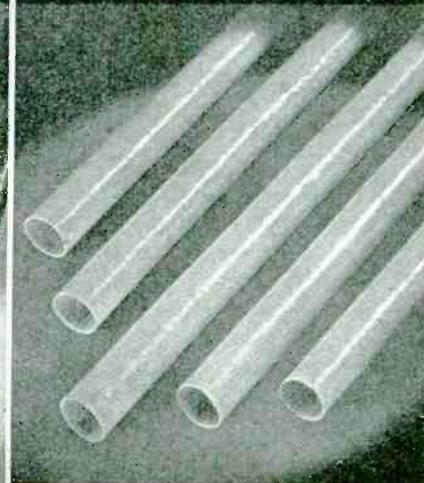
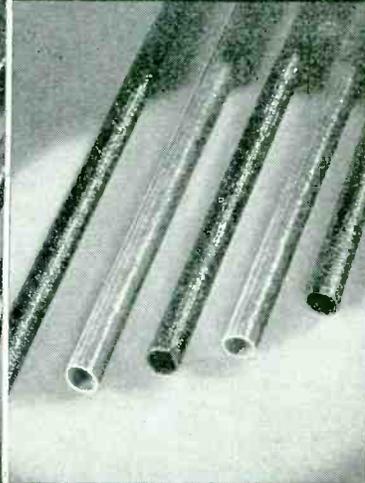
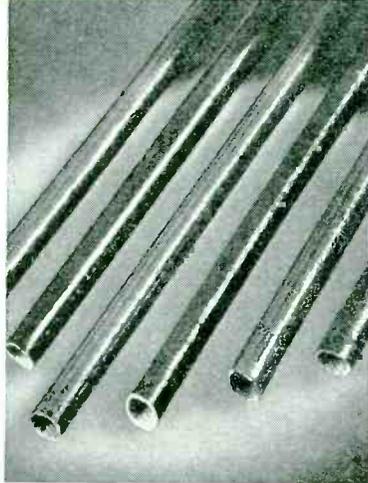
**A TYPE TO MEET  
EVERY ELECTRICAL  
AND MECHANICAL  
REQUIREMENT**

**FLEXIBLE  
VARNISHED  
TUBING**

**SATURATED  
SLEEVING**

**FIBROUS  
GLASS  
TUBING**

The part of the entire cost of an electronic product which is represented by its insulation is indeed small. On the other hand, the insulation is perhaps the most vital non-operating part of the product! This is borne out by an analysis of failures in electrical apparatus which shows that where failures *did* occur, 85% of the failures were due to faulty insulation! The facts make it evident, therefore, that nothing but the best in insulation can be risked in today's electrical products if consumer-dealer trust is to be retained. This is the William Brand policy which has motivated the development of TURBO Varnished Tubings, Sleeveings and other insulation materials.



*Here's  
what it is ...*

*here's what  
it's used for ...*

*- and here's  
the data!*

A braided cotton sleeve insulation processed "in the round" to secure precise form fitting diameter throughout length. Thoroughly saturated with flexible insulating varnishes baked-in all the way through to the inside.

Recommended for high tensile strength, flexibility, non-peeling and non-cracking qualities, low moisture absorption, oil and acid resistance and slow burning quality.  
MAGNETO GRADE—7000 V dielectric breakdown  
RADIO GRADE—4000 V dielectric breakdown

| No. | Approx. inside diam., in. | No.  | Approx. inside diam., in. |
|-----|---------------------------|------|---------------------------|
| 24  | .020                      | ..   | .177                      |
| 20  | .034                      | 5    | .186                      |
| 19  | .038                      | ..   | .196                      |
| 18  | .042                      | 4    | .208                      |
| 17  | .047                      | ..   | .216                      |
| 16  | .053                      | 3    | .234                      |
| 15  | .059                      | ..   | .255                      |
| 14  | .066                      | 2    | .263                      |
| 13  | .076                      | ..   | .275                      |
| 12  | .085                      | 1    | .294                      |
| 11  | .095                      | 5/16 | .315                      |
| 10  | .106                      | 0    | .330                      |
| ..  | ..                        | ..   | .354                      |
| 9   | .118                      | 3/8  | .375                      |
| ..  | ..                        | ..   | .393                      |
| 8   | .133                      | 7/16 | .433                      |
| 7   | .148                      | 1/2  | .500                      |
| ..  | .157                      | 5/8  | ..                        |
| 6   | .166                      | 3/4  | ..                        |
| ..  | ..                        | 1    | ..                        |

The New Standard Sizes follow the B. & S. System of Gauging Bare Wire: Therefore if tubing is to be used on covered wire, the proper allowance must be made for the thickness of the insulation. Standard strand length 42 in.—bundled 120 strands.

A select cotton braided sleeveing similar in construction to varnished tubing — rounded in the braided form to assure accuracy and conformity to sizes as listed.

An all-purpose sleeve insulator useful in all cases except in the higher dielectric ranges. Flexible, high tensile strength, low moisture absorption, acid and oil resistant, slow burning.

1200 V. minimum dielectric breakdown

| No. | Approx. inside diam., in. | No.  | Approx. inside diam., in. |
|-----|---------------------------|------|---------------------------|
| 20  | .034                      | ..   | .177                      |
| 19  | .038                      | 5    | .186                      |
| 18  | .042                      | ..   | .196                      |
| 17  | .047                      | 4    | .208                      |
| 16  | .053                      | ..   | .216                      |
| 15  | .059                      | 3    | .234                      |
| 14  | .066                      | ..   | .255                      |
| 13  | .076                      | 2    | .263                      |
| 12  | .085                      | ..   | .275                      |
| 11  | .095                      | 1    | .294                      |
| 10  | .106                      | 5/16 | .315                      |
| ..  | ..                        | 0    | .330                      |
| 9   | .118                      | ..   | .354                      |
| ..  | ..                        | 3/8  | .375                      |
| 8   | .133                      | ..   | .393                      |
| 7   | .148                      | 7/16 | .433                      |
| ..  | .157                      | 1/2  | .500                      |
| 6   | .166                      | ..   | ..                        |

A braided insulator fabricated of fibrous glass yarn and processed with TURBO insulating varnishes. The natural insulating property of glass is thus reinforced by the varnish coatings to yield a near ideal dielectric.

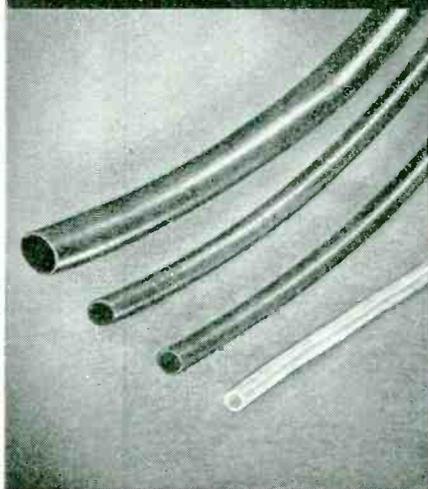
Use where exceptionally severe conditions of heat or electrical characteristics or both prevail. Consider use also in complex or "miniature" circuits where space is a factor. Gives optimum protection with least bulk.

| No. | Approx. inside diam., in. | No.  | Approx. inside diam., in. |
|-----|---------------------------|------|---------------------------|
| 20  | .034                      | 7    | .148                      |
| 18  | .042                      | 6    | .166                      |
| 17  | .047                      | 5    | .186                      |
| 15  | .059                      | 4    | .208                      |
| 14  | .066                      | 3    | .234                      |
| 12  | .085                      | 2    | .263                      |
| 11  | .095                      | 1    | .294                      |
| 10  | .106                      | 5/16 | .315                      |
| 9   | .118                      | 0    | .330                      |
| 8   | .133                      | 3/8  | .375                      |

**WILLIAM BRAND & COMPANY**

# ..specify these insulations!

## EXTRUDED PLASTIC TUBING



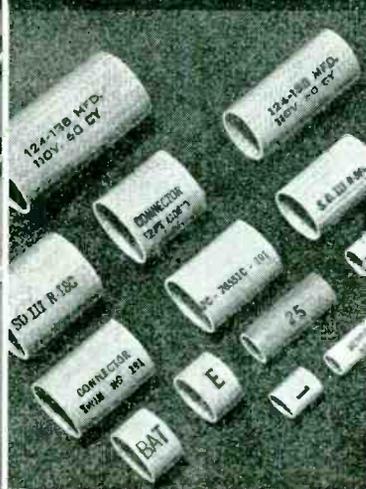
A homogeneous vinylite resin plastic sleeving formed on automatic extrusion presses. Inside and outside diameters held to close dimensional tolerances.

Recommended particularly for low temperature and variable temperature service. Exceptionally high resistance to embrittlement under sub-zero temperatures. Also valuable for its high dielectric values and low moisture absorption. Stretch factor 2½ to 1.

| Approx. inside No. | Approx. inside diam., in. | No.    | Approx. inside diam., in. |
|--------------------|---------------------------|--------|---------------------------|
| 20                 | .034                      | 4      | .208                      |
| 19                 | .038                      | 3      | .234                      |
| 18                 | .042                      | 2      | .263                      |
| 17                 | .047                      | 1      | .294                      |
| 16                 | .053                      | 5/16   | .3125                     |
| 15                 | .059                      | 0      | .330                      |
| 14                 | .066                      | 3/8    | .375                      |
| 13                 | .076                      | 7/16   | .4375                     |
| 12                 | .085                      | 1/2    | .500                      |
| 11                 | .095                      | 5/8    | .625                      |
| 10                 | .106                      | 3/4    | .750                      |
| 9                  | .118                      | 7/8    | .875                      |
| 8                  | .133                      | 1      | 1.000                     |
| 7                  | .148                      | 1 1/16 | 1.0625                    |
| 6                  | .166                      | 1 1/4  | 1.250                     |
| 5                  | .186                      | 1 1/2  | 1.500                     |

Lengths—Continuous lengths of 100 ft. up to No. 6, 50 ft. from No. 0, larger sizes 25-ft. lengths.  
Colors—Standard: Black, Yellow, Red, Green, Blue and White, also Transparent.

## WIRE IDENTIFICATION MARKERS

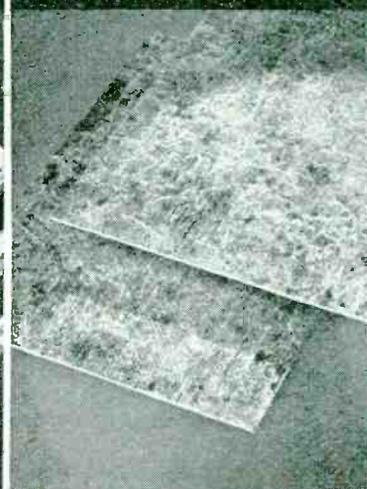


Slip-on sleeves fabricated from various materials such as woven fabrics and extruded plastics and imprinted longitudinally or circumferentially in any diameter or length in any combination of colors.

To identify electrical conductors or, in fact, any tubing, wiring, rod, pipe, hose, cable or connection. Dimensioned to precise limits to insure snug fit.

Two types—standard sleeve and tab-type. The latter is recommended for use on extremely fine diameter wires. Sizes—as required.

## MICA and MICA PRODUCTS



Mica comprises a group of natural silicates distinguished by highly developed basal cleavage into thin, tough, flexible laminations. Used as electrical insulation, mica possesses ideal electrical properties.

### Grades

**Heater Plate**—For direct contact with high heat. Temperature resistance: 1000°F. Average dielectric strength—625 V.P.M.

**Flexible Plate**—Flexible—Plastic and moldable at ordinary temperatures. Temp. rises (Mail) 275°F. Average dielectric strength—525 V.P.M.

**Segment Plate**—Soft edged surface matched to wear with copper commutator bars. Dielectric strength—625 V.P.M.

**Molding Plate**—Becomes flexible and pliable to a moldable degree at 284°F without cracking or flaking. Dielectric Strength—600 VPM on Flat Sheets.

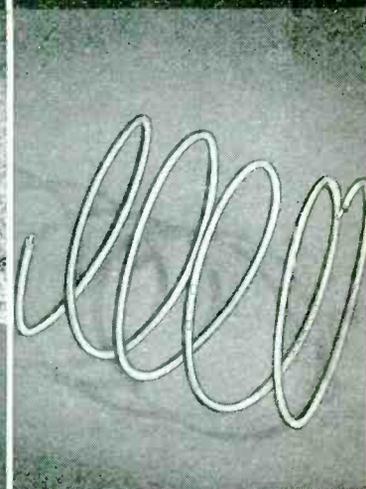
**India Segment Plate**—Similar to segment plate but harder and has higher thermal characteristics.

**B-H-1 and 2 Plate**—A built-up mica plate. High rigidity and temperature resistance (302°F) without swelling, softening or delamination. Recommended to replace virgin mica in less exacting applications for capacitor separators and backing plates.

**Block Mica**—Rigidly held to quality classification standards; complete range of standard sizes.

**Mica Films**—For mica condensers—Virgin mica rigidly gauged and classified.

## TURBOTHERM EXTRUDED WIRE



A solid or stranded conductor over which has been extruded a homogeneous vinylite plastic sheathing.

Offers great resistance to high temperatures, especially those encountered in soldering or potting operations. Has high resistance to oils, organic solvents, acids, alkalies, sunlight and oxidation.

High dielectric values—in excess of 1000 voltage breakdown strength per 1/1000 inch.

Fine gauges, Nos. 16 to 30 solid or stranded conductor.

276 FOURTH AVENUE, NEW YORK 10, N. Y.  
325 W. HURON STREET, CHICAGO 10, ILL.

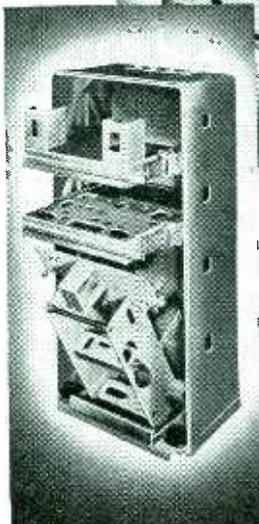


## FABRICATED SHEET METAL PRODUCTS

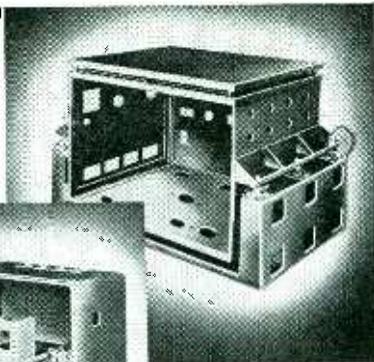
to your specifications . . .

COMPLETE facilities under one roof for quantity mass production—including welding, baking and finishing. Whistler and Wiedermann equipment for short runs. Tool and die engineering and designing.

Substantial sheet steel inventories permit speed, service and cooperation. Large assortment of stock and special dies for the radio and electronic field. Production and engineering under the personal direction of Mr. E. B. Gunzburg, president—who has had 33 years' experience in sheet metal fabrication.



Quality chassis, metal cabinets, instrument housings, panels, boxes, metal parts and stampings—sample models—in stainless steel or in any metal or any gauge. Close tolerances guaranteed.



Send your blueprints and requests for prompt attention and quotations.

### ART-LLOYD METAL PRODUCTS CORP.

2973 Cropsy Ave.

Brooklyn 14, N. Y.

Telephone: ESplanade 2-0681

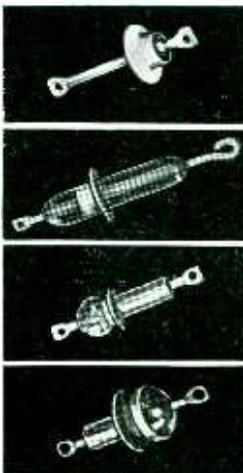
## E-I HERMETICALLY-SEALED MULTIPLE HEADERS



- ★ VACUUM TIGHT SEAL
- ★ KOVAR METAL ELECTRODES
- ★ PYREX GLASS BEAD
- ★ MANY STANDARD TYPES
- ★ ANY TYPE TO SPECIFICATIONS
- ★ SOLDER OR WELD EASILY

A complete and diversified line of E-I 4, 5, 6, 7 and 8 electrode hermetically sealed Multiple Headers are now available as standard stock items. All are supplied at mass production prices—no special tool or die costs involved. Individual sealed terminals are also included in a wide variety of standardized types. All special shapes or forms can be supplied to exact specifications at slightly higher cost.

All include Pyrex glass bead—immune to thermal or electrical shock. Pyrex annealed to eliminate strain. Kovar electrode and shell solders and welds easily and forms absolute vacuum tight chemical bond with glass—lead becomes integral part of housing. Multiple Headers can be fabricated in any form to specification—write today.



**ELECTRICAL INDUSTRIES · INC.**

42 SUMMER AVENUE, NEWARK 4, N. J.

## the electronics buyers' guide

*has been designed to serve all types of electronic engineers . . . .*

**QUICKLY  
ACCURATELY  
and  
CONVENIENTLY**

*Use it for Quick Reference as you work*



Distributor of Recording Equipment

DISC • TAPE • WIRE

and all accessories for . . .

COMMERCIAL • PROFESSIONAL  
EDUCATIONAL • HOME USE

## PRESTO RECORDING EQUIPMENT

The PRESTO 6-N recording turntable is used in broadcasting stations and instantaneous recording studios. It includes all the basic equipment needed to make recording of commercial quality.

The overhead cutting mechanism has been designed so that it is removable as a unit from the turntable and fits in a pocket inside the carrying case for safer transportation. The overhead cutting mechanism includes the 1-D high fidelity cutting head and spiraling feed screw. Illustration shows only one sample of full line.

SEND FOR COMPLETE INFORMATION

## BRUSH MAGNETIC RIBBON RECORDER

By merely pushing a button you can accurately transcribe half an hour of music or speech. Then with a pair of scissors and some cellulose tape, you can edit the program, eliminating any parts of it you don't wish to keep. Even if you play this ribbon transcription several thousands of times it will never deteriorate but will always present exactly the same perfect reproduction. Or, if any time you don't want that program any more, you can "erase" it electronically just by pushing another button. The multidirectional microphone that comes with every "Soundmirror" enables you to record forever anything you can hear, just exactly as you heard it.

### SPECIFICATIONS

|                       |  |
|-----------------------|--|
| Frequency Response    | 100 cps. to 5000 cps.                    |
| Signal to Noise Ratio | at least 40 db.                          |
| Rewind Speed          | Approx. 30-1                             |
| Recording Time        | 1/2 hr.                                  |
| Power Rating          | 115 volts, 50/60 cycles                  |
| Power Consumption     | Record 148w Playback 113w                |
| Net Wt.               | 40 lbs.                                  |
| Dimensions            | 17 3/4" Wide, 11 1/8" High, 13 3/4" Deep |



## The Perfect PIERCE WIRE RECORDER

- 66 minutes of continuous recordings on wire.
- High speed recording.
- High fidelity response.
- Flat  $\pm$  3db from 200 to 5000 cycles.
- Records speech, music on a fine steel wire.
- Reproduces immediately.

Representing  
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**BRUSH DEVELOPMENT**  
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**REK-O-KUT**



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45 W. 45th St., New York 19, BRyant 9-8897

Cable Address, Craftsono

# DUMONT TINYMITE CAPACITORS

BAKELITE ENDS • HEAT PROOF • MOISTURE PROOF • 85° C—A.C. OR D.C.

## FLAT-SHAPE



### Features:

- NON-INDUCTIVE
- HEAT-PROOF
- LEADS CANNOT PULL OUT

## ROUND SHAPE



| CAT. No. | CAP MFD | WORK VOLTS | DIMENSIONS<br>A — B — C | LIST PRICE |
|----------|---------|------------|-------------------------|------------|
|          |         |            |                         |            |
| P4 — 2   | .0001   | 600        | 1/2 × 1/4 × 1/8         | .40        |
| P4 — 3   | .00025  | 600        | 1/2 × 1/4 × 1/8         | .40        |
| P4 — 4   | .0005   | 600        | 1/2 × 1/4 × 1/8         | .40        |
| P4 * 5   | .001    | 200        | 1/2 × 1/4 × 1/8         | .50        |
| P4 — 51  | .001    | *600       | 1/2 × 3/8 × 1/8         | .50        |
| P4 — 52  | .001    | 1600       | 1 1/2 × 3/8 × 1/8       | .50        |
| P4 — 6   | .002    | 200        | 1/2 × 1/4 × 1/8         | .50        |
| P4 — 61  | .002    | 600        | 1/2 × 1/4 × 3/16        | .50        |
| P4 — 62  | .002    | 1600       | 1 1/2 × 1/4 × 3/16      | .60        |
| P4 — 8   | .005    | 150        | 1/2 × 1/4 × 1/8         | .50        |
| P1 — 5   | .005    | 400        | 5/8 × 3/8 × 1/8         | .50        |
| P1 — 5A  | .005    | 600        | 5/8 × 3/8 × 3/16        | .50        |
| P4 — 83  | .005    | 1600       | 1 5/8 × 3/8 × 1/4       | .70        |
| P4 — 10  | .01     | 150        | 1/2 × 3/8 × 1/8         | .50        |
| P1 — 7A  | .01     | 400        | 5/8 × 3/8 × 3/16        | .50        |
| P1 — 7B  | .01     | 600        | 5/8 × 3/8 × 3/16        | .50        |
| P1 — 7C  | .01     | 1600       | 1 5/8 × 3/8 × 1/4       | .60        |
| P4 — 11  | .02     | 150        | 1/2 × 3/8 × 3/16        | .70        |
| P1 — 8A  | .02     | 150        | 3/4 × 3/8 × 1/8         | .50        |
| P1 — 8A  | .02     | 400        | 3/4 × 3/8 × 3/16        | .50        |
| P1 — 8B  | .02     | 600        | 3/4 × 3/8 × 3/16        | .50        |
| P1 — 8C  | .02     | 1600       | 1 1/2 × 5/8 × 3/8       | .70        |
| P4 — 12  | .03     | 150        | 1/2 × 5/8 × 3/16        | .70        |
| P1 — 81  | .03     | 150        | 3/4 × 3/8 × 1/8         | .60        |
| P1 — 82  | .03     | 400        | 3/4 × 3/8 × 1/4         | .60        |
| P1 — 83  | .03     | 600        | 3/4 × 3/8 × 1/4         | .60        |
| P1 — 84  | .03     | 1600       | 1 1/2 × 3/8 × 1/4       | .70        |
| P4 — 13  | .05     | 150        | 1/2 × 3/8 × 1/4         | .90        |
| P1 — 9   | .05     | 150        | 3/4 × 3/8 × 1/8         | .50        |
| P1 — 9A  | .05     | 400        | 3/4 × 3/8 × 1/4         | .50        |
| P1 — 91  | .05     | 600        | 3/4 × 3/8 × 1/4         | .50        |
| P1 — 92  | .05     | 1600       | 1 1/2 × 1/2 × 3/8       | .80        |
| P1 — 10  | .1      | 150        | 3/4 × 3/8 × 3/16        | .50        |
| P1 — 10A | .1      | 400        | 3/4 × 3/8 × 1/4         | .50        |
| P1 — 10B | .1      | 600        | 1 1/4 × 3/8 × 1/4       | .50        |
| P1 — 11  | .25     | 150        | 1 × 3/8 × 1/4           | .60        |
| P1 — 11A | .25     | 400        | 1 1/2 × 1/2 × 3/8       | .80        |
| P1 — 11B | .25     | 600        | 1 1/2 × 5/8 × 3/8       | .90        |
| P1 — 12  | .5      | 150        | 1 1/2 × 5/8 × 3/8       | .90        |
| P1 — 12A | .5      | 400        | 1 1/2 × 5/8 × 1/2       | 1.00       |
| P1 — 12B | .5      | 600        | 1 1/2 × 3/4 × 1/2       | 1.25       |
| P1 — 13  | 1.      | 150        | 1 1/2 × 3/4 × 1/2       | 1.50       |
| P1 — 14  | 2.      | 150        | 1 1/2 × 1 × 1           | 2.00       |

| CAT. No. | CAP MFD | VOLTS D. C. | DIMENSIONS |       | PRICE LIST |
|----------|---------|-------------|------------|-------|------------|
|          |         |             | LEN.       | DIAM. |            |
| P5 — 1   | .00005  | 600         | 1/2        | 3/16  | .40        |
| P5 — 2   | .0001   | 600         | 1/2        | 3/16  | .40        |
| P5 — 3   | .00025  | 600         | 1/2        | 3/16  | .40        |
| P5 — 4   | .0005   | 600         | 1/2        | 3/16  | .40        |
| P5 — 5   | .001    | 200         | 1/2        | 3/16  | .40        |
| P5 — 51  | .001    | 600         | 1/2        | 1/4   | .40        |
| P5 * 6   | .002    | 200         | 1/2        | 3/16  | .40        |
| P5 — 61  | .002    | 600         | 5/8        | 1/4   | .40        |
| P5 — 7   | .003    | 200         | 1/2        | 3/16  | .40        |
| P5 — 71  | .003    | 600         | 1/2        | 1/4   | .50        |
| P5 — 9   | .005    | 200         | 5/8        | 3/16  | .40        |
| P5 — 91  | .005    | 400         | 5/8        | 1/4   | .40        |
| P5 — 92  | .005    | 600         | 5/8        | 1/4   | .50        |
| P5 — 12  | .01     | 200         | 5/8        | 1/4   | .50        |
| P5 — 12A | .01     | 400         | 3/4        | 1/4   | .50        |
| P5 — 12B | .01     | 600         | 3/4        | 1/4   | .50        |
| P5 — 13  | .02     | 200         | 5/8        | 3/8   | .50        |
| P5 — 13A | .02     | 400         | 3/4        | 3/8   | .50        |
| P2 — 8A  | .02     | 600         | 3/4        | 3/8   | .50        |
| P5 — 14  | .05     | 200         | 3/4        | 3/8   | .50        |
| P2 — 9   | .05     | 400         | 3/4        | 3/8   | .50        |
| P2 — 9A  | .075    | 600         | 3/4        | 3/8   | .50        |
| P2 — 10  | .1      | 200         | 3/4        | 5/8   | .60        |

All sizes = 1/32" on O.D.

All Sizes = 1/16" on Length

at added costs.

### \*NOTES:

All P1 and P4 are flat shape. All P5 and P2 are round. All units have Bakelite Resinoid Ends. Leads cannot pull or melt out. All can be used on applications up to 90 C without damage to the capacitors.

Pats. Pending 5/47

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BY

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NEW YORK, N. Y.

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## Features:

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5. Smaller . . . Less Room

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RESINOID  
SEALED  
CANNOT MELT

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NOW RELEASED FOR PUBLIC USE.



FOR D.C. OR A.C. AT  
90° C CONTINUOUS

BAKELIZED  
TUBES

**TYPE P6**  
Pats. applied for

| CAT. No. | CAP MFD | 150 V D X L | List Price | 200 V D X L | List Price | 400 V D X L  | List Price | 600 V D X L   | List Price | 1000 V D X L | List Price | 1500 V D X L | List Price | 2000 V L    |
|----------|---------|-------------|------------|-------------|------------|--------------|------------|---------------|------------|--------------|------------|--------------|------------|-------------|
| P6-D     | .00005  | XXXXXX      |            | XXXXXX      |            | XXXXXX       |            | 1/4 x 5/8     | .30        | 3/8 x 7/8    | .50        | 3/8 x 7/8    | .60        | 1/2 x 1     |
| P6-C     | .0001   | XXXXXX      |            | XXXXXX      |            | XXXXXX       |            | 1/4 x 5/8     | .30        | 3/8 x 7/8    | .50        | 3/8 x 7/8    | .60        | 1/2 x 1     |
| P6-B     | .00025  | XXXXXX      |            | XXXXXX      |            | XXXXXX       |            | 1/4 x 5/8     | .30        | 3/8 x 7/8    | .50        | 3/8 x 7/8    | .60        | 1/2 x 1     |
| P6-A     | .0005   | XXXXXX      |            | XXXXXX      |            | XXXXXX       |            | 1/4 x 5/8     | .30        | 3/8 x 7/8    | .50        | 3/8 x 7/8    | .60        | 1/2 x 1     |
| P6-1     | .001    | 1/4 x 7/8   | .40        | XXXXXX      |            | XXXXXX       |            | 1/4 x 7/8     | .30        | 3/8 x 7/8    | .50        | 1/2 x 1      | .60        | 5/8 x 1     |
| P6-2     | .002    | 1/4 x 7/8   | .40        | XXXXXX      |            | XXXXXX       |            | 5/16 x 7/8    | .30        | 1/2 x 7/8    | .50        | 1/2 x 1      | .60        | 5/8 x 1     |
| P6-2A    | .0025   | 1/4 x 7/8   | .50        | XXXXXX      |            | XXXXXX       |            | 5/16 x 7/8    | .30        | 1/2 x 7/8    | .50        | 1/2 x 1      | .60        | 5/8 x 1     |
| P6-3     | .003    | 1/4 x 7/8   | .50        | XXXXXX      |            | XXXXXX       |            | 5/16 x 7/8    | .30        | 1/2 x 7/8    | .50        | 1/2 x 1      | .60        | 5/8 x 1     |
| P6-4     | .004    | 1/4 x 7/8   | .50        | XXXXXX      |            | XXXXXX       |            | 5/16 x 7/8    | .30        | 1/2 x 7/8    | .50        | 5/8 x 1      | .60        | 5/8 x 1 1/4 |
| P6-5     | .005    | 1/4 x 7/8   | .50        | XXXXXX      |            | 5/16 x 7/8   | .30        | 5/16 x 7/8    | .30        | 5/8 x 7/8    | .50        | 5/8 x 1      | .60        | 5/8 x 1 1/4 |
| P6-6     | .006    | 1/4 x 7/8   | .50        | XXXXXX      |            | 5/16 x 7/8   | .30        | 5/16 x 7/8    | .30        | 5/8 x 7/8    | .50        | 5/8 x 1      | .60        | 5/8 x 1 1/4 |
| P6-7     | .008    | 5/16 x 7/8  | .50        | XXXXXX      |            | 5/16 x 7/8   | .30        | 5/16 x 7/8    | .30        | 5/8 x 7/8    | .50        | 5/8 x 1 1/4  | .60        | 5/8 x 1 1/4 |
| P6-8     | .01     | 5/16 x 7/8  | .50        | 5/16 x 7/8  | .30        | 3/8 x 7/8    | .30        | 3/8 x 7/8     | .30        | 1/2 x 1 1/4  | .50        | 5/8 x 1 1/4  | .60        | 5/8 x 1 1/4 |
| P6-9     | .02     | 3/8 x 7/8   | .50        | 3/8 x 7/8   | .30        | 7/16 x 7/8   | .30        | 1/2 x 7/8     | .30        | 5/8 x 1 1/4  | .50        | 5/8 x 1 1/4  | .70        | 3/4 x 1 1/4 |
| P6-10    | .03     | 3/8 x 7/8   | .50        | 7/16 x 7/8  | .30        | 7/16 x 1 1/4 | .30        | 1/2 x 1 1/4   | .35        | 5/8 x 1 1/4  | .70        | 5/8 x 1 1/4  | .80        | 3/4 x 1 1/4 |
| P6-10A   | .04     | 3/8 x 7/8   | .50        | 7/16 x 7/8  | .30        | 7/16 x 1 1/4 | .30        | 1/2 x 1 1/4   | .35        | 5/8 x 1 1/4  | .80        | 3/4 x 1 1/2  | .95        | 3/4 x 2     |
| P6-11    | .05     | 3/8 x 7/8   | .50        | 7/16 x 7/8  | .30        | 7/16 x 1 1/4 | .35        | 1/2 x 1 1/4   | .35        | 3/4 x 1 1/4  | .90        | XXXXXX       |            | XXXXXX      |
| P6-12    | .1      | 1/2 x 7/8   | .50        | 3/8 x 1 3/8 | .30        | 7/16 x 1 1/4 | .40        | 1/2 x 1 1/4   | .40        | XXXXXX       |            | XXXXXX       |            | XXXXXX      |
| P6-13    | .25     | 3/8 x 1 3/8 | .60        | 1/2 x 1 1/2 | .40        | 3/4 x 2      | .50        | 3/4 x 2 1/8   | .60        | XXXXXX       |            | XXXXXX       |            | XXXXXX      |
| P6-14    | .5      | 1/2 x 1 3/8 | .70        | 5/8 x 1 1/2 | .50        | 1 x 2        | .60        | 1 x 2 1/8     | .80        | XXXXXX       |            | XXXXXX       |            | XXXXXX      |
| P6-15    | 1       | 3/4 x 1 3/8 | .80        | 7/8 x 1 1/2 | .80        | 1 1/8 x 2    | .90        | 1 1/8 x 2 1/8 | 1.50       | XXXXXX       |            | XXXXXX       |            | XXXXXX      |



## DUMONT Electrolytics

| CAT. No. | VOLT. W. | CAP. MFD | SIZES         | LIST PRICES |
|----------|----------|----------|---------------|-------------|
| E 1—0    | 25       | 10       | 3/8 x 1 1/2   | .58         |
| E 1—22   | 25       | 25       | 1/2 x 1 1/2   | .69         |
| E 1—3    | 25       | 50       | 3/4 x 1 1/2   | .85         |
| E 1—4    | 25       | 100      | 5/8 x 2 1/4   | 1.25        |
| E 1—5    | 50       | 10       | 1/2 x 1 1/2   | .64         |
| E 1—6    | 50       | 25       | 1/2 x 1 1/2   | .80         |
| E 1—7    | 50       | 50       | 1/2 x 2 1/4   | 1.00        |
| E 1—8    | 50       | 100      | 5/8 x 2 1/4   | 1.40        |
| E 1—9    | 150      | 4        | 1/2 x 1 1/2   | .55         |
| E 1—10   | 150      | 8        | 1/2 x 1 1/2   | .65         |
| E 1—11   | 150      | 10       | 1/2 x 1 1/2   | .69         |
| E 1—12   | 150      | 16       | 5/8 x 1 1/2   | .80         |
| E 1—13   | 150      | 20       | 5/8 x 1 1/2   | .87         |
| E 1—14   | 150      | 30       | 5/8 x 2 1/4   | .90         |
| E 1—15   | 150      | 40       | 3/4 x 2 1/4   | .95         |
| E 1—16   | 150      | 50       | 3/4 x 2 1/4   | 1.25        |
| E 1—17   | 150      | 20-20    | 3/4 x 2 1/4   | 1.50        |
| E 1—18   | 150      | 30-30    | 7/8 x 2 1/4   | 1.75        |
| E 1—19   | 150      | 40-40    | 1 x 2 1/4     | 2.00        |
| E 1—20   | 150      | 50-50    | 1 x 2 1/4     | 2.25        |
| E 1—21   | 250      | 8        | 1/2 x 2 1/4   | .75         |
| E 1—22   | 250      | 16       | 1/2 x 2 1/4   | 1.20        |
| E 1—23   | 450      | 4        | 3/8 x 2 1/4   | .80         |
| E 1—24   | 450      | 8        | 3/4 x 2 1/4   | .87         |
| E 1—25   | 450      | 10       | 3/4 x 2 1/4   | .95         |
| E 1—26   | 450      | 12       | 1 x 2 1/4     | 1.00        |
| E 1—27   | 450      | 16       | 1 1/8 x 2 1/4 | 1.28        |
| E 1—28   | 450      | 20       | 1 1/4 x 2 1/4 | 1.40        |

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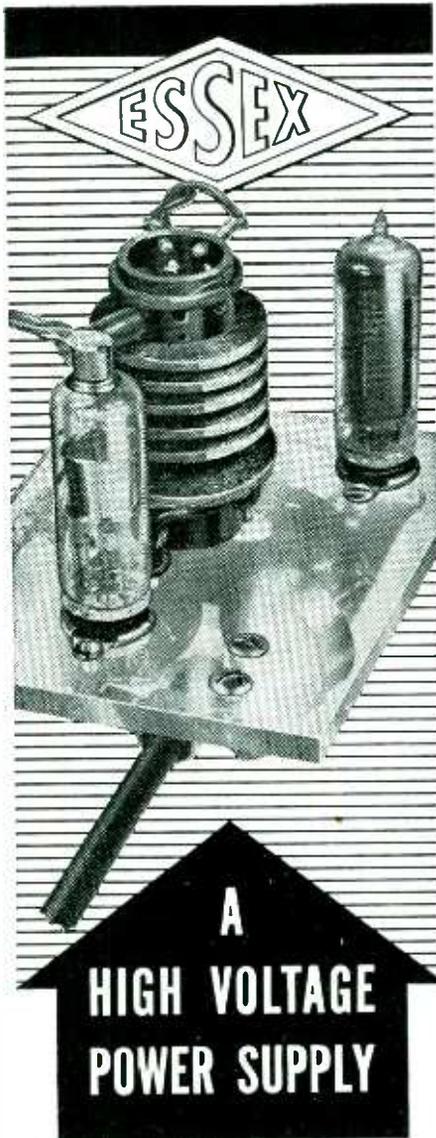
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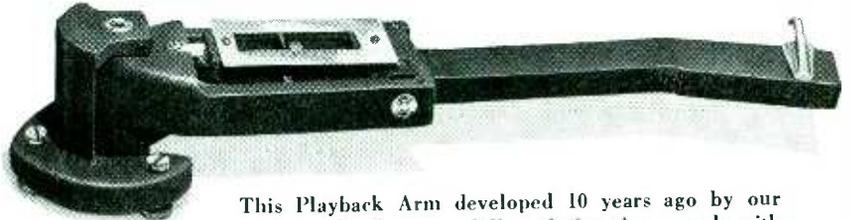
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| AUDAK            | RADIO CITY |
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| BILEY            | RAYTHEON   |
| BROWNING         | REK-O-CUT  |
| BRUSH            | SHURE      |
| CANNON           | SILVER     |
| CENTRALAB        | SIMPSON    |
| CINAUDAGRAPH     | SIMPLEX    |
| CORNELL-DUBILIER | SUPREME    |
| DAVEN STROMBERG  | CARLSON    |
| DUMONT           | SYLVANIA   |
| EIMAC            | RCA        |
| ELECTRO-VOICE    | TAYLOR     |
| GAMMATRON        | THORDARSON |
| GARRARD          | TRIMM      |
| GE               | TRIPLETT   |
| HALLICRAFTERS    | UNIVERSITY |
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## BUYERS' GUIDE

THE REFERENCE BOOK OF THE ELECTRONIC DESIGN ENGINEER

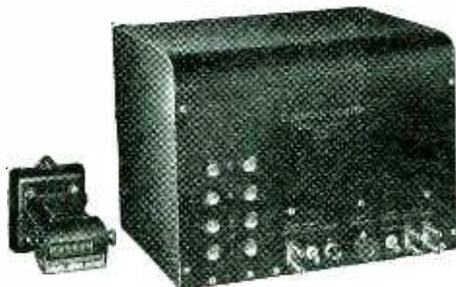
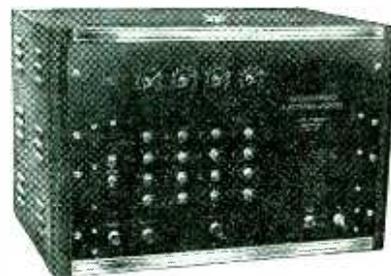


# HIGH SPEED PREDETERMINED ELECTRONIC COUNTERS, INTERVAL TIMERS, DECIMAL SCALERS & COUNT DETECTORS

## PREDETERMINED COUNTERS

- ★ **PREDETERMINED COUNTS**—of absolute accuracy
- ★ **COUNTING RATES**—to 20,000 per second
- ★ **CONTROL RATES**—to 15,000 per minute
- ★ **AUTOMATIC RESET**—instantaneous at completion of count

POTTER Predetermined Electronic Counters extend the field of automatic counting and control far beyond the scope and capabilities of existing mechanical and electro-mechanical devices. There are no moving parts, therefore, wear, slippage and inertial effects are eliminated. Normal counting rate is up to 20,000 per second. Control rates run as high as 15,000 per minute and even these high speeds can be exceeded if required. Potter counters are readily applicable to any machine or process requiring the exact measurement of QUANTITY, LENGTH, TIME, VELOCITY, FREQUENCY or REVOLUTION. Count detectors of all types are available in standard Potter units for use with these instruments.



## COUNTERS AND SCALERS

- ★ **ABSOLUTE ACCURACY**—at all rated speeds
- ★ **HIGH SPEEDS**—to 100,000 per second
- ★ **DECIMAL SCALE**—no complex translation
- ★ **VISUAL REGISTRATION**—of every count

Potter Electronic Counting and Scaling Instruments meet all requirements of high speed INDUSTRIAL COUNTING, MEASURING AND TIMING and are equally suitable for PRECISION COUNTING and SCALING in RADIO-ACTIVITY MEASUREMENTS and similar applications. Four models designated 320, 330, 340 and 340B afford full flexibility in satisfying the needs of most applications. Other models having additional features, are available. Input actuation can be derived from all types of actions such as contact closures, shaft rotations, photoelectric equipment, electro-magnetic pickup coils, Geiger-Mueller tubes and other devices. Potter Count Detectors using photo electric and electro-magnetic principles are available for actuations of the counters.

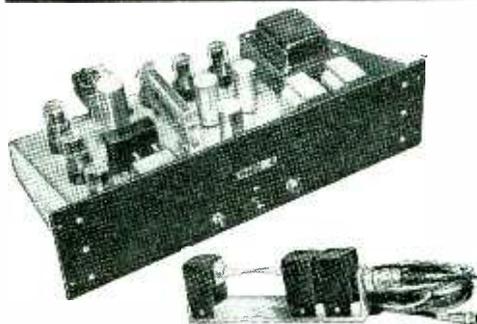
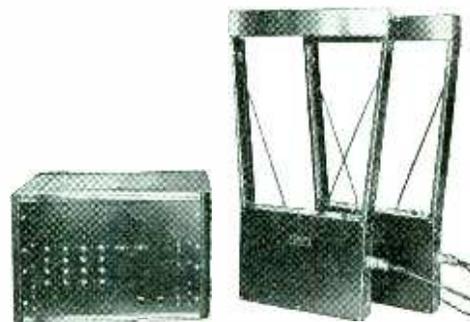
## INTERVAL TIMERS

- ★ **HIGH ACCURACY**—greater than 0.000001 second
- ★ **DIRECT READING**—no complex translation
- ★ **DEPENDABLE**—built for continuous duty
- ★ **STABLE CIRCUITS**—no adjustments required

Designed for the exacting ballistic measurement work of the government proving grounds, these Electronic Interval Timers are now available for laboratory and industrial applications where microsecond timing is required. Their performance greatly exceeds that of other types of timers—electronic, synchronous motor or mechanical. Potter Interval Timers are entirely electronic in operation, and employ no moving parts to wear or slip.

## PHOTOELECTRIC SCREENS

This screen, designed to actuate Potter Interval Timers, is widely used in measuring small arms projectile velocities. A missile passing through any part of the sensitive area generates a pulse for operation of Potter Interval Timers.



## PHOTOELECTRIC COUNT DETECTORS

- ★ **COUNTING RATE**—to 15,000 per minute
- ★ **RESOLUTION**—counts object small as 0.010"
- ★ **SENSITIVITY**—responds to 20% changes in light
- ★ **IRREGULAR SHAPES**—easily counted

The High Resolution Photoelectric Detectors are designed for use with standard Potter Electronic Predetermined Counter equipment for high speed counting of miscellaneous small objects of any shape—pills, bottle caps, watch screws, buttons, hardware, etc. The Count Detector permits the application of electronic counting to many items, which because of small size, irregular shape or light weight, could not heretofore be accurately counted at high speed. Other count Detectors for counting tin plate, cartons, bottles, etc., are also available.

## WHAT'S YOUR PROBLEM?

If you have a specific application problem related to high speed timing, counting or control, or if you desire an interview with a Potter representative to discuss your problem, call or write Potter Instrument Company, Department J. No obligation will be incurred.

## WRITE FOR LITERATURE

Complete information including specifications, technical data and descriptive material covering typical applications of Potter Electronic Equipment will be forwarded upon request. Please write on company letterhead and state which type of equipment you are interested in.



**POTTER INSTRUMENT COMPANY**  
136-56 ROOSEVELT AVENUE, FLUSHING, NEW YORK



# BRAININ ELECTRICAL CONTACTS

**PRECISION SERVICE...**  
*from Order to Delivery!*

Your production problems may be simplified when you consult an organization with a long record of successfully serving electrical manufacturers in all types of precision work. Whether you are seeking advice on new applications, redesign, or wish your own designs executed, send us your requirements, and they will receive our most careful attention.

**Extra KNOW-HOW**  
*for your specific design problems*

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PRECIOUS METAL PRODUCTS FOR ELECTRICAL MANUFACTURERS

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Types:  
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501B  
501C  
Accuracy  
½ of 1%

### MULTIMETERS and REGULAR METERS

AC and DC types, high accuracy, multiple ranges. 2 microamperes to 1 ampere DC. 2 milliamperes to 3 amperes AC.

### ELECTROSTATIC VOLTMETERS

Ranges 150-v. to 35,000-v. AC or DC. Resistance exceeds million megohms. Can measure static electricity.

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Laboratory and production measurements on magnets and magnetic circuits. Single push button return-to-zero.

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High sensitivities, low power factors. New types soon to be announced.

*Special apparatus built to order*

## RAWSON ELECTRICAL INSTRUMENT COMPANY

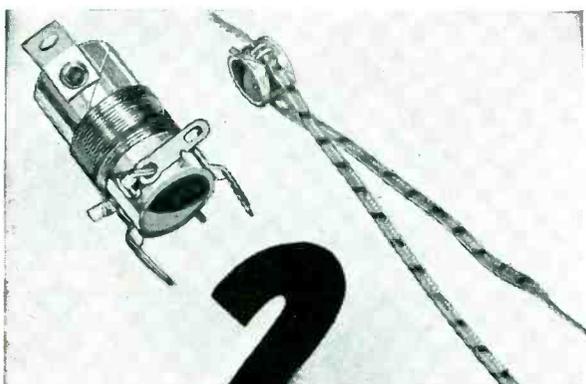
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a spirally laminated paper base Phenolic Tube.

For coil forms in all standard broadcast receiving sets, specify #96 Cosmalite.

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**\$2.00** per copy  
(Directory Section only)

**REQUESTS** for additional copies, sent on company letterhead and addressed to **ELECTRONICS**, Dept. BGR, 330 W. 42nd St., N. Y. 18, will be taken care of promptly.

# REK-O-KUT *Your Leading Source of Top Performing... QUALITY Products*



"Master - Pro"

## OVERHEAD MECHANISM with a mechanical SPIRALING DEVICE

illustrated with

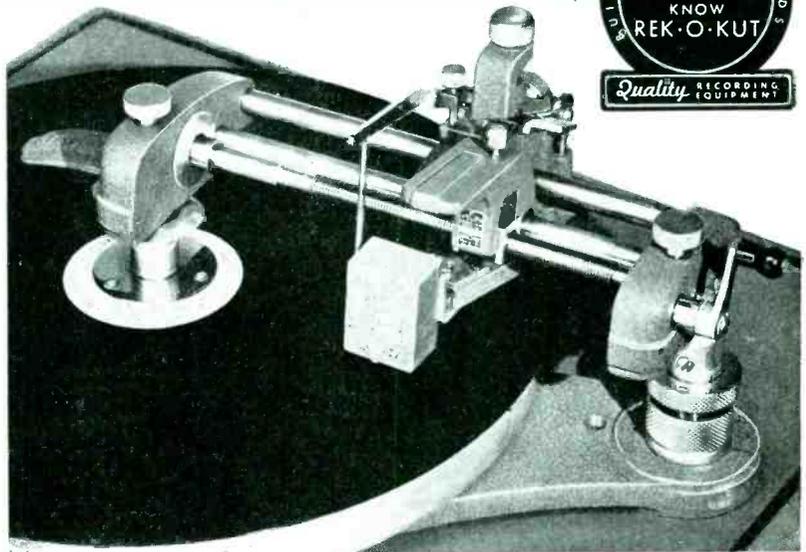
Model "V" 16" Recording Turntable  
Spiraling Device

Features:

1. **QUIET** — No gear noise or ratchet click.
2. **FASTER** — A spiral up to a 3/16" pitch can be cut.
3. **ACTION** — Velvet smoothness of action obtained by the use of newly designed over-running clutch.
4. **FOOLPROOF** —
  - (a) One clutch is built into the leadscrew for the spiral.
  - (b) The second clutch is built into the crank. This is an exclusive Rek-O-Kut safety feature which causes the crank to over-run. Should an obstruction jam the crank, or the operator accidentally attempt to turn it in the wrong direction, the recording will not be spoiled.

Standard units are equipped with 120 line outside in leadscrews. Also available in O. I. or I. O. — 90, 105, 120, at no extra cost, if requested when equipment is ordered.

Models M-5S equipped with magnetic cutter.



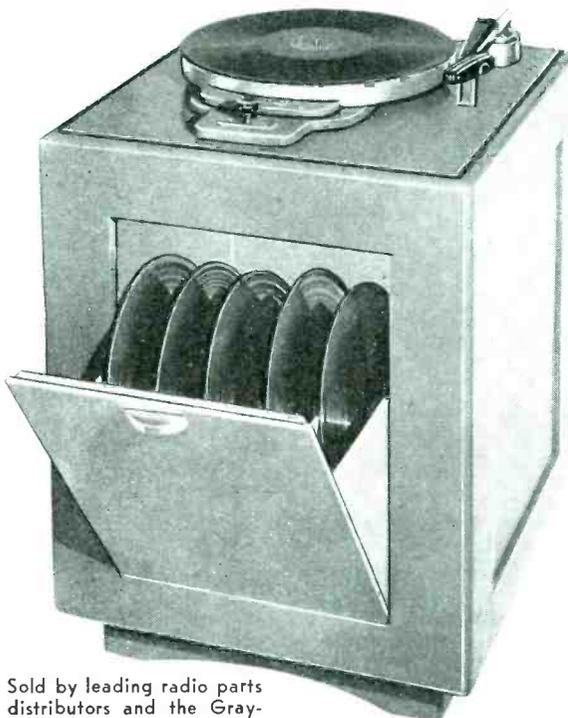
Featured with the "MASTERMATIC"  
Semi-Automatic Speed Shift\*

1. **CHASSIS** — Cast iron, ribbed L beam type, designed to rest on three points when mounted.
2. **TURNTABLE** — Lathe turned and balanced. Made of Laboratory tested aluminum alloy casting.
3. **TURNTABLE SHAFT** — Ground to a micro finish and lapped into the bearing for a precise fit.
4. **MOTOR** — Continuous duty, capacitor start and run, with rotor dynamically balanced to extra special tolerances, providing smooth, steady quiet power.
5. **IDLERS** — Made of a neoprene compound which will resist oil, wear and give maximum traction with minimum slippage.

AVAILABLE IN TWO MODELS

MODEL "V" DELUXE (illustrated) equipped with Mastermatic speed shift.  
MODEL "V" STANDARD.....without Mastermatic speed shift.

MODEL  
"V"  
OUTSTANDING  
FEATURES



Sold by leading radio parts distributors and the Gray-bar company.

Write for Descriptive Literature on these and other Rek-o-Kut products.

### \*"Mastermatic" SEMI AUTOMATIC SPEED SHIFT

This is how it works:

1. Press the control knob down.
2. Slide to the left for 78 or to the right for 33 1/3. Your turntable is now turning at its proper speed.
3. To stop turntable and shut off motor, slide control knob back to neutral.



### New Cabinet Console

1. Record Holder
2. Leveling Legs
3. Cabinet Rumble Reduced to minimum
4. Electrical facilities Attached to motor panel

ILLUSTRATED WITH  
MODEL G-2 TRANSCRIPTION  
TURNTABLE

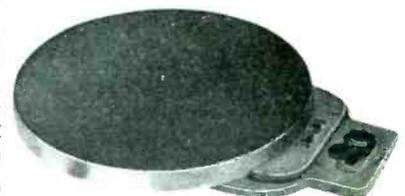
5. Ventilation... motor chamber Completely ventilated
6. Construction: Piano type For Rigidity
7. Finish—Grey metallic
8. Dimensions: 32" high x 24" wide x 26" deep

MODEL C-7... furnished with Motor Panel cut out for installing REK-O-KUT Model "V" Recording Turntable or REK-O-KUT Model "G" Transcription Turntable.

MODEL C-7A... furnished with a Blank Panel for installations of other make turntables.

### MODEL "G-2" TRANSCRIPTION TURNTABLE

1. **STARTING** ● Standing start to full speed at 78 rpm requires 3/4 of a turn—33 1/3 rpm 1/4 of a turn.
2. **CUEING** ● The 15 1/2" turntable allows the transcription, permits the operator to cue from the rim of the disc instead of the face.
3. **SPEED** ● Maintains a constant speed that betters the 1/2 of 1% regulation required by the N.A.B.
4. **NOISE LEVEL** ● 45 db below maximum recording level.



# REK-O-KUT COMPANY

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# speed production — cut costs with

## **EJECT-O-MATIC**

### AUTOMATIC-FEED SOLDERING IRONS AND ACCESSORIES



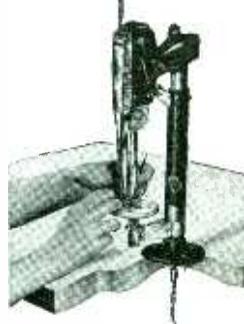
#### HEAVY DUTY EJECT-O-MATIC

High-heat 100 and 150-watt models for general heavy electrical, electronic and repair work. Also available in long-nosed "instrument" model. Weight only 22 oz.



#### STANDARD EJECT-O-MATIC

Popular 50 and 75-watt models for general radio and electrical work. Special long-nosed models available for soldering inside deep receptacles, hard-to-get relays and assemblies. Weight only 18 oz.



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**TIPS**— Multi-clad tips available in eight different sizes and shapes.

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As suppliers to the foremost radio and electronic manufacturers, we are in a position to give prompt and satisfactory service on all standard and special items required by the electronic trade.

We invite inquiries from radio, television, transmitting, communication systems, etc. manufacturers, laboratories and industrial plants.

Normally we supply standard items in a reasonably short time.

*When you need something standard, something special or something quick,*

### Try Aerolite First

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Terminal strips  
Angles  
Brackets  
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Coils  
Fuse mountings  
Terminal Boards  
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## AEROLITE ELECTRONIC HARDWARE CORP.

Manufacturers of  
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YOUR PRODUCT  
at point of strain

Protect product saleability too—by insuring long life for cords, cables and conductors. Genuine "GRIPMASTER" Strain Reliefs provide these vital features—

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- ★ Eliminate taping or threading
- ★ Prevent unraveling
- ★ Prevent cord pull damage
- ★ All sizes and styles
- ★ Easy to apply
- ★ Inexpensive

Gripmaster Strain Reliefs are "tremendous trifles" that make good products better!

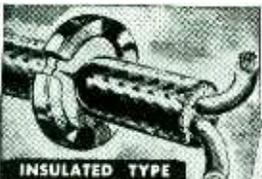
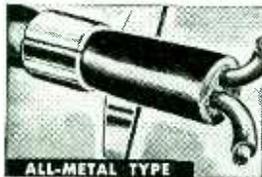
Ask for samples.

## 4 WAYS TO END ALL CORD AND CABLE SERVICE FAILURES

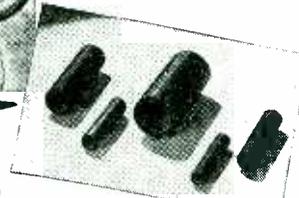
*Economically*

## GRIPMASTER STRAIN RELIEFS

Interruptions due to cable and cord connection failures are eliminated because they anchor the cord to the product at the point of strain. GRIPMASTER Strain Reliefs can withstand pulls up to 100 lbs., and are acceptable to Underwriters Laboratories. All types Reg. U. S. Pat. Off.



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THE REFERENCE BOOK OF THE ELECTRONIC DESIGN ENGINEER

# CHATHAM TUBES

Tubes listed on this page can be supplied direct from stock. Many other types are also available for immediate delivery. Write for catalog today. CHATHAM also designs, develops and manufactures special tubes to exact customer specification. Inquiries regarding this service are invited.



## CHATHAM 866-A RECTIFIER

A rugged half wave Mercury Vapor rectifier to withstand high peak inverse voltages. Heavy duty filament. Fil. 2.5 volts, 5.0 amp. . . . Peak inverse anode voltage 10,000 volts, .25 amp. average anode current.



## CHATHAM 394-A THYRATRON

A Mercury Vapor and Argon filled thyatron for grid controlled rectifier service . . . Amb. Temp. range of  $-40^{\circ}\text{C}$  to  $+80^{\circ}\text{C}$ , Heater 2.5 volts, 3.2 amp. . . . Peak inverse anode voltage 1250 volts, 640 ma. average anode current.



## CHATHAM 5594 THYRATRON

Xenon filled thyatron. Operates through ambient temperatures from  $-55^{\circ}\text{C}$  to  $+90^{\circ}\text{C}$  without auxiliary equipment to maintain bulb temperature. Fil. 2.5 volts, 5.0 amperes . . . Peak inverse 5000 volts; anode current 0.5 amps. average, 2.0 amps. peak.



## CHATHAM 2050 THYRATRON

A Xenon filled shield grid thyatron for grid controlled rectifier service. Permits use of high resistance in grid current. Heater 6.3 volts, 0.6 amp. . . . Peak inverse plate voltage 1300 volts, average anode current 100 MA.



## CHATHAM 884 THYRATRON

An Argon filled thyatron for use as a sweep circuit oscillator in cathode ray tube circuits. Stable oscillator. Heater 6.3 volts, 0.6 amp. . . . Peak forward plate voltage 300 volts, 75 ma. average plate current.



## CHATHAM 4B32 RECTIFIER

A rugged half wave Xenon filled rectifier. Operates in any position throughout an ambient temperature range of  $-75^{\circ}\text{C}$  to  $+90^{\circ}\text{C}$  Fil. 5 volts, 7.5 amp. . . . Inverse peak anode voltage 10,000 volts, 1.25 amp. average anode current.



## CHATHAM 2D21 THYRATRON

A Xenon filled shield grid thyatron for grid controlled rectifier service. Permits use of high resistance in the grid circuit. Heater 6.3 volts, .6 amp. . . . Inverse peak plate voltage 1300 volts, 100 ma. average plate current.



## CHATHAM 2A4G THYRATRON

An Argon filled thyatron for grid controlled rectifier service . . . Quick heating time . . . High peak currents. Fil. 2.5 volts, 2.5 amp. . . . Peak inverse plate voltage 200 volts, 100 ma. average, plate current 1.25 amp. peak plate current.



## CHATHAM 872-A RECTIFIER

A half wave Mercury Vapor rectifier to withstand high peak inverse voltages. Heavy duty filament. Fil. 5 volts, 7.5 amp. . . . Peak inverse anode voltage 10,000 volts, 1.25 amp. average anode current.



## CHATHAM 1Y2 RECTIFIER

High voltage vacuum rectifier for Television, Pre-cipitrons, and similar applications. Low filament power and negligible dielectric loss permit efficient operation from an R. F. supply. Fil. 1.25 volts, 265 ma. . . . Inverse Peak plate voltage 50,000 volts, 2 ma. average plate current, 18 ma. peak plate current.



## CHATHAM 17 THYRATRON

A Mercury Vapor thyatron for grid controlled rectifier and general application . . . rugged filamentary cathode. Fil. 2.5 volts, 5.0 amp. . . . Peak inverse anode voltage 5,000 volts, 0.5 amp. average anode current.



## CHATHAM 3B28 RECTIFIER

This rugged half wave Xenon filled rectifier will operate in any position and throughout an ambient temperature range of  $-75^{\circ}\text{C}$  to  $+90^{\circ}\text{C}$ . Fil. 2.5 volts, 5.0 amp. . . . Inverse peak anode voltage 10,000 volts, .25 amp. average anode current.



## CHATHAM 1Z2 RECTIFIER

A small bulb high voltage vacuum rectifier. Low cathode heating power and low dielectric losses make tube suitable for radio frequency supply circuits. Fil. 1.5 volts, .290 amp. . . . Inverse peak plate voltage 20,000 volts, 2 ma. average plate current, 10 ma. peak plate current.

**WRITE FOR CATALOG!** The informative CHATHAM catalog contains complete information and technical data covering CHATHAM rectifiers. For your free copy, write on company letterhead today.



**CHATHAM ELECTRONICS**  
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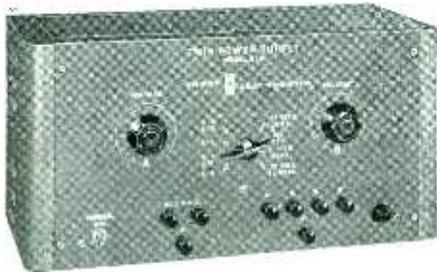
# FURST POWER SUPPLIES

MEASURING EQUIPMENT • ELECTRONIC CONTROLS



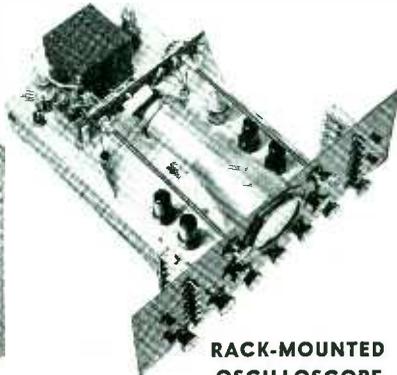
### TWIN POWER SUPPLY

Two independent, regulated sources of continuously adjustable D.C. 0 to 350 volts at 0-60 Ma. Write for Circular 210.



### REGULATED "ARTIFICIAL D.C. POWER LINE"

115 V.A.C. source provides continuously adjustable A.C. and D.C. output from 0 to 135 volts to permit rapid laboratory or production tests on A.C.-D.C. radios, sound equipment, universal motors, etc. Write for Circular 310.



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For convenient analysis of rack-mounted equipment or for continuous observation of circuit performance.

Electronic Instruments Designed for Your Special Requirements.



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every electronic component or packaged equipment item is listed in the pages

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Ward FM antennas stand head and shoulders above the field for value. Available in straight or folded dipole types (with or without reflector kit), they adapt easily to varying individual requirements. Providing the maximum electrical efficiency needed for finest FM reception, they are easy to install securely. Their trouble-free operation assures you extra profits. Write for free catalog today.

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FLEXIBLE INSULATION

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Satisfactory performance of electrical insulation depends on excellence of the insulation itself; proper selection to meet requirements of use; correct method of application.

## NATVAR INSULATIONS

Quality of Natvar insulations starts with materials. Raw materials, fabrics and papers are laboratory checked when received, and must meet our specifications. Materials in process are subject to constant laboratory control. Machinery and equipment are most modern. The result is an insulation of excellent electrical and physical properties and high uniformity.

## SERVICE REQUIREMENTS

Natvar insulations meet industry standards with ease. Test data, useful as a guide for suitable selection furnished on request. For problems where standard insulations do not meet service requirements, consult our engineers, without obligation.

## APPLICATION

Natvar insulations available in many types and finishes to simplify application. Our engineers will assist in matching insulation to method of application for maximum protection.

## DELIVERY

Shipment of Natvar standard insulations usually made on same day order is received, either from distributors' stocks or direct from our own. Special insulations handled with equal dispatch. To expedite shipment, give complete detail with each order.

### VARNISHED CAMBRIC

Straight cut for application to regular smooth surfaces; bias for irregular surfaces. Supplied in all normal commercial sizes and thicknesses, in yellow or black, and in four finishes, greasy, tacky, dusty and dry. Physical and electrical properties comply with A.S.T.M. Specifications with ample safety factor.

### VARNISHED CAMBRIC TAPE

Supplied straight cut or seamless bias, in all normal widths and thicknesses, yellow or black, greasy, tacky, dusty or dry. Characteristics same as for VC. Accurately slit for use in taping heads.

### VARNISHED CANVAS and DUCK

For use where greater mechanical protection is required. High strength fabrics coated with same high grade varnishes as VC.

### VARNISHED SILK

For use where requirements call for very thin, high dielectric insulation.

### VARNISHED SPECIAL RAYON

For use where high tensile and high dielectric strength are required in addition to smoothness and minimum clearance.

### VARNISHED FIBERGLAS

Natvar Varnished Fiberglass is Class B insulation for equipment which operates at temperatures above normal safe working range of varnished cambric. Has great mechanical strength and excellent dielectric properties. Available in rolls, tape and full width sheets to 36".

### SILICONE COATED FIBERGLAS

For higher permissible temperatures. Available in tape, sheets and rolls 36" wide.

### VARNISHED PAPERS

Chemically inert rope and kraft stocks selected for uniform thickness, tensile and dielectric strength and for freedom from pinholes. In yellow varnished, condenser type tissues and yellow or black varnished heavy papers.

### SATURATED SLEEVING

Smooth rayon braid, single, double or triple saturated with varnish or synthetic. Flexible and smooth for fast application to soft or stranded leads. Wide range of vivid colors for coding. All sizes.

### VARNISHED AND LACQUERED TUBING

Smooth rayon braid impregnated and coated with varnish, or coated with lacquer, in a continuous coating. Exceptionally smooth and flexible. Meets A.S.T.M. Specifications with ample margin. Several grades to meet various dielectric, aging and heat endurance requirements. Also in heavy-wall cotton braid where higher mechanical strength is required and O.D. is not a limiting factor. Vivid colors for coding. All sizes.

### IDENTIFICATION MARKERS

Short sleeves of varnished braid or extruded vinyl, marked with numbers or letters or both for identifying terminals of complex wiring systems, such as airplane ignition systems. Wide color range, any size, any marking.

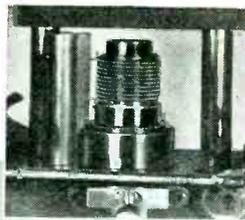
### EXTRUDED VINYL TUBING

V.I.T. No. 200 has excellent flexibility through a temperature range from  $-50^{\circ}\text{C}$ . to  $105^{\circ}\text{C}$ . Melts at high temperatures, but will not support combustion. Shows no disintegration or flaking when immersed in oil. Inert and resistant to oils, waxes, alkalis and acids and most solvents. Average tensile strength 3600 p.s.i.

Natvar No. 400 for high heat has the same inherent characteristics as V.I.T. No. 200 but has a higher resistance to heat and oil.

### SPECIAL PRODUCTS

Our laboratory, manufacturing facilities and engineers are at your service to help with problems not solved by standard materials.



### ONE OF THE REASONS WHY MORE AND MORE GIBBS MICROPOTS ARE SPECIFIED

The coiled resistance element is threaded on the mould core and made ready for the moulding process.

Core, holding resistance element, ready for mould closure and injection of bakelite. Note side core holding terminals.

Finished potentiometer unscrewed from core—resistance element and terminals are one integral part of housing.



## GIBBS MICROPOT FEATURES

CROSS-SECTION  
VIEW

# GIBBS MICROPOT

*The World's Finest*  
**PRECISION TEN TURN POTENTIOMETER**

and here are the reasons why!

**1** Moulding of resistance element as integral part of housing solidly locks every turn of resistance wire in place—No loosening or shifting.

**2** Precision ground, stainless steel, double thread, lead screw guides the rotating contact, *guarantees* smooth action, low uniform torque and accurate settings—*permanently*.

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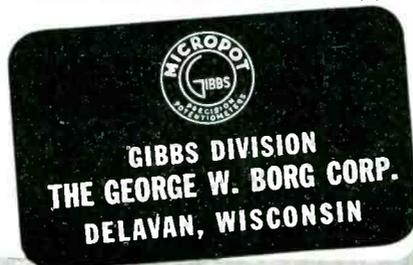
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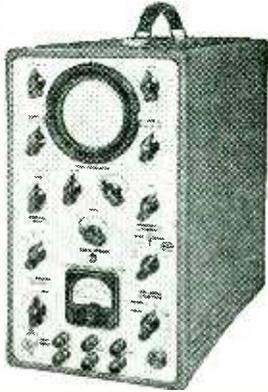
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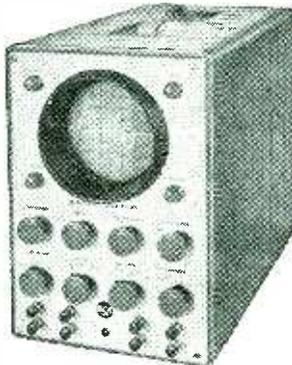
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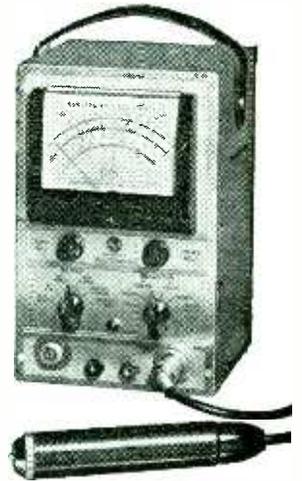


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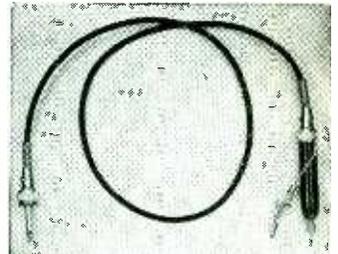
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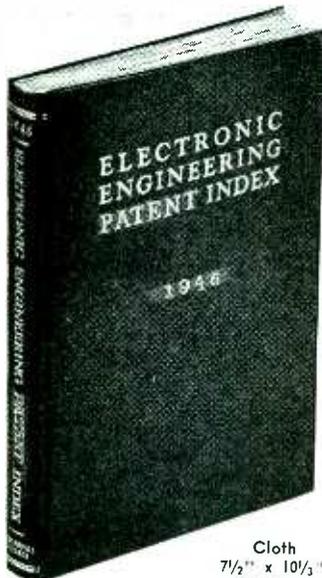
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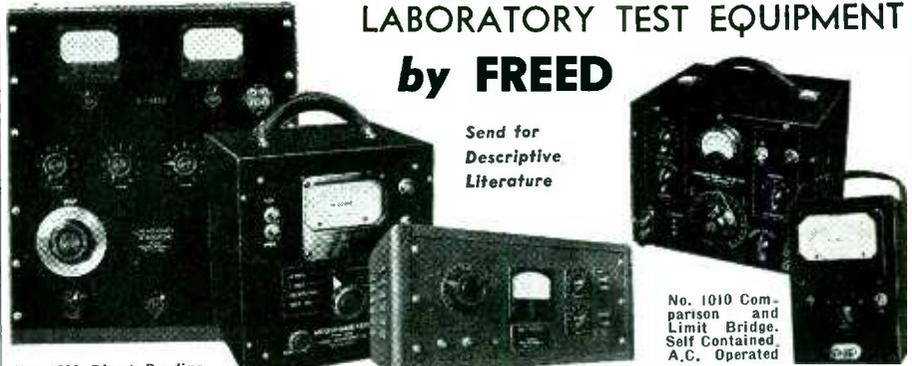
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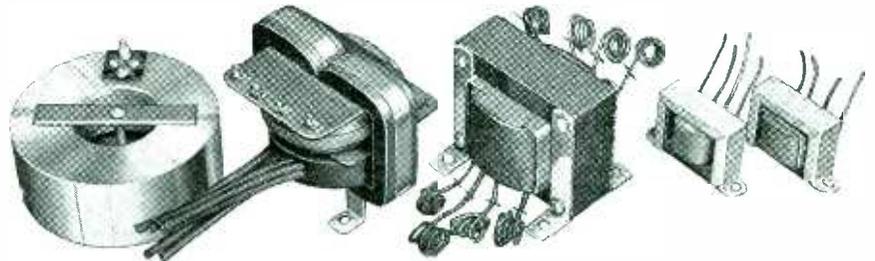
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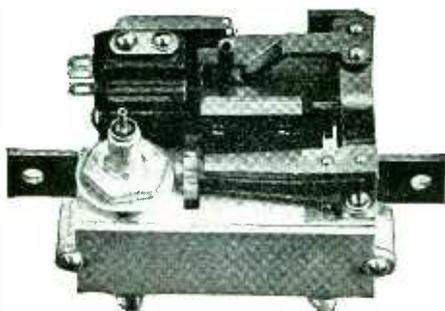
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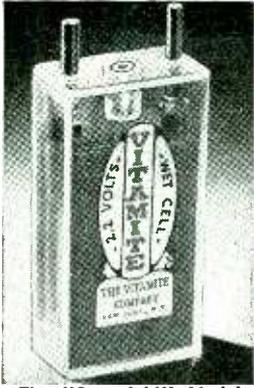
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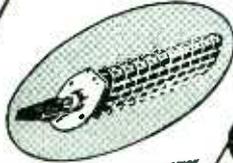
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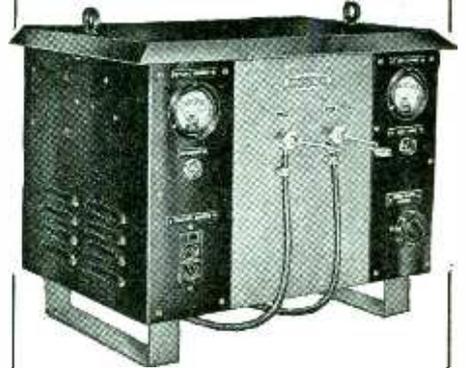
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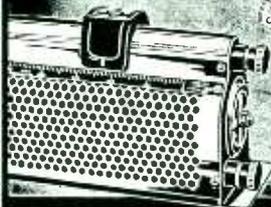
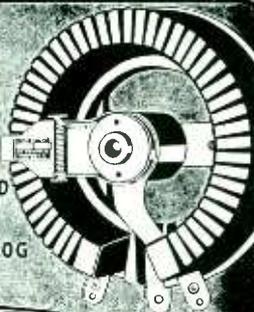
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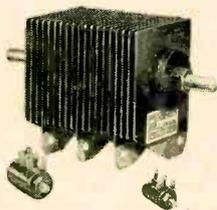
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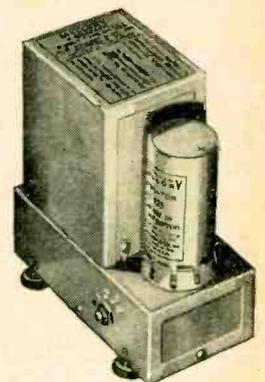
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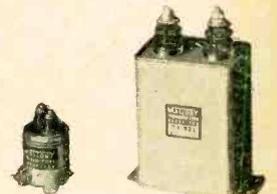
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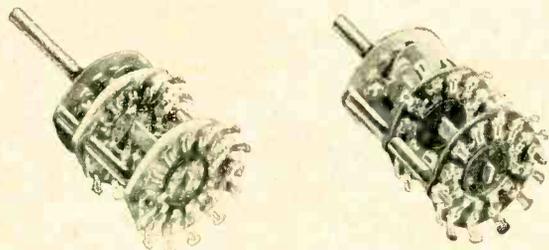


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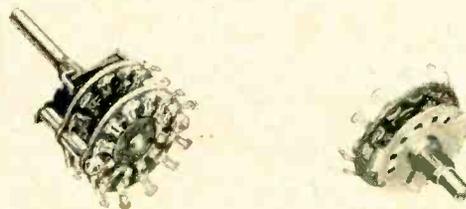
Mallory transmitting and television capacitors are built with an adequate safety factor for long life under adverse operating conditions. Available in round and square can styles.

Mallory also offers complete lines of electrostatic, mica and paper capacitors.

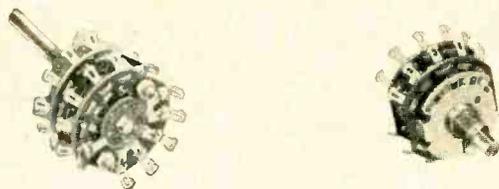
## Rotary Circuit Selector Switches



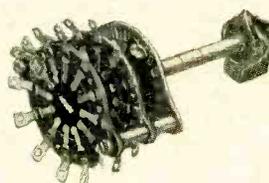
**RS-30 AND RS-40** selector switches in high grade ceramic and phenolic insulation, respectively. Designed primarily for band and tone control circuit switching in radio receivers, they are generally suitable for low-current, high frequency circuit selection in low power electrical and electronic devices. Flexibility of design permits a wide range of circuits in multiple section assembly with high torque positive hill and valley indexing. Refer Note A (Ceramic stock types 160C and 170C); also Notes B and C.



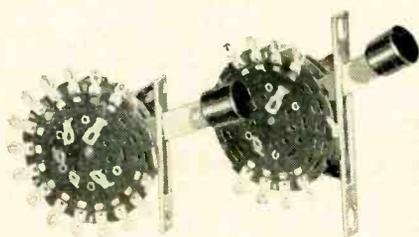
**RS-50 AND RSA-50** are selector switches of high grade phenolic insulation suitable for a wide range of radio and other electronic applications. The RS-50 employs a star wheel and ball index for medium and low torque requirements, having a wide circuit range with multiple section construction. The RSA-50 employs single spring hill and valley index embodying ear support for one or two sections and is ideally suited for low torque, band and tone switch applications where low cost is a factor. Refer Notes B and C.



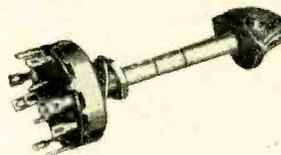
**RS-60 AND RSA-60** are switches ideal for circuit selection up to five positions. The section design is especially adapted to application where limited under-chassis space is a factor. The RS-60 employs a star wheel and ball index for medium and low torque requirements having a wide circuit range with multiple section construction. The RSA-60 employs single spring hill and valley index embodying ear support for one or two sections and is ideally suited for low torque, band and tone switch applications, where low cost is a factor. Refer Notes B and C.



**RL SWITCHES** (1200 and 1300 series) are of high quality, rugged in construction, dependable in design, capable of low current switching, especially desirable for test instrument and industrial electronic applications. Design embraces positive high torque hill and valley index, multiple section construction with excellent range of circuit combinations. It is possible to obtain from 1 to 6 circuits per section with the number of positions depending upon the circuit requirements, utilizing a 30° indexing mechanism. When using a 60° index, 1 to 3 circuits are provided. Refer Notes A, B and C.



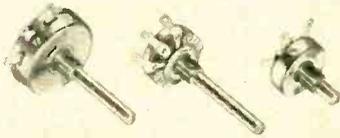
**LEVER ACTION SWITCHES** are particularly designed for intercommunication, centralized radio, sound distribution, public address and test equipment. Positive indexing available in two, three and four positions. Return spring action available in two and three positions. Both types have appropriate circuit combinations. Refer Notes A and B.



**3100 SWITCHES** are of compact, self-enclosed design, especially intended for radio frequency, tone control, antenna switching, intercommunication, test equipment and many other electronic devices where space is at a premium. Available in twelve or eighteen positions in single section construction, with a wide range of circuit combinations. Refer Notes A, B and C.

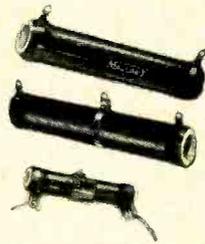
# P. R. MALLORY & CO. Inc. MALLORY APPROVED PRECISION PRODUCTS

## Variable Resistors



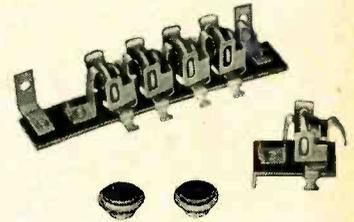
**CARBON AND WIRE WOUND VARIABLE RESISTORS** are available in a complete range of appropriate resistance values, tapers and sizes. Designed particularly for the radio, electronic and industrial fields, they employ substantial construction and characteristics that insure maximum satisfaction and dependable performance over long life. Refer Notes A, B and C.

## Vitreous Resistors



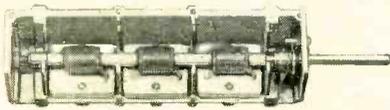
**VITREOUS ENAMEL RESISTORS** serve industrial electronic and electrical fields as voltage dividers, dropping, load and shunt resistors in all circuits where relatively high power dissipation is required. Their rugged design and construction assure dependable operation over long life. Available in fixed and adjustable types over a wide range of ratings and sizes. Refer Notes A and B.

## Grid Bias Cells

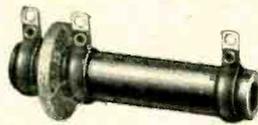


**GRID BIAS CELLS**, an exclusive patented Mallory product, are especially designed to provide dependable and constant grid bias potential in radio receivers, high gain voltage amplifiers, AVC circuits, hearing aids and many electronic applications employing Class A amplification. Individual cells and appropriate holders are available to accommodate one to four cells in series. Refer Notes A and B.

## Special Television Components



**INDUCTUNER\*** is an exclusive patented Mallory device to provide infinitely variable inductance tuning over all frequencies assigned to Television, FM and other stations within the range of 44 to 216 megacycles. Especially designed for Television and FM receivers, it has application in high frequency generators and electronic measuring instruments. Refer Note B. (\*Inductuner—Mallory registered trade mark for variable inductance tuning devices.)



**VIDEOCOUPLER** is an exclusive Mallory product designed to couple the video amplifier tube in television receivers.

It combines three units in one assembly, including two peaking inductances and the load resistor.

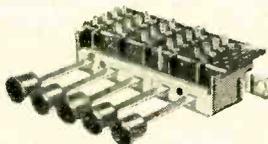
Substantial in construction and design, it greatly simplifies the design of wide-band amplifiers. Refer Note B.

## Jacks, Jack Switches, Plugs

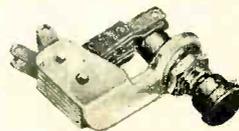


**JACKS, JACK SWITCHES AND PLUGS** are available in a wide range of sizes and circuit combinations conventional in design with rugged, long life construction. Jacks and switches are available in standard long frame, junior frame and midget sizes. Refer Note A.

## Push Button Switches



**MC SWITCHES** (2100 series) are of multiple button, latching type push button design. Especially adapted to push button circuit selection in radio receivers, intercommunication systems, coin-operated record players, test equipment and many electronic devices requiring switching of low current, high frequency circuits. Refer Notes A, B and C.



**2000 SERIES** single push button switches have application in test equipment, intercommunication equipment, meter circuits and various electronic circuit applications. Available in locking or non-locking (momentary) action, of sturdy construction and compact for service where behind-panel space is a factor. Refer Note A.

**NOTE A.** A wide range of standard stock types is available through convenient Mallory distributors. Further particulars are contained in General Catalog 467-A, available on request.

**NOTE B.** Detailed Engineering Data Folder is available on request, containing complete electrical, mechanical and dimensional specifications.

**NOTE C.** Specification sheets are available on request, permitting the engineer to lay out circuit requirements and accurately provide complete specifications for samples or ordering. Printed on thin paper to permit blueprinting and save drafting time.

# P. R. MALLORY & CO. Inc. MALLORY APPROVED PRECISION PRODUCTS

## MALLORY METALS & ALLOYS

Mallory takes pride in its long record of successful research in the field of non-ferrous metals and alloys.

The Mallory Company is a leading producer of special alloys and materials from copper, silver, platinum, palladium, tungsten, molybdenum, and many other non-ferrous elements for unusual applications. Mallory was a pioneer and is still the leader in developing new materials for the contact and resistance welding fields.

In the solution of many unusual problems, a world of engineering "know-how" has been gained in the applying and handling of these materials. This knowledge came to the fore during the war and led to the development of Mallory 1000 rotor rings, the welding of spark plug electrodes, and several other important military products involving special alloys and metals. It is now being used to solve many peacetime metallurgical problems that common-run materials will not handle.

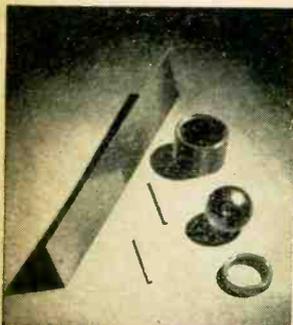
While your materials problem is still in the design stage, or if you have a production problem due to an inadequate material, you are urged to take advantage of the assistance offered by Mallory engineers.

**P. R. MALLORY & CO., Inc.**

3029 E. Washington St., Indianapolis 6, Indiana

## Special Metallurgical Products

With thirty years of experience in the metallurgical field, Mallory has developed numerous special products of non-ferrous metals and alloys that are used extensively in the electrical, electronic, and industrial fields.



High strength, high conductivity copper base bars, strips, forgings, and castings • Mallory 1000—high strength, high density machinability • Special ferromagnetic iron cores • Special de-oxidizers, purifiers and hardeners • Tungsten and molybdenum primary shapes and fabricated parts • Spark plug electrodes • Glass "Bondwire" • Silver bi-metal • Rare and precious metal parts • Special powder metal parts • Soldaloy\*—modern soldering tip material • Mallosilling and precious metal plating.

\*Reg. U. S. Pat. Off.

## Mallory Dry Battery Cells

The famous Mallory Dry Batteries are now available for hearing aids and specialized electronic equipment.

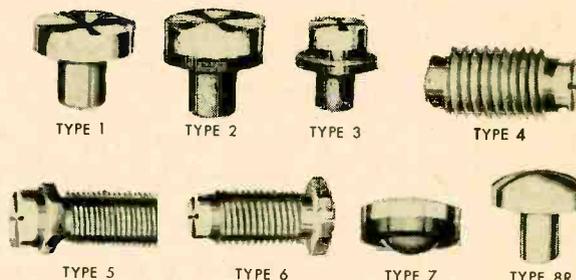
Incorporating wholly new principles of battery construction, the Mallory "A" Battery gives you these outstanding advantages:

- Small Size—less than ½ the size of the battery it replaces.
- Excellent Shelf Life.
- Doesn't Need a Rest—no recovery time required.
- No Fading—output voltage remains practically constant during service life of cell.



## MALLORY CONTACTS

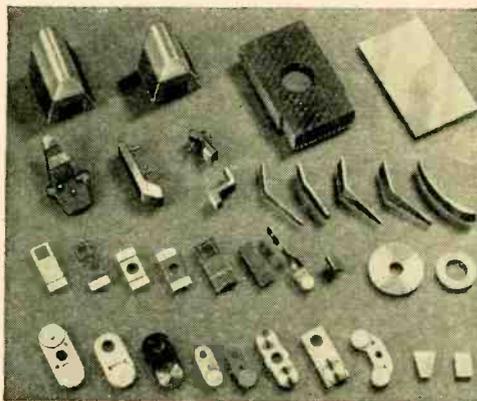
Eight Basic Types Simplify Product Design



As the largest producer of electrical contacts in America, Mallory has created more than 5,000 contact designs in the last 25 years. From this experience, it has come to learn that the eight basic types, shown above, are the ones most commonly needed—the contacts that solve nine problems out of ten.

Mallory offers you a wide variety of these eight basic types. You can get them without delay—without the expense of special tooling. And you can order by catalog number.

## Elkonite\* Materials



Elkonite, through many years of proved service under severe conditions, is now the standard contact material for most heavy-duty circuit-interrupting equipment. The Elkonite process enables the compounding of metals which will not alloy in any proportion.

Elkonite materials display uniformly high physical properties; and, used in circuit-interrupting devices, they are characterized by hardness, resistance to mechanical wear and impact, good electrical conductivity, resistance to erosion by arcing, and resistance to sticking.

In cases where standard types of contacts cannot be used in electrical apparatus, the Mallory organization can be of great assistance in solving the problem. Mallory engineers, familiar with all phases of contact production, can suggest designs that will give the desired performance without excessive fabrication costs. Where the application requires the development of new materials, a competent metallurgical research staff is available for consultation.

Facilities are available for manufacturing complete contact assemblies and contacts attached to brackets, springs, studs, or arms furnished by customers.

\*Reg. U. S. Pat. Off.

# **DIRECTORY SECTION** of the 1947-1948 **electronics** **BUYERS' GUIDE**

**IN THE PREPARATION** of this year's **ELECTRONICS BUYERS' GUIDE**, every effort has been made to insure that the Directory listings are both **COMPLETE** and **ACCURATE** according to the information manufacturers provided. Each manufacturer has been required to support—with company product literature—his listings in the various product classifications.

The listings include all products, as far as the companies themselves can determine, that will be available in the coming year. The directory section therefore will prove extremely valuable as a source of buying information.

More than 3,000 companies and their complete product lines in the electronic and allied fields are arranged and indexed in a simple, easy-to-find, telephone book style. Products can be located in much the same fashion as you locate a name in the telephone book. Where the name of a manufacturer who is also an advertiser in the **BUYERS' GUIDE** appears in the listings, the page number of his advertisement is indicated. This will make it possible to obtain complete information on the product quickly and easily.

# Alphabetical Listings Of All COMPONENTS — COMPLETE UNITS — ALLIED PRODUCTS Used in Electronic Equipment for All Purposes

The following listings have been compiled from information provided by more than 3,000 companies manufacturing electronic or allied products. The completeness and accuracy of the listings are entirely due to the helpful cooperation of those manufacturers.

Products for the electronic field made by these companies are arranged in a simple, alphabetical, telephone-book style of listing, in which the generic name of the product precedes the type, as: **ADAPTERS — Battery**.

Advertisers' names appearing in the 1947 listings are boldfaced and the page numbers of their advertisements shown, thus making it a simple matter to refer to those pages for technical data on the product.

A complete list of all manufacturers of electronic or allied products, and their addresses, is also included.

## ABRASIVES

Carborundum Co., Gload Div., Niagara Falls, N. Y.  
Do-All Co., 1301 Washington Ave., S., Minneapolis 4, Minn.  
Eraser Co., 231 W. Water St., Syracuse 2, N. Y.  
Linde Air Products Co., Unit of Union Carbide and Carbon Corp., 30 E. 42nd St., New York 17, N. Y.  
See Advertisements on pages 38, 167  
Martindale Electric Co., Box 617, Edgewater Branch, Cleveland 7, Ohio  
Mica Products Mfg. Co., 69 Wooster St., New York, N. Y.  
Minnesota Mining & Mfg. Co., 900 Fauquier Ave., St. Paul 6, Minn.  
Norton Co., 1 New Bond St., Worcester 6, Mass.  
Sittler Mfg. Corp., 18 N. Ada St., Chicago 7, Ill.  
Stow Manufacturing Co., 445 State St. Binghamton, N. Y.  
U. S. Rubber Co., 1230 Sixth Ave., New York 20, N. Y.

## ACCELEROMETERS

Consolidated Engineering Corp., 595 E. Colorado St., Pasadena 1, Calif.  
Electrodyne Co., The, 899 Boylston St., Boston 15, Mass.  
Melpar, Inc., 718 Fifth St. N. W., Washington 1, D. C.  
Miller Corp., William, 362 W. Colorado St., Pasadena, Calif.  
Schottland, Frederick D., 104-18 Metropolitan Ave., Forest Hills, N. Y.  
Statham Laboratories, 8222 Beverly Blvd., Los Angeles 36, Calif.

## ADAPTERS—Battery

Aerolite Electronic Hardware Corp., 24 Cliff St., Jersey City, N. J.  
See Advertisement on Page 246  
J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkway., Brooklyn, N. Y.  
Spitfire Tools, Inc., 2931-35 North Pulaski Road, Chicago 41, Ill.

## ADAPTERS—Panoramic

Hallcrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.

Panoramic Radio Corp., 242 W. 55th St., New York 19, N. Y.

## ADAPTERS—Short Wave for Radio

ABC Radio Labs., 3334 N. New Jersey St., Indianapolis 5, Ind.  
Waterproof Electric Co., 72 E. Verdugo Ave., Burbank, Calif.

## ADAPTERS—Test

Alden Products Co., 117 No. Main St., Brockton 64, Mass.  
Diamond Instrument Co., North Ave., Wakefield, Mass.  
Franklin Mfg. Co., A. W., 43-20 34th St., Long Island City, N. Y.  
See Advertisement on Page 98  
Monitor Products Co., 815 Fremont St., So. Pasadena, Calif.  
Radio Corp. of America, Tube Div., Harrison, N. J.  
Rice's Sons, Inc., Bernard, 325 Fifth Ave., New York 16, N. Y.

## ADAPTERS—Tube

Alden Products Co., 117 No. Main St., Brockton 64, Mass.  
American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
See Advertisement on Page 23  
J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkway., Brooklyn, N. Y.  
Radio Corp. of America, Tube Div., Harrison, N. J.

## ADHESIVES

Adhesive Products Co., 2400 13th St., S. W., Seattle, Wash.  
American Products Mfg. Co., Oleander & Dublin Sts., New Orleans 18, La.  
American Resinous Chemical Co., 104 Foster St., Peabody, Mass.  
Armstrong Cork Co., Lancaster, Pa.  
Bakelite Corp., 300 Madison Ave., New York 17, N. Y.  
Dolph Co., John C., 168 Emmet St., Newark, N. J.

du Pont de Nemours & Co., Inc., E. I., Wilmington 98, Del.  
Firestone Tire & Rubber Co., 1 Firestone Ave., Fall River, Mass.  
General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.

See Advertisement on Page 90  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Insulation Mfrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.

See Advertisement on Page 87  
Maas & Waldstein Co., 438 Riverside Ave., Newark, N. J.

See Advertisement on Page 53  
Minnesota Mining & Mfg. Co., 900 Fauquier Ave., St. Paul 6, Minn.  
Monsanto Chemical Co., Plastics Div., Springfield 2, Mass.

Paisley Products, Inc., 1770 Canalport Ave., Chicago 16, Ill.

Pennsylvania Coal Products Co., Petrolia, Pa.

Resinous Products & Chemical Co., 222 W. Washington St., Philadelphia, Pa.

Schott Co., Walter L., 9306 Santa Monica Blvd., Beverly Hills, Calif.

U. S. Rubber Co., 1230 Sixth Ave., New York 20, N. Y.

## ADHESIVES—Waterproof & Corrosion Proof Compounds

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.

American Resinous Chemical Co., 104 Foster St., Peabody, Mass.

Armstrong Cork Co., Lancaster, Pa.

Duralac Chemical Corp., 84 Lister Ave., Newark 5, N. J.

General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.

See Advertisement on Page 90  
General Electric Co., Chemical Dept., 1 Plastics Ave., Pittsfield, Mass.

See Advertisement on Page 97  
Paisley Products, Inc., 1770 Canalport Ave., Chicago 16, Ill.

U. S. Rubber Co., 1230 Sixth Ave., New York 20, N. Y.

U. S. Stoneware Co., The, Akron 9, Ohio

## AIR CLEANERS—Electrostatic

Raytheon Mfg. Co., Commercial Products Div., Waltham 54, Mass.  
Westinghouse Elec., Corp., East Pittsburgh, Pa.

### ALARM SYSTEMS

See Controls, Alarm System

### ALPHA RAY SOURCES

See Isotopes

### ALUMINUM OXIDE

See Insulation Materials

### AMMETERS

Assembly Products, Inc., Chagrin Falls, Ohio  
 Bristol Co., The, Waterbury 91, Conn.  
 Burlington Instrument Co., 214 North 4th St., Burlington, Iowa  
 Burton-Rogers Co., 857 Boylston St., Boston 16 Mass.  
 Control Corp., 718 Central Ave., Minneapolis 14, Minn.  
 DeJur-Amsco Corp., Northern Blvd., at 45th St., Long Island City 1, N. Y.  
 Electric Auto-Lite Co., The, Toledo 1, Ohio  
 Electro-Mechanical Instrument Co., 812 Chestnut St., Perkaskie, Pa.  
 Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 General Electronics, Inc., 101 Hazel St., Paterson N. J.  
 Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland, Ohio  
 J B T Instruments Inc., 441 Chapel St., New Haven 8, Conn.  
 Lewis Engineering Co., 52 Rubber Ave., Naugatuck, Conn.  
 MB Instruments, Inc., 1060 State St., New Haven 11, Conn.  
 Marion Electrical Instrument Co., Manchester, N. H.  
 Martindale Electric Co., Box 617, Edgewater Branch, Cleveland 7, Ohio  
 Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
 Norton Electrical Instrument Co., 59 Hilliard St., Manchester, Conn.  
 Precision Apparatus Co., 92-27 Horace Harding Blvd., Elmhurst, N. Y.  
 Rawson Electrical Instrument Co., 110 Potter St., Cambridge 42, Mass.  
 See Advertisement on Page 244  
 Rek-O-Kut Co., 146 Grand St., New York 13, N. Y.  
 See Advertisement on Page 245  
 Reliance Instrument Co., 715 N. Kedzie Ave., Chicago, Ill.  
 Roller-Smith, Bethlehem, Pa.  
 See Advertisement on Page 214  
 Sensitive Research Instrument Co., 9 Elm Ave., Mt. Vernon, N. Y.  
 Simpson Electric Co., 5218 W. Kinzie St., Chicago 44, Ill.  
 Sterling Mfg. Co., 9205 Detroit Ave., Cleveland, Ohio  
 Stewart-Warner Corp., 1826 Diverser Parkway, Chicago 14, Ill.  
 Sun Mfg. Co., 6323 Avondale Ave., Chicago 31, Ill.  
 Supreme Instruments Corp., Greenwood, Miss.  
 U. S. Gauge Div., American Machine & Metals, Inc., Sellersville, Pa.  
 Welch Scientific Co., 1515 Sedgwick St., Chicago 10, Ill.  
 Westinghouse Electric Corp., Meter Div., Newark, N. J.  
 Weston Electrical Instrument Corp., 618 Frelinghuysen Ave., Newark 5, N. J.

### AMMETERS—r-f

Andrew Co., 363 E. 75th St., Chicago 19, Ill.  
 Assembly Products, Inc., Chagrin Falls, Ohio  
 Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Meters, Inc., 915 Riveria Dr., Indianapolis 5, Ind.  
 Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
 Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
 Roller-Smith, Bethlehem, Pa.  
 See Advertisement on Page 214  
 Simpson Electric Co., 5218 W. Kinzie St., Chicago 44, Ill.

Triplett Electrical Instrument Co., 286 Harmon Road, Bluffton, Ohio  
 Westinghouse Electric Corp., Meter Div., Newark, N. J.  
 Weston Electrical Instrument Corp., 618 Frelinghuysen Ave., Newark 5, N. J.

### AMPLIFIERS—Audio Frequency

Air Associates, Inc., 5827 W. Century Blvd., Los Angeles 45, Calif.  
 Airdesign, Inc., 241 Fairfield Ave., Upper Darby, Pa.  
 Airpax Products Co., P. O. Box 6766, Baltimore 4, Md.  
 Altee Lansing Corp., 1161 N. Vine St., Hollywood 38, Calif.  
 American Communications Corp., 306 Broadway, New York 7, N. Y.  
 Amplifier Corp. of America, 396 Broadway, New York 13, N. Y.  
 Audar Inc., Argos, Indiana  
 Audio Development Co., 2833 130th Ave. S., Minneapolis 7, Minn.  
 See Advertisement on Page 26  
 Audio Products Co., 2101 W. Olive Ave., Burbank, Calif.  
 Aviometer Corp., 370 W. 35th St., New York 1, N. Y.  
 See Advertisement on Page 224  
 Banks Mfg. Co., 1105 W. Lawrence Ave., Chicago 40, Ill.  
 Bardwell & McAllister, 7636 Santa Monica Blvd., Hollywood, Calif.  
 Barone Co., S. A., 143 W. 22nd St., New York 11, N. Y.  
 Bell Sound Systems, Inc., 1183 Essex Ave., Columbus, Ohio  
 Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
 Berndt Corp., E. M., 3515 Sunset Blvd., Hollywood 28, Calif.  
 Bogen Co., David, 663 Broadway, New York 12, N. Y.  
 Breloco Electronics Corp., 55 Vandam St., New York 13, N. Y.  
 Brook Electronics, Inc., Elizabeth, N. J.  
 Cardwell Mfg. Corp., Allen D., 97 Whiting St., Plainville, Conn.  
 Clark Radio Equipment Corp., 4313 Lincoln Ave., Chicago 18, Ill.  
 Clarke Instrument Corp., 910 King St., Silver Spring, Md.  
 Collins Audio Products Co., 126 Park St., Westfield, N. J.  
 See Advertisement on Page 253  
 Collins Radio Co., Cedar Rapids, Iowa  
 See Advertisements on Pages 30 to 33  
 Commercial Research Labs. Inc., 20 Bartlett Ave., Detroit 3, Mich.  
 Communication Equipment & Engineering Co., 5646 W. Race St., Chicago 44, Ill.  
 Concord Radio Corp., 901 W. Jackson Blvd., Chicago, Ill.  
 See Advertisement on Page 177  
 Continental Electronics, Ltd., Brooklyn 22, N. Y.  
 Cook Laboratories, 139 Gordon Blvd., Floral Park, N. Y.  
 D. & M. Mfg. Co., 2 Delford Avenue, Bergenfield, N. J.  
 Development Engineering Co., Inc., The, 1818 Ashland St., Houston 8, Texas  
 Dilks, Inc., Norwalk, Conn.  
 Eastern Amplifier Corp., 794 E. 140th St., New York 54, N. Y.  
 Eastern Electronics Corp., 41 Chestnut St., New Haven, Conn.  
 Eckstein Radio & Television Co., 914 La Salle Ave., Minneapolis 2, Minn.  
 Electronic Apparatus, Inc., 347 Madison Ave., New York 17, N. Y.  
 Electronic Controls, Inc., 44 Summer Ave., Newark, N. J.  
 Electronic Sound Engineering Co., 4344-46 W. Armitage Ave., Chicago 39, Ill.  
 Ellinwood Industries, 150 W. Slauson Ave., Los Angeles 3, Calif.  
 Erwood Co., 223 W. Erie St., Chicago 11, Ill.  
 Espey Mfg. Co., Inc., 33 W. 46th St., New York 19, N. Y.  
 Fairchild Camera & Instrument Corp., 88-06 Van Wyck Blvd., Jamaica 1, N. Y.  
 Farmers' Engineering & Mfg. Co., Union Trust Bldg., Pittsburgh, Pa.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 Feiler Engineering Co., 803 Milwaukee Ave., Chicago 22, Ill.  
 Fidelity Amplifier Co., 1632 N. Halsted St., Chicago 14, Ill.  
 Five Star Radio Co., 416 Broadway, Cambridge, Mass.  
 Furst Electronics, 800 W. North Ave., Chicago 22, Ill.  
 See Advertisement on Page 248  
 General Aviation Equipment Co., Inc., 630 5th Ave., New York 20, N. Y.

General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
 Globe Electronics, Inc., 225 W. 17th St., New York, N. Y.  
 Guided Radio Corp., 161 6th Ave., New York 13, N. Y.  
 Hallcrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Hazeltine Electronics Corp., 1775 Broadway, New York, N. Y.  
 Herbach & Rademan Inc., 517 Ludlow St., Phila. 6, Pa.  
 Hoffman Radio Corp., 3130 S. Hill St., Los Angeles 7, Calif.  
 Hose-McCann Telephone Co., 177 Pacific St., Brooklyn 2, N. Y.  
 Inductive Equipment Co., Gettysburg, Pa.  
 Intex Co., 305 W. 42nd St., New York 18, N. Y.  
 See Advertisement on Page 68  
 Kalbflieg Labs., 1076 Morena Blvd., San Diego 10, Calif.  
 Langevin Co. Inc., 37 W. 65th St., New York, N. Y.  
 See Advertisement on Page 153  
 Linphone Co., 1661 Howard Ave., Utica, N. Y.  
 Loge Sound Engineers, J. M., 986 S. West-corn Ave., Los Angeles 6, Calif.  
 Long Co., L. J., 186 Grand St., New York 13, N. Y.  
 Lyman Electronic Corp., 12 Cass St., Springfield, Mass.  
 McGrade Mfg. Co., Inc., E. W. 406 W. 31th St., Kansas City 2, Mo.  
 MacLeod & Hanoupl, 24 Chelsea St., Charlestown 29, Mass.  
 Magnavox Co., The, Fort Wayne 4, Ind.  
 Maguire Industries Inc., Electronics Dept., Bridgeport, Conn.  
 Maico Co., Inc., 25 North 3rd St., Minneapolis, Minn.  
 Measurement Engineering Ltd., 61 Duke St., Toronto, Canada  
 See Advertisement on Page 193  
 Meck Industries, John, Liberty at Pennsylvania, Plymouth, Ind.  
 Megard Corp., 1601 S. Burlington St., Los Angeles 6, Calif.  
 Miles Reproducer Co., Inc., 812 Broadway, New York, N. Y.  
 See Advertisement on Page 256  
 Molded Insulation Co., Aircraft Control Div., 335 E. Price St., Philadelphia, Pa.  
 Music Master Radio Corp., 750 Main St., Hartford, Conn.  
 National Co., Inc., 61 Sherman St., Malden 48, Mass.  
 See Advertisement on Page 78  
 Newcomb Audio Products Co., 6824 Lexington Ave., Hollywood 38, Calif.  
 Nilsson Electrical Lab., Inc., 103 Lafayette St., New York 13, N. Y.  
 Northern Communications Mfg. Co., 210 E. 40th St., New York, N. Y.  
 See Advertisement on Page 242  
 Operadio Mfg. Co., 135th & Indiana Sts., St. Charles, Ill.  
 Pan American Electric Co., Inc., 2912 Atlantic Ave., Brooklyn 7, N. Y.  
 Press Wireless Mfg. Corp., 1475 Broadway, New York 18, N. Y.  
 Presto Recording Corp., 242 W. 55th St., New York, N. Y.  
 See Advertisements on Pages 50, 51  
 Radio Craftsmen, 1341 S. Michigan Ave., Chicago 5, Ill.  
 Radio-Music Corp., East Port Chester, Conn.  
 See Advertisement on Page 215  
 Rauland Corp., 4245 N. Knox Ave., Chicago 41, Ill.  
 Raytheon Mfg. Co., Commercial Products Div., Waltham 54, Mass.  
 Rek-O-Kut Co., 146 Grand St., New York 13, N. Y.  
 See Advertisement on Page 245  
 Remler Co., Ltd., 2101 Bryant St., San Francisco 10, Calif.  
 Riggs & Jeffreys, Inc., 73 Winthrop St., Newark 4, N. J.  
 Rowe Industries, 3120 Monroe St., Toledo 6, Ohio  
 Rowe Radio Research Lab., 2422 N. Pulaski Rd., Chicago 39, Ill.  
 Schuttig & Co., 9th & Kearney Sts., N. E., Washington 17, D. C.  
 Searle Agro Industries, Inc., Orange, Calif.  
 Setchell Carlson, Inc., 2233 University Ave., St. Paul 4, Minn.  
 Simpson Mfg. Co., Inc., Mark, 188 W. 4th St., New York 14, N. Y.  
 Smith-Meeker Engineering Co., 125 Barclay St., New York 7, N. Y.  
 Standard Transformer Corp., 1500 N. Halsted St., Chicago 22, Ill.  
 Stark Sound Engineering Co., P. O. Box 493, Fort Wayne 1, Ind.  
 Stephens Mfg. Co., 10416 National Blvd., Los Angeles 34, Calif.  
 Stromberg-Carlson Co., Rochester, N. Y.

Tech-Master Products Co., 123 Prince St., New York, N. Y.  
 Technical Apparatus Co., 167 Washington St., Boston 8, Mass.  
 Technical Devices Corp., Beaufort & Eagle Rock Aves., Roseland, N. J.  
 Telephonics Corp., 350 W. 31st St., New York 1, N. Y.  
 Television Projects, Inc., 24 Walnut St., Newark 2, N. J.  
 Televiso Products Inc., 7466 West Irving Park Rd., Chicago 34, Ill.  
 Telicon Corp., 851 Madison Ave., New York 21, N. Y.  
 Thordarson Electric Mfg. Div., Maguire Industries, Inc., 500 W. Horn St., Chicago 10, Ill.  
 United Radio Electronics Corp., 901 W. Jackson Blvd., Chicago, Ill.  
 United Transformer Corp., 150 Varick St., New York 13, N. Y.  
 See Advertisement on Inside Front Cover  
 Walsh Engineering Co., 34 DeHart Pl., Elizabeth, N. J.  
 Waterman Products Co., Inc., 2415-63 Emerald St., Philadelphia 25, Pa.  
 See Advertisement on Page 76  
 Webster Electric Co., 1900 Clark St., Racine, Wis.  
 West Coast Electronics Co., 1601 S. Burlington St., Los Angeles 6, Calif.  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89  
 Western Sound & Electric Labs., Inc., Milwaukee 4, Wis.

**AMPLIFIERS—Audio Input Systems**

American Communications Corp., 306 Broadway, New York 7, N. Y.  
 Amplifier Corp. of America, 396 Broadway, New York 13, N. Y.  
 Bardwell & McAllister, 7636 Santa Monica Blvd., Hollywood, Calif.  
 Bogen Co., David, 663 Broadway, New York 12, N. Y.  
 Brook Electronics, Inc., Elizabeth, N. J.  
 Caltron Co., 11916 W. Pico Blvd., Los Angeles 34, Calif.  
 Clark Radio Equipment Corp., 4313 Lincoln Ave., Chicago 18, Ill.  
 Collins Audio Products Co., 126 Park St., Westfield, N. J.  
 See Advertisement on Page 253  
 Collins Radio Co., Cedar Rapids, Iowa  
 See Advertisements on Pages 30 to 33  
 Commercial Radio Sound Corp., 575 Lexington Ave., New York 22, N. Y.  
 Communicating Systems Inc., 203 E. 18th St., New York 3, N. Y.  
 Concord Radio Corp., 901 W. Jackson Blvd., Chicago, Ill.  
 See Advertisement on Page 177  
 Eckstein Radio & Television Co., 914 La Salle Ave., Minneapolis 2, Minn.  
 Electronic Sound Engineering Co., 4344-46 W. Armitage Ave., Chicago 39, Ill.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 Freed Transformer Co., 72 Spring St., New York 12, N. Y.  
 See Advertisement on Page 253  
 Gates Radio Co., 123 Hampshire St., Quincy, Ill.  
 General Communication Co., 53 Commonwealth Ave., Boston 15, Mass.  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Godfrey Mfg. Co., 171 S. 2nd St., Milwaukee 4, Wis.  
 Hoffman Radio Corp., 3430 S. Hill St., Los Angeles 7, Calif.  
 Inductive Equipment Co., Gettysburg, Pa.  
 Kalbfell Labs., 1076 Morena Blvd., San Diego 10, Calif.  
 Langevin Co., Inc., 37 W. 65th St., New York, N. Y.  
 See Advertisement on Page 153  
 Loge Sound Engineers, J. M., 986 S. Western Ave., Los Angeles 6, Calif.  
 Magnavox Co., The, Fort Wayne 4, Ind.  
 Mekan Inc., 79 Thurman Ave., Columbus 6, Ohio  
 Measurement Engineering Ltd., 61 Duke St., Toronto, Canada  
 See Advertisement on Page 193  
 National Intercommunicating Systems, 1531 Devon Ave., Chicago 26, Ill.  
 Pan American Electric Co., Inc., 2912 Atlantic Ave., Brooklyn 7, N. Y.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover, Back Cover, 251  
 Radio Development and Research Co., 26 Cornellison Ave., Jersey City, N. J.  
 Raytheon Mfg. Co., Commercial Products Div., Waltham 54, Mass.

SOS Cinema Supply Co., 449 W. 42nd St., New York 18, N. Y.  
 Schuttig & Co., 9th & Kearney Sts. N. E., Washington 17, D. C.  
 Simpson Mfg. Co., Inc., Mark, 188 W. 4th St., New York 14, N. Y.  
 Sound Equipment Corp. of California, 3903 San Fernando Road, Glendale 4, Calif.  
 Stark Sound Engineering Co., P. O. Box 493, Fort Wayne 1, Ind.  
 Stromberg-Carlson Co., Rochester, N. Y.  
 Task Electronics Co., 245 W. 54th St., New York, N. Y.  
 Tech-Master Products Co., 123 Prince St., New York 12, N. Y.  
 Television Projects, Inc., 24 Walnut St., Newark 2, N. J.  
 Thordarson Electric Mfg. Div., Maguire Industries, Inc., 500 W. Horn St., Chicago 10, Ill.  
 Webster Electric Co., 1900 Clark St., Racine, Wis.  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89  
 Western Sound & Electric Labs., Inc., 808 S. Fifth St., Milwaukee 4, Wis.

**AMPLIFIERS—Decade**

Amplifier Corp. of America, 396 Broadway, New York 13, N. Y.  
 Ballantine Labs., Inc., Boonton, N. J.  
 See Advertisement on Page 42  
 Development Engineering Co., Inc., The, 1818 Ashland St., Houston 8, Texas  
 Freed Transformer Co., 72 Spring St., New York 12, N. Y.  
 See Advertisement on Page 253  
 Kalbfell Labs., 1076 Morena Blvd., San Diego 10, Calif.

**AMPLIFIERS—f-m & a-m Antenna**

Brach Mfg. Corp., 55 Dickerson St., Newark, N. J.

**AMPLIFIERS—Facsimile**

Alden Products Co., 117 No. Main St., Brockton 64, Mass.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 McElroy, Mfg. Corp., Littleton, Mass.  
 Radio Inventions, Inc., 155 Perry St., New York 14, N. Y.

**AMPLIFIERS—Keying**

Air Associates Inc., 5827 W. Century Blvd., Los Angeles 45, Calif.  
 Amplifier Corp. of America, 396 Broadway, New York 13, N. Y.  
 Boehme Inc., H. O., 915 Broadway, New York, N. Y.  
 General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
 Hoffman Radio Corp., 3430 S. Hill St., Los Angeles 7, Calif.  
 McElroy Mfg. Corp., Littleton, Mass.  
 Press Wireless Mfg. Corp., 1475 Broadway, New York 18, N. Y.  
 Schuttig & Co., 9th & Kearney Sts., NE, Washington 17, D. C.  
 Transmitter Equipment Co., Inc., 345 Hudson St., New York 14, N. Y.  
 Western Sound & Electric Labs., Inc., 808 S. Fifth St., Milwaukee 4, Wis.

**AMPLIFIERS—Medical Instrument**

American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
 Amplifier Corp. of America, 396 Broadway, New York, N. Y.  
 Aviometer Corp., 370 W. 35th St., New York 1, N. Y.  
 See Advertisement on Page 224  
 Bell Sound Systems, Inc., 1183 Essex Ave., Columbus, Ohio  
 Dalmo Victor Co., San Carlos, Calif.  
 Development Engineering Co., Inc., The, 1818 Ashland St., Houston 8, Texas  
 Electro-Medical Lab., Inc., Holliston, Mass.  
 Electronic Enterprises, Inc., 1314 Forest Ave., Dallas 15, Texas

Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.  
 Langevin Co. Inc., The Industrial Control Div., 37 W. 65th St., New York 23, N. Y.  
 Lectronic Research Labs., Howell and Hegerman Sts., Phila., Pa.  
 Process & Instruments, 60 Greenpoint Ave., Brooklyn 22, N. Y.  
 Rahm Instruments, Inc., 12 West Broadway, New York 7, N. Y.

**AMPLIFIERS—Microwave Radar**

Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Polarad Electronics Co., 135 Liberty St., New York 6, N. Y.  
 Radar Engineers, 4004 Arcade Bldg., Seattle 1, Wash.  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Serdex, Inc., 91 Cambridge St., Boston, Mass.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B

**AMPLIFIERS—Musical Instrument**

Amplifier Corp. of America, 396 Broadway, New York 13, N. Y.  
 Audar Inc., Argos, Indiana  
 Clark Radio Equipment Corp., 4313 Lincoln Ave., Chicago 18, Ill.  
 Eastern Amplifier Corp., 794 E. 140th St., New York 54, N. Y.  
 Farmers' Engineering & Mfg. Co., Union Trust Bldg., Pittsburgh, Pa.  
 Magnavox Co., The, Fort Wayne 4, Ind.  
 Meck Industries, John, Liberty at Pennsylvania, Plymouth, Ind.  
 Operadio Mfg. Co., 135th & Indiana Sts., St. Charles, Ill.  
 Quality Industries, Electronic Dept., 25 E. Jackson Blvd., Chicago 4, Ill.  
 Rowe Industries, 3120 Monroe St., Toledo 6, Ohio  
 Stark Sound Engineering Co., P. O. Box 493, Fort Wayne 1, Ind.  
 Stromberg-Carlson Co., Rochester, N. Y.  
 Simpson Mfg. Co., Inc., Mark, 188 W. 4th St., New York 14, N. Y.  
 Tech-Master Products Co., 123 Prince St., New York 12, N. Y.  
 Western Sound & Electric Labs., Inc., 808 S. Fifth St., Milwaukee 4, Wis.  
 Weymouth Instrument Co., 1440 Commercial St., East Weymouth, Mass.

**AMPLIFIERS—Photocell**

Bardwell & McAllister, 7636 Santa Monica Blvd., Hollywood, Calif.  
 D. & M. Mfg. Co., 2 Delford Ave., Bergenfield, N. J.  
 Electronic Controls, Inc., 44 Summer Ave., Newark, N. J.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Hoffman Engineering Co., Anoka, Minn.  
 Inductive Equipment Co., Gettysburg, Pa.  
 Langevin Co. Inc., The, Industrial Control Div., 37 W. 65th St., New York 23, N. Y.  
 Lectronic Research Labs., Howell & Hegerman Sts., Philadelphia, Pa.  
 McGrade Mfg. Co., Inc., E. W., 406 W. 34th St., Kansas City 2, Mo.  
 Moulis Specialties Co., 1005-1007 W. Washington St., Bloomington, Ill.  
 Pan American Electric Co., Inc., 2912 Atlantic Ave., Brooklyn 7, N. Y.  
 Simpson Mfg. Co., Inc., Mark, 188 W. 4th St., New York 14, N. Y.  
 Tech Laboratories, 337 Central Ave., Jersey City, N. J.  
 Western Sound & Electric Labs., Inc., 808 S. Fifth St., Milwaukee 4, Wis.  
 Wilson & Co., G. C., 2 N. Passaic Ave., Chatham, N. J.

**AMPLIFIERS—r-f**

Barone Co. S. A., 143 W. 22nd St., New York 11, N. Y.  
 Clarke Instrument Corp., 910 King St., Silver Spring, Md.

De Mornay-Budd Inc., 475 Grand Concourse, New York, N. Y.

See Advertisement on Page 171

Electronic Sound Engineering Co., 4344-46 W. Armitage Ave., Chicago 39, Ill.

Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.

See Advertisements on Pages 48A to 48D

General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.

Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.

See Advertisement on Page 44

National Co., Inc., 61 Sherman St., Malden 48, Mass.

See Advertisement on Page 78

Pan American Electric Co., Inc., 2912 Atlantic Ave., Brooklyn 7, N. Y.

Press Wireless Mfg. Corp., 1475 Broadway, New York 18, N. Y.

Raytheon Mfg. Co., Commercial Products Div., Waltham 54, Mass.

Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.

See Advertisements on Pages 80A, 80B

Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.

See Advertisements on Pages 158 to 161

Tech-Master Products Co., 123 Prince St., New York 12, N. Y.

## AMPLIFIERS—Strain Gage

Ballantine Labs., Inc., Boonton, N. J.

See Advertisement on Page 42

Commercial Research Labs. Inc., 20 Bartlett Ave., Detroit 3, Mich.

Consolidated Engineering Corp., 595 E. Colorado St., Pasadena 1, Calif.

Electrodyne Co., The, 899 Boylston St., Boston 15, Mass.

General Electric Co., Schenectady 5, N. Y.

See Advertisements on Pages 96B, 96C

Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.

MacLeod & Hanopol, 24 Chelsea St., Charlestown 29, Mass.

Miller Corp., William, 363 W. Colorado St., Pasadena, Calif.

Moulic Specialties Co., 1005-1007 W. Washington St., Bloomington, Ill.

Pan American Electric Co., Inc., 2912 Atlantic Ave., Brooklyn 7, N. Y.

Radio Frequency Lab., Inc., Boonton, N. J.

Rahn Instruments, Inc., 12 West Broadway, New York 7, N. Y.

Televisto Products Inc., 7644 West Irving Park Rd., Chicago, Ill.

Wilson & Co., G. C., 2 N. Passaic Ave., Chatham, N. J.

## AMPLIFIERS—Television

Electronic Apparatus, Inc., 347 Madison Ave., New York 17, N. Y.

Electronic Measurements Co., Red Bank, N. J.

See Advertisement on Page 68

Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.

See Advertisements on Pages 48A to 48D

Five Star Radio Co., 416 Broadway, Cambridge, Mass.

General Electric Co., Syracuse, N. Y.

See Advertisements on Pages 96, 96A

Lyman Electronic Corp., 12 Cass St., Springfield, Mass.

Polarad Electronics Co., 135 Liberty St., New York 6, N. Y.

Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.

Tech-Master Products Co., 123 Prince St., New York 12, N. Y.

Telequip Radio Co., 1901 S. Washtenaw, Chicago, Ill.

Television Projects, Inc., 24 Walnut St., Newark 2, N. J.

U. S. Television Mfg. Corp., 3 W. 61st St., New York 23, N. Y.

## AMPLIFIERS—Ultrasonic

Amplifier Corp. of America, 396 Broadway, New York, N. Y.

Electronic Apparatus, Inc., 347 Madison Ave., New York 17, N. Y.

Electronic Measurements Co., Red Bank, N. J.

See Advertisement on Page 68

Erwood Co., 223 W. Erie St., Chicago, Ill.

Freed Transformer Co., 72 Spring St., New York 12, N. Y.

See Advertisement on Page 253

General Electric Co., Schenectady 5, N. Y.

See Advertisements on Pages 96B, 96C

Kalbfell Labs., 1076 Morena Blvd., San Diego 10, Calif.

Wilson & Co., G. C., 2 N. Passaic Ave., Chatham, N. J.

## AMPLIFIERS—Vibration Pickup

Commercial Research Labs. Inc., 20 Bartlett Ave., Detroit 3, Mich.

Consolidated Engineering Corp., 595 E. Colorado St., Pasadena 1, Calif.

General Electric Co., Schenectady 5, N. Y.

See Advertisements on Pages 96B, 96C

General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.

Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.

Heiland Research Corp., 130 E. 5th St., Denver 9, Colo.

Lectronic Research Labs., Howell and Hegerman Sts., Philadelphia, Pa.

Maguire Industries Inc., Electronics Dept., Bridgeport, Conn.

Miller Corp., William, 363 W. Colorado St., Pasadena, Calif.

Offner Electronics, Inc., 5320 N. Kedzie Ave., Chicago 25, Ill.

Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.

See Advertisements on Pages 80A, 80B

Televisto Products Inc., 7644 West Irving Park Rd., Chicago 34, Ill.

## AMPLIFIERS—Video

See Amplifiers, Television or Wideband

## AMPLIFIERS—Wideband

American Radio Co., 611 E. Garfield Ave., Glendale, Calif.

Amplifier Corp. of America, 396 Broadway, New York, N. Y.

Atomic Instruments Co., 160 Charles St., Boston, Mass.

Ballantine Labs., Inc., Boonton, N. J.

See Advertisement on Page 42

Bardwell & McAllister, 7636 Santa Monica Blvd., Hollywood, Calif.

Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.

See Advertisements on Pages 48A to 48D

Five Star Radio Co., 416 Broadway, Cambridge, Mass.

General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.

General Electric Co., Schenectady 5, N. Y.

See Advertisements on Pages 96B, 96C

Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.

Herbach & Rademan Inc., 517 Ludlow St., Philadelphia 6, Pa.

Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.

See Advertisements on Pages 94, 95

Kalbfell Labs., 1076 Morena Blvd., San Diego 10, Calif.

Pan American Electric Co., Inc., 2912 Atlantic Ave., Brooklyn 7, N. Y.

Radar Engineers, 4004 Arcade Bldg., Seattle 1, Wash.

Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.

Sherron Electronic Co., 1201 Flushing Ave., Brooklyn 6, N. Y.

Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.

See Advertisements on Pages 80A, 80B

Stromberg-Carlson Co., Rochester, N. Y.

Technical Apparatus Co., 167 Washington St., Boston 8, Mass.

Transmitter Equipment Co., Inc., 345 Hudson St., New York 14, N. Y.

Waterman Products Co., Inc., 2445-63 Emerald St., Philadelphia 25, Pa.

See Advertisement on Page 76

Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.

See Advertisements on Pages 88, 89

## ANALYZERS—Audio Amplifier

Electronic Measurements Co., Red Bank, N. J.

See Advertisement on Page 68

Freed Transformer Co., 72 Spring St., New York 12, N. Y.

See Advertisement on Page 253

Furst Electronics, 800 W. North Ave., Chicago 22, Ill.

See Advertisement on Page 248

Herbach & Rademan, 517 Ludlow St., Philadelphia 6, Pa.

McMurdo Silver Co., Inc., 1249 Main St., Hartford 3, Conn.

Maico Co. Inc., 25 N. 3rd St., Minneapolis, Minn.

Measurement Engineering Ltd., 61 Duke St., Toronto, Canada

See Advertisement on Page 193

Meters, Inc., 915 Riveria Dr., Indianapolis 5, Ind.

Technical Apparatus Co., 167 Washington St., Boston 8, Mass.

Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.

See Advertisements on Pages 88, 89

## ANALYZERS—Capacitor

Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.

Condenser Corp. of America, 1000 Hamilton Blvd., S. Plainfield, N. J.

Cornell Dubilier Electric Corp., 1000 Hamilton Blvd., South Plainfield, N. J.

Freed Transformer Co., 72 Spring St., New York 12, N. Y.

See Advertisement on Page 253

General Electric Co., Syracuse, N. Y.

See Advertisements on Pages 96, 96A

Jackson Electrical Instrument Co., 16 S. Patterson Blvd., Dayton 1, Ohio

Kalbfell Labs., 1076 Morena Blvd., San Diego 10, Calif.

McMurdo Silver Co., Inc., 1249 Main St., Hartford 3, Conn.

Measurement Engineering Ltd., 61 Duke St., Toronto, Canada

See Advertisement on Page 193

## ANALYZERS—Circuit

Amerline, 1753 N. Honore St., Chicago 22, Ill.

Cinema Engineering Co., 1508 W. Verdugo Ave., Burbank, Calif.

Development Engineering Co., Inc., The, 1818 Ashland St., Houston 8, Texas

Dilks, Inc., Norwalk, Conn.

Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska

Feiler Engineering Co., 803 Milwaukee Ave., Chicago 22, Ill.

General Electric Co., Syracuse, N. Y.

See Advertisements on Pages 96, 96A

J-B-T Instruments, Inc., 441 Chapel St., New Haven 8, Conn.

Madison Electrical Products Div., John G. Ruckelshaus Co., 74 Main St., Madison, N. J.

Maguire Industries Inc., Electronics Dept., Bridgeport, Conn.

Measurement Engineering Ltd., 61 Duke St., Toronto, Can.

See Advertisement on Page 193

Meissner Mfg. Div., Maguire Industries, Inc., Mt. Carmel, Ill.

Meters, Inc., 915 Riveria Dr., Indianapolis 5, Ind.

Precision Apparatus Co., 92-27 Horace Harding Blvd., Elmhurst, N. Y.

Radio Frequency Labs., Inc., Boonton, N. J.

Shallcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.

Supreme Instruments Corp., Greenwood, Miss.

Westinghouse Electric Corp., Meter Div., Newark, N. J.

Weston Electrical Instrument Corp., 518 Frelinghuysen Ave., Newark 5, N. J.

## ANALYZERS—Gas

Applied Physics Corp., 40 South Oak Knoll Ave., Pasadena 1, Calif.

Bailey Meter Co., 1044 Ivanhoe Rd., Cleveland 10, Ohio

Consolidated Engineering Corp., 595 E. Colorado St., Pasadena 1, Calif.

Dayton Acme Co., 930 York St., Cincinnati 14, Ohio

Electric Heat Control Co., The, 9123 Inman Ave., Cleveland 5 Ohio

General Electric Co., Schenectady 5, N. Y.

See Advertisements on Pages 96B, 96C

Process & Instruments, 60 Greenpoint Ave., Brooklyn 22, N. Y.

Sun Mfg. Co., 6323 Avondale Ave., Chicago 31, Ill.

## ANALYZERS—Harmonic

Electro Products Labs., 549 W. Randolph St., Chicago 6, Ill.

Electronic Measurements Co., Red Bank, N. J.  
See Advertisement on Page 68  
Freed Transformer Co., 72 Spring St., New York 12, N. Y.  
See Advertisement on Page 253  
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.  
See Advertisements on Pages 94, 95  
Measurement Engineering Ltd., 61 Duke St., Toronto, Canada  
See Advertisement on Page 193  
Waterman Products Co., Inc., 2445-63 Emerald St., Philadelphia 25, Pa.  
See Advertisement on Page 76  
Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
See Advertisements on Pages 88, 89

**ANALYZERS—Intermodulation**

Altec Lansing Corp., 1161 N. Vine St., Hollywood 38, Calif.  
Freed Transformer Co., 72 Spring St., New York 12, N. Y.  
See Advertisement on Page 253  
Furst Electronics, 800 W. North Ave., Chicago 22, Ill.  
See Advertisement on Page 248  
Measurement Engineering Ltd., 61 Duke St., Toronto, Canada  
See Advertisement on Page 193

**ANALYZERS—Microwave Radar**

Diamond Instrument Co., North Ave., Wakefield, Mass.  
Electronic Measurements Co., Red Bank, N. J.  
See Advertisement on Page 68  
General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
Omicron Electric Co., 718 Columbus Ave., New York 25, N. Y.  
Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
See Advertisements on Pages 80A, 80B

**ANALYZERS—Noise**

Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.  
Electro Products Labs., 549 W. Randolph St., Chicago 6, Ill.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.  
See Advertisements on Pages 94, 95  
Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
See Advertisements on Pages 80A, 80B  
Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
See Advertisements on Pages 88, 89

**ANALYZERS—Spectrum**

Applied Physics Corp., 40 South Oak Knoll Ave., Pasadena 1, Calif.  
Diamond Instrument Co., North Ave., Wakefield, Mass.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Millen Co., James, 150 Exchange St., Malden, Mass.  
See Advertisement on Page 44  
Panoramic Radio Corp., 242 W. 55th St., New York 19, N. Y.  
Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
See Advertisements on Pages 80A, 80B  
Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
See Advertisements on Pages 158 to 161

**ANALYZERS—Surface Analyzers & Comparators**

Brush Development Co., 3405 Perkins Ave., Cleveland 14, Ohio  
Panoramic Radio Corp., 242 W. 55th St., New York 19, N. Y.  
Pho-Tron Instrument Co., 5713 Euclid Ave., Cleveland, Ohio

Saxl Instrument Co., 6 Linnaean St., Cambridge 38, Mass.

**ANALYZERS—Vibration**

Commercial Research Labs., Inc., 20 Bartlett Ave., Detroit 3, Mich.  
Consolidated Engineering Corp., 595 E. Colorado St., Pasadena 1, Calif.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
Hathaway Instrument Co., 1315 S. Clarkson St., Denver 16, Colo.  
Saxl Instrument Co., 6 Linnaean St., Cambridge 38, Mass.  
Sheffield Corp., The, Dayton 1, Ohio  
Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
See Advertisements on Pages 80A, 80B  
Televisto Products Inc., 7466 West Irving Park Road, Chicago 34, Ill.  
Vibroscope Co., 3 East 39th St., New York 16, N. Y.  
Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
See Advertisements on Pages 88, 89

**ANALYZERS—Wave**

Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.  
Electronic Measurements Co., Red Bank, N. J.  
See Advertisement on Page 68  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.  
See Advertisements on Pages 94, 95  
Measurement Engineering Ltd., 61 Duke St., Toronto, Can.  
See Advertisement on Page 193  
Panoramic Radio Corp., 242 W. 55th St., New York 19, N. Y.  
Technology Instrument Corp., 1058 Main Street, Waltham, Mass.  
Televisto Products Inc., 7466 West Irving Park Rd., Chicago, Ill.  
Waterman Products Co., Inc., 2445-63 Emerald St., Thila, 25, Pa.  
See Advertisement on Page 76

**ANODES**

See Tube Parts

**ANTENNA DRAG UNITS**

Aeronautical Radio Mfg. Co., 155 First St., Mineola, N. Y.  
Heath Co., Benton Harbor, Mich.  
Searle Aero Industries, Inc., Orange, Calif.

**ANTENNA FAIRLEADS**

Airadio Inc., Melrose Ave. & Battery Pl., Stamford, Conn.  
Aeronautical Radio Mfg. Co., 155 First St., Mineola, N. Y.  
Searle Aero Industries, Inc., Orange, Calif.  
Telenhones Corp., 350 W. 31st St., New York 1, N. Y.

**ANTENNA FEED SYSTEMS**

Andrew Co., 363 E. 75th St., Chicago 19, Ill.  
Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
See Advertisements on Pages 48A to 48D  
General Electric Co., Syracuse, N. Y.  
See Advertisements on Pages, 96, 96A  
Johnson Co., E. F. Waseca, Minn.  
Knights Co., James, 131 S. Wells St., Sandwich, Ill.  
Rice's Sons Inc., Bernard, 325 Fifth Avenue, New York 16, N. Y.  
Searle Aero Industries, Inc., Orange, Calif.  
Workshop Associates 66 Needham Street, Newton Highlands 61, Mass.

**ANTENNA KITS**

Aeronautical Radio Mfg. Co., 155 First St., Mineola, N. Y.  
Alpha Wire Corp., 50 Howard St., New York 13, N. Y.  
American Communications Corp., 306 Broadway, New York 7, N. Y.  
Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.  
Birnback Radio Co., Inc., 145 Hudson St., New York, N. Y.  
Brach Mfg. Corp., 55 Dickerson St., Newark, N. J.  
Columbia Wire & Supply Co., 5734 N. Elson Ave., Chicago 30, Ill.  
See Advertisement on Page 206  
Consolidated Wire & Associated Companies, 1635 S. Clinton St., Chicago 16, Ill.  
Cornish Wire Co., 15 Park Row, New York, N. Y.  
See Advertisement on Page 170  
Eagle Electric Mfg. Co., Inc., 23-10 Bridge Plaza S., Long Island City, N. Y.  
Electronic Apparatus, Inc., 347 Madison Ave., New York 17, N. Y.  
General Electric Co., Syracuse, N. Y.  
See Advertisements on Pages 96, 96A  
Heath Co., Benton Harbor, Mich.  
Insuline Corp. of America, 3602-35th Ave., Long Island City, N. Y.  
See Advertisement on Page 166  
Interstate Mfg. Corp., 125 Sussex Ave., Newark 4, N. J.  
See Advertisements on Pages 180, 215  
J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkwy., Brooklyn, N. Y.  
Johnson Co., E. F. Waseca, Minn.  
La Magna Mfg. Co., Inc., East Rutherford, N. J.  
Magnavox Co., The, Fort Wayne 4, Ind.  
National Electronic Mfg. Corp., 22-78 Steinway St., Long Island City 5, N. Y.  
Premax Products Div., Chisholm-Ryder Co., College & Highland Ave., Niagara Falls 2, N. Y.  
See Advertisement on Page 90  
Radio Corp. of America, Tube Div., Harrison, N. J.  
Searle Aero Industries, Inc., Orange, Calif.  
Spirling Products Co., Inc., 64 Grand St., New York 13, N. Y.  
Technical Appliance Corp., 41-06 DeLong St., Flushing, N. Y.  
Ward Products Corp., 1523 E. 45th St., Cleveland 3, Ohio  
See Advertisement on Page 248  
Wind Turbine Co., Tower & Antenna Div., E. Market St. & Penna. R. R., West Chester, Pa.  
Workshop Associates, 66 Needham St., Newton Highlands 61, Mass.

**ANTENNA MECHANICAL DRIVES**

Diamond Instrument Co., North Ave., Wakefield, Mass.  
General Electric Co., Syracuse, N. Y.  
See Advertisements on Pages 96, 96A  
Johnson Co., E. F. Waseca, Minn.  
Kings Electronics Co., 372 Classon Ave., Brooklyn 5, N. Y.  
Premax Products Div., Chisholm-Ryder Co., Inc., Niagara Falls 2, N. Y.  
See Advertisement on Page 90  
Powell & Co., Inc., R. C., 57 William St., New York, N. Y.  
Workshops Associates, 66 Needham Street, Newton Highlands 61, Mass.

**ANTENNA PEDESTALS—Gear Driven Radar**

Breeze Corp., 41 S. 6th St., Newark, N. J.  
Dalmo Victor Co. San Carlos, Calif.  
Diamond Instrument Co., North Ave., Wakefield, Mass.  
Foote Brothers Gear & Machine Corp., 5225 S. Western Blvd., Chicago 9, Ill.  
General Electric Co., Syracuse, N. Y.  
See Advertisements on Pages 96, 96A

**ANTENNA REELS**

Aeronautical Radio Mfg. Co., 155 First St., Mineola, N. Y.  
Airadio Inc., Melrose Ave. & Battery Pl., Stamford, Conn.  
General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
General Electric Co., Syracuse, N. Y.  
See Advertisements on Pages 96, 96A  
Heath Co., Benton Harbor, Mich.  
Searle Aero Industries, Inc., Orange, Calif.

## ANTENNA REFLECTORS—Radar Parabolic

Breeze Corp., 41 S. 6th St., Newark, N. J.  
 Dalmo Victor Co., San Carlos, Calif.  
 Diamond Instrument Co., North Ave., Wakefield, Mass.  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
**General Electric Co., Syracuse, N. Y.**  
 See Advertisements on Pages 96, 96A  
**Gray Mfg. Co., 16-30 Arbor St., Hartford Conn.**  
**Rice's Sons, Inc., Bernard 325 Fifth Ave., New York 16, N. Y.**  
**Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.**  
 See Advertisements on Pages 80A, 80B  
**Workshop Associates, 66 Needham Street, Newton Highlands 61, Mass.**

## ANTENNA TOWERS & SUPPORTS

American Bridge Co., Frick Bldg. Pittsburgh, Pa.  
 Andrew Co., 363 E. 75th St., Chicago 19, Ill.  
**Blaw-Knox Co., Farmers Bank Bldg., Pittsburgh, Pa.**  
 See Advertisement on Page 22  
**Clarkstan Corp., 11927 W. Pico Blvd., Los Angeles 34, Calif.**  
**Electronic Apparatus, Inc., 347 Madison Ave., New York 17, N. Y.**  
**Gardiner Mfg. Co., 2711 Union St., Oakland 7 Calif.**  
**Harco Tower, Inc., 1180 E. Broad St., Elizabeth 4, N. J.**  
**International Derrick & Equipment Co., 875 Michigan Ave., Columbus 8, Ohio**  
**Lehigh Structural Steel Co., 17 Battery Pl., New York 4, N. Y.**  
**Lingo & Son, Inc., John E., 28th & Buren Avenue, Camden, N. J.**  
**Truscon Steel Co., Youngstown, Ohio.**  
**Wincharger Corp., 7th & Division Sts., Sioux City, Iowa**  
**Wind Turbine Co., Tower & Antenna Div., E. Market St. & Penna. R.R., West Chester, Pa.**

## ANTENNA TUNING UNITS

Aero Communications, Inc., 231 Main St., Hempstead, N. Y.  
 Andrew Co., 363 E. 75th St., Chicago 19, Ill.  
 Barone Co., S. A., 143 W. 22nd St., New York 11, N. Y.  
**Collins Radio Co., Cedar Rapids, Iowa**  
 See Advertisements on Pages 30 to 33  
**Erco Radio Labs., Inc., Fenimore Ave., Hempstead, N. Y.**  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
**Johnson Co., E. F., Waseca Minn.**  
**Raytheon Mfg. Co., Commercial Products Div., Waltham 54, Mass.**  
**Searle Aero Industries, Inc., Orange, Calif.**  
**Transmitter Equipment Co., Inc., 345 Hudson St., New York 14, N. Y.**  
**Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.**  
 See Advertisements on Pages 88, 89  
**Wind Turbine Co., Tower & Antenna Div., E. Market St. & Penna. R.R., West Chester, Pa.**

## ANTENNAS—Airborne Radar Spinner

Dalmo Victor Co., San Carlos, Calif.  
 Diamond Instrument Co., North Ave., Wakefield, Mass.  
**Eclipse Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.**  
**Gray Mfg. Co., 16-30 Arbor St., Hartford Conn.**  
**Rice's Sons, Inc., Bernard, 325 Fifth Ave., New York 16, N. Y.**  
**Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.**  
 See Advertisements on Pages 80A, 80B

## ANTENNAS—Aircraft Type

Aeronautical Radio Mfg. Co., 155 First St., Mineola, N. Y.  
**Airadio Inc., Melrose Ave. & Battery Pl., Stamford, Conn.**  
**Bassett Inc., Rex, 500 SE 2nd St., Ft. Lauderdale, Fla.**

Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
 Bird Electronic Corp., 1800 E. 38th St., Cleveland 14, Ohio  
 Communication Equipment & Engrg. Co., 5346 W. Race St., Chicago 44, Ill.  
 Diamond Instrument Co., North Ave., Wakefield, Mass.  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
**General Electric Co., Syracuse, N. Y.**  
 See Advertisements on Pages 96, 96A  
**La Magna Mfg. Co., Inc., East Rutherford, N. J.**  
**Radio Corp. of Amer., RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover & Back Cover, 251  
**Searle Aero Industries, Inc., Orange, Calif.**  
**Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.**  
 See Advertisements on Pages 80A, 80B  
**Workshop Associates, 66 Needham St., Newton Highlands 61, Mass.**

## ANTENNAS—All Wave Receiving

Alpha Wire Corp., 50 Howard St., New York, N. Y.  
 American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
**Amy, Aceves & King Inc., 11 W. 42nd St., New York 18, N. Y.**  
**Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.**  
**Brach Mfg. Corp., 55 Dickerson St., Newark 4, N. J.**  
**Burton-Rogers Co., 857 Boylston St., Boston 16, Mass.**  
**Columbia Wire & Supply Co., 5734 N. Elson Ave., Chicago 30, Ill.**  
 See Advertisement on Page 206  
**Commercial Radio Sound Corp., 575 Lexington Ave., New York 22, N. Y.**  
**Consolidated Wire & Associated Companies, 1635 S. Clinton St., Chicago 16, Ill.**  
**Dielectric Products Co., Inc., 125 Virginia Ave., Jersey City 5, N. J.**  
**Fishwick Radio Co., 423 Colorado Bldg., Washington, D. C.**  
**Fleron & Son Inc., M. M., 113 N. Broad St., Trenton 8, N. J.**  
**Insuline Corp. of Amer., 36-02 35th Ave., L. I. City, N. Y.**  
 See Advertisement on Page 166  
**Interstate Mfg. Corp., 125 Sussex Ave., Newark 4, N. J.**  
 See Advertisements on Pages 180, 215  
**Magnavox Co., The, Fort Wayne 4, Ind.**  
**Maguire Industries Inc., Electronics Dept., Bridgeport, Conn.**  
**Milwaukee Resistor Co., 748 W. Virginia St., Milwaukee 4, Wisc.**  
**Pan American Electric Co., Inc., 2912 Atlantic Ave., Brooklyn 7, N. Y.**  
**Polytron Corp., 401 Broadway, New York 13, N. Y.**  
**Radio Corp. of America, Tube Div., Harrison, N. J.**  
**Snyder Mfg. Co., 22nd & Ontario Sts., Phila. 40, Pa.**  
**Stanwyck Winding Co., 102 S. Lander St., Newburgh, N. Y.**  
**Super Electric Products Corp., 1057 Summit Ave., Jersey City, N. J.**  
 See Advertisement on Page 86  
**Technical Appliance Corp., 41-06 DeLong St., Flushing, N. Y.**  
**Wind Turbine Co., Tower & Antenna Div., E. Market St. & Penna. R. R., West Chester, Pa.**

## ANTENNAS—Auto

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
**Andrew Co., 363 E. 75th St., Chicago 19, Ill.**  
**Brach Mfg. Corp., 55 Dickerson St., Newark 4, N. J.**  
**Buggie & Co., H. H., 2141 Madison Ave., Toledo 1, Ohio**  
**Burton-Rogers Co., 857 Boylston St., Boston 16, Mass.**  
**Communication Products Co., Inc., Broadway & Clark St., Keyport, N. J.**  
**Consolidated Wire & Associated Companies, 1635 S. Clinton St., Chicago 16, Ill.**  
**Doolittle Radio, Inc., 7421 Loomis Bldg., Chicago 38, Ill.**  
**Fishwick Radio Co., 423 Colorado Bldg., Washington, D. C.**  
**General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.**  
 See Advertisement on Page 90  
**General Electric Co., Syracuse, N. Y.**  
 See Advertisements on Pages 96, 96A

Insuline Corp. of Amer., 36-02 35th Ave., L. I. City, N. Y.  
 See Advertisement on Page 166  
**Interstate Mfg. Corp., 125 Sussex Ave., Newark 4, N. J.**  
 See Advertisements on Pages 180, 215  
**J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkway., Brooklyn, N. Y.**  
**Kaar Engineering Co., 619 Emerson St., Palo Alto, Calif.**  
**La Magna Mfg. Co., Inc., East Rutherford, N. J.**  
**Maguire Industries Inc., Electronics Dept., Bridgeport, Conn.**  
**National Electronic Mfg. Corp., 22-78 Steinway St., Long Island City 5, N. Y.**  
**Philson Mfg. Co., Inc., 156 Chambers Street, New York, N. Y.**  
**Premax Products Div., Chisholm-Ryder Co., Niagara Falls 2, N. Y.**  
 See Advertisement on Page 90  
**Snyder Mfg. Co., 22nd & Ontario Sts., Phila. 40, Pa.**  
**Spirling Products Co., Inc., 60-62-64 Grand St., New York 13, N. Y.**  
**Superior Tube Co., Norristown, Pa.**  
 See Advertisements on Pages 36, 37  
**Ward Products Corp., 1523 E. 45th St., Cleveland 3, Ohio**  
 See Advertisement on Page 248

## ANTENNAS—Broadcast Station Radiators

American Bridge Co., Frick Bldg., Pittsburgh, Pa.  
 American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
**Blaw-Knox Co., Farmers Bank Bldg., Pittsburgh, Pa.**  
 See Advertisement on Page 22  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
**Lehigh Structural Steel Co., 17 Battery Pl., New York 4, N. Y.**  
**Lingo & Son, Inc., John E., 28th St. & Buren Avenue, Camden, N. J.**  
**Truscon Steel Co., Youngstown, Ohio**  
**Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.**  
 See Advertisements on Pages 88, 89  
**Wind Turbine Co., Tower & Antenna Div., E. Market St. & Penna. R. R., West Chester, Pa.**

## ANTENNAS—Dipole

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
**Amy, Aceves & King Inc., 11 W. 42nd St., New York 18, N. Y.**  
**Andrew Co., 363 E. 75th St., Chicago 19, Ill.**  
**Brach Mfg. Corp., 55 Dickerson St., Newark, N. J.**  
**Clarke Instrument Corp., 910 King St., Silver Spring, Md.**  
**Communication Products Co., Inc., Broadway & Clark St., Keyport, N. J.**  
**Diamond Instrument Co. North Ave., Wakefield, Mass.**  
**Dielectric Products Co., Inc., 125 Virginia Ave., Jersey City 5, N. J.**  
**Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.**  
 See Advertisement on Page 166  
**Interstate Mfg. Corp., 125 Sussex Ave., Newark 4, N. J.**  
 See Advertisements on Pages 180, 215  
**J. F. D. Mfg. Co. 4111 Ft. Hamilton Pkway., Brooklyn, N. Y.**  
**Kings Electronics Co., 372 Classon Ave., Brooklyn 5, N. Y.**  
**Mobile Communications Co., 202 E. Fourth St., Long Beach 2, Calif.**  
**Premax Products Div., Chisholm-Ryder Co., Inc., Niagara Falls 2, N. Y.**  
 See Advertisement on Page 90  
**Radio Corp. of America, Tube Div., Harrison, N. J.**  
**Rice's Sons, Inc., Bernard, 325 Fifth Ave., New York 16, N. Y.**  
**Serdex, Inc., 91 Cambridge St., Boston, Mass.**  
**Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.**  
 See Advertisements on Pages 80A, 80B  
**Stromberg-Carlson Co., Rochester, N. Y.**  
**Technical Appliance Corp., 41-06 DeLong St., Flushing, N. Y.**  
**Ward Products Corp., 1523 E. 45th St., Cleveland 3, Ohio**  
 See Advertisement on Page 248  
**Weymouth Instrument Co., 1440 Commercial St., East Weymouth, Mass.**  
**Wind Turbine Co., Tower & Antenna Div., E. Market St. & Penna. R. R., West Chester, Pa.**

Workshop Associates, 66 Needham St.,  
Newton Highlands 61, Mass.

### ANTENNAS—Directional Antenna Coupling & Phasing Units

American Phenolic Corp., 1830 S. 54th Ave.,  
Chicago 50, Ill.  
See Advertisement on Page 23  
Andrew Co., 363 E. 75th St., Chicago 19, Ill.  
Bird Electronic Corp., 1800 E. 38th St.,  
Cleveland 14, Ohio  
Cover Dual Signal Systems, Inc., Div. of  
Electra Voice Corp., 5215-25 Ravens-  
wood Ave., Chicago 40, Ill.  
Diamond Instrument Co., North Ave., Wake-  
field, Mass.  
Dielectric Products Co., Inc., 125 Virginia  
Ave., Jersey City 5, N. J.  
Federal Telephone and Radio Corp., 100  
Kingsland Rd., Clifton, N. J.  
See Advertisements on Pages 48A to 48D  
J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkway.,  
Brooklyn, N. Y.  
Johnson Co., E. F. Waseca, Minn.  
Raytheon Mfg. Co., Commercial Products  
Div., Waltham 54, Mass.  
Schuttig & Co., 9th & Kearney Sts., N. E.,  
Washington 17, D. C.  
Sperry Gyroscope Co., Inc., Great Neck,  
L. I., N. Y.  
See Advertisements on Pages 80A, 80B  
Transmitter Equipment Co., Inc., 345 Hud-  
son St., New York 14, N. Y.  
Truscon Steel Co., Youngstown, Ohio  
Western Electric Co., 195 Broadway, New  
York 7, N. Y.  
See Advertisements on Pages 88, 89  
Westinghouse Electric Corp., Industrial  
Electronics Div., Baltimore, Md.  
Workshop Associates, 66 Needham Street,  
Newton Highlands 61, Mass.

### ANTENNAS—Dummy Loads

Bird Electronic Corp., 1800 E. 38th St.,  
Cleveland 14, Ohio  
Consolidated Wire & Associated Companies,  
1635 S. Clinton St., Chicago 16, Ill.  
Cover Dual Signal Systems, Inc., Div. of  
Electra Voice Corp., 5215-25 Ravens-  
wood Ave., Chicago 40, Ill.  
Globe Div., Carborundum Co., Buffalo Ave.,  
Niagara Falls, N. Y.  
Ohmite Mfg. Co., 4835 W. Flournoy St.,  
Chicago 44, Ill.  
See Advertisement on Page 179  
Rice's Sons, Inc., Bernard 325 Fifth Ave.,  
New York 16, N. Y.  
Rollin Co., 2070 N. Fair Oaks Ave., Pasade-  
na 3, Calif.  
Sperry Gyroscope Co., Inc., Great Neck,  
L. I., N. Y.  
See Advertisements on Pages 80A, 80B

### ANTENNAS—f-m

American Phenolic Corp., 1830 S. 54th Ave.,  
Chicago 50, Ill.  
See Advertisement on Page 23  
Amy, Aceves & King Inc., 11 W. 42nd St.,  
New York 18, N. Y.  
Andrew Co., 363 E. 75th St., Chicago 19, Ill.  
Blaw-Knox Co., Farmers Bank Building,  
Pittsburgh, Pa.  
See Advertisement on Page 22  
Brach Mfg. Corp., 55 Dickerson St., Newark  
4, N. J.  
Buggie & Co., H. H., 2141 Madison Ave.,  
Toledo 1, Ohio  
Dielectric Products Co., Inc., 125 Virginia  
Ave., Jersey City 5, N. J.  
Electronic Apparatus, Inc., 347 Madison  
Ave., New York 17, N. Y.  
Essex Electronics, 1060 Broad St., Newark  
2, N. J.  
See Advertisement on Page 241  
Farnsworth Television & Radio Corp., Ft.  
Wayne, Ind.  
Federal Telephone and Radio Corp., 100  
Kingsland Rd., Clifton, N. J.  
See Advertisements on Pages 48A to 48D  
Finch Telecommunications Inc., Passaic,  
N. J.  
General Electric Co., Syracuse, N. Y.  
See Advertisements on Pages 96, 96A  
Gordon Specialties Co., 823 S. Wabash Ave.,  
Chicago 5, Ill.  
Hallcrafters Co., 4401 W. Fifth Ave., Chi-  
cago 24, Ill.  
Harvey Radio Lab., Inc., 447 Concord Ave.,  
Cambridge, Mass.  
Hi-Par Products Co., Fitchburg, Mass.

Insuline Corp. of Amer., 36-02 35th Ave.,  
L. I. City, N. Y.  
See Advertisement on Page 166  
Interstate Mfg. Corp., 125 Sussex Ave.,  
Newark 4, N. J.  
See Advertisements on Pages 180, 215  
Kings Electronics Co., 372 Classon Ave.,  
Brooklyn 5, N. Y.  
LaMagna Mfg. Co., Inc., East Rutherford,  
N. J.  
L-high Structural Steel Co., 17 Battery Pl.,  
New York 4, N. Y.  
Lingo & Son, John E. Inc., 28th St. & Buren  
Ave., Camden, N. J.  
Magnavox Co., The, Fort Wayne 4, Ind.  
Pan American Electric Co., Inc., 2912 At-  
lantic Ave., Brooklyn 7, N. Y.  
Philson Mfg. Co., Inc., 156 Chambers St.,  
New York, N. Y.  
Premax Products Div., Chisholm-Ryder Co.,  
Niagara Falls 2, N. Y.  
See Advertisement on Page 90  
Radio Corp. of Amer., RCA Victor Div.,  
Camden, N. J.  
See Advertisements on Inside Back Cover &  
Back Cover, 251  
Radio Engineering Labs, Inc., 35-54 36th St.,  
Long Island City, N. Y.  
Rauland Corp., 4245 N. Knox Ave., Chicago  
41, Ill.  
Shur-Antenna-Mount Inc., Seaclyffe, N. Y.  
Spirling Products Co., Inc., 60-62-64 Grand  
St., New York 13, N. Y.  
Stromberg-Carlson Co., Rochester, N. Y.  
Technical Appliance Corp., 41-06 DeLong  
St., Flushing, N. Y.  
Telicon Corp., 851 Madison Ave., New York  
21, N. Y.  
Thermionic Engineering Corp., Pomptain  
Plains, N. J.  
Ward Products Corp., 1523 E. 45th St.,  
Cleveland, Ohio  
See Advertisement on Page 248  
West Coast Electronics Co., 1601 S. Burling-  
ton St., Los Angeles 6, Calif.  
Western Electric Co., Inc., 195 Broadway,  
New York 7, N. Y.  
See Advertisements on Pages 88, 89  
Wincharger Corp., 7th & Division Sts., Sioux  
City, Iowa  
Wind Turbine Co., Tower & Antenna Div.,  
E. Market St. & Penna. R. R., West Ches-  
ter, Pa.  
Workshop Associates, 66 Needham St.,  
Newton Highlands 61, Mass.

### ANTENNAS—Fixed Station Antenna Sys-tems

Aero Communications, Inc., 231 Main St.,  
Hempstead, N. Y.  
American Phenolic Corp., 1830 S. 54th Ave.,  
Chicago 50, Ill.  
See Advertisement on Page 23  
Andrew Co., 363 E. 75th St., Chicago 19, Ill.  
Dielectric Products Co., Inc., 125 Virginia  
Ave., Jersey City 5, N. J.  
Erco Radio Labs, Inc., Fenimore Ave.,  
Hempstead, N. Y.  
Federal Telephone and Radio Corp., 100  
Kingsland Rd., Clifton, N. J.  
See Advertisements on Pages 48A to 48D  
General Electric Co., Syracuse, N. Y.  
See Advertisements on Pages 96, 96A  
Mobile Communications Co., 202 E. Fourth  
St., Long Beach 2, Calif.  
Radio Corp. of America, RCA Victor Div.,  
Camden, N. J.  
See Advertisements on Inside Back Cover &  
Back Cover, 251  
Technical Appliance Corp., 41-06 DeLong  
St., Flushing, N. Y.  
Western Electric Co., Inc., 195 Broadway,  
New York 7, N. Y.  
See Advertisements on Pages 88, 89  
Wind Turbine Co., Tower & Antenna Div., E.  
Market St. & Penna. R. R., West Ches-  
ter, Pa.  
Workshop Associates, 66 Needham Street,  
Newton Highlands 61, Mass.

### ANTENNAS—Ground Plane

Aero Communications, Inc., 231 Main St.,  
Hempstead, N. Y.  
American Phenolic Corp., 1830 S. 54th Ave.,  
Chicago 50, Ill.  
See Advertisement on Page 23  
Andrew Co., 363 E. 75th St., Chicago 19, Ill.  
Diamond Instrument Co., North Ave., Wake-  
field, Mass.  
Electronic Apparatus, Inc., 347 Madison  
Ave., New York 17, N. Y.  
Erco Radio Labs, Inc., Fenimore Ave.,  
Hempstead, N. Y.  
Hi-Par Products Co., Fitchburg, Mass.  
Lingo & Son, Inc., John E. 28th St. & Buren  
Ave., Camden, N. J.

Radio Corp. of America, RCA Victor Div.,  
Camden, N. J.  
See Advertisements on Inside Back Cover &  
Back Cover, 251  
Serdex, Inc., 91 Cambridge St., Boston,  
Mass.  
West Coast Electronics Co., 1601 S. Burling-  
ton St., Los Angeles 6, Calif.  
Wind Turbine Co., Tower & Antenna Div.,  
E. Market St. & Penna. R.R., West  
Chester, Pa.  
Workshop Associates, 66 Needham St., New-  
ton Highlands 61, Mass.

### ANTENNAS—Loop

Airadio Inc., Melrose Ave. & Battery Pl.,  
Stamford, Conn.  
American Coil & Engineering Co., 1271 N.  
Hermitage Ave., Chicago 22, Ill.  
American Communications Corp., 306 Broad-  
way, New York 7, N. Y.  
Bassett Inc., Rex, 500 S.E. 2nd St., Ft. Lau-  
derdale, Fla.  
Bittermann Electric Co., 50 Henry St.,  
Brooklyn, N. Y.  
Clarke Instrument Corp., 910 King St.,  
Silver Spring, Md.  
Dielectric Products Co., Inc., Jersey City 5,  
N. Y.  
Electronic Labs, Inc., 24 W. 24th St.,  
Indianapolis 4, Ind.  
Essex Electronics, 1060 Broad St., Newark  
2, N. J.  
See Advertisement on Page 241  
Federal Telephone and Radio Corp., 100  
Kingsland Rd., Clifton, N. J.  
See Advertisements on Pages 48A to 48D  
Fisher Research Lab., 1961 University Ave.,  
Palo Alto, Calif.  
Franklin Airlap Corp., 43-20 34th St., Long  
Island City, N. Y.  
See Advertisement on Page 61  
Franklin Mfg. Co., A. W., 43-20 34th St.,  
Long Island City, N. Y.  
See Advertisement on Page 98  
General Communication Co., 530 Common-  
wealth Ave., Boston 15, Mass.  
General Electric Co., Syracuse, N. Y.  
See Advertisements on Pages 96 to 96A  
Guthman Inc., Edwin I., 15 S. Throop St.,  
Chicago, Ill.  
Hazelitine Electronics Corp., 1775 Broadway,  
New York, N. Y.  
Heath Co., Benton Harbor, Mich.  
Hillburn Electronic Products Co., 1 Worth  
St., New York 13, N. Y.  
Houlihan Co., T. J. The, 25-8-14 W.  
Lawrence Ave., Chicago 25, Ill.  
Insuline Corp. of America, 36-02 35th Ave.,  
Long Island City, N. Y.  
See Advertisement on Page 166  
J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkway,  
Brooklyn, N. Y.  
Madison Electrical Products Div., John G.  
Ruckelshaus Co., 74 Main St., Madison,  
N. J.  
National Electronic Mfg. Corp., 22-78 Stein-  
way St., Long Island City 5, N. Y.  
Plastoid Corp., 19 W. 44th St., New York  
18, N. Y.  
See Advertisement on Page 63  
Polytron Corp., 401 Broadway, New York  
13, N. Y.  
Radio Corp. of America, RCA Victor Div.,  
Camden, N. J.  
See Advertisements on Inside Back Cover &  
Back Cover, 251  
S-W Inductor Co., 1056 N. Wood St.,  
Chicago, Ill.  
Super Electric Corp., 1057 Summit Ave.,  
Jersey City, N. J.  
See Advertisement on Page 86  
Teleradio Engineering Corp., 99 Wall St.,  
New York 5, N. Y.  
Willard's, Hampden, Mass.  
Workshop Associates, 66 Needham St., New-  
ton Highlands 61, Mass.

### ANTENNAS—Marine

Airadio Inc., Melrose Ave. & Battery Pl.,  
Stamford, Conn.  
Brach Mfg. Corp., 55 Dickerson St., Newark  
4, N. J.  
Emerson Radio & Phonograph Corp., 111 5th  
Ave., New York, N. Y.  
Federal Telephone and Radio Corp., 100  
Kingsland Rd., Clifton, N. J.  
See Advertisements on Pages 48A to 48D  
Harvey Wells Electronics Inc., North St.  
Southbridge, Mass.  
Hose-McCann Telephone Co., 177 Pacific St.,  
Brooklyn 2, N. Y.  
Islip Radio Mfg. Co., Beech St., Islip, N. Y.  
Jefferson-Travis Inc., 380 Second Ave., New  
York 10, N. Y.  
Kaar Engineering Co., 619 Emerson St.,  
Palo Alto, Calif.  
Kings Electronics Co., 372 Classon Ave.,  
Brooklyn 5, N. Y.

Premax Products Div., Chisholm-Ryder Co., Niagara Falls 2, N. Y.  
 See Advertisements on Page 90  
 Snyder Mfg. Co., 22nd & Ontario Sts., Phila. 40, Pa.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B  
 Superior Tube Co., Norristown, Pa.  
 See Advertisements on Pages 36, 37  
 Workshop Associates, 66 Needham St., Newton Highlands 61, Mass.

## ANTENNAS—Microwave

Cover Dual Signal Systems, Inc., Div. of Electra Voice Corp., 5215-25 Ravenswood Ave., Chicago 40, Ill.  
 Diamond Instrument Co., North Ave., Wakefield, Mass.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Rice's Sons, Inc., Bernard, 325 Fifth Ave., New York 16, N. Y.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B  
 Televiso Products, Inc., 7466 West Irving Park Rd., Chicago 34, Ill.  
 Weymouth Instrument Co., 1440 Commercial St., East Weymouth, Mass.  
 Workshop Associates, 66 Needham St., Newton Highlands 61, Mass.

## ANTENNAS—Portable Radio Telescopic

Brach Mfg. Corp., 55 Dickerson St., Newark 4, N. J.  
 Consolidated Wire & Associated Companies, 1635 S. Clinton St., Chicago 16, Ill.  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 La Magna Mfg. Co., Inc., East Rutherford, N. J.  
 Maguire Industries Inc., Electronics Dept., Bridgeport, Conn.  
 Philson Mfg. Co., Inc., 156 Chambers St., New York, N. Y.  
 Premax Products Div., Chisholm-Ryder Co., Niagara Falls 2, N. Y.  
 See Advertisement on Page 90  
 Ward Products Corp., 1523 E. 45th St., Cleveland 3, Ohio  
 See Advertisement on Page 248  
 Workshop Associates, 66 Needham St., Newton Highland 61, Mass.

## ANTENNAS—Radar Receiving

Brach Mfg. Corp., 55 Dickerson St., Newark 4, N. J.  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Philson Mfg. Co., Inc., 156 Chambers St., New York, N. Y.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Rice's Sons, Inc., Bernard, 325 Fifth Ave., New York 16, N. Y.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B  
 Vendo Co., 1907 Grand Ave., Kansas City 8, Mo.  
 Workshop Associates, 66 Needham St., Newton Highlands 61, Mass.

## ANTENNAS—Radar Transmitting

Brach Mfg. Corp., 55 Dickerson St., Newark, 4, N. J.  
 Diamond Instrument Co., North Ave., Wakefield, Mass.  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Rice's Sons, Inc., Bernard, 325 Fifth Ave., New York 16, N. Y.

Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B  
 Televiso Products Inc., 7466 West Irving Park Rd., Chicago 34, Ill.  
 Workshop Associates, 66 Needham St., Newton Highlands 61, Mass.

## ANTENNAS—Railroad

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 Andrew Co., 363 E. 75th St., Chicago 19, Ill.  
 Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
 Brach Mfg. Corp., 55 Dickerson St., Newark, N. J.  
 Buggie & Co., H. H., 2141 Madison Ave., Toledo 1, Ohio.  
 Communication Equipment & Engrg. Co., 5646 W. Race St., Chicago 44, Ill.  
 Dielectric Products Co., Inc., 125 Virginia Ave., Jersey City 5, N. J.  
 Farnsworth Television & Radio Corp., Ft. Wayne, Ind.  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Kings Electronics Co., 372 Classon Ave., Brooklyn 5, N. Y.  
 Premax Products Div., Chisholm-Ryder Co., Niagara Falls 2, N. Y.  
 See Advertisement on Page 90  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B  
 Ward Products Corp., 1523 E. 45th St., Cleveland 3, Ohio  
 See Advertisement on Page 248  
 West Coast Electronics Co., 1601 S. Burlington St., Los Angeles 6, Calif.  
 Western Electric Co. Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89  
 Workshop Associates, 66 Needham Street, Newton Highlands 61, Mass.

## ANTENNAS—Rotary Beam

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 Clarkstan Corp., 11927 W. Pico Blvd., Los Angeles 34, Calif.  
 Electronic Apparatus, Inc., 347 Madison Ave., New York 17, N. Y.  
 Espey Mfg. Co. Inc., 33 W. 46th St., New York 19, N. Y.  
 Gordon Specialties Co., 823 S. Wabash Ave., Chicago 5, Ill.  
 Johnson Co., E. F., Waseca, Minn.  
 Kings Electronics Co., 372 Classon Ave., Brooklyn 5, N. Y.  
 Premax Products Div., Chisholm-Ryder Co., Inc., Niagara Falls 2, N. Y.  
 See Advertisement on Page 10  
 Wind Turbine Co., Tower & Antenna Div., E. Market St. & Penna. R.R., West Chester, Pa.  
 Workshop Associates, 66 Needham Street, Newton Highlands 61, Mass.

## ANTENNAS—Telescopic

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 Brach Mfg. Corp., 55 Dickerson St., Newark, N. J.  
 Gordon Specialties Co., 823 S. Wabash Ave., Chicago 5, Ill.  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Interstate Mfg. Corp., 125 Sussex Ave., Newark 4, N. J.  
 See Advertisements on Pages 180, 215  
 Jefferson-Travis Inc., 380 Second Ave., New York 10, N. Y.  
 Kings Electronics Co., 372 Classon Ave., Brooklyn 5, N. Y.  
 Lingo & Son, Inc., John E., 28th St. & Buren Ave., Camden, N. J.  
 Philson Mfg. Co. Inc., 156 Chambers St., New York, N. Y.  
 Premax Products Div., Chisholm-Ryder Co., Inc., Niagara Falls 2, N. Y.  
 See Advertisement on Page 90  
 Spiraling Products Co., Inc., 60-62-64 Grand St., New York 13, N. Y.  
 Superior Tube Co., Norristown, Pa.  
 See Advertisements on Pages 36, 37  
 Ward Products Corp., 1523 E. 45th St., Cleveland 3, Ohio.  
 See Advertisement on Page 248  
 Workshop Associates, 66 Needham Street, Newton Highlands 61, Mass.

## ANTENNAS—Television

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 Amy, Aceves & King Inc., 11 W. 42nd St., New York 18, N. Y.  
 Andrew Co., 363 E. 75th St., Chicago 19, Ill.  
 Brach Mfg. Corp., 55 Dickerson St., Newark 4, N. J.  
 Buggie & Co., H. H., 2141 Madison Ave., Toledo 1, Ohio.  
 Commercial Radio Sound Corp., 575 Lexington Ave., New York 23, N. Y.  
 Consolidated Wire & Associated Companies, 1635 S. Clinton St., Chicago 16, Ill.  
 Dielectric Products Co., Inc., 125 Virginia Ave., Jersey City 5, N. J.  
 Electronic Apparatus, Inc., 347 Madison Ave., New York 17, N. Y.  
 Electronic Instrument Co., Inc., 926 Clarkson Ave., Brooklyn 3, N. Y.  
 Farnsworth Television & Radio Corp., Ft. Wayne, Ind.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Insuline Corp. of America, 36-02 35th Ave., L. I. City, N. Y.  
 See Advertisement on Page 166  
 J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkway., Brooklyn, N. Y.  
 Keystone Electronics Co., 50-52 Franklin St., New York 13, N. Y.  
 Kings Electronics Co., 373 Classon Ave., Brooklyn 5, N. Y.  
 Lehigh Structural Steel Co., 17 Battery Pl., New York 4, N. Y.  
 Lingo & Son, Inc., John E., 28th St. & Buren Ave., Camden, N. J.  
 Pan American Electric Co., Inc., 2912 Atlantic Ave., Brooklyn 7, N. Y.  
 Philson Mfg. Co. Inc., 156 Chambers St., New York, N. Y.  
 Premax Products Div., Chisholm-Ryder Co., Inc., Niagara Falls 2, N. Y.  
 See Advertisement on Page 90  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 Rawland Corp., 4245 N. Knox Ave., Chicago 41, Ill.  
 Shur-Antenna-Mount, Inc., Seacliffe, N. Y.  
 Spiraling Products Co., Inc., 60-62-64 Grand St., New York 13, N. Y.  
 Super Electric Products Corp., 1057 Summit Ave., Jersey City, N. J.  
 See Advertisement on Page 86  
 Superior Tube Co., Norristown, Pa.  
 See Advertisements on Pages 36, 37  
 Technical Appliance Corp., 41-06 DeLong St., Flushing, N. Y.  
 Telcon Corp., 851 Madison Ave., New York 21, N. Y.  
 Thermionic Engineering Corp., Pompton Plains, N. J.  
 Transmitter Equipment Co., Inc., 345 Hudson St., New York 14, N. Y.  
 Westinghouse Electric Corp., Industrial Electronics Div., Baltimore, Md.  
 Wind Turbine Co., Tower & Antenna Div., E. Market St. & Penna. R.R., West Chester, Pa.  
 Workshop Associates, 66 Needham Street, Newton Highlands 61, Mass.

**ANTENNAS—uhf & vhf**

Abbott Instrument, Inc., 8 W. 18th St., New York, N. Y.  
 Aero Communications, Inc., 231 Main St., Hempstead, N. Y.  
 American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 Amy, Aceves & King Inc., 11 W. 42nd St., New York 18, N. Y.  
 Andrew Co., 363 E. 75th St., Chicago 19, Ill.  
 Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
 Bird Electronic Corp., 1800 E. 38th St., Cleveland 14, Ohio  
 Birnbach Radio Co. Inc., 145 Hudson St., New York, N. Y.  
 Brach Mfg. Corp., 55 Dickerson St., Newark, N. J.  
 Buggie & Co., H. H., 2141 Madison Ave., Toledo 1, Ohio  
 Diamond Instrument Co., North Ave., Wakefield, Mass.  
 Doolittle Radio, Inc., 7421 S. Loomis Blvd., Chicago 36, Ill.  
 Electronic Apparatus, Inc., 347 Madison Ave., New York 17, N. Y.  
 Erco Radio Labs. Inc., Fenimore Ave., Hempstead, N. Y.  
 Farnsworth Television & Radio Corp., Ft. Wayne, Ind.

Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
 Gross Communication Products, 1865-71 Prospect Ave., Cleveland 15, Ohio  
 Hazeltine Electronics Corp., 1775 Broadway, New York, N. Y.  
 Hoffman Radio Corp., 3430 S. Hill St., Los Angeles 7, Calif.  
 Interstate Mfg. Corp., 125 Sussex Ave., Newark 4, N. J.  
 See Advertisements on Pages 180, 215  
 Johnson Co., E. F., Waseca, Minn.  
 Lingo & Son, Inc., John E., 28th St. & Buren Ave., Camden, N. J.  
 Link, Fred M., 125 W. 17th St., New York, N. Y.  
 Mobile Communications Co., 202 E. Fourth St., Long Beach 2, Calif.  
 Premax Products Div., Chisholm-Ryder Co., Inc., Niagara Falls 2, N. Y.  
 See Advertisement on Page 90  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Rice's Sons, Inc., Bernard, 325 Fifth Ave., New York 16, N. Y.  
 Schuttig & Co., 9th & Kearney Sts., N.E., Washington 17, D. C.  
 Searle Aero Industries, Inc., Orange, Calif.  
 Sperry Gyroscope Co., Inc., Great Neck L. I., N. Y.  
 See Advertisements on Pages 80A, 80B  
 Super Electric Products Corp., 1057 Summit Ave., Jersey City, N. J.  
 See Advertisement on Page 86  
 Technical Appliance Corp., 41-06 DeLong St., Flushing, N. Y.  
 Televisio Products Inc., 7466 West Irving Park Road, Chicago 34, Ill.  
 Ward Products Corp., 1523 E. 45th St., Cleveland 3, Ohio  
 See Advertisement on Page 248  
 West Coast Electronics Co., 1601 S. Burlington St., Los Angeles 6, Calif.  
 Weymouth Instrument Co., 1440 Commercial St., East Weymouth, Mass.  
 Wind Turbine Co., Tower & Antenna Div., E. Market St. & Penna. R.R., West Chester, Pa.  
 Workshop Associates, 66 Needham Street, Newton Highlands 61, Mass.

**ARRESTORS—Lightning**

Belden Mfg. Co., 4647 W. Van Buren St., Chicago 44, Ill.  
 Birnbach Radio Co., Inc., 145 Hudson St., New York, N. Y.  
 Brach Mfg. Corp., 55 Dickerson St., Newark 4, N. J.  
 Consolidated Wire & Associated Companies, 1635 S. Clinton St., Chicago 16, Ill.  
 Corning Glass Works, Corning, N. Y.  
 Fleron & Son, Inc., N. M., 113 N. Broad St., Trenton 8, N. J.  
 Foote, Plerson & Co., Inc., 75 Hudson St., Newark 4, N. J.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkway., Brooklyn, N. Y.  
 National Carbon Co., Inc., 30 E. 42nd St., New York, N. Y.  
 See Advertisement on Page 167  
 National Electronic Mfg. Corp., 22-78 Steinway St., Long Island City 5, N. Y.  
 Wind Turbine Co., Tower & Antenna Div., E. Market St. & Penna. R.R., West Chester, Pa.

**ASBESTOS**

See Insulation Materials

**ASPHALTS**

See Insulating Compounds

**ATTENUATORS**

Aircraft Radio Corp., Boonton, N. J.  
 See Advertisement on Page 185  
 Audio Products Co., 2101 W. Olive Ave., Burbank, Calif.  
 Centralab, Div. of Globe Union Inc., 900 Keefe Ave., Milwaukee 1, Wisc.  
 See Advertisements on Pages 24, 25

Cinema Engineering Co., 1508 W. Verdugo Ave., Burbank, Calif.  
 Clarostat Mfg. Co., Inc., 285-7 6th St., Brooklyn, N. Y.  
 Collins Radio Co., Cedar Rapids, Iowa  
 See Advertisements on Pages 30 to 33  
 General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
 Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.  
 See Advertisements on Pages 91, 95  
 Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.  
 Measurements Corp., Boonton, N. J.  
 See Advertisement on Page 56  
 Ohmite Mfg. Co., 4835 W. Flournoy St., Chicago 44, Ill.  
 See Advertisement on Page 179  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Rice's Sons, Inc., Bernard, 325 Fifth Ave., New York 16, N. Y.  
 Rollin Co., 2070 N. Fair Oaks Ave., Pasadena 3, Calif.  
 Rowe Radio Research Laboratory, 2422 N. Pulaski Rd., Chicago 39, Ill.  
 Shallcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.  
 Sonotone Corp., P. O. Box 200, Saw Mill River Road, Elmsford, N. Y.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B  
 Tech Laboratories, 337 Central Ave., Jersey City, N. J.  
 Utah Radio Products Co., 820 Orleans St., Chicago, Ill.

**AUDIO AMPLIFIERS**

See Amplifiers, Audio Frequency

**AUDIOMETERS**

Audio Development Co., 2833 13th Ave. S., Minneapolis 7, Minn.  
 See Advertisement on Page 26  
 Bogen Co., David, 663 Broadway, New York 12, N. Y.  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Rahm Instruments, Inc., 12 West Broadway, New York 7, N. Y.  
 Vacolite Co., 3001-3003 N. Henderson, Dallas, Texas  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89

**BAFFLES—Microphone**

Electro-Voice Inc., 1239 S. Bend Ave., South Bend, Ind.  
 See Advertisement on Page 29  
 Lansky Die Cutting Co., 192½ Greene St., New York 12, N. Y.  
 See Advertisement on Page 220  
 Racon Electric Co., 52 E. 19th St., New York 3, N. Y.  
 See Advertisement on Page 213  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Rauland Corp., 4245 N. Knox Avenue, Chicago 41, Ill.  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89

**BAFFLES—Speaker**

American Communications Corp., 306 Broadway, New York 7, N. Y.  
 Atlas Sound Corp., 1443 39th St., Brooklyn 18, N. Y.  
 See Advertisement on Page 96D  
 Board Products Co., 2931 S. Wabash St., Chicago 16, Ill.  
 Bogen Co., David, 663 Broadway, New York 12, N. Y.

Castlewood Mfg. Co., 12th & Burnett Sts., Louisville, Ky.  
 D & M Mfg. Co., 2 Delford Ave., Bergenfield, N. J.  
 Electronic Sound Engineering Co., 4344-46 W. Armitage Ave., Chicago 39, Ill.  
 Fairfield Lumber Co., 1700 Post Rd., Fairfield, Conn.  
 Floek Process Co., Velvetone Div., 3 Quincey St., Norwalk, Conn.  
 Illinois Wood Products Corp., 2512 S. Damen Ave., Chicago 8, Ill.  
 Lansky Die Cutting Co., 192½ Greene St., New York 12, N. Y.  
 See Advertisement on Page 220  
 Magnavox Co., The, Fort Wayne 4, Ind.  
 National Co., Inc., 61 Sherman St., Malden 48, Mass.  
 See Advertisement on Page 78  
 Olek & Son, Inc., A., 4757-59 Melrose St., Philadelphia 37, Pa.  
 Operadio Mfg. Co., 135th & Indiana Sts., St. Charles, Ill.  
 Oxford Radio Corp., 3911 S. Michigan Ave., Chicago 15, Ill.  
 Racon Electric Co., 52 E. 19th St., New York 3, N. Y.  
 See Advertisement on Page 213  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Radio Mds. Sales, 550 Westchester Ave., New York 55, N. Y.  
 Rauland Corp., 4245 N. Knox Ave., Chicago 41, Ill.  
 Simpson Mfg. Co., Inc., Mark, 188 W. 4th St., New York 14, N. Y.  
 Stark Sound Engineering Co., P. O. Box 493, Fort Wayne 1, Ind.  
 University Loudspeakers, Inc., 225 Varick St., New York 14, N. Y.  
 Watterson Radio Mfg. Co., P. O. Box 54, Dallas 1, Texas  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89  
 Western Sound & Electric Labs., Inc., 808 S. Fifth St., Milwaukee 4, Wisc.  
 Willard's, Hampden, Mass.

**BASES—Relay**

Electronic Mechanics, Inc., 70 Clifton Blvd., Clifton, N. J.  
 Hermetic Seal Products Co., 414 Morris Ave., Newark 3, N. J.  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.

**BATTERIES—Dry**

Acme Battery Corp., 59 Pearl St., Brooklyn, N. Y.  
 Admiral Corp., 3800 Cortland St., Chicago 47, Ill.  
 Bond Electric Corp., Div. of Olin Industries, Inc., New Haven 4, Conn.  
 Bright Star Battery Co., Clifton, N. J.  
 General Dry Batteries, Inc., 13000 Athens Ave., Cleveland, Ohio  
 Magnavox Co., The, Ft. Wayne 4, Ind.  
 Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.  
 See Advertisements on Pages, 257 to 260  
 Marathon Battery Co., Wausau, Wisc.  
 National Carbon Co., Inc., 30 E. 42nd St., New York, N. Y.  
 See Advertisement on Page 167  
 National Union Radio Corp., 350 Scotland Rd., Orange, N. J.  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 Ray-O-Vac Co., Madison, Wisc.  
 Transelectric Mfg. Co., Oxford, Pa.  
 U. S. Electric Mfg. Corp., 222 W. 14th St., New York, N. Y.  
 Vitamite Co., 227 W. 64th St., New York 23, N. Y.  
 See Advertisement on Page 255  
 Western Cable Battery Co., Inc., 395 Sibley St., St. Paul, Minn.  
 Willard Storage Battery Co., 246 E. 131st St., Cleveland 1, Ohio

**BATTERIES—Standard Cell**

Acme Battery Corp., 59 Pearl St., Brooklyn, N. Y.  
 Bright Star Battery Co., Clifton, N. J.  
 Development Engineering Co., Inc., The, 1818 Ashland St., Houston 8, Texas  
 Eppley Lab. Inc., Newport, R. I.  
 National Carbon Co., Inc., 30 E. 42nd St., New York, N. Y.  
 See Advertisement on Page 167

## BATTERIES—Storage

Edison Storage Battery Div., Thomas A. Edison Inc., Main St. at Lakeside Ave., W. Orange, N. J.  
 Electric Auto-Lite Co., The, Toledo 1, Ohio  
 Electric Storage Battery Co., Allegheny Ave. & 19th St., Phila. 32, Pa.  
 General Lead Batteries Co., 196 W. Railway Ave., Paterson, N. J.  
 Gould Storage Battery Corp., 35 Neoga St., DePew, N. Y.  
 Ideal Industries, Inc., Park & Borden Avenues, Sycamore, Ill.  
 Prest-O-Lite Battery Co., Inc., 4500 W. 16th St., Box 1655, Indianapolis, Ind.  
 Solar Corp., 1000 W. Bruce St., Milwaukee 4, Wis.  
 Vitamite Co., 227 W. 64th St., New York 23, N. Y.  
 See Advertisement on Page 255  
 Western Cable Co., Inc., 395 Sibley St., St. Paul, Minn.  
 Willard Storage Battery Co., 246 E. 131st St., Cleveland 1, Ohio

## BATTERIES—Storage Nonspill

Centralab Div. of Globe-Union, Inc., 900 E. Keefe Ave., Milwaukee 1, Wis.  
 See Advertisements on Pages 24, 25  
 Electric Storage Battery Co., 19th St. & Allegheny Ave., Phila. 32, Pa.  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Prest-O-Lite Battery Co., Inc., 4500 W. 16th St., Box 1655, Indianapolis, Ind.  
 Vitamite Co., 227 W. 64th St., New York 23, N. Y.  
 See Advertisement on Page 255  
 Willard Storage Battery Co., 246 E. 131st St., Cleveland 1, Ohio

## BATTERY CHARGERS

Acme Electric Corp., Cuba, N. Y.  
 Airdesign, Inc., 241 Fairfield Ave., Upper Darby, Pa.  
 American Communications Corp., 306 Broadway, New York 7, N. Y.  
 American Television Co., 300 E. 4th St., St. Paul 1, Minn.  
 Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.  
 Automatic Electrical Devices Co., 324 E. 3rd St., Cincinnati 2, Ohio  
 Baldor Electric Co., 4353 Duncan Avenue, St. Louis, Mo.  
 Control Corp., 718 Central Ave., Minneapolis 14, Minn.  
 Electric Heat Control Co., The, 9123 Inman Ave., Cleveland 5, Ohio  
 Electric Products Co., 1725 Clarkstone Rd., Cleveland 12, Ohio  
 Electron Equipment Corp., 917 Meridian Ave., South Pasadena, Calif.  
 Fansteel Metallurgical Corp., 2200 Sheridan Rd., No. Chicago, Ill.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 Franklin Transformer Mfg. Co., 65 22nd Ave. N. E., Minneapolis 13, Minn.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 General Electric Co., Bridgeport 2, Conn.  
 Ideal Industries, Inc., Park & Borden Avenues, Sycamore, Ill.  
 Inductive Equipment Co., Gettysburg, Pa.  
 Lorain Products Corp., 112 F St., Lorain, Ohio  
 McColpin-Christie Corp., 4922 S. Figueroa St., Los Angeles 37, Calif.  
 Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.  
 See Advertisements on Pages 257 to 260  
 Radio Receptor Co., 251 W. 19th St., New York 11, N. Y.  
 See Advertisement on Page 40  
 Richardson Allen Corp., 15 W. 20th Street, New York 11, N. Y.  
 Schauer Machine Co., Cincinnati 2, Ohio  
 Technical Apparatus Co., 167 Washington St., Boston 8, Mass.  
 Ther Electric & Machine Works, 17 South Jefferson St., Chicago, Ill.  
 United Transformer Corp., 150 Varick St., New York 13, N. Y.  
 See Advertisement on Page Inside Front Cover  
 Vitamite Co., 227 W. 64th St., New York 23, N. Y.  
 See Advertisement on Page 255  
 Ward Leonard Electric Co., 31 South St., Mt. Vernon, N. Y.  
 See Advertisement on Page 175  
 Westinghouse Electric Corp., Motor Div., Buffalo, N. Y.  
 Willard Storage Battery Co., 246 E. 131st St., Cleveland 1, Ohio

## BATTERY CHARGERS—Gas Engine Driven

Electric Products Co., 1725 Clarkstone Rd., Cleveland 12, Ohio  
 Kato Engineering Co., 530 N. Front St., Mankato, Minn.

## BEAD

See Insulation Materials

## BEARINGS—Miniature

Amplex Div., Chrysler Corp., Detroit 31, Mich.  
 Bound Brook Oil-Less Bearing Co., Bound Brook, N. J.  
 Fafnir Bearing Co., Booth Street, New Britain, Conn.  
 Keystone Carbon Co., Inc., Saint Marys, Pa.  
 Landis & Gyr, Inc., 104 Fifth Ave., New York, N. Y.  
 Miniature Precision Bearings, Keene, N. H.  
 New Hampshire Ball Bearings, 5 Main St., Peterborough, N. H.

## BELLOWS

Chicago Metal Hose Corp., 1309 S. Third Ave., Maywood, Ill.  
 Fulton Syphon Co., Knoxville 4, Tenn.  
 Ranco, Inc., 601 W. Fifth Ave., Columbus, Ohio.

## BELTS—Dial Drive

Aerofite Electronic Hardware Corp., 24 Cliff St., Jersey City, N. J.  
 See Advertisement on Page 246  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkway., Brooklyn, N. Y.  
 Schott Co., Walter L., 9306 Santa Monica Blvd., Beverly Hills, Calif.  
 Ton-Tex Corp., Grand Rapids, Mich.

## BENCH TEST SET-UPS

De Mornay-Budd Inc., 475 Grand Concourse, New York, N. Y.  
 See Advertisement on Page 171  
 Radio Corp. of America, Tube Div., Harrison, N. J.

## BLOCKS—Fuse Blocks & Holders

Alden Products Co., 117 N. Main St., Brockton 64, Mass.  
 Amalgamated Radio Television Corp., 476 Broadway, New York 13, N. Y.  
 Bussmann Mfg. Co., St. Louis 7, Mo.  
 Dante Electric Mfg. Co., Bantam, Conn.  
 Franklin Mfg. Co., A. W., 43-20 34th St., Long Island City, N. Y.  
 See Advertisement on Page 98  
 Insulation Mfg. Co., 11 New York Ave., Brooklyn, N. Y.  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Jones, Howard B., 2460 W. George St., Chicago 18, Ill.  
 See Advertisement on Page 52  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Kolton Electric Mfg. Co., 123 N. J. Railroad Ave., Newark 5, N. J.  
 Littlefuse Inc., 4757 Ravenswood Ave., Chicago 40, Ill.  
 See Advertisement on Page 43  
 Morse Co., Frank W., 1300 Soldiers Field Rd., Boston 35, Mass.  
 Penn-Union Electric Corp., 315 State St., Erie, Pa.  
 Sherman Mfg. Co., H. B., 22 Barney St., Battle Creek, Mich.

## BLOWERS—Small

Delco Appliance Div., General Motors Corp., 391 Lyell Ave., Rochester, N. Y.

Dynamic Air Engineering, Inc., 1619 So. Alameda St., Los Angeles 11, Calif.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Iig Electric Ventilating Co., 2850 N. Crawford Ave., Chicago 41, Ill.  
 Johnson Gas Appliance Co., 520 Ave. E., N. W., Cedar Rapids, Iowa.  
 Kahle Engineering Co., 1307 7th St., North Bergen, N. J.  
 See Advertisement on Page 256  
 Redmond Co., Inc., Owosso, Mich.  
 Smith Mfg. Co., F. A., P. O. Box 509, Rochester 2, N. Y.

## BOARDS—Resistor

Alden Products Co., 117 No. Main St., Brockton 64, Mass.  
 Buggie & Co., H. H., 2141 Madison Ave., Toledo 1, Ohio.  
 Cambridge Thermionic Corp., 445 Concord Ave., Cambridge, Mass.  
 Edin Electronics Co., 207 Main Street, Worcester, Mass.  
 Franklin Airloop Corp., 43-20 34th St., Long Island City, N. Y.  
 See Advertisement on Page 61  
 Franklin Mfg. Co., A. W., 43-20 34th St., Long Island City, N. Y.  
 See Advertisement on Page 98  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Miller Co., J. W., 5917 S. Main St., Los Angeles, Calif.  
 Searle Aero Industries, Inc., Orange, Calif.

## BOBBINS—Coil Winding

American Lava Corp., Chattanooga 5, Tenn.  
 See Advertisement on Page 69  
 Centralab, Div. of Globe Union Inc., 900 Keefe Ave., Milwaukee 1, Wis.  
 See Advertisements on Pages 24, 25  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 Insulation Mfg. Co., 11 New York Ave., Brooklyn, N. Y.  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 K-V Transformer Corp., 1697 First Ave., New York, N. Y.  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Mayfair Molded Products Corp., 4140 N. Elston Ave., Chicago 30, Ill.  
 Precision Paper Tube Co., 2033 W. Charleston St., Chicago 47, Ill.  
 S-W Inductor Co., 1056 N. Wood St., Chicago, Ill.

## BOLOMETERS

Ballantine Labs., Inc., Boonton, N. J.  
 See Advertisement on Page 42  
 Illinois Testing Labs., Inc., 420 N. LaSalle St., Chicago 10, Ill.  
 Rollin Co., 2070 N. Fair Oaks Ave., Pasadena 3, Calif.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B

## BOLTS

American Screw Co., Providence, R. I.  
 Autoscrew Co., 216-222 W. 18th St., New York, N. Y.  
 Central Screw Co., 3511 Shields Ave., Chicago 9, Ill.  
 Chandler Products Co., 1475 Chardon Rd., Cleveland, Ohio  
 Chase Brass & Copper Co., Inc., Waterbury 91, Conn.  
 Continental Screw Co., New Bedford, Mass.  
 Corbin Screw Division, American Hardware Corp., High, Myrtle & Grove Sts., New Britain, Conn.  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 Harper Co., H. M., 2620 Fletcher St., Chicago 18, Ill.  
 Lamson & Sessions Co., 1971 W. 85th St., Cleveland, Ohio  
 Manufacturers Screw Products, 270 W. Hubbard St., Chicago, Ill.

National Screw & Mfg. Co., The, Cleveland 4, Ohio  
 New England Screw Co., Keene, New Hampshire  
 Parker-Kalon Corp., 200 Varick St., New York 14, N. Y.  
 Republic Steel Corp., Republic Bldg., Cleveland 1, Ohio  
 Russell, Burdall & Ward Bolt & Nut Co., Midland Ave., Port Chester, N. Y.  
 St. Louis Screw & Bolt Co., 6900 Broadway, St. Louis 15, Mo.  
 Schott Co., Walter L., 9306 Santa Monica Blvd., Beverly Hills, Calif.  
 Stronghold Screw Products, 216 West Hubbard St., Chicago 10, Ill.

**BOLTS—Expansion**

Ackerman-Johnson Co., 625 W. Jackson Blvd., Chicago, Ill.  
 Arro Expansion Bolt Co., 740 W. Center St., Marion, Ohio  
 Chase Brass & Copper Co., Inc., Waterbury 91, Conn.  
 Chicago Expansion Bolt Co., 1338 W. Concord Pl., Chicago 22, Ill.  
 Metalix Mfg. Co., Inc., 1 Fourth St., East Norwalk, Conn.  
 National Screw & Mfg. Co., The, Cleveland 4, Ohio  
 New England Screw Co., Keene, New Hampshire  
 Star Expansion Products Co., 147-149 Cedar St., New York 6, N. Y.  
 Sterling Bolt Co., 209 W. Jackson Blvd., Chicago 6, Ill.  
 United Screw & Bolt Corp., 2513 W. Cullerton St., Chicago, Ill.

**BOLTS—Eye**

Ackerman-Johnson Co., 625 W. Jackson Blvd., Chicago, Ill.  
 Central Screw Co., 3511 Shields Ave., Chicago 9, Ill.  
 Cuyahoga Spring Co., 10272 Berea Rd., Cleveland, Ohio  
 Gardiner Mfg. Co., 2711 Union St., Oakland 7, Calif.  
 National Screw & Mfg. Co., The, Cleveland 4, Ohio  
 Stronghold Screw Products, 216 West Hubbard St., Chicago 10, Ill.

**BOLTS—Toggle**

Ackerman-Johnson Co., 625 W. Jackson Blvd., Chicago, Ill.  
 Arro Expansion Bolt Co., 740 W. Center St., Marion, Ohio  
 Chicago Expansion Bolt Co., 1338 W. Concord Pl., Chicago 22, Ill.  
 Metalix Mfg. Co., Inc., 1 Fourth St., East Norwalk, Conn.

**BOOMS—Microphone**

Aviometer Corp., 370 W. 35th St., New York 1, N. Y.  
 \* See Advertisement on Page 224  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Meletron Corp., 950 N. Highland Ave., Los Angeles 33, Calif.  
 Olesen Co., Otto K., 1560 Vine St., Hollywood 28, Calif.

**BOXES—Metal**

Art-Lloyd Metal Products Corp., 2973 Crosby Ave., Brooklyn 14, N. Y.  
 See Advertisement on Page 236  
 Brach Mfg. Corp., 55 Dickerson St., Newark, N. J.  
 Bud Radio, Inc., 2118 E. 55th St., Cleveland 3, Ohio  
 Columbia Metal Box Co., 260 E. 143rd St., New York, N. Y.  
 Dahlstrom Metallic Door Co., Jamestown, N. Y.  
 Federal Electric Products Co., Inc., 50 Paris St., Newark, N. J.  
 Gardiner Mfg. Co., 2711 Union St., Oakland 7, Calif.  
 Haydu Bros., Plainfield, N. J.  
 Karp Metal Products Co., Inc., 139 Thirtieth St., Brooklyn, N. Y.  
 See Advertisement on Page 81

Kolton Electric Mfg. Co., 123 N. J. Railroad Ave., Newark 5, N. J.  
 Lindsay Corp., The, 1740 25th Ave., Melrose Park, Ill.  
 Market Forge Co., Everett 49, Mass.  
 Minute Man Products, Inc., 309 E. 22nd St., New York 10, N. Y.  
 National Co., Inc., 61 Sherman St., Malden 48, Mass.

See Advertisement on Page 78  
 Olympic Tool & Mfg. Co., 27 Chambers St., New York 7, N. Y.  
 See Advertisement on Page 177  
 Par-Metal Products Corp., 32-62 49th St., Long Island City 3, N. Y.  
 See Advertisement on Page 162  
 Pierce Template Corp., 2646 N. Coral St., Philadelphia 25, Pa.  
 Radiad Service, 720 W. Schubert Ave., Chicago 14, Ill.  
 Searle Aero Industries, Inc., Orange, Calif.  
 Sperm Metal Specialties, 2199 E. 21st St., Brooklyn 29, N. Y.  
 Walter Co., S., 144 Centre St., Brooklyn 31, N. Y.  
 See Advertisement on Page 57

**BOXES—Waterproof**

Art-Lloyd Metal Products Corp., 2973 Crosby Ave., Brooklyn 14, N. Y.  
 See Advertisement on Page 236  
 Brach Mfg. Corp., 55 Dickerson St., Newark 4, N. J.  
 Buggie & Co., H. H., 2141 Madison Ave., Toledo 1, Ohio  
 Dahlstrom Metallic Door Co., Jamestown, N. Y.  
 Formacraft Corp., Barberton, Ohio  
 Karp Metal Products Co., Inc., 139 30th St., Brooklyn, N. Y.  
 See Advertisement on Page 81  
 O. Z. Electrical Mfg. Co., 262 Bond St., Brooklyn 2, N. Y.

**BRACKETS**

Aerolite Electronic Hardware Corp., 24 Cliff St., Jersey City, N. J.  
 See Advertisement on Page 246  
 Cambridge Thermionic Corp., 445 Concord Ave., Cambridge, Mass.  
 Edin Electronics Co., 207 Main Street, Worcester, Mass.  
 Electronic Supply Co., 207 Main St., Worcester, Mass.  
 Franklin Airloop Corp., 43-20 34th St., Long Island City, N. Y.  
 See Advertisement on Page 61  
 Franklin Mfg. Co., A. W., 43-20 34th St., Long Island City, N. Y.  
 See Advertisement on Page 98  
 Gardiner Mfg. Co., 2711 Union St., Oakland 7, Calif.  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 Karp Metal Products Co., Inc., 139 30th St., Brooklyn, N. Y.  
 See Advertisement on Page 81  
 Kling Metal Spinning Co., 174 Centre St., New York 13, N. Y.  
 La Magna Mfg. Co., Inc., East Rutherford, N. J.  
 Miller Co., J. W., 5917 S. Main St., Los Angeles, Calif.  
 Minute Man Products, Inc., 309 E. 22nd St., New York 10, N. Y.  
 Permoflux Corp., 4900 W. Grand Ave., Chicago, Ill.  
 Pierce Template Corp., 2646 N. Coral St., Philadelphia 25, Pa.  
 Schott Co., Walter L., 9306 Santa Monica Blvd., Beverly Hills, Calif.

**BRACKETS—f-m & Television Antenna**

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 Andrew Co., 363 E. 75th St., Chicago 19, Ill.  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Interstate Mfg. Corp., 125 Sussex Ave., Newark 4, N. J.  
 See Advertisements on Pages 180, 215  
 J. P. D. Mfg. Co., 4111 Ft. Hamilton Pkwy., Brooklyn, N. Y.  
 Keystone Electronics Co., 50-52 Franklin St., New York 13, N. Y.  
 Radio Corp. of America, Tube Div., Harrison, N. J.

Technical Appliance Corp., 41-06 DeLong St., Flushing, N. Y.  
 Wind Turbine Co., Tower & Antenna Div., E. Market St. & Penna. R.R., West Chester, Pa.

**BREAKERS—Circuit**

Electric Auto-Lite Co., The, Toledo 1, Ohio  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Heinemann Electric Co., 97 Plum St., Trenton 2, N. J.  
 See Advertisement on Page 74  
 I-T-E Circuit Breaker Co., 19th & Hamilton Sts., Phila. 30, Pa.  
 See Advertisement on Page 199  
 Littelfuse Inc., 4757 Ravenswood Ave., Chicago 40, Ill.  
 See Advertisement on Page 43  
 Russell & Stoll Co., Inc., 125 Barclay St., New York 7, N. Y.  
 Smith Mfg. Co., F. A., P.O. Box 509, Rochester 2, N. Y.  
 Spencer Thermostat Co., 34 Forest St., Attleboro, Mass.  
 Square D Co., 6060 Rivard St., Detroit 11, Mich.  
 Trumbull Electric Mfg. Co., Plainville, Conn.  
 Westinghouse Electric Corp., Switchgear & Control Div., East Pittsburgh, Pa.

**BRIDGES—Capacity**

Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161

**BRIDGES—Electrical**

Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.  
 Brown Engineering Co., 4635 S. E. Hawthorne Blvd., Portland 15, Oregon  
 Cinema Engineering Co., 1508 W. Verdugo Ave., Burbank, Calif.  
 Clough Brengle Co., 5501 N. Broadway, Chicago 22, Ill.  
 Daven Co., 191 Central Ave., Newark 4, N. J.  
 Deutschmann Corp., Tobe, Filterette Div., Canton, Mass.  
 See Advertisement on Page 82  
 Eastern Electronics Corp., 41 Chestnut St., New Haven, Conn.  
 Electronic Measurements Co., Red Bank, N. J.  
 See Advertisement on Page 68  
 Eppley Lab. Inc., Newport, R. I.  
 Freed Transformer Co., 72 Spring St., New York 12, N. Y.  
 See Advertisement on Page 253  
 General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
 General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
 Industrial Instruments Inc., 17 Pollack Ave., Jersey City 5, N. J.  
 Industrial Transformer Corp., 2540 Belmont Ave., New York 58, N. Y.  
 See Advertisement on Page 188  
 Leeds & Northrup Co., 4970 Stenton Ave., Phila., Pa.  
 McMurdo Silver Co., 1249 Main St., Hartford 3, Conn.  
 Magnetic Products Corp., Norwalk, Conn.  
 Measurements Corp., Boonton, N. J.  
 See Advertisement on Page 56  
 Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
 Nilsson Electrical Lab., Inc., 103 Lafayette St., New York 13, N. Y.  
 Radio City Prods. Co., 127 W. 26th St., New York, N. Y.  
 Radio Corp of America, Tube Div., Harrison, N. J.  
 Reiner Electronics Co., 152 W. 25th Street, New York, N. Y.  
 Rubicon Co., 3751 Ridge Ave., Phila., Pa.  
 Shallcross Mfg. Co., 10 Jackson Ave., Colliugdale, Pa.  
 Solar Mfg. Corp., 285 Madison Ave., New York 17, N. Y.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B  
 Tagliabue Div., C. J., Portable Products Corp., 550 Park Ave., Brooklyn 5, N. Y.  
 Tech Labs., 337 Central Ave., Jersey City, N. J.  
 Technology Instrument Corp., 1058 Main St., Waltham, Mass.  
 Thermionic Engineering Corp., Pompton Plains, N. J.

Thwing-Albert Instrument Co., 5351 Pulaski Ave., Philadelphia 44, Pa.  
 United Condenser Corp., 422 E. 138th St., New York 54, N. Y.  
 Waterman Products Co., Inc., 2445-63 Emerald St., Phila. 25, Pa.  
 See Advertisement on Page 76  
 Wheeler Laboratories, Inc. 259-09 Northern Blvd., Great Neck, N. Y.  
 Winslow Co., 9 Liberty St., Newark 5, N. J.

## BRIDGES—Temperature

Development Engineering Co., Inc., The, 1818 Ashland St., Houston 8, Texas  
 Eppley Lab. Inc., Newport, R. I.  
 Shallcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.  
 Thwing-Albert Instrument Co., 5351 Pulaski Ave., Philadelphia 44, Pa.  
 United Condenser Corp., 422 E. 138th St., New York 54, N. Y.  
 Winslow Co., The, 9 Liberty St., Newark 5, N. J.

## BRIDGES—Thermistor

Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161

## BROADCAST INPUT CONTROL EQUIPMENT

American Communications Corp., 306 Broadway, New York 7, N. Y.  
 American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
 Collins Audio Products Co., 126 Park St., Westfield, N. J.  
 See Advertisement on Page 253  
 Collins Radio Co., Cedar Rapids, Iowa  
 See Advertisements on Pages 30 to 33  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 Gates Radio Co., 123 Hampshire St., Quincy, Ill.  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Langevin Co., Inc., 37 W. 65th St., New York, N. Y.  
 See Advertisement on Page 153  
 Radio Engineering Labs, Inc., 35-54 36th St., Long Island City, N. Y.  
 Raytheon Mfg. Co., Commercial Products Div., Waltham 54, Mass.  
 Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.  
 Superior Electric Co., 83 Laurel St., Bristol, Conn.  
 See Advertisements on Pages 5 to 16  
 Tech Laboratories, 337 Central Ave., Jersey City, N. J.  
 Transmitter Equipment Mfg. Co., Inc., 345 Hudson St., New York 14, N. Y.  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89

## BRUSHES—Carbon & Graphite

Becker Brothers Carbon Co., 3450 S. 52nd Ave., Chicago, Ill.  
 Bogue Electric Co., 37 Kentucky Ave., Paterson 3, N. J.  
 Electro-Nite Carbon Co., 1133 E. Columbia Ave., Philadelphia 25, Pa.  
 Graphite Metallizing Corp., 1041 Nepperhan Ave., Yonkers 3, N. Y.  
 Helwig Co., 2544 North 30th St., Milwaukee 10, Wis.  
 Keystone Carbon Co., Inc., Saint Marys, Pa.  
 National Carbon Co., Inc., 30 E. 42nd St., New York, N. Y.  
 See Advertisement on Page 167  
 Ohio Carbon Co., 12508 Berea Rd., Cleveland, Ohio  
 Pittsburgh Carbon Brush Co., 811 Fulton St., Pittsburgh 12, Pa.  
 Pure Carbon Co., St. Marys, Pa.  
 St. Marys Carbon Co., St. Marys, Pa.  
 Seager Carbon Co., 289 Church St., New York 13, N. Y.  
 Speer Carbon Co., Lincoln Ave., St. Marys, Pa.  
 Stackpole Carbon Co., St. Marys, Pa.  
 Superior Carbon Products, Inc., 9112 George Ave., Cleveland, Ohio  
 U.S. Graphite Co., 1621 Holland Ave., Saginaw, Mich.

Westinghouse Electric Corp., Motor Div., Buffalo, N. Y.

## BRUSHES—Metal-Graphite

Becker Bros. Carbon Co., 3450 S. 52nd Ave., Chicago, Ill.  
 Graphite Metallizing Corp., 1041 Nepperhan Ave., Yonkers 3, N. Y.  
 Helwig Co., 2544 N. 30th St., Milwaukee 10, Wis.  
 Keystone Carbon Co., Inc., Saint Marys, Pa.  
 National Carbon Co., Inc., 30 E. 42nd St., New York, N. Y.  
 See Advertisement on Page 167  
 Ohio Carbon Co., 12508 Berea Rd., Cleveland, Ohio  
 Pure Carbon Co., St. Marys, Pa.  
 St. Marys Carbon Co., St. Marys, Pa.  
 Seager Carbon Co., 289 Church St., New York 13, N. Y.  
 Speer Carbon Co., Lincoln Ave., St. Marys, Pa.  
 Stackpole Carbon Co., St. Marys, Pa.

## BUS BAR SYSTEMS

Revere Copper & Brass, Inc., 230 Park Ave., New York 17, N. Y.  
 Square D Co., 6060 Rivard St., Detroit 11, Mich.  
 Trumbull Electric Mfg. Co., Plainville, Conn.  
 Westinghouse Electric Corp., Switchgear & Control Div., East Pittsburgh, Pa.

## BUS BARS—Solderless

Aircraft-Marine Prods., Inc., 1523 No. 4th St., Harrisburg, Pa.  
 Chase Brass & Copper Co., Inc., Waterbury 91, Conn.  
 Frankel Connector Co., 27 Vestry St., New York, N. Y.  
 Westinghouse Electric Corp., Switchgear & Control Div., East Pittsburgh, Pa.

## BUSHINGS—Hermetically Sealed

Centralab, Div. of Globe Union Inc., 900 Keefe Ave., Milwaukee 1, Wisc.  
 See Advertisements on Pages 24, 25  
 Corning Glass Works, Corning, N. Y.  
 Electronic Controls, Inc., 44 Summer Ave., Newark, N. J.  
 General Ceramics & Steatite Corp., Keasbey, N. J.  
 See Advertisement on Page 79  
 Hermetic Seal Products Co., 414 Morris Ave., Newark 3, N. J.  
 Locke Insulator Corp., P. O. Box 57, Baltimore 3, Md.  
 Wilmington Fibre Specialty Co., P. O. Drawer 1028, Wilmington 99, Del.

## BUSHINGS—Nonmetallic

Aerolite Electronic Hardware Corp., 24 Cliff St., Jersey City, N. J.  
 See Advertisement on Page 246  
 American Lava Corp., Chattanooga 5, Tenn.  
 See Advertisement on Page 69  
 Auburn Mfg. Co., Middletown, Conn.  
 Centralab, Div. of Globe Union Inc., 900 Keefe Ave., Milwaukee 1, Wisc.  
 See Advertisements on Pages 24, 25  
 Corning Glass Works, Corning, N. Y.  
 Creative Plastics Corp., 963 Kent Ave., Brooklyn, N. Y.  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 Insuline Corp. of America, 36-02 35th Ave., L. I. City, N. Y.  
 See Advertisement on Page 166  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Keystone Electronics Co., 50-52 Franklin St., New York 13, N. Y.  
 Kirchberger & Co., Inc., M., 1425 37th St., Brooklyn 18, N. Y.  
 Locke Insulator Corp., P. O. Box 57, Baltimore 3, Md.  
 Mayfair Molded Products Corp., 4440 N. Elston Ave., Chicago 30, Ill.  
 Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44

National Co., Inc., 61 Sherman St., Malden 48, Mass.

See Advertisement on Page 78  
 National Vulcanized Fibre Co., Wilmington, Del.

See Advertisement on Page 58  
 O.Z. Electrical Mfg. Co., 262 Bond St., Brooklyn 2, N. Y.  
 Plastic Accessories, Inc., 460 Broome St., New York 13, N. Y.  
 Precision Fabricators, Inc., 120 N. Fitzhugh St., Rochester, N. Y.  
 Printloid Inc., 95 Mercer St., New York, N. Y.

See Advertisement on Page 198  
 Saxonburg Potteries, Saxonburg, Pa.  
 Spaulding Fibre Co., Inc., 310 Wheeler St., Tonawanda, N. Y.  
 Stupakoff Ceramic & Mfg. Co., Latrobe, Pa.  
 U. S. Rubber Co., 1230 Sixth Ave., New York 20, N. Y.  
 Waterbury Companies, Inc., Waterbury 90, Conn.

## CABINETS—Metal

Art-Lloyd Metal Products Corp., 2973 Croysey Ave., Brooklyn 14, N. Y.  
 See Advertisement on Page 236  
 Baker Instrument Co., 310 Main St., Orange, N. J.  
 Bardwell & McAllister, 7636 Santa Monica Blvd., Hollywood, Calif.  
 Brach Mfg. Corp., 55 Dickerson St., Newark, N. J.  
 Buck Engineering Co., 37-11 Marcy St., Freehold, N. J.  
 See Advertisement on Page 242  
 Bud Radio Inc., 2118 E. 55th St., Cleveland 3, Ohio  
 Collins Radio Co., Cedar Rapids, Iowa  
 See Advertisements on Pages 30 to 33  
 Columbia Metal Box Co., 260 E. 143rd St., New York, N. Y.  
 Croname, Inc., 3701 Ravenswood Ave., Chicago, Ill.  
 Dahlstrom Metallic Door Co., Jamestown, N. Y.  
 Eclipse Mfg. Co., Inc., 294 E. 137th St., New York 54, N. Y.  
 Edin Electronics Co., 207 Main St., Worcester Mass.  
 Electronic Supply Co., 207 Main St., Worcester, Mass.  
 Emerson Radio & Phonograph Corp., 111 8th Ave., New York, N. Y.  
 Gardiner Mfg. Co., 2711 Union St., Oakland 7, Calif.  
 Grammes & Sons, Inc., L. F., 389 Union St., Allentown 2, Pa.  
 Hall Co., Gordon L., Old Lyme, Conn.  
 Haydu Bros., Plainfield, N. J.  
 Insuline Corp. of America, 36-02 35th Ave., L. I. City, N. Y.  
 See Advertisement on Page 166  
 Johnson Co., E. F., Waseca, Minn.  
 Karp Metal Products Co., Inc., 139 30th St., Brooklyn, N. Y.  
 See Advertisement on Page 81  
 Kolton Electric Mfg. Co., 123 N. J. Railroad Ave., Newark 5, N. J.  
 Lindsay Corp., The, 1740 25th Ave., Melrose Park, N. Y.  
 Lorentzen Inc., H. K., 391 W. Broadway, New York 12, N. Y.  
 McMurdo Silver Co., 1249 Main St., Hartford 3, Conn.  
 Measurement Engineering Ltd., 61 Duke St., Toronto, Canada  
 See Advertisement on Page 193  
 Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44  
 Minute Man Products, Inc., 309 E. 22nd St., New York 10, N. Y.  
 Monitor Products Co., 815 Fremont St., So. Pasadena, Calif.  
 National Co., Inc., 61 Sherman St., Malden 48, Mass.  
 See Advertisement on Page 78  
 Olympic Tool & Mfg. Co., 27 Chambers St., New York 7, N. Y.  
 See Advertisement on Page 177  
 Pan American Electric Co., Inc., 2912 Atlantic Ave., Brooklyn 7, N. Y.  
 Par-Metal Products Corp., 32-62 49th St., L. I. City 3, N. Y.  
 See Advertisement on Page 162  
 Paul & Beekman Div., Portable Products Corp., 1801 Cortland St., Philadelphia 40, Pa.  
 Pierce Template Corp., 2646 N. Coral St., Philadelphia 25, Pa.  
 Radiad Service, 720 W. Schubert Ave., Chicago 14, Ill.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Rek-O-Kut Co., 146 Grand St., New York 13, N. Y.  
 See Advertisement on Page 245

Republic Steel Corp., Republic Bldg., Cleveland 1, Ohio  
 Robinson Aviation Inc., Teterboro Air Terminal, Teterboro, N. J.  
 Searle Aero Industries, Inc., Orange, Calif.  
 Taylor Western Transmitters Inc., 6127 South Western Ave., Los Angeles 44, Calif.  
 Vendo Co., 1907 Grand Ave., Kansas City 8, Mo.  
 Walter Co., S., 144 Centre St., Brooklyn 31, N. Y.  
 See Advertisement on Page 57  
 Western Sound & Electric Labs., Inc., 808 S. Fifth St., Milwaukee 4, Wisconsin  
 Westinghouse Electric Corp., Switchgear & Control Div., East Pittsburgh, Pa.

**CABINETS—Plastic**

Chicago Die Mold Corp., 4001 Wrightwood Ave., Chicago 39, Ill.  
 Consolidated Molded Products Corp., Scranton 2, Pa.  
 Felsenthal & Sons, G., 4100 W. Grand Ave., Chicago 51, Ill.  
 Formacraft Corp., Barberton, Ohio  
 Hawley Products Co., St. Charles, Ill.  
 Heath Co., Benton Harbor, Mich.  
 Kurz-Kasch Co., 1415 S. Broadway, Dayton 1, Ohio  
 Lyman Electronic Corp., 12 Cass St., Springfield, Mass.  
 Measurement Engineering Ltd., 61 Duke St., Toronto, Can.  
 See Advertisement on Page 193  
 Molded Insulation Co., Aircraft Control Div., 335 E. Price St., Philadelphia, Pa.  
 Pan American Electric Co., Inc., 2912 Atlantic Ave., Brooklyn 7, N. Y.  
 Plastic Enterprises, 129 Bloomfield Ave., Bloomfield, N. J.  
 Racon Electric Co., 52 E. 19th St., New York 3, N. Y.  
 See Advertisement on Page 213  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Richardson Co., The, Melrose Park, Ill.  
 See Advertisement on Page 209  
 Shaw Insulator Co., 160 Coit St., Irvington, N. J.  
 Stokes Molded Products, Taylor St. at Webster, Trenton, N. J.  
 Tri-United Plastics Corp., 390 Nye Ave., Irvington, N. J.  
 U. S. Plastics Corp., 2835-53 Irving Park Rd., Chicago, Ill.  
 Vibracloc Mfg. Co., 3597 Mission St., San Francisco, Calif.  
 Victory Mfg. Co., 1722 W. Arcade Pl., Chicago 2, Ill.  
 Waterbury Companies, Inc., Waterbury 90, Conn.  
 Watertown Mfg. Co., Watertown, Conn.

**CABINETS—Wood**

Air-King Products Co., Inc., 1523 63rd St., Brooklyn, N. Y.  
 American Communications Corp., 306 Broadway, New York 7, N. Y.  
 Aviola Radio Corp., Phoenix, Arizona  
 Bitter Construction Co. A., 721 E. 133rd St., New York, N. Y.  
 Castlewood Mfg. Co., 12th & Burnett Sts., Louisville, Ky.  
 D. & M. Mfg. Co., 2 Delford Ave., Bergenfield, N. J.  
 Delaware Industries Inc., Middletown, Delaware  
 Electronic Sound Engineering Co., 4344-46 W. Armitage Ave., Chicago 39, Ill.  
 Five Star Radio Co., 416 Broadway, Cambridge, Mass.  
 Formacraft Corp., Barberton, Ohio  
 Garrard Sales Corp., 401 Broadway, New York 13, N. Y.  
 Illinois Wood Products Corp., 2512 S. Damen Ave., Chicago 8, Ill.  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Lear, Inc., 110 Tonia Ave., N.W., Grand Rapids 2, Mich.  
 Magnavox Co., The, Fort Wayne 4, Ind.  
 Midwest Radio Corp., 909 Broadway, Cincinnati 2, Ohio  
 Purves Mfg. Corp., Cambridge City, Ind.  
 Radiad Service, 720 W. Schubert Ave., Chicago 14, Ill.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Radio Merchandise Sales, 550 Westchester Ave., New York 55, N. Y.

Rek-O-Kut Co., 146 Grand St., New York 13, N. Y.  
 See Advertisement on Page 245  
 Searle Aero Industries, Inc., Orange, Calif.  
 Stark Sound Engineering Co., P. O. Box 493, Fort Wayne 1, Ind.  
 Steger Furniture Mfg. Co., Steger, Ill.  
 Stephens Mfg. Co., 10416 National Blvd., Los Angeles 34, Calif.  
 U. S. Trunk Co., Inc., 951 Broadway, Fall River, Mass.  
 United Wood Specialty Mfg. Co., Inc., 951 Broadway, Fall River, Mass.  
 Wallace Mfg. Co., Inc., Wm. T., Chile & Madison Ave., Peru, Ind.  
 Woodcraft Corp., 501 Salzburg Ave., Bay City, Mich.

**CABLE ASSEMBLIES**

Accurate Insulated Wire Corp., 25 Fox St., New Haven 1, Conn.  
 Airplane & Marine Instruments, Inc., Clearfield, Pa.  
 Alden Products Co., 117 N. Main St., Brockton 64, Mass.  
 American Electric Cable Co., Holyoke, Mass.  
 American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 Avimeter Corp., 370 W. 35th St., New York 1, N. Y.  
 See Advertisement on Page 224  
 Baker-Phillips Co., 3057 Lyndale Ave. So., Minneapolis 8, Minn.  
 Banks Mfg. Co., 1105 W. Lawrence Ave., Chicago 40, Ill.  
 Boston Insulated Wire & Cable Co., 63 Bay St., Boston 25, Mass.  
 Bugle & Co., H. H., 2141 Madison Ave., Toledo 1, Ohio  
 Cords Ltd., 26 Camp St., Newark 2, N. J.  
 Dielectric Products Co., Inc., 125 Virginia Ave., Jersey City 5, N. J.  
 Electric Auto-Lite Co., The, Toledo 1, Ohio  
 Englewood Electrical Supply Co., 5801 S. Halsted St., Chicago, Ill.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Interstate Mfg. Corp., 125 Sussex Ave., Newark 4, N. J.  
 See Advertisements on Pages 180, 215  
 Kraft & Kraft, Hicksville, N. Y.  
 MacLeod & Hanopol, 24 Chelsea St., Charlestown 29, Mass.  
 Rice's Sons, Inc., Bernard, 325 Fifth Ave., New York 16, N. Y.  
 Searle Aero Industries, Inc., Orange, Calif.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B  
 Ward Products Corp., 1523 E. 45th St., Cleveland 3, Ohio  
 See Advertisement on Page 248  
 Whitaker Cable Corp., Kansas City 16, Mo.

**CABLE HOOKS**

Burdny Engineering Co., 107 Bruckner Blvd., New York 54, N. Y.  
 Magnavox Co., The, Fort Wayne 4, Ind.  
 Mineralac Electric Co., 25 N. Peoria St., Chicago, Ill.  
 O. Z. Electrical Mfg. Co., 262 Bond St., Brooklyn, N. Y.  
 Plastoid Corp., 19 W. 44th St., New York 18, N. Y.  
 See Advertisement on Page 63

**CABLE—Coaxial**

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 American Steel & Wire Co., U. S. Steel Corp. Subs., Rockefeller Bldg., Cleveland 13, Ohio  
 Anaconda Wire & Cable Co., 25 Broadway, New York 4, N. Y.  
 Andrew Co., 363 East 75th St., Chicago 19, Ill.  
 Belden Mfg. Co., 4647 W. Van Buren St., Chicago 44, Ill.  
 Boston Insulated Wire & Cable Co., 63 Bay St., Boston 25, Mass.  
 Communication Products Co., Inc., Broadway & Clark St., Keyport, N. J.  
 Consolidated Wire & Associated Companies, 1635 S. Clinton St., Chicago 16, Ill.

Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Gits Molding Corp., 4600 Huron St., Chicago, Ill.  
 Johnson Co., E. F., Waseca, Minn.  
 Okonite Co., Canal St., Passaic, N. J.  
 Plastic Wire & Cable Corp., Norwich, Conn.  
 Precision Tube Co., 3828 Terrace St., Philadelphia 28, Pa.  
 See Advertisement on Page 218  
 Simplex Wire & Cable Co., 79 Sidney St., Cambridge 39, Mass.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B  
 Suprenant Electrical Insulation Co., 84 Purchase St., Boston 10, Mass.  
 Titeflex, Inc., 500 Frelinghuysen Ave., Newark 5, N. J.  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89  
 Weymouth Instrument Co., 1440 Commercial St., East Weymouth, Mass.  
 Whitney Blake Co., New Haven, Conn.

**CABLE—Insulated**

Accurate Insulated Wire Corp., 25 Fox St., New Haven 1, Conn.  
 Alden Products Co., 117 No. Main St., Brockton 64, Mass.  
 Alpha Wire Corp., 50 Howard St., New York, N. Y.  
 American Electric Cable Co., Holyoke, Mass.  
 American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 American Steel & Wire Co., U. S. Steel Corp. Subs., Rockefeller Bldg., Cleveland 13, Ohio  
 Anaconda Wire & Cable Co., 25 Broadway, New York 4, N. Y.  
 Ansonia Electric Co., The, Ansonia, Conn.  
 Boston Insulated Wire & Cable Co., 63 Bay St., Dorchester, Boston 25, Mass.  
 Chase Brass & Copper Co., Inc., 236 Grand St., Waterbury 91, Conn.  
 Collyer Insulated Wire Co., 249 Roosevelt Ave., P. O. Box 61, Pawtucket, R. I.  
 Consolidated Wire & Associated Companies, 1635 S. Clinton St., Chicago 16, Ill.  
 Cords Ltd., 26 Camp St., Newark 2, N. J.  
 Electric Auto-Lite Co., Toledo 1, Ohio  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 General Cable Corp., 420 Lexington Ave., New York, N. Y.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 General Insulated Wire Wks. Inc., 69 Gordon Ave., Providence 5, R. I.  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Interstate Mfg. Corp., 125 Sussex Ave., Newark 4, N. J.  
 See Advertisements on Pages 180, 215  
 J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkway., Brooklyn, N. Y.  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Lenx Electric Mfg. Co., 1751 N. Western Ave., Chicago 4, Ill.  
 Okonite Co., Canal St., Passaic, N. J.  
 Plastic Wire & Cable Corp., Norwich, Conn.  
 Plastoid Corp., 19 W. 44th St., New York 18, N. Y.  
 See Advertisement on Page 63  
 Rockbestos Products Corp., 308 Nicoll St., New Haven 4, Conn.  
 Roebling's Sons Co., John A., 640 Broad St., Trenton 2, N. J.  
 Rome Cable Corp., 330 Ridge St., Rome, N. Y.  
 See Advertisement on Page 80  
 Runzel Cord & Wire Co., 79 Sidney St., Cambridge 39, Mass.  
 Searle Aero Industries, Inc., Orange, Calif.  
 Simplex Wire & Cable Co., 79 Sidney St., Cambridge 39, Mass.  
 U. S. Rubber Co., 1230 Sixth Ave., New York 20, N. Y.  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89  
 Western Insulated Wire Co., 1001 E. 62nd St., Los Angeles 1, Calif.  
 Whitney Blake Co., New Haven, Conn.  
 Willard Storage Battery Co., 246 E. 131st St., Cleveland 1, Ohio

**CABLE—Microphone**

Accurate Insulated Wire Corp., 25 Fox St., New Haven 1, Conn.

Alpha Wire Corp., 50 Howard St., New York, N. Y.  
**American Phenolic Corp.**, 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
**Aviometer Corp.**, 370 W. 35th St., New York 1, N. Y.  
 See Advertisement on Page 224  
**Belden Mfg. Co.**, 4647 W. Van Buren St., Chicago 44, Ill.  
**Birnbach Radio Co., Inc.**, 145 Hudson St., New York, N. Y.  
**Boston Insulated Wire & Cable Co.**, 63 Bay St., Boston 25, Mass.  
**Collins Radio Co.**, Cedar Rapids, Iowa  
 See Advertisements on Pages 30 to 33  
**Consolidated Wire & Associated Companies**, 1635 S. Clinton St., Chicago 16, Ill.  
**Cornish Wire Co.**, 15 Park Row, New York, N. Y.  
 See Advertisement on Page 170  
**General Insulated Wire Works, Inc.**, 69 Gordon Ave., Providence 5, R. I.  
**Insuline Corp. of America**, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
**J. F. D. Mfg. Co.**, 4111 Ft. Hamilton Pkway., Brooklyn, N. Y.  
**Kellogg Switchboard & Supply Co.**, 6650 S. Cicero Ave., Chicago 38, Ill.  
**Lenz Electric Mfg.**, 1751 N. Western Ave., Chicago 4, Ill.  
**Plastic Wire & Cable Corp.**, Norwich Conn.  
**Roebling's Sons Co.**, John A., 640 Broad St., Trenton 2, N. J.  
**Rome Cable Corp.**, 330 Ridge St., Rome, N. Y.  
 See Advertisement on Page 80  
**Runzel Cord & Wire Co.**, 4731 W. Montrose Ave., Chicago, Ill.  
**Simplex Wire & Cable Co.**, 79 Sidney St., Cambridge 39, Mass.  
**U. S. Rubber Co.**, 1230 Sixth Ave., New York 20, N. Y.  
**Western Electric Co.**, 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89  
**Western Insulated Wire Co.**, 1001 E. 62nd St., Los Angeles 1, Calif.  
**Whitney Blake Co.**, New Haven, Conn.

## CABLE—Shielded

Accurate Insulated Wire Corp., 25 Fox St., New Haven 1, Conn.  
**Alden Products Co.**, 117 No. Main, Brockton 64, Mass.  
**Alpha Wire Corp.**, 50 Howard St., New York, N. Y.  
**American Electric Cable Co.**, Holyoke, Mass.  
**American Phenolic Corp.**, 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
**American Steel & Wire Co.**, U. S. Steel Corp. Subs., Rockefeller Bldg., Cleveland 13, Ohio  
**Belden Mfg. Co.**, 4647 W. Van Buren St., Chicago 44, Ill.  
**Birnbach Radio Co., Inc.**, 145 Hudson St., New York, N. Y.  
**Boston Insulated Wire & Cable Co.**, 63 Bay St., Boston 25, Mass.  
**Collins Radio Co.**, Cedar Rapids, Iowa  
 See Advertisements on Pages 30 to 33  
**Consolidated Wire & Associated Companies**, 1635 S. Clinton St., Chicago 16, Ill.  
**Cornish Wire Co.**, 15 Park Row, New York, N. Y.  
 See Advertisement on Page 170  
**Electric Auto-Lite Co.**, The, Toledo 1, Ohio  
**General Cable Corp.**, 420 Lexington Ave., New York, N. Y.  
**General Electric Co.**, Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
**General Insulated Wire Works, Inc.**, 69 Gordon Ave., Providence 5, R. I.  
**Insuline Corp. of America**, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
**J. F. D. Mfg. Co.**, 4111 Ft. Hamilton Pkway., Brooklyn, N. Y.  
**Lenz Electric Mfg. Co.**, 1751 N. Western Ave., Chicago 4, Ill.  
**Okonite Co.**, Canal St., Passaic, N. J.  
**Plastic Wire & Cable Corp.**, Norwich, Conn.  
**Plastoid Corp.**, 19 W. 44th St., New York 18, N. Y.  
 See Advertisement on Page 63  
**Precision Tube Co.**, 3828 Terrace St., Philadelphia 28, Pa.  
 See Advertisement on Page 218  
**Rockbestos Products Corp.**, 308 Nicoll St., New Haven 4, Conn.  
**Roebling's Sons Co.**, John A., 640 Broad St., Trenton 2, N. J.  
**Rome Cable Corp.**, 330 Ridge St., Rome, N. Y.  
 See Advertisement on Page 80  
**Runzel Cord & Wire Co.**, 4731 W. Montrose Ave., Chicago, Ill.  
**Searle Aero Industries, Inc.**, Orange, Calif.

**Simplex Wire & Cable Co.**, 79 Sidney St., Cambridge 39, Mass.  
**Titeflex, Inc.**, 500 Frelinghuysen Ave., Newark 5, N. J.  
**U. S. Rubber Co.**, 1230 Sixth Ave., New York 20, N. Y.  
**Western Electric Co., Inc.**, 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89  
**Western Insulated Wire Co.**, 1001 E. 62nd St., Los Angeles 1, Calif.  
**Whitney Blake Co.**, New Haven, Conn.

## CABLE—Transmission Line

Accurate Insulated Wire Corp., 25 Fox St., New Haven 1, Conn.  
**Alpha Wire Corp.**, 50 Howard St., New York, N. Y.  
**American Electric Cable Co.**, Holyoke, Mass.  
**American Phenolic Corp.**, 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
**American Steel & Wire Co.**, U. S. Steel Corp. Subs., Rockefeller Bldg., Cleveland 13, Ohio  
**Anaconda Wire & Cable Co.**, 25 Broadway, New York 4, N. Y.  
**Andrew Co.**, 363 E. 75th St., Chicago 19, Ill.  
**Belden Mfg. Co.**, 4647 W. Van Buren St., Chicago 44, Ill.  
**Birnbach Radio Co., Inc.**, 145 Hudson St., New York, N. Y.  
**Boston Insulated Wire & Cable Co.**, 63 Bay St., Boston 25, Mass.  
**Chase Brass & Copper Co., Inc.**, Waterbury 91, Conn.  
**Consolidated Wire & Associated Companies**, 1635 S. Clinton St., Chicago 16, Ill.  
**Diamond Wire & Cable Co.**, 128 E. 16th St., Chicago Heights, Ill.  
**Dielectric Products Co., Inc.**, 125 Virginia Ave., Jersey City 5, N. J.  
**Doolittle Radio**, 7421 Loomis Bldg., Chicago 36, Ill.  
**Federal Telephone and Radio Corp.**, 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
**General Cable Corp.**, 420 Lexington Ave., New York, N. Y.  
**General Electric Co.**, Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
**Interstate Mfg. Corp.**, 125 Sussex Ave., Newark 4, N. J.  
 See Advertisements on Pages 180, 215  
**Kellogg Switchboard & Supply Co.**, 6650 S. Cicero Ave., Chicago 38, Ill.  
**Plastic Wire & Cable Corp.**, Norwich, Conn.  
**Plastoid Corp.**, 19 W. 44th St., New York 18, N. Y.  
 See Advertisement on Page 63  
**Precision Tube Co.**, 3828 Terrace St., Philadelphia 28, Pa.  
 See Advertisement on Page 218  
**Rome Cable Corp.**, 330 Ridge St., Rome, N. Y.  
 See Advertisement on Page 80  
**Snyder Mfg. Co.**, 22nd & Ontario Sts., Philadelphia 40, Pa.  
**Suprenant Electrical Insulation Co.**, 84 Purchase St., Boston 10, Mass.  
**Technical Appliance Corp.**, 41-06 DeLong St., Flushing, N. Y.  
**U. S. Rubber Co.**, 1230 Sixth Ave., New York 20, N. Y.  
**White Electric Cable Co.**, Maple Ave., Haverstraw, N. Y.  
**Whitney Blake Co.**, New Haven, Conn.

## CABLE—uhf

**American Phenolic Corp.**, 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
**American Steel & Wire Co.**, U. S. Steel Corp. Subs., Rockefeller Bldg., Cleveland 13, Ohio  
**Anaconda Wire & Cable Co.**, 25 Broadway, New York 4, N. Y.  
**Andrew Co.**, 363 E. 75th St., Chicago 19, Ill.  
**Boston Insulated Wire & Cable Co.**, 63 Bay St., Boston 25, Mass.  
**Federal Telephone and Radio Corp.**, 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
**General Electric Co.**, Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
**Okonite Co.**, Canal St., Passaic, N. J.  
**Plastic Wire & Cable Corp.**, Norwich, Conn.  
**Precision Tube Co.**, 3828 Terrace St., Philadelphia 28, Pa.  
 See Advertisement on Page 218  
**Simplex Wire & Cable Co.**, 79 Sidney St., Cambridge 39, Mass.  
**Ward Products Corp.**, 1523 E. 45th St., Cleveland 3, Ohio  
 See Advertisement on Page 248

## CALIBRATORS—Sweep

**Clarkstan Corp.**, 11927 W. Pico Blvd., Los Angeles 34, Calif.  
**General Communication Co.**, 530 Commonwealth Ave., Boston 15, Mass.  
**Omicron Electric Co.**, 718 Columbus Ave., New York 25, N. Y.  
**Telequip Radio Co.**, 1901 S. Washtenaw, Chicago, Ill.

## CALIBRATORS—uhf

**Alpha Wire Corp.**, 50 Howard St., New York, N. Y.  
**Ferris Instrument Co.**, 110-112 Cornelia St., Boonton, N. J.  
**Meissner Mfg. Div.**, Maguire Industries, Inc., Mt. Carmel, Ill.  
**Radio Specialty Mfg. Co.**, 2023 S. E. Sixth Ave., Portland 14, Ore.  
**Rollin Co.**, 2070 N. Fair Oaks Ave., Pasadena 3, Calif.  
**Suprenant Electrical Insulation Co.**, 84 Purchase St., Boston 10, Mass.

## CAMERAS—Cathode Ray Oscillograph

**Electrodyne Co.**, The, 899 Boylston St., Boston 15, Mass.  
**Electro-Medical Lab. Inc.**, Holliston, Mass.  
**Fairchild Camera & Instrument Corp.**, 88-06 Van Wyck Blvd., Jamaica 1, N. Y.  
**General Radio Co.**, 275 Massachusetts Ave., Cambridge 39, Mass.  
**Hathaway Instrument Co.**, 1315 S. Clarkson St., Denver 10, Colo.  
**Helland Research Corp.**, 130 E. 5th St., Denver 3, Colo.  
**Jerome Camera & Instrument Corp.**, Mas-sapequa, N. Y.

## CAMERAS—Television

**Berndt Corp.**, E. M., 3515 Sunset Blvd., Hollywood 28, Calif.  
**Farnsworth Television & Radio Corp.**, Ft. Wayne, Ind.  
**General Electric Co.**, Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
**Jerome Camera & Instrument Corp.**, Mas-sapequa, N. Y.  
**Radio Corp. of America**, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
**Remington Rand, Electronic Div.**, Middletown, Conn.  
**Telequip Radio Co.**, 1901 S. Washtenaw, Chicago, Ill.

## CAMERAS—X-Ray

**Fairchild Camera & Instrument Corp.**, 88-06 Van Wyck Blvd., Jamaica 1, N. Y.

## CANS

**Miller Co.**, J. W., 5917 S. Main St., Los Angeles, Calif.  
**Paul & Beekman Div.**, Portable Products Corp., 1801 Cortland St., Philadelphia 40, Pa.  
**Radiad Service**, 720 W. Schubert Ave., Chicago 14, Ill.  
**Worcester Pressed Steel Co.**, 100 Barber Ave., Worcester, Mass.

## CANS—Hermetically Sealed

**Cincinnati Electric Products Co.**, Carthage at Hannaford, Cincinnati 12, Ohio  
**Cook Electric Co.**, 2700 Southport Ave., Chicago, Ill.  
**Hermetic Seal Products Co.**, 414 Morris Ave., Newark 3, N. J.  
**Industrial Condenser Corp.**, 3243 N. Calif. Ave., Chicago 18, Ill.  
**Radiad Service**, 720 W. Schubert Ave., Chicago 14, Ill.

## CAPACITORS—Ceramic Fixed

**Advance Electronics Mfg. Co.**, 657 Schuyler Ave., Kearny, N. J.

Automatic Mfg. Co., 900 Passaic Ave., E. Newark, N. J.  
 See Advertisement on Page 60  
 Centralab, Div. Globe Union, Inc., 900 Keefe Ave., Milwaukee 1, Wis.  
 See Advertisements on Pages 24, 25  
 Electrical Reactance Corp., Franklinville, N. Y.  
 Erie Resistor Corp., 644 W. 12th St., Erie, Pa.  
 See Advertisement on Page 47  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Herlec Corp., The, 422 N. Fifth St., Milwaukee 3, Wis.  
 Industrial Condenser Corp., 3243 N. Calif. Ave., Chicago 18, Ill.  
 Meissner Mfg. Div., Maguire Industries, Inc., Mt. Carmel, Ill.  
 Micamold Radio Corp., 1087 Flushing Ave., Bklyn. 6, N. Y.  
 Muter Co., 1255 S. Michigan Ave., Chicago, Ill.  
 Solar Mfg. Corp., 285 Madison Ave., New York 17, N. Y.  
 Sprague Electric Co., North Adams, Mass.

**CAPACITORS—Electrolytic**

Advance Electronics Mfg. Co., 657 Schuyler Ave., Kearny, N. J.  
 Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.  
 Aircraft Radio Corp., Boonton, N. J.  
 See Advertisement on Page 185  
 American Condenser Co., 4410 Ravenswood Ave., Chicago 40, Ill.  
 Atlas Condenser Products Co., 3120 Third Ave., New York, N. Y.  
 Capacitron Co., 849 No. Kedzie Ave., Chicago 51, Ill.  
 Condenser Corp. of Amer., 1000 Hamilton Blvd., S. Plainfield, N. J.  
 Consolidated Wire & Associated Companies, 1635 S. Clinton St., Chicago 16, Ill.  
 Cornell Dubilier Electric Corp., 1000 Hamilton Blvd., South Plainfield, N. J.  
 Deutschmann Corp., Tobe, Filterette Div., Canton, Mass.  
 See Advertisement on Page 82  
 Dumont Electric Co., 34 Hubert St., New York, N. Y.  
 See Advertisements on Pages 238, 239  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Illinois Condenser Co., 1160 N. Howe St., Chicago, Ill.  
 See Advertisement on Page 164  
 Industrial Condenser Corp., 3243 No. Calif. Ave., Chicago 18, Ill.  
 Intex Co., 303 W. 42nd St., New York 18, N. Y.  
 See Advertisement on Page 68  
 Magnavox Co., The, Fort Wayne 4, Indiana  
 Mallory & Co., Inc., P. R. 3029 E. Washington Street, Indianapolis 6, Ind.  
 See Advertisements on Pages 257 to 260  
 Micamold Radio Corp., 1087 Flushing Ave., Brooklyn 6, N. Y.  
 Pyramid Electric Co., 155 Oxford St., Paterson, N. J.  
 Sangamo Electric Co., Springfield, Illinois  
 Solar Mfg. Corp., 285 Madison Ave., New York 17, N. Y.  
 Sprague Electric Co., North Adams, Mass.

**CAPACITORS—Fixed**

Advance Electronics Mfg. Co., 657 Schuyler Ave., Kearny, N. J.  
 Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.  
 Bud Radio, Inc., 2118 E. 55th St., Cleveland 3, Ohio  
 Centralab, Div. of Globe Union Inc., 900 Keefe Ave., Milwaukee 1, Wis.  
 See Advertisements on Pages 24, 25  
 Condenser Products Co., 1375 N. Branch St., Chicago, Ill.  
 Consolidated Wire & Associated Companies, 1635 S. Clinton St., Chicago 16, Ill.  
 Cornell Dubilier Electric Corp., 1000 Hamilton Blvd., South Plainfield, N. J.  
 Corning Glass Works, Corning, N. Y.  
 Deutschmann Corp., Tobe, Filterette Div., Canton, Mass.  
 See Advertisement on Page 82  
 Dine & Co., Inc., F. E., 2221 Warwick Ave., Santa Monica, Calif.  
 Electric Auto-Lite Co., The, Toledo 1, Ohio  
 Fast & Co., John E., 3101 N. Pulaski Rd., Chicago 41, Ill.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96, 96A  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96B, 96C

Herlec Corp., The, 422 N. Fifth St., Milwaukee 3, Wis.  
 Illinois Condenser Co., 1160 N. Howe St., Chicago, Ill.  
 See Advertisement on Page 164  
 Industrial Condenser Corp., 3243 No. Calif. Ave., Chicago 18, Ill.  
 Johnson Co., E. F., Waseca, Minn.  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Magnavox Co., The, Fort Wayne 4, Ind.  
 Measurements Corp., Boonton, N. J.  
 See Advertisement on Page 56  
 O'Donnell and Sons, J. P., 316 Stuart St., Boston 16, Mass.  
 Potter Co., 1850 Sheridan Rd., No. Chicago, Ill.  
 Precision Tube Co., 3828 Terrace St., Philadelphia 28, Pa.  
 See Advertisement on Page 218  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Sangamo Electric Co., Springfield, Ill.  
 Stackpole Carbon Co., St. Marys, Pa.  
 Telecon Condenser Co., 3757 W. North Ave., Chicago 47, Ill.  
 United Condenser Corp., 422 E. 138th St., New York 54, N. Y.

**CAPACITORS—Gas-filled**

Johnson Co., E. F., Waseca, Minn.  
 Lapp Insulator Co., 31 Gilbert St., LeRoy, N. Y.  
 See Advertisements on Pages 92, 93

**CAPACITORS—Mica Fixed**

Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.  
 Brown Engineering Co., 4635 S. E. Hawthorne Blvd., Portland 15, Oregon  
 Condenser Corp. of America, 1000 Hamilton Blvd., S. Plainfield, N. J.  
 Cornell Dubilier Electric Corp., 1000 Hamilton Blvd., South Plainfield, N. J.  
 Deutschmann Corp., Tobe, Filterette Div., Canton, Mass.  
 See Advertisement on Page 82  
 Electro Motive Mfg. Co., Willimantic, Conn.  
 See Advertisement on Page 27  
 Erie Resistor Corp., 644 W. 12th St., Erie, Pa.  
 See Advertisement on Page 47  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
 Mallory & Co., Inc., P. R. 3029 E. Washington St., Indianapolis 6, Ind.  
 See Advertisements on Pages 257 to 260  
 Micamold Radio Corp., 1086 Flushing Ave., Brooklyn 6, N. Y.  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 Sangamo Electric Co., Springfield, Illinois  
 Solar Mfg. Corp., 285 Madison Ave., New York 17, N. Y.  
 Sprague Electric Co., North Adams, Mass.

**CAPACITORS—Mica Transmitting**

Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.  
 Andrew Co., 363 E. 75th St., Chicago 19, Ill.  
 Cornell Dubilier Electric Corp., 1000 Hamilton Blvd., South Plainfield, N. J.  
 Ecco High Frequency Corp., 7020 Hudson Blvd., North Bergen, N. J.  
 Mallory & Co., Inc., P. R. 3029 E. Washington St., Indianapolis 6, Ind.  
 See Advertisements on Pages 257 to 260  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Sangamo Electric Co., Springfield, Ill.  
 Solar Mfg. Corp., 285 Madison Ave., New York 17, N. Y.  
 Sprague Electric Co., North Adams, Mass.

**CAPACITORS—Mica Trimmer**

Automatic Mfg. Co., 900 Passaic Ave., E. Newark, N. J.  
 See Advertisement on Page 60

Condenser Corp. of America, 1000 Hamilton Blvd., S. Plainfield, N. J.  
 Crycon, Inc., Subs. of Crystal Research Labs., Inc., Unionville, Conn.  
 General Electric Co., Syracuse N. Y.  
 See Advertisements on Pages 96, 96A  
 Guthman Inc., Edwin I., 15 S. Throop St., Chicago, Ill.  
 Lear, Inc., 110 Ionja Ave., N. W., Grand Rapids 2, Mich.  
 National Co., 61 Sherman St., Malden 48, Mass.  
 See Advertisement on Page 78  
 Pioneer Electric & Research Corp., The, Forest Park, Ill.  
 Sangamo Electric Co., Springfield, Ill.  
 Sickles Co., F. W., 165 Front St., Chicopee, Mass.  
 Sprague Electric Co., North Adams, Mass.  
 Teleradio Engineering Corp., 99 Wall St., New York 5, N. Y.

**CAPACITORS—Neutralizing**

Bud Radio, Inc., 2118 E. 55th St., Cleveland 3, Ohio  
 Centralab, Div. of Globe Union Inc., 900 Keefe Ave., Milwaukee 1, Wis.  
 See Advertisements on Pages 24, 25  
 Hammarlund Mfg. Co., Inc., 460 W. 34th St., New York 1, N. Y.  
 Industrial Condenser Corp., 3243 N. Calif. Ave., Chicago 18, Ill.  
 Johnson Co., E. F., Waseca, Minn.  
 Millen Mfg. Co., James, 150 Exchange St., Malden 48, Mass.  
 See Advertisement on Page 44  
 National Co., Inc., 61 Sherman St., Malden 48, Mass.  
 See Advertisement on Page 78  
 Teleradio Engineering Corp., 99 Wall St., New York 5, N. Y.

**CAPACITORS—Oil Impregnated**

Advance Electronics Mfg. Co., 657 Schuyler Ave., Kearny, N. J.  
 Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.  
 Aircraft Radio Corp., Boonton, N. J.  
 See Advertisement on Page 185  
 Capacitron Co., 849 No. Kedzie Ave., Chicago 51, Ill.  
 Chicago Condenser Corp., 3255 W. Armitage Ave., Chicago 47, Ill.  
 Condenser Corp. of America, 1000 Hamilton Blvd., S. Plainfield, N. J.  
 Condenser Products Co., 1375 N. Branch St., Chicago, Ill.  
 Cornell Dubilier Electric Corp., 1000 Hamilton Blvd., S. Plainfield, N. J.  
 Deutschmann Corp., Tobe, Filterette Div., Canton, Mass.  
 See Advertisement on Page 82  
 Fast & Co., John E., 3101 N. Pulaski Rd., Chicago 41, Ill.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Girard-Hopkins, 1000 40th Ave., Oakland 1, Calif.  
 Illinois Condenser Co., 1160 N. Howe St., Chicago, Ill.  
 See Advertisement on Page 164  
 Industrial Condenser Corp., 3243 No. Calif. Ave., Chicago 18, Ill.  
 Mallory & Co., Inc., P. R. 3029 E. Washington St., Indianapolis 6, Ind.  
 See Advertisements on Pages 257 to 260  
 Micamold Radio Corp., 1087 Flushing Ave., Brooklyn 6, N. Y.  
 O'Donnell and Sons, J. P., 316 Stuart St., Boston 16, Mass.  
 Potter Co., 1850 Sheridan Rd., No. Chicago, Ill.  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 Sangamo Electric Co., Springfield, Ill.  
 Solar Mfg. Corp., 285 Madison Ave., New York 17, N. Y.  
 Sprague Electric Co., North Adams, Mass.  
 Telecon Condenser Co., 3757 W. North Ave., Chicago 47, Ill.

**CAPACITORS—Padder**

Centralab, Div. of Globe Union Inc., 900 Keefe Ave., Milwaukee 1, Wis.  
 See Advertisements on Pages 24, 25  
 Electro Motive Mfg. Co., Willimantic, Conn.  
 See Advertisement on Page 27  
 Industrial Condenser Corp., 3243 N. Calif. Ave., Chicago 18, Ill.  
 Millen Mfg. Co., James 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44

Sprague Electric Co., North Adams, Mass.  
Teleradio Engineering Corp., 99 Wall St.,  
New York 5, N. Y.

## CAPACITORS—Paper

Advance Electronics Mfg. Co., 657 Schuyler Ave., Kearny, N. J.  
Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.  
**Aircraft Radio Corp., Boonton, N. J.**  
See Advertisement on Page 185  
American Condenser Co., 4410 Ravenswood Ave., Chicago 40, Ill.  
Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.  
Capacitron Co., 849 No. Kedzie Ave., Chicago 51, Ill.  
Chicago Condenser Corp., 3255 W. Armitage Ave., Chicago 47, Ill.  
Condenser Corp. of America, 1000 Hamilton Blvd., South Plainfield, N. J.  
Cornell Dubilier Electric Corp., 1000 Hamilton Blvd., South Plainfield, N. J.  
Deutschmann Corp., Tobe, Filletterette Div., Canton, Mass.  
See Advertisement on Page 82  
Dine & Co., Inc., F. E., 2221 Warwick Ave., Santa Monica, Calif.  
Dumont Electric Co., 34 Hubert St., New York, N. Y.  
See Advertisements on Pages 238, 239  
Electric Auto-Lite Co., The, Toledo 1, Ohio  
Fast & Co., John E., 3101 N. Pulaski Rd., Chicago 41, Ill.  
Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
See Advertisements on Pages 48A to 48D  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Girard-Hopkins, 1000 40th Ave., Oakland 1, Calif.  
Illinois Condenser Co., 1160 N. Howe St., Chicago, Ill.  
See Advertisement on Page 164  
Industrial Condenser Corp., 3243 N. Calif. Ave., Chicago 18, Ill.  
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.  
See Advertisements on Pages 257 to 260  
Micamold Radio Corp., 1087 Flushing Ave., Brooklyn 6, N. Y.  
O'Donnell & Sons, J. P., 316 Stuart St., Boston 16, Mass.  
Potter Co., 1850 Sheridan Rd., No. Chicago, Ill.  
Pyramid Electric Co., 155 Oxford St., Paterson, N. J.  
Radio Corp. of America, RCA Victor Div., Camden, N. J.  
See Advertisements on Inside Back Cover & Back Cover, 251  
Sangamo Electric Co., Springfield, Ill.  
Solar Mfg. Corp., 285 Madison Ave., New York 17, N. Y.  
Sprague Electric Co., North Adams, Mass.  
Telecon Condenser Co., 3757 W. North Ave., Chicago 47, Ill.  
United Condenser Corp., 422 E. 138th St., New York 54, N. Y.  
Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
See Advertisements on Pages 88, 89

## CAPACITORS—Plastic Dielectric

Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.  
Condenser Products Co., 1375 N. Branch St., Chicago, Ill.  
Fast & Co., John E., 3101 N. Pulaski Rd., Chicago 41, Ill.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Girard-Hopkins, 1000 40th Ave., Oakland 1, Calif.  
Illinois Condenser Co., 1160 N. Howe St., Chicago, Ill.  
See Advertisement on Page 164  
Industrial Condenser Corp., 3243 N. Calif. Ave., Chicago 18, Ill.  
Micamold Radio Corp., 1087 Flushing Ave., Brooklyn 6, N. Y.  
O'Donnell and Sons, J. P., 316 Stuart St., Boston 16, Mass.  
Plastic Enterprises, 129 Bloomfield Ave., Bloomfield, N. J.  
Potter Co., 1850 Sheridan Rd., No. Chicago, Ill.  
Sangamo Electric Co., Springfield, Ill.  
Solar Mfg. Corp., 285 Madison Ave., New York 17, N. Y.  
United Condenser Corp., 422 East 138th St., New York 54, N. Y.

## CAPACITORS—Precision Air

**Aircraft Radio Corp., Boonton, N. J.**  
See Advertisement on Page 185  
Cardwell Mfg. Corp., Allen D., 97 Whiting St., Plainville, Conn.  
General Radio Co., 272 Massachusetts Ave., Cambridge 39, Mass.  
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
See Advertisement on Page 44  
National Co., Inc., 61 Sherman St., Malden 48, Mass.  
See Advertisement on Page 78  
Teleradio Engineering Corp., 99 Wall St., New York 5, N. Y.

## CAPACITORS—Silvered Mica

Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.  
Automatic Mfg. Co., 900 Passaic Avenue, Newark, N. J.  
See Advertisement on Page 60  
Centralab Div., Globe Union, Inc., 900 Keefe Ave., Milwaukee 1, Wisc.  
Condenser Corp. of America, 1000 Hamilton Blvd., S. Plainfield, N. J.  
Cornell Dubilier Electric Corp., 1000 Hamilton Blvd., S. Plainfield, N. J.  
Electro Motive Mfg. Co., South Park & John St., Willimantic, Conn.  
See Advertisement on Page 27  
Erie Resistor Corp., 644 W. 12th St., Erie, Pa.  
See Advertisement on Page 47  
Micamold Radio Corp., 1087 Flushing Ave., Brooklyn 6, N. Y.  
Monitor Products Co., 815 Fremont St., So. Pasadena, Calif.  
Ross Mfg. Co., 2241 S. Indiana Ave., Chicago 27, Ill.  
Sangamo Electric Co., Springfield, Ill.  
Solar Mfg. Corp., 285 Madison Ave., New York 17, N. Y.  
Sprague Electric Co., North Adams, Mass.  
Teleradio Engineering Corp., 99 Wall St., New York 5, N. Y.

## CAPACITORS—Small High Voltage

Advance Electronics Mfg. Co., 657 Schuyler Ave., Kearny, N. J.  
Centralab Div., Globe Union, Inc., 900 Keefe Ave., Milwaukee 1, Wisc.  
See Advertisements on Pages 24, 25  
Condenser Products Co., 1375 N. Branch St., Chicago, Ill.  
Cornell Dubilier Electric Corp., 1000 Hamilton Blvd., South Plainfield, N. J.  
Deutschmann Corp., Tobe, Filletterette Div., Canton, Mass.  
See Advertisement on Page 82  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Industrial Condenser Corp., 3243 N. Calif. Ave., Chicago 18, Ill.  
Micamold Radio Corp., 1087 Flushing Ave., Brooklyn 6, N. Y.  
O'Donnell and Sons, J. P., 316 Stuart St., Boston 16, Mass.  
Sangamo Electric Co., Springfield, Ill.  
Solar Mfg. Corp., 285 Madison Ave., New York 17, N. Y.  
Sprague Electric Co., North Adams, Mass.  
Telecon Condenser Co., 3757 W. North Ave., Chicago 47, Ill.  
United Condenser Corp., 422 E. 138th St., New York 54, N. Y.

## CAPACITORS—Trimmer

Centralab Div. of Globe Union Inc., 900 Keefe Ave., Milwaukee 1, Wisc.  
See Advertisements on Pages 24, 25  
Crystal Research Labs. Inc., 29 Allyn St., Hartford, Conn.  
Crycon, Inc., Subs. of Crystal Research Labs., Inc., Unionville, Conn.  
Electro Motive Mfg. Co., South Park & John St., Willimantic, Conn.  
See Advertisement on Page 27  
Erie Resistor Corp., 644 W. 12th St., Erie, Pa.  
See Advertisement on Page 47  
Essex Electronics, 1060 Broad St., Newark 2, N. J.  
See Advertisement on Page 241  
Guthman Inc., Edwin L., 15 S. Throop St., Chicago, Ill.  
Herlec Corp., The, 422 N. Fifth St., Milwaukee 3, Wisc.  
Joyer Corp., The, 462 N. Parkside Ave., Chicago 44, Ill.

Lear, Inc., 110 Ionia Ave., N. W., Grand Rapids 2, Mich.  
McMurdo Silver Co., Inc., 1249 Main St., Hartford 3, Conn.  
Meissner Mfg. Div., Maguire Industries, Inc., Mt. Carmel, Ill.  
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
See Advertisement on Page 44  
National Co., Inc., 61 Sherman St., Malden 48, Mass.  
See Advertisement on Page 78  
North American Phillips Co., Inc., 100 E. 42nd St., New York 17, N. Y.  
Sangamo Electric Co., Springfield, Ill.  
Sickles Co., F. W., 165 Front St., Chicopee, Mass.

## CAPACITORS—Trimmer Receiving

**Aircraft Radio Corp., Boonton, N. J.**  
See Advertisement on Page 185  
Automatic Mfg. Co., 900 Passaic Ave., Newark, N. J.  
See Advertisement on Page 60  
Cardwell Mfg. Corp., Allen D., 97 Whiting St., Plainville, Conn.  
Centralab, Div. of Globe Union Inc., 900 Keefe Ave., Milwaukee 1, Wisc.  
See Advertisements on Pages 24, 25  
Corning Glass Works, Corning, N. Y.  
Crycon, Inc., Subs. of Crystal Research Labs., Inc., Unionville, Conn.  
Dine and Co., Inc., F. E., 2221 Warwick Ave., Santa Monica, Calif.  
Erie Resistor Corp., 644 W. 12th St., Erie, Pa.  
See Advertisement on Page 47  
Essex Electronics, 1060 Broad St., Newark 2, N. J.  
See Advertisement on Page 241  
Herlec Corp., The, 422 N. Fifth St., Milwaukee 3, Wisc.  
Madison Electrical Products Div., John G. Ruckelshaus Co., 74 Main St., Madison, N. J.  
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
See Advertisement on Page 44  
Sangamo Electric Co., Springfield, Ill.  
Sickles Co., F. W., 165 Front St., Chicopee, Mass.  
Teleradio Engineering Corp., 99 Wall St., New York 5, N. Y.

## CAPACITORS—Vacuum

Amperex Electronic Corporation, 25 Washington St., Brooklyn 1, N. Y.  
Eitel-McCullough Inc., San Bruno, Calif.  
Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
See Advertisements on Pages 48A to 48D  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Gilundun Electronics, 14 Union Ave., Campbell, Calif.  
Jennings Radio Mfg. Co., 1098 E. William St., San Jose 12, Calif.  
See Advertisement on Page 200  
Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
United Electronics Co., 42 Spring St., Newark 2, N. J.

## CAPACITORS—Variable Receiver Tuning

**Aircraft Radio Corp., Boonton, N. J.**  
See Advertisement on Page 185  
Airplane & Marine Instruments, Inc., Clearfield, Pa.  
Cardwell Mfg. Corp., Allen D., 97 Whiting St., Plainville, Conn.  
Clarkstan Corp., 11927 W. Pico Blvd., Los Angeles 34, Calif.  
Cover Dual Signal Systems, Inc., Div. of Electra Voice Corp., 5215-25 Ravenswood Ave., Chicago 40, Ill.  
Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
See Advertisements on Pages 48A to 48D  
General Instrument Corp., 829 Newark Ave., Elizabeth 3, N. J.  
See Advertisement on Page 71  
Hammarlund Mfg. Co., Inc., 460 W. 34th St., New York 1, N. Y.  
Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
See Advertisement on Page 166  
Kings Electronics Co., 372 Classon Ave., Brooklyn 5, N. Y.  
Lear, Inc., 110 Ionia Ave., N. W., Grand Rapids 2, Mich.  
McMurdo Silver Co., 1249 Main St., Hartford 3, Conn.

Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.

See Advertisement on Page 44  
Molded Insulation Co., Aircraft Control Div., 335 E. Price St., Philadelphia, Pa.  
National Co., Inc., 61 Sherman St., Malden 48, Mass.

See Advertisement on Page 78  
Oak Mfg. Co., 1260 N. Clybourn Ave., Chicago 10, Ill.

Radio Condenser Co., Camden, N. J.  
Searle Aero Industries, Inc., Orange, Calif.  
Waterproof Electric Co., 72 E. Verdugo Ave., Burbank, Calif.

### CAPACITORS—Variable Transmitter Tuning

Aircraft Radio Corp., Boonton, N. J.

See Advertisement on Page 185  
Airplane & Marine Instruments, Inc., Clearfield, Pa.

Andrew Co., 363 E. 75th St., Chicago 19, Ill.  
Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.

Bud Radio, Inc., 2118 E. 55th St., Cleveland 3, Ohio

Cardwell Mfg. Corp., Allen D., 97 Whiting St., Plainville, Conn.

Clarkstan Corp., 11927 W. Pico Blvd., Los Angeles 34, Calif.

Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.

See Advertisements on Pages 48A to 48D  
Hammarlund Mfg. Co., Inc., 460 W. 34th St., New York 1, N. Y.

Johnson Co., E. F., Waseca, Minn.  
Kings Electronics Co., 372 Classon Ave., Brooklyn 5, N. Y.

McMurdo Silver Co., 1249 Main St., Hartford 3, Conn.  
Micamold Radio Corp., 1087 Flushing Ave., Brooklyn 6, N. Y.

Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.

See Advertisement on Page 44  
National Co., Inc., 61 Sherman St., Malden 48, Mass.

See Advertisement on Page 78  
Peerless Labs, 461-467 10th Ave., New York 18, N. Y.

### CAPACITORS—Wax Impregnated

Advance Electronics Mfg. Co., 657 Schuyler Ave., Kearny, N. J.

Atlas Condenser Products Co., 3120 Third Ave., New York, N. Y.

Capacitron Co., 849 No. Kedzie Ave., Chicago 51, Ill.

Chicago Condenser Corp., 3255 W. Armitage Ave., Chicago 47, Ill.

Condenser Products Co., 1375 N. Branch St., Chicago, Ill.

Cornell Duplicator Electric Corp., 1000 Hamilton Blvd., South Plainfield, N. J.

Deutschmann Corp., Tohe, Filterette Div., Canton, Mass.

See Advertisement on Page 82  
Electric Auto-Lite Co., The, Toledo 1, Ohio

Fast & Co. John E., 3101 N. Pulaski Rd., Chicago 41, Ill.

General Electric Co., Schenectady 5, N. Y.

See Advertisements on Pages 96B, 96C  
Girard-Hopkins, 1000 40th Ave., Oakland 1, Calif.

Industrial Condenser Corp., 3243 No. Calif. Ave., Chicago 18, Ill.

Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.

Magnavox Co., The, Fort Wayne 4, Ind.

Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.

See Advertisements on Pages 257 to 260  
O'Donnell and Sons, J. P., 316 Stuart St., Boston 16, Mass.

Potter Co., 1850 Sheridan Rd., No. Chicago, Ill.

Radio Corp. of America, RCA Victor Div., Camden, N. J.

See Advertisements on Inside Back Cover & Back Cover, 251  
Solar Mfg. Corp., 285 Madison Ave., New York 17, N. Y.

Sprague Electric Co., North Adams, Mass.  
Telecon Condenser Co., 3757 W. North Ave., Chicago 47, Ill.

United Condenser Corp., 422 E. 138th St., New York 54, N. Y.

### CARDIOTACHOMETERS

Electrodyne Co., The, 899 Boylston St., Boston 15, Mass.

Waters Conley Co., 501 First St., N. W., Rochester, Minn.

### CASES, PORTABLE

(for Radios, Phonographs, Amplifiers, etc.)

Atlas Sound Corp., 1443 39th St., Brooklyn, N. Y.

See Advertisement on Page 96D  
Audar Inc., Argos, Ind.

Boonton Molding Co., Boonton, N. J.  
Eastern Case Co., 51 Bond St., New York 12, N. Y.

Garrard Sales Corp., 501 Broadway New York 13, N. Y.

Hollywood Radio Cabinet Co., 924 N. Formosa Ave., Hollywood, Calif.

Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.

See Advertisement on Page 166  
Karp Metal Products Co., Inc., 139 30th St., Brooklyn, N. Y.

See Advertisement on Page 81  
Magnavox Co., The, Fort Wayne 4, Ind.

Milwaukee Stamping Co., 824 S. 72nd St., Milwaukee, Wis.

Minute Man Products Inc., 309 E. 22nd St., New York 10, N. Y.

Purves Mfg. Corp., Cambridge City, Ind.  
Radiad Service, 720 W. Schubert Ave., Chicago 14, Ill.

Radio Merchandise Sales, 550 Westchester Ave., New York 55, N. Y.

Searle Aero Industries, Inc., Orange, Calif.  
Skydyne Inc., River Rd., Port Jervis, N. Y.

See Advertisement on Page 186  
Stokes Molded Products, Taylor St. at Webster, Trenton, N. J.

### CEMENTS—Radio

Ambroid Co., 305 Franklin St., Boston 10, Mass.

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.

See Advertisement on Page 23  
American Products Mfg. Co., Oleander & Dublin Sts., New Orleans 18, La.

American Resinous Chemical Co., 104 Foster St., Peabody, Mass.

Arco Co., 7301 Bessemer Ave., Cleveland 4, Ohio

Armstrong Cork Co., Lancaster, Pa.  
Bakelite Corp., 300 Madison Ave., New York 17, N. Y.

Durite Plastics, Inc., 5010 Summerdale Ave., Philadelphia 24, Pa.

General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.

See Advertisement on Page 90  
General Electric Co., Syracuse, N. Y.

See Advertisements on Pages 96, 96A  
Haynes Labs, Inc., C. W., 61 Chandler St., Springfield, Mass.

Insl-X Co., Inc., The, 857 Meeker Ave., Brooklyn 22, N. Y.

Insulating Co., 1 Broadway, New York, N. Y.  
J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkwy., Brooklyn, N. Y.

Maas & Waldstein & Co., 438 River Ave., Newark 4, N. J.

See Advertisement on Page 53  
Paisley Products, Inc., 1770 Canalport Ave., Chicago 16, Ill.

Plax Corp., 133 Walnut St., Hartford 5, Conn.

Sauereisen Cements Co., Sauereisen Building, Pittsburgh 15, Pa.

Schott Co., Walter L., 9306 Santa Monica Blvd., Beverly Hills, Cal.

U. S. Stoneware Co., The, Akron 9, Ohio

Wynn Mfg. Div., Hudson Supply Co., 401 N. 27th St., Richmond, Va.

### CERAMIC

See Insulation Materials

### CESIUM COMPOUNDS

See Metals

### CHANGERS—Automatic Record

Admiral Corp., 3800 Cortland St., Chicago 47, Ill.

Aviola Radio Corp., Phoenix, Arizona  
Bogen Co., David, 663 Broadway, New York 12, N. Y.

Crescent Industries, Inc., 4140 Belmont Ave., Chicago 41, Ill.

Erwood Co., 223 W. Erie St., Chicago, Ill.  
Farnsworth Television & Radio Corp., Fort Wayne, Ind.

Garrard Sales Corp., 401 Broadway, New York 13, N. Y.

General Instrument Corp., 829 Newark Ave., Elizabeth 3, N. J.

See Advertisement on Page 71  
Lear, Inc., 110 Ionia Ave., N. W., Grand Rapids 2, Mich.

Magnavox Co., The, Fort Wayne 4, Ind.  
Maguire Industries, Inc., Electronics Dept., Bridgeport, Conn.

Micro-Sonic Corp., 44 West 18th St., New York, N. Y.

Milwaukee Stamping Co., 824 S. 72nd St., Milwaukee, Wis.

Oak Mfg. Co., 1260 N. Clybourn Ave., Chicago 10, Ill.

Russell Electric Co., Affiliated with Raytheon Mfg. Co., 340 W. Huron St., Chicago 10, Ill.

Seeburgh Corp., J. P., 1500 N. Dayton Ave., Chicago 22, Ill.

See Advertisement on Page 203  
V-M Corp., Benton Harbor, Mich.  
Webster Chicago Corp., 5622 Bloomingdale Ave., Chicago 39, Ill.

### CHASSIS—Metal

Amalgamated Radio Television Corp., 476 Broadway, New York 13, N. Y.

Art-Lloyd Metal Products Corp., 2973 Croysey Ave., Brooklyn 14, N. Y.

See Advertisement on Page 236  
Bud Radio, Inc., 2118 E. 55th St., Cleveland 3, Ohio

Columbia Metal Box Co., 260 E. 143rd St., New York, N. Y.

Dahlstrom Metallic Door Co., Jamestown, N. Y.

Eclipse Mfg. Co., Inc., 294 E. 137th St., New York 54, N. Y.

Edin Electronics Co., 207 Main St., Worcester, Mass.

Electronic Supply Co., 207 Main St., Worcester, Mass.

Ferranti Electric Inc., 30 Rockefeller Plaza, New York 20, N. Y.

See Advertisement on Page 196  
Gardiner Mfg. Co., 711 Union St., Oakland 7, Calif.

Garrett Co., Inc., G. K., 1421 Chestnut St., Philadelphia 2, Pa.

Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.

Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.

See Advertisement on Page 166  
Karp Metal Products Co., Inc., 139 30th Ave., Brooklyn, N. Y.

See Advertisement on Page 81  
La Magna Mfg. Co., Inc., East Rutherford, N. J.

Lorentzen Inc., H. K., 391 W. Broadway, New York 12, N. Y.

McMurdo Silver Co., 1249 Main St., Hartford 3, Conn.

Measurement Engineering Ltd., 61 Duke St., Toronto, Canada

See Advertisement on Page 193  
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.

See Advertisement on Page 44  
Minute Man Products, Inc., 309 E. 22nd St., New York 10, N. Y.

Molded Insulation Co., Aircraft Control Div., 335 E. Price St., Philadelphia, Pa.

Olympic Tool & Mfg. Co., 27 Chambers St., New York 7, N. Y.

See Advertisement on Page 177  
Pan American Electric Co., Inc., 2912 Atlantic Ave., Brooklyn 7, N. Y.

Par-Metal Products Corp., 32-62 49th St., L. I. City 3, N. Y.

See Advertisement on Page 162  
Paul & Beekman Div., Portable Products Corp., 1801 Cortland St., Philadelphia 40, Pa.

Pierce Template Corp., 2646 N. Coral St., Philadelphia 25, Pa.

Radiad Service, 720 W. Schubert Ave., Chicago 14, Ill.

Reiner Electronics Co., 152 W. 25th St., New York, N. Y.

Robinson Aviation Inc., Teterboro Air Terminal, Teterboro, N. J.

Searle Aero Industries, Inc., Orange, Calif.  
Sperman Metal Specialties, 2199 E. 21st St., Brooklyn 29, N. Y.

Stamford Metal Specialty Co., 429 W. Broadway, New York 12, N. Y.

See Advertisement on Page 214  
Stark Sound Engineering Co., P. O. Box 493, Fort Wayne 1, Ind.

United Radio Mfg. Co., 191 Greenwich St., New York, N. Y.

Vendo Co., 1907 Grand Ave., Kansas City 8, Mo.

Walter Co., S., 144 Centre St., Brooklyn 31, N. Y.

See Advertisement on Page 57  
Worcester Pressed Steel Co., 100 Barber Ave., Worcester, Mass.

## CHECKERS—Crystal Rectifier

Marion Electrical Instrument Co., Manchester, N. H.

## CHECKERS—"QX"

Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.  
Boonton Radio Corp., Boonton N. J.  
See Advertisement on Page 205

## CHECKERS—vhf Circuit

Boonton Radio Corp., Boonton, N. J.  
See Advertisement on Page 205

## CHEMICALS—Radio

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
See Advertisement on Page 23  
Baker Chemical Co., J. T., N. Broad St., Phillipsburg, N. J.  
Carbide and Carbon Chemicals Corp., Unit of Union Carbide and Carbon Corp., 30 E. 42nd St., New York 17, N. Y.  
Dow Chemical Co., Midland, Mich.  
du Pont de Nemours & Co., E. I., Patterson Screen Div., Towanda, Pa.  
Glyco Products Co., Inc., 26 Court Street, Brooklyn, N. Y.  
Hommel Co., O., 209 Fourth Ave., Pittsburgh, Pa.  
J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkwy., Brooklyn, N. Y.  
Merck & Co., Inc., Rahway, N. J.  
Pennsylvania Coal Products Co., Petrolia, Pa.  
Reilly Tar & Chemical Corp., Merchants Bank Bldg., Indianapolis, Ind.  
Rohm & Haas, 222 W. Washington Sq., Philadelphia, Pa.  
Schott Co., Walter L., 9306 Santa Monica Blvd., Beverly Hills, Calif.  
Tracerlab Inc., 55 Oliver St., Boston 10, Mass.  
Wynn Mfg. Div., Hudson Supply Co., 401 N. 27th St., Richmond, Va.

## CHOKES—Audio

Aircraft Radio Corp., Boonton, N. J.  
See Advertisement on Page 185  
Airdesign Inc., 241 Fairfield Ave., Upper Darby, Pa.  
Allied Control Co. Inc., 2 East End Ave., New York 21, N. Y.  
Altec Lansing Corp., 1161 N. Vine St., Hollywood 38, Calif.  
American Coil & Engineering Co., 1271 N. Hermitage Ave., Chicago 22, Ill.  
American Television & Radio Co., 300 E. Fourth St., St. Paul 1, Minn.  
American Transformer Co., 178 Emmett St., Newark, N. J.  
Audio Development Co., 2833 13th Ave. S., Minneapolis 7, Minn.  
See Advertisement on Page 26  
Burnett Radio Lab., Wm. W. L., 4814 Idaho St., San Diego, Calif.  
Cambridge Theronionic Corp., 445 Concord Ave., Cambridge, Mass.  
Chicago Transformer Div., Essex Wire Corp., 3501 W. Addison St., Chicago 18, Ill.  
Columbus Process Co., Inc., State & Maple St., East Columbus, Ind.  
Commercial Equipment Co., 1416 McGee St., Kansas City, Mo.  
Dinion Coil Co., Inc., Caledonia, N. Y.  
See Advertisement on Page 166  
Electrocoil Transformer Co., 421 Canal St., New York 13, N. Y.  
Electronic Engineering Co., Inc., 3223 W. Armitage Ave., Chicago 47, Ill.  
See Advertisement on Page 38  
Electronic Transformer Co., 207 W. 25th St., New York, N. Y.  
Empire Coil Co., 238 Huguenot St., New Rochell, N. Y.  
Engineering Lab. Inc., 602 E. 4th St., Tulsa 3, Okla.  
Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
See Advertisements on Pages 48A to 48D  
Ferranti Electric Inc., 30 Rockefeller Plaza, New York 20, N. Y.  
See Advertisement on Page 196  
Freed Transformer Co., 72 Spring St., New York 12, N. Y.  
See Advertisement on Page 253

General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
General Electric Co., Syracuse, N. Y.  
See Advertisements on Pages 96, 96A  
General Transformer Corp., 1250 W. Van Buren St., Chicago 7, Ill.  
Gramer Co., The, 2734 N. Pulaski Rd., Chicago 39, Ill.  
Halldorson Co., The, 4500 Ravenswood Ave., Chicago 28, Ill.  
Inductive Equipment Co., Gettysburg, Pa.  
Kartron, Inc., 821A South 4th St., Alhambra, Calif.  
Kenyon Transformer Co., 840 Barry St., New York 59, N. Y.  
See Advertisements on Pages 149 to 152  
Langevin Co., Inc., 37 W. 65th St., New York, N. Y.  
See Advertisement on Page 153  
Magnavox Co., The, Fort Wayne 4, Ind.  
Magnetic Devices Corp., 76-14 Woodside Ave., Elmhurst, N. Y.  
Magnetic Products Corp., The, Norwalk, Conn.  
Magnetic Windings Co., Div. Essex Wire Corp., 416 S. 16th St., Easton, Pa.  
Maguire Industries Inc., Electronics Dept., Bridgeport, Conn.  
Malco Co. Inc., 25 N. 3rd St., Minneapolis, Minn.  
Merit Coil & Transformer Corp., 4427 N. Clark St., Chicago 40, Ill.  
Miller Co., B. F., Trenton 4, N. J.  
National Co., Inc., 61 Sherman St., Malden 48, Mass.  
See Advertisement on Page 78  
New York Transformer Co., Alpha, N. J.  
See Advertisement on Page 165  
Peerless Electric Products Co., 6920 McKinley Ave., Los Angeles 1, Calif.  
Pickering and Co., Audio Labs, Oceanside, N. Y.  
Radio Corp. of America, RCA Victor Div., Camden, N. J.  
See Advertisements on Inside Back Cover & Back Cover, 251  
Raytheon Mfg. Co., Commercial Products Div., Waltham 54, Mass.  
S. N. C. Mfg. Co., Inc., Box 156, Glenview, Ill.  
Smith Mfg. Co., N. R., 105 Pasadena Ave., So. Pasadena, Calif.  
Sorensen & Co., 375 Fairfield Ave., Stamford, Conn.  
See Advertisement on Page 154  
Standard Electrical Products Co., Dayton 3, Ohio  
Standard Transformer Corp., 1500 N. Halsted St., Chicago 22, Ill.  
Super Electric Corp., 1057 Summit Ave., Jersey City, N. J.  
See Advertisement on Page 86  
Thermador Electric Mfg. Co., 5119 S. Riverside Dr., Los Angeles 22, Calif.  
Transformer Engineers, 389 South Arroyo Parkway, Pasadena, Calif.  
Transformer Products Inc., 143 W. 51st St., New York, N. Y.  
Triad Transformer Mfg. Co., 423 N. Western Ave., Los Angeles 4, Calif.  
United Transformer Corp., 150 Varick St., New York 13, N. Y.  
See Advertisement on Inside Front Cover  
Walsh Engineering Co., 34 De Hart Pl., Elizabeth, N. J.

## CHOKES—Filter

Acme Electric Corp., Cuba, N. Y.  
Airdesign, Inc., 247 Fairfield Ave., Upper Darby, Pa.  
American Transformer Co., 178 Emmett St., Newark, N. J.  
Audio Development Co., 2833 13th Ave. S., Minneapolis 7, Minn.  
See Advertisement on Page 26  
Burnell & Co., 45 Warburton Ave., Yonkers 2, N. Y.  
See Advertisement on Page 192  
Cambridge Theronionic Corp., 445 Concord Ave., Cambridge, Mass.  
Chicago Transformer Div., Essex Wire Corp., 3501 W. Addison St., Chicago 18, Ill.  
Columbus Process Co. Inc., State & Maple St., East Columbus, Ind.  
Commercial Equipment Co., 1416 McGee St., Kansas City, Mo.  
Continental Electric Co., Inc., 323-327 Ferry St., Newark 5, N. J.  
Control Corp., 718 Central Ave., Minneapolis 14, Minn.  
D. & M. Mfg. Co., 2 Delford Ave., Bergenfield, N. J.  
Dinion Coil Co., Inc., Caledonia, N. Y.  
See Advertisement on Page 166  
Eisler Engineering Co., 740 S. 13th St., Newark 3, N. J.  
Electran Mfg. Co., 4587 Elston Ave., Chicago 30, Ill.  
Electrical Specialty Co., 2304 Washington St., Boston, Mass.

Electrocoil Transformer Co., 421 Canal St., New York 13, N. Y.  
Electronic Engineering Co., Inc., 3223 W. Armitage Ave., Chicago 47, Ill.  
See Advertisement on Page 38  
Electronic Transformer Co., 207 W. 25th St., New York, N. Y.  
Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
See Advertisements on Pages 48A to 48D  
Ferranti Electric Inc., 30 Rockefeller Plaza, New York 20, N. Y.  
See Advertisement on Page 196  
Freed Transformer Co., 72 Spring St., New York 12, N. Y.  
See Advertisement on Page 253  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
General Electric Co., Syracuse, N. Y.  
See Advertisements on Pages 96, 96A  
General Transformer Corp., 1250 W. Van Buren St., Chicago 7, Ill.  
Gramer Co., The, 2734 N. Pulaski Rd., Chicago 39, Ill.  
Halldorson Co., The, 4500 Ravenswood Ave., Chicago 28, Ill.  
Inductive Equipment Co., Gettysburg, Pa.  
Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
See Advertisement on Page 166  
Joyner Corp., The, 462 N. Parkside Ave., Chicago 44, Ill.  
Kartron, Inc., 821A South 4th St., Alhambra, Calif.  
Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
Kenyon Transformer Co., 840 Barry St., New York 59, N. Y.  
See Advertisements on Pages 149 to 152  
Langevin Co. Inc., 37 W. 65th St., New York, N. Y.  
See Advertisement on Page 153  
Magnavox Co., The, Fort Wayne 4, Ind.  
Magnetic Devices Corp., 76-14 Woodside Ave., Elmhurst, N. Y.  
Magnetic Products Corp., The, Norwalk, Conn.  
Maguire Industries Inc., Electronics Dept., Bridgeport, Conn.  
Miller Co., B. F., Trenton 4, N. J.  
Miller Co., J. W., 5917 S. Main St., Los Angeles, Calif.  
National Co., Inc., 61 Sherman St., Malden 48, Mass.  
See Advertisement on Page 78  
New York Transformer Co., Alpha, N. J.  
See Advertisement on Page 165  
Newark Transformer Co., 17 Frelinghuysen Ave., Newark 5, N. J.  
Osborne Transformer Corp., 948 E. Lafayette Ave., Detroit 7, Mich.  
Peerless Electrical Products Co., 6920 McKinley Ave., Los Angeles 1, Calif.  
Radio Corp. of America, RCA Victor Div., Camden, N. J.  
See Advertisements on Inside Back Cover & Back Cover, 251  
Raytheon Mfg. Co., Commercial Products Div., Waltham 54, Mass.  
S. N. C. Mfg. Co., Inc., Box 156, Glenview, Ill.  
S-W Inductor Co., 1056 N. Wood St., Chicago 11, Ill.  
Smith Mfg. Co., Nathan R., 105 Pasadena Ave., So. Pasadena, Calif.  
Sorensen & Co., 375 Fairfield Ave., Stamford, Conn.  
See Advertisement on Page 154  
Standard Electrical Products Co., Dayton 3, Ohio  
Standard Transformer Corp., 1500 N. Halsted St., Chicago 22, Ill.  
Super Electric Products Corp., 1057 Summit Ave., Jersey City, N. J.  
See Advertisement on Page 86  
Thermador Electric Mfg. Co., 5119 S. Riverside Drive, Los Angeles 22, Calif.  
Transformer Engineers, 389 South Arroyo Parkway, Pasadena, Calif.  
Triad Transformer Mfg. Co., 423 N. Western Ave., Los Angeles 4, Calif.  
United Transformer Corp., 150 Varick St., New York 13, N. Y.  
See Advertisement on Inside Front Cover  
Utah Radio Products Co., 820 Orleans St., Chicago, Ill.  
Westinghouse Electric Corp., Transformer Div., Sharon, Pa.

## CHOKES—Hermetically Sealed

Airdesign, Inc., 241 Fairfield Ave., Upper Darby, Pa.  
Audio Development Co., 2833 13th Ave. S., Minneapolis 7, Minn.  
See Advertisement on Page 26  
Burnell & Co., 45 Warburton Ave., Yonkers 2, N. Y.  
See Advertisement on Page 192  
Chicago Transformer Div., Essex Wire Corp., 3501 W. Addison St., Chicago 18, Ill.

Continental Electric Co., Inc., 323-327 Ferry St., Newark 5, N. J.  
 Dinton Coil Co., Inc., Caledonia, N. Y.  
 See Advertisement on Page 166  
 Electronic Engineering Co., Inc., 3223 W. Armitage Ave., Chicago 47, Ill.  
 See Advertisement on Page 38  
 Electronic Transformer Co. Inc., 207 W. 25th St., New York, N. Y.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 Ferranti Electric Inc., 30 Rockefeller Plaza, New York 20, N. Y.  
 See Advertisement on Page 196  
 Freed Transformer Co., 72 Spring St., New York 12, N. Y.  
 See Advertisement on Page 253  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Inductive Equipment Co., Gettysburg, Pa.  
 Kartron, Inc., 821A South 4th St., Alhambra, Calif.  
 Kenyon Transformer Co., 840 Barry St., New York 59, N. Y.  
 See Advertisements on Pages 149 to 152  
 Magnetic Products Corp., The, Norwalk, Conn.  
 Maguire Industries Inc., Electronics Dept., Bridgeport, Conn.  
 New York Transformer Co., Alpha, N. J.  
 Peerless Electrical Products Co., 6920 McKinley Ave., Los Angeles 1, Calif.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Raytheon Mfg. Co., Commercial Products Div., Waltham 54, Mass.  
 S-W Inductor Co., 1056 N. Wood St., Chicago, Ill.  
 Shallcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.  
 Sorensen & Co., 375 Fairfield Ave., Stamford, Conn.  
 See Advertisement on Page 154  
 Super Electric Products Corp., 1057 Summit Ave., Jersey City, N. J.  
 See Advertisement on Page 86  
 Thermador Electric Mfg. Co., 5119 S. Riverside Drive, Los Angeles 22, Calif.  
 Transformer Engineers, 389 South Arroyo Parkway, Pasadena, Calif.  
 Triad Transformer Mfg. Co., 423 N. Western Ave., Los Angeles 4, Calif.  
 United Transformer Corp., 150 Varick St., New York 13, N. Y.  
 See Advertisement on Inside Front Cover  
 Walsh Engineering Co., 34 De Hart Pl., Elizabeth, N. J.  
 Westinghouse Electric Corp., Transformer Div., Sharon, Pa.

**CHOKES—Power**

Airdesign Inc., 241 Fairfield Ave., Upper Darby, Pa.  
 American Coil & Engineering Co., 1271 N. Hermitage Ave., Chicago 22, Ill.  
 American Television & Radio Co., 300 E. Fourth St., St. Paul 1, Minn.  
 American Transformer Co., 178 Emmett St., Newark, N. J.  
 Audio Development Co., 2833 13th Ave. S., Minneapolis 7, Minn.  
 See Advertisement on Page 26  
 Chicago Transformer Div., Essex Wire Corp., 3501 W. Addison St., Chicago 18, Ill.  
 Control Corp., 718 Central Ave., Minneapolis 14, Minn.  
 Dinton Coil Co., Inc., Caledonia, N. Y.  
 See Advertisement on Page 166  
 Electran Mfg. Co., 4587 Elston Ave., Chicago 30, Ill.  
 Electrocoil Transformer Co., 421 Canal St., New York 13, N. Y.  
 Electronic Engineering Co., Inc., 3223 W. Armitage Ave., Chicago 47, Ill.  
 See Advertisement on Page 38  
 Electronic Transformer Co., 207 W. 25th St., New York, N. Y.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 Ferranti Electric Inc., 30 Rockefeller Plaza, New York 20, N. Y.  
 See Advertisement on Page 196  
 Freed Transformer Co., 72 Spring St., New York 12, N. Y.  
 See Advertisement on Page 253  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 General Transformer Corp., 1250 W. Van Buren St., Chicago 7, Ill.  
 Gramer Company, The, 2734 N. Pulaski Rd., Chicago 39, Ill.  
 Hallderson Co., The, 4500 Ravenswood Ave., Chicago 28, Ill.  
 Inductive Equipment Co., Gettysburg, Pa.

Kenyon Transformer Co., 840 Barry St., New York 59, N. Y.  
 See Advertisements on Pages 149 to 152  
 Langevin Co., Inc., 37 W. 65th St., New York, N. Y.  
 See Advertisement on Page 153  
 Magnetic Devices Corp., 76-14 Woodside Ave., Elmhurst, N. Y.  
 Magnetic Products Corp., The, Norwalk, Conn.  
 Magnetic Windings Co., Div. Essex Wire Corp., 416 S. 16th St., Easton, Pa.  
 Maguire Industries Inc., Electronics Dept., Bridgeport, Conn.  
 Merit Coil & Transformer Corp., 4427 N. Clark St., Chicago 40, Ill.  
 Miller Co., B. F., Trenton 4, N. J.  
 New York Transformer Co., Alpha, N. J.  
 See Advertisement on Page 165  
 Nothelfer Winding Labs., 111 Albemarle Ave., Trenton, N. J.  
 Ohmite Mfg., 4835 W. Flournoy St., Chicago 44, Ill.  
 See Advertisement on Page 179  
 Osborne Transformer Corp., 948 E. Lafayette Ave., Detroit 7, Mich.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Sorensen & Co., 375 Fairfield Ave., Stamford, Conn.  
 See Advertisement on Page 154  
 Standard Electrical Products Co., Dayton 3, Ohio  
 Standard Transformer Corp., 1500 N. Halsted St., Chicago 22, Ill.  
 Super Electric Products Corp., 1057 Summit Ave., Jersey City, N. J.  
 See Advertisement on Page 86  
 Thermador Electric Mfg. Co., 5119 S. Riverside Drive, Los Angeles 22, Calif.  
 Transformer Engineers, 389 South Arroyo Parkway, Pasadena, Calif.  
 Transformer Products Inc., 143 W. 51st St., New York, N. Y.  
 Triad Transformer Mfg. Co., 423 N. Western Ave., Los Angeles 4, Calif.  
 United Transformer Corp., 150 Varick St., New York 13, N. Y.  
 See Advertisement on Inside Front Cover  
 Walsh Engineering Co., 34 De Hart Pl., Elizabeth, N. J.  
 Westinghouse Electric Corp., Switchgear & Control Div., East Pittsburgh, Pa.

**CHOKES—r-f & i-f**

Aircraft Radio Corp., Boonton, N. J.  
 See Advertisement on Page 185  
 Aviola Radio Corp., Phoenix, Arizona  
 Bud Radio, Inc., 2118 E. 55th St., Cleveland 3, Ohio  
 Burnett Radio Lab., Wm. W. L., 4814 Idaho St., San Diego, Calif.  
 Cambridge Thermionic Corp., 445 Concord Ave., Cambridge, Mass.  
 Cinema Engineering Co., 1508 W. Verdugo Ave., Burbank, Calif.  
 Clarostat Mfg. Co. Inc., 285-7 6th St., Brooklyn, N. Y.  
 Columbus Process Co., Inc., State & Maple St., East Columbus, Ind.  
 Communication Parts, 1101 N. Pauline St., Chicago 22, Ill.  
 General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
 Gold Shield Products, 25 W. Broadway, New York 7, N. Y.  
 Hercules Electric & Mfg. Co., Inc., 2500 Atlantic Ave., Brooklyn 7, N. Y.  
 Hillburn Electronic Products Co., 1 Worth St., New York 13, N. Y.  
 Inductive Equipment Co., Gettysburg, Pa.  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Islip Radio Mfg. Co., Beech St., Islip, N. Y.  
 Johnson Co., E. F., Waseca, Minn.  
 Joyner Corp., The, 462 N. Palisade Ave., Chicago 44, Ill.  
 Kraft & Kraft, Hicksville, N. Y.  
 Madison Electrical Products Div., John G. Ruckelshaus Co., 14 Main St., Madison, N. J.  
 Maguire Industries, Inc., Electronics Dept., Bridgeport, Conn.  
 Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.  
 See Advertisements on Pages 257 to 260  
 Miller Co., J. W., 5917 S. Main St., Los Angeles, Calif.  
 Monroe Coil Co., 2659 W. 19th St., Chicago, Ill.  
 National Co., Inc., 61 Sherman St., Malden 48, Mass.  
 See Advertisement on Page 78

Ohmite Mfg. Co., 4835 W. Flournoy St., Chicago 44, Ill.  
 See Advertisement on Page 179  
 Precision Tube Co., 3828 Terrace St., Philadelphia 28, Pa.  
 See Advertisement on Page 218  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Radio Labs. Co., 2701 California Ave., Seattle 6, Wash.  
 Raytheon Mfg. Co., Commercial Products Div., Waltham 54, Mass.  
 S-W Inductor Co., 1056 N. Wood St., Chicago, Ill.  
 Shallcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.  
 Super Electric Products Corp., 1057 Summit Ave., Jersey City, N. J.  
 See Advertisement on Page 86  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161  
 Teleradio Engineering Corp., 99 Wall St., New York, N. Y.  
 Transformer Products Inc., 143 W. 51st St., New York, N. Y.

**CHRONAXIMETERS**

Electro-Medical Lab. Inc., Holliston, Mass.  
 Electrodyne Co., The, 899 Boylston St., Boston 15, Mass.

**CHRONOGRAPHS—Inertialless**

American Time Products Inc., 580 Fifth Ave., New York 19, N. Y.  
 See Advertisement on Page 168  
 Atomic Instrument Co., 160 Charles St., Boston, Mass.  
 Electro-Medical Lab. Inc., Holliston, Mass.  
 Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.  
 Potter Instrument Co., 136-56 Roosevelt Ave., Flushing, N. Y.  
 See Advertisement on Page 243

**CHRONOSCOPES**

Potter Instrument Co., 136-56 Roosevelt Ave., Flushing, N. Y.  
 See Advertisement on Page 243  
 Rawson Electrical Instrument Co., 110 Potter St., Cambridge 42, Mass.  
 See Advertisement on Page 244

**CIRCUIT BREAKERS**

See Breakers, Circuit

**CLIPS & CLAMPS—Test & Tube**

Aerolite Electronic Hardware Corp., 24 Cliff St., Jersey City, N. J.  
 See Advertisement on Page 246  
 Alden Products Co., 117 N. Main St., Brockton 64, Mass.  
 Alpha Wire Corp., 50 Howard St., New York, N. Y.  
 American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 Barnes-Gibson-Raymond Div. of Associated Spring Corp., 6400 Miller Ave., Detroit 11, Mich.  
 Bircher Corp., 5087 Huntington Dr., Los Angeles 32, Calif.  
 Cornish Wire Co., 15 Park Row, New York, N. Y.  
 See Advertisement on Page 170  
 Frankel Connector Co., 27 Vestry St., New York, N. Y.  
 Franklin Mfg. Co., A. W., 43-20 34th St., Long Island City, N. Y.  
 See Advertisement on Page 98  
 Grammes & Sons Inc., L. F., 389 Union St., Allentown 2, Pa.  
 Gregory Mfg. Co., 67 Franklin St., New Haven 11, Conn.  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Johnson Co., E. F., Waseca, Minn.  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Keystone Electronics Co., 50-52 Franklin St., New York 13, N. Y.

**Littelfuse Inc.**, 4757 Ravenswood Ave. Chicago, Ill.  
**See Advertisement on Page 43**  
**Manufacturers Screw Prods.**, 270 W. Hubbard St., Chicago, Ill.  
**Morse Co.**, Frank W., 1300 Soldiers Field Rd., Boston 35, Mass.  
**Mueller Electric Co.**, 1583 E. 31st St., Cleveland 14, Ohio  
**National Co., Inc.**, 61 Sherman St., Malden 48, Mass.  
**Penn-Union Electric Corp.**, 315 State St., Erie, Pa.  
**Rapid Specialties Co.**, 325 W. Huron St., Chicago 10, Ill.  
**Reliable Spring & Wire Forms Co.**, Fulton Road and Paris Ave., Cleveland 9, Ohio  
**Schott Co.**, Walter L., 9306 Santa Monica Blvd., Beverly Hills, Calif.  
**Sherman Mfg. Co.**, H. B., 22 Barney St., Battle Creek, Mich.  
**States Co.**, 19 New Park Ave., Hartford 6, Conn.  
**Tinnerman Products Inc.**, 2106 Fulton Rd., Cleveland 13, Ohio  
**Zierick Mfg. Corp.**, 385 Gerard Ave., New York, N. Y.

## CLOTHS—Speaker Grille

**Austin Co., O.**, 335 Throop Ave., Brooklyn 21, N. Y.  
**Celanese Corp. of America**, 180 Madison Ave., New York 16, N. Y.  
**General Cement Mfg. Co.**, 919 Taylor Ave., Rockford, Ill.  
**See Advertisement on Page 90**  
**J. F. D. Mfg. Co.**, 4111 Ft. Hamilton Pkway., Brooklyn, N. Y.  
**Olek & Sons, Inc., A.**, 4757-59 Melrose St., Philadelphia 37, Pa.  
**Schott Co.**, Walter L., 9306 Santa Monica Blvd., Beverly Hills, Calif.

## CLOTHS—Woven Wire

**Austin Co., O.**, 335 Throop Ave., Brooklyn 21, N. Y.  
**Chase Brass & Copper Co., Inc.**, Waterbury 91, Conn.  
**Cleveland Wire Cloth & Mfg. Co.**, 3573 E. 78th Street, Cleveland 5, Ohio  
**Flock Process Co.**, Velvetone Div., 3 Quincy Street, Norwalk, Conn.  
**General Cement Mfg. Co.**, 919 Taylor Ave., Rockford, Ill.  
**See Advertisement on Page 90**  
**Jelliff Mfg. Corp.**, C. O., 200 Pequot Ave., Southport, Conn.  
**Keasbey & Mattison**, Ambler, Pa.  
**Wickwire Spencer Steel, Div. Colorado Fuel and Iron Corp.**, 361 Delaware Ave., Buffalo 2, N. Y.

## COATINGS—Organic Conducting

**Austin Co., O.**, 335 Throop Ave., Brooklyn 21, N. Y.  
**Clarostat Mfg. Co. Inc.**, 285-7 6th St., Brooklyn, N. Y.  
**Division Lead Co.**, 836 W. Kinzie St., Chicago 22, Ill.  
**General Cement Mfg. Co.**, 919 Taylor Ave., Rockford, Ill.  
**See Advertisement on Page 90**  
**Hague & Co., Inc.**, Alfred, 227 34th Street, Brooklyn, N. Y.

## COATINGS—Protective

**American Resinous Chemical Co.**, 104 Foster St., Peabody, Mass.  
**Arco Co.**, 7301 Bessemer Ave., Cleveland 4, Ohio  
**Austin Co., O.**, 335 Throop Ave., Brooklyn 21, N. Y.  
**Bakelite Corp.**, 300 Madison Ave., New York 17, N. Y.  
**Dow Chemical Co.**, Midland, Mich.  
**du Pont de Nemours & Co., Inc.**, E. I., Wilmington 98, Del.  
**General Cement Mfg. Co.**, 919 Taylor Ave., Rockford, Ill.  
**See Advertisement on Page 90**  
**Heresite and Chemical Co.**, Manitowoc, Wisc.  
**Insl-X Co., Inc.**, 857 Meeker Ave., Brooklyn 22, N. Y.  
**Insulation Mfrs. Corp.**, 565 W. Washington Blvd., Chicago 6, Ill.  
**See Advertisement on Page 87**

**Lukens Steel Co.**, Coatesville, Pa.  
**Nukem Products Corp.**, 111 Colgate Ave., Buffalo 20, N. Y.  
**Reilly Tar & Chemical Corp.**, Merchants Bank Bldg., Indianapolis, Ind.  
**U. S. Rubber Co.**, 1230 Sixth Ave., New York 20, N. Y.  
**U. S. Stoneware Co.**, The, Akron 9, Ohio

## COATINGS—Salt Spray Resistance

**Arco Co.**, 7301 Bessemer Ave., Cleveland 4, Ohio  
**Austin Co., O.**, 335 Throop Ave., Brooklyn 21, N. Y.  
**Division Lead Co.**, 836 W. Kinzie St., Chicago 22, Ill.  
**Heresite & Chemical Co.**, Manitowoc, Wisc.  
**Insl-X Co., Inc.**, 857 Meeker Ave., Brooklyn 22, N. Y.  
**Nukem Products Corp.**, 111 Colgate Ave., Buffalo 20, N. Y.  
**Special Chemicals Co.**, 30 Irving Pl., New York, N. Y.  
**U. S. Stoneware Co., The**, Akron 9, Ohio

## CODE & TAB MARKERS

**Austin Co., O.**, 335 Throop Ave., Brooklyn 21, N. Y.  
**Kulka Electric Mfg. Co. Inc.**, 30 South St., Mt. Vernon, N. Y.  
**Potter Co.**, 1850 Sheridan Rd. No. Chicago, Ill.  
**Topflight Tool Co.**, Huber Bldg., York, Pa.  
**See Advertisement on Page 256**  
**Western Lithograph Co.**, E-Z Code Div., 600 E. Second St., Los Angeles 54, Calif.

## COIL ASSEMBLIES

**Aerolite Electronic Hardware Corp.**, 24 Cliff St., Jersey City, N. J.  
**See Advertisement on Page 246**  
**American Coil & Engineering Co.**, 1271 N. Hermitage Ave., Chicago 22, Ill.  
**American Communications Corp.**, 306 Broadway, New York 7, N. Y.  
**Assembly Products, Inc.**, Chagrin Falls, Ohio  
**Barker & Williamson**, 235 Fairfield Ave., Upper Darby, Pa.  
**Rud Radio, Inc.**, 2118 E. 55th St., Cleveland 3, Ohio  
**Cambridge Thermionic Corp.**, 445 Concord Ave., Cambridge, Mass.  
**Cook Electric Co.**, 2700 Southport Ave., Chicago, Ill.  
**Davis & Co.**, Dean W., Kentland, Ind.  
**Dietz Design & Mfg. Co.**, 5810 Park Ave., Kansas City 4, Mo.  
**Electric Auto-Lite Co.**, The, Toledo 1, Ohio  
**Electronic Transformer Co. Inc.**, 207 W. 25th St., New York, N. Y.  
**Federal Telephone and Radio Corp.**, 100 Kingsland Rd., Clifton, N. J.  
**See Advertisements on Pages 48A to 48D**  
**Five Star Radio Co.**, 416 Broadway, Cambridge, Mass.  
**Freed Transformer Co.**, 72 Spring St., New York 12, N. Y.  
**See Advertisement on Page 253**  
**Gramer Co., The**, 2734 N. Pulaski Rd., Chicago 39, Ill.  
**Harnett Electric Corp.**, 138 Haven Ave., Port Washington, N. Y.  
**See Advertisement on Page 162**  
**Hillburn Electronic Products Co.**, 1 Worth St., New York 13, N. Y.  
**Inductive Equipment Co.**, Gettysburg, Pa.  
**Insuline Corp. of America**, 36-02 35th Ave., Long Island City, N. Y.  
**See Advertisement on Page 166**  
**K-V Transformer Corp.**, 1697 First Ave., New York, N. Y.  
**Kellogg Switchboard & Supply Co.**, 6650 S. Cicero Ave., Chicago 38, Ill.  
**Kraft & Kraft**, Hicksville, N. Y.  
**Magnavox Co.**, The, Fort Wayne 4, Ind.  
**Magnetic Devices Corp.**, 76-14 Woodside Ave., Elmhurst, N. Y.  
**Monroe Coil Co.**, 2659 W. 19th St., Chicago, Ill.  
**National Co.**, 61 Sherman St., Malden 48, Mass.  
**Permoflux Corp.**, 4900 W. Grand Ave., Chicago, Ill.  
**Pioneer Electric & Research Corp.**, The, Forest Park, Ill.  
**Racon Electric Co.**, 52 E. 19th St., New York 3, N. Y.  
**See Advertisement on Page 213**  
**Radex Corp.**, 2076 N. Elston Ave., Chicago, Ill.  
**Radio Corp. of America**, RCA Victor Div., Camden, N. J.  
**See Advertisements on Inside Back Cover & Back Cover, 251**

**Radio Craftsmen**, 1341 S. Michigan Ave., Chicago 5, Ill.  
**S-W Inductor Co.**, 1056 N. Wood St., Chicago, Ill.  
**Sickles Co. F. W.**, 165 Front St., Chicopee, Mass.  
**Small Motors, Inc.**, 1322 Elston Ave., Chicago 22, Ill.  
**Standard Electrical Products Co.**, Dayton 3, Ohio  
**Standard Transformer Corp.**, 1500 N. Halstead St., Chicago 22, Ill.  
**Super Electric Products Corp.**, 1057 Summit Ave., Jersey City, N. J.  
**See Advertisement on Page 86**  
**Toleradio Engineering Corp.**, 99 Wall St., New York 5, N. Y.  
**Transformer Products Inc.**, 143 W. 51st St., New York, N. Y.  
**West Coast Electronics Co.**, 1601 S. Burlington St., Los Angeles 6, Calif.

## COIL DOPES

See Insulating Compounds

## COIL WINDING MACHINES

**Allied Control Co., Inc.**, 2 East End Ave., New York 21, N. Y.  
**See Advertisement on Page 221**  
**Callite Tungsten Corp.**, 540 39th St., Union City, N. J.  
**Connecticut Specialties Co.**, Box 501, Stamford, Conn.  
**Houlihan Co.**, The, 2508-14 Lawrence Ave., Chicago 25, Ill.  
**Kahle Engineering Co.**, 1307 7th St., North Bergen, N. J.  
**See Advertisement on Page 256**  
**Magnetic Products Corp.**, Norwalk, Conn.  
**Paper Machinery & Research, Inc.**, 1014 Oak St., Roselle, N. J.  
**See Advertisement on Page 174**  
**Production Equipment Co.**, 182 South St., Oyster Bay, New York  
**Stevens Mfg. Co., Inc. Geo.**, 1850 W. Henderson St., Chicago 13, Ill.  
**See Advertisement on Page 76**  
**Switchcraft, Inc.**, 1735 West Diversey Parkway, Chicago 14, Ill.  
**Transformer Products Inc.**, 143 W. 51st St., New York, N. Y.  
**Universal Winding Co.**, 1655 Elmwood Ave., Cranston 3, R. I.  
**See Advertisement on Page 83**  
**Weymouth Instrument Co.**, 1440 Commercial St., East Weymouth, Mass.

## COILS—Antenna

**American Coil & Engineering Co.**, 1271 N. Hermitage Ave., Chicago 22, Ill.  
**Assembly Products, Inc.**, Chagrin Falls, Ohio  
**Automatic Mfg. Co.**, 900 Passaic Ave., Newark, N. J.  
**See Advertisement on Page 60**  
**Aviola Radio Corp.**, Phoenix, Arizona  
**Bud Radio, Inc.**, 2118 E. 55th St., Cleveland 3, Ohio  
**Burnell & Co.**, 45 Warburton Ave., Yonkers 2, N. Y.  
**See Advertisement on Page 192**  
**Cambridge Thermionic Corp.**, 445 Concord Ave., Cambridge, Mass.  
**Carron Mfg. Co.**, 415 S. Aberdeen St., Chicago, Ill.  
**Davis & Co.**, Dean W., Kentland, Ind.  
**Dietz Design & Mfg. Co.**, 5810 Park Ave., Kansas City 4, Mo.  
**Electronic Transformer Co., Inc.**, 207 W. 25th St., New York, N. Y.  
**Essex Electronics**, 1060 Broad St., Newark 2, N. J.  
**See Advertisement on Page 241**  
**Federal Telephone and Radio Corp.**, 100 Kingsland Rd., Clifton, N. J.  
**See Advertisements on Pages 48A to 48D**  
**General Electric Co.**, Syracuse, N. Y.  
**See Advertisements, on Pages 96, 96A**  
**Harnett Electric Corp.**, 138 Haven Ave., Port Washington, N. Y.  
**See Advertisement on Page 162**  
**Hillburn Electronic Products Co.**, 1 Worth St., New York 13, N. Y.  
**Hope Webbing Co.**, Providence, R. I.  
**Houlihan Co., T. J.**, The, 2508-14 W. Lawrence Ave., Chicago 25, Ill.  
**J. F. D. Mfg. Co.**, 4111 Ft. Hamilton Pkway., Brooklyn, N. Y.  
**Johnson Co.**, E. F., Waseca, Minn.  
**Joyner Corp.**, The, 462 N. Parkside Ave., Chicago 44, Ill.  
**Kraft & Kraft**, Hicksville, N. Y.  
**Madison Electrical Products Div.**, John G. Ruckelshaus Co., 74 Main St., Madison, N. J.

Meissner Mfg. Div., Maguire Industries, Inc., Mt. Carmel, Ill.  
 Monroe Coil Co., 2659 W. 19th St., Chicago, Ill.  
 Pioneer Electric & Research Corp., The, Forest Park, Ill.  
 Precise Electronics, 614 W. 49th St., New York, N. Y.  
 Radex Corp., 2076 N. Elston Ave., Chicago, Ill.  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
**See Advertisements on Inside Back Cover & Back Cover, 251**  
 Radio Craftsmen, 1341 S. Michigan Ave., Chicago 5, Ill.  
 Runzel Cord & Wire Co., 4731 W. Montrose Ave., Chicago, Ill.  
 S-W Inductor Co., 1056 N. Wood St., Chicago, Ill.  
 Small Motors, Inc., 1322 Elston Ave., Chicago 22, Ill.  
 Standard Coil Products Co., 2329 N. Pulaski Rd., Chicago 18, Ill.  
 Standard Winding Corp., 44-62 Johnes St., Newburgh, N. Y.  
**Super Electric Products Corp., 1057 Summit Ave., Jersey City, N. J.**  
**See Advertisement on Page 86**  
 Teleradio Engineering Corp., 99 Wall St., New York 5, N. Y.  
 Transformer Products Inc., 143 W. 51st St., New York, N. Y.  
**Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.**  
**See Advertisements on Pages 88, 89**

**COILS—Choke**

American Coil & Engineering Co., 1271 N. Hermitage Ave., Chicago 22, Ill.  
 American Communications Corp., 306 Broadway, New York 7, N. Y.  
 American Television & Radio Co., 300 E. Fourth St., St. Paul 1, Minn.  
 Assembly Products, Inc., Chagrin Falls, Ohio  
 Automatic Mfg. Co., 900 Passaic Ave., E. Newark, N. J.  
**See Advertisement on Page 60**  
 Bitterman Electric Co., 50 Henry St., Brooklyn, N. Y.  
 Cambridge Thermionic Corp., 445 Concord Ave., Cambridge, Mass.  
 Clarostat Mfg. Co. Inc., 285-7 6th St., Brooklyn, N. Y.  
 Clippard Instrument Lab., 1440 Chase Ave., Cincinnati 23, Ohio  
 Continental Electric Co., Inc., 323-327 Ferry St., Newark 5, N. J.  
 Cook Electric Co., 2700 Southport Ave., Chicago, Ill.  
 Davis & Co., Dean W., Kentland, Ind.  
 Dietz Design & Mfg. Co., 5810 Park Ave., Kansas City 4, Mo.  
**Dinion Coil Co., Inc., Caledonia, N. Y.**  
**See Advertisement on Page 166**  
 Electrical Reactance Corp., Franklinville, N. Y.  
 Electrical Windings, Inc., 2015 N. Kolmar Ave., Chicago 39, Ill.  
 Electronic Transformer Co., Inc., 207 W. 25th St., New York, N. Y.  
**Essex Electronics, 1606 Broad St., Newark 2, N. J.**  
**See Advertisement on Page 241**  
 Fast & Co., John E., 3101 N. Pulaski Rd., Chicago 41, Ill.  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
**See Advertisements on Pages 48A to 48D**  
 Five Star Radio Co., 416 Broadway, Cambridge, Mass.  
**General Electric Co., Schenectady 5, N. Y.**  
**See Advertisements on Pages 96B, 96C**  
 Gramer Co., The, 2736 N. Pulaski Rd., Chicago 39, Ill.  
**Harnett Electric Corp., 138 Haven Ave., Port Washington, N. Y.**  
**See Advertisement on Page 162**  
 Houlihan Co., The, T. J., 2508-14 W. Lawrence Ave., Chicago 25, Ill.  
 Inductive Equipment Co., Gettysburg, Pa.  
**Instrument Resistors Co., 1036 Commerce Ave., Union, N. J.**  
**See Advertisement on Page 39**  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
**See Advertisement on Page 166**  
 Johnson Co., E. F. Waseca, Minn.  
 Joyner Corp., The, 462 N. Parkside Ave., Chicago 44, Ill.  
 K-V Transformer Co., 1697 First Ave., New York, N. Y.  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Kraft & Kraft, Hicksville, N. Y.  
 Magnetic Devices Corp., 76-14 Woodside Ave., Elmhurst, N. Y.  
**Melco Products, Inc., 22 E. Hennepin Ave., Minneapolis 1, Minn.**  
**See Advertisement on Page 223**

Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
**See Advertisement on Page 44**  
 Monroe Coil Co., 2659 W. 19th St., Chicago, Ill.  
 National Co., Inc., 61 Sherman St., Malden 48, Mass.  
 Permoflux Corp., 4900 W. Grand Ave., Chicago, Ill.  
 Pioneer Electric & Research Corp., The, Forest Park, Ill.  
 Precise Electronics, 614 W. 49th St., New York, N. Y.  
 Precision Transformer Co., 733 W. Ohio St., Chicago 10, Ill.  
 Radex Corp., 2076 N. Elston Ave., Chicago, Ill.  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
**See Advertisements on Inside Back Cover & Back Cover, 251**  
 Radionic Controls, Inc., 3758 Belmont Ave., Chicago 18, Ill.  
 Raytheon Mfg. Co., Commercial Products Div., Waltham 54, Mass.  
 S-W Inductor Co., 1056 N. Wood St., Chicago, Ill.  
 Shallcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.  
 Sickles Co., F. W., 165 Front St., Chicopee, Mass.  
 Small Motors, Inc., 1322 Elston Ave., Chicago 22, Ill.  
 Standard Electrical Products Co., Dayton 3, Ohio  
 Standard Transformer Corp., 1500 N. Halstead St., Chicago 22, Ill.  
 Standard Winding Corp., 44-62 Johnes St., Newburgh, N. Y.  
**Super Electric Products Corp., 1057 Summit Ave., Jersey City, N. J.**  
**See Advertisement on Page 86**  
 Teleradio Engineering Corp., 99 Wall St., New York 5, N. Y.  
 Transformer Products Inc., 143 W. 51st St., New York, N. Y.  
 Triad Transformer Mfg. Co., 423 N. Western Ave., Los Angeles 4, Calif.  
**United Transformer Corp., 150 Varick St., New York 13, N. Y.**  
**See Advertisement on Inside Front Cover**  
**Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.**  
**See Advertisements on Pages 88, 89**  
 Weymouth Instrument Co., 1440 Commercial St., East Weymouth, Mass.

**COILS—Electronic Heating Inductor**

American Coil & Engineering Co., 1271 N. Hermitage Ave., Chicago 22, Ill.  
 Rudd Induction Heating Inc., Detroit, Mich.  
 Davis & Co., Dean W., Kentland, Ind.  
 Electronic Transformer Co., Inc., 207 W. 25th St., New York, N. Y.  
 Induction Heating Corp., 389 La Fayette St., New York 3, N. Y.  
 Inductive Equipment Co., Gettysburg Pa.  
 Johnson Co., E. F. Waseca, Minn.  
 Marion Electronic Instrument Co., Manchester, N. H.  
 S-W Inductor Co., 1056 N. Wood St., Chicago, Ill.  
 Searle Aero Industries, Inc., Orange, Calif.  
 Small Motors, Inc., 1322 Elston Ave., Chicago 22, Ill.

**COILS—Magnet**

Acme Wire Co., New Haven 14, Conn.  
 American Coil & Engineering Co., 1271 N. Hermitage Ave., Chicago 22, Ill.  
 American Television & Radio Co., 300 E. Fourth St., St. Paul 1, Minn.  
 Anaconda Wire & Cable Co., 25 Broadway, New York 4, N. Y.  
 Aray Mfg. & Supply Co., 3107 Pine St., St. Louis 3, Mo.  
 Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.  
 Best Mfg. Co., Inc., 1200 Grove St., Irvington 11, N. J.  
 Bittermann Electric Co., 50 Henry St., Brooklyn, N. Y.  
 Cambridge Thermionic Corp., 445 Concord Ave., Cambridge, Mass.  
 Control Corp., 718 Central Ave., Minneapolis 14, Minn.  
 Cook Electric Co., 2700 Southport Ave., Chicago, Ill.  
 D. & M. Mfg. Co., 2 Delford Ave., Bergenfield, N. J.  
 Davis & Co., Dean W., Kentland, Ind.  
 Electrical Coil Winding Co., 2733 Saunders St., Camden, N. J.  
 Electrical Windings, Inc., 2015 N. Kolmar Ave., Chicago 39, Ill.  
 Electronic Transformer Co., Inc., 207 W. 25th St., New York, N. Y.

**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
**See Advertisements on Pages 48A to 48D**  
**General Electric Co., Schenectady 5, N. Y.**  
**See Advertisements on Pages 96B, 96C**  
 Gorrell & Gorrell, Haworth, N. J.  
 Gramer Co., The, 2736 N. Pulaski Rd., Chicago 39, Ill.  
 Houlihan Co., The, T. J., 2508-14 W. Lawrence Ave., Chicago 25, Ill.  
 Inductive Equipment Co., Gettysburg, Pa.  
**Instrument Resistors Co., 1036 Commerce Ave., Union, N. J.**  
**See Advertisement on Page 39**  
 K-V Transformer Corp., 1697 First Ave., New York, N. Y.  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Madison Electric Products Div. John G. Ruckelshaus Co., 74 Main St., Madison, N. J.  
 Magnetic Devices Corp., 76-14 Woodside Ave., Elmhurst, N. Y.  
 Magnetic Products Corp., The, Norwalk, Conn.  
 Miller Co., B. F., Trenton 4, N. J.  
 Nothelmer Winding Labs., 111 Albemarle Ave., Trenton, N. J.  
 Precise Electronics, 614 W. 49th St., New York, N. Y.  
 S-W Inductor Co., 1056 N. Wood St., Chicago, Ill.  
 Smith Mfg. Co., Nathan R., 105 Pasadena Ave., So. Pasadena, Calif.  
**Sorensen & Co., 375 Fairfield Ave., Stamford, Conn.**  
**See Advertisement on Page 154**  
 Standard Coil Products Co., 2329 N. Pulaski Rd., Chicago 18, Ill.  
 Standard Electrical Products Co., Dayton 3, Ohio  
**Super Electric Products Corp., 1057 Summit Ave., Jersey City, N. J.**  
**See Advertisement on Page 86**  
 Ther Electric & Machine Works, 17 South Jefferson St., Chicago, Ill.  
 Transformer Products Inc., 143 W. 51st St., New York, N. Y.  
**United Transformer Corp., 150 Varick St., New York 13, N. Y.**  
**See Advertisement on Inside Front Cover**  
 Weymouth Instrument Co., 1440 Commercial St., East Weymouth, Mass.

**COILS—Motor & Generator Field**

Bittermann Electric Co., 50 Henry St., Brooklyn, N. Y.  
 Bogue Electric Co., 37 Kentucky Ave., Paterson 3, N. J.  
 Cambridge Thermionic Corp., 445 Concord Ave., Cambridge, Mass.  
 Continental Electric Co., Inc., 323-327 Ferry St., Newark 5, N. J.  
 Electronic Transformer Co., Inc., 207 W. 25th St., New York, N. Y.  
**General Electric Co., Schenectady 5, N. Y.**  
**See Advertisements on Pages 96B, 96C**  
 Gramer Co., The, 2736 N. Pulaski Rd., Chicago 39, Ill.  
 Houlihan Co., T. J., The, 2508-14 W. Lawrence Ave., Chicago 25, Ill.  
 Radex Corp., 2076 N. Elston Ave., Chicago, Ill.  
 Small Motors, Inc., 1322 Elston Ave., Chicago 22, Ill.  
 Ther Electric & Machine Works, 17 South Jefferson St., Chicago, Ill.

**COILS—Multiple Wound**

Acme Wire Co., New Haven 14, Conn.  
 Airdesgen, Inc., 241 Fairfield Ave., Upper Darby, Pa.  
 American Coil & Engineering Co., 1271 N. Hermitage Ave., Chicago 22, Ill.  
 Anaconda Wire & Cable Co., 25 Broadway, New York 4, N. Y.  
 Best Mfg. Co., Inc., 1200 Grove St., Irvington 11, N. J.  
 Cambridge Thermionic Corp., 445 Concord Ave., Cambridge, Mass.  
 Control Corp., 718 Central Ave., Minneapolis 14, Minn.  
 Cook Electric Co., 2700 Southport Ave., Chicago, Ill.  
 Davis & Co., Dean W., Kentland, Ind.  
 Dietz Design & Mfg. Co., 5810 Park Ave., Kansas City 4, Mo.  
**Dinion Coil Co., Inc., Caledonia, N. Y.**  
**See Advertisement on Page 166**  
 Electrical Windings, Inc., 2015 N. Kolmar Ave., Chicago 39, Ill.  
 Electronic Transformer Co., Inc., 207 W. 25th St., New York, N. Y.

Empire Coil Co., 238 Huguenot St., New Rochelle, N. Y.  
**Federal Telephone and Radio Corp.**, 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 Five Star Radio Co., 416 Broadway, Cambridge, Mass.  
 Gramer Co., The, 2734 N. Pulaski Rd., Chicago 39, Ill.  
**Harnett Electric Corp.**, 138 Haven Ave., Port Washington, N. Y.  
 See Advertisement on Page 162  
**Instrument Resistors Co.**, 1036 Commerce Ave., Union, N. J.  
 See Advertisement on Page 39  
 K-V Transformer Corp., 1697 First Ave., New York, N. Y.  
 Kraft & Kraft, Hicksville, N. Y.  
 Magnetic Devices Corp., 76-14 Woodside Ave., Elmhurst, N. Y.  
 Magnetic Windings Co., Div. Essex Wire Corp., 416 S. 16th St., Easton, Pa.  
 Miller Co., B. F., Trenton 4, N. J.  
**New York Transformer Co., Alpha, N. J.**  
 See Advertisement on Page 165  
 Nothelfer Winding Labs., 111 Albemarle Ave., Trenton, N. J.  
 Precise Electronics, 614 W. 49th St., New York, N. Y.  
 Smith Mfg. Co., Nathan R., 105 Pasadena Ave., So. Pasadena, Calif.  
**Sorenson & Co.**, 375 Fairfield Ave., Stamford, Conn.  
 See Advertisement on Page 154  
**Standard Electrical Products Co.**, Dayton 3, Ohio  
**Super Electric Products Corp.**, 1057 Summit Ave., Jersey City, N. J.  
 See Advertisement on Page 86  
 Transformer Products Inc., 143 W. 51st St., New York, N. Y.  
 Triad Transformer Mfg. Co., 423 N. Western Ave., Los Angeles 4, Calif.  
**United Transformer Corp.**, 150 Varick St., New York 13, N. Y.  
 See Advertisement on Inside Front Cover  
 Weymouth Instrument Co., 1440 Commercial St., East Weymouth, Mass.

## COILS—Pickup

Carron Mfg. Co., 415 S. Aberdeen St., Chicago, Ill.  
 Davis & Co., Dean W., Kentland, Ind.  
**Electronic Transformer Co. Inc.**, 207 W. 25th St., New York, N. Y.  
 Madison Electrical Products Div., John G. Ruckelshaus Co., 74 Main St., Madison, N. J.  
 Precise Electronics, 614 W. 49th St., New York, N. Y.  
 Smith Mfg. Co., Nathan R., 105 Pasadena Ave., So. Pasadena, Calif.  
**Super Electric Products Corp.**, 1057 Summit Ave., Jersey City, N. J.  
 See Advertisement on Page 86  
 Transformer Products Inc., 143 W. 51st St., New York, N. Y.  
 Weymouth Instrument Co., 1440 Commercial St., East Weymouth, Mass.

## COILS—Power & a-f Coils & Windings

Acme Wire Co., New Haven 14, Conn.  
**Aerolite Electronic Hardware Corp.**, 24 Cliff St., Jersey City, N. J.  
 See Advertisement on Page 246  
 American Coil & Engineering Co., 1271 N. Hermitage Ave., Chicago 22, Ill.  
 American Television & Radio Co., 300 E. 4th St., St. Paul 1, Minn.  
 Assembly Prods., Inc., Chagrin Falls, Ohio  
 Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.  
 Best Mfg. Co., Inc., 1200 Grove St., Irvington 11, N. J.  
 Bittermann Electric Co., 50 Henry St., Brooklyn, N. Y.  
**Burnell & Co.**, 45 Warburton Ave., Yonkers 2, N. Y.  
 See Advertisement on Page 192  
 Cambridge Thermionic Corp., 445 Concord Ave., Cambridge, Mass.  
 Davis & Co., Dean W., Kentland, Ind.  
**De Coursey Engineering Lab.**, P.O. Box 235, Los Angeles 25, Calif.  
 See Advertisement on Page 214  
**Dinion Coil Co. Inc.**, Caledonia, N. Y.  
 See Advertisement on Page 166  
 Electrical Specialty Co., 2304 Washington St., Boston, Mass.  
 Electrical Windings, Inc., 2015 N. Kolmar Ave., Chicago 39, Ill.  
 Electrocoil Transformer Co., 421 Canal St., New York 13, N. Y.  
 Electronic Transformer Co., 207 West 25th St., New York, N. Y.

Empire Coil Co., 238 Huguenot St., New Rochelle, N. Y.  
**Federal Telephone and Radio Corp.**, 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
**General Electric Co.**, Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
**Industrial Transformer Corp.**, 2540 Belmont Ave., New York, N. Y.  
 See Advertisement on Page 188  
**Instrument Resistors Co.**, 1036 Commerce Ave., Union, N. J.  
 See Advertisement on Page 39  
 Johnson Co., E. F., Waseca, Minn.  
 Joyner Corp., The, 462 N. Parkside Ave., Chicago 44, Ill.  
 K-V Transformer Corp., 1697 First Ave., New York, N. Y.  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Madison Electrical Products Div., John G. Ruckelshaus Co., 74 Main St., Madison, N. J.  
 Magnetic Devices Corp., 76-14 Woodside Ave., Elmhurst, N. Y.  
 Magnetic Products Corp., The, Norwalk, Conn.  
 Meissner Mfg. Div., Maguire Industries, Inc., Mt. Carmel, Ill.  
**Melco Products, Inc.**, 22 E. Hennepin Ave., Minneapolis 1, Minn.  
 See Advertisement on Page 223  
 Monroe Coil Co., 2659 W. 19th St., Chicago, Ill.  
**New York Transformer Co., Alpha, N. J.**  
 See Advertisement on Page 165  
 Oxford Radio Corp., 3911 S. Michigan Ave., Chicago 15, Ill.  
 Peerless Electrical Products Co., 6920 McKinley Ave., Los Angeles 1, Calif.  
 Perfection Electric Co., 829 S. State St., Chicago, Ill.  
 Pilot Electric Co., 29 S. Broadway, Long Branch, N. J.  
 Precise Electronics Co., 614 W. 49th St., New York, N. Y.  
 Small Motors, Inc., 1322 Elston Ave., Chicago 22, Ill.  
 Smith Mfg. Co., Nathan R., 105 Pasadena Ave., So. Pasadena, Calif.  
**Sorenson & Co.**, 375 Fairfield Ave., Stamford, Conn.  
 See Advertisement on Page 154  
**Standard Electrical Products Co.**, Dayton 3, Ohio  
**Standard Transformer Corp.**, 1500 N. Halstead St., Chicago 22, Ill.  
**Super Electric Products Corp.**, 1057 Summit Ave., Jersey City, N. J.  
 See Advertisement on Page 86  
 Transformer Products Inc., 143 W. 51st St., New York, N. Y.  
 Triad Transformer Mfg. Co., 423 N. Western Ave., Los Angeles 4, Calif.  
**United Transformer Corp.**, 150 Varick St., New York 13, N. Y.  
 See Advertisement on Inside Front Cover  
 Walsh Engineering Co., 34 DeHart Place, Elizabeth, N. J.  
 Weymouth Instrument Co., 1440 Commercial St., East Weymouth, Mass.

## COILS—r-f & i-f Receiving or Transmitting

**Aerolite Electronic Hardware Corp.**, 24 Cliff St., Jersey City, N. J.  
 See Advertisement on Page 246  
 American Coil & Engineering Co., 1271 N. Hermitage Ave., Chicago 22, Ill.  
 American Communications Corp., 306 Broadway, New York, N. Y.  
 Andrew Co., 363 E. 75th St., Chicago 19, Ill.  
**Automatic Mfg. Co.**, 900 Passaic Ave., Newark, N. J.  
 See Advertisement on Page 60  
 Aviola Radio Corp., Phoenix, Arizona  
 Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.  
 Bittermann Electric Co., 50 Henry St., Brooklyn, N. Y.  
 Boonton Radio Corp., Boonton, N. J.  
 Bud Radio Inc., 2118 E. 55th St., Cleveland 3, Ohio  
**Burnell & Co.**, 45 Warburton Ave., Yonkers 2, N. Y.  
 See Advertisement on Page 192  
 Cambridge Thermionic Corp., 445 Concord Ave., Cambridge, Mass.  
 Carron Mfg. Co., 415 S. Aberdeen St., Chicago, Ill.  
 Clippard Instrument Lab., 1440 Chase Ave., Cincinnati 23, Ohio  
 Consolidated Wire & Associated Companies, 1635 S. Clinton St., Chicago 16, Ill.  
 Dietz Design & Mfg. Co., 5810 Park Ave., Kansas City 4, Mo.

**Essex Electronics**, 1060 Broad St., Newark 2, N. J.  
 See Advertisement on Page 241  
 Fast & Co., John E., 3101 N. Pulaski Rd., Chicago 41, Ill.  
 Federal Instrument Corp., 3609 Vernon Blvd., L. I. City 1, N. Y.  
**Federal Telephone and Radio Corp.**, 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
**Harnett Electric Corp.**, 138 Haven Ave., Port Washington, N. Y.  
 See Advertisement on Page 162  
 Hillburn Electronic Products Co., 1 Worth St., New York 13, N. Y.  
 Houlihan Co., T. J., The, 2508-14 W. Lawrence Ave., Chicago 25, Ill.  
 Inductive Equipment Co., Gettysburg, Pa.  
**Instrument Resistors Co.**, 1036 Commerce Ave., Union, N. J.  
 See Advertisement on Page 39  
**Intex Co.**, 303 W. 42nd St., New York 18, N. Y.  
 See Advertisement on Page 68  
 Johnson Co., E. F., Waseca, Minn.  
 Joyner Corp., The, 462 N. Parkside Ave., Chicago 44, Ill.  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Kraft & Kraft, Hicksville, N. Y.  
 McMurdo Silver Co., Inc., 1249 Main St., Hartford 3, Conn.  
 Madison Electric Products Div., John G. Ruckelshaus Co., 74 Main St., Madison, N. J.  
 Maguire Industries, Inc., Electronics Dept., Bridgeport, Conn.  
 Meissner Mfg. Div., Maguire Industries, Inc., Mount Carmel, Ill.  
**Millen Mfg. Co., James**, 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44  
 Monarch Mfg. Co., 2014 N. Major Ave., Chicago 39, Ill.  
 Monroe Coil Co., 2659 W. 19th St., Chicago, Ill.  
 Muter Co., 1255 S. Michigan Ave., Chicago, Ill.  
 National Co., Inc., 61 Sherman St., Malden 48, Mass.  
 Pioneer Electric & Research Corp., The, Forest Park, Ill.  
 Precise Electronics, 614 W. 49th St., New York, N. Y.  
**Precision Tube Co.**, 3828 Terrace St., Phila. 28, Pa.  
 See Advertisement on Page 218  
 Radex Corp., 2076 N. Elston Ave., Chicago, Ill.  
**Radio Corp. of America, RCA Victor Div.**, Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Radio Craftsmen, 1341 So. Michigan Ave., Chicago 5, Ill.  
 Radio Labs, Inc., 2701 Calif. Ave., Seattle 6, Wash.  
 Ross Mfg. Co., 2241 S. Indiana Ave., Chicago 27, Ill.  
 S-W Inductor Co., 1056 N. Wood St., Chicago, Ill.  
 Sickles Co., F. W., 165 Front St., Chicopee, Mass.  
 Small Motors, Inc., 1322 Elston Ave., Chicago 22, Ill.  
 Standard Coil Products Co., 2329 N. Pulaski Rd., Chicago 18, Ill.  
 Stanwyck Winding Co., 102 South Lander St., Newburgh, N. Y.  
 Teleradio Engineering Corp., 99 Wall St., New York 5, N. Y.  
 Transformer Products Inc., 143 W. 51st St., New York, N. Y.  
 Transmitter Equipment Co., Inc., 345 Hudson St., New York 14, N. Y.  
 West Coast Electronics Co., 1601 S. Burlington St., Los Angeles 6, Calif.

## COILS—Relay & Solenoid

Acme Wire Co., New Haven 14, Conn.  
**Allied Control Co. Inc.**, 2 East End Ave., New York 21, N. Y.  
 See Advertisement on Page 221  
 American Coil & Engineering Co., 1271 N. Hermitage Ave., Chicago 22, Ill.  
 Assembly Products, Inc., Chagrin Falls, Ohio  
 Best Mfg. Co., Inc., 1200 Grove St., Irvington 11, N. J.  
 Bittermann Electric Co., 50 Henry St., Brooklyn, N. Y.  
 Cook Electric Co., 2700 Southport Ave., Chicago, Ill.  
 Davis & Co., Dean W., Kentland, Ind.  
**Dinion Coil Co. Inc.**, Caledonia, N. Y.  
 See Advertisement on Page 166  
 Electron Mfg. Co., 4587 Elston Ave., Chicago 30, Ill.  
 Electric Heat Control Co., 9123 Inman Ave., Cleveland 5, Ohio

Electrical Coil Winding Co., 2733 Saunders St., Camden, N. J.  
 Electrical Windings, Inc., 2015 N. Kolmar Ave., Chicago 39, Ill.  
 Electrocoil Transformer Co., 421 Canal St., New York 13, N. Y.  
 Electronic Transformer Co. Inc., 207 W. 25th St., New York, N. Y.  
 Electronic Winding Co., 5031 Broadway, Chicago 40, Ill.  
 Empire Coil Co., 238 Huguenot St., New Rochelle, N. Y.  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
 Gramer Co., The, 2734 N. Pulaski Rd., Chicago 39, Ill.  
 Houlihan Co., T. J., The, 2508-14 W. Lawrence Ave., Chicago 25, Ill.  
 Inductive Equipment Co., Gettysburg, Pa.  
**Instrument Resistors Co., 1036 Commerce Ave., Union, N. J.**  
 See Advertisement on Page 39  
 Joyner Corp., The, 462 N. Parkside Ave., Chicago 44, Ill.  
 K-V Transformer Co., 1697 First Ave., New York, N. Y.  
 Madison Electrical Products Div., John G. Ruckelshaus Co., 74 Main St., Madison, N. J.  
 Magnavox Co., The, Fort Wayne 4, Ind.  
 Magnetic Devices Corp., 76-14 Woodside Ave., Elmhurst, N. Y.  
 Magnetic Products Corp., Norwalk, Conn.  
 Magnetic Windings Co., Div. of Essex Wire Corp., 416 South 16th St., Easton, Pa.  
**Melco Products, Inc., 22 E. Hennepen Ave., Minneapolis 1, Minn.**  
 See Advertisement on Page 223  
 Nothelfer Windings Labs., 111 Albemarle Ave., Trenton, N. J.  
 Shallcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.  
 Smith Mfg. Co., Nathan R., 105 Pasadena Ave., South Pasadena, Calif.  
 Standard Electrical Products Co., Dayton 3, Ohio  
 Standard Transformer Corp., 1500 N. Halstead St., Chicago 22, Ill.  
**Super Electric Products Corp., 1057 Summit Ave., Jersey City, N. J.**  
 See Advertisement on Page 86  
 Transformer Products Inc., 113 W. 51st St., New York, N. Y.  
**United Transformer Corp., 150 Varick St., New York 13, N. Y.**  
 See Advertisement on Inside Front Cover

**COILS—Speaker**

Acme Wire Co., New Haven 14, Conn.  
 American Coil & Engineering Co., 1271 N. Hermitage Ave., Chicago 22, Ill.  
**Atlas Sound Corp., 1443 39th St., Brooklyn 18, N. Y.**  
 See Advertisement on Page 96D  
 Best Mfg. Co., Inc., 1200 Grove St., Irvington 11, N. J.  
 Carron Mfg. Co., 415 S. Aberdeen St., Chicago, Ill.  
 Davis & Co., Dean W., Kentland, Ind.  
**Dinion Coil Co., Inc., Caledonia, N. Y.**  
 See Advertisement on Page 166  
 Electronic Transformer Co. Inc., 207 W. 25th St., New York, N. Y.  
 Inductive Equipment Co., Gettysburg, Pa.  
 K-V Transformer Corp., 1697 First Ave., New York, N. Y.  
 Magnavox Co., The, Fort Wayne 4, Ind.  
 Monroe Coil Co., 2659 W. 19th St., Chicago, Ill.  
 Operadio Mfg. Co., 135th & Indiana Sts., St. Charles, Ill.  
 Perfection Electric Co., 829 S. State St., Chicago, Ill.  
 Precise Electronics, 614 W. 49th St., New York, N. Y.  
**Racon Electric Co., 52 E. 19th St., New York 3, N. Y.**  
 See Advertisement on Page 213

**COILS—Television Focusing**

Assembly Products, Inc., Chagrin Falls, Ohio  
 Best Mfg. Co., Inc., 1200 Grove St., Irvington 11, N. J.  
 Bittermann Electric Co., 50 Henry St., Brooklyn, N. Y.  
 Electronic Transformer Co. Inc., 207 W. 25th St., New York, N. Y.  
**Freed Transformer Co., 72 Spring St., New York 12, N. Y.**  
 See Advertisement on Page 253

**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
**Harnett Electric Corp., 138 Haven Ave., Port Washington, N. Y.**  
 See Advertisement on Page 162  
 Inductive Equipment Co., Gettysburg, Pa.  
 Joyner Corp., The, 462 N. Parkside Ave., Chicago 44, Ill.  
 Madison Electrical Products Div., John G. Ruckelshaus Co., 74 Main St., Madison, N. J.  
 Magnetic Products Corp., The, Norwalk, Conn.  
 Monroe Coil Co., 2659 W. 19th St., Chicago, Ill.  
 Precise Electronics, 614 W. 49th St., New York, N. Y.  
**Sorenson & Co., 375 Fairfield Ave., Stamford, Conn.**  
 See Advertisement on Page 154  
**Super Electric Products Corp., Jersey City, N. J.**  
 See Advertisement on Page 86  
**United Transformer Corp., 150 Varick St., New York 13, N. Y.**  
 See Advertisement on Inside Front Cover

**COILS—Transformer Coils & Windings**

Acme Wire Co., New Haven 14, Conn.  
 Airdesign Inc., 241 Fairfield Ave., Upper Darby, Pa.  
 American Coil & Engineering Co., 1271 N. Hermitage Ave., Chicago 22, Ill.  
 American Television & Radio Co., 300 E. 4th St., St. Paul 1, Minn.  
 Assembly Products, Inc., Chagrin Falls, Ohio  
 Best Mfg. Co., Inc., 1200 Grove St., Irvington 11, N. J.  
 Bitterman Electric Co., 50 Henry St., Brooklyn, N. Y.  
 Cambridge Thermionic Corp., 445 Concord Ave., Cambridge, Mass.  
 Commercial Equipment Co., 1416 McGee St., Kansas City, Mo.  
 Control Corp., 718 Central Ave., Minneapolis 14, Minn.  
 Davis & Co., Dean W., Kentland, Ind.  
**Dinion Coil Co., Inc., Caledonia, N. Y.**  
 See Advertisement on Page 166  
 Electric Heat Control Co., The, 9123 Inman Ave., Cleveland 5, Ohio  
 Electrical Windings, Inc., 2015 N. Kolmar Ave., Chicago 39, Ill.  
 Electrocoil Transformer Co., 421 Canal St., New York 13, N. Y.  
 Electronic Transformer Co. Inc., 207 W. 25th St., New York, N. Y.  
 Empire Coil Co., 238 Huguenot St., New Rochelle, N. Y.  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
 Gramer Co., The, 2734 N. Pulaski Rd., Chicago 39, Ill.  
 Inductive Equipment Co., Gettysburg, Pa.  
 K-V Transformer Corp., 1697 First Ave., New York, N. Y.  
 Magnetic Devices Corp., 76-14 Woodside Ave., Elmhurst, N. Y.  
 Magnetic Products Corp., The, Norwalk, Conn.  
 Magnetic Windings Div., Essex Wire Corp., 416 S. 16th St., Easton, Pa.  
 Miller Co., B. F., Trenton 4, N. J.  
**New York Transformer Co., Alpha, N. J.**  
 See Advertisement on Page 165  
 Perfection Electric Co., 829 S. State St., Chicago, Ill.  
 Permoflux Corp., 4900 W. Grand Ave., Chicago, Ill.  
 Precise Electronics, 614 W. 49th St., New York, N. Y.  
 Radionic Controls, Inc., 3758 Belmont Ave., Chicago 18, Ill.  
 S-W Inductor Co., 1056 N. Wood St., Chicago, Ill.  
**Sorenson & Co., 375 Fairfield Ave., Stamford, Conn.**  
 See Advertisement on Page 154  
 Standard Electrical Products Co., Dayton 3, Ohio  
 Standard Transformer Corp., 1500 N. Halstead St., Chicago 22, Ill.  
 States Co., 19 New Park Ave., Hartford 6, Conn.  
**Super Electric Products Corp., 1057 Summit Ave., Jersey City, N. J.**  
 See Advertisement on Page 86  
 Ther Electric & Machine Works, 17 S. Jefferson St., Chicago, Ill.  
 Transformer Products Inc., 143 W. 51st St., New York, N. Y.  
 Triad Transformer Mfg. Co., 423 N. Western Ave., Los Angeles 4, Calif.

**United Transformer Corp., 150 Varick St., New York 13, N. Y.**  
 See Advertisement on Inside Front Cover

**COLORIMETERS—Photoelectric**

Baker Instrument Co., 310 Main St., Orange, N. J.  
 Coleman Electric Co., 318 Madison St., Maywood, Ill.  
 Electrodyne Co., The, 899 Boylston St., Boston 15, Mass.  
 Electronic Engineers, 1039-B Pacific St., Santa Monica, Calif.  
 Fisher Scientific Co., 717 Forbes St., Pittsburgh, Pa.  
 Gardner Lab., Inc., Henry A., 4723 Elm St., Bethesda 14, Md.  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
 Photovolt Corp., 95 Madison Ave., New York 16, N. Y.  
 Pho-Tron Instrument Co., 5713 Euclid Ave., Cleveland, Ohio  
 Process & Instruments, 60 Greenpoint Ave., Brooklyn 22, N. Y.  
 Rubicon Co., 3751 Ridge Ave., Philadelphia, Pa.

**COLUMBIUM**

See Metals

**COMMUNICATION SYSTEMS—Aircraft**

Aermotive Equipment Corp., 1632-3 Central St., Kansas City 10, Missouri  
 Aero Communications, Inc., 231 Main St., Hempstead, N. Y.  
 Airadio Inc., Melrose Ave. & Battery Pl., Stamford, Conn.  
**Aircraft Radio Corp., Boonton, N. J.**  
 See Advertisement on Page 185  
 Barone Co., S. A., 143 W. 22nd St., New York 11, N. Y.  
 Bassett Inc., Rex, 500 St. 2nd St., Ft. Lauderdale, Fla.  
 Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
**Collins Radio Co., Cedar Rapids, Iowa**  
 See Advertisements on Pages 30 to 33  
 Communications Co., Inc., 300 Greco Ave., Coral Gables 34, Fla.  
 Eckstein Radio & Television Co., 914 La Salle Ave., Minneapolis 2, Minn.  
 Erico Radio Labs., Inc., Fenimore Ave., Hempstead, N. Y.  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
 General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
**General Electric Co., Syracuse, N. Y.**  
 See Advertisements on Pages 96, 96A  
 Hallcrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Harvey Wells Electronics Inc., North St., Southbridge, Mass.  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Lear, Inc., 110 Jonia Ave., N. W. Grand Rapids 2, Mich.  
 Maguire Industries Inc., Electronics Dept., Bridgeport, Conn.  
 Motorola Radio, Galvin Mfg. Corp., 4545 Augusta Blvd., Chicago, Ill.  
 Murdock Mfg. Co., Wm. J., Chelsea, Mass.  
 Philco Corp., Tioga & C Sts., Philadelphia 34, Pa.  
**Racon Electric Co., 52 E. 19th St., New York 3, N. Y.**  
 See Advertisement on Page 213  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Radio Development and Research Co., 26 Cornellison Ave., Jersey City, N. J.  
 Radio Receptor Co., 251 W. 19th St., New York 11, N. Y.  
 See Advertisement on Page 40  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Searle Aero Industries, Inc., Orange, Calif.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B  
**Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.**  
 See Advertisements on Pages 88, 89

## COMMUNICATION SYSTEMS—Airport Traffic Control

Aero Communications, Inc., 231 Main St., Hempstead, N. Y.  
 Air Associates Inc., 5327 W. Century Blvd., Los Angeles 45, Calif.  
 Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.  
 Bassett Inc., Rex, 500 SE 2nd St., Ft. Lauderdale, Fla.  
 Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
**Collins Radio Co., Cedar Rapids, Iowa**  
 See Advertisements on Pages 30 to 33  
 Communications Co., Inc., 300 Greco Ave., Coral Gables 34, Fla.  
 Dine and Co., Inc., F. E., 2221 Warwick Ave., Santa Monica, Calif.  
 Erco Radio Labs., Inc., Fenimore Ave., Hempstead, N. Y.  
 Farmers' Engineering & Mfg. Co., Union Trust Bldg., Pittsburgh, Pa.  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
 McElroy Mfg. Corp., Littleton, Mass.  
 Panoramic Radio Corp., 242 W. 55th St., New York 19, N. Y.  
**Racon Electric Co., 52 E. 19th St., New York 3, N. Y.**  
 See Advertisement on Page 213  
**Radio Receptor Co., 251 W. 19th St., New York, N. Y.**  
 See Advertisement on Page 40  
 Schuttig & Co., 9th & Kearney Sts., Washington 17, D. C.  
 Searle Aero Industries, Inc., Orange, Calif.  
**Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.**  
 See Advertisements on Pages 80A, 80B  
 Transmitter Equipment Co., Inc., 345 Hudson St., New York 14, N. Y.  
 Webster Electric Co., 1900 Clark St., Racine, Wisc.  
**Western Electric Co., 195 Broadway, New York 7, N. Y.**  
 See Advertisements on Pages 88, 89  
 Western Sound & Electric Labs., Inc., 808 S. Fifth St., Milwaukee 4, Wisc.

## COMMUNICATION SYSTEMS—Carrier Current

Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.  
 Barone Co., S. A., 143 W. 22nd St., New York 11, N. Y.  
 Breco Electronics Corp., 55 Vandam St., New York 13, N. Y.  
 Communication Equipment & Engineering Co., 5645 W. Race St., Chicago 14, Ill.  
 Control Corp., 718 Central Ave., Minneapolis 14, Minn.  
 Dayton Acme Co., 930 York St., Cincinnati 14, Ohio  
 Electronic Sound Engineering Co., 4344-46 W. Armitage Ave., Chicago 39, Ill.  
 Farmers' Engineering & Mfg. Co., Union Trust Bldg., Pittsburgh, Pa.  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
**General Electric Co., Syracuse, N. Y.**  
 See Advertisements on Pages 96, 96A  
 Huber Radio Co., 260 S. Center St., Casper, Wyo.  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Lectronic Research Labs., Howell and Hegermann Sts., Philadelphia, Pa.  
 Link, Fred M., 125 W. 17th St., New York, N. Y.  
 Philco Corp., Tioga & C Sts., Philadelphia 34, Pa.  
 Rhein Engineering, 120 W. North St., Springfield, Ohio  
 Stromberg-Carlson Co., Rochester, N. Y.  
 West Coast Electronics Co., 1601 S. Burlington St., Los Angeles 6, Calif.  
**Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.**  
 See Advertisements on Pages 88, 89  
 Westinghouse Electric Corp., Industrial Electronics Div., Baltimore, Md.

## COMMUNICATION SYSTEMS—Facsimile

Alden Products Co., 117 No. Main St., Brockton 64, Mass.  
 Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.  
 Barone Co., S. A., 143 W. 22nd St., New York 11, N. Y.  
 Communicating Systems Inc., 203 E. 18th St., New York 3, N. Y.

**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
 Finch Telecommunications Inc., Passaic, N. J.  
**General Electric Co., Syracuse, N. Y.**  
 See Advertisements on Pages 96, 96A  
 Press Wireless Mfg. Corp., 1475 Broadway, New York 18, N. Y.  
 Radio Inventions, Inc., 155 Perry St., New York 14, N. Y.  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 TelAutograph Corp., 16 W. 61st St., New York 23, N. Y.  
 Times Facsimile Corp., 229 W. 43rd St., New York, N. Y.  
 Transmitter Equipment Co., Inc., 345 Hudson St., New York 14, N. Y.  
 Western Union Telegraph Co., 60 Hudson St., New York 13, N. Y.  
 Wind Turbine Co. Tower & Antenna Div., E. Market St. & Penna. R.R., West Chester, Pa.

## COMMUNICATION SYSTEMS—Induction

Barone Co., S. A., 143 W. 22nd St., New York 11, N. Y.  
 Communication Equipment & Engrg. Co., 5646 W. Race St., Chicago 44, Ill.  
 Rhein Engineering, 120 W. North St., Springfield, Ohio

## COMMUNICATION SYSTEMS—Marine Radio-Telephone

Aero Communications, Inc., 231 Main St., Hempstead, N. Y.  
 Airadio Inc., Melrose Ave. & Battery Pl., Stamford, Conn.  
 Barone Co., S. A., 143 W. 22nd St., New York 11, N. Y.  
 Bassett Inc., Rex, 500 SE 2nd St., Ft. Lauderdale, Fla.  
 Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
 Breco Electronics Corp., 55 Vandam St., New York 13, N. Y.  
**Collins Radio Co., Cedar Rapids, Iowa**  
 See Advertisements on Pages 30 to 33  
 Communications Co., Inc., 300 Greco Ave., Coral Gables 34, Fla.  
 Development Engineering Co., Inc., The, 1818 Ashland St., Houston 8, Texas  
 Dine and Co., Inc., F. E., 2221 Warwick Ave., Santa Monica, Calif.  
 Electronic Associates Inc., 61 Brighton Ave., Long Branch, N. J.  
 Emerson Radio & Phonograph Corp., 111 5th Ave., New York, N. Y.  
 Erco Radio Labs., Inc., Fenimore Ave., Hempstead, N. Y.  
 Farmers' Engineering & Mfg. Co., Union Trust Bldg., Pittsburgh, Pa.  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
 General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
**General Electric Co., Syracuse, N. Y.**  
 See Advertisements on Pages 96, 96A  
 Grady Instrument Co., 689 Belmont St., Belmont 78, Mass.  
 Hallcrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Harvey Radio Labs., Inc., 447 Concord Ave., Cambridge, Mass.  
 Harvey Wells Electronics Inc., North St., Southbridge, Mass.  
 Hose-McCann Telephone Co., 177 Pacific St., Brooklyn 2, N. Y.  
 Hudson American Corp., 25 W 43rd St., New York 18, N. Y.  
 Islip Radio Mfg. Co., Beech St., Islip, N. Y.  
 Jefferson, Inc., Ray, 40 E. Merrick Rd., Freeport, N. Y.  
 Jefferson-Travis Inc., 380 Second Ave., New York 10, N. Y.  
 Lavoie Labs., Morganville, N. J.  
**National Co., Inc., 61 Sherman St., Malden 48, Mass.**  
 See Advertisement on Page 78  
 Pan American Electric Co., Inc., 2912 Atlantic Ave., Brooklyn 7, N. Y.  
**Racon Electric Co., 52 E. 19th St., New York 3, N. Y.**  
 See Advertisement on Page 213  
 Radio Development & Research Co., 26 Cornellson Ave., Jersey City, N. J.  
 Radiomarine Corp. of America, 75 Varick St., New York 13, N. Y.  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Rhein Engineering, 120 W. North St., Springfield, Ohio  
 Searle Aero Industries, Inc., Orange, Calif.

Submarine Signal Co., Affiliated with Raytheon Mfg. Co., 160 State St., Boston, Mass.  
 Taylor Western Transmitters Inc., 6127 South Western Ave., Los Angeles 44, Calif.  
 Transmitter Equipment Co., Inc., 345 Hudson St., New York 14, N. Y.

## COMMUNICATION SYSTEMS—Micro-wave

Barone Co., S. A., 143 W. 22nd St., New York 11, N. Y.  
 Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
 Cover Dual Signal Systems, Inc., Div. of Electra Voice Corp., 5215-25 Ravenswood Ave., Chicago 40, Ill.  
**Electronic Measurements Co., Red Bank, N. J.**  
 See Advertisement on Page 68  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
**Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.**  
 See Advertisements on Pages 80A, 80B  
 Televiso Products Inc., 7466 West Irving Park Road, Chicago 34, Ill.  
 Transmitter Equipment Co., Inc., 345 Hudson St., New York 14, N. Y.  
 Weymouth Instrument Co., 1440 Commercial St., East Weymouth, Mass.

## COMMUNICATION SYSTEMS—Portable Installation

Aero Communications, Inc., 231 Main St., Hempstead, N. Y.  
 Aireon Mfg. Corp., Fairfax & Funston Rds., Kansas City 15, Kansas  
 Barone Co., S. A., 143 W. 22nd St., New York 11, N. Y.  
 Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
**Collins Radio Co., Cedar Rapids, Iowa**  
 See Advertisements on Pages 30 to 33  
 Communicating Systems Inc., 203 E. 18th St., New York 3, N. Y.  
 Dine and Co., Inc., F. E., 2221 Warwick Ave., Santa Monica, Calif.  
 Doolittle Radio, Inc., 7421 Loomis Bldg., Chicago 36, Ill.  
 Erco Radio Labs., Inc., Fenimore Ave., Hempstead, N. Y.  
 Farmers' Engineering & Mfg. Co., Union Trust Bldg., Pittsburgh, Pa.  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
**General Electric Co., Syracuse, N. Y.**  
 See Advertisements on Pages 96, 96A  
 Gross Communications Products, 1865-71 Prospect Ave., Cleveland 15, Ohio  
 Hallcrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Meck Industries, John, Liberty at Pa., Plymouth, Ind.  
 Mobile Communications Co., 202 E. Fourth St., Long Beach 2, Calif.  
 Motorola Radio, Galvin Mfg. Corp., 4545 Augusta Blvd., Chicago, Ill.  
 Murdock Mfg. Co., Wm. J., Chelsea, Mass.  
 Philco Corp., Tioga & C Sts., Philadelphia 34, Pa.  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Stark Sound Engineering Co., P. O. Box 493, Fort Wayne 1, Ind.  
 Stromberg-Carlson Co., Rochester, N. Y.  
 Transmitter Equipment Mfg. Co., Inc., 345 Hudson St., New York 14, N. Y.  
**U. S. Instrument Corp., 19 S. Harrison St., East Orange, N. J.**  
 See Advertisement on Page 255  
 Webster Electric Co., 1900 Clark St., Racine, Wisc.  
 Western Sound & Electric Labs., Inc., 808 S. Fifth St., Milwaukee 4, Wisc.  
 Westinghouse Electric Corp., Industrial Electronics Div., Baltimore, Md.

## COMMUNICATION SYSTEMS—Radiotele-type

Aero Communications, Inc., 231 Main St., Hempstead, N. Y.

Barone Co., S. A., 143 W. 22nd St., New York 11, N. Y.  
**Collins Radio Co., Cedar Rapids, Iowa**  
 See Advertisements on Pages 30 to 33  
 Commercial Radio Sound Corp., 575 Lexington Ave., New York 22, N. Y.  
 Erco Radio Labs. Inc., Fenimore Ave., Hempstead, N. Y.  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
 McElroy Mfg. Corp., Littleton, Mass.  
 Motorola Radio, Galvin Mfg. Corp., 4545 Augusta Blvd., Chicago, Ill.  
 Rhein Engineering, 120 W. North St., Springfield, Ohio  
 Schuttig & Co., 9th & Kearney Sts., Washington 17, D. C.  
 Stark Sound Engineering Co., P. O. Box 493, Fort Wayne 1, Ind.

**COMMUNICATION SYSTEMS—Railroad**

Aireon Mfg. Corp., Fairfax & Funston Rds., Kansas City 15, Kansas  
 Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.  
 Barone Co., S. A., 143 W. 22nd St., New York 11, N. Y.  
 Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
 Bogue Co., David, 663 Broadway, New York 12, N. Y.  
 Communication Equipment & Engineering Co., 5646 W. Race St., Chicago 44, Ill.  
 Communications Co. Inc., 300 Greco Ave., Coral Gables 34, Fla.  
 Dine and Co. Inc., F. E., 2221 Warwick Ave., Santa Monica, Calif.  
 Farmers' Engineering & Mfg. Co., Union Trust Bldg., Pittsburgh, Pa.  
 Farnsworth Television & Radio Corp., Ft. Wayne, Ind.  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
**General Electric Co., Syracuse, N. Y.**  
 See Advertisements on Pages 96, 96A  
 Hallicrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Maguire Industries Inc., Electronics Dept., Bridgeport, Conn.  
 Motorola Radio, Galvin Mfg. Corp., 4545 Augusta Blvd., Chicago, Ill.  
**Racon Electric Co., 52 E. 19th St., New York 3, N. Y.**  
 See Advertisement on Page 213  
**Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.**  
 See Advertisements on Pages 80A, 80B  
 Stromberg-Carlson Co., Rochester, N. Y.  
 Taylor Western Transmitters Inc., 6127 South Western Ave., Los Angeles 44, Calif.  
 Transmitter Equipment Co., Inc., 345 Hudson St., New York 14, N. Y.  
 Webster Electric Co., 1900 Clark St., Racine, Wis.  
 West Coast Electronics Co., 1601 S. Burlington St., Los Angeles 6, Calif.  
**Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.**  
 See Advertisements on Pages 88, 89  
 Western Sound & Electric Labs., Inc., 808 S. Fifth St., Milwaukee 4, Wisc.  
 Westinghouse Electric Corp., Industrial Electronics Div., Baltimore, Md.

**COMMUNICATION SYSTEMS—Vehicular**

Aero Communications, Inc., 231 Main St., Hempstead, N. Y.  
 Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.  
 Barone Co., S. A., 143 W. 22nd St., New York 11, N. Y.  
 Bassett Inc., Rex, 500 SE 2nd St., Ft. Lauderdale, Fla.  
 Belmont Radio Co., Div. Raytheon Mfg. Co., 5921 W. Dickens Ave., Chicago 39, Ill.  
 Bogen Co., David, 663 Broadway, New York 12, N. Y.  
 Caltron Co., 11916 W. Pico Blvd., Los Angeles 34, Calif.  
 Communications Co., Inc., 300 Greco Ave., Coral Gables 34, Fla.  
 Doolittle Radio, Inc., 7421 Loomis Bldg., Chicago 36, Ill.  
 Eckstein Radio & Television Co., 914 La Sale Ave., Minneapolis 2, Minn.  
 Erco Radio Labs. Inc., Fenimore Ave., Hempstead, N. Y.  
 Farmers' Engineering & Mfg. Co., Union Trust Bldg., Pittsburgh, Pa.  
 Farnsworth Television & Radio Corp., Ft. Wayne, Ind.

**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
**General Electric Co., Syracuse, N. Y.**  
 See Advertisements on Pages 96, 96A  
 Grady Instrument Co., 689 Belmont St., Belmont 78, Mass.  
 Hallicrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Harvey Radio Labs., Inc., 447 Concord Ave., Cambridge, Mass.  
 Harvey Wells Electronics Inc., North St., Southbridge, Mass.  
 Link, Fred M., 125 W. 17th St., New York, N. Y.  
 Pan American Electric Co., Inc., 2912 Atlantic Ave., Brooklyn 7, N. Y.  
**Racon Electric Co., 52 E. 19th St., New York 3, N. Y.**  
 See Advertisement on Page 213  
 Rhein Engineering, 120 W. North St., Springfield, Ohio  
 Searle Aero Industries, Inc., Orange, Calif.  
 Stark Sound Engineering Co., P. O. Box 493, Fort Wayne 1, Ind.  
 Technical Apparatus Co., 167 Washington St., Boston 8, Mass.  
 Transmitter Equipment Co., Inc., 345 Hudson St., New York 14, N. Y.  
 West Coast Electronics Co., 1601 S. Burlington St., Los Angeles 6, Calif.  
**Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.**  
 See Advertisements on Pages 88, 89  
 Western Sound & Electric Labs., Inc., 808 S. Fifth St., Milwaukee 4, Wisc.  
 Wilcox Electric Co., 1400 Chestnut St., Kansas City, Mo.

**COMPARATORS—Automatic Resistance**

Clippard Instrument Lab., 1440 Chase Ave., Cincinnati 23, Ohio  
 Industrial Instruments Inc., 17 Pollack Ave., Jersey City 5, N. J.  
 Maguire Industries Inc., Electronics Dept., Bridgeport, Conn.  
**Measurement Engineering Ltd., 61 Duke St., Toronto, Can.**  
 See Advertisement on Page 193  
 Transmitter Equipment Co., Inc., 345 Hudson St., New York 14, N. Y.

**COMPARATORS—Crystal**

Monitor Products Co., 815 Fremont St., So. Pasadena, Calif.  
 Panoramic Radio Corp., 242 W. 55th St., New York 19, N. Y.

**COMPARATORS, SURFACE**

See Analyzers, Surface

**COMPASSES—Electronic Gyro**

Eclipse Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.  
 Lear, Inc., 110 Ionia Ave., N. W., Grand Rapids 2, Mich.  
**Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.**  
 See Advertisements on Pages 80A, 80B

**COMPUTERS, ELECTRONIC**

See Machines

**CONDENSERS**

See Capacitors

**CONES—Speaker**

Aireon Mfg. Corp., Fairfax and Funston Rds., Kansas City 15, Kansas  
 Best Mfg. Co., Inc., 1200 Grove St., Irvington 11, N. J.  
 Carron Mfg. Co., 415 S. Aberdeen St., Chicago, Ill.  
 Hawley Products Co., St. Charles, Ill.

Jensen Radio Mfg. Co., 6601 S. Laramie Ave., Chicago, Ill.  
 National Molding Co., 2141 W. Washington Blvd., Los Angeles 7, Calif.  
 Oxford Radio Corp., 3911 S. Michigan Ave., Chicago 15, Ill.  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Searle Aero Industries, Inc., Orange, Calif.  
 Stromberg-Carlson Co., Rochester, N. Y.

**CONNECTOR INSERTS**

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 Buggie & Co., H. H., 2141 Madison Ave., Toledo 1, Ohio  
 Diamond Instrument Co., North Ave., Wakefield, Mass.  
 Electrix Corp., 150 Middle St., Pawtucket, R. I.  
**Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.**  
 See Advertisement on Page 166  
 Keystone Electronics Co., 50-52 Franklin St., New York 13, N. Y.  
 Winchester Co., The, 6 East 46th St., New York 17, N. Y.

**CONNECTORS—Cable Connectors & Couplings**

**Aircraft Radio Corp., Boonton, N. J.**  
 See Advertisement on Page 185  
 Aircraft-Marine Prods. Inc., 1523 N. Fourth St., Harrisburg, Pa.  
 Alden Products Co., 117 North Main St., Brockton 64, Mass.  
**American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.**  
 See Advertisement on Page 23  
 Boston Insulated Wire & Cable Co., 63 Bay St., Boston 25, Mass.  
 Bud Radio, Inc., 2118 E. 55th St., Cleveland 5, Ohio  
 Buggie & Co., H. H., 2141 Madison Ave., Toledo 1, Ohio  
 Burndy Engineering Co., 107 Bruckner Blvd., New York 54, N. Y.  
**Cannon Electric Development Co., 3209 Humboldt St., Los Angeles 31, Calif.**  
 See Advertisement on Page 70  
 Dante Electric Mfg. Co., Bantam, Conn.  
 Diamond Instrument Co., North Ave., Wakefield, Mass.  
 Eastern Specialty Co., 3617 N. 8th St., Phila. 40, Pa.  
 Eby, Inc., Hugh H., 18 W. Chelton Ave., Phila. 13, Pa.  
 Englewood Electrical Supply Co., 5801 S. Halsted St., Chicago 11, Ill.  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
 Frankel Connector Co., 177 Hudson St., New York, N. Y.  
**Franklin Mfg. Co., A. W., 43-20 34th St., Long Island City, N. Y.**  
 See Advertisement on Page 98  
**General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.**  
 See Advertisement on Page 90  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
 General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
 Hadden Co., The, 17 Academy St., Newark 2, N. J.  
 Ilco Copper Tube & Product Inc., Mariemont Ave., Mariemont 27, Ohio  
**Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.**  
 See Advertisement on Page 166  
 J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkway., Brooklyn, N. Y.  
 Johnson Co., E. F., Waseca, Minn.  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Kings Electronics Co., 372 Classon Ave., Brooklyn 5, N. Y.  
 Lewis Engineering Co., 52 Rubber Ave., Naugatuck, Conn.  
 Morse Co., Frank W., 1300 Soldiers Field Rd., Boston 35, Mass.  
 O. Z. Electrical Mfg. Co., 262 Bond St., Brooklyn 2, N. Y.  
 Penn-Union Electric Corp., 315 State St., Erie, Pa.  
 Radio Development & Research Co., 26 Cornellison Ave., Jersey City, N. J.  
 Rattan Mfg. Co., The, P. O. Box 1745, New Haven 7, Conn.  
 Searle Aero Industries, Inc., Orange, Calif.  
 Sherman Mfg. Co., H. B., 22 Barney St., Battle Creek, Mich.

Special Electric Labs., 7244 So. Main St., Los Angeles 3, Calif.  
 Sperry Gyroscope Co. Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B  
 Switchcraft, Inc., 1735 West Diversey Parkway, Chicago 14, Ill.  
 Thomas & Betts Co., Inc., 36 Butler St., Elizabeth 1, N. J.  
 U. S. Rubber Co., 1230 Sixth Ave., New York 20, N. Y.  
 Winchester Co., The, 6 East 46th St., New York 17, N. Y.

## CONNECTORS—Ceramic Cable

Aircraft Radio Corp., Boonton, N. J.  
 See Advertisement on Page 185  
 Buggie & Co., H. H., 2141 Madison Ave., Toledo 1, Ohio  
 Centralab, Div. of Globe Union Inc., 900 Keefe Ave., Milwaukee 1, Wis.  
 See Advertisements on Pages 24, 25  
 Eagle Electric Mfg. Co., Inc., 23-10 Bridge Plaza S., Long Island City, N. Y.  
 General Ceramics & Steatite Corp., Keasbey, N. J.  
 See Advertisement on Page 79  
 Lapp Insulator Co., 31 Gilbert St., LeRoy, N. Y.  
 See Advertisements on Pages 92, 93

## CONNECTORS—Coaxial Cable

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 Andrew Co., 363 E. 75th St., Chicago 19, Ill.  
 Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.  
 Bird Electronic Corp., 1800 E. 38th St., Cleveland 14, Ohio  
 Boston Insulated Wire & Cable Co., 63 Bay St., Boston 25, Mass.  
 Buggie & Co., H. H., 2141 Madison Ave., Toledo 1, Ohio  
 Burndy Engineering Co., 107 Bruckner Blvd., New York 54, N. Y.  
 Cannon Electric Development Co., 3209 Humboldt St., Los Angeles 31, Calif.  
 See Advertisement on Page 70  
 Diamond Instrument Co., North Ave., Wakefield, Mass.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
 Hermetic Seal Products Co., 414 Morris Ave., Newark 3, N. J.  
 Industrial Products Co., Danbury, Conn.  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Kings Electronics Co., 372 Classon Ave., Brooklyn 5, N. Y.  
 Mendelsohn Speedgun Co., Inc., 457 Bloomfield Ave., Bloomfield, N. J.  
 Molded Insulation Co., Aircraft Control Div., 335 E. Price St., Philadelphia, Pa.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B  
 Thomas & Betts Co., Inc., 36 Butler St., Elizabeth 1, N. J.  
 Weymouth Instrument Co., 1440 Commercial St., East Weymouth, Mass.  
 Winchester Co., The, 6 East 46th St., New York 17, N. Y.

## CONNECTORS—Receptacle

Aerolite Electronic Hardware Corp., 24 Cliff St., Jersey City, N. J.  
 See Advertisement on Page 246  
 Aircraft Radio Corp., Boonton, N. J.  
 See Advertisement on Page 185  
 Alden Products Co., 117 No. Main St., Brockton 64, Mass.  
 American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 Arrow-Hart & Hegeman Electric Co., 103 Hawthorne St., Hartford 6, Conn.  
 Buggie & Co., H. H., 2141 Madison Ave., Toledo 1, Ohio  
 Cannon Electric Development Co., 3209 Humboldt St., Los Angeles 31, Calif.  
 See Advertisement on Page 70  
 Eby Inc., Hugh H., 18 W. Chelton Ave., Phila. 13, Pa.  
 Electric Corp., 150 Middle St., Pawtucket, R. I.  
 Hubbell Inc., Harvey, Bridgeport 2, Conn.  
 Jones Howard B., 2460 W. George St., Chicago 18, Ill.  
 See Advertisement on Page 52

Kings Electronics Co., 372 Classon Ave., Brooklyn 5, N. Y.  
 Lapp Insulator Co., 31 Gilbert St., LeRoy, N. Y.  
 See Advertisements on Pages 92, 93  
 Maico Co. Inc., 25 N. 3rd St., Minneapolis, Minn.  
 Morse Co., Frank W., 1300 Soldiers Field Rd., Boston 35, Mass.  
 Pyle-National Co., 1334 N. Kostner Ave., Chicago 51, Ill.  
 Remler Co. Ltd., 2101 Bryant Ave., San Francisco 10, Calif.  
 Russell & Stoll Co., 125 Barclay St., New York 7, N. Y.  
 Switchcraft, Inc. 1735 West Diversey Parkway, Chicago 14, Ill.  
 Winchester Co., The, 6 East 46th St., New York 17, N. Y.

## CONNECTORS—Stand-off & Cone

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 Buggie & Co., H. H., 2141 Madison Ave., Toledo 1, Ohio  
 Centralab, Div. of Globe Union Inc., 900 Keefe Ave., Milwaukee 1, Wis.  
 See Advertisements on Pages 24, 25  
 Interstate Mfg. Corp., 125 Sussex Ave., Newark 4, N. J.  
 See Advertisements on Pages 180, 215  
 Lapp Insulator Co., 31 Gilbert St., LeRoy, N. Y.  
 See Advertisements on Pages 92, 93  
 Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44  
 Winchester Co., The, 6 East 46th St., New York 17, N. Y.

## CONTACTORS

Arrow-Hart & Hegeman Electric Co., 103 Hawthorne St., Hartford, Conn.  
 Automatic Switch Co., 41 E. 11th St., New York 3, N. Y.  
 Cutler-Hammer Inc., 315 North 12th St., Milwaukee 1, Wis.  
 Fansteel Metallurgical Corp., 2200 Sheridan Rd., No. Chicago, Ill.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Guardian Electric Mfg. Co., 1400 Washington Blvd., Chicago 7, Ill.  
 McQuay-Norris Mfg. Co., Electric Products Div., 6319 Manchester Ave., St. Louis 10, Mo.  
 Monitor Controller Co., 51 S. Gay St., Baltimore 2, Md.  
 R. B. M. Div., Essex Wire Corp., Logansport, Ind.  
 Tork Clock Co., 1 Grove St., Mt. Vernon, N. Y.  
 Ward Leonard Electric Co., 31 South St., Mt. Vernon, N. Y.  
 See Advertisement on Page 175  
 Warrick Co., Chas. F., 16251 Hamilton Ave., Detroit 3, Mich.  
 Westinghouse Electric Corp., Switchgear & Control Div., East Pittsburgh, Pa.  
 Zenith Electric Co., 152 W. Walton St., Chicago, Ill.

## CONTROLS—Alarm System

Adams & Westlake Co., Michigan St., Elkhart, Ind.  
 See Advertisements on Pages 34, 35  
 American Communications Corp., 306 Broadway, New York 7, N. Y.  
 Autocall Co., The, Shelby, Ohio  
 Automatic Electric Co., 1933 W. Van Buren St., Chicago 7, Ill.  
 Brown Instrument Co., 4428 Wayne Ave., Philadelphia 44, Pa.  
 Browning Laboratories, Inc., 750 Main St., Winchester, Mass.  
 See Advertisement on Page 65  
 Development Engineering Co., Inc., The, 1818 Ashland St., Houston 8, Texas  
 Edison, Inc., Thomas A., Instrument Div., West Orange, N. J.  
 See Advertisement on Page 18  
 Electronic Control Corp., 1573 E. Forest St., Detroit, Mich.  
 Electronic Radio Alarm, Inc., 1920 Lincoln-Liberty Bldg., Philadelphia 7, Pa.  
 Ess Instrument Co., 96 So. Washington Ave., Bergenfield, N. J.  
 Fischer & Porter Co., Hatboro, Pa.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C

Langevin Co. Inc., The, Industrial Control Div., 37 W. 65th St., New York 23, N. Y.  
 Moulic Specialties Co., 1005-1007 W. Washington St., Bloomington, Ill.  
 Reynolds Electric Co., 2560 W. Congress St., Chicago 12, Ill.  
 Ripley Co., Torrington, Conn.  
 Rowe Radio Research Lab., 2422 N. Pulaski Rd., Chicago 39, Ill.  
 Russell & Stoll Co., Inc., 125 Barclay St., New York 7, N. Y.  
 Signal Engineering & Mfg. Co., 154 W. 14th St., New York, N. Y.  
 See Advertisement on Page 254

## CONTROLS—Auto Radio Remote

Stewart Mfg. Corp., F. W., 4311 Ravenswood Ave. Chicago 13, Ill.  
 White Dental Mfg. Co., S. S., Industrial Div., 10 E. 40th St., New York, N. Y.  
 See Advertisement on Page 66

## CONTROLS—Automatic Tuning

Melpar, Inc., 718 Fifth St., N. W., Washington 1, D. C.  
 Yardney Laboratories, Inc., 105 Chambers St., New York 7, N. Y.

## CONTROLS—Chemical

Bailey Meter Co., 1044 Ivanhoe Rd., Cleveland 10, Ohio  
 Baker Instrument Co., 310 Main St., Orange, N. J.  
 Foxboro Co., Foxboro, Mass.  
 La Motte Chemical Products Co., Towson 4, Baltimore, Md.  
 Potter Instrument Co., 136-56 Roosevelt Ave., Flushing, N. Y.  
 See Advertisement on Page 243  
 Process & Instruments, 60 Greenpoint Ave., Brooklyn 22, N. Y.  
 Ripley Co., Torrington, Conn.  
 Robinette Co., W. C., 802 Fair Oaks Ave., South Pasadena, Calif.  
 Tech Labs., 337 Central Ave., Jersey City, N. J.

## CONTROLS—Counter

American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
 Automatic Temperature Control Co., 18 W. Chelton Ave., Philadelphia 44, Pa.  
 Barton Co., The, 968 Farmington Ave., West Hartford, Conn.  
 Electric Tachometer Corp., Broad & Spring Garden Sts., Philadelphia, Pa.  
 Electronic Apparatus, Inc., 347 Madison Ave., New York 17, N. Y.  
 Electronic Associates, Inc., 61 Brighton Ave., Long Branch, N. J.  
 Electronic Controls, Inc., 44 Summer Ave., Newark, N. J.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Hetherington & Son Inc., Robert, Sharon Hill, Pa.  
 Langevin Co. Inc., The, Industrial Control Div., 37 W. 65th St., New York 23, N. Y.  
 Lectronic Research Labs., Howell and Hegerman Sts., Philadelphia, Pa.  
 Potter Instrument Co., 136-56 Roosevelt Ave., Flushing, N. Y.  
 See Advertisement on Page 243  
 Rhein Engineering, 120 W. North St., Springfield, Ohio  
 Ripley Co., Torrington, Conn.  
 Wilson & Co., G. C., 2 N. Passaic Ave., Chatham, N. J.

## CONTROLS—Counting & Sorting

Airpax Products Co., P. O. Box 6766, Baltimore 4, Md.  
 Atomic Instrument Co., 160 Charles St., Boston, Mass.  
 Autotron Co., Danville, Ill.  
 Do-All Co., 1301 Washington Ave., S., Minneapolis 4, Minn.  
 Eagle Signal Corp., Moline, Ill.  
 Electric Eye Equipment Co., 16 W. Fairchild St., Danville, Ill.

Electric Tachometer Corp., Broad & Spring Garden Sts., Philadelphia, Pa.  
 Electrodyne Co., The, 899 Boylston St., Boston 15, Mass.  
 Electronic Engineers, 1039-B Pacific St., Santa Monica, Calif.  
 Foote, Pierson & Co., Inc., 75 Hudson St., Newark 4, N. J.  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
 Gerett Corp., M. A., 724 W. Winnebago St., Milwaukee 5, Wisc.  
 Langevin Co. Inc., The, Industrial Control Div., 37 W. 65th St., New York 23, N. Y.  
 Magnavox Co., The, Fort Wayne 4, Ind.  
 Potter Instrument Co., 136-56 Roosevelt Ave., Flushing, N. Y.  
 See Advertisement on Page 243  
 Process & Instruments, 60 Greenpoint Ave., Brooklyn 22, N. Y.  
 Rhein Engineering, 120 W. North St., Springfield, Ohio  
 Ripley Co., Torrington, Conn.  
 Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.  
 Wilmotte Mfg. Co., 1713 Kalorama Rd. N.W., Washington 9, D. C.

**CONTROLS—Differential Winding**

**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
 Langevin Co. Inc., The, Industrial Control Div., 37 W. 65th St., New York 23, N. Y.

**CONTROLS—Dimension**

Electronic Apparatus, Inc., 347 Madison Ave., New York 17, N. Y.  
 Electronic Engineers, 1039-B Pacific St., Santa Monica, Calif.  
 Foote, Pierson & Co. Inc., 75 Hudson St., Newark 4, N. J.  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
 Lectronic Research Labs., Howell and Hegerman Sts., Philadelphia, Pa.  
 Potter Instrument Co., 136-56 Roosevelt Ave., Flushing, N. Y.  
 See Advertisement on Page 243  
 Rhein Engineering, 120 W. North St., Springfield, Ohio  
 Robinette Co., W. C., 802 Fair Oaks Ave., South Pasadena, Calif.

**CONTROLS—Door**

American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
 Barton Co., The, 968 Farmington Ave., West Hartford, Conn.  
 Electronic Apparatus, Inc., 347 Madison Ave., New York 17, N. Y.  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
 Langevin Co. Inc., The, Industrial Control Div., 37 W. 65th St., New York 23, N. Y.  
 Rhein Engineering, 120 W. North St., Springfield, Ohio  
 Ripley Co., Torrington, Conn.  
 Stanley Works, The, New Britain, Conn.  
 Warrick Co., Chas. F., 16251 Hamilton Ave., Detroit 3, Mich.

**CONTROLS—Electronic Motor**

Federal Electric Products Co. Inc., 50 Paris St., Newark, N. J.  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
 Westinghouse Electric Corp., Industrial Electronics Div., Baltimore, Md.

**CONTROLS—Electronic Ozone Measurement & Control Apparatus**

Kemlite Labs., 1809 N. Ashland Ave., Chicago, Ill.  
 Thermionic Engineering Corp., Pomptain Plains, N. J.

**CONTROLS—Flow**

American Instrument Co., 8030 Georgia Ave., Silver Springs, Md.  
 Askania Regulator Co., 1603 S. Michigan Ave., Chicago 16, Ill.  
 Bailey Meter Co., 1044 Ivanhoe Rd., Cleveland 10, Ohio  
 Bristol Co., The, Waterbury 91, Conn.  
 Brown Instrument Co., 4428 Wayne Ave., Philadelphia 44, Pa.  
 Fischer & Porter Co., Hatboro, Pa.  
 Foxboro Co., Foxboro, Mass.  
 General Controls Co., 801 Allen Ave., Glendale 1, Calif.  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
 Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.

Process & Instruments, 60 Greenpoint Ave., Brooklyn 22, N. Y.  
 Robinette Co., W. C., 802 Fair Oaks Ave., South Pasadena, Calif.  
 Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.

**CONTROLS—Fluid Conductivity**

Combustion Control Corporation, 77 Broadway, Cambridge 42, Mass.  
 Foxboro Co., Foxboro, Mass.  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
 Industrial Instruments Inc., 17 Pollack Ave., Jersey City 5, N. J.  
 Langevin Co. Inc., The, Industrial Control Div., 37 W. 65th St., New York 23, N. Y.  
 Process & Instruments, 60 Greenpoint Ave., Brooklyn 22, N. Y.  
 United Condenser Corp., 422 E. 138th St., New York 54, N. Y.  
 Warrick Co., Chas. F., 16251 Hamilton Ave., Detroit 3, Mich.

**CONTROLS—Food Processing**

Brown Instrument Co., 4428 Wayne Ave., Philadelphia 44, Pa.  
 Electric Sorting Machine Co., 410 44th St., S.W., Grand Rapids, Mich.  
 Foxboro Co., Foxboro, Mass.  
 Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.  
 Potter Instrument Co., 136-56 Roosevelt Ave., Flushing, N. Y.  
 See Advertisement on Page 243  
 Ranco, Inc., 601 W. Fifth Ave., Columbus, Ohio  
 Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.  
 Tagliabue Div., C. J., Portable Products Corp., 550 Park Ave., Brooklyn 5, N. Y.  
 Planet Co., George, 88 E. Kinney St., Newark 5, N. J.

**CONTROLS—Heat Treating**

Brown Instrument Co., 4428 Wayne Ave., Philadelphia 44, Pa.  
 Burling Instrument Co., 253 Springfield Ave., Newark 3, N. J.  
 Foxboro Co., Foxboro, Mass.  
 General Controls Co., 801 Allen Ave., Glendale 1, Calif.  
 Gordon Co., Claud S., 3000 S. Wallace St., Chicago 16, Ill.  
 Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave. S., Minneapolis, Minn.  
 Rhein Engineering, 120 W. North St., Springfield, Ohio  
 Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.  
 Tagliabue Div., C. J., Portable Products Corp., 550 Park Ave., Brooklyn 5, N. Y.  
 Thwing-Albert Instrument Co., 5351 Pulaski Ave., Philadelphia 44, Pa.  
 Westinghouse Electric Corp., Switchgear & Control Div., East Pittsburgh, Pa.  
 Wheelco Instruments Co., 647 W. Harrison St., Chicago 7, Ill.

**CONTROLS—Humidity**

Barber Colman Co., River & Loomis Sts., Rockford, Ill.  
 Bristol Co., The, Waterbury 91, Conn.  
 Electronic Engineers, 1039-B Pacific St., Santa Monica, Calif.  
 Foxboro Co., Foxboro, Mass.

Friez Instrument Div., Bendix Aviation Corp., Baltimore 4, Md.  
 General Controls Co., 801 Allen Ave., Glendale 1, Calif.  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
 Illinois Testing Labs., Inc., 420 N. LaSalle St., Chicago 10, Ill.  
 Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave. S., Minneapolis, Minn.  
 Serdex, Inc., 91 Cambridge St., Boston, Mass.  
 Techno-Scientific Co., 901 Nepperhan Ave., Yonkers 3, N. Y.  
 Tenney Engineering Inc., 24-28 Avenue B, Newark, N. J.

**CONTROLS—Inspection**

Electric Eye Equipment Co., 16 W. Fairchild St. Danville, Ill.  
 Electronic Apparatus, Inc., 347 Madison Ave., New York 17, N. Y.  
 Electronic Controls, Inc., 44 Summer Ave., Newark, N. J.  
 Electronic Engineers, 1039-B Pacific St., Santa Monica, Calif.  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
 Gerett Corp., M. A., 724 W. Winnebago St., Milwaukee 5, Wisc.  
 Langevin Co. Inc., The, Industrial Control Div., 37 W. 65th St., New York 23, N. Y.  
 Ripley Co., Torrington, Conn.

**CONTROLS—Lighting**

Barton Co., The, 968 Farmington Ave., West Hartford, Conn.  
 Electronic Apparatus, Inc., 347 Madison Ave., New York 17, N. Y.  
 Electronic Engineers, 1039-B Pacific St., Santa Monica, Calif.  
 Electronic Products Co., 19 No. First St., Geneva, Ill.  
 Fisher-Pierce Co., 70 Ceylon St., Boston 21, Mass.  
 See Advertisement on Page 163  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
 Langevin Co. Inc., The, Industrial Control Div., 37 W. 65th St., New York 23, N. Y.  
 Magnavox Co., The, Fort Wayne 4, Ind.  
 Radio Development Labs., 362 Atlantic Ave., Brooklyn 2, N. Y.  
 Rhein Engineering, 120 W. North St., Springfield, Ohio  
 Ripley Co., Torrington, Conn.  
 Ward Leonard Electric Co., 31 South St., Mt. Vernon, N. Y.  
 See Advertisement on Page 175  
 Weston Electrical Instrument Corp., 618 Frelinghuysen Ave., Newark 5, N. J.

**CONTROLS—Liquid Level**

Alco Valve Co., 865 Kingsland, St. Louis 5, Mo.  
 Askania Regulator Co., 1603 So. Michigan Ave., Chicago 16, Ill.  
 Autocall Co., The, Shelby, Ohio  
 Bailey Meter Co., 1044 Ivanhoe Rd., Cleveland 10, Ohio  
 Bristol Co., The, Waterbury 91, Conn.  
 Brown Instrument Co., 4428 Wayne Ave., Philadelphia 44, Pa.  
 Clark Controller Co., The, 1146 E. 152nd St., Cleveland 10, Ohio  
 Cook Electric Co., 2700 Southport Ave., Chicago, Ill.  
 Cutler-Hammer, Inc., 315 No. 12th St., Milwaukee 1, Wisc.  
 Electronic Apparatus, Inc., 347 Madison Ave., New York 17, N. Y.  
 Engineering Lab., Inc., 602 E. 4th St., Tulsa 3, Okla.  
 Fisher-Pierce Co., 70 Ceylon St., Boston, Mass.  
 See Advertisement on Page 163  
 Foxboro Co., Foxboro, Mass.  
 General Controls Co., 801 Allen Ave., Glendale 1, Calif.  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
 Guardian Electric Mfg. Co., 1400 Washington Blvd., Chicago 7, Ill.  
 Langevin Co. Inc., The, Industrial Control Div., 37 W. 65th St., New York 23, N. Y.  
 Lumenite Electric Co., 407 S. Dearborn St., Chicago, Ill.  
 Mercoid Corp., 4201 Belmont Ave., Chicago 41, Ill.  
 Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave. S., Minneapolis, Minn.

Rhein Engineering, 120 W. North St., Springfield, Ohio  
 Ripley Co., Torrington, Conn.  
 Robinette Co., W. C., 802 Fair Oaks Ave., South Pasadena, Calif.  
 Tagliabue Div., C. J., Portable Products Corp., 550 Park Ave., Brooklyn 5, N. Y.  
 United Condenser Corp., 422 E. 138th St., New York 54, N. Y.  
 Warrick Co. Chas. F., 16251 Hamilton Ave., Detroit 3, Mich.  
 Westinghouse Electric Corp., Switchgear & Control Div., East Pittsburgh, Pa.  
 Wheelco Instruments Co., 847 W. Harrison St., Chicago 7, Ill.

## CONTROLS—Loop Regulation

Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251

## CONTROLS—Machine Safety

Airpax Products Co., P. O. Box 6741, Baltimore 4, Maryland  
 American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
 Clark Controller Co., The, 1146 E. 152nd St., Cleveland 10, Ohio  
 Electronic Control Corp., 1573 E. Forest St., Detroit, Mich.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Gerett Corp., M. A., 724 W. Winnebago St., Milwaukee 5, Wisc.  
 Hoffman Engineering Co., Anoka, Minn.  
 Langevin Co. Inc., The, Industrial Control Div., 37 W. 65th St., New York 23, N. Y.  
 Rhein Engineering, 120 W. North St., Springfield, Ohio  
 Russell & Stoll Co., Inc., 125 Barclay St., New York 7, N. Y.  
 Wheelco Instruments Co., 847 W. Harrison St., Chicago 7, Ill.

## CONTROLS—Moisture

American Instrument Co., 8030 Georgia Ave., Silver Springs, Md.  
 Foxboro Co., Foxboro, Mass.  
 Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., Minneapolis 5, Minn.  
 Moisture Register Co., 133 No. Garfield, Alhambra, Calif.  
 Serdex, Inc., 91 Cambridge St., Boston, Mass.  
 Tech Laboratories, 337 Central Ave., Jersey City, N. J.

## CONTROLS—Motor & Generator

Adams & Westlake Co., Michigan St., Elkhart, Ind.  
 See Advertisements on Pages 34, 35  
 Allis-Chalmers Mfg. Co., Milwaukee 1, Wisc.  
 Bodine Electric Co., Ohio St. & Oakley Blvd., Chicago, Ill.  
 Clark Controller Co., The, 1146 E. 152nd St., Cleveland 10, Ohio  
 Control Corp., 718 Central Ave., Minneapolis 14, Minn.  
 Controls Labs. Inc., 98 Union St., Worcester 8, Mass.  
 Cutler-Hammer, Inc., 315 N. 12th St., Milwaukee 1, Wisc.  
 Electric Machinery Mfg. Co., 1331 NE Tyler St., Minneapolis 13, Minn.  
 Electron Equipment Corp., 917 Meridian Ave., South Pasadena, Calif.  
 Electronic Engineers, 1039-B Pacific St., Santa Monica, Calif.  
 Electronic Power Co. Inc., 19 W. 44th St., New York, N. Y.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Hertner Electric Co., 12690 Elmwood Ave., Cleveland 11, Ohio  
 Hetherington & Son Inc., Robert, Sharon Hill, Pa.  
 Holtzer-Cabot, Div. of First Industrial Corp., 125 Amory Street, Boston, Mass.  
 Lyman Electronic Co., 12 Cass St., Springfield, Mass.  
 Magnavox Co., The Fort Wayne 4, Ind.  
 Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave. S., Minneapolis, Minn.

Monitor Controller Co., 51 S. Gay St., Baltimore 2, Md.  
 R. B. M. Division, Essex Wire Corp., Logansport Ind.  
 Speedway Mfg. Co., 1834 S. 52nd Ave., Cicero 50, Ill.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B  
 Square D Co., 6060 Rivard St., Detroit 11, Mich.  
 Submarine Signal Co., Affiliated with Raytheon Mfg. Co., 160 State St., Boston, Mass.  
 Synchro Start Products, Inc., 1046 W. Fullerton Ave., Chicago 14, Ill.  
 Trumbull Electric Mfg. Co., Plainville, Conn.  
 Ulanet Co., George, 88 E. Kinney St., Newark 5, N. J.  
 Vendo Co., 1907 Grand Ave., Kansas City 8, Mo.  
 Ward Leonard Electric Co., 31 South St., Mt. Vernon, N. Y.  
 See Advertisement on Page 175  
 Weltron Co., 19500 West 8 Mile Rd., Detroit 19, Mich.  
 Westinghouse Elec. Corp., Switchgear & Control Div., East Pittsburgh, Pa.  
 Yardeny Laboratories Inc., 105 Chambers St., New York 7, N. Y.

## CONTROLS—Package Wrapping

Electric Eye Equipment Co., 16 W. Fairchild St., Danville, Ill.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Langevin Co. Inc., The, Industrial Control Div., 37 W. 65th St., New York 23, N. Y.  
 Potter Instrument Co., 136-56 Roosevelt Ave., Flushing, N. Y.  
 See Advertisement on Page 243  
 Ulanet Co., George, 88 E. Kinney St., Newark 5, N. J.

## CONTROLS—Photoelectric

Aerolux Light Corp., 653 11th Ave., New York 19, N. Y.  
 Aireon Mfg. Corp., Fairfax & Funston Rds., Kansas City 15, Kansas  
 American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
 Atomic Instrument Co., 160 Charles St., Boston, Mass.  
 Barton Co., The, 968 Farmington Ave., West Hartford, Conn.  
 Budd Induction Heating Inc., Detroit, Mich.  
 Controls Labs. Inc., 98 Union St., Worcester 8, Mass.  
 Cover Dual Signal Systems, Inc., Div. of Electra Voice Corp., 5215-25 Ravenswood Ave., Chicago 40, Ill.  
 Electronic Apparatus, Inc., 347 Madison Ave., New York 17, N. Y.  
 Electronic Controls Inc., 44 Summer Ave., Newark, N. J.  
 Electronic Mechanical Products Co., 13-15-17 N. Virginia Ave., Atlantic City, N. J.  
 Ess Instrument Co., 96 So. Washington Ave., Bergenfield, N. J.  
 Fischer-Smith Inc., 162 State St., West Englewood, N. J.  
 Fisher-Pierce Co., 70 Ceylon St., Boston 21, Mass.  
 See Advertisement on Page 163  
 Furst Electronics, 800 W. North Ave., Chicago 22, Ill.  
 See Advertisement on Page 248  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Inductive Equipment Co., Gettysburg, Pa.  
 Intex Co., 303 W. 42nd St., New York 18, N. Y.  
 See Advertisement on Page 68  
 Langevin Co. Inc., The, Industrial Control Div., 37 W. 65th St., New York 23, N. Y.  
 Mettler Co., Lee B., 406 S. Main St., Los Angeles 13, Calif.  
 Moulic Specialties Co., 1005-1007 W. Washington St., Bloomington, Ill.  
 Potter Instrument Co., 136-56 Roosevelt Ave., Flushing, N. Y.  
 See Advertisement on Page 243  
 Process & Instruments, 60 Greenpoint Ave., Brooklyn 22, N. Y.  
 Rhein Engineering, 120 W. North St., Springfield, Ohio  
 Ripley Co., Torrington, Conn.  
 Tagliabue Div., C. J., Portable Products Corp., 550 Park Ave., Brooklyn 5, N. Y.  
 Vendo Co., 1907 Grand Ave., Kansas City 8, Mo.  
 Westinghouse Electric Corp., Switchgear & Control Div., East Pittsburgh, Pa.  
 Weston Electrical Instrument Corp., 618 Frelinghuysen Ave., Newark 5, N. J.

Wilson & Co., G. C., 2 N. Passaic Ave., Chatham, N. J.  
 Worner Electronic Devices, Rankin, Ill.

## CONTROLS—Photographic Exposure

Electric Eye Equipment Co., 16 W. Fairchild St., Danville, Ill.  
 Electronic Controls, Inc., 44 Summer Ave., Newark, N. J.  
 Electronic Mechanical Products Co., 13-15-17 N. Virginia Ave., Atlantic City, N. J.  
 Potter Instrument Co., 136-56 Roosevelt Ave., Flushing, N. Y.  
 See Advertisement on Page 243  
 Rhein Engineering, 120 W. North St., Springfield, Ohio

## CONTROLS—Positioning

Askania Regulator Co., 1603 S. Michigan Ave., Chicago 16, Ill.  
 Barber Colman Co., River & Loomis Sts., Rockford, Ill.  
 Controls Labs. Inc., 98 Union St., Worcester 8, Mass.  
 Eclipse Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.  
 Electronic Apparatus, Inc., 347 Madison Ave., New York 17, N. Y.  
 Fairchild Camera & Instrument Corp., 88-06 Van Wyck Blvd., Jamaica 1, N. Y.  
 Foxboro Co., Foxboro, Mass.  
 General Aviation Equipment Co., Inc., 630 5th Ave., New York 20, N. Y.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Giannini & Co., Inc., G. M., Auto Flight Instruments Div., 285 W. Colorado St., Pasadena 1, Calif.  
 Langevin Co. Inc., The, Industrial Control Div., 37 W. 65th St., New York 23, N. Y.  
 Magnavox Co., The, Fort Wayne 4, Ind.  
 Melpar, Inc., 718 Fifth St., N.W., Washington 1, D. C.  
 Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave. S., Minneapolis, Minn.  
 Potter Instrument Co., 136-56 Roosevelt Ave., Flushing, N. Y.  
 See Advertisement on Page 243  
 Reeves-Hoffman Corp., 215 E. 91st St., New York, N. Y.  
 See Advertisement on Page 180  
 Reeves Instrument Corp., 215 E. 91st St., New York, N. Y.  
 Rhein Engineering, 120 W. North St., Springfield, Ohio  
 Robinette Co., W. C., 802 Fair Oaks Ave., South Pasadena, Calif.  
 Superior Electric Co., 83 Laurel St., Bristol, Conn.  
 See Advertisements on Pages 5 to 16  
 Synchro Start Products, Inc., 1046 W. Fullerton Ave., Chicago 14, Ill.  
 Wilson & Co., G. C., 2 N. Passaic Ave., Chatham, N. J.  
 Yardeny Laboratories Inc., 105 Chambers St., New York 7, N. Y.

## CONTROLS—Pressure

Askania Regulator Co., 1603 So. Michigan Ave., Chicago 16, Ill.  
 Autocall Co., The, Shelby, Ohio  
 Bailey Meter Co., 1044 Ivanhoe Rd., Cleveland 10, Ohio  
 Barber Colman Co., River & Loomis Sts., Rockford, Ill.  
 Bristol Co., The, Waterbury 91, Conn.  
 Brown Instrument Co., 4428 Wayne Ave., Philadelphia 44, Pa.  
 Cook Electric Co., 2700 Southport Ave., Chicago, Ill.  
 Cutler-Hammer, Inc., 315 No. 12th St., Milwaukee 1, Wisc.  
 Electronic Engineers, 1039-B Pacific St., Santa Monica, Calif.  
 Foxboro Co., Foxboro, Mass.  
 General Controls Co., 801 Allen Ave., Glendale 1, Calif.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 McQuay-Norris Mfg. Co., Electric Products Div., 6319 Manchester Ave., St. Louis 10, Mo.  
 Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave. S., Minneapolis, Minn.  
 Nurnberg Thermometer Co., Inc., 112 Broadway, Cambridge 42, Mass.  
 Process & Instruments, 60 Greenpoint Ave., Brooklyn 22, N. Y.  
 Robinette Co., W. C., 802 Fair Oaks Ave., South Pasadena, Calif.

Serdex, Inc., 91 Cambridge St., Boston, Mass.  
 Square D. Co., 6060 Rivard St., Detroit 11, Mich.  
 Tagliabue Div., C. J., Portable Products Corp., 550 Park Ave., Brooklyn 5, N. Y.  
 United Electric Controls Co., 71 A St., S. Boston 27, Mass.  
 Westinghouse Electric Corp., Switchgear & Control Div., East Pittsburgh, Pa.  
 White-Rodgers Electric Co., 1209 Cass Ave., St. Louis 6, Mo.

**CONTROLS—Refrigeration Defrosting**

Barton Co., The, 968 Farmington Ave., West Hartford, Conn.  
 Fisher-Pierce Co., 70 Ceylon St., Boston 21, Mass.  
 See Advertisement on Page 163  
 Foxboro Co., Foxboro, Mass.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.  
 Ranco, Inc., 601 W. Fifth Ave., Columbus, Ohio

Photovolt Corp., 95 Madison Ave., New York 16, N. Y.  
 Rheln Engineering, 120 W. North St., Springfield, Ohio  
 Ripley Co., Torrington, Conn.  
 Tagliabue Div., C. J., Portable Products Corp., 550 Park Ave., Brooklyn 5, N. Y.  
 Task Electronics Co., 243 W. 54th St., New York, N. Y.

**CONTROLS—Sound Systems**

Centralab, Div. of Globe Union, Inc., 900 Keefe Ave., Milwaukee 1, Wis.  
 See Advertisements on Pages 24, 25  
 Collins Audio Products Co., 1126 Park St., Westfield, N. J.  
 See Advertisement on Page 253  
 Edison, Inc., Thomas A., Instrument Div., West Orange, N. J.  
 See Advertisement on Page 18  
 Electronic Sound Engineering Co., 4344-46 W. Armitage Ave., Chicago 39, Ill.  
 Hallcrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Magnavox Co., The, Fort Wayne 4, Ind.  
 Stackpole Carbon Co., St. Marys, Pa.  
 Stark Sound Engineering Co., P. O. Box 493, Fort Wayne 1, Ind.  
 Webster Electric Co., 1900 Clark St., Racine, Wis.

**CONTROLS—Printing**

Electric Eye Equipment Co., 16 W. Fairchild St., Danville, Ill.  
 Fisher-Pierce Co., 70 Ceylon St., Boston 21, Mass.  
 See Advertisement on Page 163  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Langevin Co. Inc., The, Industrial Control Div., 37 W. 65th St., New York 23, N. Y.  
 Monitor Controller Co., 51 S. Gay St., Baltimore 2, Md.  
 Potter Instrument Co., 136-56 Roosevelt Ave., Flushing, N. Y.  
 See Advertisement on Page 243  
 Ripley Co., Torrington, Conn.  
 Robinette Co., W. C., 802 Fair Oaks Ave., South Pasadena, Calif.  
 Westinghouse Electric Corp., Switchgear & Control Div., East Pittsburgh, Pa.

**CONTROLS—Register Cutter**

Fisher-Pierce Co., 70 Ceylon St., Boston 21, Mass.  
 See Advertisement on Page 163  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Langevin Co. Inc., The, Industrial Control Div., 37 W. 65th St., New York 23, N. Y.  
 Ripley Co., Torrington, Conn.

**CONTROLS—Servo**

Askania Regulator Co., 1603 So. Michigan Ave., Chicago 16, Ill.  
 Barber Colman Co., River & Loomis Sts., Rockford, Ill.  
 Collins Radio Co., Cedar Rapids, Iowa  
 See Advertisements on Pages 30 to 33  
 Controls Labs. Inc., 98 Union St., Worcester 8, Mass.  
 Electrodyne Co., The, 899 Boylston St., Boston 15, Mass.  
 Electronic Associates Inc., 61 Brighton Ave., Long Branch, N. J.  
 Fairchild Camera & Instrument Corp., 88-06 Van Wyck Blvd., Jamaica 1, N. Y.  
 General Aviation Equipment Co., Inc., 630 5th Ave., New York 20, N. Y.  
 General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Reeves-Hoffman Corp., 215 E. 91st St., New York, N. Y.  
 See Advertisement on Page 180  
 Reeves Instrument Corp., 215 E. 91st St., New York, N. Y.  
 Robinette Co., W. C., 802 Fair Oaks Ave., South Pasadena, Calif.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B  
 Superior Electric Co., 83 Laurel St., Bristol, Conn.  
 See Advertisements on Pages 5 to 16  
 Techno-Scientific Co., 901 Nepperhan Ave., Yonkers 3, N. Y.  
 Televiso Products Inc., 7466 West Irving Park Road, Chicago 34, Ill.  
 Westinghouse Electric Corp., Motor Div., Buffalo, N. Y.  
 Wilson & Co., G. C., 2 N. Passaic Ave., Chatham, N. J.  
 Yardeny Labs., Inc., 105 Chambers St., New York 7, N. Y.

**CONTROLS—Radio Remote**

Air Associates Inc., 5827 W. Century Blvd., Los Angeles 45, Calif.  
 Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.  
 Banks Mfg. Co., 1105 W. Lawrence Ave., Chicago 40, Ill.  
 Bell Sound Systems, Inc., 1183 Essex Ave., Columbus, Ohio  
 Bendix Aviation Corp., Pacific Div., 11600 Sherman Way, North Hollywood, Calif.  
 Breeze Corp., 41 S. 6th St., Newark, N. J.  
 Breco Electronics Corp., 55 Vandam St., New York 13, N. Y.  
 Collins Radio Co., Cedar Rapids, Iowa  
 See Advertisements on Pages 30 to 33  
 Commercial Radio Sound Corp., 575 Lexington Ave., New York 22, N. Y.  
 Communications Co., Inc., 300 Greco Ave., Coral Gables 34, Fla.  
 Croname Inc., 3701 Ravenswood Ave., Chicago 13, Ill.  
 Dalmo Victor Co., San Carlos, Calif.  
 Electronic Engineers, 1039-B Pacific St., Santa Monica, Calif.  
 Erwood Co., 223 W. Erie St., Chicago 10, Ill.  
 Gates Radio Co., 123 Hampshire St., Quincy, Ill.  
 Gem Radio & Television Co., 72 Cortlandt St., New York 6, N. Y.  
 Hallicrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Hudson American Corp., 25 W. 43rd St., New York 18, N. Y.  
 Loge Sound Engineers, J. M., 986 S. Western Ave., Los Angeles 6, Calif.  
 Magnavox Co., The, Fort Wayne 4, Ind.  
 Melpar, Inc., 718 Fifth St., N.W., Washington 1, D. C.  
 Miles Reproducer Co., Inc., 812 Broadway, New York 3, N. Y.  
 See Advertisement on Page 256  
 Molded Insulation Co., Aircraft Control Div., 335 E. Price St., Phil. 44, Pa.  
 North Electric Mfg. Co., 501 S. Market St., Galion, Ohio  
 Operadio Mfg. Co., 135th & Indiana Sts., St. Charles, Ill.  
 Philharmonic Radio Corp., 528 E. 72nd St., New York 21, N. Y.  
 Shakespeare Products Co., 241 E. Kalamazoo Ave., Kalamazoo, Mich.  
 Searle Aero Industries, Inc., Orange, Calif.  
 Sorensen & Co., 375 Fairfield Ave., Stamford, Conn.  
 See Advertisement on Page 154  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B  
 Transmitter-Equipment Mfg. Co., Inc., 345 Hudson St., New York 14, N. Y.  
 White Dental Mfg. Co., S. S., Industrial Div., 10 E. 40th St., New York, N. Y.  
 See Advertisement on Page 66  
 Yardeny Laboratories Inc., 105 Chambers St., New York 7, N. Y.

**CONTROLS—Smoke Density & Combustion**

Bailey Meter Co., 1044 Ivanhoe Rd., Cleveland, Ohio  
 Brown Instrument Co., 4428 Wayne Ave., Philadelphia 44, Pa.  
 Electronic Apparatus, Inc., 347 Madison Ave., New York 17, N. Y.  
 Electronic Control Corp., 1573 E. Forest St., Detroit, Mich.  
 Electronic Products Co., 19 No. First St., Geneva, Ill.  
 Ess Instrument Co., 96 So. Washington Ave., Bergenfield, N. J.  
 Furst Electronics, 800 W. North Ave., Chicago 22, Ill.  
 See Advertisement on Page 248  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Langevin Co. Inc., The, Industrial Control Div., 37 W. 65th St., New York 23, N. Y.  
 Leeds & Northrup Co., 4970 Stenton Ave., Philadelphia, Pa.  
 Mettler Co., Lee B., 406 S. Main St., Los Angeles 13, Calif.  
 Photoswitch, 77 Broadway, Cambridge 42, Mass.

**CONTROLS—Temperature**

American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
 Askania Regulator Co., 1603 So. Michigan Ave., Chicago 16, Ill.  
 Autocal Co., The, Shelby, Ohio  
 Automatic Temperature Control Co., 18 W. Cheltenham Ave., Philadelphia 44, Pa.  
 Bailey Meter Co., 1041 Ivanhoe Rd., Cleveland 10, Ohio  
 Baker Instrument Co., 310 Main St., Orange, N. J.  
 Barber Colman Co., River & Loomis Sts., Rockford, Ill.  
 Bristol Co., The, Waterbury 91, Conn.  
 Brown Instrument Co., 4128 Wayne Ave., Philadelphia 44, Pa.  
 Burling Instrument Co., 253 Springfield Ave., Newark 3, N. J.  
 Cook Electric Co., 2700 Southport Ave., Chicago, Ill.  
 Electric Soldering Iron Co., 1815 W. Elm St., Deep River, Conn.  
 Electronic Control Corp., 1573 E. Forest St., Detroit, Mich.  
 Fischer-Smith, Inc., 162 State St., West Englewood, N. J.  
 Foxboro Co., Foxboro, Mass.  
 Friez Instrument Div., Bendix Aviation Corp., Baltimore 4, Md.  
 Fulton Slyphon Co., Knoxville 4, Tenn.  
 General Controls Co., 801 Allen Ave., Glendale 1, Calif.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Huber Radio Co., 260 S. Center St., Casper, Wyo.  
 Illinois Testing Labs., Inc., 420 N. La Salle St., Chicago 10, Ill.  
 Instrument Development Labs., 817 E. 55th St., Chicago 15, Ill.  
 Lectronic Research Labs., Howell and Hegerman Sts., Philadelphia, Pa.  
 Leeds & Northrup Co., 4970 Stenton Ave., Philadelphia, Pa.  
 McQuay-Norris Mfg. Co., Electric Products Div., 6319 Manchester Ave., St. Louis 10, Mo.  
 Mercoird Corp., 4201 Belmont Ave., Chicago 41, Ill.  
 Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave. S., Minneapolis, Minn.  
 Monitor Products Co., 815 Fremont St., So. Pasadena, Calif.  
 Nurnberg Thermometer Co., Inc., 112 Broadway, Cambridge 42, Mass.  
 Process & Instruments, 60 Greenpoint Ave., Brooklyn 22, N. Y.  
 Pyrometer Instrument Co., 103 Lafayette St., New York, N. Y.  
 Ranco, Inc., 601 W. Fifth Ave., Columbus, Ohio  
 Rheln Engineering, 120 W. North St., Springfield, Ohio  
 Richards Co., Inc., Arklay S., 78 Winchester St., Newton Highlands, Mass.  
 Sarco Co., Inc., 475 Fifth Ave., New York 17, N. Y.  
 Spencer Thermostat Co., 34 Forest St., Attleboro, Mass.  
 Square D Co., 6060 Rivard St., Detroit 11, Mich.  
 Tagliabue Div., C. J., Portable Products Corp., 550 Park Ave., Brooklyn 5, N. Y.

Tenney Engineering Inc., 26 Avenue E, Newark 5, N. J.  
 Thwing-Albert Instrument Co., 5351 Pulaski Ave., Philadelphia 44, Pa.  
 Ulanet Co., George, 88 E. Kinney St., Newark 5, N. J.  
 United Condenser Corp., 422 E. 138th St., New York 54, N. Y.  
 United Electric Controls Co., 71 A St., S. Boston 27, Mass.  
 Westinghouse Electric Corp., Switchgear & Control Div., East Pittsburgh, Pa.  
 Wheelco Instruments Corp., 847 W. Harrison St., Chicago 7, Ill.  
 White-Rodgers Electric Co., 1201 Cass Ave., St. Louis 6, Mo.

Ulanet Co., George, 88 E. Kinney St., Newark 5, N. J.  
 United Condenser Corp., 422 E. 138th St., New York 54, N. Y.  
 White-Rodgers Electric Co., 1209 Cass Ave., St. Louis 6, Mo.  
 Wilson & Co., G. C., 2 N. Passaic Ave., Chatham, N. J.

### CONTROLS—Torque Units

Breeze Corp., 41 S. 6th St., Newark, N. J.  
 General Aviation Equipment Co., Inc., 630 5th Ave., New York 20, N. Y.  
**Reeves-Hoffman Corp., 215 E. 91st St., New York, N. Y.**  
 See Advertisement on Page 180  
 Reeves Instrument Corp., 215 E. 91st St., New York, N. Y.  
 Robinette Co., W. C., 802 Fair Oaks Ave., South Pasadena, Calif.  
**Sorensen & Co., 375 Fairfield Ave., Stamford, Conn.**  
 See Advertisement on Page 154

### CONTROLS—Ultrasonic

Ripley Co., Torrington, Conn.  
 Televiso Products Inc., 7466 West Irving Park Road, Chicago 34, Ill.

### CONTROLS—Ventilating Control Systems

Barber Colman Co., River & Loomis Sts., Rockford, Ill.  
 Brown Instrument Co., 4428 Wayne Ave., Philadelphia 44, Pa.  
 Foxboro Co., Foxboro, Mass.  
 General Controls Co., 801 Allen Ave., Glendale 1, Calif.  
 Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.  
 Rhein Engineering, 120 W. North St., Springfield, Ohio  
 Robinette Co., W. C., 802 Fair Oaks Ave., South Pasadena, Calif.  
**Ward Leonard Electric Co., 31 South St., Mt. Vernon, N. Y.**  
 See Advertisement on Page 175  
 White-Rodgers Electric Co., 1209 Cass Ave., St. Louis 6, Mo.

### CONTROLS—Volume & Tone

Bradley Co., Allen, 136 W. Greenfield Ave., Milwaukee 2, Wis.  
**Centralab, Div. of Globe Union Inc., 900 Keefe Ave., Milwaukee 1, Wis.**  
 See Advertisements on Pages 24, 25  
 Chicago Telephone Supply Co., 1142 W. Leardsley Ave., Elkhart, Ind.  
 Cinema Engineering Co., 1503 W. Verdugo Ave., Burbank, Calif.  
 Clarostat Mfg. Co. Inc., 285-7 6th St., Brooklyn, N. Y.  
 Consolidated Wire & Associated Companies, 1635 S. Clinton St., Chicago 16, Ill.  
 Daven Co., 191 Central Ave., Newark 4, N. J.  
**General Electric Co., Syracuse, N. Y.**  
 See Advertisements on Pages 96, 96A  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
**Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.**  
 See Advertisements on Pages 257 to 260  
 National Union Radio Corp., 350 Scotland Rd., Orange, N. J.  
 Owens-Illinois Glass Co., Plastics Div., Toledo, Ohio  
 Stackpole Carbon Co., St. Marys, Pa.  
 Utah Radio Products Co., 820 Orleans St., Chicago, Ill.  
 Wirt Co., 5221 Greene St., Philadelphia, Pa.

### CONTROLS—Water Detector

Fisher-Pierce Co., 70 Ceylon St., Boston 21, Mass.  
 See Advertisement on Page 163  
 Industrial Instruments Inc., 17 Pollack Ave., Jersey City 5, N. J.  
 Lectronic Research Labs., Howell and Hegerman Sts., Philadelphia, Pa.  
 Rhein Engineering, 120 W. North St., Springfield, Ohio  
 Warrick Co., Chas. F., 16251 Hamilton Ave., Detroit 3, Mich.

### CONTROLS—Weight

Electronic Apparatus, Inc., 347 Madison Ave., New York 17, N. Y.  
 Electronic Engineers, 1039-B Pacific St., Santa Monica, Calif.  
 Foxboro Co., Foxboro, Mass.  
 Langevin Co. Inc., The Industrial Control Div., 37 W. 65th St., New York 23, N. Y.  
 Magnavox Co., The, Fort Wayne 4, Ind.  
 Rhein Engineering, 120 W. North St., Springfield, Ohio

### CONTROLS—Welding

Clark Controller Co., The, 1146 E. 152nd St., Cleveland 10, Ohio  
 Cutler-Hammer, Inc., 315 N. 12th St., Milwaukee 1, Wis.  
 Davis & Murphy, 5252 Broadway, Chicago 40, Ill.  
 Eisler Engineering Co. Inc., 740 S. 13th St., Newark 3, N. J.  
 Electronic Apparatus, Inc., 317 Madison Ave., New York 17, N. Y.  
 Electronic Power Co. Inc., 18 W. 44th St., New York, N. Y.  
 Electronic Products Co., 19 No. First St., Geneva, Ill.  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
 Hercules Electric & Mfg. Co., Inc., 2506 Atlantic Ave., Brooklyn 7, N. Y.  
 Langevin Co. Inc., The, Industrial Control Div., 37 W. 65th St., New York 23, N. Y.  
 Lyman Electronic Corp., 12 Cass St., Springfield, Mass.  
 Raytheon Mfg. Co., Commercial Products Div., Waltham 54, Mass.  
 Rhein Engineering, 120 W. North St., Springfield, Ohio  
 Ripley Co., Torrington, Conn.  
 Sciaky Bros., 4915 W. 67th St., Chicago 33, Ill.  
 Vangronic Corp., 87 Washburn St., Bridgeport, Conn.  
 Weltron Co., 19500 West 8 Mile Rd., Detroit 19, Mich.  
 Westinghouse Electric Corp., Motor Div., Buffalo, N. Y.  
 Westinghouse Electric Corp., Switchgear & Control Div., East Pittsburgh, Pa.

### CONVERTERS—f-m

Collins Audio Products Co., 126 Park St., Westfield, N. J.  
 See Advertisement on Page 253  
 Communication Measurements Lab. Inc., 120 Greenwich St., New York, N. Y.  
 Cover Dual Signal Systems, Inc., Div. of Electra Voice Corp., 5215-25 Ravenswood Ave., Chicago 40, Ill.  
 Electrodyne Co., The, 839 Boylston St., Boston 15, Mass.  
 Fisher Radio Co., 41 E. 47th St., New York, N. Y.  
 Hallcrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Hoffman Radio Corp., 3430 S. Hill St., Los Angeles 7, Calif.  
 Magnavox Co., The, Fort Wayne 4, Ind.  
 Meissner Mfg. Div., Maguire Industries, Inc., Mt. Carmel, Ill.  
**National Co., Inc., 61 Sherman St., Malden 48, Mass.**  
 See Advertisement on Page 78  
 Waterproof Electric Co., 72 E. Verdugo Ave., Burbank, Calif.

### CONVERTERS—Frequency Shift

Boehme Inc., H. O., 915 Broadway, New York, N. Y.  
 Bogue Electric Co., 37 Kentucky Ave., Paterson 3, N. J.  
**Collins Radio Co., Cedar Rapids, Iowa**  
 See Advertisements on Pages 30 to 33  
**Electronic Measurements Co., Red Bank, N. J.**  
 See Advertisement on Page 68  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
**National Co., 61 Sherman St., Malden 48, Mass.**  
 See Advertisement on Page 78  
 Press Wireless Mfg. Corp., 1475 Broadway, New York 18, N. Y.  
**Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.**  
 See Advertisements on Pages 88, 89

### CONTROLS—Tentering

Brown Instrument Co., 4428 Wayne Ave., Philadelphia 44, Pa.  
**Fisher-Pierce Co., 70 Ceylon St., Boston 21, Mass.**  
 See Advertisement on Page 163  
 Foxboro Co., Foxboro, Mass.  
 Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.

### CONTROLS—Timing

Adams & Westlake Co., Michigan St., Elkhart, Ind.  
 See Advertisements on Pages 34, 35  
 Airpax Products Co., P. O. Box 6766, Baltimore 4, Md.  
 American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
 Ansonia Clock Co. Inc., 103 Lafayette St., New York 13, N. Y.  
 Atomic Instrument Co., 160 Charles St., Boston, Mass.  
 Automatic Temperature Control Co., 18 W. Chelton Ave., Philadelphia 44, Pa.  
**Aviometer Corp., 370 W. 35th St., New York 1, N. Y.**  
 See Advertisement on Page 224  
 Bristol Co., The, Waterbury 91, Conn.  
 Clarostat Mfg. Co. Inc., 285-7 6th St., Brooklyn, N. Y.  
 Cover Dual Signal Systems, Inc., Div. of Electra Voice Corp., 5215-25 Ravenswood Ave., Chicago 40, Ill.  
**Cramer Co., R. W., Centerbrook, Conn.**  
 See Advertisement on Page 233  
 Cutler-Hammer, Inc., 315 No. 12th St., Milwaukee 1, Wis.  
 Eagle Signal Corp., Moline, Ill.  
**Edison, Inc., Thomas A., Instrument Div., West Orange, N. J.**  
 See Advertisement on Page 18  
 Electronic Apparatus, Inc., 347 Madison Ave., New York 17, N. Y.  
 Electronic Controls Inc., 44 Summer Ave., Newark, N. J.  
**Fisher-Pierce Co., 70 Ceylon St., Boston 21, Mass.**  
 See Advertisement on Page 163  
 General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
 Hayden Co., A. W., The, Waterbury 32, Conn.  
**Kay Electric Co., 34 Marshall St., Newark, N. J.**  
 See Advertisement on Page 184  
 Langevin Co. Inc., Industrial Control Div., 37 W. 65th St., New York 23, N. Y.  
 Lektra Labs., 30 E. 10th St., New York, N. Y.  
 Lumentite Electric Co., 407 S. Dearborn St., Chicago, Ill.  
 Magnavox Co., The, Fort Wayne 4, Ind.  
 Mercoid Corp., 4201 Belmont Ave., Chicago 41, Ill.  
 Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.  
 Phillips Control Corp., 612 N. Michigan Ave., Chicago 11, Ill.  
 Photovolt Corp., 95 Madison Ave., New York 16, N. Y.  
**Potter Instrument Co., 136-56 Roosevelt Ave., Flushing, N. Y.**  
 See Advertisement on Page 243  
 Reynolds Electric Co., 2560 W. Congress St., Chicago 12, Ill.  
 Rhein Engineering, 120 W. North St., Springfield, Ohio  
 Ripley Co., Torrington, Conn.  
 Sciaky Bros., 4915 W. 67th St., Chicago 33, Ill.  
 Simpson Mfg. Co., Inc., Mark, 188 W. 4th St., New York 14, N. Y.  
 Standard Electric Time Co., 89 Logan St., Springfield, Mass.  
 Tagliabue Div., C. J., Portable Products Corp., 550 Park Ave., Brooklyn 5, N. Y.  
 Telechron Inc., Homer Ave., Ashland, Mass.

**CONVERTERS—Low Frequency**

Amplifier Corp. of America, 396 Broadway, New York, N. Y.  
 Ecor, Inc., 1501 W. Congress St., Chicago 7, Ill.  
 See Advertisement on Page 210  
 Electronic Measurements Co., Red Bank, N. J.  
 See Advertisement on Page 68  
 Furst Electronics, 800 W. North Ave., Chicago 22, Ill.  
 See Advertisement on Page 248  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Great Lakes Electric Mfg. Co., 17 S. Desplains St., Chicago 6, Ill.  
 Lorain Products Corp., 1122 F St., Lorain, Ohio  
 Press Wireless Mfg. Corp., 1475 Broadway, New York 18, N. Y.  
 Radio Mfg. Engineers, Inc., Peoria 6, Ill.  
 Sorensen & Co., 375 Fairfield Ave., Stamford, Conn.  
 See Advertisement on Page 154

**CONVERTERS—Vibrator Type**

American Television & Radio Co., 300 E. Fourth St., St. Paul 1, Minn.  
 Clarostat Mfg. Co. Inc., 285-7 6th St., Brooklyn, N. Y.  
 Cover Dual Signal Systems, Inc., Div. of Electra Voice Corp., 5215-25 Ravenswood Ave., Chicago 40, Ill.  
 Gem Radio & Television Co., 72 Cortlandt St., New York 6, N. Y.  
 Electronic Labs. Inc., 24 W. 24th St., Indianapolis, Ind.  
 Electronic Measurements Co., Red Bank, N. J.  
 See Advertisement on Page 63  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Maguire Industries Inc., Electronics Dept., Bridgeport, Conn.  
 Radio Mfg. Engineers Inc., Peoria, Ill.  
 Technical Devices Corp., Beaufort & Eagle Rock Ave., Roseland, N. J.

**CORD SETS**

A B C Products, Inc., 2131-35 Stoner Ave., W. Los Angeles 25, Calif.  
 Accurate Insulated Wire Corp., 25 Fox St., New Haven 1, Conn.  
 Alden Products Co., 117 No. Main St., Brockton 64, Mass.  
 Alpha Wire Corp., 50 Howard St., New York, N. Y.  
 American Electric Cable Co., Holyoke, Mass.  
 Avimeter Corp., 370 W. 35th St., New York 1, N. Y.  
 See Advertisement on Page 224  
 Baker-Phillips Co., 3057 Lyndale Ave. So., Minneapolis 8, Minn.  
 Banks Mfg. Co., 1105 W. Lawrence Ave., Chicago 40, Ill.  
 Belden Mfg. Co., 4647 W. Van Buren St., Chicago 44, Ill.  
 Birnbach Radio Co. Inc., 145 Hudson St., New York, N. Y.  
 Bruce Electronics Co., 1478 Coney Island Ave., Brooklyn, N. Y.  
 Buggie & Co., H. H., 2141 Madison Ave., Toledo 1, Ohio  
 Columbia Wire & Supply Co., 5734 N. Elson Ave., Chicago 30, Ill.  
 See Advertisement on Page 206  
 Consolidated Wire & Associated Companies, 1635 S. Clinton St., Chicago 16, Ill.  
 Cornish Wire Co., 15 Park Row, New York, N. Y.  
 See Advertisement on Page 170  
 Davis & Murphy, 5252 Broadway, Chicago 40, Ill.  
 Diamond Wire & Cable Co., 128 E. 16th St., Chicago Heights, Ill.  
 Eckstein Radio & Television Co., 914 La Salle Ave., Minneapolis 2, Minn.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 General Cable Corp., 420 Lexington Ave., New York, N. Y.  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 General Insulated Wire Works Inc., 69 Gordon Ave., Providence 5, R. I.  
 Haft & Sons Inc., 79 Third St., Brooklyn, N. Y.  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Interstate Mfg. Corp., 125 Sussex Ave., Newark 4, N. J.  
 See Advertisements on Pages 180, 215

Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Lenz Electric Mfg. Co., 1751 N. Western Ave., Chicago, Ill.  
 Lowell Insulated Wire Co., Lowell, Mass.  
 Molded Insulation Co., Aircraft Control Div., 335 E. Price St., Philadelphia, Pa.  
 Plastic Wire & Cable Corp., Norwich, Conn.  
 Plastoid Corp., 19 W. 44th St., New York 18, N. Y.  
 See Advertisement on Page 63  
 Runzel Cord & Wire Co., 4731 W. Montrose Ave., Chicago, Ill.  
 U. S. Rubber Co., 1230 Sixth Ave., New York 20, N. Y.  
 Waterbury Companies, Inc., Waterbury 90, Conn.  
 Whitney Blake Co., New Haven, Conn.  
 Wood Electric Co., Inc., C. D., 826 Broadway, New York 3, N. Y.

**CORDS—Dial Cords & Cables**

Aerolite Electronic Hardware Corp., 24 Cliff St., Jersey City, N. J.  
 See Advertisement on Page 246  
 Alpha Wire Corp., 50 Howard St., New York, N. Y.  
 American Electric Cable Co., Holyoke, Mass.  
 Birnbach Radio Co. Inc., 145 Hudson St., New York, N. Y.  
 Consolidated Wire & Associated Companies, 1635 S. Clinton St., Chicago 16, Ill.  
 Cords Ltd., 26 Camp St., Newark 25, N. J.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 Flexo Wire Co., 638 Genesee St., W., Syracuse, N. Y.  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkway., Brooklyn, N. Y.  
 New England Electrical Works Inc., Lisbon, N. H.  
 Schott Co., Walter L., 9306 Santa Monica Blvd., Beverly Hills, Calif.  
 Wood Electric Co., Inc., C. D., 826 Broadway, New York 3, N. Y.

**CORDS—Line**

Accurate Insulated Wire Corp., 25 Fox St., New Haven 1, Conn.  
 Aerolite Electronic Hardware Corp., 24 Cliff St., Jersey City, N. J.  
 See Advertisement on Page 246  
 Alden Products Co., 117 No. Main St., Brockton 64, Mass.  
 Alpha Wire Corp., 50 Howard St., New York, N. Y.  
 American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 Birnbach Radio Co. Inc., 145 Hudson St., New York, N. Y.  
 Boston Insulated Wire & Cable Co., 63 Bay St., Boston 25, Mass.  
 Bruce Electronics Co., 1478 Coney Island Ave., Brooklyn 30, N. Y.  
 Collyer Insulated Wire Co., 249 Roosevelt Ave., P. O. Box 61, Pawtucket, R. I.  
 Columbia Wire & Supply Co., 5734 N. Elson Ave., Chicago 30, Ill.  
 See Advertisement on Page 206  
 Consolidated Wire & Associated Companies, 1635 S. Clinton St., Chicago 16, Ill.  
 Cords Ltd., 26 Camp St., Newark 5, N. J.  
 Cornish Wire Co., 15 Park Row, New York, N. Y.  
 See Advertisement on Page 170  
 Diamond Wire & Cable Co., 128 E. 16th St., Chicago Heights, Ill.  
 Eagle Electric Mfg. Co., Inc., 23-10 Bridge Plaza S., Long Island City, N. Y.  
 Englewood Electrical Supply Co., 5801 S. Halsted St., Chicago, Ill.  
 Essex Wire Corp., 1601 Wall St., Ft. Wayne, Ind.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 General Cable Corp., 420 Lexington Ave., New York, N. Y.  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 General Insulated Wire Works Inc., 69 Gordon Ave., Providence 5, R. I.  
 Haft & Sons Inc., 79 Third St., Brooklyn, N. Y.  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Interstate Mfg. Corp., 125 Sussex Ave., Newark 4, N. J.  
 See Advertisements on Pages 180, 215

J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkway., Brooklyn, N. Y.  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Lowell Insulated Wire Co., Lowell, Mass.  
 Plastic Wire & Cable Corp., Norwich, Conn.  
 Plastoid Corp., 19 W. 44th St., New York 18, N. Y.  
 See Advertisement on Page 63  
 Roebing's Sons Co., John A., 640 Broad St., Trenton 2, N. J.  
 Rome Cable Corp., 330 Ridge St., Rome, N. Y.  
 See Advertisement on Page 80  
 Runzel Cord & Wire Co., 4731 W. Montrose Ave., Chicago, Ill.  
 Rupp's Assembling & Mfg. Works, 2341 N. Seminary Ave., Chicago 14, Ill.  
 Schott Co., Walter L., 9306 Santa Monica Blvd., Beverly Hills, Calif.  
 Whitney Blake Co., New Haven, Conn.

**CORDS—Line Resistance**

Alden Products Co., 117 Main St., Brockton 64, Mass.  
 Alpha Wire Corp., 50 Howard St., New York, N. Y.  
 American Electric Cable Co., Holyoke, Mass.  
 Birnbach Radio Co. Inc., 145 Hudson St., New York, N. Y.  
 Clarostat Mfg. Co. Inc., 285-7 6th St., Brooklyn, N. Y.  
 Columbia Wire & Supply Co., 5734 N. Elson Ave., Chicago 30, Ill.  
 See Advertisement on Page 206  
 Consolidated Wire & Associated Companies, 1635 S. Clinton St., Chicago 16, Ill.  
 Cords Ltd., 26 Camp St., Newark 25, N. J.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 Gem Radio & Television Co., 72 Cortlandt St., New York 6, N. Y.  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkway., Brooklyn, N. Y.

**CORDS—Patch**

Alden Products Co., 117 No. Main St., Brockton 64, Mass.  
 Amalgamated Radio Television Corp., 476 Broadway, New York 13, N. Y.  
 Audio Development Co., 2833 13th Ave. S., Minneapolis 7, Minn.  
 See Advertisement on Page 26  
 Avimeter Corp., 370 W. 35th St., New York 1, N. Y.  
 See Advertisement on Page 224  
 Boston Insulated Wire & Cable Co., 63 Bay St., Boston 25, Mass.  
 Buggie & Co., H. H., 2141 Madison Ave., Toledo 1, Ohio  
 Cords Ltd., 26 Camp St., Newark 5, N. J.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Runzel Cord & Wire Co., 4731 W. Montrose Ave., Chicago, Ill.  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89  
 Wynn Mfg. Div., Hudson Supply Co., 401 N. 27th St., Richmond, Va.

**CORES—Ceramic**

Electrical Refractories Co., 50 Clark St., East Palestine, Ohio

**CORES—Hipersil**

Westinghouse Electric Corp., Transformer Div., Sharon, Pa.

**CORES—Iron**

Amplex Div., Chrysler Corp., Detroit 31, Mich.

Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.  
 See Advertisements on Pages 257 to 260  
 National Moldite Co., 25 Montgomery St., Hillside 5, N. J.  
 See Advertisement on Page 225  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisement on Inside Back Cover & Back Cover, 251  
 Stanwyck-Webb Magnetic Core Corp., 142-144 Highland Ave., Ossining, N. Y.

## CORES—Powdered Iron

Aladdin Radio Industries, Inc., 501 W. 35th St., Chicago 16, Ill.  
 Crowley & Co. Inc., Henry L., 1 Central Ave., West Orange, N. J.  
 Davis & Murphy, 5252 Broadway, Chicago 40, Ill.  
 Lenkurt Electric Co., 1138 Howard St., San Francisco 3, Calif.  
 National Moldite Co., 25 Montgomery St., Hillside 5, N. J.  
 See Advertisement on Page 225  
 Pyroferic Corp., 175 Varick St., New York, N. Y.  
 See Advertisement on Page 220  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisement on Inside Back Cover & Back Cover, 251  
 Ross Mfg. Co., 2241 S. Indiana Ave., Chicago 27, Ill.  
 Speer Resistor Corp., St. Marys, Pa.  
 Stackpole Carbon Co., St. Marys, Pa.  
 Stanwyck-Webb Magnetic Core Corp., 142-144 Highland Ave., Ossining, N. Y.

## CORES—Slug Tuning Units

American Coil & Engineering Co., 1271 N. Hermitage Ave., Chicago 22, Ill.  
 Lenkurt Electric Co., 1138 Howard St., San Francisco 3, Calif.  
 Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisement on Inside Back Cover & Back Cover, 251  
 Ross Mfg. Co., 2241 S. Indiana Ave., Chicago 27, Ill.  
 Stackpole Carbon Co., St. Marys, Pa.

## CORTICAL STIMULATORS

Electrodyn Co., The, 399 Boylston St., Boston 15, Mass.  
 Electro Medical Lab. Inc., Holliston, Mass.  
 Electronic Engineers, 1039-B Pacific St., Santa Monica, Calif.  
 Lektra Labs., 30 E. 10th St., New York, N. Y.  
 Process & Instruments, 60 Greenpoint Ave., Brooklyn 22, N. Y.  
 Rahm Instruments, Inc., 12 W. Broadway New York 7, N. Y.

## COUNTERS, ELECTRON AND NUCLEAR

See Indicators, Geiger Counter

## COUPLINGS, SHAFT—Reducers and Extensions

Amalgamated Radio Television Corp., 476 Broadway, New York 13, N. Y.  
 Birnbach Radio Co. Inc., 145 Hudson St., New York, N. Y.  
 Bud Radio Inc., 2118 E. 55th St., Cleveland 3, Ohio  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44  
 National Co., Inc., 61 Sherman St., Malden 48, Mass.  
 See Advertisement on Page 78  
 Owens-Illinois Glass Co., Plastics Div., Toledo, Ohio

## COUPLINGS, SHAFT—Rigid & Flexible

Aircraft Radio Corp., Boonton, N. J.  
 See Advertisement on Page 185  
 Cardwell Mfg. Co., Allen D., 97 Whiting St., Plainville, Conn.  
 Centralab, Div. of Globe Union Inc., 900 Keefe Ave., Milwaukee 1, Wisc.  
 See Advertisements on Pages 24, 25  
 Crocker-Wheeler Electric Mfg. Co., Div. of Joshua Hendy Iron Works, Ampere, N. J.  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 Hammarlund Mfg. Co., 460 W. 34th St., New York 1, N. Y.  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Johnson Co., E. F., Waseca, Minn.  
 Lord Mfg. Co., 1635 W. 12th St., Erie, Pa.  
 See Advertisement on Page 19  
 Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44  
 National Co., Inc., 61 Sherman St., Malden 48, Mass.  
 See Advertisement on Page 78  
 Piezo Mfg. Corp., 110 E. 42nd St., New York 17, N. Y.  
 Stow Mfg. Co., 445 State St., Binghamton, N. Y.  
 White Dental Mfg. Co., S. S., Industrial Div., 10 E. 40th St., New York, N. Y.  
 See Advertisement on Page 66

## CRYSTAL ANALYSIS EQUIPMENT

Electronic Measurements Co., Red Bank, N. J.  
 See Advertisement on Page 68  
 Elematic Equipment Corp., 6046 S. Wentworth Ave., Chicago 21, Ill.  
 Monitor Products Co., 815 Fremont St., So. Pasadena, Calif.  
 North American Philips Co., Inc., 100 E. 42nd St., New York 17, N. Y.

## CRYSTAL CARTRIDGES

Brush Development Co., 3405 Perkins Ave., Cleveland 14, Ohio  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Shure Brothers, 225 W. Huron St., Chicago, Ill.  
 See Advertisement on Page 157  
 Sylvania Electric Prods., Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161  
 Tibbetts Industries, Inc., Camden, Maine  
 Webster Electric Co., 1900 Clark St., Racine, Wisc.  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89

## CRYSTAL HOLDERS

Bhiley Electric Co., Union Station Bldg., Erie, Pa.  
 See Advertisement on Page 67  
 Breon Labs., 607 Rose St., Williamsport, Pa.  
 Burnett Radio Lab., Wm. W. L., 4814 Idaho St., San Diego, Calif.  
 C. W. Mfg. Co., 1124 Parkway Dr., Elmonte, Calif.  
 Centralab, Div. of Globe Union Inc., 900 Keefe Ave., Milwaukee 1, Wisc.  
 See Advertisements on Pages 24, 25  
 Colonial Electric Products Co., North Bergen, N. J.  
 Crowley & Co. Inc., Henry L., 1 Central Ave., West Orange, N. J.  
 Crystal Products Co., 1519 McGee Trafficway, Kansas City, Mo.  
 Crystal Research Labs. Inc., 29 Allyn St., Hartford, Conn.  
 Dallons Labs., 5066 Santa Monica Blvd., Los Angeles, Calif.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 Franklin Mfg. Co., A. W., 43-20 34th St., Long Island City, N. Y.  
 See Advertisement on Page 98  
 Gasket Engineering Co., 2440 Charlotte St., Kansas City 8, Mo.  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A

Hermetic Seal Products Co., 414 Morris Ave., Newark 3, N. J.  
 Hollister Crystal Co., Boulder, Colo.  
 Howard Mfg. Co., 15 Fourth St., Council Bluffs, Iowa  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Leuck Crystal Lab., 245 S. 11th St., Lincoln, Neb.  
 Miller, August E., 9226 Hudson Blvd., North Bergen, N. J.  
 Monitor Products Co., 815 Fremont St., So. Pasadena, Calif.  
 Multi-Products Tool Co., 123 Sussex Ave., Newark 4, N. J.  
 See Advertisement on Page 246  
 Mykroy Inc., 1917 N. Springfield Ave., Chicago 47, Ill.  
 North America Philips Co., Inc., 100 E. 42nd St., New York 17, N. Y.  
 Petersen Radio Co., 2800 W. Broadway, Council Bluffs, Iowa  
 Precision Piezo Service, 427 Mayflower St., Baton Rouge, La.  
 Premier Crystal Labs. Inc., 63 Park Row, New York, N. Y.  
 Rice's Sons, Inc., Bernard, 325 Fifth Ave., New York 16, N. Y.  
 Scientific Radio Service, 4301 Sheridan St., University Park, Md.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B  
 Standard Crystal Co., 321 East Gregory, Kansas City 5, Mo.  
 Standard Piezo Co., Woolworth Bldg., Carlisle, Pa.  
 Stupakoff Ceramic & Mfg. Co., Latrobe, Pa.  
 Telicon Corp., 851 Madison Ave., New York 21, N. Y.  
 Valpey Crystals, Highland St., Holliston, Mass.  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 Westline Crystal Co., 10860 Santa Monica Blvd., Los Angeles 25, Calif.

## CRYSTALS—Frequency Control

Aeronautical Radio Mfg. Co., 155 First St., Mineola, N. Y.  
 Burnett Radio Lab., Wm. W. L., 4814 Idaho St., San Diego, Calif.  
 Commercial Equipment Co., 1416 McGee St., Kansas City, Mo.  
 Dallons Labs., 5066 Santa Monica Blvd., Los Angeles, Calif.  
 Eidson Electronic Co., 1802 N. Third St., Temple, Texas  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Hudson American Corp., 25 W. 43rd St., New York 18, N. Y.  
 Hunt Corp., The, 544 Hanover St., Carlisle, Pa.  
 See Advertisement on Page 155  
 Kaar Engineering Co., 619 Emerson St., Palo Alto, Calif.  
 Miller, August E., 9226 Hudson Blvd., North Bergen, N. J.  
 Monitor Products Co., 815 Fremont St., So. Pasadena, Calif.  
 North American Philips Co., Inc., 100 E. 42nd St., New York 17, N. Y.  
 Petersen Radio Co., 2800 W. Broadway, Council Bluffs, Iowa  
 Precision Piezo Service, 427 Mayflower St., Baton Rouge, La.  
 Premier Crystal Labs. Inc., 63 Park Row, New York, N. Y.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisement on Inside Back Cover & Back Cover, 251  
 Radio Specialty Mfg. Co., 2023 S. E. Sixth Ave., Portland 14, Ore.  
 Reeves-Hoffman Corp., 215 E. 91st St., New York, N. Y.  
 See Advertisement on Page 180  
 Scientific Radio Products Co., 738 W. Broadway, Council Bluffs, Iowa  
 Standard Piezo Co., Woolworth Bldg., Carlisle, Pa.  
 Telicon Corp., 851 Madison Ave., New York 21, N. Y.  
 Valpey Crystals, Highland St., Holliston, Mass.  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89

## CRYSTALS—Frequency Multiplier

Commercial Equipment Co., 1416 McGee St., Kansas City, Mo.

Crystal Products Co., 1519 McGee Trafficway, Kansas City, Mo.  
 Edison Electronic Co., 1802 N. Third St., Temple, Texas  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
 Hudson American Corp., 25 W. 43rd St., New York 18, N. Y.  
 Hunt Corp., The, 544 Hanover St., Carlisle, Pa.  
 See Advertisement on Page 155  
 Miller, August E., 9226 Hudson Blvd., North Bergen, N. J.  
 Monitor Products Co., 815 Fremont St., So. Pasadena, Calif.  
 North American Phillips Co., Inc., 100 E. 42nd St., New York 17, N. Y.  
 Radio Specialty Mfg. Co., 2023 S. E. Sixth Ave., Portland 14, Ore.  
**Reeves-Hoffman Corp., 215 E. 91st St., New York, N. Y.**  
 See Advertisement on Page 180  
 Scientific Radio Products Co., 738 W. Broadway, Council Bluffs, Iowa  
 Standard Piezo Co., Woolworth Bldg., Carlisle, Pa.  
 Telicon Corp., 851 Madison Ave., New York 21, N. Y.  
 Valpey Crystals, Highland St., Holliston, Mass.  
**Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.**  
 See Advertisements on Pages 88, 89

**CRYSTALS—Frequency Standard**

Bibley Electric Co., Union Station Bldg., Erie, Pa.  
 See Advertisement on Page 67  
 Burnett Radio Lab., Wm. W. L., 4814 Idaho St., San Diego, Calif.  
 Commercial Equipment Co., 1416 McGee St., Kansas City, Mo.  
 Dallons Labs., 5066 Santa Monica Blvd., Los Angeles, Calif.  
 Edison Electronic Co., 1802 N. Third St., Temple, Texas  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
 Hudson American Corp., 25 W. 43rd St., New York 18, N. Y.  
 Hunt Corp., The, 544 Hanover St., Carlisle, Pa.  
 See Advertisement on Page 155  
 Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44  
 Miller, August E., 9226 Hudson Blvd., North Bergen, N. J.  
 Monitor Products Co., 815 Fremont St., So. Pasadena, Calif.  
 North American Phillips Co., Inc., 100 E. 42nd St., New York 17, N. Y.  
 Petersen Radio Co., 2800 W. Broadway, Council Bluffs, Iowa  
 Premier Crystal Labs. Inc., 63 Park Row, New York, N. Y.  
 Precision Piezo Service, 427 Mayflower St., Baton Rouge, La.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Radio Specialty Mfg. Co., 2023 S. E. Sixth Ave., Portland 14, Oregon  
**Reeves-Hoffman Corp., 215 E. 91st St., New York, N. Y.**  
 See Advertisement on Page 180  
 Scientific Radio Products Co., 738 W. Broadway, Council Bluffs, Iowa  
 Standard Piezo Co., Woolworth Bldg., Carlisle, Pa.  
 Valpey Crystals, Highland St., Holliston, Mass.  
**Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.**  
 See Advertisements on Pages 88, 89  
 Westline Crystal Co., 10860 Santa Monica Blvd., Los Angeles 25, Calif.

**CRYSTALS—i-f Filter**

Commercial Equipment Co., 1416 McGee St., Kansas City, Mo.  
 Crystal Products Co., 1519 McGee Trafficway, Kansas City, Mo.  
 Crystal Research Labs. Inc., 29 Allyn St., Hartford, Conn.  
 Dallons Labs., 5066 Santa Monica Blvd., Los Angeles, Calif.  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A

Monitor Products Co., 815 Fremont St., So. Pasadena, Calif.  
 North American Phillips Co., Inc., 100 E. 42nd St., New York 17, N. Y.  
 Premier Crystal Labs. Inc., 63 Park Row, New York, N. Y.  
 Radio Specialty Mfg. Co., 2023 S. E. Sixth Ave., Portland 14, Ore.  
**Reeves-Hoffman Corp., 215 E. 91st St., New York, N. Y.**  
 See Advertisement on Page 180  
 Standard Piezo Co., Woolworth Bldg., Carlisle, Pa.  
 Valpey Crystals, Highland St., Holliston, Mass.  
 Westline Crystal Co., 10860 Santa Monica Blvd., Los Angeles 25, Calif.

**CRYSTALS—Microwave**

Aircraft Radio Corp., Boonton, N. J.  
 See Advertisement on Page 185  
 Commercial Equipment Co., 1416 McGee St., Kansas City, Mo.  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
 Hunt Corp., The, 544 Hanover St., Carlisle, Pa.  
 See Advertisement on Page 155  
**Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.**  
 See Advertisements on Pages 88, 89

**CRYSTALS—Piezoelectric**

Brush Development Co., 3405 Perkins Ave., Cleveland 14, Ohio

**CRYSTALS—Quartz**

American Gem & Pearl Co., 6 West 48th St., New York 19, N. Y.  
 Bassett, Inc., Rex, 500 SE Second St., Fort Lauderdale, Fla.  
**Bibley Electric Co., Union Station Bldg., Erie, Pa.**  
 See Advertisement on Page 67  
 Breon Labs., 607 Rose St., Williamsport, Pa.  
 Burnett Radio Lab., Wm. W. L., 4814 Idaho St., San Diego, Calif.  
 C. W. Mfg. Co., 1124 Parkway Dr., Elmonte, Calif.  
 Cambridge Thermonic Corp., 1445 Concord Ave., Cambridge, Mass.  
 Commercial Equipment Co., 1416 McGee St., Kansas City, Mo.  
 Crystal Products Co., 1519 McGee Trafficway, Kansas City, Mo.  
 Crystal Research Labs. Inc., 29 Allyn St., Hartford, Conn.  
 Dallons Labs., 5066 Santa Monica Blvd., Los Angeles, Calif.  
 Diamond Drill Carbon Co., 53-63 Park Row, New York 7, N. Y.  
 Dine and Co., Inc., F. E., 2221 Warwick Ave., Santa Monica, Calif.  
 Edison Electronic Co., 1802 N. Third St., Temple, Texas  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Hollister Crystal Co., Boulder, Colo.  
 Hudson American Corp., 25 W. 43rd St., New York 18, N. Y.  
 Hunt Corp., The, 544 Hanover St., Carlisle, Pa.  
 See Advertisement on Page 155  
 Kaar Engineering Co., 619 Emerson St., Palo Alto, Calif.  
 Kemlite Labs., 1809 N. Ashland Ave., Chicago, Ill.  
 Knights Co., James, 131 S. Wells St., Sandwich, Ill.  
 Leuck Crystal Lab., 245 S. 11th St., Lincoln, Neb.  
 Miller, August E., 9226 Hudson Blvd., North Bergen, N. J.  
 Monitor Products Co., 815 Fremont St., South Pasadena, Calif.  
 Nebel Lab., R. E., 1104 Lincoln Pl., Brooklyn, N. Y.  
 North American Phillips Co., Inc., 100 E. 42nd St., New York 17, N. Y.  
 Petersen Radio Co., 2800 W. Broadway, Council Bluffs, Iowa  
 Precision Piezo Service, 427 Mayflower St., Baton Rouge, La.  
 Premier Crystal Labs., Inc., 63 Park Row, New York, N. Y.  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover & Back Cover, 251

Radio Specialty Mfg. Co., 2023 S. E. 6th Ave., Portland 14, Oregon  
**Reeves-Hoffman Corp., 215 E. 91st St., New York, N. Y.**  
 See Advertisement on Page 180  
 Scientific Radio Products Co., 738 W. Broadway, Council Bluffs, Iowa  
 Scientific Radio Service, 4301 Sheridan St., University Park, Md.  
 Sentry Crystal Co., 206 S. W. Washington St., Portland 4, Ore.  
 Standard Coil Products Co., 2329 N. Pulaski Rd., Chicago 18, Ill.  
 Standard Crystal Co., 321 East Gregory, Kansas City 5, Mo.  
 Standard Piezo Co., Woolworth Bldg., Carlisle, Pa.  
 Telicon Corp., 851 Madison Ave., New York, N. Y.  
 Valpey Crystals, Highland St., Holliston, Mass.  
**Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.**  
 See Advertisements on Pages 88, 89  
 Westline Crystal Co., 10860 Santa Monica Blvd., Los Angeles 25, Calif.  
 Wilcox Electric Co., 1400 Chestnut St., Kansas City, Mo.

**CRYSTALS—Quartz Crystal Ultrasonic**

Bibley Electric Co., Union Station Bldg., Erie, Pa.  
 See Advertisement on Page 67  
 Commercial Equipment Co., 1416 McGee St., Kansas City, Mo.  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
 Hunt Corp., The, 544 Hanover St., Carlisle, Pa.  
 See Advertisement on Page 155  
 Kemlite Labs., 1809 N. Ashland Ave., Chicago, Ill.  
 Knights Co., James, 131 S. Wells St., Sandwich, Ill.  
 Miller, August E., 9226 Hudson Blvd., North Bergen, N. J.  
 Monitor Products Co., 815 Fremont St., So. Pasadena, Calif.  
 North American Phillips Co., Inc., 100 E. 42nd St., New York 17, N. Y.  
 Premier Crystal Labs. Inc., 63 Park Row, New York, N. Y.  
**Reeves-Hoffman Corp., 215 E. 91st St., New York, N. Y.**  
 See Advertisement on Page 180  
 Standard Piezo Co., Woolworth Bldg., Carlisle, Pa.

**CRYSTALS—Receiver Control**

Bassett Inc., Rex, 500 SE 2nd St., Ft. Lauderdale, Fla.  
 C. W. Mfg. Co., 1124 Parkway Dr., Elmonte, Calif.  
 Commercial Equipment Co., 1416 McGee St., Kansas City, Mo.  
 Dine and Co., Inc., F. E., 2221 Warwick Ave., Santa Monica, Calif.  
 Edison Electronic Co., 1802 N. Third St., Temple, Texas  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Hudson American Corp., 25 W. 43rd St., New York 18, N. Y.  
 Hunt Corp., The, 544 Hanover St., Carlisle, Pa.  
 See Advertisement on Page 155  
 Miller, August E., 9226 Hudson Blvd., North Bergen, N. J.  
 Monitor Products Co., 815 Fremont St., So. Pasadena, Calif.  
 Nebel Lab., R. E., 1104 Lincoln Pl., Brooklyn 13, N. Y.  
 Petersen Radio Co., 2800 W. Broadway, Council Bluffs, Iowa  
 Precision Piezo Service, 427 Mayflower St., Baton Rouge, La.  
 Premier Crystal Labs. Inc., 63 Park Row, New York, N. Y.  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Radio Specialty Mfg. Co., 2023 S. E. Sixth Ave., Portland 14, Ore.  
**Reeves-Hoffman Corp., 215 E. 91st St., New York, N. Y.**  
 See Advertisement on Page 180  
 Scientific Radio Products Co., 738 W. Broadway, Council Bluffs, Iowa  
 Standard Piezo Co., Woolworth Bldg., Carlisle, Pa.  
 Valpey Crystals, Highland St., Holliston, Mass.

## CRYSTALS—Rochelle Salt

Brush Development Co., The, 3405 Perkins Ave., Cleveland 14, Ohio  
Tibbetts Industries, Inc., Camden, Maine

## CRYSTALS—Silicon

Commercial Equipment Co., 1416 McGee St., Kansas City, Mo.  
Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
See Advertisements on Pages 88, 89

## CRYSTALS—Tourmaline

Hudson American Corp., 25 W. 43rd St., New York 18, N. Y.  
Miller, August E., 9226 Hudson Blvd., North Bergen, N. J.  
Premier Crystal Labs, Inc., 63 Park Row, New York, N. Y.  
Reeves-Hoffman Corp., 215 E. 91st St., New York, N. Y.  
See Advertisement on Page 180

## DECADE BOXES—Capacitance

Brown Engineering Co., 4635 S. E. Hawthorne Blvd., Portland 15, Oregon  
Freed Transformer Co., 72 Spring St., New York 12, N. Y.  
See Advertisement on Page 253  
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
Harvey Wells Electronics, Inc., North St., Southbridge, Mass.  
Industrial Instruments, Inc., 17 Pollack Ave., Jersey City 5, N. J.  
Leeds & Northrup Co., 4970 Stenton Ave., Philadelphia, Pa.  
Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
Radio Specialty Mfg. Co., 2023 S. E. Sixth Ave., Portland 14, Ore.  
Winslow Co., 9 Liberty St., Newark 5, N. J.

## DECADE BOXES—Inductance

Burnell & Co., 45 Warburton Ave., Yonkers 2, N. Y.  
See Advertisement on Page 192  
Freed Transformer Co., 72 Spring St., New York 12, N. Y.  
See Advertisement on Page 253  
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
Harvey Wells Electronics, Inc., North St., Southbridge, Mass.  
Magnetic Products Corp., The, Norwalk, Conn.  
Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
New York Transformer Co., Alpha, N. J.  
See Advertisement on Page 165  
Transformer Products Inc., 143 W. 51st St., New York, N. Y.  
United Transformer Corp., 150 Varick St., New York 13, N. Y.  
See Advertisement on Inside Front Cover

## DECADE BOXES—Resistance

American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
Brown Engineering Co., 4635 S. E. Hawthorne Blvd., Portland 15, Oregon  
Clarostat Mfg. Co., Inc., 285-7 6th St., Brooklyn, N. Y.  
Daven Co., 191 Central Ave., Newark 4, N. J.  
Electrodyne Co., The, 899 Boylston St., Boston 15, Mass.  
Electronic Development Lab., 2655 W. 19th St., Chicago 8, Ill.  
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
Harvey Wells Electronics, Inc., North St., Southbridge, Mass.  
Herbach & Rademan Inc., 517 Ludlow St., Phila. 6, Pa.  
Industrial Instruments, Inc., 17 Pollack Ave., Jersey City 5, N. J.  
Leeds & Northrup Co., 4970 Stenton Ave., Philadelphia, Pa.  
MacLeod & Hanopol, 24 Chelsea St., Charlestown 29, Mass.

Metropolitan & Instrument Co., 6 Murray St., New York 7, N. Y.  
Ohmite Mfg. Co., 4835 W. Flournoy St., Chicago 44, Ill.  
See Advertisement on Page 179  
Precision Resistor Co., 334 Badger Ave., Newark 8, N. J.  
Radio Specialty Mfg. Co., 2023 S. E. Sixth Ave., Portland 14, Ore.  
Rubicon Co., 3751 Ridge Ave., Philadelphia, Pa.  
Shallcross Mfg. Co., 10 Jackson Ave., Colingdale, Pa.  
Tech Laboratories, 337 Central Ave., Jersey City, N. J.  
Thwing-Albert Instrument Co., 5351 Pulaski Ave., Philadelphia 44, Pa.  
Transformer Products, Inc., 143 W. 51st St., New York, N. Y.  
Winslow Co., 9 Liberty St., Newark 5, N. J.

## DENSITOMETERS

Applied Research Labs., 4336 San Fernando Rd., Glendale 4, Calif.  
Communication Measurements Lab., Inc., 120 Greenwich St., New York, N. Y.  
Eastman Kodak Co., Industrial Photographic Sales Div., 343 State St., Rochester 4, N. Y.  
Electronic Mechanical Products Co., 13-15-17 N. Virginia Ave., Atlantic City, N. J.  
Jarrell-Ash Co., 165 Newbury St., Boston 16, Mass.  
Long Co., L. J., 186 Grand St., New York 13, N. Y.  
Madison Electrical Products Div., John G. Ruckelshaus Co., 74 Main St., Madison, N. J.  
Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.

## DERMOHMETERS

Electro-Medical Lab. Inc., Holliston, Mass.  
Electro-Physical Labs., Div. of Electronic Corp. of America, 25 W. 18th St., New York 11, N. Y.

## DETECTORS—Crystal

Aircraft Radio Corp., Boonton, N. J.  
See Advertisement on Page 185  
Carborundum Co., Global Div., Niagara Falls, N. Y.  
Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
See Advertisement on Page 166  
Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
See Advertisements on Pages 80A, 80B  
Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
See Advertisements on Pages 158 to 161  
Televiso Products, Inc., 7466 West Irving Park Road, Chicago 34, Ill.

## DETECTORS—Crystal Germanium

Carron Mfg. Co., 415 S. Aberdeen St., Chicago, Ill.  
Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
See Advertisements on Pages 158 to 161

## DETECTORS—Crystal Silicon

Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
See Advertisements on Pages 158 to 161

## DETECTORS—Explosive Gas

Bailey Meter Co., 1044 Ivanhoe Rd., Cleveland 10, Ohio  
Cardox Western, Inc., 151 North Ave. 19, Los Angeles 31, Calif.  
Heiland Research Corp., 130 E. 5th St., Denver 9, Colo.

## DETECTORS—Flaw & Defect

Branson Instruments, Inc., Joe's Hill Rd., Danbury, Conn.  
Brush Development Co., The, 3405 Perkins Ave., Cleveland 14, Ohio  
Development Engineering Co., Inc., The, 1818 Ashland St., Houston 8, Texas  
Electronic Engineers, 1039-B Pacific St., Santa Monica, Calif.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Globe Phone Mfg. Co., 2 Linden St., Reading, Mass.  
Sperry Products Inc., 15th & Willow Avenue, Hoboken, N. J.

## DETECTORS—Galena

Carron Mfg. Co., 415 S. Aberdeen St., Chicago, Ill.  
Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
See Advertisement on Page 166

## DETECTORS—Mercury Vapor

General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C

## DETECTORS—Null

Freed Transformer Co., 72 Spring St., New York 12, N. Y.  
See Advertisement on Page 253  
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
Harvey Radio Labs, Inc., 447 Concord Ave., Cambridge, Mass.  
Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.  
Technical Apparatus Co., 167 Washington St., Boston 8, Mass.  
Waterman Products Co., Inc., 2445-63 Emerald St., Phila. 25, Pa.  
See Advertisement on Page 76

## DETECTORS—r-f Null

Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.

## DETECTORS—Vibration

Brush Development Co., The, 3405 Perkins Ave., Cleveland 14, Ohio  
Consolidated Engineering Corp., 595 E. Colorado St., Pasadena 1, Calif.  
Electronic Control Corp., 1573 E. Forest St., Detroit, Mich.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.  
Heiland Research Corp., 130 E. 5th St., Denver 9, Colo.  
Shure Brothers, 225 W. Huron St., Chicago, Ill.  
See Advertisement on Page 157  
Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
See Advertisements on Pages 80A, 80B

## DIAL CRYSTALS

Austin Co., O., 335 Throop Ave., Brooklyn 21, N. Y.  
Chicago Die Mold Corp., 4001 Wrightwood Ave., Chicago 39, Ill.  
Croname, Inc., 3701 Ravenswood Ave., Chicago, Ill.  
Emeloid Co., Inc., 291 Laurel Ave., Arlington, N. J.  
Etched Products Corp., 39-01 Queens Blvd., Long Island City, N. Y.  
Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
See Advertisements on Pages 48A to 48D  
Felsenthal & Sons, G., 4100 W. Grand Ave., Chicago 51, Ill.

Flock Process Co., Velvetone Div., 3 Quincy St., Norwalk, Conn.  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.

See Advertisement on Page 90  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Kilburn Glass Co., Inc., J. R., 22 S. Worcester St., Charley, Mass.  
 La Magna Mfg. Co., Inc., East Rutherford, N. J.  
 Parisian Novelty Co., 3510 South Western Ave., Chicago 9, Ill.  
 Plastic Accessories, Inc., 460 Broome St., New York 13, N. Y.  
 Printloid Inc., 95 Mercer St., New York, N. Y.  
 See Advertisement on Page 198  
 R-9 Crystal Co., Inc., 907 Penn Ave., Pittsburgh, Pa.  
 Schott Co., Walter L., 9306 Santa Monica Blvd., Beverly Hills, Calif.  
 Searle Aero Industries, Inc., Orange, Calif.  
 Sillocks-Miller Co., 10 Parker Ave. W., So. Orange, N. J.

## DIALS—Instrument

Ansonia Clock Co., Inc., 103 Lafayette St., New York 13, N. Y.  
 Austin Co., O., 335 Throop Ave., Brooklyn 21, N. Y.  
 Beach Mfg., Inc., 322 East Beach Ave., Inglewood, Calif.  
 See Advertisement on Page 76  
 Bostonian Process Co., 40 W. 13th St., New York 11, N. Y.  
 Bud Radio, Inc., 2118 E. 55th St., Cleveland 3, Ohio  
 Cardy-Lundmark Co., 1801 W. Byron St., Chicago 13, Ill.  
 Consolidated Molded Products Corp., Scranton 2, Pa.  
 Electric Auto-Lite Co., The, Toledo 1, Ohio  
 Electric Tachometer Corp., Broad & Spring Garden Sts., Philadelphia, Pa.  
 Emeloid Co., Inc., The, 291 Laurel Ave., Arlington, N. J.  
 Enfield Art Works, Hazardville, Conn.  
 See Advertisement on Page 256  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 Felsenthal & Sons, G., 4100 W. Grand Ave., Chicago 51, Ill.  
 General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
 Grammes & Sons, Inc., L. F., 339 Union St., Allentown 2, Pa.  
 Helipot Co., 1011 Mission St., So. Pasadena, Calif.  
 See Advertisement on Page 229  
 Hopp Press Inc., 460 W. 34th St., New York, N. Y.  
 Insulating Fabricators of New England, Inc., 22 Elkins St., S. Boston, Mass.  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkway., Brooklyn, N. Y.  
 Marion Electrical Instrument Co., Manchester, N. H.  
 Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44  
 National Co., Inc., 61 Sherman St., Malden 48, Mass.  
 See Advertisement on Page 78  
 National Vulcanized Fibre Co., Wilmington, Del.  
 See Advertisement on Page 58  
 Nebel Lab., R. E., 104 Lincoln Pl., Brooklyn, N. Y.  
 New England Radiocrafters, 1156 Commonwealth Ave., Boston 34, Mass.  
 Plastic Accessories, Inc., 460 Broome St., New York 13, N. Y.  
 Plastic Fabricators Co., 440 Sansome St., San Francisco 11, Calif.  
 Premier Metal Etching Co., 21-03 44th Ave., Long Island City, N. Y.  
 See Advertisement on Page 206  
 Printloid Inc., 95 Mercer St., New York, N. Y.  
 See Advertisement on Page 198  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisement on Inside Back Cover & Back Cover, 251  
 Reynolds Metals Co., 2500 So. Third St., Louisville 1, Ky.  
 Screenmakers Co., 64 Fulton St., New York 7, N. Y.  
 Sillocks-Miller Co., 10 Parker Ave. W., So. Orange, N. J.  
 Sun Dial Corp., Runnymede Rd., Essex Falls, N. J.  
 Tablet & Ticket Co., 1021 W. Adams St., Chicago 7, Ill.  
 U. S. Radium Corp., 535 Pearl St., New York 7, N. Y.

Van Dyke Instruments, Inc., Tarzana, Calif.  
 Willson Plastics Div., Willson Magazine Camera Co., 6022 Media St., Philadelphia 31, Pa.

## DIALS—Precision

Acromark Co., 9-13 Morrell St., Elizabeth 4, N. J.  
 Austin Co., O., 335 Throop Ave., Brooklyn 21, N. Y.  
 Beach Mfg. Inc., 322 East Beach Ave., Inglewood, Calif.  
 See Advertisement on Page 76  
 Bostonian Process Co., 40 W. 13th St., New York 11, N. Y.  
 Bud Radio, Inc., 2118 E. 55th St., Cleveland 3, Ohio  
 Felsenthal & Sons, G., 4100 W. Grand Ave., Chicago 51, Ill.  
 Gaertner Scientific Corp., 1201 Wrightwood Ave., Chicago 14, Ill.  
 General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
 Helipot Corp., 1011 Mission St., So. Pasadena, Calif.  
 See Advertisement on Page 229  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Jorgensen Mfg. Co., 1547 West Farms Rd., New York 60, N. Y.  
 Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44  
 National Co., Inc., 61 Sherman St., Malden 48, Mass.  
 See Advertisement on Page 78  
 Plastic Accessories, Inc., 460 Broome St., New York 13, N. Y.  
 Printloid, Inc., 95 Mercer St., New York, N. Y.  
 See Advertisement on Page 198  
 Reynolds Metals Co., 2500 So. Third St., Louisville 1, Ky.  
 Sun Dial Corp., Runnymede Rd., Essex Falls, N. J.  
 Tablet & Ticket Co., 1021 W. Adams St., Chicago 7, Ill.  
 Van Dyke Instruments, Inc., Tarzana, Calif.

## DIAPHRAGMS

Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.  
 Hawley Products Co., St. Charles, Ill.  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Mica Insulator Co., Schenectady 1, N. Y.  
 National Carbon Co., Inc., 30 E. 42nd St., New York, N. Y.  
 See Advertisement on Page 167  
 National Molding Co., 2141 W. Washington Blvd., Los Angeles 7, Calif.  
 Bacon Electric Co., 52 E. 19th St., New York 3, N. Y.  
 See Advertisement on Page 213  
 Serdex, Inc., 91 Cambridge St., Boston, Mass.

## DIATHERMY

American Diathermy Productions, 10860 Santa Monica Blvd., Los Angeles 25, Calif.  
 American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
 Birnbach Radio Co., Inc., 145 Hudson St., New York, N. Y.  
 Bogen Co., David, 663 Broadway, New York 12, N. Y.  
 Branstor Electric Mfg. Co., 61-65 Gill Pl., Buffalo 13, N. Y.  
 Communications Co. Inc., 300 Greco Ave., Coral Gables 34, Fla.  
 Dallan Labs., 5066 Santa Monica Blvd., Los Angeles, Calif.  
 Edin Electronics Co., 207 Main Street, Worcester, Mass.  
 Electronic Supply Co., 207 Main St., Worcester, Mass.  
 General Electric X-Ray Corp., 2012 Jackson Blvd., Chicago 4, Ill.  
 Kelley-Koett Mfg. Co., Inc., The, Covington, Ky.  
 Liebel-Flarsheim Co., 303 W. Third St., Cincinnati 2, Ohio  
 Mooradian High Frequency Labs., 137 Park Place, Bogota, N. J.  
 Omicron Electric Co., 718 Columbus Ave., New York 25, N. Y.  
 Peerless Labs., 461-467 10th Ave., New York 18, N. Y.  
 Polk Electronics, 119 Bleeker St., New York 12, N. Y.

Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.  
 Standard Technical Devices, Inc., 129 Livingston St., Brooklyn 2, N. Y.  
 Terma Electric Co., 20 W. 22nd St., New York, N. Y.  
 Thermionic Engineering Corp., Pompton Plains, N. J.  
 Wappler, Inc., 27 W. 24th St., New York 10, N. Y.

## DIATHERMY ACCESSORIES

Birnbach Radio Co., Inc., 145 Hudson St., New York, N. Y.  
 Dallans Labs., 5066 Santa Monica Blvd., Los Angeles, Calif.  
 Lektra Labs., 30 E. 10th St., New York, N. Y.  
 Liebel-Flarsheim Co., 303 W. Third St., Cincinnati 2, Ohio  
 Peerless Labs., 461-467 10th Ave., New York 18, N. Y.  
 Polk Electronics, 119 Bleeker St., New York 12, N. Y.  
 Standard Technical Devices, 129 Livingston St., Brooklyn 2, N. Y.  
 Wappler, Inc., 27 W. 24th St., New York 10, N. Y.

## DIELECTRIC HEATING

See Heating, Dielectric

## DIELECTRICS—Liquids &amp; Solids

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 Dow Corning Corp., Midland, Mich.  
 Electric Eye Equipment Co., 16 W. Fairchild St., Danville, Ill.  
 General Ceramics & Steatite Corp., Keasbey, N. J.  
 See Advertisement on Page 79  
 Halowax Prods. Div., Union Carbide & Carbon Corp., 30 E. 42nd St., New York, N. Y.  
 Insulation Mfrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.  
 See Advertisement on Page 87  
 Mica Insulator Co., Schenectady 1, N. Y.

## DIES

Ace Mfg. Corp., 1255 E. Erie Ave., Philadelphia 24, Pa.  
 Acromark Co., 9-13 Morrell St., Elizabeth 4, N. J.  
 Arnessen Electric Co., Inc., 116 Broome St., New York 4, N. Y.  
 Congress Tool & Die Co., Congress Die Casting Div., 3750 E. Outer Dr., Detroit, Mich.  
 Crescent Industries, Inc., 4140 Belmont Ave., Chicago 41, Ill.  
 Dayton Acme Co., 930 York St., Cincinnati 14, Ohio  
 Do-All Co., 1301 Washington Ave. S., Minneapolis 4, Minn.  
 Doehler-Jarvis Corp., 386 Fourth Ave., New York 16, N. Y.  
 Edwards Inc., T. J., 210 South St., Boston 5, Mass.  
 Flock Process Co., Velvetone Div., 3 Quincy St., Norwalk, Conn.  
 Gardiner Mfg. Co., 2711 Union St., Oakland 7, Calif.  
 Haydu Bros., Plainfield, N. J.  
 Hovis Screwlock Co., 8100 E. Nine Mile Rd., Van Dyke, Mich.  
 La Magna Mfg. Co., Inc., East Rutherford, N. J.  
 Minute Man Products, Inc., 309 E. 22nd St., New York 10, N. Y.  
 Multi-Products Tool Co., 123 Sussex Ave., Newark 4, N. J.  
 See Advertisement on Page 246  
 National Vulcanized Fibre Co., Wilmington, Del.  
 See Advertisement on Page 58  
 North American Phillips Co., Inc., 100 E. 42nd St., New York 17, N. Y.  
 Paul & Beekman Div., Portable Products Corp., 1801 Cortland St., Philadelphia 48, Pa.  
 Red Arrow Electric Corp., 100 Coit St., Irvington, N. J.  
 Searle Aero Industries, Inc., Orange, Calif.

Simonds Machine Co., Inc., 246-48 Worcester St., Southbridge, Mass.  
 Sperman Metal Specialties, 2199 E. 21st St., Brooklyn 29, N. Y.  
 Spitfire Tools, Inc., 3931-35 North Pulaski Rd., Chicago 41, Ill.  
 Swanson Tool & Machine Products, 810-14 E. 8th St., Erie, Pa.  
 Switchcraft, Inc., 1735 Diversey Parkway, Chicago 14, Ill.  
 Taylor Mfg. Co., 3078 W. Meinecke Ave., Milwaukee 10, Wisc.  
 Thomas & Skinner Steel Products Co., 1122 E. 23rd St., Indianapolis 5, Ind.  
 Tri-United Plastics Corp., 390 Nye Ave., Irvington, N. J.  
 Viewlex Inc. Div. of Andrews & Perillo, 39-30 Crescent St., Long Island City, N. Y.  
 Walter Co., S., 144 Centre St., Brooklyn 31, N. Y.  
 Whistler & Sons, Inc., S. B., 752 Military Rd., Buffalo 17, N. Y.  
 Wiedemann Machine Co., 1815 W. Sedgley Ave., Philadelphia 22, Pa.

## DILATOMETERS—Automatic Recording

Bristol Co., The, Waterbury 91, Conn.  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161

## DISCS—Blank Recording

Advance Recording Products Co., 36-12 34th St., L. I. City, N. Y.  
 Allied Recording Products Co., 21-09 43rd Ave., Long Island City 1, N. Y.  
 See Advertisement on Page 233  
 Audio Devices, Inc., 444 Madison Ave., New York 22, N. Y.  
 See Advertisement on Page 91  
 Duotone Co., 799 Broadway, New York, N. Y.  
 Gould Moody Co., 395 Broadway, New York, N. Y.  
 See Advertisement on Page 165  
 Mirror Record Corp., 1133 Broadway, New York 10, N. Y.  
 Presto Recording Corp., 242 W. 55th St., New York, N. Y.  
 See Advertisements on Pages 50, 51  
 Recordisc Corp., 395 Broadway, New York, N. Y.  
 Recotone Corp., 212 Fifth Ave., New York, N. Y.  
 Reeves Soundcraft Corp., 10 E. 52nd St., New York 22, N. Y.  
 See Advertisement on Page 208  
 Sound Devices Co., 160 East 116th St., New York 29, N. Y.  
 Wilcox-Gay Corp., Charlotte, Mich.  
 Zephyr Products Corp., 160 E. 116th St., New York 29, N. Y.

## DRAFTING EQUIPMENT

American Photocopy Equipment Co., 2849 N. Clark St., Chicago, Ill.  
 Arkwright Finishing Co., Providence, R. I.  
 Bruning Co., Inc., Charles, 4700 Montrose Ave., Chicago 41, Ill.  
 Cardinell Corp., Montclair, N. J.  
 Dietzgen Co., Eugene, 2425 Sheffield Ave., Chicago, Ill.  
 Dixon Crucible Co., Joseph, Jersey City, N. J.  
 Eagle Pencil Co., 703 East 13th St., New York, N. Y.  
 Eberhard Faber Pencil Co., 37 Greenpoint Ave., Brooklyn 22, N. Y.  
 Engineers Specialties Div., Universal Engraving & Colorplate Co., 980 Ellicott Street, Buffalo 8, N. Y.  
 Faber, Inc., A. W., 41 Dickerson St., Newark 4, N. J.  
 Jiffy Sales Co., 1820 East 37th St., Cleveland 14, Ohio  
 Keuffel & Esser Co., Hoboken, N. J.  
 Koh-i-Noor Pencil Co., Bloomsbury, N. J.  
 National Co., Inc., 61 Sherman St., Malden 48, Mass.  
 See Advertisement on Page 78  
 Paragon-Revolute Corp., 71 South Ave., Rochester 4, N. Y.  
 Pease Company, C. F., 2601 W. Irving Park Rd., Chicago 18, Ill.  
 Peck & Harvey, 5736-38 N. Western Ave., Chicago 45, Ill.  
 United States Blue Print Paper Co., 207 S. Wabash Ave., Chicago, Ill.  
 Universal Drafting Machine Co., 3110 Payne Ave., Cleveland 14, Ohio

Weber Co., F., 1220 Buttonwood St., Philadelphia 23, Pa.  
 Weil & Co., J. H., 1315 Cherry St., Philadelphia 7, Pa.

## DRIVERS—Recording

Clarke Instrument Corp., 910 King St., Silver Spring, Md.  
 Press Wireless Mfg. Corp., 1475 Broadway, New York 18, N. Y.  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89

## DRIVES—Antenna Mechanical

Footo Brothers Gear & Machine Corp., 5225 S. Western Blvd., Chicago 9, Ill.

## DRIVES—Small Electric Drive Mechanisms

Electric Tachometer Corp., Broad & Spring Garden Sts., Philadelphia, Pa.  
 Kollman Instrument Div. of Square D Co., 80-08 45th Ave., Elmhurst, N. Y.  
 See Advertisement on Page 46  
 McElroy Mfg. Corp., Littleton, Mass.  
 Magnetic Products Corp., The, Norwalk, Conn.  
 Price Electric Corp., East Church and 2nd St., Frederick, Md.

## DRYERS, ELECTRONIC—Dehydration and Drying

Barrett Co., Leon J., P. O. Box 378, Worcester 1, Mass.  
 Despatch Oven Co., 619 S. E. Eighth St., Minneapolis 14, Minn.  
 Electronic Processes Corp., 249 Richards Rd., Ridgewood, N. J.  
 Fostoria Pressed Steel Corp., Fostoria, Ohio  
 Reeves-Hoffman Corp., 215 E. 91st St., New York, N. Y.  
 See Advertisement on Page 180

## DYNAMOMETERS

Continental Electric Co., Inc., 323-327 Ferry St., Newark 5, N. J.  
 Dillon & Co., Inc., W. C., 5410 W. Harrison St., Chicago 44, Ill.  
 Electric Products Co., 1725 Clarkstone Rd., Cleveland 12, Ohio  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements, on Pages 96B, 96C  
 Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.  
 L. A. B. Corp., 31 Union Pl., Summit, N. J.  
 Lear, Inc., 110 Ionia Ave., N. W., Grand Rapids 2, Mich.  
 Rawson Electrical Instrument Co., 110 Potter St., Cambridge 42, Mass.  
 See Advertisement on Page 244  
 Statham Labs., 8222 Beverly Blvd., Los Angeles 36, Cal.  
 Taylor Mfg. Co., 3078 W. Meinecke Ave., Milwaukee 10, Wisc.  
 Thwing-Albert Instrument Co., 5351 Pulaski Ave., Philadelphia 44, Pa.  
 Westinghouse Electric Corp., Motor Div., Buffalo, N. Y.

## DYNAMOTORS

See Generators, Power

## ELECTRO MAGNETS

See Magnets

## ELECTROCARDIOGRAPHS

Bogen Co., David, 663 Broadway, New York 12, N. Y.  
 Edin Electronics Co., 207 Main Street, Worcester, Mass.

Electro Physical Laboratories, Div. of Electronic Corp. of America, 25 W. 18th St., New York 11, N. Y.  
 Electronic Engineers, 1039-B Pacific St., Santa Monica, Calif.  
 Electronic Supply Co., 207 Main St., Worcester, Mass.  
 General Electric X-Ray Corp., 2012 Jackson Blvd., Chicago 4, Ill.  
 Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.  
 Rahm Instruments, Inc., 12 W. Broadway, New York 7, N. Y.  
 Sanborn Co., 39 Osborne St., Cambridge 39, Mass.  
 Thermionic Engineering Corp., Pompton Plains, N. J.

## ELECTRODYNAMOMETERS

Process & Instruments, 60 Greenpoint Ave., Brooklyn 22, N. Y.  
 Rawson Electrical Instrument Co., 110 Potter St., Cambridge 42, Mass.  
 See Advertisement on Page 244  
 Roller-Smith, Bethlehem, Pa.  
 See Advertisement on Page 214  
 Triplett Electrical Instrument Co., 286 Harmon Road, Bluffton, Ohio

## ELECTROENCEPHALOGRAPHS

Bogen Co., David, 663 Broadway, New York 12, N. Y.  
 Edin Electronics Co., 207 Main St., Worcester, Mass.  
 Electro-Medical Lab. Inc., Holliston, Mass.  
 Electro-Physical Laboratories Div. of Electronic Corp. of America, 25 W. 18th St., New York 11, N. Y.  
 Electronic Supply Co., 207 Main St., Worcester, Mass.  
 Offner Electronics, Inc., 5320 N. Kedzie Ave., Chicago 25, Ill.  
 Rahm Instruments, Inc., 12 W. Broadway, New York 7, N. Y.  
 Thermionic Engineering Corp., Pompton Plains, N. J.

## ELECTROPLETHYSMOGRAPHS

Electro-Physical Laboratories Div. of Electronic Corp. of America, 25 W. 18th St., New York 11, N. Y.  
 Offner Electronics, Inc., 5320 N. Kedzie Ave., Chicago 25, Ill.  
 Rahm Instruments, Inc., 12 West Broadway, New York 7, N. Y.

## ELECTRO-SHOCK THERAPY APPARATUS

Aerolux Light Corp., 653 11th Ave., New York 19, N. Y.  
 Electrodyne Co., The, 899 Boylston St., Boston 15, Mass.  
 Edin Electronics Co., 207 Main St., Worcester, Mass.  
 Electro-Physical Labs., Div. of Electronic Corp. of America, 25 W. 18th St., New York 11, N. Y.  
 Electronic Supply Co., 207 Main St., Worcester, Mass.  
 Lektra Labs., 30 E. 10th St., New York, N. Y.  
 Rahm Instruments, Inc., 12 W. Broadway, New York 7, N. Y.

## ELECTRO-SURGICAL APPARATUS

Airadio Inc., Melrose Ave & Battery Pl., Stamford, Conn.  
 Bogen Co., David, 663 Broadway, New York 12, N. Y.  
 Branstor Electric Mfg. Co., 61-65 Gill Pl., Buffalo 13, N. Y.  
 Dallons Labs., 5066 Santa Monica Blvd., Los Angeles, Calif.  
 Electronic Supply Co., 207 Main St., Worcester, Mass.  
 Lektra Labs., 30 E. 10th St., New York, N. Y.  
 Liebel-Flarsheim Co., 303 W. Third St., Cincinnati 2, Ohio  
 Mooradian High Frequency Labs., 137 Park Place, Bogota, N. J.  
 Process & Instruments, 60 Greenpoint Ave., Brooklyn 22, N. Y.

Thermionic Engineering Corp., Pompton Plains, N. J.

**ELEMENTS, HEATING—Crystal Oven**

Landis & Gyr, Inc., 104 Fifth Ave., New York, N. Y.  
Monitor Products Co., 815 Fremont St., So. Pasadena, Calif.

**ESCUTCHEONS**

American Communications Corp., 306 Broadway, New York 7, N. Y.  
American Emblem Co., Utica, N. Y.  
American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
See Advertisement on Page 23  
Austin Co., O., 335 Throop Ave., Brooklyn 21, N. Y.  
Browning Labs., Inc., 750 Main St., Winchester, Mass.  
See Advertisement on Page 65  
Cinema Engineering Co., 1508 W. Verdugo Ave., Burbank, Calif.  
Croname, Inc., 3701 Ravenswood Ave., Chicago, Ill.  
Erle Resistor Corp., 644 W. 12th St., Erie, Pa.  
See Advertisement on Page 47  
Etched Products Corp., 39-01 Queens Blvd., Long Island City, N. Y.  
Felsenthal & Sons, G., 4100 W. Grand Ave., Chicago 51, Ill.  
Gemloid Corp., 79-10 Albion Ave., Elmhurst, N. Y.  
Grammes & Sons, Inc., L. F., 389 Union St., Allentown 2, Pa.  
Hopp Press Inc., 460 W. 34th St., New York, N. Y.  
Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
Kirkland Co., H. R., 8-10 King St., Morristown, N. J.  
Meyercord Co., 5323 W. Lake St., Chicago 44, Ill.  
Midwest Molding & Mfg. Co., 319 N. Whipple St., Chicago 12, Ill.  
Parisian Novelty Co., 3510 South Western Ave., Chicago 9, Ill.  
Radio Corp. of America, RCA Victor Div., Camden, N. J.  
See Advertisement on Inside Back Cover & Back Cover, 251  
Screenmakers Co., 64 Fulton St., New York 7, N. Y.  
Stokes' Molded Products, Taylor St., at Webster, Trenton, N. J.  
Stronghold Screw Products, 216 West Hubbard St., Chicago 10, Ill.  
Syracuse Ornamental Co., 531 So. Clinton St., Syracuse, N. Y.  
Tri-United Plastics Corp., 390 Nye Ave., Irvington, N. J.  
Victory Mfg. Co., 1722 W. Arcade Pl., Chicago 12, Ill.

**FABRIC**

See Insulation Materials

**FACSIMILE RECORDING PAPERS**

See Papers, Facsimile Recording

**FANS—Tube Cooling**

Dynamic Air Engineering Inc., 1619 S. Alameda St., Los Angeles, Calif.  
Ilg Electric Ventilating Co., 2850 N. Crawford Ave., Chicago 41, Ill.  
Magnetic Products Corp., The, Norwalk, Conn.  
Marathon Electric Mfg. Corp., Randolph & Cherry Sts., Wausau, Wisc.  
Smith Mfg. Co., F. A., P. O. Box 509, Rochester 2, N. Y.  
Torit Mfg. Co., Walnut & Exchange Sts., St. Paul 2, Minn.

**FASTENERS & FASTENING DEVICES**

Aircraft Radio Corp., Boonton, N. J.  
See Advertisement on Page 185  
Allen Mfg. Co., Hartford, Conn.

American Screw Co., Providence, R. I.  
Automatic Nut Co., Inc., Lebanon, Pa.  
Camloc Fastener Corp., 420 Lexington Ave., New York 17, N. Y.  
Central Screw Co., 3511 Shields Ave., Chicago 9, Ill.  
Cherry Rivet Co., 231 Winston St., Los Angeles 13, Calif.  
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.  
Corbin Screw Div., American Hardware Corp., High, Myrtle & Grove Sts., New Britain, Conn.  
Cuyahoga Spring Co., 10272 Berea Rd., Cleveland, Ohio  
du Pont de Nemours & Co., Inc., Wilmington 98, Del.  
Dzus Fasteners Co., Inc., Box 605, Babylon, N. Y.  
Federal Screw Products Co., 224 W. Huron St., Chicago 10, Ill.  
Garrett Co., Inc., George K., 1421 Chestnut St., Philadelphia 2, Pa.  
General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
See Advertisement on Page 90  
Grammes & Sons Inc., L. F., 389 Union St., Allentown 2, Pa.  
Hassall, Inc., John, Clay & Oakland Sts., Brooklyn, N. Y.  
Manufacturers Screw Products, 270 W. Hubbard St., Chicago, Ill.  
Palnut Co., Inc., 39 Cordier St., Irvington 11, N. J.  
Penn Engineering & Mfg. Corp., Box 311, Doylestown, Pa.  
Prestole Corp., 3150 Bellevue Rd., Toledo 6, Ohio  
Production Engineering Co., 666 Van Houten Ave., Clifton, N. J.  
See Advertisement on Page 197  
Public Metal Products, Inc., 100 6th Ave., New York 13, N. Y.  
Russell, Burdshall & Ward Bolt & Nut Co., Midland Ave., Port Chester, N. Y.  
Scovill Mfg. Co., Waterville Screw Products Div., Waterbury, Conn.  
Shakeproof Inc., Div. of Ill. Tool Works, 2501 N. Keeler Ave., Chicago 39, Ill.  
Simmons Fastener Corp., North Broadway, Albany 1, N. Y.  
Sterling Bolt Co., 209 W. Jackson Blvd., Chicago 6, Ill.  
Stimpson Co., Inc., Edwin B., 74 Franklin Ave., Brooklyn 5, N. Y.  
Stronghold Screw Products, 216 West Hubbard St., Chicago 10, Ill.  
Tinnerman Products, Inc., 2106 Fulton Rd., Cleveland 13, Ohio

**FELTS & FELT PARTS**

Aetna Felt Co., Centre & Hester Sts., New York, N. Y.  
American Felt Co., Glenville, Conn.  
Auburn Mfg. Co., Middletown, Conn.  
Feiters Co., The, 210 South St., Boston, Mass.  
General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
See Advertisement on Page 90  
Moore Co., Howard J., 108 Park Row, New York 7, N. Y.  
Western Felt Works, 4029 Ogden Ave., Chicago, Ill.  
Whe-Gro Co., 315-17-19 N. Cardinal Ave., St. Louis 3, Mo.

**FIBER**

See Insulation Materials

**FILTERS—Antenna**

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
See Advertisement on Page 23  
Bird Electronic Corp., 1800 E. 38th St., Cleveland 14, Ohio  
Collins Audio Products Co., 126 Park St., Westfield, N. J.  
See Advertisement on Page 253  
Consolidated Wire & Associated Companies, 1635 S. Clinton St., Chicago 16, Ill.  
Dietz Design & Mfg. Co., 5810 Park Ave., Kansas City 4, Mo.  
Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
See Advertisement on Page 166  
Radio Corp. of America, RCA Victor Div., Camden, N. J.  
See Advertisement on Inside Back Cover & Back Cover, 251  
S-W Inductor Co., 1056 N. Wood St., Chicago, Ill.

Sprague Electric Co., North Adams, Mass.  
Transformer Products Inc., 143 W. 51st St., New York, N. Y.

**FILTERS—Band Elimination**

Burnell & Co., 45 Warburton Ave., Yonkers 2, N. Y.  
Chicago Transformer Div., Essex Wire Corp., 3501 W. Addison St., Chicago 18, Ill.  
Collins Audio Products Co., 126 Park St., Westfield, N. J.  
See Advertisement on Page 253  
Diamond Instrument Co., North Ave., Wakefield, Mass.  
Dietz Design & Mfg. Co., 5810 Park Ave., Kansas City 4, Mo.  
Electronic Transformer Co. Inc., 207 W. 25th St., New York, N. Y.  
Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
See Advertisements on Pages 48A to 48D  
Freed Transformer Co., 72 Spring St., New York 12, N. Y.  
See Advertisement on Page 253  
General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
Inductive Equipment Co., Gettysburg, Pa.  
K-V Transformer Corp., 1697 First Ave., New York, N. Y.  
Kalbfell Labs., 1076 Morena Blvd., San Diego 10, Calif.  
Kartron, Inc., 321A South 4th St., Alhambra, Calif.  
Kenyon Transformer Co., 840 Barry St., New York 59, N. Y.  
See Advertisements on Pages 149 to 152  
New York Transformer Co., Alpha, N. J.  
See Advertisement on Page 165  
Radio Corp. of America, RCA Victor Div., Camden, N. J.  
See Advertisement on Inside Back Cover & Back Cover, 251  
Rice's Sons, Inc., Bernard, 325 Fifth Ave., New York 16, N. Y.  
S-W Inductor Co., 1056 N. Wood St., Chicago, Ill.  
Sorensen & Co., 375 Fairfield Ave., Stamford, Conn.  
See Advertisement on Page 154  
Thordarson Electric Mfg. Div., Maguire Industries, Inc., 500 Horn St., Chicago 10, Ill.  
Transformer Engineers, 339 South Arroyo Parkway, Pasadena, Calif.  
Transformer Products Inc., 143 W. 51st St., New York, N. Y.  
United Transformer Corp., 150 Varick St., New York 13, N. Y.  
See Advertisement on Page Inside Front Cover

**FILTERS—Band Pass**

Airdesign, Inc., 241 Fairfield Ave., Upper Darby, Pa.  
Audio Development Co., 2833 13th Ave. S., Minneapolis 7, Minn.  
See Advertisement on Page 26  
Burnell & Co., 45 Warburton Ave., Yonkers 2, N. Y.  
See Advertisement on Page 192  
Chicago Transformer Div., Essex Wire Corp., 3501 W. Addison St., Chicago 18, Ill.  
Collins Audio Products Co., 126 Park St., Westfield, N. J.  
See Advertisement on Page 253  
Consolidated Engineering Corp., 595 E. Colorado St., Pasadena 1, Calif.  
Deutschmann Corp., Tobe, Filterette Div., Canton, Mass.  
See Advertisement on Page 82  
Diamond Instrument Co., North Ave., Wakefield, Mass.  
Dietz Design & Mfg. Co., 5810 Park Ave., Kansas City 4, Mo.  
Electronic Associates Inc., 61 Brighton Ave., Long Branch, N. J.  
Electronic Transformer Co. Inc., 207 W. 25th St., New York, N. Y.  
Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
See Advertisements on Pages 48A to 48D  
Freed Transformer Co., 72 Spring St., New York 12, N. Y.  
See Advertisement on Page 253  
General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
Inductive Equipment Co., Gettysburg, Pa.  
International Transformer Co., 396 Broadway, New York, N. Y.  
K-V Transformer Corp., 1697 First Ave., New York, N. Y.

Kartron, Inc., 821A South 4th St., Alhambra, Calif.  
**Kenyon Transformer Co.**, 840 Barry St., New York 59, N. Y.  
 See Advertisements on Pages 149 to 152  
**Magnetic Products Corp.**, The, Norwalk, Conn.  
**Miller Co.**, J. W., 5917 S. Main St., Los Angeles, Calif.  
**New York Transformer Co.**, Alpha, N. J.  
 See Advertisement on Page 165  
**Press Wireless Mfg. Corp.**, 1475 Broadway, New York 18, N. Y.  
**Radio Corp. of America**, RCA Victor Div., Camden, N. J.  
 See Advertisement on Inside Back Cover & Back Cover, 251  
**Rice's Sons, Inc.**, Bernard, 325 Fifth Ave., New York 16, N. Y.  
**S-W Inductor Co.**, 1056 N. Wood St., Chicago, Ill.  
**Sorensen & Co.**, 375 Fairfield Ave., Stamford, Conn.  
 See Advertisement on Page 154  
**Sprague Electric Co.**, North Adams, Mass.  
**Stevens-Arnold Co.**, 22 Elkins St., So. Boston, Mass.  
**Thordarson Electric Mfg. Div.**, Maguire Industries, Inc., 500 Horn St., Chicago 10, Ill.  
**Transformer Engineers**, 389 South Arroyo Parkway, Pasadena, Calif.  
**Transformer Products Inc.**, 143 W. 51st St., New York, N. Y.  
**United Transformer Corp.**, 150 Varick St., New York 13, N. Y.  
 See Advertisement on Inside Front Cover  
**Western Electric Co., Inc.**, 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89

## FILTERS—Detonation

**Electronic Transformer Co. Inc.**, 207 W. 25th St., New York, N. Y.  
**Rowe Radio Research Labs.**, 2422 N. Pulaski Rd., Chicago 39, Ill.

## FILTERS—Electric Wave Section

**Andrew Co.**, 363 E. 75th St., Chicago 19, Ill.  
**Barker & Williamson**, 235 Faurefield Ave., Upper Darby, Pa.  
**Burnell & Co.**, 45 Warburton Ave., Yonkers 2, N. Y.  
 See Advertisement on Page 192  
**Chicago Transformer Div.**, Essex Wire Corp., 3501 W. Addison St., Chicago 18, Ill.  
**Commercial Research Labs. Inc.**, 20 Bartlett Ave., Detroit 3, Mich.  
**Communication Equipment & Engrg. Co.**, 5645 W. Race St., Chicago 44, Ill.  
**Communication Parts**, 1101 N. Paulina St., Chicago 22, Ill.  
**Dietz Design & Mfg. Co.**, 5810 Park Ave., Kansas City 4, Mo.  
**Electronic Transformer Co. Inc.**, 207 W. 25th St., New York, N. Y.  
**Federal Telephone and Radio Corp.**, 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
**Freed Transformer Co.**, 72 Spring St., New York 12, N. Y.  
 See Advertisement on Page 253  
**General Radio Co.**, 275 Massachusetts Ave., Cambridge 39, Mass.  
**Kartron Inc.**, 821A South 4th St., Alhambra, Calif.  
**Kenyon Transformer Co.**, 840 Barry St., New York 59, N. Y.  
 See Advertisements on Pages 149 to 152  
**Magnetic Products Corp.**, The, Norwalk, Conn.  
**New York Transformer Co.**, Alpha, N. J.  
 See Advertisement on Page 165  
**Radio Corp. of America**, RCA Victor Div., Camden, N. J.  
 See Advertisement on Inside Back Cover & Back Cover, 251  
**S-W Inductor Co.**, 1056 N. Wood St., Chicago, Ill.  
**Transformer Engineers**, 389 South Arroyo Parkway, Pasadena, Calif.  
**Transformer Products Inc.**, 143 W. 51st St., New York, N. Y.  
**United Transformer Corp.**, 150 Varick St., New York 13, N. Y.  
 See Advertisement on Inside Front Cover  
**Valpey Crystals**, Highland St., Holliston, Mass.

## FILTERS—Equalizer

**Burnell & Co.**, 45 Warburton Ave., Yonkers 2, N. Y.  
 See Advertisement on Page 192  
**Chicago Transformer Div.**, Essex Wire Corp., 3501 W. Addison St., Chicago 18, Ill.  
**Cinema Engineering Co.**, 1508 W. Verdugo Ave., Burbank, Calif.  
**Collins Audio Products Co.**, 126 Park St., Westfield, N. J.  
 See Advertisement on Page 253  
**Collins Radio Co.**, Cedar Rapids, Iowa  
 See Advertisements on Pages 30 to 33  
**Electronic Engineers**, 1039-B Pacific St., Santa Monica, Calif.  
**Electronic Transformer Co. Inc.**, 207 W. 25th St., New York, N. Y.  
**Federal Telephone and Radio Corp.**, 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
**Gold Shield Products**, 25 W. Broadway, New York 7, N. Y.  
**Kenyon Transformer Co.**, 840 Barry St., New York 59, N. Y.  
 See Advertisements on Pages 149 to 152  
**Magnetic Products Corp.**, The, Norwalk, Conn.  
**New York Transformer Co.**, Alpha, N. J.  
 See Advertisement on Page 165  
**Presto Recording Corp.**, 242 W. 55th St., New York 19, N. Y.  
 See Advertisements on Pages 50, 51  
**Raytheon Mfg. Co.**, Commercial Products Div., Waltham 54, Mass.  
**S-W Inductor Co.**, 1056 N. Wood St., Chicago, Ill.  
**Thordarson Electric Mfg. Div.**, Maguire Industries, Inc., 500 W. Horn St., Chicago 10, Ill.  
**Transformer Engineers**, 389 South Arroyo Parkway, Pasadena, Calif.  
**Transformer Products Inc.**, 143 W. 51st St., New York, N. Y.  
**United Transformer Corp.**, 150 Varick St., New York 13, N. Y.  
 See Advertisement on Inside Front Cover  
**Western Electric Co., Inc.**, 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89

## FILTERS—Lighting (for radio towers)

**Airadio Inc.**, Melrose Ave. & Battery Pl., Stamford, Conn.  
**Andrew Co.**, 363 E. 75th St., Chicago 19, Ill.  
**Johnson Co.**, E. F., Waseca, Minn.  
**Miller Co.**, J. W., 5917 S. Main St., Los Angeles, Calif.  
**Raytheon Mfg. Co.**, Commercial Products Div., Waltham 54, Mass.  
**Transformer Products, Inc.**, 143 W. 51st St., New York, N. Y.  
**United Transformer Corp.**, 150 Varick St., New York 13, N. Y.  
 See Advertisement on Inside Front Cover

## FILTERS—Needle Scratch

**Burnell & Co.**, 45 Warburton Ave., Yonkers 2, N. Y.  
 See Advertisement on Page 192  
**Collins Audio Products Co.**, 126 Park St., Westfield, N. J.  
 See Advertisement on Page 253  
**Electronic Transformer Co. Inc.**, 207 W. 25th St., New York, N. Y.  
**Freed Transformer Co.**, 72 Spring St., New York 12, N. Y.  
 See Advertisement on Page 253  
**Gold Shield Products**, 25 W. Broadway, New York 7, N. Y.  
**Miller Co.**, J. W., 5917 S. Main St., Los Angeles, Calif.  
**New York Transformer Co.**, Alpha, N. J.  
 See Advertisement on Page 165  
**Transformer Products, Inc.**, 143 W. 51st St., New York, N. Y.  
**United Transformer Corp.**, 150 Varick St., New York 13, N. Y.  
 See Advertisement on Inside Front Cover

## FILTERS—Noise

**Aeronautical Radio Mfg. Co.**, 155 First St., Mineola, N. Y.  
**Consolidated Wire & Associated Companies**, 1635 S. Clinton St., Chicago 16, Ill.  
**Deutschmann Corp.**, Tope, Filterette Div., Canton, Mass.  
 See Advertisement on Page 82

**Electronic Designs, Inc.**, Irvington, N. Y.  
**Electronic Devices Co.**, 601 W. 26th St., New York, N. Y.  
**Electronic Transformer Co., Inc.**, 207 W. 25th St., New York, N. Y.  
**Fast & Co.**, John E., 3101 N. Pulaski Rd., Chicago 41, Ill.  
**Federal Telephone and Radio Corp.**, 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
**Freed Transformer Co.**, 72 Spring St., New York 12, N. Y.  
 See Advertisement on Page 253  
**General Electric Co.**, Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
**Inductive Equipment Co.**, Gettysburg, Pa.  
**Insuline Corp. of America**, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
**J. F. D. Mfg. Co.**, 4111 Ft. Hamilton Pkway., Brooklyn, N. Y.  
**Kellogg Switchboard & Supply Co.**, 6650 S. Cicero Ave., Chicago 38, Ill.  
**Mallory & Co., Inc.**, P. E., 3029 E. Washington St., Indianapolis 6, Ind.  
 See Advertisements on Pages 257 to 260  
**Millen Mfg. Co.**, James, 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44  
**Miller Co.**, J. W., 5917 S. Main St., Los Angeles, Calif.  
**Potter Co.**, 1850 Sheridan Rd., No. Chicago, Ill.  
**Pyramid Electric Co.**, 155 Oxford St., Paterson, N. J.  
**S-W Inductor Co.**, 1056 N. Wood St., Chicago, Ill.  
**Searle Aero Industries, Inc.**, Orange, Calif.  
**Sprague Electric Co.**, North Adams, Mass.  
**Technical Appliance Corp.**, 41-06 DeLong Street, Flushing, N. Y.  
**Transformer Products, Inc.**, 143 W. 51st St., New York, N. Y.  
**United Transformer Corp.**, 150 Varick St., New York 13, N. Y.  
 See Advertisement on Inside Front Cover  
**Western Electric Co., Inc.**, 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89

## FILTERS—uhf & vhf

**Bird Electronic Corp.**, 1800 E. 38th St., Cleveland 14, Ohio  
**Cambridge Thermionic Corp.**, 445 Concord Ave., Cambridge, Mass.  
**Deutschmann Corp.**, Tope, Filterette Div., Canton, Mass.  
 See Advertisement on Page 82  
**Dietz Design & Mfg. Co.**, 5810 Park Ave., Kansas City 4, Mo.  
**Electronic Measurements Co.**, Red Bank, N. J.  
 See Advertisement on Page 68  
**Federal Telephone and Radio Corp.**, 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
**Lavoie Labs.**, Morganville, N. J.  
**Rice's Sons, Inc.**, Bernard, 325 Fifth Ave., New York 16, N. Y.  
**Rollin Co.**, 2070 N. Fair Oaks Ave., Pasadena 3, Calif.  
**Sprague Electric Co.**, North Adams, Mass.  
**Titeflex, Inc.**, 500 Frelinghuysen Ave., Newark 5, N. J.  
**Transformer Products, Inc.**, 143 W. 51st St., New York, N. Y.  
**Weymouth Instrument Co.**, 1440 Commercial St., East Weymouth, Mass.

## FINISHES—Crystal

**General Cement Mfg. Co.**, 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
**Maas & Waldstein Co.**, 438 Riverside Ave., Newark, N. J.  
 See Advertisement on Page 53  
**Reeves-Hoffman Corp.**, 215 E. 91st St., New York, N. Y.  
 See Advertisement on Page 180  
**Schott Co.**, Walter L., 9306 Santa Monica Blvd., Beverly Hills, Calif.

## FINISHES—Enamel

**Arco Co.**, 7301 Bessemer Ave., Cleveland 4, Ohio  
**Dolph Co.**, John C., 168 Emmett St., Newark, N. J.  
**du Pont de Nemours & Co. Inc.**, Wilmington 98, Delaware  
**Duralac Chemical Corp.**, 84 Lister Ave., Newark 5, N. J.

Egyptian Lacquer Mfg. Co., 1270 Sixth Ave., New York, N. Y.  
 Franklin Paint & Varnish Co., Benjamin, 4820 Langdon St., Philadelphia 24, Pa.  
**General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.**  
 See Advertisement on Page 90  
 Horn Co., Inc., A. C., 43-36 Tenth St., L. I. City 1, N. Y.  
 Insulation Mfg. Co., 11 New York Ave., Brooklyn, N. Y.  
**Maas & Waldstein & Co., 438 Riverside Ave., Newark 4, N. J.**  
 See Advertisement on Page 53  
 Midland Paint & Varnish Co., 9115 Reno Ave., Cleveland 5, Ohio  
 Minute Man Products, Inc., 309 E. 22nd St., New York 10, N. Y.  
 Nukem Products Corp., 111 Colgate Ave., Buffalo 20, N. Y.  
 Standard Varnish Works, 2600 Richmond Terr., Staten Island, N. Y.  
 U. S. Rubber Co., 1230 Sixth Ave., New York 20, N. Y.  
 Zapon Div., Atlas Powder Co., Ludlow St., Stamford, Conn.

**FINISHES—Lacquer**

Arco Co., 7301 Bessemer Ave., Cleveland 4, Ohio  
 Dolph Co., John C., 168 Emmett St., Newark, N. J.  
 du Pont de Nemours & Co., Inc., Wilmington 98, Delaware  
 Duralac Chemical Corp., 84 Lister Ave., Newark 5, N. J.  
 Egyptian Lacquer Mfg. Co., 1270 Sixth Ave., New York, N. Y.  
 Franklin Paint & Varnish Co., Benjamin, 4820 Langdon St., Philadelphia 24, Pa.  
**General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.**  
 See Advertisement on Page 90  
 Horn Co., Inc., A. C., 43-36 Tenth St., Long Island City 1, N. Y.  
 Insulation Mfrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.  
 See Advertisement on Page 87  
**Maas & Waldstein Co., 438 Riverside Ave., Newark 4, N. J.**  
 See Advertisement on Page 53  
 Minute Man Products, Inc., 309 E. 22nd St., New York 10, N. Y.  
 Monsanto Chemical Co., Plastics Div., Springfield 2, Mass.  
 Schott Co., Walter L., 9306 Santa Monica Blvd., Beverly Hills, Calif.  
 Standard Varnish Works, 2600 Richmond Terr., Staten Island, N. Y.  
 Zapon Div., Atlas Powder Co., Ludlow St., Stamford, Conn.

**FINISHES—Luminous Materials**

Austin Co., O., 335 Throop Ave., Brooklyn 21, N. Y.  
 du Pont de Nemours & Co., Inc., E. I., Wilmington 98, Del.  
 Duralac Chemical Corp., 84 Lister Ave., Newark 5, N. J.  
**General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.**  
 See Advertisement on Page 90  
**Maas & Waldstein Co., 438 Riverside Ave., Newark, N. J.**  
 See Advertisement on Page 53  
 Shannon Luminous Materials Co., 7346 Santa Monica Blvd., Hollywood 46, Calif.

**FINISHES—Ripple**

Ansonia Clock Co., Inc., 103 Lafayette St., New York 13, N. Y.  
 Arco Co., 7301 Bessemer Ave., Cleveland 4, Ohio  
 Franklin Paint & Varnish Co., Benjamin, 4820 Langdon St., Philadelphia 24, Pa.  
**General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.**  
 See Advertisement on Page 90  
**Maas & Waldstein Co., 438 Riverside Ave., Newark 4, N. J.**  
 See Advertisement on Page 53  
 Zapon Div., Atlas Powder Co., Ludlow St., Stamford, Conn.

**FINISHES—Varnish**

American Resinous Chemical Co., 104 Foster St., Peabody, Mass.

Arco Co., 7301 Bessemer Ave., Cleveland 4, Ohio  
 du Pont de Nemours & Co., Inc., E. I., Wilmington 98, Del.  
**General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.**  
 See Advertisement on Page 90  
 Horn Co., Inc., A. C., 43-36 Tenth St., Long Island City 1, N. Y.  
 Insulation Mfg. Co., 11 New York Ave., Brooklyn, N. Y.  
**Insulation Mfrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.**  
 See Advertisement on Page 87  
**Maas & Waldstein Co., 438 Riverside Ave., Newark, N. J.**  
 See Advertisement on Page 53

**FLEXIBLE SHAFT EQUIPMENT**

See Machines

**FLOCK & FLOCKED PAPER**

Austin Co., O., 335 Throop Ave., Brooklyn 21, N. Y.  
 Celluquede Products, Inc., Rockford, Ill.  
 See Advertisement on Page 76  
 Flock Process Co., 3 Quincy St., Norwalk, Conn.  
**General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.**  
 See Advertisement on Page 90  
**Maas & Waldstein Co., 438 Riverside Ave., Newark, N. J.**  
 See Advertisement on Page 53  
 Schott Co., Walter L., 9306 Santa Monica Blvd., Beverly Hills, Calif.

**FLUROMETERS**

Coleman Electric Co., 318 Madison St., Maywood, Ill.  
 Farrand Optical Co., Inc., Bronx Blvd. at 238th St., New York 66, N. Y.

**FLUX—Brazing Compounds**

American Solder & Flux Co., 2152 E. Norris Street, Philadelphia 25, Pa.  
 Chase Brass & Copper Co., Inc., Waterbury 91, Conn.  
 Division Lead Co., 836 W. Kinzie St., Chicago 22, Ill.  
 Do-All Co., 1301 Washington Ave. S., Minneapolis 4, Minn.  
 Eutetic Welding Alloys Co., 40 Worth St., New York 13, N. Y.  
 Farrelloy Co., 1245 N. 26th St., Philadelphia 21, Pa.  
 Goldsmith Bros. Smelting & Refining Co., 58 E. Washington St., Chicago, Ill.  
 Handy & Harman, 82 Fulton St., New York 7, N. Y.  
 Special Chemicals Co., 30 Irving Pl., New York, N. Y.  
 Superior Flux Co., 913 Public Square Bldg., Cleveland 13, Ohio  
 Westinghouse Electric Corp., Motor Div., Buffalo, N. Y.

**FLUX—Brazing & Soldering**

American Platinum Works, N. J. R. R. Ave. at Oliver St., Newark 5, N. J.  
 See Advertisement on Page 253  
 American Solder & Flux Co., 2152 E. Norris St., Philadelphia 25, Pa.  
 Division Lead Co., 836 W. Kinzie St., Chicago 22, Ill.  
 Eutetic Welding Alloys Co., 40 Worth St., New York 13, N. Y.  
 Farrelloy Co., 1245 N. 26th St., Philadelphia 21, Pa.  
 Goldsmith Bros. Smelting & Refining Co., 58 E. Washington St., Chicago, Ill.  
 Handy & Harman, 82 Fulton St., New York 7, N. Y.  
 Johnson Co., Lloyd S., 2241 Indiana Ave., Chicago, Ill.  
 Lenk Mfg. Co., The, Newton Lower Falls 62, Mass.  
 Makepeace Co., D. E., Attleboro, Mass.  
 See Advertisement on Page 28  
 Special Chemicals Co., 30 Irving Pl., New York 3, N. Y.  
 Superior Flux Co., 913 Public Square Bldg., Cleveland 13, Ohio

Westinghouse Electric Corp., Motor Div., Buffalo, N. Y.

**FLUX—Soldering**

American Solder & Flux Co., 2152 E. Norris St., Phila. 25, Pa.  
 Burnley Battery & Mfg. Co., Clay St., North East, Pa.  
 Chase Brass & Copper Co., Inc., Waterbury 91, Conn.  
 Division Lead Co., 836 W. Kinzie St., Chicago 22, Ill.  
 Dual-Heat, Inc., 542 So. Broadway, Los Angeles 13, Calif.  
 du Pont de Nemours & Co. Inc., E. I., Wilmington 98, Delaware  
 Eutetic Welding Alloys Co., 40 Worth St., New York 13, N. Y.  
 Farrelloy Co., 1245 N. 26th St., Philadelphia 21, Pa.  
**General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.**  
 See Advertisement on Page 90  
 Glaser Lead Co., Inc., 31 Wycoff Ave., Brooklyn, N. Y.  
 See Advertisement on Page 240  
 Grayhill Corp., 1 N. Pulaski Rd., Chicago 24, Ill.  
 Johnson Co., Lloyd S., 2241 Indiana Ave., Chicago, Ill.  
 Johnson Gas Appliance Co., 520 Ave. E., N. W., Cedar Rapids, Iowa  
 Kester Solder Co., 4212 Wrightwood Ave., Chicago 33, Ill.  
 Lenk Mfg. Co., Newton Lower Falls 62, Mass.  
 Linlok Chemical Co., 29 E. Madison St., Chicago 2, Ill.  
 Merck & Co., Inc., Rahway, N. J.  
 Mitchell Rand Insulation Co., Inc., 51 Murray St., New York 7, N. Y.  
 See Advertisement on Page 173  
 National Lead Co., 111 Broadway, New York 6, N. Y.  
 Ruby Chemical Co., 68 MacDowell St., Columbus, Ohio  
 Schott Co., Walter L., 9306 Santa Monica Blvd., Beverly Hills, Calif.  
 Special Chemicals Co., 30 Irving Place, New York 3, N. Y.  
 Superior Flux Co., 913 Public Square Bldg., Cleveland 13, Ohio  
 Weaver Specialty Co., 6344 Aurelia St., Pittsburgh, Pa.

**FLUXMETER**

Clarke Instrument Corp., 910 King St., Silver Spring, Md.  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
 Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland, Ohio  
 Maico Co., Inc., 25 North 3rd St., Minneapolis, Minn.  
 Marion Electrical Instrument Co., Manchester, N. H.  
**Rawson Electrical Instrument Co., 110 Potter St., Cambridge 42, Mass.**  
 See Advertisement on Page 244  
 Sensitive Research Instrument Co., 9 Elm Ave., Mt. Vernon, N. Y.

**FORKS—Electrically Driven Tuning**

Electric Tachometer Corp., Broad & Spring Garden Sts., Philadelphia, Pa.  
 Gaertner Scientific Corp., 1201 Wrightwood Ave., Chicago, Ill.  
 General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
 Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.  
 Heiland Research Corp., 130 E. 5th St., Denver 9, Colo.  
 Macleod & Hanopol, 24 Chelsea St., Charlestown 29, Mass.  
 Norman Labs., Ernst, Williams Bay, Wis.  
 Times Facsimile Corp., 229 W. 43rd St., New York, N. Y.

**FORMS—Antenna**

Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.  
 Joyner Corp., The, 462 N. Parkside Ave., Chicago 44, Ill.  
 Rogers Corporation, Manchester, Conn.

## FORMS—Choke

Centralab, Div. of Globe Union, Inc., 900 Keefe Ave., Milwaukee 1, Wisc.  
 See Advertisements on Pages 24, 25  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Joyner Corp., The, 462 N. Parkside Ave., Chicago 44, Ill.  
 Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44  
 National Co., Inc., 61 Sherman St., Malden 48, Mass.  
 See Advertisement on Page 78  
 Stackpole Carbon Co., St. Marys, Pa.  
 Steward Mfg. Co., D. M. E., 36th St., Chattanooga, Tenn.  
 Stupakoff Ceramic & Mfg. Co., Latrobe, Pa.  
 Waterbury Companies, Inc., Waterbury 90, Conn.

## FORMS—Coil

Alden Products Co., 117 N. Main St., Brockton 64, Mass.  
 American Lava Corp., Chattanooga 5, Tenn.  
 See Advertisement on Page 69  
 American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 Auburn Mfg. Co., Middletown, Conn.  
 Bud Radio Inc., 2118 E. 55th St., Cleveland 3, Ohio  
 Buggie & Co., H. H., 2141 Madison Ave., Toledo 1, Ohio  
 Centralab Div. of Globe Union, Inc., 900 Keefe Ave., Milwaukee 1, Wisc.  
 See Advertisements on Pages 24, 25  
 Chicago Die Mold Corp., 4001 Wrightwood Ave., Chicago 39, Ill.  
 Cleveland Container Co., 10630 Berea Rd., Cleveland 2, Ohio  
 See Advertisement on Page 244  
 Consolidated Molded Products Corp., Scranton 2, Pa.  
 Continental Diamond Fibre Co., 16 Chapel St., Newark, Del.  
 See Advertisements on Pages 72, 73  
 Corning Glass Works, Corning, N. Y.  
 Crowley & Co., Inc., Henry L., 1 Central Ave., West Orange, N. J.  
 Electronic Mechanics, Inc., 70 Clifton Blvd., Clifton, N. J.  
 Erie Resistor Corp., 644 W. 12th St., Erie, Pa.  
 See Advertisement on Page 47  
 Felsenthal & Sons, G., 4100 W. Grand Ave., Chicago 51, Ill.  
 General Ceramics & Steatite Corp., Keasbey, N. J.  
 See Advertisement on Page 79  
 Greenhut Insulation Co., 31 W. 21st St., New York, N. Y.  
 Insulating Fabricators of New England, Inc., 22 Elkins St., S. Boston, Mass.  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Johnson Co., E. F., Waseca, Minn.  
 Joyner Corp., The, 462 N. Parkside Ave., Chicago 44, Ill.  
 Kirchberger & Co., Inc., M., 1425 37th St., Brooklyn 18, N. Y.  
 Mayfair Molded Products Corp., 4440 N. Elston Ave., Chicago 30, Ill.  
 Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44  
 National Co., 61 Sherman St., Malden 48, Mass.  
 See Advertisement on Page 78  
 National Vulcanized Fibre Co., Wilmington, Del.  
 See Advertisement on Page 58  
 Plastic Accessories, Inc., 460 Broome St., New York 13, N. Y.  
 Precision Paper Tube Co., 2033 W. Charleston St., Chicago 47, Ill.  
 Printloid Inc., 95 Mercer St., New York, N. Y.  
 See Advertisement on Page 198  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Raymond Mfg. Co., Div. of Associated Spring Corp., 226 S. Center St., Corry, Pa.  
 Speer Resistor Corp., St. Marys, Pa.  
 Stackpole Carbon Co., St. Marys, Pa.  
 Standard Molding Corp., Dayton, Ohio  
 Steward Mfg. Co., D. M. E., 36th St., Chattanooga, Tenn.  
 Stupakoff Ceramic & Mfg. Co., Latrobe, Pa.  
 Synthane Corp., Oaks, Pa.  
 Taylor Fibre Co., Norristown, Pa.  
 Victory Manufacturing Co., 1722 W. Arcade Place, Chicago 12, Ill.  
 Waterbury Companies, Inc., Waterbury 90, Conn.

## FORMS—Resistor

Boonton Molding Co., Boonton, N. J.  
 Centralab, Div. of Globe Union, Inc., 900 Keefe Ave., Milwaukee 1, Wisc.  
 See Advertisements on Pages 24, 25  
 Corning Glass Works, Corning, N. Y.  
 Kirchberger & Co., Inc., M., 1425 37th St., Brooklyn 18, N. Y.  
 Saxonburg Potteries, Saxonburg, Pa.  
 Stackpole Carbon Co., St. Marys, Pa.  
 Stupakoff Ceramic & Mfg. Co., Latrobe, Pa.

## FORMS—Wire

Art Wire & Stamping Co., 227 High St., Newark 2, N. J.  
 Barnes-Gibson-Raymond Div. of Associated Spring Corp., 6400 Miller Ave., Detroit 11, Mich.  
 Cuyahoga Spring Co., 10272 Berea Rd., Cleveland, Ohio  
 Grammes & Sons Inc., L. F., 389 Union St., Allentown 2, Pa.  
 Haydu Bros., Plainfield, N. J.  
 Hubbard Spring Co., M. D., Central Ave., Pontiac, Mich.  
 Reliable Spring & Wire Forms Co., Fulton Rd & Paris Ave., Cleveland 9, Ohio  
 Stackpole Carbon Co., St. Marys, Pa.  
 Stimpson Co., Inc., Edwin B., 74 Franklin Ave., Brooklyn 5, N. Y.  
 Stupakoff Ceramic & Mfg. Co., Latrobe, Pa.  
 Titcheiner & Co., E. H., Binghamton, N. Y.

## FREQUENCY STANDARDS

See Crystals

## FRITS—Resistor

Hommel Co., O., 209 Fourth Ave., Pittsburgh, Pa.

## FUSES

Bussmann Mfg. Co., St. Louis 7, Mo.  
 Chase-Shawmut Co., Newburyport, Mass.  
 Commercial Enclosed Fuse Co. of N. J., 1317 Willow Ave., Hoboken, N. J.  
 Eagle Electric Mfg. Co., Inc., 23-10 Bridge Plaza S., Long Island City, N. Y.  
 Electro Motive Mfg. Co., South Park & John St., Willimantic, Conn.  
 See Advertisement on Page 27  
 General Electric Co., Bridgeport 2, Conn.  
 Kirkman Engineering Corp., 121 6th Ave., New York 13, N. Y.  
 Littelfuse, Inc., 4757 Ravenswood Ave., Chicago 40, Ill.  
 See Advertisement on Page 43  
 Pierce Renewable Fuses, Inc., 211 Hertel Ave., Buffalo 7, N. Y.  
 Trico Fuse Mfg. Co., 2943 N. Fifth, Milwaukee 12, Wisc.

## GAGES—Comparator

Do-All Co., 1301 Washington Ave., S., Minneapolis 4, Minn.  
 Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska  
 Foote, Pierson & Co., Inc., 75 Hudson St., Newark 4, N. J.  
 Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.  
 International Merit Products Corp., 254 W. 54th St., New York 19, N. Y.  
 Metron Instrument Co., 432 Lincoln St., Denver 3, Colo.  
 Panoramic Radio Corp., 242 W. 55th St., New York 19, N. Y.  
 Scherr, Geo. D., 200 Lafayette St., New York 12, N. Y.  
 Sheffield Corp., The, Dayton 1, Ohio  
 Spitfire Tools, Inc., 2931-35 North Pulaski Road, Chicago 41, Ill.  
 Starratt Co., L. S., 165 Crescent St., Athol, Mass.

## GAGES—Displacement Measuring

Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.

Spitfire Tools, Inc., 2931-35 North Pulaski Road, Chicago 41, Ill.  
 Statham Labs., 3222 Beverly Blvd., Los Angeles 36, Cal.  
 Televiso Products Inc., 7466 West Irving Park Road, Chicago 34, Ill.

## GAGES—Electronic Fuel Indicator

Edison, Inc., Thomas A., Instrument Div., West Orange, N. J.  
 See Advertisement on Page 18  
 Melpar, Inc., 718 Fifth St., N. W., Washington 1, D. C.  
 Simonds Aerocessories, Inc., 30 Rockefeller Plaza, New York 20, N. Y.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B

## GAGES—Electronic Inspection

Autotron Co., Danville, Ill.  
 Branson Instruments, Inc., Joe's Hill Rd., Danbury, Conn.  
 Electric Eye Equipment Co., 16 W. Fairchild St., Danville, Ill.  
 Foote, Pierson & Co., Inc., 75 Hudson St., Newark 4, N. J.  
 Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.  
 Industrial Electronics, Inc., 21 Henry St., Detroit 1, Mich.  
 See Advertisement on Page 251  
 Langevin Co. Inc., The, Industrial Control Div., 37 W. 65th St., New York 23, N. Y.  
 Lectronic Research Labs., Howell and Hegerman Sts., Philadelphia, Pa.  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 Sheffield Corp., The, Dayton 1, Ohio

## GAGES—Electronic Spring Checking

Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.  
 Link Engineering Co., 13581 Elmira St., Detroit 27, Mich.

## GAGES—Ionization

Distillation Products, Inc., 755 Ridge Rd. W., Rochester, N. Y.  
 Herbach & Rademan Inc., 517 Ludlow St., Phila. 6, Pa.  
 National Research Corp. Vacuum Engineering Div., 100 Brookline Ave., Boston 15, Mass.  
 National Union Radio Corp., 350 Scotland Rd., Orange, N. J.  
 Process & Instruments, 60 Greenpoint Ave., Brooklyn 22, N. Y.  
 Spitfire Tools, Inc., 2931-35 North Pulaski Road, Chicago 41, Ill.

## GAGES—Paint Depth

Electronic Control Corp., 1573 E. Forest St., Detroit, Mich.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.  
 Saxl Instrument Co., 6 Linnaean St., Cambridge 38, Mass.

## GAGES—Photoelectric Dimension

Electric Eye Equipment Co., 16 W. Fairchild St., Danville, Ill.  
 Electronic Control Corp., 1573 E. Forest Street, Detroit, Mich.  
 Langevin Co. Inc., The, Industrial Control Div., 37 W. 65th St., New York 23, N. Y.  
 Wilson & Co., G. C., 2 N. Passaic Ave., Chatham, N. J.

## GAGES—Pirani

Ballantine Labs. Inc., Boonton, N. J.  
 See Advertisement on Page 42

Distillation Products, Inc., 755 Ridge Rd.  
W., Rochester, N. Y.  
Radio Corp. of America, Tube Div., Har-  
rison, N. J.

**GAGES—Pressure**

Andrew Co., 363 E. 75th St., Chicago 19, Ill.  
Bristol Co., The, Waterbury 91, Conn.  
Brown Instrument Co., 4428 Wayne Ave.,  
Philadelphia 44, Pa.  
Brush Development Co., 3405 Perkins Ave.,  
Cleveland 14, Ohio.  
Dinon & Co., Inc., W. C., 5410 W. Harrison  
St., Chicago 44, Ill.  
Electric Auto-Lite Co., The, Toledo 1, Ohio  
Electro Products Labs., 549 W. Randolph  
St., Chicago 6, Ill.  
Elematic Equipment Corp., 6046 S. Went-  
worth Ave., Chicago 21, Ill.  
Foxboro Co., Foxboro, Mass.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Giannini & Co., Inc., G. M., Autoflight In-  
struments Div., 285 W. Colorado St.,  
Pasadena 1, Calif.  
Hathaway Instrument Co., 1315 S. Clarkson  
St., Denver 10, Colo.  
Haydu Bros., Plainfield, N. J.  
Kollsman Instrument Div. of Square D Co.,  
80-08 45th Ave., Elmhurst, N. Y.  
See Advertisement on Page 46  
Melpar, Inc., 718 Fifth St. N. W., Wash-  
ington 1, D. C.  
Saxl Instrument Co., 6 Linnaean St., Cam-  
bridge 38, Mass.  
Statham Laboratories, 8222 Beverly Blvd.,  
Los Angeles 36, Calif.  
Stewart-Warner Corp., 1326 Diversey Park-  
way, Chicago 14, Ill.  
Tagliabue Div. C. J., Portable Products  
Corp., 550 Park Ave., Brooklyn 5, N. Y.  
Wekster Thermometer Corp., 52 W. Houston  
St., New York, N. Y.

**GAGES—Strain**

Baker Instrument Co., 310 Main St., Orange,  
N. J.  
Brush Development Co., The, 3405 Perkins  
Ave., Cleveland 14, Ohio  
Chatillon & Sons, John, 93 Cliff St., New  
York 7, N. Y.  
Consolidated Engineering Corp., 595 E. Col-  
orado St., Pasadena 1, Calif.  
Electrodyne Co., The, 899 Boylston St.,  
Boston 15, Mass.  
Foxboro Co., Foxboro, Mass.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Hathaway Instrument Co., 1315 S. Clarkson  
St., Denver 10, Colorado  
Heiland Research Corp., 130 E. 5th St.,  
Denver 9, Colorado  
Pan American Electric Co., Inc., 2912 At-  
lantic Ave., Brooklyn 7, N. Y.  
Saxl Instrument Co., 6, Linnaean St., Cam-  
bridge 38, Mass.  
Starrett Co., L. S., 165 Crescent St., Athol,  
Mass.  
Statham Laboratories, 8222 Beverly Blvd.,  
Los Angeles 36, Calif.  
Teleso Products Inc., 7466 West Irving  
Park Rd., Chicago 34, Ill.

**GAGES—Supersonic Thickness**

Branson Instruments, Inc., Joe's Hill Rd.,  
Danbury, Conn.

**GAGES—Thickness**

Commercial Research Labs., Inc., 20 Bartlett  
Ave., Detroit 3, Mich.  
Engineering Lab., Inc., 602 E. 4th St., Tulsa  
3, Okla.

**GAGES—Vacuum**

Bristol Co., The, Waterbury 91, Conn.  
Brown Instrument Co., 4428 Wayne Ave.,  
Philadelphia 44, Pa.  
Continental Electric Co., Geneva, Ill.  
Distillation Products, Inc., 755 Ridge Rd.,  
W., Rochester, N. Y.  
Electric Auto-Lite Co., The, Toledo 1, Ohio  
Electric Heat Control Co., The, 9123 Inman  
Ave., Cleveland 5, Ohio

Foxboro Co., Foxboro, Mass.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Hathaway Instrument Co., 1315 S. Clark-  
son St., Denver 10, Colo.  
Haydu Bros., Plainfield, N. J.  
Kollsman Instrument Div. of Square D Co.,  
80-08 45th Ave., Elmhurst, N. Y.  
See Advertisement on Page 46  
Melpar, Inc., 718 Fifth St., N. W., Wash-  
ington 1, D. C.  
National Research Corp., Vacuum Engrg.  
Div., 100 Brookline Ave., Boston 15,  
Mass.  
Precision Resistor Co., 334 Badger Ave.,  
Newark 8, N. J.  
Radio Corp. of America, RCA Victor Div.,  
Camden, N. J.  
See Advertisements on Inside Back Cover &  
Back Cover, 251  
Stokes Machine Co., F. J., 5850 Tabor Rd.,  
Olney P. O., Phila. 20, Pa.  
Wekster Thermometer Corp., 52 W. Houston  
St., New York, N. Y.  
Welch Scientific Co., 1515 Sedgwick St.,  
Chicago 10, Ill.  
Winslow Co., 9 Liberty St., Newark 5, N. J.

**GALVANOMETERS**

Assembly Products, Inc., Chagrin Falls,  
Ohio  
Berndt Corp., E. M., 3515 Sunset Blvd.,  
Hollywood 28, Calif.  
Brush Development Co., 3405 Perkins Ave.,  
Cleveland 14, Ohio  
Consolidated Engineering Corp., 595 E. Col-  
orado St., Pasadena 1, Calif.  
Electronic Development Co., 4420 N. 23rd  
St., Omaha 11, Nebraska  
Engineering Lab., Inc., 602 E. 4th St., Tulsa  
3, Okla.  
G-M Laboratories, Inc., 4313 No. Knox  
Ave., Chicago, Ill.  
General Electric Co., Schenectady 5, N. Y.  
General Electronics, Inc., 101 Hazel St.,  
Paterson, N. J.  
Giannini & Co., Inc., G. M., Autoflight In-  
struments Div., 285 W. Colorado St.,  
Pasadena 1, Calif.  
Gordon Co., Claude S., 3000 S. Wallace St.,  
Chicago 16, Ill.  
Harvey Radio Labs., Inc., 447 Concord Ave.,  
Cambridge, Mass.  
Hathaway Instrument Co., 1315 S. Clarkson  
St., Denver 10, Colo.  
Heiland Research Corp., 130 E. 5th St.,  
Denver 9, Colo.  
J B T Instruments, Inc., 441 Chapel St.,  
New Haven 8, Conn.  
Leeds & Northrup Co., 4970 Stenton Ave.,  
Philadelphia 44, Pa.  
Meters, Inc., 915 Riverside Dr., Indianapolis  
5, Ind.  
Miller Corp., William, 362 W. Colorado St.,  
Pasadena, Calif.  
Nilsson Electrical Lab., Inc., 103 Lafayette  
St., New York 13, N. Y.  
Rubicon Co., 3751 Ridge Ave., Philadelphia,  
Pa.  
Tagliabue Div. C. J., Portable Products  
Corp., 550 Park Ave., Brooklyn 5, N. Y.  
Thwing-Albert Instrument Co., 5351 Pulaski  
Avenue, Philadelphia 44, Pa.  
Westinghouse Electric Corp., Meter Div.,  
Newark, N. J.  
Weston Electrical Instrument Corp., 618  
Frelinghuysen Ave., Newark 5, N. J.  
Winslow Co., 9 Liberty St., Newark 5, N. J.

**GASES—Nitrogen**

Air Reduction Sales Co., 60 E. 42nd St., New  
York, N. Y.  
Andrew Co., 363 E. 75th St., Chicago 19, Ill.  
Linde Air Products Co., Unit of Union Car-  
bide and Carbon Corp., 30 E. 42nd St.,  
New York 17, N. Y.  
See Advertisements on Pages 38, 167

**GASES—Rare**

Aerolux Light Corp., 653 11th Ave., New  
York 19, N. Y.  
Air Reduction Sales Co., 80 East 42nd St.,  
New York, N. Y.  
du Pont de Nemours & Co., Inc., E. I., Wil-  
mington 93, Del.  
Linde Air Products Co., Unit of Union Car-  
bide and Carbon Corp., 30 E. 42nd St.,  
New York 17, N. Y.  
See Advertisements on Pages 38, 167  
Westinghouse Electric Corp., Bloomfield  
Lamp Div., Bloomfield, N. J.  
See Advertisement on Page 45

**GASKETS**

Aldine Paper Co., Inc., 535 Fifth Ave., New  
York 17, N. Y.  
American Felt Co., Glenville, Conn.  
Armstrong Cork Co., Lancaster, Pa.  
Auburn Mfg. Co., Middletown, Conn.  
Board Products Co., 2931 S. Wabash St.,  
Chicago 16, Ill.  
Cardy-Lundmark Co., 1801 W. Byron St.,  
Chicago 13, Ill.  
Chase Brass & Copper Co., Inc., Waterbury  
91, Conn.  
Felsenthal & Sons, G., 4100 W. Grand Ave.,  
Chicago 51, Ill.  
Gasket Engineering Co., 2440 Charlotte St.,  
Kansas City 8, Mo.  
General Electric Co., Chemical Dept., L  
Plastics Ave., Pittsfield, Mass.  
See Advertisement on Page 97  
Headden Co., The, 17 Academy St., Newark  
2, N. J.  
Insuline Corp. of America, 36-02 35th Ave.,  
Long Island City, N. Y.  
See Advertisement on Page 166  
Melrath Supply & Gasket Co., Tioga St. &  
Aramingo Ave., Philadelphia, Pa.  
Moore Co., Howard J., 108 Park Row, New  
York 7, N. Y.  
National Gasket & Washer Co., Inc., 122 E.  
25th St., New York 10, N. Y.  
Parisian Novelty Co., 3510 South Western  
Ave., Chicago 9, Ill.  
Penn Fibre & Specialty Co., 2030 E. More-  
land St., Phila. 44, Pa.  
Plastic Accessories, Inc., 460 Broome St.,  
New York 13, N. Y.  
Radio Corp. of America, Tube Div., Harri-  
son, N. J.  
Tricon Mfg. Co., 8318 S. Racine Ave., Chi-  
cago, Ill.  
U. S. Rubber Co., 1230 Sixth Ave., New  
York 20, N. Y.  
Western Felt Works, 4029 Ogden Ave., Chi-  
cago, Illinois  
Willard's, Hampden, Mass.  
Wilmington Fibre Specialty Co., P. O.  
Drawer 1028, Wilmington 99, Del.

**GEARS—Precision**

Beaver Gear Works, Inc., Rockford, Ill.  
See Advertisement on Page 176  
Foote Brothers Gear & Machine Corp., 5225  
S. Western Blvd., Chicago 9, Ill.  
Gear Specialties, 2635 W. Medill Ave., Chi-  
cago 47, Ill.  
See Advertisement on Page 41  
Gorrell & Gorrell, Haworth, N. J.  
Insulating Fabricators of New England,  
Inc., 22 Elkins St., S. Boston, Mass.  
National Vulcanized Fibre Co., Wilmington,  
Del.  
See Advertisement on Page 58  
Perkins Machine & Gear Co., 130 Circuit  
Ave., Springfield, Mass.  
Quaker City Gear Works, 1910-32 N. Front  
St., Philadelphia, Pa.  
Reeves Instrument Corp., 215 E. 91st St.,  
New York, N. Y.

**GENERATORS—Electronic Variable Frequency**

Aircraft Radio Corp., Boonton, N. J.  
See Advertisement on Page 185  
Allis-Chalmers Mfg. Co., Milwaukee 1, Wisc.  
Communication Measurements Lab. Inc., 120  
Greenwich St., New York, N. Y.  
Development Engineering Co., Inc., The,  
1818 Ashland St., Houston 8, Texas  
Electrodyne Co., The, 899 Boylston St.,  
Boston 15, Mass.  
Electronic Apparatus, Inc., 347 Madison  
Ave., New York 17, N. Y.  
Electronic Measurements Co., Red Bank,  
N. J.  
See Advertisement on Page 68  
Feiler Engineering Co., 803 Milwaukee Ave.,  
Chicago 22, Ill.  
Furst Electronics, 800 W. North Ave., Chi-  
cago 22, Ill.  
See Advertisement on Page 248  
General Communication Co., 530 Common-  
wealth Ave., Boston 15, Mass.  
General Radio Co., 275 Massachusetts Ave.,  
Cambridge 39, Mass.  
Hazeltime Electronics Corp., 1775 Broadway,  
New York, N. Y.  
Herbach & Rademann Inc., 517 Ludlow St.,  
Philadelphia 6, Pa.  
Measurement Engineering Ltd., 61 Duke St.,  
Toronto, Canada  
See Advertisement on Page 193  
Omicron Electric Co., 718 Columbus Ave.,  
New York 25, N. Y.  
Press Wireless Mfg. Corp., 1475 Broadway,  
New York 18, N. Y.

Radio-Television Institute, Inc., 480 Lexington Ave., New York 17, N. Y.  
**Reeves-Hoffman Corp.**, 215 E. 91st St., New York 17, N. Y.  
 See Advertisement on Page 180  
**Sperry Gyroscope Co., Inc.**, Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B  
**Technical Apparatus Co.**, 167 Washington St., Boston 8, Mass.

**Measurement Engineering Ltd.**, 61 Duke St., Toronto, Can.  
 See Advertisement on Page 193  
**Monitor Products Co.**, 815 Fremont St., So. Pasadena, Calif.  
**Televiso Products Inc.**, 7466 West Irving Park Road, Chicago 34, Ill.

**Pioneer Gen-E-Motor Corp.**, 5841 W. Dickens Ave., Chicago 39, Ill.  
**Star Electric Motor Co.**, 200 Bloomfield Ave., Bloomfield, N. J.  
**Superior Electric Co.**, 83 Laurel St., Bristol, Conn.  
 See Advertisements on Pages 5 to 16  
**Westinghouse Electric Corp.**, Motor Div., Buffalo, N. Y.  
**Wincharger Corp.**, 7th & Division Sts., Sioux City, Iowa

## GENERATORS—Electronic Wave

**Amplifier Corp. of America**, 396 Broadway, New York 13, N. Y.  
**Electronic Measurements Co.**, Red Bank, N. J.  
 See Advertisement on Page 68  
**Feller Engineering Co.**, 803 Milwaukee Ave., Chicago 22, Ill.  
**General Communication Co.**, 530 Commonwealth Ave., Boston 15, Mass.  
**Lektra Labs.**, 30 E. 10th St., New York, N. Y.  
**Peerless Labs.**, 46-467 10th Ave., New York 18, N. Y.  
**Sherron Electronics Co.**, 1201 Flushing Ave., Brooklyn 6, N. Y.  
**Sperry Gyroscope Co., Inc.**, Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B  
**Wappler, Inc.**, 27 W. 24th St., New York 10, N. Y.

## GENERATORS—Gas-Engine Driven

**Carson Machine & Supply Co.**, Box 4547, Oklahoma City 9, Okla.  
**Climax Industries, Inc.**, Climax Engineering Div., Clinton, Iowa.  
**Continental Electric Co., Inc.**, 323-327 Ferry St., Newark 5, N. J.  
**Cyclohm Motor Corp.**, 5-17 46 Rd., L. I. City 1, N. Y.  
 See Advertisement on Page 252  
**Delco Appliance Div., General Motors Corp.**, 391 Lyell Ave., Rochester 1, N. Y.  
**Electric Auto-Lite Co.**, The, Toledo 1, Ohio  
**Electric Products Co.**, 1725 Clarkstone Rd., Cleveland 12, Ohio  
**Electric Specialty Co.**, 211 South St., Stamford, Conn.  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
**Homelite Corp.**, Port Chester, N. Y.  
**Kato Engineering Co.**, 530 N. Front St., Mankato, Minn.  
**Kellogg Switchboard & Supply Co.**, 6650 S. Cicero Ave., Chicago 38, Ill.  
**Kohler Co., Kohler, Wis.**  
**Marble-Card Electric Co.**, Gladstone, Mich.  
**Master Vibrator Co.**, 200 Davis Ave., Dayton 1, Ohio  
**Midco Mfg. & Distributing Co.**, S. 13th & Kentucky Ave., Shevbovgan, Wis.  
**Onan & Sons, D. W.**, 3264 Royalston Ave., Minneapolis 5, Minn.  
**Pioneer Electric Co.**, 3700 E. Olympic Blvd., Los Angeles 23, Calif.  
**Pioneer Gen-E-Motor Corp.**, 5841 W. Dickens Ave., Chicago 39, Ill.  
**Ready Power Co.**, 11231 Freud Ave., Detroit 14, Mich.  
**Universal Motor Co.**, 186 Harrison St., Oshkosh, Wis.

## GENERATORS—Hand Driven

**Arnessen Electric Co., Inc.**, 116 Broad St., New York 4, N. Y.  
**Continental Electric Co., Inc.**, 323-327 Ferry St., Newark 5, N. J.  
**Cyclohm Motor Corp.**, 5-17 46 Rd., Long Island City 1, N. Y.  
 See Advertisement on Page 252  
**Federal Telephone and Radio Corp.**, 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
**U. S. Instrument Corp.**, 19 South Harrison St., East Orange, N. J.  
 See Advertisement on Page 255

## GENERATORS—Harmonic Frequency

**Boonton Radio Corp.**, Boonton, N. J.  
 See Advertisement on Page 205  
**Electronic Measurements Co.**, Red Bank, N. J.  
 See Advertisement on Page 68  
**Lavoie Labs.**, Morganville, N. J.  
**Lorain Products Corp.**, 1122 F St., Lorain, Ohio

## GENERATORS—Induction and Dielectric Heating

**Allis-Chalmers Mfg. Co.**, Milwaukee 1, Wis.  
**Budd Induction Heating Inc.**, Detroit, Mich.  
**Ecco High Frequency Corp.**, 7020 Hudson Blvd., North Bergen, N. J.  
**Electronic Sound Engineering Co.**, 4344-46 W. Armitage Ave., Chicago 39, Ill.  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
**Induction Heating Corp.**, 389 Lafayette St., New York 3, N. Y.  
**Marion Electrical Instrument Co.**, Manchester, N. H.  
**Radio Corp. of America, RCA Victor Div.**, Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
**Radio Receptor Co.**, 251 W. 19th St., New York, N. Y.  
 See Advertisement on Page 40  
**Searle Aero Industries, Inc.**, Orange, Calif.  
**Sherron Electronics Co.**, 1201 Flushing Ave., Brooklyn 6, N. Y.  
**Televiso Products Inc.**, 7466 West Irving Park Rd., Chicago 34, Ill.  
**Westinghouse Electric Corp., Industrial Electronics Div.**, Baltimore, Md.

## GENERATORS—Motor

**Allis-Chalmers Mfg. Co.**, Milwaukee 1, Wis.  
**Allis Co., Louis.**, 427 E. Stewart St., Milwaukee 7, Wis.  
**Beadix Aviation Corp.**, Red Bank Div., Red Bank, N. J.  
 See Advertisement on Page 216  
**Bogue Electric Co.**, 37 Kentucky Ave., Paterson 3, N. J.  
**Buda Co., Harvey, Illinois**  
**Burke Electric Co.**, 12th & Cranberry Sts., Erie, Pa.  
**Carter Motor Co.**, 2644 N. Maplewood Ave., Chicago 47, Ill.  
 See Advertisement on Page 228  
**Century Electric Co.**, 1806 Pine St., St. Louis 3, Mo.  
**Columbia Electric Mfg. Co.**, 4519 Hamilton Ave., N. E., Cleveland 14, Ohio  
**Continental Electric Co., Inc.**, 325 Ferry St., Newark 5, N. J.  
**Crocker-Wheeler Electric Mfg. Co., Div. of Joshua Hendy Iron Works, Ampere, N. J.**  
**Cyclohm Motor Corp.**, 5-17 46 Rd., L. I. City 1, N. Y.  
 See Advertisement on Page 252  
**Dalmo Victor Co.**, San Carlos, California  
**Eicor Inc.**, 1501 W. Congress St., Chicago 7, Ill.  
 See Advertisement on Page 210  
**Electric Auto-Lite Co.**, The, Toledo 1, Ohio  
**Electric Indicator Co.**, 21 Parker Ave., Stamford, Conn.  
**Electric Machinery Mfg. Co.**, 1331 NE Tyler St., Minneapolis 13, Minn.  
**Electric Products Co.**, 1725 Clarkstone Road, Cleveland 12, Ohio  
**Electric Specialty Co.**, 211 South St., Stamford, Conn.  
**Fidelity Electric Co.**, 332 No. Arch St., Lancaster, Pa.  
**Gaston Power Tools**, 2659 W. 95th St., Chicago 42, Ill.  
**General Aviation Equipment Co., Inc.**, 630 5th Ave., New York 20, N. Y.  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
**Geophysical Instrument Co.**, Key Blvd., & Nast St., Arlington, Va.  
**Great Lakes Electric Mfg. Co.**, 17 S. Desplaines St., Chicago 6, Ill.  
**Hertner Electric Co.**, 12690 Elmwood Ave., Cleveland 11, Ohio  
**Homelite Corp.**, Port Chester, N. Y.  
**Janette Mfg. Co.**, 556 W. Monroe St., Chicago 6, Ill.  
**Kato Engineering Co.**, 530 N. Front St., Mankato, Minn.  
**Kollsman Instrument Div. of Square D Co.**, 80-08 45th Ave., Elmhurst, N. Y.  
 See Advertisement on Page 46  
**Leland Electric Co.**, 1501 Webster St., Dayton, Ohio  
**Master Vibrator Co.**, 200 Davis Ave., Dayton 1, Ohio  
**Onan & Sons, D. W.**, 3264 Royalston Ave., Minneapolis 5, Minn.

## GENERATORS—Pulse

**American Radio Co.**, 611 E. Garfield Ave., Glendale, Calif.  
**Atomic Instruments Co.**, 160 Charles St., Boston, Mass.  
**Chatham Electronics**, 475 Washington St., Newark 2, N. J.  
 See Advertisement on Page 241  
**Electrodyne Co., The**, 899 Boylston St., Boston 15, Mass.  
**General Communication Co.**, 530 Commonwealth Ave., Boston 15, Mass.  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
**General Radio Co.**, 275 Massachusetts Ave., Cambridge 39, Mass.  
**Hewlett-Packard Co.**, 395 Page Mill Rd., Palo Alto, Calif.  
 See Advertisements on Pages 94, 95  
**Instrument Development Labs.**, 817 E. 55th St., Chicago 15, Ill.  
**Kay Electric Co.**, 34 Marshall St., Newark, N. J.  
 See Advertisement on Page 181  
**Lavoie Labs.**, Morganville, N. J.  
**Measurements Corp., Boonton, N. J.**  
 See Advertisement on Page 56  
**Polarad Electronics Co.**, 135 Liberty St., New York 6, N. Y.  
**Radar Engineers**, 4004 Arcade Bldg., Seattle 1, Wash.  
**Remington Rand, Electronics Div.**, Middletown, Conn.  
**Rollin Co.**, 2070 N. Fair Oaks Ave., Pasadena 3, Calif.  
**Rowe Radio Research Lab.**, 2422 N. Pulaski Road, Chicago 39, Ill.  
**Sherron Electronics Co.**, 1201 Flushing Ave., Brooklyn 6, N. Y.  
**Waterman Products Co., Inc.**, 2445-63 Emerald St., Philadelphia 25, Pa.  
 See Advertisement on Page 76  
**Westinghouse Electric Corp., Motor Div.**, Buffalo, N. Y.  
**Wilmotte Mfg. Co.**, 1713 Kalorama Rd. N-W, Washington 9, D. C.

## GENERATORS—Square Wave

**American Radio Co.**, 611 E. Garfield Ave., Glendale, Calif.  
**DeMornay-Budd Inc.**, 475 Grand Concourse, New York, N. Y.  
 See Advertisement on Page 171  
**Development Engineering Co., Inc.**, The, 1818 Ashland St., Houston 8, Texas  
**Electrodyne Co., The**, 899 Boylston St., Boston 15, Mass.  
**Electronic Development Lab.**, 2655 W. 19th St., Chicago 8, Ill.  
**Electronic Measurements Co., Red Bank, N. J.**  
 See Advertisement on Page 68  
**Espy Radio and Electronic Corp.**, 1218 Lincoln Ave., Santa Monica, Calif.  
 See Advertisement on Page 156  
**General Communication Co.**, 530 Commonwealth Ave., Boston 15, Mass.  
**General Electric Co., Syracuse, N. Y.**  
 See Advertisements on Pages 96, 96A  
**Hazeltine Electronics Corp.**, 1775 Broadway, New York, N. Y.  
**Hewlett-Packard Co.**, 395 Page Mill Rd., Palo Alto, Calif.  
 See Advertisements on Pages 94, 95  
**Measurement Engineering Ltd.**, 61 Duke St., Toronto, Can.  
 See Advertisement on Page 193  
**Measurements Corp., Boonton, New Jersey**  
 See Advertisement on Page 56  
**Reiner Electronics Co.**, 152 West 25th St., New York, N. Y.  
**Sherron Electronics Co.**, 1201 Flushing Ave., Brooklyn 6, N. Y.  
**Sperry Gyroscope Co., Inc.**, Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B  
**Technical Apparatus Co.**, 167 Washington St., Boston 8, Mass.

## GENERATORS—Ultrasonic

**Electronic Apparatus, Inc.**, 347 Madison Ave., New York 17, N. Y.

**Electronic Measurements Co., Red Bank, N. J.**  
 See Advertisement on Page 68  
**Electronic Tube Corp., 1200 E. Mermaid Ave., Phila. 18, Pa.**  
**Televiso Products, Inc., 7466 West Irving Park Road, Chicago, Ill.**  
**Vendo Co., 1907 Grand Ave., Kansas City 8, Mo.**  
**Wilson & Co., G. C., 2 N. Passaic Ave., Chatham, N. J.**

**GENERATORS—Winddriven Generating Equipment**

**Electric Auto-Lite Co., The, Toledo 1, Ohio**  
**Wincharger Corp., 7th & Division Sts., Sioux City, Iowa**

**GENERATORS, SIGNAL—a-f**

**American Radio Co., 611 E. Garfield Ave., Glendale, Calif.**  
**Boonton Radio Corp., Boonton, N. J.**  
 See Advertisement on Page 205  
**Communication Measurements Lab., 120 Greenwich St., New York, N. Y.**  
**Control Corp., 718 Central Ave., Minneapolis 14, Minn.**  
**Dayco Radio Corp., 915 Valley St., Dayton 4, Ohio**  
**Electrodyne Co., The, 899 Boylston St., Boston 15, Mass.**  
**Electronic Measurements Co., Red Bank, N. J.**  
 See Advertisement on Page 68  
**Espey Mfg. Co., Inc., 32 W. 46th St., New York 19, N. Y.**  
**Espey Radio and Electronic Corp., 1218 Lincoln Ave., Santa Monica, Calif.**  
 See Advertisement on Page 156  
**Feiler Engineering Co., 803 Milwaukee Ave., Chicago 22, Ill.**  
**Freed Transformer Co., 72 Spring St., New York 12, N. Y.**  
 See Advertisement on Page 253  
**General Electronics, Inc., 101 Hazel St., Paterson, N. J.**  
**General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.**  
**Hazeltine Electronics Corp., 1775 Broadway, New York, N. Y.**  
**Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.**  
 See Advertisements on Pages 94, 95  
**Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland, Ohio**  
**Madison Electrical Products Div., John G. Ruckelshaus Co., 74 Main St., Madison, N. J.**  
**Measurement Engineering Ltd., 61 Duke St., Toronto, Canada**  
 See Advertisement on Page 193  
**Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.**  
**Philco Corp., Tioga & C Sts., Philadelphia 34, Pa.**  
**Radio City Products, 127 W. 26th St., New York, N. Y.**  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover & Back Cover, 251  
**Reiner Electronics Co., 152 W. 25th St., New York, N. Y.**  
**Supreme Instruments Corp., Greenwood, Miss.**  
**Technical Apparatus Co., 167 Washington St., Boston 8, Mass.**  
**Televiso Products Inc., 7466 West Irving Park Rd., Chicago, Ill.**

**GENERATORS, SIGNAL—f-m**

**Boonton Radio Corp., Boonton, N. J.**  
 See Advertisement on Page 205  
**Clough Brengle Co., 5501 N. Broadway, Chicago 22, Ill.**  
**Diamond Instrument Co., North Ave., Wakefield, Mass.**  
**Electronic Measurements Co., Red Bank, N. J.**  
 See Advertisement on Page 68  
**Hazeltine Electronics Corp., 1775 Broadway, New York, N. Y.**  
**McMurdo Silver Co., Inc., 1249 Main St., Hartford 3, Conn.**  
**Measurement Engineering Ltd., 61 Duke St., Toronto, Canada**  
 See Advertisement on Page 193  
**Measurements Corp., Boonton, N. J.**  
 See Advertisement on Page 56  
**Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.**

**Omicron Electric Co., 718 Columbus Ave., New York 25, N. Y.**  
**Radio City Products, 127 W. 26th St., New York, N. Y.**  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover & Back Cover, 251  
**Reiner Electronics Co., 152 W. 25th St., New York, N. Y.**  
**Rollin Co., 2070 N. Fair Oaks Ave., Pasadena 3, Calif.**  
**Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.**  
 See Advertisements on Pages 80A, 80B  
**Superior Instruments Co., 227 Fulton St., New York 7, N. Y.**  
**Supreme Instruments Corp., Greenwood, Miss.**  
**Technical Apparatus Co., 167 Washington St., Boston 8, Mass.**

**GENERATORS, SIGNAL—r-f**

**Airadio Inc., Melrose Ave. & Battery Pl., Stamford, Conn.**  
**Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.**  
**Boonton Radio Corp., Boonton, N. J.**  
 See Advertisement on Page 205  
**Brown Engineering Co., 4635 S. E. Hawthorne Blvd., Portland 15, Oregon**  
**Burke Electric Co., 12th & Cranberry Sts., Erie, Pa.**  
**Clough Brengle Co., 5501 N. Broadway, Chicago 22, Ill.**  
**Dayton Acme Co., 930 York St., Cincinnati 14, Ohio**  
**Electronic Mfg. Co., 714 Race St., Harrisburg, Pa.**  
**Electronic Measurements Co., Red Bank, N. J.**  
 See Advertisement on Page 68  
**Espey Mfg. Co., 33 W. 46th St., New York 19, N. Y.**  
**Feiler Engineering Co., 803 Milwaukee Ave., Chicago 22, Ill.**  
**Ferris Instrument Co., 110-112 Cornelia St., Boonton, N. J.**  
**Gem Radio & Television Co., 72 Cortlandt St., New York 6, N. Y.**  
**General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.**  
**General Electronics, Inc., 101 Hazel St., Paterson, N. J.**  
**General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.**  
**Hazeltine Electronics Corp., 1775 Broadway, New York, N. Y.**  
**Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.**  
 See Advertisements on Pages 94, 95  
**Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland, Ohio**  
**Hillburn Electronic Products Co., 1 Worth St., New York 13, N. Y.**  
**Huber Radio Co., 260 S. Center St., Casper, Wyo.**  
**Jackson Electrical Instrument Co., 16 S. Patterson Blvd., Dayton 1, Ohio**  
**Jarvis, Kenneth W., 1140 Cherry St., Winnetka, Ill.**  
**Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.**  
**McMurdo Silver Co., Inc., 1249 Main St., Hartford 3, Conn.**  
**Madison Electrical Products Div., John G. Ruckelshaus Co., 74 Main St., Madison, N. J.**  
**Measurement Engineering Ltd., 61 Duke St., Toronto, Canada**  
 See Advertisement on Page 193  
**Measurements Corp., Boonton, N. J.**  
 See Advertisement on Page 56  
**Monarch Mfg. Co., 2014 N. Major Ave., Chicago 39, Ill.**  
**Monitor Products Co., 815 Fremont St., So. Pasadena, Calif.**  
**Northeastern Engineering Inc., Manchester, N. H.**  
**Omicron Electric Co., 718 Columbus Ave., New York 25, N. Y.**  
**Philco Corp., Tioga & C Sts., Phila. 34, Pa.**  
**Precision Apparatus Co., 92-27 Horace Harding Blvd., Elmhurst, N. Y.**  
**Radio City Products, 127 W. 26th St., New York, N. Y.**  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover & Back Cover, 251  
**Reiner Electronics Co., 152 W. 25th St., New York, N. Y.**  
**Rollin Co., 2070 N. Fair Oaks Ave., Pasadena 3, Calif.**  
**Simpson Electric Co., 5218 W. Kinzie St., Chicago 44, Ill.**  
**Supreme Instruments Corp., Greenwood, Miss.**  
**Technical Apparatus Co., 167 Washington St., Boston 8, Mass.**

**GENERATORS, SIGNAL—shf**

**Boonton Radio Corp., Boonton, N. J.**  
 See Advertisement on Page 205  
**Feller Engineering Co., 803 Milwaukee Ave., Chicago 22, Ill.**  
**General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.**  
**Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.**  
**Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.**  
 See Advertisements on Pages 80A, 80B

**GENERATORS, SIGNAL—Sweeping**

**Diehl Manufacturing Co., 1129 Finnerde Ave., Somerville, N. J.**  
**Electronic Measurements Co., Red Bank, N. J.**  
 See Advertisement on Page 68  
**General Electric Co., Syracuse, N. Y.**  
 See Advertisements on Pages 96, 96A  
**Harvey Radio Labs, Inc., 447 Concord Ave., Cambridge, Mass.**  
**Kay Electric Co., 34 Marshall St., Newark, N. J.**  
 See Advertisement on Page 184  
**Measurement Engineering Ltd., 61 Duke St., Toronto, Can.**  
 See Advertisement on Page 193  
**Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.**  
**Omicron Electric Co., 718 Columbus Ave., New York 25, N. Y.**  
**Panoramic Radio Corp., 242 W. 55th St., New York 19, N. Y.**  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover & Back Cover, 251  
**Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.**  
 See Advertisements on Pages 80A, 80B  
**United States Television Mfg., Corp., 3 W. 61st St., New York 23, N. Y.**

**GENERATORS, SIGNAL—Television Synchronizing**

**DuMont Labs, Inc., Allen B., 2 Main Ave., Passaic, N. J.**  
**Electronic Measurements Co., Red Bank, N. J.**  
 See Advertisement on Page 68  
**Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.**  
**Polorad Electronics Co., 135 Liberty St., New York 6, N. Y.**  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover & Back Cover, 251  
**Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.**  
**Telequip Radio Co., 1901 S. Washtenaw, Chicago, Ill.**  
**Television Projects, Inc., 24 Walnut St., Newark 2, N. J.**  
**Telicon Corp., 851 Madison Ave., New York 21, N. Y.**

**GENERATORS, SIGNAL—uhf**

**Aircraft Radio Corp., Boonton, N. J.**  
 See Advertisement on Page 185  
**Boonton Radio Corp., Boonton, N. J.**  
 See Advertisement on Page 205  
**Electronic Measurements Co., Red Bank, N. J.**  
 See Advertisement on Page 68  
**Ferris Instrument Co., 110-112 Cornelia St., Boonton, N. J.**  
**General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.**  
**Hazeltine Electronics Corp., 1775 Broadway, New York, N. Y.**  
**Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.**  
 See Advertisements on Pages 94, 95  
**McMurdo Silver Co., Inc., 1249 Main St., Hartford 3, Conn.**  
**Measurements Corp., Boonton, N. J.**  
 See Advertisement on Page 56  
**Measurement Engineering Ltd., 61 Duke St., Toronto, Can.**  
 See Advertisement on Page 193  
**Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.**  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover & Back Cover, 251  
**Rollin Co., 2070 N. Fair Oaks Ave., Pasadena 3, Calif.**

## GENERATORS, SIGNAL—vhf

Ferris Instrument Co., 110-112 Cornelia St., Boonton, N. J.  
 General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
 Harvey Radio Labs., Inc., 447 Concord Ave., Cambridge, Mass.  
 Hazeltine Electronics Corp., 1775 Broadway, New York, N. Y.  
 Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.

See Advertisements on Pages 94, 95  
 McMurdo Silver Co., 1249 Main St., Hartford 3, Conn.

Measurements Corp., Boonton, N. J.  
 See Advertisement on Page 56  
 Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
 Omicron Electric Co., 718 Columbus Ave., New York 25, N. Y.  
 Rollin Co., 2070 N. Fair Oaks Ave., Pasadena 3, Calif.

## GEOPHYSICAL APPARATUS

American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
 Development Engineering Co., Inc., The, 1818 Ashland St., Houston 8, Texas  
 Engineering Laboratories, Inc., 602 E. Fourth St., Tulsa 3, Okla.  
 Geophysical Instrument Co., Key Blvd. & Nash St., Arlington, Va.  
 Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.  
 Lectronic Research Labs., Howell and Hegermann Sts., Philadelphia, Pa.  
 Miller Corp., Wm., 362 W. Colorado St., Pasadena, Calif.  
 Triad Transformer Mfg. Co., 423 N. Western Ave., Los Angeles 4, Calif.  
 Trion Electric Corp., 76 Ellicott St., Buffalo 3, N. Y.

## GETTERS

See Tube Parts

## GLASS

See Insulation Materials

## GLASS BONDED MICA

See Insulation Materials

## GLASS FIBER

See Insulation Materials

## GRAPHIC RECORDING INSTRUMENTS

See Instruments, Graphic Recording

## GRAPHITE—Colloidal

Acheson Colloids Corp., Port Huron, Mich.  
 Asbury Graphite Mills Inc., Asbury, N. J.  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 Grafo Colloids Corp., Sharon, Pa.  
 Superior Flake Graphite Co., 33 S. Clark St., Chicago 3, Ill.

## GRIDS AND GRID SUPPORTS

See Tube Parts

## GRILLES—Metal

Amalgamated Radio Television Corp., 476 Broadway, New York 13, N. Y.  
 Barber Colman Co., River & Loomis Sts., Rockford, Ill.

Flock Process Co., Velvetone Div., 3 Quincy St., Norwalk, Conn.  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Karp Metal Products Co., Inc., 139 30th St., Brooklyn, N. Y.  
 See Advertisement on Page 81  
 Schott Co., Walter L., 9306 Santa Monica Blvd., Beverly Hills, Calif.

## GRILLES—Molded Plastic

American Communications Corp., 306 Broadway, New York 7, N. Y.  
 Chicago Die Mold Corp., 4001 Wrightwood Ave., Chicago 39, Ill.  
 Consolidated Molded Products Corp., Seranton 2, Pa.  
 Felsenthal & Sons, G., 4100 W. Grand Ave., Chicago 51, Ill.  
 Insulation Mfg. Co., 11 New York Ave., Brooklyn, N. Y.  
 Plastic Enterprises, 129 Bloomfield Ave., Bloomfield, N. J.  
 Searle Aero Industries, Inc., Orange, Calif.  
 Stokes Molded Products, Taylor St., at Webster, Trenton, N. J.  
 Syracuse Ornamental Co., 581 S. Clinton St., Syracuse, N. Y.  
 Tri-United Plastics Corp., 390 Nye Ave., Irvington, N. J.  
 Victory Mfg. Co., 1722 W. Arcade Pl., Chicago 2, Ill.

## GRILLES—Speaker

American Communications Corp., 306 Broadway, New York 7, N. Y.  
 Felsenthal & Sons, G., 4100 W. Grand Ave., Chicago 51, Ill.  
 Flock Process Co., Velvetone Div., 3 Quincy St., Norwalk, Conn.  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Precision Fabricators, Inc., 120 N. Fitzbush St., Rochester, N. Y.  
 Schott Co., Walter L., 9306 Santa Monica Blvd., Beverly Hills, Calif.  
 Searle Aero Industries, Inc., Orange, Calif.  
 Shaw Insulator Co., 160 Coit St., Irvington 11, N. J.  
 Stromberg-Carlson Co., Rochester, N. Y.

## GROMMETS

Aerolite Electronic Hardware Corp., 24 Cliff St., Jersey City, N. J.  
 See Advertisement on Page 246  
 American Lava Corp., Chattanooga, 5, Tenn.  
 See Advertisement on Page 69  
 Buggie & Co., H. H., 2141 Madison Ave., Toledo 1, Ohio  
 Centralab, Div. of Globe Union Inc., 900 Keefe Ave., Milwaukee 1, Wis.  
 See Advertisements on Pages 24, 25  
 Chase Brass & Copper Co., Inc., Waterbury 91, Conn.  
 Creative Plastics Corp., 963 Kent Ave., Brooklyn, N. Y.  
 Dzus Fasteners Co. Inc., Box 605, Babylon, N. Y.  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 Gordon Specialties Co., 823 S. Wabash Ave., Chicago 5, Ill.  
 Grammes & Sons Inc., L. F., 389 Union St., Allentown 2, Pa.  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Mayfair Molded Products Corp., 4440 N. Elston Ave., Chicago 30, Ill.  
 Mykroy Inc., 1917 N. Springfield Ave., Chicago 47, Ill.  
 National Vulcanized Fibre Co., Wilmington, Del.  
 See Advertisement on Page 58  
 Parisian Novelty Co., 3510 South Western Ave., Chicago 9, Ill.  
 Plastic Enterprises, 129 Bloomfield Ave., Bloomfield, N. J.  
 Plume & Atwood Mfg. Co., 470 Bank St., Waterbury, Conn.  
 Precision Fabricators, Inc., 120 N. Fitzbush St., Rochester, N. Y.

Schott Co., Walter L., 9306 Santa Monica Blvd., Beverly Hills, Calif.  
 Spaulding Fibre Co., Inc., 310 Wheeler St., Tonawanda, N. Y.  
 Stimpson Co., Inc., Edwin B., 74 Franklin Avenue, Brooklyn 5, New York  
 Stronghold Screw Products, 216 West Hubbard St., Chicago 10, Ill.  
 U. S. Rubber Co., 1230 Sixth Ave., New York 20, N. Y.  
 Wilmington Fibre Specialty Co., P. O. Drawer 1028, Wilmington 99, Del.

## GUIDES—Coil Wind

Centralab, Div. of Globe Union Inc., Milwaukee 1, Wis.  
 See Advertisements on Pages 24, 25  
 Gatti, Inc., Aurele M., 1909 Liberty Street, Trenton, N. J.  
 Magnetic Products Corp., The, Norwalk, Conn.

## GUIDES—Flexible Wave

American Brass Co., American Metal Hose Branch, Waterbury 88, Conn.

## GUIDES, WAVE

See Microwave Transmission Lines and Accessories

## HARNESSES—Wire

Aircraft-Marine Products, Inc., 1523 N. Fourth St., Harrisburg, Pa.  
 Alden Products Co., 117 No. Main St., Brockton 64, Mass.  
 Alpha Wire Corp., 50 Howard St., New York, N. Y.  
 American Electric Cable Co., Holyoke, Mass.  
 American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 Boston Insulated Wire & Cable Co., 63 Bay St., Boston 25, Mass.  
 Branston Electric Mfg. Co., 61-65 Gill Pl., Buffalo 13, N. Y.  
 Bruce Electronics Co., 1478 Coney Island Ave., Brooklyn, N. Y.  
 Buggie & Co., H. H., 2141 Madison Ave., Toledo 1, Ohio  
 Columbia Wire & Supply Co., 5734 N. Elson Ave., Chicago 30, Ill.  
 See Advertisement on Page 206  
 Electric Auto-Lite Co., The, Toledo 1, Ohio  
 Interstate Mfg. Corp., 125 Sussex Ave., Newark 4, N. J.  
 See Advertisements on Pages 180, 215  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Runzel Cord & Wire Co., 4731 Montrose Ave., Chicago, Ill.  
 Searle Aero Industries, Inc., Orange, Calif.  
 Sittler Mfg. Corp., 18 N. Ada St., Chicago 7, Ill.  
 Whittaker Cable Corp., North Kansas City, Mo.

## HEADPHONES & HEADSETS

Astatic Corp., Conneaut, Ohio  
 Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.  
 Aviometer Corp., 370 West 35th St., New York 1, N. Y.  
 See Advertisement on Page 224  
 Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
 Brush Development Co., 3405 Perkins Ave., Cleveland 14, Ohio  
 Cannon Co., C. F., Springwater, N. Y.  
 Carron Mfg. Co., 415 S. Aberdeen St., Chicago, Ill.  
 Connecticut Telephone & Electric Div., Great American Industries, 70 Britannia St., Meriden, Conn.  
 Eby, Inc., Hugh H., 18 W. Chelton Ave., Phila. 13, Pa.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisement on Page 96B, 96C  
 Insuline Corp. of America, 36-02 35th Ave., L. I. City, N. Y.  
 See Advertisement on Page 166  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.

Miles Reproducer Co., Inc., 812 Broadway, New York, N. Y.  
See Advertisement on Page 256  
Murdock Mfg. Co., William J., Chelsea, Mass.  
Permoflux Corp., 4900 W. Grand Ave., Chicago, Ill.  
Remler Co. Ltd., 2101 Bryant St., San Francisco 10, Calif.  
Taybern Equipment Co., 120 Greenwich St., New York 6, N. Y.  
Telex Inc., Telex Park, Minneapolis, Minn.  
See Advertisement on Page 207  
Telephonics Corp., 350 West 31st St., New York, N. Y.  
Trimm, Inc., 1770 W. Berteau Ave., Chicago 13, Ill.  
U. S. Instrument Corp., 19 S. Harrison St., East Orange, N. J.  
See Advertisement on Page 255  
Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
See Advertisements on Pages 88, 89  
Winslow Co., 9 Liberty St., Newark 5, N. J.

**HEADS—Recording**

Allied Recording Products Co., 21-09 43rd Ave., Long Island City, N. Y.  
See Advertisement on Page 233  
Brush Development Co., 3405 Perkins Ave., Cleveland 14, Ohio  
Caltron Co., 11916 W. Pico Blvd., Los Angeles 34, Calif.  
Duotone Co., 799 Broadway, New York 3, N. Y.  
Fairchild Camera & Instrument Corp., 88-06 Van Wyck Blvd., Jamaica 1, N. Y.  
Miles Reproducer Co., Inc., 812 Broadway, New York 3, N. Y.  
See Advertisement on Page 256  
Presto Recording Corp., 242 W. 55th St., New York 19, N. Y.  
See Advertisements on Pages 50, 51  
Rek-O-Kut Co., 146 Grand St., New York 13, N. Y.  
See Advertisement on Page 245  
Shure Brothers, 225 W. Huron St., Chicago, Ill.  
See Advertisement on Page 157  
Universal Microphone Co., Inglewood, Calif.  
See Advertisement on Page 56  
Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
See Advertisements on Pages 88, 89

**HEARING AID ANALYZERS**

Electronic Measurements Co., Red Bank, N. J.  
See Advertisement on Page 68  
Pan American Electric Co., Inc., 2912 Atlantic Ave., Brooklyn 7, N. Y.  
Paraphone Hearing Aid Inc., 2056 E. 4th St., Cleveland 15, Ohio  
Tech Laboratories, 337 Central Ave., Jersey City, N. J.  
Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.

**HEARING AID BATTERIES**

General Dry Batteries, Inc., 13000 Athens Ave., Cleveland, Ohio  
Magnavox Co., The, Fort Wayne 4, Ind.  
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.  
See Advertisements on Pages 257 to 260  
National Carbon Co., Inc., 30 E. 42nd St., New York, N. Y.  
See Advertisement on Page 167  
Paraphone Hearing Aid Inc., 2056 E. 4th St., Cleveland 15, Ohio

**HEARING AID CHOKES**

Control Corp., 718 Central Ave., Minneapolis 14, Minn.  
Electronic Transformer Co. Inc., 207 W. 25th St., New York, N. Y.  
Joyner Corp., The, 462 N. Parkside Ave., Chicago 44, Ill.  
K-V Transformer Corp., 1697 First Ave., New York, N. Y.  
Magnetic Products Corp., The, Norwalk, Conn.  
New York Transformer Co., Alpha, N. J.  
See Advertisement on Page 165  
Paraphone Hearing Aid Inc., 2056 E. 4th St., Cleveland 15, Ohio  
Permoflux Corp., 4900 W. Grand Ave., Chicago, Ill.

Radionic Controls, Inc., 3758 Belmont Ave., Chicago 18, Ill.  
Standard Transformer Corp., 1500 N. Halstead St., Chicago 22, Ill.  
Super Electric Products Corp., 1057 Summit Ave., Jersey City, N. J.  
See Advertisement on Page 86  
Telex Inc., Telex Park, Minneapolis 1, Minn.  
See Advertisement on Page 207  
United Transformer Corp., 150 Varick St., New York 13, N. Y.  
See Advertisement on Inside Front Cover

**HEARING AID CONNECTORS**

Alden Products Co., 117 No. Main St., Brockton 64, Mass.  
American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
See Advertisement on Page 23  
Brush Development Co., The, 3405 Perkins Ave., Cleveland 14, Ohio  
Buggie & Co., H. H., 2141 Madison Ave., Toledo 1, Ohio  
Diamond Instrument Co., North Ave., Wakefield, Mass.  
Eby, Inc., Hugh H., 13 W. Chelton Ave., Philadelphia 13, Pa.  
Hermetic Seal Products Co., 414 Morris Ave., Newark 3, N. J.  
Kings Electronics Co., 372 Classon Ave., Brooklyn 5, N. Y.  
Paraphone Hearing Aid Inc., 2056 E. 4th St., Cleveland 15, Ohio

**HEARING AID METERS**

Electro-Mechanical Instrument Co., 812 Chestnut St., Perkasie, Pa.  
MB Instruments, Inc., 1060 State St., New Haven 11, Conn.  
Maico Co. Inc., 25 N. 3rd St., Minneapolis, Minn.  
Pan American Electric Co., Inc., 2912 Atlantic Ave., Brooklyn 7, N. Y.

**HEARING AID MICROPHONES**

Astatic Corp., Conneaut, Ohio  
Brush Development Co., The, 3405 Perkins Ave., Cleveland 14, Ohio  
Maico Co., Inc., 25 N. 3rd St., Minneapolis, Minn.  
Paraphone Hearing Aid Inc., 2056 E. 4th St., Cleveland 15, Ohio  
Permoflux Corp., 4900 W. Grand Ave., Chicago, Ill.  
Shure Brothers, 225 W. Huron St., Chicago, Ill.  
See Advertisement on Page 157  
Tibbetts Industries, Inc., Camden, Maine

**HEARING AID RECEIVERS**

American Earphone Co., 10 E. 43rd St., New York 17, N. Y.  
Brush Development Co., 3405 Perkins Ave., Cleveland 14, Ohio  
Maico Co., Inc., 25 N. 3rd St., Minneapolis, Minn.  
Murdock Mfg. Co., Wm. J., Chelsea, Mass.  
Paraphone Hearing Aid Inc., 2056 E. 4th St., Cleveland 15, Ohio  
Shure Brothers, 225 W. Huron St., Chicago, Ill.  
See Advertisement on Page 157  
Telex Inc., Telex Park, Minneapolis 1, Minn.  
See Advertisement on Page 207

**HEARING AID TRANSFORMERS**

Airdesign, Inc., 241 Fairfield Ave., Upper Darby, Pa.  
Chicago Transformer Div., Essex Wire Corp., 3501 W. Addison St., Chicago 18, Ill.  
Control Corp., 718 Central Ave., Minneapolis 14, Minn.  
Electronic Engineering Co., Inc., 3223 W. Armitage Ave., Chicago 47, Ill.  
See Advertisement on Page 38  
Electronic Transformer Co., Inc., 207 W. 25th St., New York, N. Y.  
K-V Transformer Corp., 1697 First Ave., New York, N. Y.  
Magnetic Products Corp., The, Norwalk, Conn.

Maico Co., Inc., 25 North 34th St., Minneapolis, Minn.  
New York Transformer Co., Alpha, N. J.  
See Advertisement on Page 165  
Paraphone Hearing Aid Inc., 2056 E. 4th St., Cleveland 15, Ohio  
Permoflux Corp., 4900 W. Grand Ave., Chicago, Ill.  
Radionic Controls, Inc., 3758 Belmont Ave., Chicago 18, Ill.  
Standard Electrical Products Co., Dayton 3, Ohio  
Standard Transformer Corp., 1500 N. Halstead St., Chicago 22, Ill.  
Super Electric Products Corp., 1057 Summit Ave., Jersey City, N. J.  
See Advertisement on Page 86  
Telex Inc., Telex Park, Minneapolis 1, Minn.  
See Advertisement on Page 207  
Triad Transformer Mfg. Co., 423 N. Western Ave., Los Angeles 4, Calif.  
United Transformer Corp., 150 Varick St., New York 13, N. Y.  
See Advertisement on Inside Front Cover  
Vacolite Co., 3001-3003 N. Henderson, Dallas, Texas

**HEARING AID TUBES**

Aurex Corp., 1117 N. Franklin St., Chicago, Ill.  
Paraphone Hearing Aid Inc., 2056 E. 4th St., Cleveland 15, Ohio  
Radio Corp. of America, Tube Div., Harrison, N. J.  
Raytheon Mfg. Co., Special Tube Section, 55 Chapel St., Newton 58, Mass.  
Sonotone Corp., P. O. Box 200, Saw Mill River Rd., Elmsford, N. Y.  
Standard Arcturus Corp., 99 Sussex Ave., Newark, N. J.

**HEARING AIDS**

American Earphone Co., 10 E. 43rd St., New York 17, N. Y.  
Aurex Corp., 1117 N. Franklin St., Chicago, Ill.  
Electronic Sound Engineering Co., 4344-46 W. Armitage Ave., Chicago 39, Ill.  
Emerson Radio & Phonograph Corp., 111 8th Ave., New York, N. Y.  
Globe Phone Mfg. Corp., 2 Linden St., Reading, Mass.  
Hofmann Corp., C. L., 347 Fifth Ave., Pittsburgh, Pa.  
Laurehk Radio Mfg. Co., 3931 Monroe Ave., Wayne, Mich.  
Myers & Sons, E. A., Radioear Bldg., Beverly Rd., Pittsburgh 16, Pa.  
Paraphone Hearing Aid Inc., 2056 East 4th St., Cleveland 15, Ohio  
Sonotone Corp., P. O. Box 200, Saw Mill River Road, Elmsford, N. Y.  
Taybern Equipment Co., 120 Greenwich St., New York 6, N. Y.  
Trimm Inc., 1770 W. Berteau Ave., Chicago 13, Ill.  
Vacolite Co., 3001-3003 N. Henderson, Dallas, Texas  
Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
See Advertisements on Pages 88, 89  
Zenith Radio Corp., 6001 Dickens Ave., Chicago, Ill.

**HEATING, ELECTRONIC—Accessories and Associated Equipment**

Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.  
Budd Induction Heating, Inc., Detroit, Mich.  
Dobeckmun Co., The, Industrial Products Div., Cleveland 1, Ohio  
Eisler Engineering Co. Inc., 740 S. 13th St., Newark 3, N. J.  
Electronic Processes Corp., 249 Richards Rd., Ridgewood, N. J.  
Electronic Transformer Co. Inc., 207 W. 25th St., New York, N. Y.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Girdler Corp., Thermex Div., 224 E. Broadway, Louisville 1, Ky.  
Induction Heating Corp., 389 Lafayette St., New York 3, N. Y.  
Kable Engineering Co., 1307 7th St., North Bergen, N. J.  
See Advertisement on Page 256  
Marion Electrical Instrument Co., Manchester, N. H.  
Rhein Engineering, 120 W. North St., Springfield, Ohio

S-W Inductor Co., 1056 N. Wood St., Chicago, Ill.  
 Searle Aero Industries, Inc., Orange, Calif.  
 Titelflex, Inc., 500 Frelinghuysen Ave., Newark 5, N. J.  
 Westinghouse Electric Corp., Industrial Electronics Div., Baltimore, Md.  
 Wilmotte Mfg. Co., 1713 Kalorama Rd., N.W., Washington 9, D. C.

## HEATING, ELECTRONIC—Dielectric

Airtronics Mfg. Co., 5145 W. San Fernando Rd., Los Angeles 26, Calif.  
 Allis-Chalmers Mfg. Co., Milwaukee 1, Wisc.  
 American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
 Cutler-Hammer, Inc., 315 No. 12th St., Milwaukee 1, Wisc.  
 Diehl Manufacturing Co., 1129 Funderne Ave., Somerville, N. J.  
 Electric Eye Equipment Co., 16 W. Fairchild St., Danville, Ill.  
 Electronic Processes Corp., 249 Richards Rd., Ridgewood, N. J.  
 Electronic Sound Engineering Co., 4344-46 W. Armitage Ave., Chicago 39, Ill.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Girdler Corp., Thermex Div., 224 E. Broadway, Louisville 1, Ky.  
 Illinois Tool Works, Electronics Div., 2501 N. Keeler Ave., Chicago 39, Ill.  
 Induction Heating Corp., 389 Lafayette St., New York 3, N. Y.  
 Inductive Equipment Co., Gettysburg, Pa.  
 LaRose & Associates, W. T., 646 Second Ave., Troy, N. Y.  
 Lyman Electronic Corp., 12 Cass St., Springfield, Mass.  
 Parker Engineering Products Co., 16 W. 22nd St., New York 10, N. Y.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Rhein Engineering, 120 W. North St., Springfield, Ohio  
 "S" Corrugated Quenched Gap Co., Scientific Electric Div., 107 Monroe St., Garfield, N. J.  
 See Advertisement on Page 255  
 S-W Inductor Co., 1056 N. Wood St., Chicago, Illinois  
 Searle Aero Industries, Inc., Orange, Calif.  
 Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.  
 Short Wave Plastic Forming Co., 2921 W. Alameda St., Burbank, Calif.  
 Thermionic Engineering Corp., Pompton Plains, N. J.  
 Triplett & Barton Inc., Burbank, Calif.  
 Westinghouse Electric Corp., Industrial Div., Baltimore, Md.

## HEATING, ELECTRONIC—Induction

Ajax Electrothermic Corp., Ajax Park, Trenton, N. J.  
 Allis-Chalmers Mfg. Co., Milwaukee 1, Wisc.  
 Budd Induction Heating Inc., Detroit, Mich.  
 Ecco High Frequency Corp., 7020 Hudson Blvd., North Bergen, N. J.  
 Electric Eye Equipment Co., 16 W. Fairchild St., Danville, Ill.  
 Electric Furnace Co., Salem, Ohio  
 Electronic Engineers, 1039-B Pacific St., Santa Monica, Calif.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Illinois Tool Works, Electronics Div., 2501 N. Keeler Ave., Chicago 39, Ill.  
 Induction Heating Corp., 389 Lafayette St., New York 3, N. Y.  
 Inductive Equipment Co., Gettysburg, Pa.  
 LaRose & Associates, W. T., 646 Second Ave., Troy, N. Y.  
 Lyman Electronic Corp., 12 Cass St., Springfield, Mass.  
 Marion Electrical Instrument Co., Manchester, N. H.  
 Ohio Crankshaft Co., Tocco Div., 3800 Harvard Ave., Cleveland 1, Ohio  
 Parker Engineering Products Co., 16 W. 22nd St., New York 10, N. Y.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Rhein Engineering, 120 W. North St., Springfield, Ohio  
 "S" Corrugated Quenched Gap Co., Scientific Electric Div., 107 Monroe St., Garfield, N. J.  
 See Advertisement on Page 255  
 S-W Inductor Co., 1056 N. Wood St., Chicago, Illinois  
 Searle Aero Industries, Inc., Orange, Calif.

Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.  
 Sylvia Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161  
 Weltron Co., 19500 West 8 Mile Rd., Detroit 19, Mich.  
 Westinghouse Electric Corp., Industrial Electronics Div., Baltimore, Md.

## HEMOGLOBINOMETER—Electronic

Fisher Scientific Co., 717 Forbes St., Pittsburgh 16, Pa.  
 Kemlite Labs., 1809 N. Ashland Ave., Chicago, Ill.  
 Maico Co. Inc., 25 N. 3rd St., Minneapolis, Minn.

## HOODS—Viewing

Du Mont Labs, Inc., Allen B., 2 Main Ave., Passaic, N. J.  
 Rice's Sons, Inc., Bernard, 325 Fifth Ave., New York 16, N. Y.

## HORNS—Speaker Projector

Altee Lansing Corp., 1161 Vine St., Hollywood 38, Calif.  
 Atlas Sound Corp., 1443 39th St., Brooklyn 18, N. Y.  
 See Advertisement on Page 96D  
 Castwood Mfg. Co., 12th & Burnett Sts., Louisville, Ky.  
 Hawley Products Co., St. Charles, Ill.  
 Jensen Radio Mfg. Co., 6601 S. Laramie Ave., Chicago, Ill.  
 Kling Metal Spinning Co., 174 Centre St., New York 13, N. Y.  
 Langevin Co., Inc., 37 W. 65th St., New York, N. Y.  
 See Advertisement on Page 153  
 Oxford Radio Corp., 3911 S. Michigan Ave., Chicago 15, Ill.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Rauland Corp., 4245 N. Knox Ave., Chicago 41, Ill.  
 SOS Cinema Supply Co., 449 West 42nd Street, New York 18, N. Y.  
 Stromberg-Carlson Co., Rochester, N. Y.  
 University Loudspeakers Inc., 225 Varick St., New York, N. Y.  
 Western Electric Co., Inc., 195 Broadway, New York, N. Y.  
 See Advertisements on Pages 88, 89

## HOUSINGS—Antenna

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 Buglie & Co., H. H., 2141 Madison Ave., Toledo 1, Ohio  
 Diamond Instrument Co., North Ave., Wakefield, Mass.  
 Insuline Corp. of America 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Rice's Sons, Inc., Bernard, 325 Fifth Ave., New York 16, N. Y.  
 U. S. Rubber Co., 1230 Sixth Ave., New York 20, N. Y.

## HOUSINGS—Automobile Radio

Hawley Products Co., St. Charles, Ill.  
 Insulation Mfg. Co., 11 New York Ave., Brooklyn, N. Y.

## HOUSINGS—Instrument

Art-Lloyd Metal Products Corp., 2973 Cropsey Ave., Brooklyn 14, N. Y.  
 See Advertisement on Page 236  
 Eclipse Mfg. Co. Inc., 294 E. 137th St., New York 54, N. Y.  
 Electric Tachometer Corp., Broad & Spring Garden Sts., Philadelphia, Pa.  
 Insulation Mfg. Co., 11 New York Ave., Brooklyn, N. Y.

Insuline Corp. of America, 36-02 35th Ave., L. I. City, N. Y.  
 See Advertisement on Page 166  
 Karp Metal Products Co., Inc., 139 30th St., Brooklyn, N. Y.  
 See Advertisement on Page 81  
 Lavole Labs., Morganville, N. J.  
 Marion Electrical Instrument Co., Manchester, N. H.  
 Plastic Enterprises, 129 Bloomfield Ave., Bloomfield, N. J.  
 Sanders Bros. Mfg. Co., 409 W. Main St., Ottawa, Ill.  
 Stamford Metal Specialty Co., 429 W. Broadway, New York 12, N. Y.  
 See Advertisement on Page 214  
 Standard Molding Corp., Dayton, Ohio  
 Walter Co., S., 144 Centre St., Brooklyn 31, N. Y.  
 See Advertisement on Page 57  
 Watertown Mfg. Co., Watertown, Conn.

## HOUSINGS—Public Address System

Atlas Sound Corp., 1443 39th St., Brooklyn 18, N. Y.  
 See Advertisement on Page 96D  
 Bogen Co., David, 663 Broadway, New York 12, N. Y.  
 Castlewood Mfg. Co., 12th & Burnett Sts., Louisville, Ky.  
 Electronic Sound Engineering Co., 4344-46 W. Armitage Ave., Chicago 39, Ill.  
 Hawley Products Co., St. Charles, Ill.  
 Karp Metal Products Co., Inc., 139 Thirtieth St., Brooklyn, N. Y.  
 See Advertisement on Page 81  
 Kling Metal Spinning Co., 174 Centre St., New York 13, N. Y.  
 Langevin Co., Inc., 37 W. 65th St., New York, N. Y.  
 See Advertisement on Page 153  
 Measurement Engineering Ltd., 61 Duke St., Toronto, Can.  
 See Advertisement on Page 193  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Stark Sound Engineering Co., P.O. Box 493, Fort Wayne 1, Ind.  
 Walter Co., S., 144 Centre St., Brooklyn 31, N. Y.  
 See Advertisement on Page 57

## HOUSINGS—Speaker

Atlas Sound Corp., 1443 39th St., Brooklyn 18, N. Y.  
 See Advertisement on Page 96D  
 Bogen Co., David, 663 Broadway, New York 12, N. Y.  
 Bud Radio, Inc., 2118 E. 55th St., Cleveland 3, Ohio  
 Collins Audio Products Co., 126 Park St., Westfield, N. J.  
 See Advertisement on Page 253  
 D. & M. Mfg. Co., 2 Delford Ave., Bergenfield, N. J.  
 Electronic Sound Engineering Co., 4344-46 W. Armitage Ave., Chicago 39, Ill.  
 Hawley Products Co., St. Charles, Ill.  
 Karp Metal Products Co., Inc., 139 30th St., Brooklyn, N. Y.  
 See Advertisement on Page 81  
 Kling Metal Spinning Co., 174 Centre St., New York 13, N. Y.  
 Langevin Co., Inc., 37 W. 65th St., New York 12, N. Y.  
 See Advertisement on Page 153  
 Lorentzen, Inc., H. K., 391 Broadway, New York 12, N. Y.  
 Magnavox Co., The, Fort Wayne 4, Ind.  
 National Co., 61 Sherman Street, Malden 48, Mass.  
 See Advertisement on Page 78  
 Racon Electric Co., 52 E. 19th St., New York 3, N. Y.  
 See Advertisement on Page 213  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Radio Labs, Inc., 2701 Calif. Ave., Seattle 6, Wash.  
 Rauland Corp., 4245 N. Knox Ave., Chicago 41, Ill.  
 Searle Aero Industries, Inc., Orange, Calif.  
 Standard Molding Corp., Dayton, Ohio  
 University Loudspeakers, Inc., 225 Varick St., New York 14, N. Y.  
 Walter Co., S., 144 Centre St., Brooklyn 31, N. Y.  
 See Advertisement on Page 57

**IGNITION SYSTEMS—Electronic**

Electric Auto-Lite Co., The, Toledo 1, Ohio  
Madison Electrical Products Div., John G.  
Ruckelshaus Co., 74 Main St., Madison,  
N. J.

**IGNITRON**

See Tubes

**IMPREGNATING COMPOUNDS**

See Insulating Compounds

**IMPREGNATING MACHINES**

See Machines

**INDICATORS—Automatic Mixture Control**

Industrial Instruments Inc., 17 Pollack Ave.,  
Jersey City 5, N. J.  
Sperry Gyroscope Co., Inc., Great Neck,  
L. I., N. Y.  
See Advertisements on Pages 80A, 80B

**INDICATORS—Capacitor Leakage**

Aerovox Corp., 740 Belleville Ave., New  
Bedford, Mass.  
Condenser Corp. of America, 1000 Hamilton  
Blvd., S. Plainfield, N. J.  
Electric Heat Control Co., The, 9123 Inman  
Ave., Cleveland 5, Ohio  
Industrial Instruments Inc., 17 Pollack Ave.,  
Jersey City 5, N. J.  
McMurdo Silver Co., Inc., 1249 Main St.,  
Hartford 3, Conn.  
National Technical Lab., 820 Mission St.,  
South Pasadena, Calif.  
Rowe Radio Research Lab., 2422 N. Pulaski  
Rd., Chicago 39, Ill.  
Technical Apparatus Co., 167 Washington  
St., Boston 8, Mass.  
Weston Electrical Instrument Co., 618  
Frelinghuysen Ave., Newark 5, N. J.

**INDICATORS—Detonation Indicators & Meters**

Sperry Gyroscope Co., Inc., Great Neck,  
L. I., N. Y.  
See Advertisements on Pages 80A, 80B

**INDICATORS—Film Thickness**

Foxboro Co., Foxboro, Mass.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Hathaway Instrument Co., 1315 S. Clarkson  
St., Denver 10, Colo.  
Magnetic Gauge Co., 60 E. Bartges St.,  
Akron, Ohio  
Rowe Radio Research Lab., 2422 N. Pulaski  
Rd., Chicago 39, Ill.  
Technical Apparatus Co., 167 Washington  
St., Boston 8, Mass.

**INDICATORS—Geiger Counter**

Aerolux Light Corp., 653 11th Ave., New  
York 19, N. Y.  
Atomic Instrument Co., 160 Charles St.,  
Boston, Mass.  
Development Engineering Co., Inc., The,  
1818 Ashland St., Houston 8, Texas  
Engineering Lab. Inc., 602 E. 4th St., Tulsa  
3, Okla.  
Geophysical Instrument Co., Key Blvd. &  
Nash St., Arlington, Va.  
National Technical Lab., 820 Mission St.,  
South Pasadena, Calif.  
Potter Instrument Co., 136-56 Roosevelt  
Ave., Flushing, N. Y.  
See Advertisement on Page 243

**INDICATORS—Moisture**

Barber Colman Co., River & Loomis Sts.,  
Rockford, Ill.  
Foxboro Co., Foxboro, Mass.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Illinois Testing Labs., Inc., 420 N. La Salle  
St., Chicago 10, Ill.  
Rowe Radio Research Lab., 2422 N. Pulaski  
Rd., Chicago 39, Ill.  
Serdex, Inc., 91 Cambridge St., Boston,  
Mass.  
Tagliabue Div., C. J., Portable Products  
Corp., 550 Park Avenue, Brooklyn 5,  
N. Y.

**INDICATORS—Power Level Indicators & Recorders**

Cinema Engineering Co., 1508 W. Verdugo  
Ave., Burbank, Calif.  
Daven Co., 191 Central Ave., Newark 4,  
N. J.  
Federal Telephone and Radio Corp., 100  
Kingsland Rd., Clifton, N. J.  
See Advertisements on Pages 48A to 48D  
Meters, Inc., 915 Riverside Dr., Indianapolis  
5, Ind.  
Rowe Radio Research Lab., 2422 N. Pulaski  
Rd., Chicago 39, Ill.  
Shallcross Mfg. Co., 10 Jackson Ave., Coling-  
dale, Pa.  
Simonds Machine Co., Inc., 246-48 Worcester  
St., Southbridge, Mass.  
Sound Apparatus Co., 233 Broadway, New  
York 7, N. Y.  
See Advertisement on Page 228  
Weston Electrical Instrument Corp., 618  
Frelinghuysen Ave., Newark 5, N. J.

**INDICATORS—Recording Engine**

American Instrument Co., 8030 Georgia  
Ave., Silver Springs, Md.  
Commercial Research Labs. Inc., 20 Bartlett  
Ave., Detroit 3, Mich.

**INDICATORS—Remote Position Antenna**

American Phenolic Corp., 1830 S. 54th Ave.,  
Chicago 50, Ill.  
See Advertisement on Page 23  
Assembly Products, Inc., Chagrin Falls,  
Ohio  
Controls Labs. Inc., 98 Union St., Worcester  
8, Mass.  
Electric Tachometer Corp., Broad & Spring  
Garden Sts., Philadelphia, Pa.  
Giannini & Co., Inc., G. M., Auto Flight In-  
struments Div., 285 W. Colorado St.,  
Pasadena, Calif.  
Johnson Co., E. F., Waseca, Minn.  
Transcoil Corp., 114 Worth St., New York  
13, N. Y.  
Wilson & Co., G. C., 2 N. Passaic Ave.,  
Chatham, N. J.

**INDICATORS—Shorted Turn**

General Electronics, Inc., 101 Hazel St.,  
Paterson, N. J.  
Kartron Inc., 821A South 4th St., Alhambra,  
Calif.  
Rubicon Co., 3751 Ridge Ave., Phila., Pa.

**INDICATORS—Solar Radiation**

Eppley Lab. Inc., Newport, R. I.  
Potter Instrument Co., 136-56 Roosevelt  
Ave., Flushing, N. Y.  
See Advertisement on Page 243  
Victoreen Instrument Co., 5806 Hough Ave.,  
Cleveland 3, Ohio

**INDICATORS—Sound Level Indicators & Recorders**

Collins Audio Products Co., 126 Park St.,  
Westfield, N. J.  
See Advertisement on Page 253  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Meters, Inc., 915 Riviera Dr., Indianapolis  
5, Ind.

Sound Apparatus Co., 233 Broadway, New  
York 7, N. Y.  
See Advertisement on Page 228  
Western Electric Co., Inc., 195 Broadway,  
New York 7, N. Y.  
See Advertisements on Pages 88, 89

**INDICATORS—Specific Gravity**

Bristol Co., The, Waterbury 91, Conn.  
Engineering Lab., Inc., 602 E. 4th St., Tulsa  
3, Okla.  
Ess Instrument Co., 96 So. Washington  
Ave., Bergenfield, N. J.  
Foxboro Co., Foxboro, Mass.

**INDICATORS—Steel Hardness**

Rowe Radio Research Lab., 2422 N. Pulaski  
Rd., Chicago 39, Ill.

**INDICATORS—Telemeter**

Bailey Meter Co., 1044 Ivanhoe Rd., Cleve-  
land 10, Ohio  
Controls Labs. Inc., 98 Union St., Worcester  
8, Mass.  
Giannini & Co., Inc., G. M., Auto Flight In-  
struments Div., 285 W. Colorado St.,  
Pasadena 1, Calif.  
Melpar, Inc., 718 Fifth St., N. W., Washing-  
ton 1, D. C.  
Panoramic Radio Corp., 242 W. 55th St.,  
New York 19, N. Y.  
Radio Engineering Products, Div. of Ray-  
mond Rosen & Co., Philadelphia 4, Pa.  
Serdex, Inc., 91 Cambridge St., Boston,  
Mass.  
Sorensen & Co., 375 Fairfield Ave., Stam-  
ford, Conn.  
See Advertisement on Page 154

**INDICATORS—Temperature**

Bailey Meter Co., 1044 Ivanhoe Rd., Cleve-  
land 10, Ohio  
Brown Instrument Co., 4428 Wayne Ave.,  
Philadelphia 44, Pa.  
Development Engineering Co., Inc., The,  
1818 Ashland St., Houston 8, Texas  
Dinon & Co., Inc., W. C., 5410 W. Harrison  
St., Chicago 44, Ill.  
Eastern Specialty Co., Philadelphia 40, Pa.  
Edison Inc., Thomas A., Instrument Div.,  
West Orange, N. J.  
See Advertisement on Page 18  
Electric Auto-Lite Co., The, Toledo 1, Ohio  
Elematic Equipment Corp., 6046 S. Went-  
worth Ave., Chicago 21, Ill.  
Foxboro Co., Foxboro, Mass.  
Gordon Co., Claud S., 3000 S. Wallace St.,  
Chicago 16, Ill.  
Hathaway Instrument Co., 1315 S. Clarkson  
St., Denver 10, Colo.  
Illinois Testing Labs., Inc., 420 N. La Salle  
St., Chicago 10, Ill.  
Leeds & Northrup Co., 4970 Stenton Ave.,  
Philadelphia, Pa.  
Measurement Engineering Ltd., 61 Duke St.,  
Toronto, Canada  
See Advertisement on Page 193  
Meters, Inc., 915 Riviera Dr., Indianapolis  
5, Ind.  
Minneapolis-Honeywell Regulator Co., 2753  
Fourth Ave. S., Minneapolis, Minn.  
Nurnberg Thermometer Co., Inc., 112 Broad-  
way, Cambridge 42, Mass.  
Pyrometer Instrument Co., 103 Lafayette  
St., New York, N. Y.  
Richards Co., Inc., Arklay S., 78 Winchester  
St., Newton Highlands, Mass.  
Sorensen & Co., 375 Fairfield Ave., Stam-  
ford, Conn.  
See Advertisement on Page 154  
Tagliabue Div., C. J., Portable Products  
Corp., 550 Park Ave., Brooklyn 5, N. Y.  
Thwing-Albert Instrument Co., 5351 Pulaski  
Ave., Philadelphia 44, Pa.  
Weksler Thermometer Corp., 52 W. Houston  
St., New York, N. Y.  
Weston Electrical Instrument Co., 618 Fre-  
linghuysen Ave., Newark 5, N. J.  
Wheelco Instruments Co., 647 W. Harrison  
St., Chicago 7, Ill.

**INDICATORS—Turbidity Indicators & Recorders**

American Instrument Co., 8030 Georgia  
Ave., Silver Springs, Md.

Electronic Mechanical Products Co., 13-15-17 N. Virginia Ave., Atlantic City, N. J.  
Ess Instrument Co., 96 So. Washington Ave., Bergenfield, N. J.

## INDICATORS—Ultrasonic Depth

Bendix Aviation Corp., Pacific Div., 11600 Sherman Way, North Hollywood, Calif.  
National-Simplex-Bludworth, Inc., Marine Div., 100 Gold St., New York 7, N. Y.  
Submarine Signal Co., Affiliated with Raytheon Mfg. Co., 160 State St., Boston, Mass.  
Teleso Products, Inc., 7466 West Irving Park Road, Chicago 34, Ill.

## INDICATORS—Volume

Amplifier Corp. of America, 396 Broadway, New York, N. Y.  
Audio Products Co., 2101 W. Olive Ave., Burbank, Calif.  
Collins Audio Products Co., 126 Park St., Westfield, N. J.  
See Advertisement on Page 253  
Daven Co., 191 Central Ave., Newark 4, N. J.  
Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska  
Electronic Mechanical Products Co., 13-15-17 N. Virginia Ave., Atlantic City, N. J.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
General Electronics, Inc., 101 Hazel St., Paterson, N. J.  
Meters, Inc., 915 Riveria Dr., Indianapolis 5, Ind.  
Triplett Electrical Instrument Co., 286 Harmon St., Bluffton, Ohio  
Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.

## ILLUMINATION CONTROLS

See Controls, Lighting

## INDUCTION HEATING

See Heating, Induction

## INFRA-RED DRYING OVENS

See Ovens

## INSTRUMENT PARTS—Precision

American Electro Metal Corp., 320 Yonkers Ave., Yonkers, N. Y.  
Assembly Products, Inc., Chagrin Falls, Ohio  
Boehme Inc., H. O., 915 Broadway, New York, N. Y.  
Development Engineering Co., Inc., The, 1818 Ashland St., Houston 8, Texas  
Diamond Instrument Co., North Ave., Wakefield, Mass.  
Do-All Co., 1301 Washington Ave., S., Minneapolis 4, Minn.  
Electric Tachometer Corp., Broad & Spring Garden Sts., Philadelphia, Pa.  
Foote, Pierson & Co., Inc., 75 Hudson St., Newark 4, N. J.  
Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.  
Instrument Parts Corp., Ossining, N. Y.  
See Advertisement on Page 222  
Makepeace Co., D. E., Attleboro, Mass.  
See Advertisement on Page 28  
Nilsson Electrical Lab., Inc., 103 Lafayette St., New York 13, N. Y.  
Precision Tube Co., 3828 Terrace St., Philadelphia 28, Pa.  
See Advertisement on Page 218  
Robinette Co., W. C., 802 Fair Oaks Ave., South Pasadena, Calif.  
Technology Instrument Corp., 1058 Main St., Waltham, Mass.  
Van Dyke Instruments, Inc., Tarzana, Calif.  
Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.  
Weymouth Instrument Co., 1440 Commercial St., East Weymouth, Mass.  
Winslow Co., The, 9 Liberty St., Newark 5, N. J.

## INSTRUMENTS—Electronic Musical

Aerolux Light Corp., 653 11th Ave., New York 19, N. Y.  
Conn Ltd., C. G., Elkhart, Ind.  
Crystal Research Labs. Inc., 29 Allyn St., Hartford, Conn.  
Electronic Engineers, 1039-B Pacific St., Santa Monica, Calif.  
Lektra Labs., 30 E. 10th St., New York, N. Y.  
Ripley Co., Torrington, Conn.  
Valco Mfg. Co., 4700 W. Walton St., Chicago 51, Ill.  
Weston Electrical Instrument Co., Newark 5, N. J.

## INSTRUMENTS—Graphic Recording

Brush Development Co., The, 3405 Perkins Ave., Cleveland 14, Ohio  
Electric Tachometer Corp., Broad & Spring Garden Sts., Philadelphia, Pa.  
Esterline-Angus Co., Inc., P. O. Box 597, Indianapolis, Ind.  
Foxboro Co., Foxboro, Mass.  
Giannini & Co., Inc., G. M. Autoflight Instruments Div., 285 W. Colorado St., Pasadena 1, Calif.  
Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.  
Sound Apparatus Co., 233 Broadway, New York 7, N. Y.  
See Advertisement on Page 228  
Tagliabue Div., C. J., Portable Products Corp., 550 Park Ave., Brooklyn 5, N. Y.  
Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
See Advertisements on Pages 88, 89  
Westinghouse Electric Corp., Meter Div., Newark, N. J.  
Zernickow Co., O., 15 Park Row, New York 7, N. Y.

## INSTRUMENTS—Ultrasonic

Branson Instruments, Inc., Joe's Hill Rd., Danbury, Conn.  
Brush Development Co., 3405 Perkins Ave., Cleveland 14, Ohio  
Crystal Research Labs. Inc., 29 Allyn St., Hartford, Conn.  
National-Simplex-Bludworth, Inc., Marine Div., 100 Gold St., New York 7, N. Y.  
Racon Electric Co., 52 E. 19th St., New York 3, N. Y.  
See Advertisement on Page 213  
Sperry Products, Inc., 15th & Willow Ave., Hoboken, N. J.  
Submarine Signal Co., Affiliated with Raytheon Mfg. Co., 160 State St., Boston, Mass.

## INSULATING COMPOUNDS

### Asphalts

Biwax Corp., 3445 Howard St., Skokie, Ill.  
Dolph Co., John C., 168 Emmett St., Newark, N. J.  
Minerallac Electric Co., 25 N. Peoria St., Chicago, Ill.  
Mitchell Rand Insulation Co., Inc., 51 Murray St., New York 7, N. Y.  
See Advertisement on Page 173  
Ruberoid Co., 500 5th Ave., New York, N. Y.  
Standard Varnish Works, 2600 Richmond Terr., Staten Island 3, N. Y.  
Trotter & Co., E. T., 594 Johnson Ave., Brooklyn, N. Y.  
U. S. Stoneware Co., The, Akron 9, Ohio  
Zophar Mills Inc., 112-130 26th St., Brooklyn 32, N. Y.  
See Advertisement on Page 186

### Coil Dopes

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
See Advertisement on Page 23  
American Products Mfg. Co., Oleander & Dublin Sts., New Orleans 18, La.  
General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
See Advertisement on Page 90  
General Electric Co., Chemical Dept., 1 Plastics Ave., Pittsfield, Mass.  
See Advertisement on Page 97  
Haynes Labs. Inc., C. W., 61 Chandler St., Springfield, Mass.  
Insl-X Co. Inc., The, 857 Meeker Ave., Brooklyn 22, N. Y.  
Insulating Co., 1 Broadway, New York, N. Y.

Insulation Mfrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.  
See Advertisement on Page 87  
Maas & Waldstein Co., 438 Riverside Ave., Newark, N. J.  
See Advertisement on Page 53  
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
See Advertisement on Page 44  
National Co., Inc., 61 Sherman St., Malden 48, Mass.  
See Advertisement on Page 78  
Schott Co., Walter L., 9306 Santa Monica Blvd., Beverly Hills, Calif.  
Trotter & Co., E. T., 594 Johnson Ave., Brooklyn, N. Y.  
Zophar Mills, Inc., 112-130 26th St., Brooklyn 32, N. Y.  
See Advertisement on Page 186

## Impregnating Compounds

Acme Wire Co., New Haven 14, Conn.  
American Products Mfg. Co., Oleander & Dublin Sts., New Orleans 18, La.  
Bakelite Corp., 300 Madison Ave., New York 17, N. Y.  
Biwax Corp., 3445 Howard St., Skokie, Ill.  
Cantol Wax Co., 211 N. Washington St., Bloomington, Ind.  
Dolph Co., John C., 168 Emmett St., Newark, N. J.  
General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
See Advertisement on Page 90  
George Co., P. D., 5200 N. 2nd Street, St. Louis, Mo.  
Halowax Prods. Div., Union Carbide & Carbon Corp., 30 E. 42nd St., New York, N. Y.  
Insulation Mfrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.  
See Advertisement on Page 87  
Irvington Varnish & Insulator Co., 10 Argyle Terr., Irvington 11, N. J.  
See Advertisements on Pages 20, 21  
Mica Insulator Co., Schenectady 1, N. Y.  
Mitchell Rand Insulation Co., Inc., 51 Murray St., New York 7, N. Y.  
See Advertisement on Page 173  
Standard Varnish Works, 2600 Richmond Terr., Staten Island 3, N. Y.  
Stevenson Bros. & Co., 110 Race Street, Phila. 6, Pa.  
Trotter & Co., E. T., 594 Johnson Ave., Brooklyn 6, N. Y.  
Zophar Mills Inc., 112-130 26th St., Brooklyn 32, N. Y.  
See Advertisement on Page 186

## Insulating Varnish

Acme Wire Co., New Haven 14, Conn.  
American Resinous Chemical Co., 104 Foster St., Peabody, Mass.  
Arco Co., 7301 Bessemer Ave., Cleveland 4, Ohio  
Bakelite Corp., 300 Madison Ave., New York 17, N. Y.  
Communication Products Co., Inc., Broadway & Clark St., Keyport, N. J.  
Dolph, John C., 168 Emmet St., Newark 5, N. J.  
Dow Corning Corp., Midland, Mich.  
du Pont de Nemours & Co., Inc., E. I., Wilmington 98, Del.  
General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
See Advertisement on Page 90  
General Electric Co., Chemical Dept., 1 Plastics Ave., Pittsfield, Mass.  
See Advertisement on Page 97  
George Co., P. D., 5200 N. Second St., St. Louis, Mo.  
Heresite & Chemical Co., Manitowoc, Wisc.  
Horn Co., Inc., A. C., 43-36 Tenth St., Long Island City 1, N. Y.  
Insulation Mfrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.  
See Advertisement on Page 87  
Irvington Varnish & Insulator Co., 10 Argyle Terr., Irvington 11, N. J.  
See Advertisements on Pages 20, 21  
Maas & Waldstein Co., 438 Riverside Ave., Newark, N. J.  
See Advertisement on Page 53  
Martindale Electric Co., Box 617, Edgewater Branch, Cleveland 7, Ohio  
Mica Insulator Co., Schenectady 1, N. Y.  
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
See Advertisement on Page 44  
Mitchell-Rand Insulation Co., Inc., 51 Murray St., New York 7, N. Y.  
See Advertisement on Page 173  
Schott Co., Walter L., 9306 Santa Monica Blvd., Beverly Hills, Calif.

Standard Varnish Works, 2600 Richmond Terrace, Staten Island 3, N. Y.  
U. S. Stoneware Co., The, Akron 9, Ohio

**Lacquer**

Arco Co., 7301 Bessemer Ave., Cleveland 4, Ohio  
Communication Products Co., Inc., Broadway & Clark St., Keyport, N. J.  
Dolph Co., John C., 168 Emmett St., Newark, N. J.  
du Pont de Nemours & Co., Inc., E. I., Wilmington 98, Del.  
Duralac Chemical Corp., 84 Lister Ave., Newark 5, N. J.  
General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
See Advertisement on Page 90  
General Electric Co., Chemical Dept., 1 Plastics Ave., Pittsfield, Mass.  
See Advertisement on Page 97  
George Co., P. D., 5200 N. 2nd St., St. Louis, Mo.  
Haynes Labs., Inc., C. W., 61 Chandler St., Springfield, Mass.  
Horn Co., Inc., A. C., 43-36 Tenth St., Long Island City 1, N. Y.  
Insl-X Co., Inc., 857 Meeker Ave., Brooklyn 22, N. Y.  
Insulation Mfrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.  
See Advertisement on Page 87  
Maas & Waldstein Co., 438 Riverside Ave., Newark, N. J.  
See Advertisement on Page 53  
Standard Varnish Works, 2600 Richmond Terr., Staten Island 3, N. Y.  
U. S. Stoneware Co., The, Akron 9, Ohio

**Phenolic Molding Compounds**

Adhesive Products Co., 3400 13th St., S.W., Seattle, Wash.  
American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
See Advertisement on Page 23  
Bakelite Corp., 300 Madison Ave., New York 17, N. Y.  
Durite Plastics, Inc., 5010 Summerdale Ave., Philadelphia 24, Pa.  
Heresite & Chemical Co., Manitowoc, Wis.  
Insl-X Co. Inc., The, 857 Meeker Ave., Brooklyn 22, N. Y.

**Pitch**

General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
See Advertisement on Page 90  
Interlake Chemical Corp., Union Commerce Bldg., Cleveland 14, Ohio  
Mitchell Rand Insulation Co., Inc., 51 Murray St., New York 7, N. Y.  
See Advertisement on Page 173  
Ruberoid Co., 500 5th Ave., New York, N. Y.  
Trotter & Co., E. T., 594 Johnson Ave., Brooklyn, N. Y.  
Zophar Mills Inc., 112-130 26th St., Brooklyn 32, N. Y.  
See Advertisement on Page 186

**Protective Sealers**

Cook Electric Co., 2700 Southport Ave., Chicago, Ill.  
Dow Corning Corp., Midland, Mich.  
Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
See Advertisements on Pages 48A to 48D  
George Co., P. D., 5200 N. 2nd Street, St. Louis, Mo.  
Halowax Prods. Div., Union Carbide & Carbon Corp., 30 E. 42nd St., New York, N. Y.  
Insl-X Co. Inc., The, 857 Meeker Ave., Brooklyn 22, N. Y.  
Insulation Mfrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.  
See Advertisement on Page 87  
Irvington Varnish & Insulator Co., 10 Argye Terr., Irvington 11, N. J.  
See Advertisements on Pages 20, 21  
Nukem Products Corp., 111 Colgate Ave., Buffalo 20, N. Y.  
Zophar Mills Inc., 112-130 26th St., Brooklyn 32, N. Y.  
See Advertisement on Page 186

**Resins**

Adhesive Products Co., 3400 13th St., SW, Seattle, Wash.  
Bakelite Corp., 300 Madison Ave., New York 17, N. Y.  
Biwax Corp., 3445 Howard St., Skokie, Ill.  
Catalin Corp., 1 Park Ave., New York, N. Y.  
Dow Corning Corp., Midland, Mich.  
du Pont de Nemours & Co., Inc., E. I., Wilmington 98, Del.  
Durite Plastics, Inc., 5010 Summerdale Ave., Philadelphia 24, Pa.  
General Electric Co., Chemical Dept., 1 Plastics Ave., Pittsfield, Mass.  
See Advertisement on Page 97  
Goodyear Tire & Rubber Co., Plastics & Chemical Div., 114 E. Market St., Akron 16, Ohio  
Insulation Mfrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.  
See Advertisement on Page 87  
Interlake Chemical Corp., Union Commerce Bldg., Cleveland 14, Ohio  
Irvington Varnish & Insulator Co., 10 Argye Terr., Irvington 11, N. J.  
See Advertisements on Pages 20, 21  
Maas & Waldstein Co., 438 Riverside Ave., Newark, N. J.  
See Advertisement on Page 53  
Minerallac Electric Co., 25 N. Peoria St., Chicago, Ill.  
Rohm & Haas, 222 W. Washington Sq., Philadelphia, Pa.  
Stevenson Bros. & Co., 110 Race St., Philadelphia 6, Pa.  
U. S. Stoneware Co., The, Akron 9, Ohio  
Brooklyn 32, N. Y.  
Zophar Mills Inc., 112-130 26th St., Brooklyn 32, N. Y.  
See Advertisement on Page 186

**Silicone Compounds**

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
See Advertisement on Page 23  
Dow Corning Corp., Midland, Mich.  
General Electric Co., Chemical Dept., 1 Plastics Ave., Pittsfield, Mass.  
See Advertisement on Page 97  
Insulation Mfrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.  
See Advertisement on Page 87  
Zophar Mills Inc., 112-130 26th St., Brooklyn 32, N. Y.  
See Advertisement on Page 186

**Varnish Cambric Coatings**

Acme Wire Co., New Haven 14, Conn.  
General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
See Advertisement on Page 90  
General Electric Co., Chemical Dept., 1 Plastics Ave., Pittsfield, Mass.  
See Advertisement on Page 97  
George Co., P. D., 5200 N. 2nd St., St. Louis, Mo.  
Insulation Mfrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.  
See Advertisement on Page 87  
Irvington Varnish & Insulator Co., 10 Argye Terr., Irvington 11, N. J.  
See Advertisements on Pages 20, 21  
Standard Varnish Works, 2600 Richmond Terr., Staten Island 3, N. Y.  
Westinghouse Electric & Mfg. Co., Mi-carta Dept., Trafford, Pa.

**Waxes**

Bakelite Corp., 300 Madison Ave., New York 17, N. Y.  
Biwax Corp., 3445 Howard St., Skokie, Ill.  
Black Bear Co., Inc., 620 Fifth Ave., New York 20, N. Y.  
Cantol Wax Co., 211 N. Washington St., Bloomington, Ind.  
General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
General Electric Co., Chemical Dept., 1 Plastics Ave., Pittsfield, Mass.  
See Advertisement on Page 97  
Glyco Products Co., Inc., 26 Court St., Brooklyn, N. Y.  
Halowax Prods. Div., Union Carbide & Carbon Corp., 30 E. 42nd St., New York, N. Y.  
Horn Co. Inc., A. C., 43-36 Tenth St., Long Island City 1, N. Y.  
Insulative Co., 1 Broadway, New York, N. Y.

Maas & Waldstein Co., 438 Riverside Ave., Newark, N. J.  
See Advertisement on Page 53  
Mitchell Rand Insulation Co., Inc., 51 Murray Street, New York 7, N. Y.  
See Advertisement on Page 173  
Standard Varnish Works, 2600 Richmond Terr., Staten Island 3, N. Y.  
Stevenson Bros. & Co., 110 Race St., Phila. 6, Pa.  
Trotter & Co., E. T., 594 Johnson Ave., Brooklyn 6, N. Y.  
Wynn Mfg. Div., Hudson Supply Co., 401 N. 27th St., Richmond, Va.  
Zophar Mills Inc., 112-130 26th St., Brooklyn 32, N. Y.  
See Advertisement on Page 186

**INSULATING VARNISH**

See Insulating Compounds

**INSULATION MATERIALS**

**Aluminum Oxide**

Aluminum Co. of America, Gulf Bldg., Pittsburgh, Pa.  
Belmont Smelting & Refining Works, Inc., 330 Belmont Ave., Brooklyn 7, N. Y.  
du Pont de Nemours & Co., Inc., E. I., Wilmington 98, Del.  
Merck & Co., Inc., Rahway, N. J.  
Norton Co., 1 New Bond St., Worcester 6, Mass.  
Reynolds Metals Co., 2500 So. Third St., Louisville 1, Ky.  
Stupakoff Ceramic & Mfg. Co., Latrobe, Pa.

**Asbestos**

Auburn Mfg. Co., Middletown, Conn.  
Gasket Engineering Co., 2440 Charlotte St., Kansas City 8, Mo.  
Insulation Mfg. Co., 11 New York Ave., Brooklyn, N. Y.  
Insulation Mfrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.  
See Advertisement on Page 87  
Keasbey & Mattison, Ambler, Pa.  
Powhatan Mining Co., Baltimore 7, Md.  
Ruberoid Co., 500 5th Ave., New York, N. Y.

**Bead**

American Lava Corp., Chattanooga 5, Tenn.  
See Advertisement on Page 69  
American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
See Advertisement on Page 23  
Corning Glass Works, Corning, N. Y.  
Hermetic Seal Products Co., 414 Morris Ave., Newark 3, N. J.  
Kopp Glass Inc., 1 East 42nd St., New York 17, N. Y.  
Martindale Electric Co., Box 617, Edge-water Branch, Cleveland 7, Ohio  
Stupakoff Ceramic & Mfg. Co., Latrobe, Pa.

**Ceramic**

American Lava Corp., Chattanooga 5, Tenn.  
See Advertisement on Page 69  
Centralab Div. of Globe Union, Inc., 900 Keefe Ave., Milwaukee 1, Wis.  
See Advertisements on Pages 24, 25  
Cook Ceramic Mfg. Co., 501 Prospect St., Trenton 1, N. J.  
General Ceramic & Steatite Corp., Keasby, N. J.  
See Advertisement on Page 79  
Insuline Corp. of America 36-02 35th Ave., Long Island City, N. Y.  
See Advertisement on Page 166  
Kirchberger & Co., Inc., M., 1425 37th St., Brooklyn 18, N. Y.  
Lapp Insulator Co., 31 Gilbert St., Le Roy N. Y.  
See Advertisements on Pages 92, 93  
Locke Insulator Corp., P. O. Box 57, Baltimore 3, Md.  
Mica Products Mfg. Co., 69 Wooster St., New York, N. Y.  
National Ceramic Co., 400 Southard St., Trenton 2, N. J.  
Star Porcelain Co., 61 Muirhead Ave., Trenton, N. J.  
Stupakoff Ceramic & Mfg. Co., Latrobe, Pa.  
Titanium Alloy Mfg. Co., Niagara Falls, N. Y.

Union Electrical Porcelain Works, Van St., Trenton 5, N. J.  
 U. S. Stoneware Co., The, Akron 9, Ohio  
 Universal Clay Products Co., 1505 E. First St., Sandusky, Ohio  
 Wisconsin Porcelain Co., Sun Prairies, Wis.

## Fabric

**American Phenolic Corp.**, 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
**Bentley-Harris Mfg. Co.**, Conshohocken, Pa.  
**Brand & Co., Wm.**, 276 Fourth Ave., New York 10, N. Y.  
**Carolina Narrow Fabric Co.**, 1636 N. Chestnut St., Winston-Salem, N. C.  
**Celanese Corp. of America**, 180 Madison Ave., New York 16, N. Y.  
**du Pont de Nemours & Co., Inc.**, E. I., Wilmington 98, Del.  
**Franklin Fibre-Lamitex Corp.**, 12th and French Sts., Wilmington, Del.  
 See Advertisement on Page 232  
**Gasket Engineering Co.**, 2440 Charlotte St., Kansas City 8, Mo.  
**General Cement Mfg. Co.**, 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
**Huse Liberty Mica Co.**, 171 Camden St., Boston, Mass.  
**Insulation Mfg. Co.**, 11 New York Ave., Brooklyn, N. Y.  
**Insulation Manufacturers Corp.**, 565 W. Washington Blvd., Chicago 6, Ill.  
 See Advertisement on Page 87  
**Irvington Varnish & Insulator Co.**, 10 Argyle Terrace, Irvington 11, N. J.  
 See Advertisements on Pages 20, 21  
**Pacific Mills**, 214 Church St., New York, N. Y.  
**Varflex Corp.**, N. Jay St., Rome, N. Y.  
 See Advertisement on Page 190

## Fiber

**Auburn Mfg. Co.**, Middletown, Conn.  
**Baer Co., N. S.**, 9 Montgomery St., Hillside, N. J.  
 See Advertisement on Page 227  
**Brand & Co., Wm.**, 276 Fourth Ave., New York 10, N. Y.  
**Continental Diamond Fibre Co.**, 16 Chapel St., Newark, Del.  
 See Advertisements on Pages 72, 73  
**Franklin Fibre-Lamitex Corp.**, 12th and French Sts., Wilmington, Del.  
 See Advertisement on Page 232  
**Gasket Engineering Co.**, 2440 Charlotte St., Kansas City 8, Mo.  
**General Cement Mfg. Co.**, 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
**General Electric Co., Chemical Dept.**, 1 Plastics Ave., Pittsfield, Mass.  
 See Advertisement on Page 97  
**Hope Webbing Co.**, Providence, R. I.  
**Huse Liberty Mica Co.**, 171 Camden St., Boston, Mass.  
**Insulating Fabricators of New England, Inc.**, 22 Elkins St., S. Boston, Mass.  
**Insulation Mfg. Co.**, 11 New York Ave., Brooklyn, N. Y.  
**Insulation Manufacturers Corp.**, 565 W. Washington Blvd., Chicago 6, Ill.  
 See Advertisement on Page 87  
**Insuline Corp. of America**, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
**Keystone Electronics Co.**, 50-52 Franklin St., New York 13, N. Y.  
**Mica Products Mfg. Co.**, 69 Wooster St., New York, N. Y.  
**Moore Co., Howard J.**, 108 Park Row, New York 7, N. Y.  
**National Vulcanized Fibre Co.**, Wilmington, Del.  
 See Advertisement on Page 58  
**Owens-Corning Fiberglas Corp.**, 1860 Nicholas Bldg., Toledo 1, Ohio.  
**Penn Fibre & Specialty Co.**, 2030 E. Westmoreland St., Philadelphia 44, Pa.  
**Rogers Corp.**, Manchester, Conn.  
**Spaulding Fibre Co., Inc.**, 130 Wheeler St., Tonawanda, N. Y.  
**Stevens Paper Mills, Inc.**, Windsor, Conn.  
**Taylor Fibre Co.**, Norristown, Pa.  
**West Virginia Pulp & Paper Co., Pulp Products Dept.**, 230 Park Ave., New York, N. Y.  
**Wilmington Fibre Specialty Co.**, P. O. Drawer 1028, Wilmington 99, Del.

## Glass

**Cincinnati Electric Products Co.**, Carthage at Hannaford, Cincinnati 12, Ohio

**Corning Glass Works**, Corning, N. Y.  
**Franklin Fibre-Lamitex Corp.**, 12th and French Sts., Wilmington, Del.  
 See Advertisement on Page 232  
**Hermetic Seal Products Co.**, 414 Morris Ave., Newark 3, N. J.  
**Insulation Manufacturers Corp.**, 565 W. Washington Blvd., Chicago 6, Ill.  
 See Advertisement on Page 87  
**Insulation Mfg. Co.**, 11 New York Ave., Brooklyn, N. Y.  
**Kopp Glass, Inc.**, 1 East 42nd St., New York 17, N. Y.  
**Libbey Div., Owens Illinois Glass Co.**, P. O. Box 1035, Toledo 1, Ohio  
**Polan Industries**, 220 Eighth St., Huntington, West Virginia

## Glass Bonded Mica

**Electronic Mechanics, Inc.**, 70 Clifton Blvd., Clifton, N. J.  
**Huse Liberty Mica Co.**, 171 Camden St., Boston, Mass.  
**Insulation Mfg. Co.**, 11 New York Ave., Brooklyn, N. Y.  
**Insulation Manufacturers Corp.**, 565 W. Washington Blvd., Chicago 6, Ill.  
 See Advertisement on Page 87  
**International Products Corp.**, Baltimore 18, Md.  
**Macallen Co., The**, 16 Macallen St., Boston 27, Mass.  
**Mica Insulator Co., Schenectady 1, N. Y.**  
**Mica Products Mfg. Co.**, 69 Wooster St., New York, N. Y.  
**Mitchell Rand Insulation Co., Inc.**, 51 Murray St., New York 7, N. Y.  
 See Advertisement on Page 173  
**Mycalex Corp. of America**, 60 Clifton Blvd., Clifton, N. J.  
 See Advertisements on Pages 84, 85  
**Schoonmaker Insulation Co., Inc.**, A. O., 635 Greenwich St., New York 14, N. Y.  
**Tar Heel Mica Co., Plumtree, N. C.**  
**U. S. Mica Mfg. Co.**, 1521 Circle Ave., Forest Park, Ill.

## Glass Fiber

**Bentley-Harris Mfg. Co.**, Conshohocken, Pa.  
**Continental Diamond Fibre Co.**, 16 Chapel St., Newark, Del.  
 See Advertisements on Pages 72, 73  
**Franklin Fibre-Lamitex Corp.**, 12th and French Sts., Wilmington, Delaware  
 See Advertisement on Page 232  
**General Cement Mfg. Co.**, 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
**Hope Webbing Co.**, Providence, R. I.  
**Huse Liberty Mica Co.**, 171 Camden St., Boston, Mass.  
**Insulation Manufacturers Corp.**, 565 W. Washington Blvd., Chicago 6, Ill.  
 See Advertisement on Page 87  
**Insulation Mfg. Co.**, 11 New York Ave., Brooklyn, N. Y.  
**Mitchell Rand Insulation Co., Inc.**, 51 Murray St., New York 7, N. Y.  
 See Advertisement on Page 173  
**Owens-Corning Fiberglass Corp.**, 1860 Nicholas Bldg., Toledo 1, Ohio  
**Varflex Corp.**, N. Jay St., Rome, N. Y.  
 See Advertisement on Page 190

## Mica

**Asheville Mica Co.**, 5 River Rd., Biltmore, N. C.  
**Brand & Co., Wm.**, 276 Fourth Ave., New York 10, N. Y.  
**Continental Diamond Fibre Co.**, 16 Chapel St., Newark, Del.  
 See Advertisements on Pages 72, 73  
**Ford Radio & Mica Corp.**, 536 63rd St., Brooklyn, N. Y.  
**General Electric Co., Chemical Dept.**, 1 Plastics Ave., Pittsfield, Mass.  
 See Advertisement on Page 97  
**Huse Liberty Mica Co.**, 171 Camden St., Boston, Mass.  
**Insulation Mfrs. Corp.**, 565 W. Washington Blvd., Chicago 6, Ill.  
 See Advertisement on Page 87  
**Macallen Co., The**, 16 Macallen St., Boston 27, Mass.  
**Mica Insulator Co., Schenectady 1, N. Y.**  
**Mica Products Mfg. Co.**, 69 Wooster St., New York, N. Y.  
**Mitchell Rand Insulation Co., Inc.**, 51 Murray St., New York 7, N. Y.  
 See Advertisement on Page 173  
**Moore Co., Howard J.**, 108 Park Row, New York 7, N. Y.  
**Munsell & Co., Eugene**, 200 Varick Street, New York, N. Y.  
**New England Mica Co., Waltham, Mass.**  
**Schoonmaker Insulation Co., Inc.**, A. O., 635 Greenwich St., New York 14, N. Y.  
**Tar Heel Mica Co., Plumtree, N. C.**  
**U. S. Mica Mfg. Co.**, 1521 Circle Ave., Forest Park, Ill.

## Paper

**Acme Folding Box Co. Inc.**, 141 E. 25th St., New York, N. Y.  
**Acme Wire Co.**, New Haven 14, Conn.  
**Aldine Paper Co., Inc.**, 535 Fifth Ave., New York 17, N. Y.  
**Auburn Mfg. Co.**, Middletown, Conn.  
**Brand & Co., Wm.**, 276 Fourth Ave., New York 10, N. Y.  
**Central Paper Co.**, 2400 Lakeshore Drive, Muskegon, Mich.  
**Cottrel Paper Co.**, 83 Purchase St., Fall River, Mass.  
**Dobeckun Co., Industrial Products Div.**, Cleveland 1, Ohio  
**Gasket Engineering Co.**, 2440 Charlotte St., Kansas City 8, Mo.  
**General Cement Mfg. Co.**, 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
**Huse Liberty Mica Co.**, 171 Camden St., Boston, Mass.  
**Insulating Fabricators of New England, Inc.**, 22 Elkins St., S. Boston, Mass.  
**Insulation Manufacturers Corp.**, 565 W. Washington Blvd., Chicago 6, Ill.  
 See Advertisement on Page 87  
**Insulation Mfg. Co.**, 11 New York Ave., Brooklyn, N. Y.  
**Irvington Varnish & Insulator Co.**, 10 Argyle Terrace, Irvington 11, N. J.  
 See Advertisements on Pages 20, 21  
**Mica Insulator Co., Schenectady, N. Y.**  
**Mitchell Rand Insulation Co., Inc.**, 51 Murray St., New York 7, N. Y.  
 See Advertisement on Page 173  
**Moore Co., H. J.**, 108 Park Row, New York 7, N. Y.  
**National Vulcanized Fibre Co.**, Wilmington, Del.  
 See Advertisement on Page 58  
**Penn Fibre & Specialty Co.**, 2030 E. Westmoreland St., Philadelphia 44, Pa.  
**Precision Fabricators Inc.**, 120 N. Fitzhugh St., Rochester, N. Y.  
**Rogers Corp.**, Manchester, Conn.  
**Ruberoid Co.**, 500 5th Ave., New York, N. Y.  
**Schweitzer Paper Co.**, 182 Cornelison Ave., Jersey City, N. J.  
 See Advertisement on Page 64  
**Stevens Paper Mills, Inc.**, Windsor, Conn.  
**Willard's, Hampden, Mass.**  
**Wilmington Fibre Specialty Co.**, P. O. Drawer 1028, Wilmington 99, Del.

## Plastic

**Goodrich Chemical Co.**, B. F., Cleveland 15, Ohio  
**Rohm & Haas**, 222 W. Washington Sq., Philadelphia, Pa.

## Rubber

**Armstrong Cork Co.**, Lancaster, Pa.  
**Auburn Mfg. Co.**, Middletown, Conn.  
**Dow Corning Corp.**, Midland, Mich.  
**du Pont de Nemours & Co., Inc.**, E. I., Wilmington 98, Del.  
**Firestone Tire & Rubber Co.**, 1 Firestone Ave., Fall River, Mass.  
**Gasket Engineering Co.**, 2440 Charlotte St., Kansas City 8, Mo.  
**General Cement Mfg. Co.**, 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
**General Tire & Rubber Co., The**, Silentbloc Div., Wabash, Ind.  
**Goodrich Co., B. F.**, Cleveland 15, Ohio  
**Stokes Molded Products**, Taylor St., at Webster, Trenton, N. J.  
**U. S. Rubber Co.**, 1230 Sixth Ave., New York 20, N. Y.  
**U. S. Stoneware Co.**, The, Akron 9, Ohio

## Steatite

**American Lava Corp.**, Chattanooga 5, Tenn.  
 See Advertisement on Page 69  
**Centralab Div., of Globe Union, Inc.**, 900 Keefe Ave., Milwaukee 1, Wis.  
 See Advertisements on Pages 24, 25  
**Cook Ceramic Mfg. Co.**, 501 Prospect St., Trenton 1, N. J.  
**Kirchberger & Co., Inc.**, M., 1425 37th St., Brooklyn 18, N. Y.  
**Lapp Insulator Co.**, 31 Gilbert St., LeRoy, N. Y.  
 See Advertisements on Pages 92, 93  
**Locke Insulator Corp.**, P. O. Box 57, Baltimore 3, Md.  
**National Ceramic Co.**, 400 Southard St., Trenton 2, N. J.  
**Saxonburg Potteries**, Saxonburg, Pa.  
**Stupakoff Ceramic & Mfg. Co.**, Latrobe, Pa.  
**Wisconsin Porcelain Co.**, Sun Prairies, Wis.

## INSULATION PARTS

## Bead Insulation Parts

American Lava Corp., Chattanooga 5, Tenn.  
See Advertisement on Page 69  
American Phenolic Corp., 1830 S. 54th St., Chicago 50, Ill.  
See Advertisement on Page 23  
Centralab Div. of Globe-Union, Inc., 900 Keefe Ave., Milwaukee 1, Wisc.  
See Advertisements on Pages 24, 25  
Cook Ceramic Mfg. Co., 501 Prospect St., Trenton 1, N. J.  
Crowley & Co., Inc., Henry L., 1 Central Ave., West Orange, N. J.  
Electrical Refractories Co., 50 Clark St., East Palestine, Ohio  
General Ceramics & Steatite Corp., Keasbey, N. J.  
See Advertisement on Page 79  
Hermetic Seal Products Co., 414 Morris Ave., Newark 3, N. J.  
Insuline Corp. of America, 36-02 35th Ave., Long Island City 10, N. Y.  
See Advertisement on Page 166  
Jorgensen Mfg. Co., 1547 West Farms Rd., New York 60, N. Y.  
Kilburn Glass Co., Inc., J. R., 22 S. Worcester St., Chertley, Mass.  
Kirchberger & Co., Inc., M., 1425 37th St., Brooklyn 18, N. Y.  
Martindale Electric Co., Box 617, Edgewater Branch, Cleveland 1, Ohio  
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
See Advertisement on Page 44  
National Co., Inc., 61 Sherman St., New York, N. Y.  
See Advertisement on Page 78  
National Ceramic Co., 400 Southard St., Trenton, N. J.  
Plastic Enterprises, 129 Bloomfield Ave., Bloomfield, N. J.  
Saxonburg Potteries, Saxonburg, Pa.  
Spertl. Inc., Norwood Sta., Cincinnati 12, Ohio  
Star Porcelain Co., 61 Muirhead Ave., Trenton, N. J.  
Steward Mfg. Co., D. M. E., 36th St., Chattanooga, Tenn.  
Stupakoff Ceramic & Mfg. Co., Latrobe, Pa.  
Waterbury Companies, Inc., Waterbury 90, Conn.

## Capacitor Boxes

Moore Co., Howard J., 108 Park Row, New York 7, N. Y.  
Plastic Enterprises, 129 Bloomfield Ave., Bloomfield, N. J.  
Radio Corp. of America, RCA Victor Div., Camden, N. J.  
See Advertisements on Inside Back Cover & Back Cover, 251  
Stupakoff Ceramic & Mfg. Co., Latrobe, Pa.

## Capacitor Films

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
See Advertisement on Page 23  
Celanese Corp. of America, 180 Madison Ave., New York 16, N. Y.  
Ford Radio & Mica Corp., 536 63rd St., Brooklyn, N. Y.  
Mica Products Mfg. Co., 69 Wooster St., New York, N. Y.

## Ceramic Insulation Parts

Acme Folding Box Co. Inc., 141 E. 25th St., New York, N. Y.  
American Lava Corp., Chattanooga 5, Tenn.  
See Advertisement on Page 69  
Centralab Div., Globe-Union, Inc., 900 Keefe Ave., Milwaukee 1, Wisc.  
See Advertisements on Pages 24, 25  
Cook Ceramic Mfg. Co., 501 Prospect St., Trenton 1, N. J.  
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.  
Crowley & Co., Inc., Henry L., 1 Central Ave., West Orange, N. J.  
General Ceramics & Steatite Corp., Keasbey, N. J.  
See Advertisement on Page 79  
Kirchberger & Co., Inc., M., 1425 37th St., Brooklyn 18, N. Y.  
Locke Insulator Corp., P. O. Box 57, Baltimore 3, Md.  
Mica Products Mfg. Co., 69 Wooster St., New York, N. Y.  
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
See Advertisement on Page 44

Mykroy Inc., 1917 N. Springfield Ave., Chicago 47, Ill.  
National Co., Inc., 61 Sherman St., New York, N. Y.  
See Advertisement on Page 78  
Precision Fabricators Inc., 120 N. Fitzhugh St., Rochester, N. Y.  
Radio Corp. of America, Tube Div., Harrison, N. J.  
Saxonburg Potteries, Saxonburg, Pa.  
Steward Mfg. Co., D. M. E., Chattanooga 1, Tenn.  
Stupakoff Ceramic & Mfg. Co., Latrobe, Pa.

## Cut Insulation Parts

Auburn Mfg. Co., Middletown, Conn.  
Felt Products Mfg. Co., 1504 W. Carroll Ave., Chicago 7, Ill.  
General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
See Advertisement on Page 90  
Huse Liberty Mica Co., 171 Camden St., Boston, Mass.  
Insulating Fabricators of New England, Inc., 22 Elkins St., S. Boston, Mass.  
Insulation Mfrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.  
See Advertisement on Page 87  
Lansky Die Cutting Co., 192½ Greene St., New York 12, N. Y.  
See Advertisement on Page 220  
Moore Co., Howard J., 108 Park Row, New York 7, N. Y.  
National Vulcanized Fibre Co., Wilmington, Del.  
See Advertisement on Page 58  
Plax Corp., 133 Walnut St., Hartford 5, Conn.  
Printloid Inc., 95 Mercer St., New York, N. Y.  
See Advertisement on Page 198  
Rogers Corp., Manchester, Conn.  
Saxonburg Potteries, Saxonburg, Pa.

## Extruded Insulation Parts

American Hard Rubber Co., 11 Mercer St., New York 13, N. Y.  
American Lava Corp., Chattanooga 5, Tenn.  
See Advertisement on Page 69  
American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
See Advertisement on Page 23  
Auburn Button Works Inc., 48 Canoga St., Auburn, N. Y.  
Auburn Mfg. Co., Middletown, Conn.  
Bakelite Corp., 300 Madison Ave., New York 17, N. Y.  
Centralab Div., Globe Union Inc., 900 Keefe Ave., Milwaukee 1, Wisc.  
See Advertisements on Pages 24, 25  
Firestone Tire & Rubber Co., 1 Firestone Ave., Fall River, Mass.  
General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
See Advertisement on Page 90  
General Ceramics & Steatite Corp., Keasbey, N. J.  
See Advertisement on Page 79  
Insulation Mfrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.  
See Advertisement on Page 87  
Irvington Varnish & Insulator Co., 10 Argyll Terr., Irvington 11, N. J.  
See Advertisements on Pages 20, 21  
Kirchberger & Co., Inc., M., 1425 37th St., Brooklyn 18, N. Y.  
Lenz Electric Mfg. Co., 1751 N. Western Ave., Chicago, Ill.  
Mica Products Mfg. Co., 69 Wooster St., New York, N. Y.  
Moore Co., Howard J., 108 Park Row, New York 7, N. Y.  
Plastex Corp., 402 Mt. Vernon Ave., Columbus 3, Ohio  
Plax Corp., 133 Walnut St., Hartford 5, Conn.  
Steward Mfg. Co., D. M. E., 36th St., Chattanooga, Tenn.  
Suprenant Electrical Insulation Co., 84 Purchase St., Boston 10, Mass.

## Fabricated Insulation Parts

Aerolite Electronic Hardware Corp., 24 Cliff St., Jersey City, N. J.  
See Advertisement on Page 246  
American Communications Corp., 306 Broadway, New York 7, N. Y.  
American Felt Co., Glenville, Conn.  
American Hard Rubber Co., 11 Mercer St., New York 13, N. Y.  
American Lava Corp., Chattanooga 5, Tenn.  
See Advertisement on Page 69

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
See Advertisement on Page 23  
Auburn Mfg. Co., Middletown, Conn.  
Baer Co., N. S., 9 Montgomery St., Hillside, N. J.  
See Advertisement on Page 227  
Buggie & Co., H. H., 2141 Madison Ave., Toledo 1, Ohio  
Cambridge Thermionic Corp., 445 Concord Ave., Cambridge, Mass.  
Cincinnati Electric Products Co., Carthage at Hannaford, Cincinnati 12, Ohio  
Cleveland Plastics, Inc., 1017 Euclid Ave., Cleveland 14, Ohio  
Edwards Inc., T. J., 121 Beach St., Boston 5, Mass.  
Electrical Insulation Co., 12 Vestry St., New York, N. Y.  
Electronic Mechanics Inc., 70 Clifton Blvd., Clifton, N. J.  
Firestone Tire & Rubber Co., 1 Firestone Ave., Fall River, Mass.  
Franklin Fibre-Lamitex Corp., 12th and French Sts., Wilmington, Del.  
See Advertisement on Page 232  
Franklin Mfg. Co., A. W., 43-20 34th St., Long Island City, N. Y.  
See Advertisement on Page 98  
Gardiner Mfg. Co., 2711 Union St., Oakland 7, Calif.  
General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
See Advertisement on Page 90  
General Electric Co., Chemical Dept., 1 Plastics Ave., Pittsfield, Mass.  
See Advertisement on Page 97  
Huse Liberty Mica Co., 171 Camden St., Boston, Mass.  
Insulating Fabricators, Inc., 12 E. 12th St., New York 3, N. Y.  
Insulating Fabricators of New England, Inc., 22 Elkins St., S. Boston, Mass.  
Insulation Mfg. Co., 11 New York Ave., Brooklyn, N. Y.  
Insulation Mfrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.  
See Advertisement on Page 87  
International Products Corp., Baltimore 18, Md.  
Keystone Electronics Co., 50-52 Franklin St., New York 13, N. Y.  
Lamico Fabricators, 3600 W. Potomac Ave., Chicago, Ill.  
Metaplast Co., 205 W. 19th St., New York 11, N. Y.  
Mica Insulator Co., Schenectady 1, N. Y.  
Mica Products Mfg. Co., 69 Wooster St., New York, N. Y.  
Micarta Fabricators, Inc., 5324 Ravenswood Ave., Chicago 40, Ill.  
Moore Co., Howard J., 108 Park Row, New York 7, N. Y.  
Mycalex Corp. of America, 60 Clifton Blvd., Clifton, N. J.  
See Advertisements on Pages 84, 85  
Mykroy Inc., 1917 N. Springfield Ave., Chicago 47, Ill.  
National Gasket & Washer Co., Inc., 122 E. 25th St., New York 10, N. Y.  
National Vulcanized Fibre Co., Wilmington, Del.  
See Advertisement on Page 58  
Penn Fibre & Specialty Co., 2030 E. Westmoreland St., Philadelphia 44, Pa.  
Plastic Accessories, Inc., 460 Broome St., New York 13, N. Y.  
Plasticraft Products Co., 20 Hudson St., New York 13, N. Y.  
Plax Corp., 133 Walnut St., Hartford 5, Conn.  
Precision Fabricators Inc., 120 N. Fitzhugh St., Rochester, N. Y.  
Printloid Inc., 95 Mercer St., New York, N. Y.  
See Advertisement on Page 198  
Rogan Bros., 2001 S. Michigan Ave., Chicago, Ill.  
See Advertisement on Page 164  
Rogers Corp., Manchester, Conn.  
Spaulding Fibre Co. Inc., 310 Wheeler St., Tonawanda, N. Y.  
Special Electric Labs., 7224 So. Main St., Los Angeles 3, Calif.  
Synthane Corp., Oaks, Pa.  
U. S. Plastics Corp., 2835-53 Irving Park Rd., Chicago, Ill.  
Willard's, Hampden, Mass.

## Insulating Cord

General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
See Advertisement on Page 90  
Jorgensen Mfg. Co., 1547 West Farms Rd., New York 60, N. Y.  
Mitchell Rand Insulation Co. Inc., 51 Murray Street, New York 7, N. Y.  
See Advertisement on Page 173  
Owens-Corning Fiberglas Corp., 1860 Nicholas Bldg., Toledo 1, Ohio

## Insulating Foil

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 Bakelite Corp., 300 Madison Ave., New York 17, N. Y.  
 Buggie & Co., H. H., 2141 Madison Ave., Toledo 1, Ohio  
 Celanese Corp. of America, 180 Madison Ave., New York 16, N. Y.  
 Plax Corp., 133 Walnut St., Hartford 5, Conn.

## Insulating Sleeves

American Hard Rubber Co., 11 Mercer St., New York 13, N. Y.  
 American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 Anchor Webbing Co., 1005 Main, Pawtucket, R. I.  
 Bentley, Harris Mfg. Co., Conshohocken, Pa.  
 Firestone Tire & Rubber Co., 1 Firestone Ave., Fall River, Mass.  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 Hope Webbing Co., Providence, R. I.  
 Industrial Synthetics Corp., 60 Woolsey St., Irvington, N. J.  
 See Advertisement on Page 169  
 Insulation Mfrs. Corp., 365 W. Washington Blvd., Chicago 6, Ill.  
 See Advertisement on Page 87  
 Intex Co., 303 W. 42nd St., New York 18, N. Y.  
 See Advertisement on Page 68  
 Mica Products Mfg. Co., 69 Wooster St., New York, N. Y.  
 Mitchell Rand Insulation Co. Inc., 51 Murray Street, New York 7, N. Y.  
 See Advertisement on Page 173  
 National Varnished Prod. Corp., 211 Randolph Ave., Woodbridge, N. J.  
 See Advertisement on Page 249  
 National Vulcanized Fibre Co., Wilmington, Del.  
 See Advertisement on Page 58  
 Owens-Corning Fiberglass Corp., 1860 Nicholas Bldg., Toledo 1, Ohio  
 Penn Fibre & Specialty Co., 2030 E. Westmoreland St., Philadelphia 44, Pa.  
 Plastic Accessories, Inc., 460 Broome St., New York 13, N. Y.  
 Varflex Corp., N. Jay St., Rome, N. Y.  
 See Advertisement on Page 190

## Laminated Insulation Parts

Baer Co., N. S., 9 Montgomery St., Hillside, N. J.  
 See Advertisement on Page 227  
 Bakelite Corp., 300 Madison Ave., New York 17, N. Y.  
 Cambridge Thermionic Corp., 445 Concord Ave., Cambridge, Mass.  
 Continental Diamond Fibre Co., 16 Chapel St., Newark, Del.  
 See Advertisements on Pages 72, 73  
 Eby, Inc., Hugh H., 18 W. Chelton Ave., Philadelphia 13, Pa.  
 Electrical Insulation Co., 12 Vestry St., New York, N. Y.  
 Farley & Loetscher Mfg. Co., Dubuque, Iowa  
 Firestone Tire & Rubber Co., 1 Firestone Ave., Fall River, Mass.  
 Formica Insulation Co., 4662 Spring Grove Ave., Cincinnati, Ohio  
 Franklin Airloop Corp., 43-20 34th St., Long Island City, N. Y.  
 See Advertisement on Page 61  
 Franklin Fibre-Lamitex Corp., 12th and French Sts., Wilmington, Del.  
 See Advertisement on Page 232  
 Franklin Mfg. Co., A. W., 43-20 34th St., Long Island City, N. Y.  
 See Advertisement on Page 98  
 Huse Liberty Mica Co., 171 Camden St., Boston, Mass.  
 Insulating Fabricators of New England, Inc., 22 Elkins St., S. Boston, Mass.  
 Insulation Mfrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.  
 See Advertisement on Page 87  
 Lamicold Fabricators, 3600 W. Potomac Ave., Chicago 51, Ill.  
 Mica Products Mfg. Co., 69 Wooster St., New York, N. Y.  
 Moore Co., Howard J., 108 Park Row, New York 7, N. Y.  
 National Vulcanized Fibre Co., Wilmington, Del.  
 See Advertisement on Page 58  
 Penn Fibre & Specialty Co., 2030 E. Westmoreland St., Philadelphia 44, Pa.

Plastic Accessories, Inc., 460 Broome St., New York 13, N. Y.  
 Precision Fabricators, Inc., 120 N. Fitzhugh St., Rochester, N. Y.  
 Synthane Corp., Oaks, Pa.  
 Taylor Fibre Co., Norristown, Pa.  
 Wilmington Fibre Specialty Co., P. O. Drawing 1028, Wilmington 99, Del.

## Molded Insulation Parts

Alden Products Co., 117 No. Main St., Brockton 64, Mass.  
 American Hard Rubber Co., 11 Mercer St., New York 13, N. Y.  
 American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 Bakelite Corp., 300 Madison Ave., New York 17, N. Y.  
 Boonton Molding Co., Boonton, N. J.  
 Buggie & Co., H. H., 2141 Madison Ave., Toledo 1, Ohio  
 Chicago Die Mold Corp., 4001 Wrightwood Ave., Chicago 39, Ill.  
 Cincinnati Molding Co., 2037 Florence Ave., Cincinnati 6, Ohio  
 Cleveland Plastics, Inc., 1017 Euclid Ave., Cleveland 14, Ohio  
 Consolidated Molded Products Corp., Scranton 2, Pa.  
 Continental Diamond Fibre Co., 16 Chapel St., Newark, Del.  
 See Advertisements on Pages 72, 73  
 Cutler-Hammer, Inc., 315 N. 12th St., Milwaukee 1, Wis.  
 Diemolding Corp., Rasbach St., Canastota, N. Y.  
 Dimco Plastics, 207 E. 6th St., Dayton, Ohio  
 du Pont de Nemours Co. Inc., E. I. Plastics Dept., 626 Schuyler Ave., Arlington, N. J.  
 Eby, Inc., Hugh H., 18 W. Chelton Ave., Philadelphia 13, Pa.  
 Electronic Mechanics Inc., 70 Clifton Blvd., Clifton, N. J.  
 Farley & Loetscher Mfg. Co., Dubuque, Iowa  
 Felsenthal & Sons, G., 4100 W. Grand Ave., Chicago 51, Ill.  
 Firestone Tire & Rubber Co., 1 Firestone Ave., Fall River, Mass.  
 Franklin Airloop Corp., 43-20 34th St., Long Island City, N. Y.  
 See Advertisement on Page 61  
 Frantia Fibre-Lamitex Corp., 12th and French Sts., Wilmington, Del.  
 See Advertisement on Page 232  
 Franklin Mfg. Co., A. W., 43-20 34th St., Long Island City, N. Y.  
 See Advertisement on Page 98  
 General Electric Co., Chemical Dept., 1 Plastics Ave., Pittsfield, Mass.  
 See Advertisement on Page 97  
 General Industries Co., Taylor & Olive Sts., Elvria, Ohio  
 Howard Mfg. Co., 15 Fourth St., Council Bluffs, Iowa  
 Insulation Mfg. Co., 11 New York Ave., Brooklyn, N. Y.  
 Keesbey & Mattison, Ambler, Pa.  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 La Magna Mfg. Co., Inc., East Rutherford, N. J.  
 LaRose & Associates, W. T., 635 Second Ave., Troy, N. Y.  
 Malco Co., Inc., 25 N. 3rd St., Minneapolis, Minn.  
 Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44  
 Molded Insulation Co., Aircraft Control Div., 335 E. Price St., Phila., Pa.  
 Mykroy Inc., 1917 N. Springfield Ave., Chicago 47, Ill.  
 National Vulcanized Fibre Co., Wilmington, Del.  
 See Advertisement on Page 58  
 Northern Industrial Chemical Co., 7-11 Elkins St., South Boston 27, Mass.  
 Oris Mfg. Co., Inc., Thomaston, Conn.  
 Plastic Accessories, Inc., 460 Broome St., New York 13, N. Y.  
 Plastic Enterprises, 129 Bloomfield Ave., Bloomfield, N. J.  
 Plastic Manufacturers Inc., Stamford, Conn.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Richardson Co., The, Melrose Park, Ill.  
 See Advertisement on Page 209  
 Rogan Bros., 2001 S. Michigan Ave., Chicago, Ill.  
 See Advertisement on Page 164  
 Shaw Insulator Co., 160 Coit St., Irvington 11, N. J.  
 Standard Molding Corp., Dayton, Ohio  
 Stokes Molded Products, Taylor St. at Webster, Trenton, N. J.

Taylor Fibre Co., Norristown, Pa.  
 Taylor Mfg. Co., 3078 W. Meinecke Ave., Milwaukee 10, Wis.  
 U. S. Plastics Corp., 2835-53 Irving Park Rd., Chicago, Ill.  
 Victory Mfg. Co., 1722 W. Arcade Pl., Chicago 2, Ill.  
 Waterbury Companies, Inc., Waterbury 90, Conn.  
 Watertown Mfg. Co., Watertown, Conn.  
 White Dental Mfg. Co., S. S., Industrial Div., 10 E. 40th St., New York, N. Y.  
 See Advertisement on Page 66

## Plastic Insulation Parts

Aerolite Electronic Hardware Corp., 24 Cliff St., Jersey City, N. J.  
 See Advertisement on Page 246  
 Amalgamated Radio Television Corp., 476 Broadway, New York 13, N. Y.  
 American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 Baer Co., N. S., 9 Montgomery St., Hillside, N. J.  
 See Advertisement on Page 227  
 Buggie & Co., H. H., 2141 Madison Ave., Toledo 1, Ohio  
 Celanese Corp. of America, 180 Madison Ave., New York 16, N. Y.  
 Chicago Die Mold Corp., 4001 Wrightwood Ave., Chicago 39, Ill.  
 Cincinnati Molding Co., 2037 Florence Ave., Cincinnati 6, Ohio  
 Cleveland Plastics, Inc., 1017 Euclid Ave., Cleveland 14, Ohio  
 Consolidated Molded Prods. Corp., Scranton 2, Pa.  
 Creative Plastics Corp., 963 Kent Ave., Brooklyn 5, N. Y.  
 Diemolding Corp., Rasbach St., Canastota, N. Y.  
 Felsenthal & Sons, G., 4100 W. Grand Ave., Chicago 51, Ill.  
 Firestone Tire & Rubber Co., 1 Firestone Ave., Fall River, Mass.  
 Franklin Airloop Corp., 43-20 34th St., L. I. City, N. Y.  
 See Advertisement on Page 61  
 Franklin Fibre-Lamitex Corp., 12th and French Sts., Wilmington, Del.  
 See Advertisement on Page 232  
 Franklin Mfg. Co., A. W., 43-20 34th St., Long Island City, N. Y.  
 See Advertisement on Page 98  
 Gemloid Corp., 79-10 Albion Ave., Elmhurst, N. Y.  
 General Electric Co., Chemical Dept., 1 Plastics Ave., Pittsfield, Mass.  
 See Advertisement on Page 97  
 General Industries Co., Taylor & Olive Sts., Elyria, Ohio  
 Howard Mfg. Co., 15 Fourth St., Council Bluffs, Iowa  
 Huse Liberty Mica Co., 171 Camden St., Boston, Mass.  
 Insulating Fabricators, Inc., 12 E. 12th St., New York 3, N. Y.  
 Insulation Mfg. Co., 11 New York Ave., Brooklyn, N. Y.  
 Insulation Mfrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.  
 See Advertisement on Page 87  
 Jorgensen Mfg. Co., 1547 W. Farms Rd., New York 60, N. Y.  
 Lamicold Fabricators, 3600 W. Potomac Ave., Chicago, Ill.  
 Lansky Die Cutting Co., 192½ Greene St., New York 12, N. Y.  
 See Advertisement on Page 220  
 Mayfair Molded Products Corp., 4440 N. Elston Ave., Chicago 30, Ill.  
 Metaplast Co., 205 W. 19th St., New York 11, N. Y.  
 Mica Products Mfg. Co., 69 Wooster St., New York, N. Y.  
 Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44  
 Molded Insulation Co., Aircraft Control Div., 335 E. Price St., Phila., Pa.  
 National Vulcanized Fibre Co., Wilmington, Del.  
 See Advertisement on Page 58  
 Plastic Accessories, Inc., 460 Broome St., New York 13, N. Y.  
 Plastic Enterprises, 129 Bloomfield Ave., Bloomfield, N. J.  
 Plastic Insulator Co., Inc., 369 Lexington Ave., New York 17, N. Y.  
 Plastics Products Co., 20 Hudson St., New York 13, N. Y.  
 Plax Corp., 133 Walnut St., Hartford 5, Conn.  
 Precision Fabricators Inc., 120 N. Fitzhugh St., Rochester, N. Y.  
 Printoid Inc., 95 Mercer St., New York, N. Y.  
 See Advertisement on Page 198

Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Richardson Co., The, Melrose Park, Ill.  
 See Advertisement on Page 209  
 Rogan Bros., 2001 S. Michigan Ave., Chicago, Ill.  
 See Advertisement on Page 164  
 Shaw Insulator Co., 160 Coit St., Irvington 11, N. J.  
 Silcocks-Miller Co., 10 Parker Ave. W., So. Orange, N. J.  
 Spaulding Fibre Co., Inc., 310 Wheeler St., Tonawanda, N. Y.  
 Stokes Molded Products, Taylor St. at Webster, Trenton, N. J.  
 Synthane Corp., Oaks, Pa.  
 Taylor Fibre Co., Norristown, Pa.  
 Taylor Mfg. Co., 3078 W. Meinecke Ave., Milwaukee 10, Wis.  
 Techna Co., 223-01 Northern Blvd., Bay-side, N. Y.  
 Ucinite Co., The, Div. United-Carr Fastener Corp., 469 Watertown St., Newtonville, Mass.  
 U. S. Plastics Corp., 2835-53 Irving Park Rd., Chicago, Ill.  
 Victory Mfg. Co., 1722 W. Arcade Pl., Chicago 2, Ill.  
 Waterbury Companies, Inc., Waterbury 90, Conn.  
 Wilmington Fibre Specialty Co., P. O. Drawer 1028, Wilmington 99, Del.

**Rods**

Aerolite Electronic Hardware Corp., 24 Cliff St., Jersey City, N. J.  
 See Advertisement on Page 246  
 American Hard Rubber Co., 11 Mercer St., New York 13, N. Y.  
 American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 Blum & Co., Julius, 532 W. 22nd St., New York, N. Y.  
 Boonton Molding Co., Boonton, N. J.  
 Celanese Plastics Corp., 180 Madison Ave., New York 16, N. Y.  
 Continental Diamond Fibre Co., 16 Chapel St., Newark, Del.  
 See Advertisements on Pages 72, 73  
 du Pont de Nemours Co., Inc., E. I. Plastics Dept., 626 Schuyler Ave., Arlington, N. J.  
 Electrical Insulation Co., 12 Vestry St., New York, N. Y.  
 Formica Insulation Co., 4662 Spring Grove Ave., Cincinnati, Ohio  
 Franklin Fibre-Lamitex Corp., 12th & French Sts., Wilmington, Del.  
 See Advertisement on Page 232  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 General Electric Co., Chemical Dept., 1 Plastics Ave., Pittsfield, Mass.  
 See Advertisement on Page 97  
 Greenhut Insulation Co., 31 W. 21st St., New York, N. Y.  
 Industrial Synthetics Corp., 60 Woolsey St., Irvington, N. J.  
 See Advertisement on Page 169  
 Insulating Fabricators of New England Inc., 22 Elkins St., S. Boston, Mass.  
 Insulation Mfrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.  
 See Advertisement on Page 87  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Lamicold Fabricators, 3600 W. Potomac Ave., Chicago 51, Ill.  
 Mica Insulator Co., Schenectady 1, N. Y.  
 Mykroy Inc., 1917 N. Springfield Ave., Chicago 47, Ill.  
 National Vulcanized Fibre Co., Wilmington, Delaware  
 See Advertisement on Page 58  
 Penn Fibre & Specialty Co., 2030 E. Westmoreland St., Phila. 44, Pa.  
 Plastex Corp., 402 Mt. Vernon Ave., Columbus 3, Ohio  
 Plax Corp., 133 Walnut St., Hartford 5, Conn.  
 Rohm & Haas, 222 W. Washington Sq., Philadelphia, Pa.  
 Spaulding Fibre Co. Inc., 310 Wheeler St., Tonawanda, N. Y.  
 Stronghold Screw Products, 216 West Hubbard St., Chicago 10, Ill.  
 Synthane Corp., Oaks, Pa.  
 Taylor Fibre Co., Norristown, Pa.  
 United Radio Mfg. Co., 191 Greenwich St., New York, N. Y.  
 Wilmington Fibre Specialty Co., P. O. Drawer 1028, Wilmington 99, Del.

**Screw Machine Parts**

Ace Mfg. Corp., 1255 E. Erie Ave., Philadelphia, Pa.

Amalgamated Radio Television Corp., 476 Broadway, New York 13, N. Y.  
 Baer Co., N. S., 9 Montgomery St., Hillside, N. J.  
 See Advertisement on Page 227  
 Buchmann Spark-Wheel Corp., 4-20 47th Ave., Long Island City 1, N. Y.  
 Cambridge Thermionic Corp., 445 Concord Ave., Cambridge, Mass.  
 Chase Brass & Copper Co., Inc., Waterbury 91, Conn.  
 Continental Diamond Fibre Co., 16 Chapel St., Newark, Del.  
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 Eby, Inc., Hugh H., 18 W. Chelton Ave., Philadelphia 13, Pa.  
 Franklin Fibre-Lamitex Corp., 12th and French Sts., Wilmington, Del.  
 See Advertisement on Page 232  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 Insulating Fabricators, Inc., 12 E. 12th St., New York 3, N. Y.  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Keystone Electronics Co., 50-52 Franklin St., New York 13, N. Y.  
 La Magna Mfg. Co., Inc., East Rutherford, N. J.  
 Lamicold Fabricators, 3600 W. Potomac Ave., Chicago 51, Ill.  
 Mykroy Inc., 1917 N. Springfield Ave., Chicago 47, Ill.  
 Penn Fibre & Specialty Co., 2030 E. Westmoreland St., Philadelphia 44, Pa.  
 Plastic Accessories, Inc., 460 Broome St., New York 13, N. Y.  
 Spaulding Fibre Co., Inc., 310 Wheeler St., Tonawanda, N. Y.  
 Synthane Corp., Oaks, Pa.  
 Taylor Fibre Co., Norristown, Pa.

**Sheets**

Aerolite Electronic Hardware Corp., 24 Cliff St., Jersey City, N. J.  
 See Advertisement on Page 246  
 American Hard Rubber Co., 11 Mercer St., New York 13, N. Y.  
 American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 Auburn Mfg. Co., Middletown, Conn.  
 Blum & Co., Julius, 532 W. 22nd St., New York, N. Y.  
 Celanese Corp. of America, 180 Madison Ave., New York 16, N. Y.  
 Electrical Insulation Co., 12 Vestry St., New York, N. Y.  
 Formica Insulation Co., 4662 Spring Grove Ave., Cincinnati, Ohio  
 Franklin Fibre-Lamitex Corp., 12th and French Sts., Wilmington, Del.  
 See Advertisement on Page 232  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 General Electric Co., Chemical Dept., 1 Plastics Ave., Pittsfield, Mass.  
 See Advertisement on Page 97  
 Greenhut Insulation Co., 31 W. 21st St., New York, N. Y.  
 Huse Liberty Mica Co., 171 Camden St., Boston, Mass.  
 Industrial Synthetics Corp., 60 Woolsey St., Irvington, N. J.  
 See Advertisement on Page 169  
 Insulation Mfrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.  
 See Advertisement on Page 87  
 Jorgensen Mfg. Co., 1547 West Farms Rd., New York 60, N. Y.  
 Lamicold Fabricators, 3600 W. Potomac Ave., Chicago 51, Ill.  
 Mica Insulator Co., Schenectady 1, N. Y.  
 Moore Co., Howard J., 108 Park Row, New York 7, N. Y.  
 Mykroy Inc., 1917 N. Springfield Ave., Chicago 47, Ill.  
 National Vulcanized Fibre Co., Wilmington, Del.  
 See Advertisement on Page 58  
 Penn Fibre & Specialty Co., 2030 E. Westmoreland St., Philadelphia 44, Pa.  
 Plastex Corp., 402 Mt. Vernon Ave., Columbus 3, Ohio  
 Plax Corp., 133 Walnut St., Hartford 5, Conn.  
 Spaulding Fibre Co. Inc., 310 Wheeler St., Tonawanda, N. Y.  
 Suprenant Electrical Insulation Co., 84 Purchase St., Boston 10, Mass.  
 Synthane Corp., Oaks, Pa.  
 Taylor Fibre Co., Norristown, Pa.  
 United Radio Mfg. Co., 191 Greenwich St., New York, N. Y.  
 Wilmington Fibre Specialty Co., P. O. Drawer 1028, Wilmington 99, Del.

**Stampings & Punchings—Ceramic**

Amalgamated Radio Television Corp., 476 Broadway, New York 13, N. Y.  
 American Lava Corp., Chattanooga 5, Tenn.  
 See Advertisement on Page 69  
 Centralab Div., Globe Union Inc., 900 Keefe Ave., Milwaukee 1, Wisc.  
 See Advertisements on Pages 24, 25  
 Cook Ceramic Mfg. Co., 501 Prospect St., Trenton 1, N. J.  
 Flock Process Co., Velvetone Div., 3 Quincy St., Norwalk, Conn.  
 Ford Radio & Mica Corp., 538 63rd St., Brooklyn, N. Y.  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 General Ceramics & Steatite Corp., Keasbey, N. J.  
 See Advertisement on Page 79  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Kirchberger & Co., Inc., M., 1425 37th St., Brooklyn 18, N. Y.  
 Mykroy Inc., 1917 N. Springfield Ave., Chicago 47, Ill.  
 Penn Fibre & Specialty Co., 2030 E. Westmoreland St., Philadelphia 44, Pa.

**Stampings & Punchings—Fiber**

Alden Products Co., 117 No. Main St., Brockton 64, Mass.  
 Auburn Mfg. Co., Middletown, Conn.  
 Baer Co., N. S., 9 Montgomery St., Hillside, N. J.  
 See Advertisement on Page 227  
 Continental Diamond Fibre Co., 16 Chapel St., Newark, Del.  
 See Advertisements on Pages 72, 73  
 Electrical Insulation Co., 12 Vestry St., New York, N. Y.  
 Flock Process Co., Velvetone Div., 3 Quincy St., Norwalk, Conn.  
 Franklin Airloop Corp., 43-20 34th St., Long Island City, N. Y.  
 See Advertisement on Page 61  
 Franklin Fibre-Lamitex Corp., 12th and French Sts., Wilmington, Del.  
 See Advertisement on Page 232  
 Franklin Mfg. Co., A. W., 43-20 34th St., Long Island City, N. Y.  
 See Advertisement on Page 98  
 Gasket Engineering Co., 2440 Charlotte St., Kansas City 8, Mo.  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 Heyman Mfg. Co., Kenilworth, N. J.  
 Huse Liberty Mica Co., 171 Camden St., Boston, Mass.  
 Insulating Fabricators, Inc., 12 E. 12th St., New York 3, N. Y.  
 Insulation Mfrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.  
 See Advertisement on Page 87  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 La Magna Mfg. Co., Inc., East Rutherford, N. J.  
 Lamicold Fabricators, 3600 W. Potomac Ave., Chicago 51, Ill.  
 Melrath Supply & Gasket Co., Tioga St. & Aramingo Ave., Philadelphia, Pa.  
 Moore Co., Howard J., 108 Park Row, New York 7, N. Y.  
 National Gasket & Washer Co., Inc., 122 E. 25th St., New York 10, N. Y.  
 National Vulcanized Fibre Co., Wilmington, Del.  
 See Advertisement on Page 58  
 Penn Fibre & Specialty Co., 2030 E. Westmoreland St., Philadelphia 44, Pa.  
 Precision Fabricators Inc., 120 N. Fitzhugh St., Rochester, N. Y.  
 Rogers Corp., Manchester, Conn.  
 Spaulding Fibre Co., Inc., 310 Wheeler St., Tonawanda, N. Y.  
 Synthane Corp., Oaks, Pa.  
 Taylor Fibre Co., Norristown, Pa.

**Stampings & Punchings—Paper**

Aldine Paper Co., Inc., 535 Fifth Ave., New York 17, N. Y.  
 Amalgamated Radio Television Corp., 476 Broadway, New York 13, N. Y.  
 Auburn Mfg. Co., Middletown, Conn.  
 Flock Process Co., Velvetone Div., 3 Quincy St., Norwalk, Conn.  
 Franklin Mfg. Co., A. W., 43-20 34th St., Long Island City, N. Y.  
 See Advertisement on Page 98  
 Gasket Engineering Co., 2440 Charlotte St., Kansas City 8, Mo.

**General Cement Mfg. Co.**, 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
**Huse Liberty Mica Co.**, 171 Camden St., Boston, Mass.  
**Insulating Fabricators, Inc.**, 12 E. 12th St., New York 3, N. Y.  
**Insulation Mfrs. Corp.**, 565 W. Washington Blvd., Chicago 6, Ill.  
 See Advertisement on Page 87  
**Insuline Corp. of America**, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
**Lamcold Fabricators**, 3600 W. Potomac Ave., Chicago 51, Ill.  
**Lansky Die Cutting Co.**, 192½ Greene St., New York 12, N. Y.  
 See Advertisement on Page 220  
**Melrath Supply & Gasket Co.**, Tioga St. & Aramingo Ave., Philadelphia, Pa.  
**Moore Co.**, Howard J., 108 Park Row, New York 7, N. Y.  
**National Gasket & Washer Co., Inc.**, 122 E. 25th St., New York, N. Y.  
**Penn Fibre & Specialty Co.**, 2030 E. Westmoreland St., Philadelphia 44, Pa.  
**Precision Fabricators, Inc.**, 120 N. Fitzhugh St., Rochester, N. Y.  
**Rogers Corp.**, Manchester, Conn.  
**Schoonmaker Insulation Co., Inc.**, A. O., 635 Greenwich St., New York 14, N. Y.  
**Wilmington Fibre Specialty Co.**, P. O. Drawer 1028, Wilmington 99, Del.

## Tapes, Insulating

**Aeme Wire Co.**, New Haven 14, Conn.  
**Ajdine Paper Co., Inc.**, 535 5th Ave., New York 17, N. Y.  
**American Phenolic Corp.**, 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
**Anchor Webbing Co.**, 1005 Main St., Pawtucket, R. I.  
**Carolina Narrow Fabric Co.**, 1636 N. Chestnut St., Winston-Salem, N. C.  
**Celanese Corp. of America**, 180 Madison Ave., New York 16, N. Y.  
**Continental Diamond Fibre Co.**, 16 Chapel St., Newark, Del.  
 See Advertisements on Pages 72, 73  
**Dobeckmun Co., The, Industrial Products Div.**, Cleveland 1, Ohio  
**General Cement Mfg. Co.**, 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
**General Electric Co., Chemical Dept.**, 1 Plastics Ave., Pittsfield, Mass.  
 See Advertisement on Page 97  
**Hope Webbing Co.**, Providence, R. I.  
**Industrial Synthetics Corp.**, 60 Woolsey St., Irvington, N. J.  
 See Advertisement on Page 169  
**Insulating Fabricators, Inc.**, 12 E. 12th St., New York 3, N. Y.  
**Insulation Mfrs. Corp.**, 565 W. Washington Blvd., Chicago 6, Ill.  
 See Advertisement on Page 87  
**Insuline Corp. of America**, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
**Interstate Mfg. Corp.**, 125 Sussex Ave., Newark 4, N. J.  
 See Advertisements on Pages 180, 215  
**Irvington Varnish & Insulator Co.**, 10 Argyle Terr., Irvington 11, N. J.  
 See Advertisements on Pages 20, 21  
**Lamcold Fabricators**, 3600 W. Potomac Ave., Chicago 51, Ill.  
**Linton & Bros. Inc.**, Horace, 3081 Ruth St., Philadelphia 34, Pa.  
**Melrath Supply & Gasket Co.**, Tioga St. & Aramingo Ave., Philadelphia, Pa.  
**Mica Insulator Co.**, Schenectady 1, N. Y.  
**Minnesota Mining & Mfg. Co.**, 900 Fauquier Ave., St. Paul 6, Minn.  
**Mitchell Rand Insulation Co., Inc.**, 51 Murray St., New York 7, N. Y.  
 See Advertisement on Page 173  
**Okonite Co.**, Canal St., Passaic, N. J.  
**Owens-Corning Fiberglass Corp.**, 1860 Nicholas Bldg., Toledo 1, Ohio  
**Penn Fibre & Specialty Co.**, 2030 E. Westmoreland St., Philadelphia 44, Pa.  
**Plax Corp.**, 133 Walnut St., Hartford 5, Conn.  
**Ruberoid Co.**, 500 Fifth Ave., New York, N. Y.  
**Schoonmaker Insulation Co., Inc.**, A. O., 635 Greenwich St., New York 14, N. Y.  
**Suprenant Electrical Insulation Co.**, 84 Purchase St., Boston 10, Mass.  
**Wright & Sons Co.**, Wm. E., West Warren, Mass.

## INSULATORS—Antenna Insulators & Spring Assemblies

**Aeronautical Radio Mfg. Co.**, 155 First Street, Mineola, N. Y.

**Amalgamated Radio Television Corp.**, 476 Broadway, New York 13, N. Y.  
**American Lava Corp.**, Chattanooga 5, Tenn.  
 See Advertisement on Page 69  
**American Phenolic Corp.**, 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
**Insulation Mfg. Co.**, 11 New York Ave., Brooklyn, N. Y.  
**Insuline Corp. of America**, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
**Kellogg Switchboard & Supply Co.**, 6650 S. Cicero Ave., Chicago 38, Ill.  
**Mykroy Inc.**, 1917 N. Springfield Ave., Chicago 47, Ill.  
**Porcelain Products, Inc.**, Parkersburgh, W. Va.  
**Premax Prods. Div., Chisholm-Ryder Co.**, Niagara Falls 2, N. Y.  
 See Advertisement on Page 90

## INSULATORS—Can Liner

**Aeme Folding Box Co. Inc.**, 141 E. 25th St., New York, N. Y.  
**American Phenolic Corp.**, 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
**Kirchberger & Co., Inc.**, M., 1425 37th St., Brooklyn 18, N. Y.  
**Mica Insulator Co.**, Schenectady 1, N. Y.  
**Moore Co.**, H. J., 108 Park Row, New York 7, N. Y.  
**Rogers Corporation**, Manchester, Conn.

## INSULATORS—Ceramic

**American Lava Corp.**, Chattanooga 5, Tenn.  
 See Advertisement on Page 69  
**American Phenolic Corp.**, 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
**Birnbach Radio Co., Inc.**, 145 Hudson St., New York, N. Y.  
**Centralab Div., Globe Union, Inc.**, 900 Keefe Ave., Milwaukee 1, Wisc.  
 See Advertisements on Pages 24, 25  
**Consolidated Wire & Associated Companies**, 1635 S. Clinton St., Chicago 16, Ill.  
**Cook Ceramic Mfg. Co.**, 501 Prospect St., Trenton 1, N. J.  
**Crowley & Co. Inc.**, Henry L., 1 Central Ave., West Orange, N. J.  
**Fleron & Son, Inc.**, M. M., 113 N. Broad St., Trenton 8, N. J.  
**General Ceramics & Steatite Corp.**, Keasbey, N. J.  
 See Advertisement on Page 79  
**General Electric Co.**, Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
**General Electronics, Inc.**, 1819 Broadway, New York 23, N. Y.  
**Insuline Corp. of America**, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
**Johnson Co.**, E. F., Waseca, Minn.  
**Locke Insulator Corp.**, P. O. Box 57, Baltimore 3, Md.  
**Mica Products Mfg. Co.**, 69 Wooster St., New York, N. Y.  
**Millen Mfg. Co., James**, 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44  
**Mykroy Inc.**, 1917 N. Springfield Ave., Chicago 47, Ill.  
**Porcelain Products, Inc.**, Parkersburgh, W. Va.  
**Radio Corp. of America, Tube Div.**, Harrison, N. J.  
**Steward Mfg. Co.**, D. M. E., 36th St., Chattanooga, Tenn.  
**Stupakoff Ceramic & Mfg. Co.**, Latrobe, Pa.  
**Technical Appliance Corp.**, 41-06 DeLong St., Flushing, N. Y.  
**Union Electric Porcelain Works**, Van St., Trenton 5, N. J.  
**Universal Clay Products Co.**, 1505 E. 1st St., Sandusky, Ohio

## INSULATORS—Feeder Spreader

**American Phenolic Corp.**, 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
**Centralab Div., Globe Union, Inc.**, 900 Keefe Ave., Milwaukee 1, Wisc.  
 See Advertisements on Pages 24, 25  
**Consolidated Wire & Associated Companies**, 1635 S. Clinton St., Chicago 16, Ill.  
**General Ceramics & Steatite Corp.**, Keasbey, N. J.  
 See Advertisement on Page 79  
**Johnson Co.**, E. F., Waseca, Minn.

**Locke Insulator Corp.**, P. O. Box 57, Baltimore 3, Md.  
**Millen Mfg. Co., James**, 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44  
**National Co.**, 61 Sherman St., Malden 48, Mass.  
 See Advertisement on Page 78  
**Printind, Inc.**, 95 Mercer St., New York, N. Y.  
 See Advertisement on Page 198  
**Steward Mfg. Co.**, D. M. E., 36th St., Chattanooga, Tenn.  
**Stupakoff Ceramic & Mfg. Co.**, Latrobe, Pa.

## INSULATORS—Fused Quartz

**Amersil Co., Inc.**, Chestnut Ave., Hillside, N. J.  
**Dallons Labs.**, 5066 Santa Monica Blvd., Los Angeles, Calif.  
**General Electric Co.**, Nela Park, Cleveland, Ohio  
**Hanovia Chemical & Mfg. Co.**, 233 N. J. RR Ave., Newark, N. J.

## INSULATORS—High Dielectric Paper

**Huse Liberty Mica Co.**, 171 Camden St., Boston, Mass.  
**Insulation Mfrs. Corp.**, 565 W. Washington Blvd., Chicago 6, Ill.  
 See Advertisement on Page 87  
**Moore Co.**, Howard J., 108 Park Row, New York 7, N. Y.

## INSULATORS—Mast Guy

**Centralab Div., Globe Union, Inc.**, 900 Keefe Ave., Milwaukee 1, Wisc.  
 See Advertisements on Pages 24, 25  
**General Ceramics & Steatite Corp.**, Keasbey, N. J.  
 See Advertisement on Page 79  
**Insulation Mfg. Co.**, 11 New York Ave., Brooklyn, N. Y.  
**Lapp Insulator Co.**, 31 Gilbert St., LeRoy, N. Y.  
 See Advertisements on Pages 92, 93  
**Locke Insulator Corp.**, P. O. Box 57, Baltimore 3, Md.  
**Porcelain Products, Inc.**, Parkersburgh, W. Va.  
**Stupakoff Ceramic & Mfg. Co.**, Latrobe, Pa.

## INSULATORS—Passthrough & Bushing

**American Lava Corp.**, Chattanooga 5, Tenn.  
 See Advertisement on Page 69  
**American Phenolic Corp.**, 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
**Bud Radio Inc.**, 2118 E. 55th St., Cleveland 3, Ohio  
**Centralab Div., Globe Union, Inc.**, 900 Keefe Ave., Milwaukee 1, Wisc.  
 See Advertisements on Pages 24, 25  
**Consolidated Wire & Associated Companies**, 1635 S. Clinton St., Chicago 16, Ill.  
**Cook Ceramic Mfg. Co.**, 501 Prospect St., Trenton 1, N. J.  
**Electronic Mechanics Inc.**, 70 Clifton Blvd., Clifton, N. J.  
**General Ceramics & Steatite Corp.**, Keasbey, N. J.  
 See Advertisement on Page 79  
**Insuline Corp. of America**, 36-02 35th Ave., L. I. City, N. Y.  
 See Advertisement on Page 166  
**Interstate Mfg. Corp.**, 125 Sussex Ave., Newark 4, N. J.  
 See Advertisements on Pages 180, 215  
**Johnson Co.**, E. F., Waseca, Minn.  
**Lapp Insulator Co.**, 31 Gilbert St., LeRoy, N. Y.  
 See Advertisements on Pages 92, 93  
**Locke Insulator Corp.**, P. O. Box 57, Baltimore 3, Md.  
**Millen Mfg. Co., James**, 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44  
**Mycalex Corp. of America**, 60 Clifton Blvd., Clifton, N. J.  
 See Advertisements on Pages 84, 85  
**Mykroy Inc.**, 1917 N. Springfield Ave., Chicago 47, Ill.  
**National Co.**, 61 Sherman St., Malden 48, Mass.  
 See Advertisement on Page 78  
**Porcelain Products, Inc.**, Parkersburgh, W. Va.

Printloid, Inc., 95 Mercer St., New York, N. Y.  
See Advertisement on Page 198

**INSULATORS—Standoff & Cone**

American Lava Corp., Chattanooga 5, Tenn.  
See Advertisement on Page 69  
American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
See Advertisement on Page 23  
Bud Radio Inc., 2118 E. 55th St., Cleveland 3, Ohio  
Centralab Div., Globe Union, Inc., 900 Keefe Ave., Milwaukee 1, Wisc.  
See Advertisements on Pages 24, 25  
Corning Glass Works, Corning, N. Y.  
Electronic Mechanics Inc., 70 Clifton Blvd., Clifton, N. J.  
General Ceramics & Steatite Corp., Keasbey, N. J.  
See Advertisement on Page 79  
General Electronics Inc., 1319 Broadway, New York 23, N. Y.  
Insulation Mfg. Co., 11 New York Ave., Brooklyn, N. Y.  
Insuline Corp. of America, 36-02 35th Ave., L. I. City, N. Y.  
See Advertisement on Page 166  
Interstate Mfg. Corp., 125 Sussex Ave., Newark 4, N. J.  
See Advertisements on Pages 180, 215  
Johnson Co., E. F. Waseca, Minn.  
Lapp Insulator Co., 31 Gilbert St., LeRoy, N. Y.  
See Advertisements on Pages 92, 93  
Locke Insulator Corp., P. O. Box 57, Baltimore 3, Md.  
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
See Advertisement on Page 44  
Mykroy Inc., 1917 N. Springfield Ave., Chicago 47, Ill.  
National Co., 61 Sherman St., Malden 48, Mass.  
See Advertisement on Page 78  
Porcelain Products, Inc., Parkersburgh, W. Va.  
Premax Products Div., Chisholm-Ryder Co., Inc., Niagara Falls 2, N. Y.  
See Advertisement on Page 90  
Printloid, Inc., 95 Mercer St., New York, N. Y.  
See Advertisement on Page 198  
Stupakoff Ceramic & Mfg. Co., Latrobe, Pa.  
Technical Appliance Corp., 41-06 DeLong St., Flushing, N. Y.  
U. S. Plastics Corp., 2835-53 Irving Park Road, Chicago, Ill.  
Winchester Co., The, 6 East 46th St., New York 17, N. Y.  
Workshop Associates, 66 Needham St., Newton Highlands 61, Mass.

**INSULATORS—Strain**

Aeronautical Radio Mfg. Co., 155 First St., Mineola, N. Y.  
Alpha Wire Corp., 50 Howard St., New York, N. Y.  
American Lava Corp., Chattanooga 5, Tenn.  
See Advertisement on Page 69  
Birnback Radio Co. Inc., 145 Hudson St., New York, N. Y.  
Centralab Div., Globe Union, Inc., 900 Keefe Ave., Milwaukee 1, Wisc.  
See Advertisements on Pages 24, 25  
Consolidated Wire & Associated Companies, 1635 S. Clinton St., Chicago 16, Ill.  
Corning Glass Works, Corning, N. Y.  
Cornish Wire Co., 15 Park Row, New York, N. Y.  
See Advertisement on Page 170  
Electronic Mechanics Inc., 70 Clifton Blvd., Clifton, N. J.  
Fleron & Son Inc., M. M., 113 N. Broad St., Trenton 8, N. J.  
General Ceramics & Steatite Corp., Keasbey, N. J.  
See Advertisement on Page 79  
Insulation Mfg. Co., 11 New York Ave., Brooklyn, N. Y.  
Interstate Mfg. Corp., 125 Sussex Ave., Newark 4, N. J.  
See Advertisements on Pages 180, 215  
Isolantite Inc., 343 Cortlandt St., Belleville 9, N. J.  
Johnson Co., E. F. Waseca, Minn.  
Lapp Insulator Co., 31 Gilbert St., LeRoy, N. Y.  
See Advertisements on Pages 92, 93  
Locke Insulator Corp., P. O. Box 57, Baltimore 3, Md.  
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
See Advertisement on Page 44  
Mykroy Inc., 1917 N. Springfield Ave., Chicago 47, Ill.

National Vulcanized Fibre Co., Wilmington, Del.  
See Advertisement on Page 58  
National Co., Inc., 61 Sherman St., Malden 48, Mass.  
See Advertisement on Page 78  
Porcelain Products, Inc., Parkersburgh, W. Va.  
Stupakoff Ceramic & Mfg. Co., Latrobe, Pa.

**INSULATORS—Test Clip**

Amalgamated Radio Television Corp., 476 Broadway, New York 13, N. Y.  
American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
See Advertisement on Page 23  
Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
See Advertisement on Page 166  
Mueller Electric Co., 1583 E. 31st Street, Cleveland 14, Ohio

**INSULATORS—Thermocouple**

American Lava Corp., Chattanooga 5, Tenn.  
See Advertisement on Page 69  
Centralab Div., Globe Union Inc., 900 Keefe Ave., Milwaukee 1, Wisc.  
See Advertisements on Pages 24, 25  
Leeds & Northrup Co., 4970 Stenton Ave., Philadelphia, Pa.  
Steward Mfg. Co., D. M. E., 36th St., Chattanooga, Tenn.  
Stupakoff Ceramic & Mfg. Co., Latrobe, Pa.  
Thwing-Albert Instrument Co., 5351 Pulaski Ave., Philadelphia 44, Pa.

**INSULATORS—Tower**

Lapp Insulator Co., 31 Gilbert St., LeRoy, N. Y.  
See Advertisements on Pages 92, 93  
Locke Insulator Corp., P. O. Box 57, Baltimore 3, Md.  
Premax Products Div., Chisholm-Ryder Co., Inc., Niagara Falls 2, N. Y.  
See Advertisement on Page 90

**INSULATORS—Transmitting Antenna**

American Lava Corp., Chattanooga 5, Tenn.  
See Advertisement on Page 69  
Centralab Div., Globe Union Inc., 900 Keefe Ave., Milwaukee 1, Wisc.  
See Advertisements on Pages 24, 25  
Corning Glass Works, Corning, N. Y.  
General Ceramics & Steatite Corp., Keasbey, N. J.  
See Advertisement on Page 79  
Johnson Co., E. F. Waseca, Minn.  
Locke Insulator Corp., P. O. Box 57, Baltimore 3, Md.  
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
See Advertisement on Page 44  
Porcelain Products, Inc., Parkersburgh, W. Va.  
Premax Products Div., Chisholm-Ryder Co., Inc., Niagara Falls 2, N. Y.  
See Advertisement on Page 90  
Stupakoff Ceramic & Mfg. Co., Latrobe, Pa.

**INTEGRATORS—Electronic**

Atomic Instrument Co., 160 Charles St., Boston, Mass.  
Commercial Research Labs. Inc., 20 Bartlett Ave., Detroit 3, Mich.  
Fredericks Co., Geo. E., Bethayres, Pa.  
Saxl Instrument Co., 6 Linnaean St., Cambridge 38, Mass.

**INTERCOMMUNICATION SYSTEMS**

Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.  
Aviometer Corp., 370 W. 35th St., New York 1, N. Y.  
See Advertisement on Page 224  
Banks Mfg. Co., 1105 W. Lawrence Ave., Chicago 40, Ill.  
Bell Sound Systems, Inc., 1183 Essex Ave., Columbus, Ohio

Bendix Aviation Corp., Pacific Div., 11600 Sherman Way, North Hollywood, Calif.  
Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
Biltmore Radio Corp., 15 Ave. A., New York 3, N. Y.  
Bogen Co., David, 663 Broadway, New York 12, N. Y.  
Boom Electric & Amplifier Co., 1227 W. Washington Blvd., Chicago 7, Ill.  
Communicating Systems Inc., 203 E. 18th St., New York 3, N. Y.  
Dalmo Victor Co., San Carlos, California  
Dayton Acme Co., 930 York St., Cincinnati 14, Ohio  
Electronic Apparatus, Inc., 347 Madison Ave., New York 17, N. Y.  
Electronic Labs. Inc., 24 W. 24th St., Indianapolis, Indiana  
Electronic Sound Engineering Co., 4344-46 W. Armitage Ave., Chicago 39, Ill.  
Executone Inc., 415 Lexington Ave., New York 17, N. Y.  
Gem Radio & Television Co., 72 Cortlandt St., New York 6, N. Y.  
General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
General Electric Co., Syracuse, N. Y.  
See Advertisements on Pages 96, 96A  
Globe Electronics, Inc., 225 W. 17th St., New York, N. Y.  
Godfrey Mfg. Co., 171 S. 2nd St., Milwaukee 4, Wisc.  
Intercall Systems, Inc., 201 Hickory St., Dayton, Ohio  
Intex Co., 303 W. 42nd St., New York 18, N. Y.  
See Advertisement on Page 68  
Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
Lake Mfg. Co., 2323 Chestnut St., Oakland 7, Calif.  
Loge Sound Engineers, J. M., 986 S. Western Ave., Los Angeles 6, Calif.  
Long Co., L. J., 186 Grand St., New York 13, N. Y.  
McGrade Mfg. Co., Inc., E. W., 406 W. 34th St., Kansas City 2, Mo.  
Magnavox Co., The, Fort Wayne 4, Ind.  
Miles Reproducer Co. Inc., 812 Broadway, New York 3, N. Y.  
See Advertisement on Page 256  
National Intercommunicating Systems, 1531 Devon Ave., Chicago 26, Ill.  
Philco Corp., Tioga & C Sts., Phila. 34, Pa.  
Polytron Corp., 401 Broadway, New York 13, N. Y.  
Radio Corp. of America, RCA Victor Div., Camden, N. J.  
See Advertisements on Inside Back Cover & Back Cover, 251  
Radio Receptor Co., 251 W. 19th St., New York, N. Y.  
See Advertisement on Page 40  
Rauland Corp., 4245 N. Knox Ave., Chicago 41, Ill.  
Remler Co. Ltd., 2101 Bryant St., San Francisco 10, Calif.  
Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.  
Simpson Mfg. Co., Inc., Mark, 183 W. 4th St., New York 14, N. Y.  
Stark Sound Engineering Corp., P. O. 493, Ft. Wayne 1, Ind.  
Talk-A-Phone Mfg. Co., 1512 S. Pulaski Rd., Chicago 23, Ill.  
Task Electronics Co., 245 W. 54th St., New York, N. Y.  
Tech-Master Products Co., 123 Prince St., New York, N. Y.  
Tel Autograph Corp., 16 W. 61st St., New York 23, N. Y.  
Technical Apparatus Co., 167 Washington St., Boston 8, Mass.  
Telephonics Corp., 350 W. 31st St., New York 1, N. Y.  
Webster Electric Co., 1900 Clark St., Racine, Wisc.

**INVERTERS**

Airpax Products Co., P. O. Box 6766, Baltimore 4, Md.  
American Television & Radio Co., 300 E. Fourth St., St. Paul 1, Minn.  
Cyclohm Motor Corp., 5-17 46 Rd., L. I. City 1, N. Y.  
See Advertisement on Page 252  
Eicor, Inc., 1501 W. Congress St., Chicago 7, Ill.  
See Advertisement on Page 210  
Electronic Devices Co., 601 W. 26th St., New York, N. Y.  
Electronic Laboratories, Inc., 24 W. 24th St., Indianapolis, Ind.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.  
Inductive Equipment Co., Gettysburg, Pa.  
Jack & Heintz Precision Industries, Inc., Cleveland 1, Ohio

Leland Electric Co., 1501 Webster St., Dayton, Ohio  
 Norrman Labs., Ernst, Williams Bay, Wisc.  
 Radio Mfg. Engineers Inc., Peoria, Ill.  
 Sorensen & Co., 375 Fairfield Ave., Stamford, Conn.  
**See Advertisement on Page 154**  
 Westinghouse Electric Corp., Motor Div., Buffalo, N. Y.

Boehme Inc., H. O., 915 Broadway, New York, N. Y.  
 Erco Radio Labs. Inc., Fenimore Ave., Hempstead, N. Y.  
 Press Wireless Mfg. Corp., 1475 Broadway, New York City 18, N. Y.  
 Schuttig & Co., 9th & Kearney Sts., N. E., Washington 17, D. C.

Hopp Press Inc., 460 W. 34th St., New York, N. Y.  
 Insulation Mfg. Co., 11 New York Ave., Brooklyn, N. Y.  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
**See Advertisement on Page 166**  
 J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkway., Brooklyn, N. Y.  
 Kurz-Kasch Co., 1415 S. Broadway, Dayton 1, Ohio

## IRONS—Electric Soldering

Acme Electric Heating Co., 1217 Washington St., Boston, Mass.  
**American Electrical Heater Co., 6110 Cass Ave., Detroit 2, Mich.**  
**See Advertisement on Page 68**  
 Belden Mfg. Co., 4647 W. Van Buren St., Chicago 44, Ill.  
**Drake Electric Works, 3656 Lincoln Ave., Chicago 13, Ill.**  
**See Advertisement on Page 206**  
 Dual-Heat, Inc., 542 So. Broadway, Los Angeles 13, Calif.  
 Dual Remote Control Co., Wayne, Mich.  
 Eisler Engineering Co., Inc., 740 S. 13th St., Newark 3, N. J.  
 Electric Soldering Iron Co., 1845 W. Elm St., Deep River, Conn.  
 General Electric Co., Schenectady 5, N. Y.  
 Hexacon Electric Company, 161 W. Clay Ave., Roselle Park, N. J.  
**Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.**  
**See Advertisement on Page 166**  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Kelnor Mfg. Co., 215 Kearny St., San Francisco 8, Calif.  
**Kwikheat Div., Sound Equipment Corp., 3903 San Fernando Road, Glendale 4, Calif.**  
**See Advertisement on Page 38**  
 Lenk Mfg. Co., Newton Lower Falls 62, Mass.  
 Luma Electric Equipment Co., P. O. Box 132, Toledo 1, Ohio  
**Multi-Products Tool Co., 123 Sussex Ave., Newark 4, N. J.**  
**See Advertisement on Page 246**  
 Sound Equipment Corp. of California, 3903 San Fernando Rd., Glendale 4, Calif.  
 Ungar Electric Tools, Inc., 615 Ducommun St., Los Angeles 54, Calif.  
 Vulcan Electric Co., 83 Holten St., Danvers, Mass.  
 Waage Electric Co., A. H., 54 Park Pl., New York 7, N. Y.  
 Weller Mfg. Co., 516 Northampton St., Easton, Pa.

## KEYS & CODING EQUIPMENT

Aero Communications, Inc., 231 Main St., Hempstead, N. Y.  
 Alden Products Co., 117 N. Main St., Brockton 64, Mass.  
 Boehme Inc., H. O., 915 Broadway, New York, N. Y.  
 Erco Radio Labs. Inc., Fenimore Ave., Hempstead, N. Y.  
 Fischer-Smith, Inc., 162 State St., West Englewood, N. J.  
**General Electric Co., Schenectady 5, N. Y.**  
**See Advertisements on Pages 96B, 96C**  
**Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.**  
**See Advertisement on Page 166**  
 Logan Co., Les., 530 Gough St., San Francisco 2, Calif.  
 McElroy Manufacturing Corp., Littleton, Mass.  
 Selectograph Mfg. Co., 502 W. Colo. Ave., Colorado Springs, Colo.  
 Telephonics Corp., 350 West 31st St., New York 1, N. Y.  
 Vibroplex Co., Inc., 833 Broadway, New York, N. Y.  
 Winslow Co., 9 Liberty St., Newark 5, N. J.

Mayfair Molded Products Corp., 4440 N. Elston Ave., Chicago 30, Ill.  
**Measurement Engineering Ltd., 61 Duke St., Toronto, Canada**  
**See Advertisement on Page 193**  
 Midwest Molding & Mfg. Co., 319 N. Whipple St., Chicago 12, Ill.  
 Molded Insulation Co., Aircraft Control Div., 335 E. Price St., Philadelphia, Pa.  
**National Co., Inc., 61 Sherman St., Malden 48, Mass.**  
**See Advertisement on Page 78**  
 New England Radiocrafters, 1156 Commonwealth Ave., Boston 34, Mass.  
 Owens-Illinois Glass Co., Plastics Div., Toledo, Ohio  
 Plastic Enterprises, 129 Bloomfield Ave., Bloomfield, N. J.  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
**See Advertisements on Inside Back Cover & Back Cover, 251**  
 Reiner Electronics Co., 152 W. 25th St., New York, N. Y.  
**Richardson Co., The, Melrose Park, Ill.**  
**See Advertisement on Page 209**  
**Rogan Bros., 2001 S. Michigan Ave., Chicago, Ill.**  
**See Advertisement on Page 164**  
 Schott Co., Walter L., 9306 Santa Monica Blvd., Beverly Hills, Calif.  
 Standard Molding Corp., Dayton, Ohio  
 Stokes Molded Products, Taylor St. at Webster, Trenton, N. J.  
 Taylor Mfg. Co., 3078 W. Meinecke Ave., Milwaukee 10, Wisc.  
**U. S. Instrument Corp., 19 South Harrison St., East Orange, N. J.**  
**See Advertisement on Page 255**  
**U. S. Plastics Corp., 2335-53 Irving Park Rd., Chicago, Ill.**  
 Victory Mfg. Co., 1722 W. Arcade Pl., Chicago 2, Ill.  
 Waterbury Companies, Inc., Waterbury 90, Conn.  
 Wilmington Fibre Specialty Co., P. O. Drawer 1028, Wilmington 99, Del.

## ISOLATION COUPLER—f-m Antenna

Andrew Co., 363 E. 75th St., Chicago 19, Ill.  
 Johnson Co., E. F., Waseca, Minn.

## KILOVOLT METERS

Assembly Products, Inc., Chagrin Falls, Ohio  
**Ballantine Labs. Inc., Boonton, N. J.**  
**See Advertisement on Page 42**  
 Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska  
**Electronic Measurements Co., Red Bank, N. J.**  
**See Advertisement on Page 68**  
 Johnson Co., E. F., Waseca, Minn.  
 Meters, Inc., 915 Riveria Dr., Indianapolis 5, Ind.  
**Rawson Electrical Instrument Co., 110 Potter St., Cambridge 42, Mass.**  
**See Advertisement on Page 244**  
 Scientific Service Lab., Subs. of Electronics, Inc., 915 Meridian Ave., South Pasadena, Calif.  
 Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.

## KNOBBS—Wooden

Birnbach Radio Co., Inc., 145 Hudson St., New York, N. Y.  
 Boonton Molding Co., Boonton, N. J.  
 J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkway., Brooklyn, N. Y.  
 Syracuse Ornamental Co., 581 S. Clinton St., Syracuse, N. Y.  
 Tri-United Plastics Corp., 390 Nye Ave., Irvington, N. J.

## ISOTOPES—Radioactive

Isotope Section, Research Div., Manhattan Engineer District, P. O. Box E, Oakridge, Tenn.  
 Tracerlab, Inc., 55 Oliver St., Boston 10, Mass.

## KLYSTRON

See Tubes

## JACKS

See Plugs and Jacks

## KNOBBS—Plastic Molded

Alden Products Co., 117 No. Main St., Brockton 64, Mass.  
**Beach Mfg. Inc., 322 East Beach Ave., Inglewood, Calif.**  
**See Advertisement on Page 76**  
 Birnbach Radio Co. Inc., 145 Hudson St., New York, N. Y.  
 Bud Radio Inc., 2118 E. 55th St., Cleveland 3, Ohio  
 Chicago Die Mold Corp., 4001 Wright Ave., Chicago 39, Ill.  
 Consolidated Molded Products Corp., Scranton 2, Pa.  
 Consolidated Wire & Associated Companies, 1625 S. Clinton St., Chicago 16, Ill.  
 Croname, Inc., 3701 Ravenswood Ave., Chicago, Ill.  
 Davies Molding Co., Harry, 1428 N. Wells St., Chicago 10, Ill.  
 Dimco Plastics, Inc., Dayton, Ohio  
**Erie Resistor Corp., 644 W. 12th St., Erie, Pa.**  
**See Advertisement on Page 47**  
 Firestone Tire & Rubber Co., 1 Firestone Ave., Fall River, Mass.  
**General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.**  
**See Advertisement on Page 90**  
**General Electric Co., Syracuse, N. Y.**  
**See Advertisements on Pages 96, 96A**  
**General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.**  
 Gordon Specialties Co., 823 S. Wabash Ave., Chicago 5, Ill.  
 Grammes & Sons Inc., L. F., 389 Union St., Allentown 2, Pa.

## LACQUER

See Insulating Compounds

## JUMPERS—Bonding

Aeronautical Radio Mfg. Co., 155 First St., Mineola, N. Y.  
 American Steel & Wire Co., U. S. Steel Corp. Subs., Rockefeller Bldg., Cleveland 13, Ohio  
 Eby, Inc., Hugh H., 18 W. Chelton Ave., Philadelphia 13, Pa.  
 Rattan Mfg. Co., The, P. O. Box 1745, New Haven 7, Conn.

## LAMINATIONS—Transformer

Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Magnetic Products Corp., The, Norwalk, Conn.  
**National Co., Inc., 61 Sherman St., New York, N. Y.**  
**See Advertisement on Page 78**  
**Olympic Tool & Mfg. Co., 27 Chambers St., New York 7, N. Y.**  
**See Advertisement on Page 177**  
 Publix Metal Products Inc., 100 6th Ave., New York 13, N. Y.  
 Radiad Service, 720 W. Schubert Ave., Chicago 14, Ill.  
 Spaulding Fibre Co., Inc., 310 Wheeler St., Tonawanda, N. Y.  
**Super Electric Products Corp., 1057 Summit Ave., Jersey City, N. J.**  
**See Advertisement on Page 86**  
**Transformer Products Inc., 143 W. 51st St., New York, N. Y.**  
**United Transformer Corp., 150 Varick St., New York 13, N. Y.**  
**Webster-Chicago Corp., 5622 Bloomingdale Ave., Chicago 39, Ill.**

## KEYERS & COUPLERS

Aero Communications, Inc., 231 Main St., Hempstead, N. Y.  
**American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.**  
**See Advertisement on Page 23**

## LEADS—Test

**Aerolite Electronic Hardware Corp.**, 24 Cliff St., Jersey City, N. J.  
See Advertisement on Page 246

**Alden Products Co.**, 117 N. Main St., Brockton 64, Mass.

**Alpha Wire Corp.**, 50 Howard St., New York, N. Y.

**Amalgamated Radio Television Corp.**, 476 Broadway, New York 13, N. Y.

**Bud Radio Inc.**, 2118 E. 55th St., Cleveland 3, Ohio

**Electronic Development Co.**, 4420 N. 23rd St., Omaha 11, Nebraska

**General Cement Mfg. Co.**, 919 Taylor Ave., Rockford, Ill.  
See Advertisement on Page 90

**Insuline Corp. of America**, 36-02 35th Ave., Long Island City, N. Y.  
See Advertisement on Page 166

**J. F. D. Mfg. Co.**, 4111 Ft. Hamilton Pkway., Brooklyn, N. Y.

**Keystone Electronics Co.**, 50-52 Franklin St., New York 13, N. Y.

**La Magna Mfg. Co., Inc.**, East Rutherford, N. J.

**Reiner Electronics Co.**, 152 W. 25th St., New York, N. Y.

**Thwing-Albert Instrument Co.**, 5351 Pulaski Ave., Philadelphia 44, Pa.

## LEATHERETTE

**General Cement Mfg. Co.**, 919 Taylor Ave., Rockford, Ill.  
See Advertisement on Page 90

**U. S. Rubber Co.**, 1230 Sixth Ave., New York 20, N. Y.

## LIE DETECTORS—Electronic

**Maico Co. Inc.**, 25 N. 3rd St., Minneapolis, Minn.

## LIGHTNING ARRESTORS

See Arrestors

## LIGHTS—Dial and Panel

**Aerolite Electronic Hardware Corp.**, 24 Cliff St., Jersey City, N. J.  
See Advertisement on Page 246

**Automatic Electric Co.**, 1033 W. Van Buren St., Chicago 7, Ill.

**Bud Radio, Inc.**, 2118 E. 55th St., Cleveland 3, Ohio

**Dial Light Co. of America**, 900 Broadway, New York 3, N. Y.

**Franklin Airloop Corp.**, 43-20 34th St., Long Island City, N. Y.  
See Advertisement on Page 61

**General Cement Mfg. Co.**, 919 Taylor Ave., Rockford, Ill.  
See Advertisement on Page 90

**General Electric Co.**, Nela Park, Cleveland, Ohio

**Hart Mfg. Co.**, 110 Bartholomew Ave., Hartford 1, Conn.

**Insuline Corp. of America**, 36-02 35th Ave., Long Island City, N. Y.  
See Advertisement on Page 166

**Johnson Co. E. F.**, Waseca, Minn.

**Kellogg Switchboard & Supply Co.**, 6650 S. Cicero Ave., Chicago 38, Ill.

**Kirkland Co., H. R.**, 8-10 King St., Morristown, N. J.

**Littelfuse Inc.**, 4757 Ravenswood Ave., Chicago 40, Ill.  
See Advertisement on Page 43

**Micarta Fabricators Inc.**, 5324 Ravenswood Ave., Chicago 40, Ill.

**National Union Radio Corp.**, 350 Scotland Rd., Orange, N. J.

**Searle Aero Industries, Inc.**, Orange, Calif.

**Tang-Sol Lamp Works, Inc.**, 95 Eighth Ave., Newark, N. J.  
See Advertisement on Page 181

**Westinghouse Electric Corp.**, Bloomfield Lamp Div., Bloomfield, N. J.  
See Advertisement on Page 45

## LIGHTS—Photoelectric Source

**Aerolux Light Corp.**, 653 11th Ave., New York 19, N. Y.

**D. & M. Mfg. Co.**, 2 Delford Ave., Bergenfield, N. J.

**Fisher-Pierce Co.**, 70 Ceylon Street, Boston 21, Mass.  
See Advertisement on Page 163

**General Electric Co.**, Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C

**Langevin Co. Inc.**, The Industrial Control Div., 37 W. 65th St., New York 23, N. Y.

**Photoswitch, Inc.**, 77 Broadway, Cambridge 42, Mass.

**Ripley Co.**, Torrington, Conn.

**Westinghouse Electric Corp.**, Bloomfield Lamp Div., Bloomfield, N. J.  
See Advertisement on Page 45

**Worner Electronic Devices**, Rankin, Ill.

## LIGHTS—Pilot

**Aerolight Electronic Hardware Corp.**, 24 Cliff St., Jersey City, N. J.  
See Advertisement on Page 246

**Aerolux Light Corp.**, 653 11th Ave., New York 19, N. Y.

**Amalgamated Radio Television Corp.**, 476 Broadway, New York 13, N. Y.

**Automatic Electric Co.**, 1033 W. Van Buren St., Chicago 7, Ill.

**D. & M. Mfg. Co.**, 2 Delford Ave., Bergenfield, N. J.

**Dial Light Co. of America, Inc.**, 900 Broadway, New York 3, N. Y.

**Drake Mfg. Co.**, 1713 Hubbard St., Chicago, Ill.  
See Advertisement on Page 174

**Franklin Airloop Corp.**, 43-20 34th St., Long Island City, N. Y.  
See Advertisement on Page 61

**Franklin Mfg. Co., A. W.**, 43-20 34th St., Long Island City, N. Y.  
See Advertisement on Page 98

**General Cement Mfg. Co.**, 919 Taylor Ave., Rockford, Ill.  
See Advertisement on Page 90

**General Electric Co.**, Nela Park, Cleveland, Ohio

**Gothard Mfg. Co.**, 2110 Clear Lake Ave., Springfield, Ill.

**Hart Mfg. Co.**, 110 Bartholomew Ave., Hartford 1, Conn.

**Johnson Co. E. F.**, Waseca, Minn.

**Kellogg Switchboard & Supply Co.**, 6650 S. Cicero Ave., Chicago 38, Ill.

**Kirkland Co., H. R.**, 8-10 King St., Morristown, N. J.

**Kulka Electric Mfg. Co., Inc.**, 30 South St., Mt. Vernon, N. Y.

**La Magna Mfg. Co., Inc.**, East Rutherford, N. J.

**Littelfuse Inc.**, 4757 Ravenswood Ave., Chicago 40, Ill.  
See Advertisement on Page 43

**Premier Crystal Labs. Inc.**, 63 Park Row, New York, N. Y.

**Sylvania Electric Prods., Inc.**, 500 5th Ave., New York 18, N. Y.  
See Advertisements on Pages 158 to 161

**Universal Microphone Co.**, Inglewood, Calif.  
See Advertisement on Page 56

**Westinghouse Electric Corp.**, Switchgear & Control Div., East Pittsburgh, Pa.

**Westinghouse Electric Corp.**, Bloomfield Lamp Div., Bloomfield, N. J.  
See Advertisement on Page 45

## LIGHTS—Signal

**Aerolite Electronic Hardware Corp.**, 24 Cliff St., Jersey City, N. J.  
See Advertisement on Page 246

**Dial Light Co. of America**, 900 Broadway, New York 3, N. Y.

**General Cement Mfg. Co.**, 919 Taylor Ave., Rockford, Ill.  
See Advertisement on Page 90

**Kirkland Co., H. R.**, 8-10 King St., Morristown, N. J.

**Leland Electric Co.**, 1501 Webster St., Dayton, Ohio

**North American Lamp Co.**, 1014 Tyler St., St. Louis 6, Mo.

**Searle Aero Industries, Inc.**, Orange, Calif.

**Westinghouse Electric Corp.**, Bloomfield Lamp Div., Bloomfield, N. J.  
See Advertisement on Page 45

## LIGHTS—Stroboscopic Source

**Aerolux Light Corp.**, 653 11th Ave., New York 19, N. Y.

**General Radio Co.**, 275 Massachusetts Ave., Cambridge 39, Mass.

**Sylvania Electric Products, Inc.**, 500 5th Ave., New York 18, N. Y.  
See Advertisements on Pages 158 to 161

## LINKS—Antenna

**American Phenolic Corp.**, 1830 S. 54th Ave., Chicago 50, Ill.  
See Advertisement on Page 23

**Telephonics Corp.**, 350 W. 31st St., New York, N. Y.

## LITHIUM COMPOUNDS

See Metals

## LOCATORS—Electronic Metal Locators &amp; Defectors

**Electronic Engineers**, 1039-B Pacific St., Santa Monica, Calif.

**Engineering Lab., Inc.**, 602 E. 4th St., Tulsa 3, Okla.

**Fisher Research Lab.**, 1961 University Ave., Palo Alto, Calif.

**General Electric Co.**, Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C

**Maico Co. Inc.**, 25 N. 3rd St., Minneapolis, Minn.

**Nilsson Electrical Lab., Inc.**, 103 Lafayette St., New York 13, N. Y.

**Radio Corp. of America, RCA Victor Div.**, Camden, N. J.  
See Advertisements on Inside Back Cover & Back Cover, 251

**Radio Frequency Labs., Inc.**, Boonton, N. J.

**Willmotte Mfg. Co.**, 1713 Kalorama Rd., N. W., Washington 9, D. C.

## LOCATORS—Power Line Failure

**Dentschmann Corp.**, Tobe, Filterette Div., Canton, Mass.  
See Advertisement on Page 82

**General Electric Co.**, Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C

**Jarvis, Kenneth W.**, 1140 Cherry St., Winnetka, Ill.

**Raytron, Inc.**, 407 N. Jackson St., Jackson, Mich.

## LOCKS—Dial

**Bud Radio, Inc.**, 2118 E. 55th St., Cleveland 3, Ohio

**General Radio Co.**, 275 Massachusetts Ave., Cambridge 39, Mass.

**Millen Mfg. Co., James**, 150 Exchange St., Malden, Mass.  
See Advertisement on Page 44

**National Co.**, 61 Sherman St., Malden 48, Mass.  
See Advertisement on Page 78

## LOCKS—Shaft

**Millen Mfg. Co., James**, 150 Exchange St., Malden, Mass.  
See Advertisement on Page 44

**National Co.**, 61 Sherman St., Malden 48, Mass.  
See Advertisement on Page 78

## LORAN NAVIGATIONAL DEVICES

**Harvey Radio Labs., Inc.**, 447 Concord Ave., Cambridge, Mass.

**National-Simplex-Bludworth, Inc.**, Marine Div., 100 Gold St., New York 7, N. Y.

**Radio Corp. of America, RCA Victor Div.**, Camden, N. J.  
See Advertisements on Inside Back Cover & Back Cover, 251

**Radiomarine Corp. of America**, 75 Varick St., New York 13, N. Y.

**Sperry Gyroscope Co., Inc.**, Great Neck, L. I., N. Y.  
See Advertisements on Pages 80A, 80B

**Televisto Products Inc.**, 7466 West Irving Park Road, Chicago 34, Ill.

## LOUDSPEAKER DRIVER UNITS

**Altec Lansing Corp.**, 1161 N. Vine St., Hollywood 38, Calif.

Atlas Sound Corp., 1443 39th St., Brooklyn 18, N. Y.  
 See Advertisement on Page 96D  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Stromberg-Carlson Co., Rochester, N. Y.  
 University Loudspeakers Inc., 225 Varick Street, New York, N. Y.

## LOUDSPEAKERS

Aireon Mfg. Corp., Fairfax & Funston Rds., Kansas City 15, Kansas.  
 Altec Lansing Corp., 1161 N. Vine St., Hollywood 33, Calif.  
 Atlas Sound Corp., 1443 39th St., Brooklyn 18, N. Y.  
 See Advertisement on Page 96D  
 Best Mfg. Co., 1200 Grove St., Irvington, N. J.  
 Cinaudagraph Speakers, Inc., Subsidiary of Aireon Mfg. Corp., 1401 Fairfax Trafficway, Kansas City, Kansas  
 See Advertisement on Page 195  
 Commercial Radio Sound Corp., 575 Lexington Ave., New York 22, N. Y.  
 Crescent Industries, Inc., 4140 Belmont Ave., Chicago 41, Ill.  
 Delco Radio Div., General Motors Corp., Kokomo, Ind.  
 Dilks, Inc., Norwalk, Conn.  
 DX Radio Products Co. Inc., 12000 N. Claremont Ave., Chicago 22, Ill.  
 Emerson Radio & Phonograph Corp., 111 8th Ave., New York, N. Y.  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 General Instrument Corp., 828 Newark Ave., Elizabeth 3, N. J.  
 See Advertisement on Page 71  
 Hallicrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Horton Machine Products Co., Horton & Rockaway Aves., Valley Stream, N. Y.  
 Jensen Radio Mfg. Co., 6601 S. Laramie Ave., Chicago, Ill.  
 McGrade Mfg. Co., Inc., E. W., 406 W. 34th St., Kansas City 2, Mo.  
 Molded Insulation Co., Aircraft Control Div., 335 E. Price St., Phila., Pa.  
 Murdock Mfg. Co., Wm. J., Chelsea, Mass.  
 Operadio Mfg. Co., 135th & Indiana Sts., St. Charles, Ill.  
 Oxford Radio Corp., 3911 S. Michigan Ave., Chicago 15, Ill.  
 Perfection Electric Co., 829 S. State St., Chicago, Ill.  
 Permoflux Corp., 4900 W. Grand Avenue, Chicago, Ill.  
 Quam Nichols Co., 526 E. 33rd Pl., Chicago 16, Ill.  
 Radell Corp., 215 W. Michigan St., Indianapolis 2, Ind.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 Radio Craftsmen, 1341 So. Michigan Ave., Chicago 5, Ill.  
 Radio Development & Research Co., 26 Cornellison Ave., Jersey City, N. J.  
 Radio-Music Corp., East Port Chester, Conn.  
 See Advertisement on Page 215  
 Radio Speakers Inc., 221 E. Cullerton St., Chicago, Ill.  
 Rola Co. Inc., 2530 Superior Ave., Cleveland, Ohio  
 Rowe Industries, 3120 Monroe St., Toledo 6, Ohio  
 Searle Aero Industries, Inc., Orange, Calif.  
 SOS Cinema Supply Co., 449 W. 42nd St., New York 18, N. Y.  
 Stephens Mfg. Co., 10416 National Blvd., Los Angeles 34, Calif.  
 University Loudspeakers, Inc., 225 Varick St., New York, N. Y.  
 Utah Radio Products Div., International Corp., Huntington, Ind.  
 Vibraloc Mfg. Co., 3597 Mission St., San Francisco, Calif.  
 Webster Electric Co., 1900 Clark St., Racine, Wisc.

## LOUDSPEAKERS—Marine Speaker Systems

American Communications Corp., 306 Broadway, New York 7, N. Y.  
 Guided Radio Corp., 161 6th Ave., New York 13, N. Y.  
 Hose-McCann Telephone Co., 177 Pacific St., Brooklyn 2, N. Y.  
 Magnavox Co., The, Fort Wayne 4, Ind.  
 Operadio Mfg. Co., 135th & Indiana Sts., St. Charles, Ill.

Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Remler Co. Ltd., 2101 Bryant St., San Francisco 10, Calif.  
 Taybern Equipment Co., 120 Greenwich St., New York 6, N. Y.  
 University Loudspeakers, Inc., 225 Varick St., New York 14, N. Y.  
 Webster Electric Co., 1900 Clark St., Racine, Wisc.  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89

## LUGS AND TERMINALS

Aerolite Electronic Hardware Corp., 24 Cliff St., Jersey City, N. J.  
 See Advertisement on Page 246  
 Aircraft-Marine Products, Inc., 1523 N. Fourth St., Harrisburg, Pa.  
 Amalgamated Radio Television Corp., 476 Broadway, New York 13, N. Y.  
 Audio Products Co., 2101 W. Olive Ave., Burbank, Calif.  
 Belden Mfg. Co., 4647 W. Van Buren St., Chicago 44, Ill.  
 Birnbach Radio Co. Inc., 145 Hudson St., New York, N. Y.  
 Cambridge Thermionic Corp., 445 Concord Ave., Cambridge, Mass.  
 Cinch Mfg. Corp., 2335 W. Van Buren St., Chicago 12, Ill.  
 See Advertisement on Page 75  
 Dante Electric Mfg. Co., Bantam, Conn.  
 Diamond Instrument Co., North Ave., Wakefield, Mass.  
 Diebel Die & Mfg. Co., 3658 N. Lincoln Ave., Chicago 13, Ill.  
 Eby, Inc., Hugh H., 18 W. Chelton Ave., Philadelphia 13, Pa.  
 Electro-Mechanical Instrument Co., 812 Chestnut St., Perkasie, Pa.  
 Federal Electric Products Co., Inc., 50 Paris St., Newark, N. J.  
 Franklin Ah-loop Corp., 43-20 34th St., Long Island City, N. Y.  
 See Advertisement on Page 61  
 Franklin Mfg. Co., A. W., 43-20 34th St., Long Island City, N. Y.  
 See Advertisement on Page 98  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Grammes & Sons, L. F., 389 Union St., Allentown 2, Pa.  
 Greene Mfg. Corp., G. G., Warren, Pa.  
 Gregory Mfg. Co., 67 Franklin St., New Haven 11, Conn.  
 Hevman Mfg. Co., Kenilworth, N. J.  
 High Tension Co. Inc., 36 N. Main St., Phillipsbury, N. J.  
 Ideal Industries, Inc., Park & Borden Avenues, Sycamore, Ill.  
 Ilco Copper & Tube Products Inc., Mariemont Ave., Mariemont 27, Ohio  
 Insulating Fabricators, Inc., 12 E. 12th St., New York 3, N. Y.  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Johnson Co., E. F., Waseca, Minn.  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Keystone Electronics Co., 50-52 Franklin St., New York 13, N. Y.  
 Kolton Electric Mfg. Co., 123 N. J. Railroad Ave., Newark 5, N. J.  
 Kulka Electric Mfg. Co., Inc., 30 South St., Mt. Vernon, N. Y.  
 La Magna Mfg. Co., Inc., East Rutherford, N. J.  
 Manufacturers Screw Products, 270 W. Hubbard St., Chicago, Ill.  
 Moore Co., Frank W., 1300 Soldiers Field Rd., Boston 35, Mass.  
 O. Z. Electrical Mfg. Co., 262 Bond St., Brooklyn 2, N. Y.  
 Patton-MacGover Co., 17 Virginia Ave., Providence 5, R. I.  
 Penn-Union Electric Corp., 315 State St., Erie, Pa.  
 Rajah Co., Bloomfield, N. J.  
 Rusgreen Mfg. Co., 14262 Birwood Ave., Detroit, Mich.  
 Schott Co., Walter L., 9306 Santa Monica Blvd., Beverly Hills, Calif.  
 Sherman Mfg. Co., H. B., 22 Barney St., Battle Creek, Mich.  
 States Co., 19 New Park Ave., Hartford 6, Conn.  
 Staver Mfg. Co., 33-21 85th St., Jackson Heights, N. Y.  
 See Advertisement on Page 253  
 Stimpson Co., Inc., Edwin B., 74 Franklin Ave., Brooklyn 5, N. Y.  
 Stronghold Screw Products, 216 West Hubbard St., Chicago 10, Ill.

Thomas & Betts Co. Inc., 36 Butler St., Elizabeth 1, N. J.  
 Thompson-Bremer & Co., 1640 W. Hubbard St., Chicago, Ill.  
 Trumbull Electric Mfg. Co., Plainville, Conn.  
 United Screw & Bolt Corp., 2513 W. Cullerton St., Chicago, Ill.  
 Waterbury Companies, Inc., Waterbury 90, Conn.  
 West Coast Electronics Co., 1601 S. Burlington St., Los Angeles 6, Calif.  
 Zierick Mfg. Corp., 385 Gerard Ave., New York, N. Y.

## MACHINES—Blueprint

Dietzgen Co., Eugene, 2425 Sheffield Ave., Chicago, Ill.  
 Paragon-Revolute Corp., 71 South Ave., Rochester 4, N. Y.  
 Pease Co., C. F., 2601 W. Irving Park Rd., Chicago, Ill.  
 Peck & Harvey, 5736-38 N. Western Ave., Chicago 45, Ill.

## MACHINES—Carbon Filling for Microphones

Tech Laboratories, 337 Central Ave., Jersey City, N. J.

## MACHINES—Crystal Disc Lapping & Manufacturing

Commercial Equipment Co., 1416 McGee St., Kansas City, Mo.  
 National Gasket & Washer Mfg. Co., 122 E. 25th St., New York 10, N. Y.  
 Simonds Machine Co., Inc., 246-48 Worcester St., Southbridge, Mass.  
 Spitfire Tools, Inc., 2931-35 North Pulaski Road, Chicago 41, Ill.

## MACHINES—Crystal Manufacturing & Finishing

Commercial Equipment Co., 1416 McGee St., Kansas City, Mo.  
 Simonds Machine Co., Inc., 246-48 Worcester St., Southbridge, Mass.

## MACHINES—Electric Soldering

Baker-Phillips Co., 3057 Lyndale Ave. So., Minneapolis 8, Minn.  
 Cole Radio Works, 86 Westville Ave., Caldwell, N. J.  
 Eisler Engineering Co. Inc., 740 S. 13th St., Newark 3, N. J.  
 Electric Soldering Iron Co., 1845 W. Elm St., Deep River, Conn.  
 Multi-Products Tool Co., 123 Sussex Ave., Newark 4, N. J.  
 See Advertisement on Page 246  
 Searle Aero Industries, Inc., Orange, Calif.  
 Torit Mfg. Co., Walnut & Exchange Sts., St. Paul 2, Minn.

## MACHINES—Electronic Balancing

Annis Co., R. B., 1101 N. Delaware St., Indianapolis, Ind.  
 Diamond Instrument Co., North Ave., Wakefield, Mass.  
 Gisholt Machine Co., 1245 E. Washington Ave., Madison 3, Wisc.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B  
 Westinghouse Electric Corp., Industrial Electronics Div., Baltimore, Md.

## MACHINES—Electronic Beverage Inspection

Electronic Apparatus, Inc., 347 Madison Ave., New York 17, N. Y.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251

**MACHINES—Electronic Computing**

Controls Labs. Inc., 98 Union St., Worcester 8, Mass.  
 Electrodyne Co., The, 899 Boylston St., Boston 15, Mass.  
 Potter Instrument Co., 136-56 Roosevelt Ave., Flushing, N. Y.  
 See Advertisement on Page 243  
 Reeves-Hoffman Corp., 215 E. 91st St., New York, N. Y.  
 See Advertisement on Page 180  
 Reeves Instrument Corp., 215 E. 91st St., New York, N. Y.

**MACHINES—Engraving and Profiling**

Auto Engraver Co., 1776 Broadway, New York, N. Y.  
 Controls Labs. Inc., 98 Union St., Worcester 8, Mass.  
 Preis Engraving Machine Co., 155 Summit St., Newark 4, N. J.

**MACHINES—Flexible Shaft Equipment**

Dumore Co., The, 1225 14th St., Racine, Wisc.  
 Freedom Electric Co., 27 Park Place, New York 7, N. Y.  
 Haskins Co., R. G., 615 S. California Ave., Chicago 12, Ill.  
 Martindale Electric Co., Box 617, Edgewater Branch, Cleveland 7, Ohio  
 Walker-Turner Co., Inc., 1463 Berckman St., Plainfield, N. J.

**MACHINES—Glass Blowing**

Eisler Engineering Co., 740 S. 13th St., Newark 3, N. J.  
 Haydu Bros., Plainfield, N. J.  
 Kahle Engineering Co., 1307 7th St., North Bergen, N. J.  
 See Advertisement on Page 256  
 Litton Engineering Labs., Redwood City, Calif.  
 Radio Corp. of America, Tube Div., Harrison, N. J.

**MACHINES—Glass Working**

Eisler Engineering Co. Inc., 740 S. 13th St., Newark 3, N. J.  
 Haydu Bros., Plainfield, N. J.  
 International Machine Works, 2027 46th St., North Bergen, N. J.  
 See Advertisement on Page 186  
 Kahle Engineering Co., 1307 7th St., North Bergen, N. J.  
 See Advertisement on Page 256  
 Litton Engineering Labs., Redwood City, Calif.  
 Radio Corp. of America, Tube Div., Harrison, N. J.

**MACHINES—Impregnating**

Barrett Co., Leon J., P. O. Box 378, Worcester 1, Mass.  
 Production Engineering Co., 666 Van Houten Ave., Clifton, N. J.  
 See Advertisement on Page 197

**MACHINES—Instrument Cleaning**

Eastern Specialty Co., Phila. 40, Pa.  
 Naxon Utilities Corp., 2101-11 W. Walnut St., Chicago 12, Ill.

**MACHINES—Instrument Shock Testing**

Radio Frequency Labs., Boonton, N. J.

**MACHINES—Metal and Glass Marking**

Acromark Co., 9-13 Morrell St., Elizabeth 4, N. J.

Austin Co., O., 335 Throop Ave., Brooklyn 21, N. Y.  
 Auto Engraver Co., 1776 Broadway, New York, N. Y.  
 Eisler Engineering Co. Inc., 740 S. 13th St., Newark 3, N. J.  
 Kahle Engineering Co., 1307 7th St., North Bergen, N. J.  
 Leiman Bros., 203 Christie St., Newark 5, N. J.  
 Markem Machine Co., Keene, N. H.  
 Numberall Stamp & Tool Co., Huguenot St., Staten Island 12, N. Y.  
 Peerless Roll Leaf Co. Inc., 4511 New York Ave., Union City, N. J.  
 Preis Engraving Machine Co., 155 Summit St., Newark 4, N. J.  
 Rogan Bros., 2001 S. Michigan Ave., Chicago, Ill.  
 See Advertisement on Page 164

**MACHINES—Photocopy**

American Photocopy Equipment Co., 2849 N. Clark St., Chicago, Ill.  
 Dietzgen Co., Eugene, 2425 Sheffield Ave., Chicago, Ill.  
 Paragon-Revolute Corp., 71 South Street, Rochester 4, N. Y.  
 Peck & Harvey, 5736-38 N. Western Ave., Chicago 45, Ill.  
 Photo Reproducing Equipment Co., Chatham, N. J.

**MACHINES—Record Manufacturing**

Audak Co., 500 Fifth Ave., New York, N. Y.  
 Poinsettia, Inc., 95 Cedar Ave., Pitman, N. J.  
 Presto Recording Corp., 242 W. 55th St., New York 19, N. Y.  
 See Advertisements on Pages 50, 51  
 Robinson Recording Labs., 2022 Sansom St., Phila. Pa.  
 Scully Machine Co., 62 Walter St., Bridgeport, Conn.  
 Techno-Craft Prods., 200 Hudson St., New York 13, N. Y.  
 Webster Electric Co., 1900 Clark St., Racine, Wisc.

**MACHINES—Tube Manufacturing**

Automatic Mfg. Co., 900 Passaic Ave., E. Newark, N. J.  
 See Advertisement on Page 60  
 Buck Engineering Co., 37-41 Marcy St., Freehold, N. J.  
 See Advertisement on Page 242  
 Callite Tungsten Corp., 540 39th St., Union City, N. J.  
 Eisler Engineering Co., Inc., 740 S. 13th St., Newark 3, N. J.  
 Electronic Apparatus, Inc., 347 Madison Ave., New York 17, N. Y.  
 International Machine Works, 2027 46th St., North Bergen, N. J.  
 See Advertisement on Page 186  
 Kahle Engineering Co., 1307 7th St., North Bergen, N. J.  
 See Advertisement on Page 256  
 Litton Engrg. Labs., Redwood City, Calif.  
 Marlboro Tool & Mfg. Co., Charles St. & New Brunswick Ave., Matawan, N. J.  
 Radio Corp. of America, Tube Div., Harrison, N. J.

**MACHINES—Vibration Fatigue Testing**

All American Tool & Mfg. Co., 1014 W. Fullerton St., Chicago 14, Ill.  
 L. A. B. Corp., 31 Union Pl., Summit, N. J.  
 Rollin Co., 2070 N. Fair Oaks Ave., Pasadena 3, Calif.  
 Sheffield Corp., The, Dayton 1, Ohio  
 Westinghouse Electric Corp., Industrial Electronics Div., Baltimore, Md.

**MACHINES—Whiteprint**

Dietzgen Co., Eugene, 2425 Sheffield Ave., Chicago, Ill.  
 General Aniline & Film Corp., Special Prods. Sales Dept., 270 Park Ave., New York 17, N. Y.  
 See Advertisement on Page 17  
 Paragon-Revolute Corp., 71 South Ave., Rochester 4, N. Y.  
 Pease Co., C. F., 2601 W. Irving Park Rd., Chicago, Ill.

**MACHINES—Wire Drawing**

Haydu Bros., Plainfield, N. J.  
 Kahle Engineering Co., 1307 7th St., North Bergen, N. J.  
 See Advertisement on Page 256  
 Radio Corp. of America, Tube Div., Harrison, N. J.

**MACHINES—Wire Stripping**

Ideal Industries, Inc., Park & Borden Avenues, Sycamore, Ill.  
 Lead-All Products Co., 24 East 21st St., New York 10, N. Y.  
 Pyramid Products Co., 2224 S. State St., Chicago, Ill.

**MAGNETIC ANALYSIS EQUIPMENT**

General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
 Magnetic Analysis Corp., 42-44 Twelfth St., Long Island City 1, N. Y.

**MAGNETIZERS AND DEMAGNETIZERS**

Annis Co., R. B., 1101 N. Delaware St., Indianapolis, Ind.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Grayhill Corp., 1 N. Pulaski Rd., Chicago 24, Ill.  
 Luma Electric Equipment Co., P. O. Box 132, Toledo 1, Ohio  
 Magnetic Analysis Corp., 42-44 Twelfth St., Long Island City 1, N. Y.  
 Magnetic Devices Corp., 76-14 Woodside Ave., Elmhurst, N. Y.  
 Radio Frequency Labs., Boonton, N. J.  
 Searle Aero Industries, Inc., Orange, Calif.  
 Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.  
 Smith Mfg. Co., Nathan R., 105 Pasadena Ave., So. Pasadena, Calif.  
 Sperman Metal Specialties, 2199 E. 21st St., Brooklyn 29, N. Y.

**MAGNETRON**

See Tubes

**MAGNETS—Electro**

Automatic Switch Co., 41 E. 11th St., New York 3, N. Y.  
 Bitterman Electric Co., 50 Henry St., Brooklyn, N. Y.  
 Control Corp., 718 Central Ave., Minneapolis 14, Minn.  
 Electric Tachometer Corp., Broad & Spring Garden Sts., Philadelphia, Pa.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Guardian Electric Mfg. Co., 1400 Washington Blvd., Chicago 7, Ill.  
 Magnetic Devices Corp., 76-14 Woodside Ave., Elmhurst, N. Y.  
 Standard Electrical Products Co., Dayton 3, Ohio  
 Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.  
 Weymouth Instrument Co., 1440 Commercial St., East Weymouth, Mass.

**MAGNETS—Permanent**

American Electro Metal Corp., 320 Yonkers Ave., Yonkers, N. Y.  
 Arnold Engineering Co., 147 E. Ontario St., Chicago, Ill.  
 Crowley & Co., Inc., Henry L., 1 Central Ave., W. Orange, N. J.  
 Crucible Steel Co. of America, 405 Lexington Ave., New York 17, N. Y.  
 Electric Tachometer Corp., Broad & Spring Garden Sts., Philadelphia, Pa.  
 General Electric Co., Chemical Dept., 1 Plastics Ave., Pittsfield, Mass.  
 See Advertisement on Page 97  
 General Magnetic Corp., 1001 Erwin Ave., Detroit 5, Mich.  
 Indiana Steel Products Co., Cincinagraph Div., 2 Selleck St., Stamford, Conn.  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.

Magnetic Devices Corp., 76-14 Woodside Ave., Elmhurst, N. Y.  
 Searle Aero Industries, Inc., Orange, Calif.  
 Simmonds Saw & Steel Co., Lockport, N. Y.  
 Stackpole Carbon Co., St. Marys, Pa.  
 Stanwyck-Webb Magnetic Core Corp., 142-144 Highland Ave., Ossining, N. Y.  
 Taylor-Wharton Iron & Steel Co., High-bridge, N. J.  
 Tri-United Plastics Corp., 390 Nye Ave., Irvington, N. J.

## MARKERS, WIRE

See Code & Tab Markers

## MEGAPHONES—Electronic

American Communications Corp., 306 Broadway, New York 7, N. Y.  
 Guided Radio Corp., 161 6th Ave., New York 13, N. Y.  
 Racon Electric Co., 52 E. 19th St., New York 3, N. Y.  
 See Advertisement on Page 213  
 Taybern Equipment Co., 120 Greenwich St., New York 6, N. Y.

## MEGOHMMETERS

Assembly Products, Inc., Chagrin Falls, Ohio  
 Biddle Co., Jas. G., 1316 Arch St., Philadelphia 7, Pa.  
 Communication Measurements Lab., 120 Greenwich St., New York, N. Y.  
 Delmhorst Instrument Co., 115 Cornelia St., Boonton, N. J.  
 Development Engineering Co., Inc., The, 1818 Ashland St., Houston 8, Texas  
 Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska  
 General Electric Co., Seleneclady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
 MacLeod & Hanopol, 24 Chelsea St., Charlestown 29, Mass.  
 Measurements Corp., Boonton, N. J.  
 See Advertisement on Page 56  
 Meters, Inc., 915 Riveria Dr., Indianapolis 5, Ind.  
 Nilsson Electrical Lab., Inc., 103 Lafayette St., New York 13, N. Y.  
 Rowe Radio Research Lab., 2422 N. Pulaski Rd., Chicago 39, Ill.  
 Sticht Co., Inc., Herman H., 27 Park Pl., New York 7, N. Y.  
 Supreme Instruments Corp., Greenwood, Miss.  
 Technical Apparatus Co., 167 Washington St., Boston 8, Mass.  
 Thermionic Engineering Corp., Pompton Plains, N. J.  
 Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.  
 Winslow Co., 9 Liberty St., Newark 5, N. J.

## METAL PARTS—Bushings

Aircraft Screw Products Co., Inc., 47-23 35th St., Long Island City 1, N. Y.  
 Amalgamated Radio Television Corp., 476 Broadway, New York 13, N. Y.  
 Amplex Div., Chrysler Corp., Detroit 31, Mich.  
 Bound Brook Oil-Less Bearing Co., Bound Brook, N. J.  
 Cambridge Thermionic Corp., 445 Concord Ave., Cambridge, Mass.  
 Chase Brass & Copper Co., Inc., Waterbury 91, Conn.  
 Electronic Apparatus, Inc., 347 Madison Ave., New York 17, N. Y.  
 Flock Process Co., Velvetone Div., 3 Quincy St., Norwalk, Conn.  
 Gatti, Inc., Aurele M., 1909 Liberty St., Trenton, N. J.  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 Haydu Bros., Plainfield, N. J.  
 Instruments Parts Corp., Snowden Ave. & Water St., Ossining, N. Y.  
 See Advertisement on Page 222  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 International Merit Products Corp., 254 W. 54th St., New York 19, N. Y.  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Keystone Carbon Co., Inc., Saint Marys, Pa.

Radiad Service, 720 W. Schubert Ave., Chicago 14, Ill.  
 Rattan Mfg. Co., The, P. O. Box 1745, New Haven 7, Conn.  
 Schott Co., Walter L., 9306 Santa Monica Blvd., Beverly Hills, Calif.  
 Waterbury Companies, Inc., Waterbury 90, Conn.

## METAL PARTS—Laminated

Amplex Div., Chrysler Corp., Detroit 31, Mich.  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 Haydu Bros., Plainfield, N. J.  
 Magnetic Products Corp., Norwalk, Conn.  
 Makepeace Co., D. E., Attleboro, Mass.  
 See Advertisement on Page 28  
 Publix Metal Products, Inc., 100 6th Ave., New York 13, N. Y.  
 Thomas & Skinner Steel Products Co., 1122 E. 23rd St., Indianapolis, Ind.  
 Tricon Mfg. Co., 8318 S. Racine Ave., Chicago, Ill.

## METAL PARTS—Lead

Alpha Metals Inc., 363 Hudson Ave., Brooklyn 1, N. Y.  
 Belmont Smelting & Refining Co., Inc., 330 Belmont Ave., Brooklyn 7, N. Y.  
 Haydu Bros., Plainfield, N. J.  
 Tricon Mfg. Co., 8318 S. Racine Ave., Chicago, Ill.

## METAL PARTS—Powdered

American Electro Metal Corp., 320 Yonkers Ave., Yonkers, N. Y.  
 Amplex Div., Chrysler Corp., Detroit 31, Mich.  
 Belmont Smelting & Refining Wks., Inc., 330 Belmont Ave., Brooklyn 7, N. Y.  
 Bound Brook Oil-Less Bearing Co., Bound Brook, N. J.  
 Callite Tungsten Corp., 540 39th St., Union City, N. J.  
 Crowley & Co. Inc., Henry L., 1 Central Ave., West Orange, N. J.  
 Davis & Murphy, 5252 Broadway, Chicago 40, Ill.  
 Keystone Carbon Co., Inc., St. Marys, Pa.  
 Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis, Ind.  
 See Advertisements on Pages 257 to 260  
 National Moldite Co., 25 Montgomery St., Hillside 5, N. J.  
 See Advertisement on Page 225  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 U. S. Graphite Co., 1621 Holland Ave., Saginaw, Mich.  
 Waterbury Companies, Inc., Waterbury 90, Conn.

## METAL PARTS—Screw Machine

Ace Mfg. Corp., 1255 E. Erie Ave., Philadelphia, Pa.  
 Amalgamated Radio Television Corp., 476 Broadway, New York 13, N. Y.  
 Art Wire & Stamping Co., 227 High St., Newark 2, N. J.  
 Automatic Metal Products Co., 315 Berry St., Brooklyn 1, N. Y.  
 Autoscrew Co., 216-222 W. 18th St., New York, N. Y.  
 Breeze Corp., 41 S. 6th St., Newark, N. J.  
 Buchmann Spark-Wheel Corp., 4-20 47th Ave., Long Island City 1, N. Y.  
 Cambridge Thermionic Corp., 445 Concord Ave., Cambridge, Mass.  
 Chase Brass & Copper Co., Inc., Waterbury 91, Conn.  
 Corbin Screw Div., Amer. Hardware Corp., High, Myrtle & Grove Sts., New Britain, Conn.  
 Dayton Acme Co., 930 York St., Cincinnati 14, Ohio  
 Eastern Specialty Co., Philadelphia 40, Pa.  
 Eby, Inc., Hugh H., 18 W. Chelton Ave., Philadelphia 13, Pa.  
 Electronic Apparatus, Inc., 347 Madison Ave., New York 17, N. Y.  
 Electronic Supply Co., 207 Main St., Worcester, Mass.  
 Engineering Co., 27 Wright St., Newark, N. J.  
 See Advertisements on Pages 38, 218, 228  
 Eriasson Screw Machine Products Co., 25 Lafayette St., Brooklyn 1, N. Y.

Gatti, Inc., Aurele M., 1909 Liberty St., Trenton, N. J.  
 Haydu Bros., Plainfield, N. J.  
 Instruments Parts Corp., Snowden Ave. & Water St., Ossining, N. Y.  
 See Advertisement on Page 222  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 International Merit Products Corp., 254 W. 54th St., New York 19, N. Y.  
 Jorgensen Mfg. Co., 1547 West Farms Rd., New York 60, N. Y.  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Keystone Electronics Co., 50-52 Franklin St., New York 13, N. Y.  
 Kings Electronics Co., 372 Classon Ave., Brooklyn 5, N. Y.  
 Lamson & Sessions Co., 1971 W. 85th St., Cleveland, Ohio  
 Magnetic Products Corp., Norwalk, Conn.  
 Milford Rivet & Machine Co., Milford, Conn.  
 Penn Fibre & Specialty Co., 2030 E. Westmoreland St., Philadelphia 44, Pa.  
 Phonograph Needle Mfg. Co., 42 Dudley St., Providence 5, R. I.  
 Publix Metal Products Inc., 100 6th Ave., New York 13, N. Y.  
 Radiad Service, 720 W. Schubert Ave., Chicago 14, Ill.  
 Reeves-Hoffman Corp., 215 E. 91st St., New York, N. Y.  
 See Advertisement on Page 180  
 St. Louis Screw & Bolt Co., 6900 Broadway, St. Louis 15, Mo.  
 Searle Aero Industries, Inc., Orange, Calif.  
 Simmonds Machine Co., Inc., 246-48 Worcester St., Southbridge, Mass.  
 Standard Pressed Steel Co., Jenkinstown, Pa.  
 See Advertisement on Page 20  
 Stimpson Co., Inc., Edwin B., 74 Franklin Ave., Brooklyn 5, N. Y.  
 Titan Metal Mfg. Co., Bellefonte, Pa.  
 Tudor Products Co., 70 Franklin St., East Orange, N. J.  
 Waltham Screw Co., 77 Rumford Ave., Waltham, Mass.  
 Westfield Metal Products Co., Inc., Westfield, Mass.  
 Wynn Mfg. Div., Hudson Supply Co., 401 N. 27th St., Richmond, Va.

## METAL PARTS—Small Metal Stampings

Ace Manufacturing Corp., 1255 East Erie Ave., Philadelphia 38, Pa.  
 Acklin Stamping Co., 1923 Nebraska Ave., Toledo 7, Ohio  
 Adel Precision Products Corp., 10777 Van Buren St., Burbank, Calif.  
 Aerolite Electronic Hardware Corp., 24 Cliff St., Jersey City, N. J.  
 See Advertisement on Page 246  
 Air-King Products Co., Inc., 1523 63rd St., Brooklyn, N. Y.  
 Alden Products Co., 117 No. Main St., Brockton 64, Mass.  
 Amalgamated Radio Television Corp., 76 Broadway, New York 13, N. Y.  
 Art-Lloyd Metal Products Corp., 2973 Cropsy Ave., Brooklyn 14, N. Y.  
 See Advertisement on Page 236  
 Art Wire & Stamping Co., 227 High St., Newark 2, N. J.  
 Auburn Mfg. Co., Middletown, Conn.  
 Barnes-Gibson-Raymond Div. of Associated Spring Corp., 6400 Miller Ave., Detroit 11, Mich.  
 Bird Electronic Corp., 1800 E. 38th St., Cleveland 14, Ohio  
 Cambridge Thermionic Corp., 445 Concord Ave., Cambridge, Mass.  
 Chase Brass & Copper Co., Inc., Waterbury 91, Conn.  
 Chicago Expansion Bolt Co., 1338 W. Concord Pl., Chicago 22, Ill.  
 Congress Tool & Die Co., Congress Die Casting Div., 3750 E. Outer Dr., Detroit, Mich.  
 Crescent Industries, Inc., 4140 Belmont Ave., Chicago 41, Ill.  
 Cuyahoga Spring Co., 10272 Berea Rd., Cleveland, Ohio  
 Dahstrom Metallic Door Co., Jamestown, N. Y.  
 Dalmo Victor Co., San Carlos, Calif.  
 Dante Electric Mfg. Co., Bantam, Conn.  
 Dayton Acme Co., 930 York St., Cincinnati 14, Ohio  
 Diebel Die & Mfg. Co., 3658 N. Lincoln Ave., Chicago 13, Ill.  
 Dual Remote Control Co., Wayne, Mich.  
 Eastern Specialty Co., Philadelphia 40, Pa.  
 Eby, Inc., Hugh H., 18 W. Chelton Ave., Philadelphia 12, Pa.  
 Edin Electronics Co., 207 Main St., Worcester, Mass.  
 Engineering Co., 27 Wright St., Newark, N. J.  
 See Advertisements on Pages 38, 218, 228  
 Flock Process Co., Velvetone Div., 3 Quincy St., Norwalk, Conn.

Franklin Airloop Corp., 43-20 34th St., Long Island City, N. Y.

See Advertisement on Page 61

Franklin Mfg. Corp., A. W., 43-20 34th St., Long Island City, N. Y.

See Advertisement on Page 98

Garrett Co. Inc., George K., 1421 Chestnut St., Philadelphia 2, Pa.

Gasket Engineering Co., 2440 Charlotte St., Kansas City 8, Mo.

Goat Co., Inc., Fred, 314 Dean St., Brooklyn, N. Y.

See Advertisement on Page 202

Grammes & Sons, L. F., 389 Union St., Allentown 2, Pa.

Greene Mfg. Corp., G. G., Warren, Pa.

Gregory Mfg. Co., 67 Franklin St., New Haven 11, Conn.

Haydu Bros., Plainfield, N. J.

Heyman Mfg. Co., Kenilworth, N. J.

Howard Mfg. Co., 15 Fourth St., Council Bluffs, Iowa

Hubbard Spring Co., M. D., 573 Central Ave., Pontiac, Mich.

Hunter Pressed Steel Co., Lansdale, Pa.

Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.

See Advertisement on Page 166

Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.

King Laboratories, Inc., 127 Solar St., Syracuse 4, N. Y.

Kings Electronics Co., 372 Classon Ave., Brooklyn 5, N. Y.

Kling Metal Spinning Co., 174 Centre St., New York 13, N. Y.

Kolton Electric Mfg. Co., 123 N. J. Railroad Ave., Newark 6, N. J.

La Magna Mfg. Co., Inc., East Rutherford, N. J.

Lansing Stamping Co., 1159 S. Pennsylvania Ave., Lansing, Mich.

Lorentzen Inc., H. K., 391 W. Broadway, New York 12, N. Y.

Magnetic Products Corp., Norwalk, Conn.

Market Forge Co., Everett, Mass.

Measurement Engineering Ltd., 61 Duke St., Toronto, Canada

See Advertisement on Page 193

Milwaukee Stamping Co., 824 S. 72nd St., Milwaukee, Wisc.

Minute Man Products, Inc., 309 E. 22nd St., New York 10, N. Y.

Monitor Products Co., 815 Fremont St., So. Pasadena, Calif.

National Co., Inc., 61 Sherman St., New York, N. Y.

See Advertisement on Page 78

Olympic Tool & Mfg. Co., 27 Chambers St., New York 7, N. Y.

See Advertisement on Page 177

Patton-MacGuver Co., 17 Virginia Ave., Providence 5, R. I.

Paul & Beekman Div., Portable Products Corp., 1801 Cortland St., Philadelphia 40, Pa.

Penn Fibre & Specialty Co., 2030 E. Westmoreland St., Philadelphia 44, Pa.

Precision Fabricators Inc., 120 N. Fitzhugh St., Rochester, N. Y.

Prestole Corp., 3150 Bellevue Rd., Toledo 6, Ohio

Publix Metal Products, Inc., 100 6th Ave., New York 13, N. Y.

Quadruga Mfg. Co., 213 W. Grand Ave., Chicago 11, Ill.

Radiad Service, 720 Schubert Ave., Chicago 14, Ill.

Radio Corp. of America, Tube Div., Harrison, N. J.

Robinson Aviation Inc., Teterboro Air Terminal, Teterboro, N. J.

Schott Co., Walter L., 9306 Santa Monica Blvd., Beverly Hills, Calif.

Searle Aero Industries, Inc., Orange, Calif.

Special Electric Labs., 7224 So. Main St., Los Angeles 3, Calif.

Stamford Metal Specialty Co., 429 Broadway, New York 12, N. Y.

See Advertisement on Page 214

Stimson Co., Inc., Edwin, 74 Franklin Ave., Brooklyn 5, N. Y.

Switchcraft, Inc., 1735 West Diversey Parkway, Chicago 14, Ill.

Thomas & Skinner Steel Products Co., 1122 E. 23rd St., Indianapolis, Ind.

Tricon Manufacturing Co., 8318 S. Racine Ave., Chicago, Ill.

Tubing Seal-Cap Inc., P. O. Box 6450, Metropolitan Station, Los Angeles 55, Calif.

Tudor Products Co., 70 Franklin St., East Orange, N. J.

Ucinite Co., The, Div. United-Carr Fastener Corp., Watertown St., Newtonville, Mass.

United Screw & Bolt Corp., 2513 W. Cullerton St., Chicago, Ill.

Viewlex Inc., Div. of Andrews & Perillo, 39-30 Crescent St., Long Island City, N. Y.

Walter Co., S., 144 Centre St., Brooklyn 31, N. Y.

See Advertisement on Page 57

Waterbury Companies, Inc., Waterbury 90, Conn.

Whitehead Stampings Co., 1691 W. Lafayette Blvd., Detroit 16, Mich.

Worcester Pressed Steel Co., 100 Barber Ave., Worcester, Mass.

Wrought Washer Mfg. Co., 2100 S. Bay St., Milwaukee 7, Wisc.

Zierick Mfg. Corp., 385 Gerard Ave., New York, N. Y.

### METAL PARTS—Trimings

Bailey Co., Inc., 21 Water St., Amesbury, Mass.

Dahlstrom Metallic Door Co., Jamestown, N. Y.

Dayton Acme Co., 930 York St., Cincinnati 14, Ohio

Gramme's & Sons Inc., L. F., 389 Union St., Allentown 2, Pa.

Haydu Bros., Plainfield, N. J.

Radiad Service, 720 W. Schubert Ave., Chicago 14, Ill.

Rice's Sons Inc., Bernard, 325 Fifth Ave., New York 16, N. Y.

Stronghold Screw Products, 216 West Hubbard St., Chicago 10, Ill.

Waterbury Companies, Inc., Waterbury 90, Conn.

### METALS

#### Aluminum

Aluminum Co. of America, Gulf Bldg., Pittsburgh, Pa.

American Smelting and Refining Co., Federated Metals Div., 120 Broadway, New York 5, N. Y.

Belmont Smelting & Refining Wks., Inc., 330 Belmont Ave., Brooklyn 7, N. Y.

Fairmont Aluminum Co., Fairmont, West Va.

Hommel Co., O., 209 Fourth Ave., Pittsburgh, Pa.

Revere Copper and Brass Inc., 230 Park Ave., New York 17, N. Y.

Reynolds Metals Co., 2500 So. Third St., Louisville 1, Ky.

York Materials Co. Inc., 150 Nassau St., New York 7, N. Y.

#### Alnico

Arnold Engineering Co., 147 E. Ontario St., Chicago, Ill.

General Electric Co., Chemical Dept., 1 Plastics Ave., Pittsfield, Mass.

See Advertisement on Page 97

Stackpole Carbon Co., St. Marys, Pa.

Tromas & Skinner Steel Products Co., 1122 E. 23rd St., Indianapolis, Ind.

#### Antimony

American Smelting and Refining Co., Federated Metals Div., 120 Broadway, New York 5, N. Y.

Belmont Smelting & Refining Works, Inc., 330 Belmont Ave., Brooklyn 7, N. Y.

Division Lead Co., 836 W. Kinzie St., Chicago 22, Ill.

National Lead Co., 111 Broadway, New York 6, N. Y.

#### Arsenic

Belmont Smelting & Refining Wks., Inc., 330 Belmont Ave., Brooklyn 7, N. Y.

Division Lead Co., 836 W. Kinzie St., Chicago 22, Ill.

Swanson Tool & Machine Products, 810-14 E. 8th St., Erie, Pa.

#### Barium

King Laboratories Inc., 127 Solar St., Syracuse 4, N. Y.

#### Beryllium and Beryllium Alloys

Belmont Smelting & Refining Wks., Inc., 330 Belmont Ave., Brooklyn 7, N. Y.

Brush Beryllium Co., The, 3714 Chester Ave., Cleveland 14, Ohio

Riverside Metal Co., Riverside, N. J.

Wilson Co., H. A., 97 Chestnut St., Newark, N. J.

See Advertisement on Page 191

#### Brass and Bronze

American Smelting and Refining Co., Federated Metals Div., 120 Broadway, New York 5, N. Y.

Belmont Smelting & Refining Wks., Inc., 330 Belmont Ave., Brooklyn 7, N. Y.

Chase Brass & Copper Co., Inc., Waterbury 91, Conn.

La Magna Mfg. Co., Inc., East Rutherford, N. J.

Revere Copper & Brass Inc., 230 Park Ave., New York 17, N. Y.

Riverside Metal Co., Riverside, N. J.

Titan Metal Mfg. Co., Bellefonte, Pa.

Western Brass Mills, Div. of Olin Industries, Inc., East Alton, Ill.

#### Cadmium

American Smelting and Refining Co., Federated Metals Div., 120 Broadway, New York 5, N. Y.

Belmont Smelting & Refining Wks., Inc., 330 Belmont Ave., Brooklyn 7, N. Y.

Division Lead Co., 836 W. Kinzie St., Chicago 22, Ill.

#### Cesium Compounds

Foot Mineral Co., 1609 Summer St., Phila., Pa.

#### Chromium

Belmont Smelting & Refining Wks., Inc., 330 Belmont Ave., Brooklyn 7, N. Y.

Electro Metallurgical Co., Unit of Union Carbide and Carbon Corp., 30 E. 42nd St., New York 17, N. Y.

#### Coefficient Metals

Carpenter Steel Co., Reading, Pa.

Keystone Carbon Co., Inc., Saint Marys, Pa.

Magnetic Metals Co., Camden, N. J.

#### Columbium

Fansteel Metallurgical Corp., 2200 Sheridan Rd., North Chicago, Ill.

#### Copper

Alpha Wire Corp., 50 Howard St., New York, N. Y.

American Smelting and Refining Co., Federated Metals Div., 120 Broadway, New York 5, N. Y.

Baker & Co., 113 Astor St., Newark 5, N. J.

Belmont Smelting & Refining Wks., Inc., 330 Belmont Ave., Brooklyn 7, N. Y.

Chase Brass & Copper Co., Inc., Waterbury 91, Conn.

Revere Copper & Brass Inc., 230 Park Ave., New York 17, N. Y.

Riverside Metal Co., Riverside, N. J.

Western Brass Mills, Div. of Olin Industries, E. Alton, Ill.

#### Foil-Aluminum, Tin & Lead

Aluminum Co. of America, Gulf Bldg., Pittsburgh, Pa.

Belmont Smelting & Refining Wks., Inc., 330 Belmont Ave., Brooklyn 7, N. Y.

Division Lead Co., 836 W. Kinzie St., Chicago 22, Ill.

Johnston Tin Foil & Metal Co., 6100 S. Broadway, St. Louis 11, Mo.

Reynolds Metals Co., 2500 So. Third St., Louisville 1, Ky.

#### Gold and Gold Alloys

American Platinum Works, N. J. R. R. Ave. at Oliver St., Newark 5, N. J.

See Advertisement on Page 253

Baker & Co., 113 Astor St., Newark 5, N. J.

Braun Co., C. S., 233 Spring St., New York 13, N. Y.

See Advertisement on Page 244

Goldsmith Bros. Smelting & Refining Co., 58 E. Washington St., Chicago, Ill.

Handy & Harman, 82 Fulton St., New York 7, N. Y.

Makepeace Co., D. E., Attleboro, Mass.

See Advertisement on Page 28

Ney Co., J. M., Hartford, Conn.  
 Wildberg Bros. Smelting & Refining Co., 742  
 Market St., San Francisco 2, Calif.  
 Wilson Co., H. A., 97 Chestnut St., Newark,  
 N. J.  
 See Advertisement on Page 191

### High Permeability Alloys

Amplex Div., Chrysler Corp., Detroit 31,  
 Mich.  
 Carpenter Steel Co., Reading, Pa.  
 Driver-Harris Co., 201 Middlesex St., Har-  
 rison, N. J.  
 See Advertisement on Page 187  
 Magnetic Metals Co., Camden, N. J.  
 Makepeace Co., D. E., Attleboro, Mass.  
 See Advertisement on Page 28  
 Simmonds Saw & Steel Co., Lockport, N. Y.

### Laminated Metal Products

Magnetic Metals Co., Camden, N. J.  
 Makepeace Co., D. E., Attleboro, Mass.  
 See Advertisement on Page 28  
 Reynolds Metals Co., 2500 So. Third St.,  
 Louisville 1, Ky.  
 Wilson Co., H. A., 97 Chestnut St., Newark,  
 N. J.  
 See Advertisement on Page 191

### Lead

American Smelting and Refining Co., Fed-  
 erated Metals Div., 120 Broadway, New  
 York 5, N. Y.  
 Belmont Smelting & Refining Wks., Inc., 330  
 Belmont Ave., Brooklyn 7, N. Y.  
 National Lead Co., 111 Broadway, New  
 York 6, N. Y.

### Lithium Compounds (for cathode tube screen setting)

Belmont Smelting & Refining Wks., Inc., 330  
 Belmont Ave., Brooklyn 7, N. Y.  
 Foote Mineral Co., 1609 Summer St., Phila.,  
 Pa.

### Magnesium

American Smelting and Refining Co., Fed-  
 erated Metals Div., 120 Broadway, New  
 York 5, N. Y.  
 Belmont Smelting & Refining Wks., Inc., 330  
 Belmont Ave., Brooklyn 7, N. Y.  
 Revere Copper and Brass Inc., 230 Park  
 Ave., New York 17, N. Y.

### Magnetic Iron Oxide (for cores)

Foote Mineral Co., 1609 Summer St., Phila.,  
 Pa.  
 Plastic Metals Division, The National Ra-  
 diator Co., 169 Bridge Street, Johnst-  
 own, Pa.

### Manganese

Belmont Smelting & Refining Wks., Inc., 330  
 Belmont Ave., Brooklyn 7, N. Y.  
 Electro Metallurgical Co., Unit of Union  
 Carbide and Carbon Corp., 30 E. 42nd  
 St., New York 17, N. Y.  
 Hommel Co., O., 209 Fourth Ave., Pitts-  
 burgh, Pa.  
 Plastic Metals Division, The National Ra-  
 diator Co., 169 Bridge Street, Johnst-  
 own, Pa.

### Mercury

Belmont Smelting & Refining Wks., Inc., 330  
 Belmont Ave., Brooklyn 7, N. Y.  
 Callite Tungsten Corp., 540 39th St., Union  
 City, N. J.  
 Division Lead Co., 836 W. Kinzie St., Chi-  
 cago 22, Ill.  
 Goldsmith Bros. Smelting & Refining Co.,  
 58 E. Washington St., Chicago, Ill.  
 Haydu Bros., Plainfield, N. J.  
 Hommel Co., O., 209 Fourth Ave., Pitts-  
 burgh, Pa.  
 Merck & Co., Inc., Rahway, N. J.

### Molybdenum

Baker & Co., 113 Astor St., Newark 5, N. J.  
 Belmont Smelting & Refining Wks., Inc., 330  
 Belmont Ave., Brooklyn 7, N. Y.  
 Callite Tungsten Corp., 540 39th St., Union  
 City, N. J.  
 Cleveland Tungsten, Inc., 10200 Meech Ave.,  
 Cleveland, Ohio  
 Cross, H., 15 Beekman St., New York, N. Y.  
 See Advertisement on Page 256  
 Fansteel Metallurgical Corp., 2200 Sheridan  
 Rd., No. Chicago, Ill.  
 North American Philips Co., Inc., 100 E.  
 42nd St., New York 17, N. Y.  
 Westinghouse Electric Corp., Bloomfield  
 Lamp Div., Bloomfield, N. J.  
 See Advertisement on Page 45

### Monel

Alloy Metal Wire Co., Prospect Park (Moore  
 Sta.), Pa.  
 Belmont Smelting & Refining Wks., Inc., 330  
 Belmont Ave., Brooklyn 7, N. Y.  
 Driver-Harris Co., 201 Middlesex St., Har-  
 rison, N. J.  
 See Advertisement on Page 187

International Nickel Co., Inc., The, 67 Wall  
 St., New York 5, N. Y.  
 Jelliff Mfg. Corp., C. O., 200 Pequot Ave.,  
 Southport, Conn.

### Nickel and Nickel Alloys

Alloy Metal Wire Co., Prospect Park (Moore  
 Sta.), Pa.  
 American Smelting and Refining Co., Fed-  
 erated Metals Div., 120 Broadway, New  
 York 5, N. Y.  
 Belmont Smelting & Refining Wks., Inc., 330  
 Belmont Ave., Brooklyn 7, N. Y.  
 Carpenter Steel Co., Reading, Pa.  
 Driver-Harris Co., 201 Middlesex St., Har-  
 rison, N. J.  
 See Advertisement on Page 187  
 Haynes Stellite Co., Unit of Union Carbide  
 and Carbon Corp., 30 E. 42nd St., New  
 York 17, N. Y.  
 Hoskins Mfg. Co., 4445 Lawton Ave., De-  
 troit 8, Mich.  
 International Nickel Co., Inc., 67 Wall St.,  
 New York 5, N. Y.  
 Lukens Steel Co., Coatesville, Pa.  
 Magnetic Metals Co., Camden, N. J.  
 Plastic Metals Division, The National Ra-  
 diator Co., 169 Bridge Street, Johnst-  
 own, Pa.  
 Revere Copper and Brass Inc., 230 Park  
 Ave., New York 17, N. Y.  
 Riverside Metal Co., Riverside, N. J.  
 Simmonds Saw & Steel Co., Lockport, N. Y.  
 Western Brass Mills, Div. of Olin Indus-  
 tries, East Alton, Ill.  
 Wilson Co., H. A., 97 Chestnut St., Newark  
 5, N. J.  
 See Advertisement on Page 191

### Nickel Ribbon

Alloy Metal Wire Co., Prospect Park (Moore  
 Sta.), Pa.  
 Driver Co., Wilbur B., 150 Riverside Ave.,  
 Newark, N. J.  
 Driver-Harris Co., 201 Middlesex St., Har-  
 rison, N. J.  
 See Advertisement on Page 187  
 Hoskins Mfg. Co., 4445 Lawton Ave., De-  
 troit 8, Mich.

### Palladium

American Platinum Dorks, N. J. R. R. Ave.,  
 at Oliver St., Newark 5, N. J.  
 See Advertisement on Page 253  
 Baker & Co., 113 Astor St., Newark 5,  
 N. J.  
 Goldsmith Bros. Smelting & Refining Co., 58  
 E. Washington St., Chicago, Ill.  
 Makepeace Co., D. E., Attleboro, Mass.  
 See Advertisement on Page 28

### Phosphor Bronze

American Smelting and Refining Co., Fed-  
 erated Metals Div., 120 Broadway, New  
 York 5, N. Y.  
 Amplex Div., Chrysler Corp., Detroit 3,  
 Mich.  
 Belmont Smelting & Refining Works, Inc.,  
 330 Belmont Ave., Brooklyn 7, N. Y.  
 Revere Copper and Brass Inc., 230 Park  
 Ave., New York 17, N. Y.  
 Riverside Metal Co., Riverside, N. J.  
 Western Brass Mills, Div. of Olin Indus-  
 tries, E. Alton, Ill.

### Platinum

American Platinum Works, N. J. R. R. Ave.,  
 at Oliver St., Newark 5, N. J.  
 Goldsmith Bros. Smelting & Refining Co., 58  
 E. Washington St., Chicago, Ill.  
 Wildberg Bros. Smelting & Refining Co.,  
 742 Market St., San Francisco 2, Calif.

### Powdered Metals

American Solder & Flux Co., 2152 E. Norris  
 St., Phila. 25, Pa.  
 Belmont Smelting & Refining Co., 330 Bel-  
 mont Ave., Brooklyn 7, N. Y.  
 Division Lead Co., 836 W. Kinzie St., Chi-  
 cago 22, Ill.  
 Fansteel Metallurgical Corp., 2200 Sheridan  
 Rd., No. Chicago, Ill.  
 General Aniline & Film Corp., Special Pro-  
 ducts Sales Dept., 270 Park Ave., New  
 York 17, N. Y.  
 See Advertisement on Page 17  
 Goldsmith Bros. Smelting & Refining Co.,  
 58 E. Washington St., Chicago, Ill.  
 Hommel Co., O., 209 Fourth Ave., Pitts-  
 burgh, Pa.  
 Mepharm Corp., G. S., 2001 Lynch Ave.,  
 East St. Louis, Ill.  
 See Advertisement on Page 162  
 Plastic Metals Div., The National Radiator  
 Co., 169 Bridge St., Johnstown, Pa.  
 Reynolds Metals Co., 2500 So. Third St.,  
 Louisville 1, Ky.  
 Wilson Co., H. A., 97 Chestnut St., Newark,  
 N. J.  
 See Advertisement on Page 191

### Silicon

Belmont Smelting & Refining Wks., Inc., 330  
 Belmont Ave., Brooklyn 7, N. Y.  
 Electro Metallurgical Co., Unit of Union  
 Carbide and Carbon Corp., 30 E. 42nd  
 St., New York 17, N. Y.  
 Plastic Metals Division, The National Ra-  
 diator Co., 169 Bridge Street, Johnst-  
 own, Pa.

### Silver

American Platinum Works, N. J. R. R. Ave.,  
 at Oliver St., Newark 5, N. J.  
 See Advertisement on Page 253  
 Baker & Co., 113 Astor St., Newark 5, N. J.  
 Belmont Smelting & Refining Wks., Inc., 330  
 Belmont Ave., Brooklyn 7, N. Y.  
 Callite Tungsten Corp., 540 39th St., Union  
 City, N. J.  
 Division Lead Co., 836 W. Kinzie St., Chi-  
 cago 22, Ill.  
 Goldsmith Bros. Smelting & Refining Co.,  
 58 E. Washington St., Chicago, Ill.  
 Handy & Harman, 82 Fulton St., New York  
 7, N. Y.  
 Hommel Co., O., 209 Fourth Ave., Pitts-  
 burgh, Pa.  
 Makepeace Co., D. E., Attleboro, Mass.  
 See Advertisement on Page 28  
 Merck & Co., Inc., Rahway, N. J.  
 North American Philips Co., Inc., 100 E.  
 42nd St., New York 17, N. Y.

### Silver Alloys and Compounds

American Platinum Works, N. J. R. R. Ave.,  
 at Oliver St., Newark 5, N. J.  
 See Advertisement on Page 253  
 Baker & Co., 113 Astor St., Newark 5, N. J.  
 Belmont Smelting & Refining Works, Inc.,  
 330 Belmont Ave., Brooklyn 7, N. Y.  
 Division Lead Co., 836 W. Kinzie St., Chi-  
 cago 22, Ill.  
 Handy & Harman, 82 Fulton St., New York  
 7, N. Y.  
 Makepeace Co., D. E., Attleboro, Mass.  
 See Advertisement on Page 28  
 Mallory & Co., Inc., P. R., 3029 E. Wash-  
 ington St., Indianapolis 6, Ind.  
 See Advertisements on Pages 257 to 260  
 Tricon Mfg. Co., 8318 S. Racine Ave., Chi-  
 cago, Ill.  
 Wildberg Bros. Smelting & Refining Co.,  
 742 Market St., San Francisco 2, Calif.  
 Wilson Co., H. A., 97 Chestnut St., Newark,  
 N. J.  
 See Advertisement on Page 191

### Stainless Steel

Alloy Metal Wire Co., Prospect Park (Moore  
 Sta.), Pa.  
 Carnegie Illinois Steel Corp., Carnegie Build-  
 ing, Pittsburgh, Pa.  
 Carpenter Steel Co., Reading, Pa.  
 Driver-Harris Co., 201 Middlesex St., Har-  
 rison, N. J.  
 See Advertisement on Page 187  
 Lukens Steel Co., Coatesville, Pa.  
 Republic Steel Corp., Republic Bldg., Cleve-  
 land 1, Ohio

### Steel

Carnegie Illinois Steel Corp., Carnegie Bldg.,  
 Pittsburgh, Pa.  
 Carpenter Steel Co., Reading, Pa.  
 La Magna Mfg. Co., Inc., East Rutherford,  
 N. J.  
 Lukens Steel Co., Coatesville, Pa.  
 Philadelphia Steel & Wire Corp., Penn St. &  
 Belfield Ave., Philadelphia, Pa.  
 Republic Steel Corp., Republic Bldg., Cleve-  
 land 1, Ohio  
 Revere Copper and Brass Inc., 230 Park  
 Ave., New York 17, N. Y.  
 Swedish Iron & Steel Corp., 17 Battery Pl.,  
 New York, N. Y.  
 U. S. Steel Corp., 71 Broadway, New York  
 6, N. Y.  
 Wickwire Spencer Steel, Div. Colorado Fuel  
 and Iron Corp., 361 Delaware Ave.,  
 Buffalo 2, N. Y.

### Steel, Electrical

Carnegie-Illinois Steel Corp., Carnegie  
 Bldg., Pittsburgh, Pa.  
 Carpenter Steel Co., Reading, Pa.  
 Empire Steel Corporation, Mansfield, Ohio  
 Newport Rolling Mill Co., Ninth & Lowell  
 Sts., Newport, Ky.

### Sfrontium

King Laboratories Inc., 127 Solar St., Syra-  
 cuse 4, N. Y.

### Tantalum

Baker & Co., 113 Astor St., Newark 5, N. J.  
 Fansteel Metallurgical Corp., 2200 Sheridan  
 Rd., No. Chicago, Ill.

### Thermostatic Bi-Metals

Baker & Co., 113 Astor St., Newark 5, N. J.  
 Callite Tungsten Corp., 540 39th St., Union  
 City, N. J.

Carpenter Steel Co., Reading, Pa.  
 Chace Co., W. M., 1600 Beard Ave., Detroit, Mich.  
**Wilson Co., H. A., 97 Chestnut St., Newark, N. J.**  
 See Advertisement on Page 191

**Tin**

American Smelting and Refining Co., Federated Metals Div., 120 Broadway, New York 5, N. Y.  
 Belmont Smelting & Refining Wks., Inc., 330 Belmont Ave., Brooklyn 7, N. Y.  
 Division Lead Co., 836 W. Kinzie St., Chicago 22, Ill.  
 National Lead Co., 111 Broadway, New York 6, N. Y.

**Tungsten**

Baker & Co., 113 Astor St., Newark 5, N. J.  
 Belmont Smelting & Refining Wks., Inc., 330 Belmont Ave., Brooklyn 7, N. Y.  
 Callite Tungsten Corp., 540 39th St., Union City, N. J.  
 Cleveland Tungsten, Inc., 10200 Meech Ave., Cleveland, Ohio  
**Cross Co., H., 15 Beekman St., New York 7, N. Y.**  
 See Advertisement on Page 256  
 Electro Metallurgical Co., Unit of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.  
 Fansteel Metallurgical Corp., 2200 Sheridan Rd., North Chicago, Ill.  
 Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.  
 North American Philips Co., Inc., 100 E. 42nd St., New York 17, N. Y.  
 Westinghouse Electric Corp., Bloomfield Lamp Div., Bloomfield, N. J.  
 See Advertisement on Page 45  
**Wilson Co., H. A., 97 Chestnut St., Newark, N. J.**  
 See Advertisement on Page 191

**Tungsten Ribbon**

Cleveland Tungsten, Inc., 10200 Meech Ave., Cleveland, Ohio  
**Cross, H., 15 Beekman St., New York, N. Y.**  
 See Advertisement on Page 256  
 North American Philips Co., Inc., 100 E. 42nd St., New York 17, N. Y.  
 Westinghouse Electric Corp., Bloomfield Lamp Div., Bloomfield, N. J.  
 See Advertisement on Page 45

**Zinc**

American Smelting and Refining Co., Federated Metals Div., 120 Broadway, New York 5, N. Y.  
 Belmont Smelting & Refining Wks., Inc., 330 Belmont Ave., Brooklyn 7, N. Y.  
 Division Lead Co., 836 W. Kinzie St., Chicago 22, Ill.

**Zirconium**

Foot Mineral Co., 1609 Summer St., Phila., Pa.

**METEOROLOGICAL EQUIPMENT—  
Electronic**

American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
 Chase Bras & Copper Co., Inc., Waterbury 91, Conn.  
 Communication Measurements Lab., Inc., 120 Greenwich St., New York, N. Y.  
 Friez Instrument Div., Bendix Aviation Corp., Taylor Ave., Baltimore 4, Md.  
**General Electric Co., Syracuse, N. Y.**  
 See Advertisements on Pages 96, 96A  
 McElroy Mfg. Corp., Littleton, Mass.  
 Serdex, Inc., 91 Cambridge St., Boston, Mass.  
 Techno-Scientific Co., 901 Nepperhan Ave., Yonkers 3, N. Y.

**METERS, ACCELERATION**

See Accelerometers

**METERS—Attenuation**

Assembly Products, Inc., Chagrin Falls, Ohio  
 Communication Equipment & Engrg. Co., 5646 W. Race St., Chicago 44, Ill.  
 Daven Co., 191 Central Ave., Newark 4, N. J.  
 Freed Transformer Co., 72 Spring St., New York 12, N. Y.  
 See Advertisement on Page 253

**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
 General Electronics, Inc., 101 Hazel St., Paterson, N. J.  
 Meters, Inc., 915 Riveria Dr., Indianapolis 5, Ind.  
 Shallcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B

**METERS—Cable Testing**

Columbia Electric Mfg. Co., 4519 Hamilton Ave., N.E., Cleveland 14, Ohio  
 Ferranti Electric Inc., 30 Rockefeller Plaza, New York 20, N. Y.  
 See Advertisement on Page 196  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
 Industrial Instruments Inc., 17 Pollack Ave., Jersey City 5, N. J.  
 Jarvis, Kenneth W., 1140 Cherry St., Winnetka, Ill.  
 Shallcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.  
 Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.  
 Winslow Co., The, 9 Liberty St., Newark 5, N. J.

**METERS—Counting Rate**

Atomic Instruments Co., 160 Charles St., Boston, Mass.  
 Cyclotron Specialties Co., Morago 8, Calif.  
 Engineering Lab., Inc., 602 E. 4th St., Tulsa 3, Okla.  
 General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
 Geophysical Instrument Co., Key Blvd. & Nash St., Arlington, Va.  
 Herbath & Rademan Inc., 517 Ludlow St., Phila. 6, Pa.  
 Instrument Development Labs., 817 East 55th St., Chicago 15, Ill.  
 Tracerlab Inc., 55 Oliver St., Boston 10, Mass.

**METERS—d'Arsonval**

Assembly Products, Inc., Chagrin Falls, Ohio  
 Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
 MB Instruments, Inc., 1060 State St., New Haven 11, Conn.  
**Rawson Electrical Instrument Co., 110 Potter St., Cambridge 42, Mass.**  
 See Advertisement on Page 244  
 Scientific Service Lab., Subs. of Electronics, Inc., 915 Meridian Ave., South Pasadena, Calif.  
 Sun Mfg. Co., 6323 Avondale Ave., Chicago 31, Ill.  
 Supreme Instruments Corp., Greenwood, Miss.  
 Thwing-Albert Instrument Co., 5351 Pulaski Ave., Philadelphia 44, Pa.  
 Westinghouse Electric Corp., Meter Div., Newark, N. J.  
 Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.

**METERS—Decibel**

Daven Co., 191 Central Ave., Newark 4, N. J.  
 Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska  
 Electronic Instrument Co., Inc., 926 Clarkson Ave., Brooklyn 3, N. Y.  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
 General Electronics, Inc., 101 Hazel St., Paterson, N. J.  
 McMurdo Silver Co., Inc., 1249 Main St., Hartford 3, Conn.  
 Marion Electrical Instrument Co., Manchester, N. H.  
 Meters, Inc., 915 Riveria Dr., Indianapolis 5, Ind.  
 Metropolitan Electronic & Instrument Co., 8 Murray St., New York 7, N. Y.  
 Precision Apparatus Co., 92-27 Horace Harding Blvd., Elmhurst, N. Y.  
 Roller-Smith, Bethlehem, Pa.  
 See Advertisement on Page 214

Scientific Service Lab., Subsidiary Electronics, Inc., 915 Meridian Ave., South Pasadena, Calif.  
 Shallcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.  
**Sound Apparatus Co., 233 Broadway, New York 7, N. Y.**  
 See Advertisement on Page 228  
 Triplett Electrical Instrument Co., 286 Harmon Rd., Bluffton, Ohio  
 Westinghouse Electric Corp., Meter Div., Newark, N. J.  
 Weston Electrical Instrument Corp., 618 Frelinghuysen Ave., Newark 5, N. J.

**METERS—Distortion**

Doolittle Radio, Inc., 7421 Loomis Bldg., Chicago 36, Ill.  
 Ferris Instrument Co., 110-112 Cornelia St., Boonton, N. J.  
 General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
**Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.**  
 See Advertisements on Pages 94, 95  
 Pickering and Co., Audio Labs., Oceanside, N. Y.  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover & Back Cover, 251

**METERS—Elapsed Time**

Aero Instrument Co., 3907 San Fernando Rd., Glendale 4, Calif.  
**Cramer Co., R. W., Centerbrook, Conn.**  
 See Advertisement on Page 233  
 Electric Tachometer Corp., Broad & Spring Garden Sts., Philadelphia, Pa.  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
 Haydon Mfg. Co., Inc., Forestville, Conn.  
 Industrial Timer Corp., 115 Edison Pl., Newark 5, N. J.  
 Jarvis, Kenneth W., 1140 Cherry St., Winnetka, Ill.  
 Marion Electrical Instrument Co., Manchester, N. H.  
 Rowe Radio Research Lab., 2422 N. Pulaski Rd., Chicago 39, Ill.  
 Westinghouse Electric Corp., Meter Div., Newark, N. J.  
 Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.  
 Zernickow Co., O., 15 Park Row, New York 7, N. Y.

**METERS—Electronic Capacitance**

Industrial Instruments Inc., 17 Pollack Ave., Jersey City 5, N. J.  
 Kabfell Labs., 1076 Morena Blvd., San Diego 10, Calif.  
 McMurdo Silver Co., Inc., 1249 Main St., Hartford 3, Conn.  
 MacLeod & Hanopol, 24 Chelsea St., Charlestown 29, Mass.  
 Sprague Electric Co., North Adams, Mass.  
 Technical Apparatus Co., 167 Washington St., Boston 8, Mass.  
 Wheeler Labs., Inc., 259-09 Northern Blvd., Great Neck, N. Y.

**METERS—Field Intensity**

Brush Development Co., 3405 Perkins Ave., Cleveland 14, Ohio  
 Clarke Instrument Corp., 910 King St., Silver Springs, Md.  
**Deutschmann Corp., Tobe, Filterette Div., Canton, Mass.**  
 See Advertisement on Page 82  
 Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska  
 Electronic Development Lab., 2655 W. 19th St., Chicago 8, Ill.  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
 Ferris Instrument Co., 110-112 Cornelia St., Boonton, N. J.  
 General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
 Measurement Engineering Ltd., 61 Duke St., Toronto, Canada  
 See Advertisement on Page 193  
 Measurements Corp., Boonton, N. J.  
 See Advertisement on Page 56

Radio Corp. of America, RCA Victor Div., Camden, N. J.  
See Advertisements on Inside Back Cover & Back Cover, 251  
Stoddard Aircraft Radio Co., 6644 Santa Monica Blvd., Hollywood 38, Calif.

Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
See Advertisement on Page 44  
Radio Corp. of America, RCA Victor Div., Camden, N. J.  
See Advertisements on Inside Back Cover & Back Cover, 251  
Roller-Smith, Bethlehem, Pa.  
See Advertisement on Page 214  
Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
See Advertisements on Pages 80A, 80B  
Westinghouse Electric Corp., Meters Div., Newark, N. J.  
Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.

Westinghouse Electric Corp., Meter Div., Newark, N. J.  
Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.

## METERS—f-m Deviation

Browning Laboratories, Inc., 750 Main St., Winchester, Mass.  
See Advertisement on Page 65  
Furst Electronics, 800 W. North Ave., Chicago 22, Ill.  
See Advertisement on Page 248  
Hazeltine Electronics Corp., 1775 Broadway, New York, N. Y.  
MB Instruments, Inc., 1060 State St., New Haven 11, Conn.  
Measurement Engineering Ltd., 61 Duke St., Toronto, Can.  
See Advertisement on Page 193  
West Coast Electronics Co., 1601 S. Burlington St., Los Angeles 6, Calif.

## METERS—Flow

Bailey Meter Co., 1044 Ivanhoe Rd., Cleveland 10, Ohio  
Bristol Co., The, Waterbury 91, Conn.  
Commercial Research Labs. Inc., 20 Bartlett Ave., Detroit 3, Mich.  
Electric Heat Control Co., The, 9123 Inman Ave., Cleveland 5, Ohio  
Foxboro Co., Foxboro, Mass.  
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.

## METERS—Footcandle

Electronic Engineers, 1039-B Pacific St., Santa Monica, Calif.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
General Electronics, Inc., 101 Hazel St., Paterson, N. J.  
MB Instruments, Inc., 1060 State St., New Haven 11, Conn.  
Meters, Inc., 915 Riveria Dr., Indianapolis 5, Ind.  
Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.

## METERS—Frequency

Aero Instrument Co., 3907 San Fernando Rd., Glendale 4, Calif.  
Aircraft Radio Corp., Boonton, N. J.  
See Advertisement on Page 185  
Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.  
Biddle Co., James G., 1316 Arch St., Philadelphia 7, Pa.  
Browning Laboratories, Inc., 750 Main St., Winchester, Mass.  
See Advertisement on Page 65  
Burnett Radio Lab., Wm. W. L., 4814 Idaho St., San Diego, Calif.  
Cardwell Mfg. Corp., Allen D., 97 Whiting St., Plainville, Conn.  
Communication Measurements Lab., 120 Greenwich St., New York, N. Y.  
Daven Co., 191 Central Ave., Newark 4, N. J.  
DeciMeter, 742 W. Colfax Ave., Denver 4, Colorado  
Furst Electronics, 800 W. North Ave., Chicago 22, Ill.  
See Advertisement on Page 248  
General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
Herbach & Rademan Inc., Mfg. Div., 517 Ludlow St., Philadelphia, Pa.  
Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.  
See Advertisements on Pages 94, 95  
J B T Instruments, Inc., 441 Chapel St., New Haven 8, Conn.  
Lampkin Laboratories, Bradenton, Fla.  
See Advertisement on Page 256  
Lavoie Laboratories, Morganville, N. J.  
McMurdo Silver Co., 1249 Main St., Hartford 3, Conn.  
Measurement Engineering Ltd., 61 Duke St., Toronto, Can.  
See Advertisement on Page 193

## METERS—Microwave

Aircraft Radio Corp., Boonton, N. J.  
See Advertisement on Page 185  
Cover Dual Signal Systems, Inc., Div. of Electra Voice Corp., 5215-25 Ravenswood Ave., Chicago 40, Ill.  
DeciMeter, 742 W. Colfax Ave., Denver 4, Colorado  
General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
See Advertisement on Page 44  
Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
See Advertisements on Pages 80A, 80B  
Weymouth Instrument Co., 1440 Commercial St., East Weymouth, Mass.

## METERS—Modulation

General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
Measurement Engineering Ltd., 61 Duke St., Toronto, Can.  
See Advertisement on Page 193  
Metropolitan Electronic Instrument Co., 6 Murray St., New York 7, N. Y.  
Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
See Advertisements on Pages 158 to 161  
Waterman Products Co., Inc., 2445-63 Emerald St., Philadelphia 25, Pa.  
See Advertisement on Page 76

## METERS—Moisture

Delmhorst Instrument Co., 115 Cornelia Street, Boonton, N. J.  
Foxboro Co., Foxboro, Mass.  
Illinois Testing Labs., Inc., 420 N. La Salle St., Chicago 10, Ill.  
Industrial Instruments, Inc., 17 Pollack Ave., Jersey City 5, N. J.  
Measurements Corp., Boonton, N. J.  
See Advertisement on Page 56  
Serdex, Inc., 91 Cambridge St., Boston, Mass.  
Tagliabue Div., C. J., Portable Products Corp., 550 Park Ave., Brooklyn 5, N. Y.  
Tech Labs., 337 Central Ave., Jersey City, N. J.

## METERS—Output

Assembly Products, Inc., Chagrin Falls, Ohio  
Bird Electronic Corp., 1800 E. 38th St., Cleveland 14, Ohio  
Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska  
Electronic Instrument Co., Inc., 926 Clarkson Ave., Brooklyn 3, N. Y.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
MB Instruments, Inc., 1060 State St., New Haven 11, Conn.  
McMurdo Silver Co., Inc., 1249 Main St., Hartford 3, Conn.  
Marion Electrical Instrument Co., Manchester, N. H.  
Meters, Inc., 915 Riveria Dr., Indianapolis 5, Ind.  
Pan American Electric Co., Inc., 2912 Atlantic Ave., Brooklyn 7, N. Y.  
Precision Apparatus Co., 92-27 Horace Harding Blvd., Elmhurst, N. Y.  
Simpson Electric Co., 5218 W. Kinzie St., Chicago 44, Ill.  
Triplett Electrical Instrument Co., 286 Harmon Rd., Bluffton, Ohio

## METERS—Panel

Assembly Products, Inc., Chagrin Falls, Ohio  
Electric Heat Control Co., The, 9123 Inman Ave., Cleveland 5, Ohio  
Electro-Mechanical Instrument Co., 812 Chestnut St., Perkasie, Pa.  
Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska  
Electronic Instrument Co., Inc., 926 Clarkson Ave., Brooklyn 3, N. Y.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
MB Instruments, Inc., 1060 State St., New Haven 11, Conn.  
Marion Electrical Instrument Co., Manchester, N. H.  
Meters, Inc., 915 Riveria Dr., Indianapolis 5, Ind.  
Scientific Service Lab., Subs. of Electronics, Inc., 915 Meridian Ave., South Pasadena, Calif.  
Simpson Electric Co., 5218 W. Kinzie St., Chicago 44, Ill.  
Sterling Mfg. Co., 9205 Detroit Ave., Cleveland 2, Ohio  
Supreme Instruments Corp., Greenwood, Miss.  
Westinghouse Electric Corp., Meter Div., Newark, N. J.  
Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.

## METERS—Ph Meters, Recorders & Comparators

Baker Instrument Co., 310 Main St., Orange, N. J.  
Bristol Co., The, Waterbury 91, Conn.  
Central Scientific Co., 1700 Irving Park Blvd., Chicago 13, Ill.  
Coleman Electric Co., 318 Madison St., Maywood, Ill.  
Electronic Mechanical Products Co., 13-15-17 N. Virginia Ave., Atlantic City, N. J.  
Fisher Scientific Co., 717 Forbes St., Pittsburgh 16, Pa.  
Foxboro Co., Foxboro, Mass.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
General Electronics, Inc., 101 Hazel St., Paterson, N. J.  
LaMotte Chemical Products Co., Towson 4, Baltimore, Md.  
Leeds & Northrup Co., 4970 Stenton Ave., Philadelphia 44, Pa.  
National Technical Labs., 820 Mission St., South Pasadena, Calif.  
Photovolt Corp., 95 Madison Ave., New York 16, N. Y.  
Tagliabue Division, C. J., Portable Products Corp., 550 Park Ave., Brooklyn 5, N. Y.  
Thwing-Albert Instrument Co., 5351 Pulaski Ave., Philadelphia 44, Pa.  
Winslow Co., The, 9 Liberty St., Newark 5, N. J.

## METERS—Phase Angle

American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
Andrew Co., 363 E. 75th St., Chicago 19, Ill.  
Clarke Instrument Corp., 910 King St., Silver Spring, Md.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Rollin Co., 2070 N. Fair Oaks Ave., Pasadena 3, Calif.  
Sound Apparatus Co., 233 Broadway, New York 7, N. Y.  
See Advertisement on Page 228  
Technology Instrument Corp., 1058 Main St., Waltham, Mass.  
Westinghouse Electric Corp., Meter Div., Newark, N. J.  
Weston Electrical Instrument Corp., 618 Frelinghuysen Ave., Newark 5, N. J.

## METERS—Photoelectric Reflection

Electronic Mechanical Products Co., 13-15-17 N. Virginia Ave., Atlantic City, N. J.  
Gardner Lab. Inc., Henry A., 4723 Elm St., Bethesda, Md.  
National Technical Lab., 820 Mission St., South Pasadena, Calif.

Photovolt Corp., 95 Madison Ave., New York 16, N. Y.

**METERS—Power Factor**

General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Roller-Smith, Bethlehem, Pa.  
See Advertisement on Page 214  
Westinghouse Electric Corp., Meter Div., Newark, N. J.  
Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.

**METERS—Q**

American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
Boonton Radio Corp., Boonton, N. J.  
See Advertisement on Page 205  
Electro Prods. Labs., 549 W. Randolph St., Chicago 6, Ill.  
Electronic Measurements Co., Red Bank, N. J.  
See Advertisement on Page 68  
Freed Transformer Co., 72 Spring St., New York 12, N. Y.  
See Advertisement on Page 253  
General Electric Co., Syracuse, N. Y.  
See Advertisements on Pages 96, 96A  
Pan American Electric Co., Inc., 2912 Atlantic Ave., Brooklyn 7, N. Y.

**METERS—Sound Level**

Assembly Products, Inc., Chagrin Falls, Ohio  
Daven Co., 191 Central Ave., Newark 4, N. J.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
Pan American Electric Co., Inc., 2912 Atlantic Ave., Brooklyn 7, N. Y.  
Precision Apparatus Co., 92-27 Horace Harding Blvd., Elmhurst, N. Y.  
Rek-O-Kut Co., 146 Grand St., New York 13, N. Y.  
See Advertisement on Page 245  
Sound Apparatus Co., 233 Broadway, New York 7, N. Y.  
See Advertisement on Page 228  
Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
See Advertisements on Pages 88, 89

**METERS—Tension**

Dillon & Co., Inc., W. C., 5410 W. Harrison St., Chicago 44, Ill.  
Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.  
Sipp-Eastwood Corp., Keen & Summer Sts., Paterson, N. J.

**METERS—Thermocouple**

Andrew Co., 363 E. 75th St., Chicago 19, Ill.  
Assembly Products, Inc., Chagrin Falls, Ohio  
Bailey Meter Co., 1044 Ivanhoe Rd., Cleveland 10, Ohio  
Bird Electronic Corp., 1800 E. 38th St., Cleveland 14, Ohio  
Bristol Co., The, Waterbury 91, Conn.  
Brown Instrument Co., 4428 Wayne Ave., Philadelphia 44, Pa.  
Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska  
Field Electrical Instrument Co., 109 E. 184th St., New York 53, N. Y.  
Foxboro Co., Foxboro, Mass.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96A, 96B  
Gordon Co., Claud S., 3000 S. Wallace St., Chicago 16, Ill.  
Illinois Testing Labs., Inc., 420 N. LaSalle St., Chicago 10, Ill.  
MB Instruments, Inc., 1060 State St., New Haven 11, Conn.  
Marion Electrical Instrument Co., Manchester, N. H.  
Meters, Inc., 915 Riveria Dr., Indianapolis 5, Ind.  
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.  
Pyrometer Instrument Co., 103 Lafayette St., New York, N. Y.

Rawson Electrical Instrument Co., 110 Potter St., Cambridge 42, Mass.  
See Advertisement on Page 244  
Roller-Smith, Bethlehem, Pa.  
See Advertisement on Page 214  
Scientific Service Lab., Subsidiary Electronics, Inc., 915 Meridian Ave., South Pasadena, Calif.  
Simpson Electric Co., 5218 W. Kinzie St., Chicago 44, Ill.  
Thwing-Albert Instrument Co., 5351 Pulaski Ave., Philadelphia 44, Pa.  
Triplett Electrical Instrument Co., 286 Harmon Rd., Bluffton, Ohio  
Westinghouse Electric Corp., Meter Div., Newark, N. J.  
Weston Electrical Instrument Corp., 618 Frelinghuysen Ave., Newark 5, N. J.  
Winslow Co., 9 Liberty St., Newark 5, N. J.

**METERS—Vibration**

Commercial Research Labs., Inc., 20 Bartlett Ave., Detroit 3, Mich.  
Consolidated Engineering Corp., 595 E. Colorado St., Pasadena 1, Calif.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisement on Page 96B, 96C  
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.  
Heiland Research Corp., 130 E. 5th St., Denver 9, Colo.  
Pan American Electric Co., Inc., 2912 Atlantic Ave., Brooklyn 7, N. Y.  
Sound Apparatus Co., 233 Broadway, New York 7, N. Y.  
See Advertisement on Page 228  
Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
See Advertisements on Pages 80A, 80B  
Televiso Products, Inc., 7466 West Irving Park Road, Chicago 34, Ill.  
Vibroscope Co., 6 East 39th St., New York 16, N. Y.  
Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
See Advertisements on Pages 88, 89

**METERS—Viscosity**

Electric Eye Equipment Co., 16 W. Fairchild St., Danville, Ill.  
Tech Labs., 337 Central Ave., Jersey City, N. J.

**METERS—Wave**

Airadio Inc., Melrose Ave. & Battery Pl., Stamford, Conn.  
Aircraft Radio Corp., Boonton, N. J.  
See Advertisement on Page 185  
Bud Radio Inc., 2113 E. 55th St., Cleveland 3, Ohio  
Decimeter, 742 W. Colfax Ave., Denver 4, Colorado  
General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.  
See Advertisements on Pages 94, 95  
Lavoie Labs., Morganville, N. J.  
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
See Advertisement on Page 44  
Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
See Advertisements on Pages 80A, 80B  
Weymouth Instrument Co., 1440 Commercial St., East Weymouth, Mass.

**METERS—X-Ray Intensity**

Atomic Instrument Co., 160 Charles St., Boston, Mass.  
Electronic Control Corp., 1573 E. Forest St., Detroit, Mich.  
General Electric Co., Syracuse, N. Y.  
See Advertisements on Pages 96A, 96B  
Geophysical Instrument Co., Key Blvd. & Nash St., Arlington, Va.  
Sterling Mfg. Co., 9205 Detroit Ave., Cleveland 2, Ohio  
Victoreen Instrument Co., 5806 Hough Ave., Cleveland 3, Ohio

**MICA**

See Insulation Materials

**MICROAMMETERS**

Assembly Products, Inc., Chagrin Falls, Ohio  
Burlington Instrument Co., 214 N. 4th St., Burlington, Iowa  
Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
General Electronics, Inc., 101 Hazel St., Paterson, N. J.  
Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland, Ohio  
MB Instruments, Inc., 1060 State St., New Haven 11, Conn.  
Marion Electrical Instrument Co., Manchester, N. H.  
Meters, Inc., 915 Riveria Dr., Indianapolis 5, Ind.  
Metropolitan Electronic & Instrument Co., 6 Murray St., New York 6, N. Y.  
Rawson Electrical Instrument Co., 110 Potter St., Cambridge 42, Mass.  
See Advertisement on Page 244  
Roller-Smith, Bethlehem, Pa.  
See Advertisement on Page 214  
Rowe Radio Research Lab., 2422 N. Pulaski Rd., Chicago 39, Ill.  
Scientific Service Lab., Subsidiary Electronics, Inc., 915 Meridian Ave., S. Pasadena, Calif.  
Sensitive Research Instrument Co., 9 Elm Ave., Mt. Vernon, N. Y.  
Simpson Electric Co., 5218 W. Kinzie St., Chicago 44, Ill.  
Sun Mfg. Co., 6323 Avondale Ave., Chicago 31, Ill.  
Supreme Instruments Corp., Greenwood, Miss.  
Triplett Electrical Instrument Co., 286 Harmon Road, Bluffton, Ohio  
Welch Scientific Co., 1515 Sedgwick St., Chicago 10, Ill.  
Westinghouse Electric Corp., Meter Div., Newark, N. J.  
Weston Electrical Instrument Corp., 618 Frelinghuysen Ave., Newark 5, N. J.

**MICRO-MICROAMMETERS**

General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
National Technical Lab., 820 Mission Street, South Pasadena, Calif.

**MICROFARADMETERS**

Assembly Products, Inc., Chagrin Falls, Ohio  
Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska  
General Electric Co., Syracuse, N. Y.  
See Advertisements on Pages 96, 96A  
Measurement Engineering Ltd., 61 Duke St., Toronto, Can.  
See Advertisement on Page 193  
Weston Electrical Instrument Corp., 618 Frelinghuysen Ave., Newark 5, N. J.

**MICROMETERS—Electronic**

Carson Micrometer Corp., 2 E. Main St., Little Falls, N. J.  
Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska

**MICROPHONES—Aircraft Type**

Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.  
Aviometer Corp., 370 W. 35th St., New York 1, N. Y.  
See Advertisement on Page 224  
Electro-Voice Inc., 1239 South Bend Ave., South Bend, Ind.  
See Advertisement on Page 29  
Favorite Mfg. Co., 105 E. 12th St., New York 3, N. Y.  
Hallcrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
Miles Reproducer Co., Inc., 812 Broadway, New York 3, N. Y.  
See Advertisement on Page 256  
Permoflux Corp., 4900 W. Grand Ave., Chicago, Ill.  
Racon Electric Co., 52 E. 10th St., New York 3, N. Y.  
See Advertisement on Page 213  
Radio Corp. of America, RCA Victor Div., Camden, N. J.  
See Advertisements on Inside Back Cover & Back Cover, 251

St. Louis Microphone Co., 2726-28 Brentwood Blvd., St. Louis 17, Mo.  
**Universal Microphone Co., Inglewood, Calif.**  
 See Advertisement on Page 56  
**Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.**  
 See Advertisements on Pages 88, 89

## MICROPHONES—Carbon

American Earphone Co., 10 E. 43rd St., New York 17, N. Y.  
 Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.  
**Aviometer Corp., 370 W. 35th St., New York 1, N. Y.**  
 See Advertisement on Page 224  
 Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
**Electro-Voice Inc., 1239 South Bend Ave., South Bend, Ind.**  
 See Advertisement on Page 29  
 Favorite Mfg. Co., 105 E. 12th St., New York 3, N. Y.  
**General Electric Co., Syracuse, N. Y.**  
 See Advertisements on Pages 96, 96A  
**Hallicrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.**  
**Kaar Engineering Co., 619 Emerson St., Palo Alto, Calif.**  
**Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.**  
**Miles Reproducer Co., Inc., 812 Broadway, New York 3, N. Y.**  
 See Advertisement on Page 256  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover & Back Cover, 251  
**Shure Brothers, 225 W. Huron St., Chicago, Ill.**  
 See Advertisement on Page 157  
**Stromberg-Carlson Co., Rochester, N. Y.**  
**Universal Microphone Co., Inglewood, Calif.**  
 See Advertisement on Page 56  
**University Loudspeakers Inc., 225 Varick St., New York, New York**  
**Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.**  
 See Advertisements on Pages 88, 89

## MICROPHONES—Condenser

American Microphone Co., 370 So. Fair Oaks Ave., Pasadena 2, Calif.  
**Aviometer Corp., 350 W. 35th St., New York 1, N. Y.**  
 Favorite Mfg. Co., 105 E. 12th St., New York 3, N. Y.  
**Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.**  
**Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.**

## MICROPHONES—Contact

American Microphone Co., 370 So. Fair Oaks Ave., Pasadena 2, Calif.  
**Amperite Co., 561 Broadway, New York, N. Y.**  
 See Advertisement on Page 202  
**Aviometer Corp., 370 W. 35th St., New York 1, N. Y.**  
 See Advertisement on Page 224  
**Electro-Voice, Inc., 1239 South Bend Ave., South Bend, Ind.**  
 See Advertisement on Page 29  
 Favorite Mfg. Co., 105 E. 12th St., New York 3, N. Y.  
**Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.**  
**Miles Reproducer Co., Inc., 812 Broadway, New York 3, N. Y.**  
 See Advertisement on Page 256  
**Rowe Industries, 3120 Monroe St., Toledo 6, Ohio**  
**St. Louis Microphone Co., 2726-28 Brentwood Blvd., St. Louis 17, Mo.**  
**Shure Bros., 225 W. Huron St., Chicago, Ill.**  
 See Advertisement on Page 157  
**Simpson Mfg. Co., Inc., Mark, 183 W. 4th St., New York 14, N. Y.**  
**Turner Co., 909 17th St., Cedar Rapids, Iowa**  
**Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.**  
 See Advertisements on Pages 88, 89

## MICROPHONES—Crystal

American Microphone Co., 370 So. Fair Oaks Ave., Pasadena 2, Calif.

Astatic Corp., Conneaut, Ohio  
 Brush Development Co., 3405 Perkins Ave., Cleveland 14, Ohio  
 Du Mont Labs., Inc., Allen B., 2 Main Ave., Passaic, N. J.  
**Electro-Voice, Inc., 1239 South Bend Ave., South Bend, Ind.**  
 See Advertisement on Page 29  
 Favorite Mfg. Co., 105 E. 12th St., New York 3, N. Y.  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover & Back Cover, 251  
**Shure Brothers, 225 W. Huron St., Chicago, Ill.**  
 See Advertisement on Page 157  
**Stromberg-Carlson Co., Rochester, N. Y.**  
**Tibbetts Industries, Inc., Camden, Maine**  
**Turner Co., 909 17th St., Cedar Rapids, Iowa**

## MICROPHONES—Dynamic

American Microphone Co., 370 So. Fair Oaks Ave., Pasadena 2, Calif.  
**Amperite Co., 561 Broadway, New York, N. Y.**  
 See Advertisement on Page 202  
 Astatic Corp., Conneaut, Ohio  
**Aviometer Corp., 370 W. 35th St., New York 1, N. Y.**  
 See Advertisement on Page 224  
 Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
**Carron Mfg. Co., 415 S. Aberdeen St., Chicago, Ill.**  
**Eby, Inc., Hugh H., 18 W. Chelton Ave., Phila. 13, Pa.**  
**Electro-Voice, Inc., 1239 South Bend Ave., South Bend, Ind.**  
 See Advertisement on Page 29  
 Favorite Mfg. Co., 105 E. 12th St., New York 3, N. Y.  
**General Electric Co., Syracuse, N. Y.**  
 See Advertisements on Pages 96, 96A  
**Intex Co., 303 W. 42nd St., New York 18, N. Y.**  
 See Advertisement on Page 68  
**Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.**  
**Lektra Labs., 30 E. 10th Street, New York, N. Y.**  
**Magnavox Co., The, Fort Wayne 4, Ind.**  
**Miles Reproducer Co., Inc., 812 Broadway, New York 3, N. Y.**  
 See Advertisement on Page 256  
**Permoflux Corp., 4900 W. Grand Ave., Chicago, Ill.**  
**Racon Electric Co., 52 E. 19th St., New York 3, N. Y.**  
 See Advertisement on Page 213  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover & Back Cover, 251  
**Rauland Corp., 4245 N. Knox Ave., Chicago 41, Ill.**  
**Remler Co. Ltd., 2101 Bryant St., San Francisco 10, Calif.**  
**St. Louis Microphone Co., 2726-28 Brentwood Blvd., St. Louis 17, Mo.**  
**Shure Bros., 225 W. Huron St., Chicago, Ill.**  
 See Advertisement on Page 157  
**Stromberg-Carlson Co., Rochester, N. Y.**  
**Turner Co., 909 17th St., Cedar Rapids, Iowa**  
**Universal Microphone Co., Inglewood, Calif.**  
 See Advertisement on Page 56  
**University Loudspeakers, Inc., 225 Varick Street, New York, N. Y.**  
**Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.**  
 See Advertisements on Pages 88, 89

## MICROPHONES—Velocity

**Amperite Co., 561 Broadway, New York, N. Y.**  
 See Advertisement on Page 202  
**Aviometer Corp., 370 W. 35th St., New York 1, N. Y.**  
 See Advertisement on Page 224  
**Electro-Voice Inc., 1239 South Bend Ave., South Bend, Ind.**  
 See Advertisement on Page 29  
 Favorite Mfg. Co., 105 E. 12th St., New York 3, N. Y.  
**General Electric Co., Syracuse, N. Y.**  
 See Advertisements on Pages 96, 96A  
**Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.**  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover & Back Cover, 251  
**Rauland Corp., 4245 N. Knox Ave., Chicago 41, Ill.**  
**Universal Microphone Co., Inglewood, Calif.**  
 See Advertisement on Page 56

## MICROSCOPES—Electronic

Farrand Optical Co. Inc., Bronx Blvd. & E. 238th St., New York 66, N. Y.  
 Favorite Mfg. Co., 105 E. 12th St., New York 3, N. Y.  
**General Electric Co., Syracuse, N. Y.**  
 See Advertisements on Pages 96, 96A  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover & Back Cover, 251

## MICROWAVE TRANSMISSION LINES & ACCESSORIES

**Aircraft Radio Corp., Boonton, N. J.**  
 See Advertisement on Page 185  
**American Brass Co., American Metal Hose Branch, Waterbury 88, Conn.**  
**Buggie & Co., H. H., 2141 Madison Ave., Toledo 1, Ohio**  
**Dalmo Victor Co., San Carlos, California**  
**De Mornay-Budd Inc., 475 Grand Course, New York, N. Y.**  
 See Advertisement on Page 171  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
**Hammarlund Mfg. Co., 460 W. 34th St., New York 1, N. Y.**  
**Kings Electronics Co., 372 Classon Ave., Brooklyn 5, N. Y.**  
**Mendelsohn Speedgun Co., Inc., 457 Bloomfield Ave., Bloomfield, N. J.**  
**Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.**  
**Rice's Sons Inc., Bernard, 325 Fifth Ave., New York 16, N. Y.**  
**Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.**  
 See Advertisements on Pages 80A, 80B  
**Sylvania Electric Prods., Inc., 500 5th Ave., New York 18, N. Y.**  
 See Advertisements on Pages 158 to 161  
**Titelflex, Inc., 500 Frelinghuysen Ave., Newark 5, N. J.**  
**Weymouth Instrument Co., 1440 Commercial St., East Weymouth, Mass.**

## MILLIAMMETERS

Assembly Products, Inc., Chagrin Falls, Ohio  
**Ballantine Labs., Inc., Boonton, N. J.**  
 See Advertisement on Page 42  
**Burlington Instrument Co., 214 N. 4th St., Burlington, Iowa**  
**DeJur-Amsco Corp., Northern Blvd. at 45th St., Long Island City 1, N. Y.**  
**Development Engineering Co., Inc., The, 1818 Ashland St., Houston 8, Texas**  
**Electric Heat Control Co., The, 9123 Inman Ave., Cleveland 5, Ohio**  
**Electro-Mechanical Instrument Co., 812 Chestnut St., Perkasia, Pa.**  
**Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska**  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B to 96D  
**General Electronics, Inc., 101 Hazel St., Paterson, N. J.**  
**Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland, Ohio**  
**MB Instruments, Inc., 1060 State St., New Haven 11, Conn.**  
**Marion Electrical Instrument Co., Manchester, N. H.**  
**Meters, Inc., 915 Riveria Dr., Indianapolis 5, Ind.**  
**Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.**  
**Precision Apparatus Co., 92-27 Horace Harding Blvd., Elmhurst, N. Y.**  
**Rawson Electrical Instrument Co., 110 Potter St., Cambridge 42, Mass.**  
 See Advertisement on Page 244  
**Roller-Smith, Bethlehem, Pa.**  
 See Advertisement on Page 214  
**Scientific Service Lab., Subsidiary Electronics, Inc., 915 Meridian Ave., South-Pasadena, Calif.**  
**Sensitive Research Instrument Co., 9 Elm Ave., Mt. Vernon, N. Y.**  
**Simpson Electric Co., 5218 W. Kinzie St., Chicago 44, Ill.**  
**Sterling Mfg. Co., 9205 Detroit Ave., Cleveland, Ohio**  
**Sticht Co., Inc., Herman H., 27 Park Pl., New York 7, N. Y.**  
**Sun Mfg. Co., 6323 Avondale Ave., Chicago 31, Ill.**  
**Supreme Instruments Corp., Greenwood, Miss.**  
**Triplett Electrical Instrument Co., 286 Harmon Rd., Bluffton, Ohio**  
**Welch Scientific Co., 1515 Sedgwick St., Chicago 10, Ill.**

Westinghouse Electric Corp., Meter Div., Newark, N. J.  
Weston Electrical Instrument Corp., 618 Frelinghuysen Ave., Newark 5, N. J.

## MILLIVOLTMETERS

Assembly Products, Inc., Chagrin Falls, Ohio  
Ballantine Labs., Inc., Boonton, N. J.  
See Advertisement on Page 42  
Brown Instrument Co., 4428 Wayne Ave., Philadelphia 44, Pa.  
Burlington Instrument Co., 214 N. 4th St., Burlington, Iowa  
Commercial Research Labs., Inc., 20 Bartlett Ave., Detroit 3, Mich.  
Development Engineering Co., Inc., The, 1818 Ashland St., Houston 8, Texas  
Electric Heat Control Co., The, 9123 Inman Ave., Cleveland 5, Ohio  
Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
General Electronics, Inc., 101 Hazel Street, Paterson, N. J.  
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland, Ohio  
Illinois Testing Labs., Inc., 420 N. LaSalle St., Chicago 10, Ill.  
Marion Electrical Instrument Co., Manchester, N. H.  
Meters, Inc., 915 Riveria Dr., Indianapolis 5, Ind.  
Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
Pyrometer Instrument Co., 103 Lafayette St., New York, N. Y.  
Rawson Electrical Instruments Co., 110 Potter St., Cambridge 42, Mass.  
See Advertisement on Page 244  
Roller-Smith, Bethlehem, Pa.  
See Advertisement on Page 214  
Scientific Service Lab., Subsidiary Electronics, Inc., 915 Meridian Ave., South Pasadena, Calif.  
Sticht Co., Inc., Herman H., 27 Park Pl., New York 7, N. Y.  
Sun Mfg. Co., 6323 Avondale Ave., Chicago 31, Ill.  
Thwing-Albert Instrument Co., 5351 Pulaski Ave., Philadelphia 44, Pa.  
Westinghouse Electric Corp., Meter Div., Newark, N. J.  
Weston Electrical Instrument Corp., 618 Frelinghuysen Ave., Newark 5, N. J.

## MIRRORS—Television

Austin Co., O., 335 Throop Ave., Brooklyn 21, N. Y.  
Bache & Co., Semon, 636 Greenwich St., New York 14, N. Y.  
Eclipse Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.  
Farrand Optical Co., Inc., Bronx Blvd. at 238th St., New York 66, N. Y.  
Fish-Schurmann Corp., 230 E. 45th St., New York 17, N. Y.  
Panero Mirrors Inc., 2958 Los Feliz Blvd., Los Angeles, Calif.  
Perkin Elmer Corp., Glenbrook, Conn.

## MONITORS—Broadcast

Andrew Co., 363 E. 75th St., Chicago 19, Ill.  
Collins Radio Co., Cedar Rapids, Iowa  
See Advertisements on Pages 30 to 33  
Doolittle Radio, Inc., 7421 Loomis Bldg., Chicago 36, Ill.  
Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
See Advertisements on Pages 48A to 48D  
General Electric Co., Syracuse, N. Y.  
See Advertisements on Pages 96, 96A  
Langevin Co., Inc., 37 W. 65th St., New York, N. Y.  
See Advertisement on Page 153  
Monitor Products Co., 815 Fremont St., So. Pasadena, Calif.  
Radio Corp. of America, RCA Victor Div., Camden, N. J.  
See Advertisements on Inside Back Cover & Back Cover, 251  
Radio Engineering Laboratories, Inc., 35-54 36th St., Long Island City, N. Y.  
Raytheon Mfg. Co., Commercial Products Div., Waltham 54, Mass.  
Transmitter Equipment Mfg. Co. Inc., 345 Hudson St., New York 14, N. Y.

## MONITORS—Frequency

Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
Collins Radio Co., Cedar Rapids, Iowa  
See Advertisements on Pages 30 to 33  
Doolittle Radio, Inc., 7421 S. Loomis Bldg., Chicago 36, Ill.  
General Electric Co., Syracuse, N. Y.  
See Advertisements on Pages 96, 96A  
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
Lampkin Laboratories, Bradenton, Fla.  
See Advertisement on Page 256  
Link, Fred M., 125 W. 17th St., New York, N. Y.  
Measurement Engineering Ltd., 61 Duke St., Toronto, Can.  
See Advertisement on Page 193  
Millen Mfg. Co., James, 150 Exchange St., Maiden, Mass.  
See Advertisement on Page 44  
Monitor Products Co., 815 Fremont St., So. Pasadena, Calif.  
Panoramic Radio Corp., 242 W. 55th St., New York 19, N. Y.  
Radio Corp. of America, RCA Victor Div., Camden, N. J.  
See Advertisements on Inside Back Cover & Back Cover, 251  
West Coast Electronics Co., 1601 S. Burlington St., Los Angeles 6, Calif.

## MONITORS—Modulation

Collins Radio Co., Cedar Rapids, Iowa  
See Advertisements on Pages 30 to 33  
Doolittle Radio, Inc., 7421 S. Loomis Blvd., Chicago 36, Ill.  
Du Mont Labs., Inc., Allen B., 2 Main Ave., Passaic, N. J.  
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
Herbach & Rademan Inc., 517 Ludlow St., Phila. 6, Pa.  
Measurement Engineering Ltd., 61 Duke St., Toronto, Can.  
See Advertisement on Page 193  
Radio Corp. of America, RCA Victor Div., Camden, N. J.  
See Advertisements on Inside Back Cover & Back Cover, 251  
Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
See Advertisements on Pages 158 to 161  
West Coast Electronics Co., 1601 S. Burlington St., Los Angeles 6, Calif.

## MONITORS—Television Master

Du Mont Labs., Inc., Allen B., 2 Main Ave., Passaic, N. J.  
General Electric Co., Syracuse, N. Y.  
See Advertisements on Pages 96, 96A  
Pan American Electric Co., Inc., 2912 Atlantic Ave., Brooklyn 7, N. Y.  
Polarad Electronics Co., 135 Liberty St., New York 6, N. Y.  
Remington Rand, Electronic Div., Middletown, Conn.  
Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.  
Telequin Radio Co., 1901 S. Washtenaw, Chicago, Ill.  
Television Projects, Inc., 24 Walnut St., Newark 2, N. J.

## MONITORS—(FS) Transmitter

Press Wireless Mfg. Corp., 1475 Broadway, New York 18, N. Y.

## MOTORS—Fractional hp

Alliance Mfg. Co., Lake Park Blvd., Alliance, Ohio  
See Advertisement on Page 182  
Alni Corp., 10 E. 52nd St., New York 22, N. Y.  
Anco Products Corp., 975 Market St., Paterson, N. J.  
Arnessen Electric Co., Inc., 116 Broad St., New York 4, N. Y.  
Barber Colman Co., River & Loomis Sts., Rockford, Ill.  
Bendix Aviation Corp., Pacific Div., 11600 Sherman Way, North Hollywood, Calif.  
Bodine Electric Co., Ohio St. & Oakley Blvd., Chicago, Ill.  
Burke Electric Co., 12th & Cranberry Sts., Erie, Pa.  
Century Electric Co., 1806 Pine St., St. Louis 3, Mo.  
Continental Electric Co., Inc., 323-327 Ferry St., Newark, N. J.

Cyclohm Motor Corp., 5-17 46 Rd., L. I. City 1, N. Y.  
See Advertisement on Page 252  
Dayton Acme Co., 930 York St., Cincinnati 14, Ohio  
Delco Appliance Div., General Motors Corp., 391 Lyell Ave., Rochester, N. Y.  
Diehl Mfg. Co., 1129 FINDERNE AVE., Somerville, N. J.  
Eastern Air Devices, Inc., 585 Dean St., Brooklyn 17, N. Y.  
See Advertisement on Page 172  
Elcor, Inc., 1501 W. Congress St., Chicago 7, Ill.  
See Advertisement on Page 210

Electric Indicator Co., 21 Parker Ave., Stamford, Conn.  
Electric Motor Corp., Racine, Wis.  
Electric Specialty Co., 211 South St., Stamford, Conn.  
Fairchild Camera & Instrument Corp., Jamaica 1, N. Y.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
General Industries Co., Taylor & Olive Sts., Elyria, Ohio  
Holtzer-Cabot, Div. of First Industrial Corp., 125 Amory St., Boston, Mass.  
Jack & Heintz Precision Industries, Inc., Cleveland 1, Ohio  
Janette Mfg. Co., 556 W. Monroe St., Chicago 6, Ill.  
Kato Engineering Co., 530 N. Front St., Mankato, Minn.  
Lear, Inc., 110 Ionia Ave., N.W., Grand Rapids 2, Mich.  
Leland Electric Co., 1501 Webster St., Dayton, Ohio  
Magnetic Products Corp., The, Norwalk, Conn.  
Ohio Electric Mfg. Co., 5908 Maurice Ave., Cleveland 4, Ohio  
Oster Mfg. Co., John, Racine, Wisconsin  
Price Electric Corp., E. Church & 2nd Sts., Frederick, Md.  
Redmond Co., Inc., Owosso, Mich.  
Reynolds Electric Co., 2560 W. Congress St., Chicago 12, Ill.  
Robbins & Myers, 1345 Lagonda Ave., Springfield, Ohio  
Russell Electric Co., affiliated with Raytheon Mfg. Co., 340 W. Huron St., Chicago 10, Ill.  
Schauer Machine Co., Cincinnati 2, Ohio  
Small Motors Inc., 1322 Elston Ave., Chicago 22, Ill.  
Smith Mfg. Co., F. A., P. O. Box 509, Rochester 2, N. Y.  
Speedway Mfg. Co., 1834 S. 52nd Ave., Cicero 50, Ill.  
Superior Electric Co., 83 Laurel St., Bristol, Conn.  
See Advertisements on Pages 5 to 16  
U. S. Electrical Motors, Inc., 200 E. Slauson Ave., Los Angeles 64, Calif.  
Universal Electric Co., 300 E. Main St., Owosso, Mich.  
Victor Electric Products, Inc., 2950 Robertson Ave., Cincinnati 9, Ohio  
Wagner Electric Corp., 6400 Plymouth Ave., St. Louis, Mo.  
Walker-Turner Co., Inc., 1463 Berckman St., Plainfield, N. J.  
Webster-Chicago Corp., 5622 Bloomingdale Ave., Chicago 39, Ill.  
Wincharger Corp., 7th & Division Sts., Sioux City, Iowa

## MOTORS—Phonograph

Alliance Mfg. Co., Lake Park Blvd., Alliance, Ohio  
See Advertisement on Page 182  
Burke Electric Co., 12th & Cranberry Sts., Erie, Pa.  
Fairchild Camera & Instrument Corp., 88-06 Van Wyck Blvd., Jamaica 1, N. Y.  
Favorite Mfg. Co., 105 E. 12th St., New York 3, N. Y.  
Garrard Sales Corp., 401 Broadway, New York 13, N. Y.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
General Industries Co., Taylor & Olive Sts., Elyria, Ohio  
Magnetic Products Corp., Norwalk, Conn.  
Rek-O-Kut Co., 146 Grand St., New York 13, N. Y.  
See Advertisement on Page 245  
Spirling Products Co., 60-62-64 Grand St., New York 13, N. Y.  
Webster-Chicago Corp., Electronics Div., 3825 Armitage Ave., Chicago 47, Ill.  
Wincharger Corp., 7th & Division Sts., Sioux City, Iowa

## MOTORS—Remote Control

Barber Colman Co., River & Loomis Sts., Rockford, Ill.

Brown Instrument Co., 4428 Wayne Ave., Philadelphia 44, Pa.  
 Eclipse Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.  
 Eicor, Inc., 1501 W. Congress St., Chicago 7, Ill.  
 See Advertisement on Page 210  
 Electric Indicator Co., 21 Parker Ave., Stamford, Conn.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Kollsman Instrument Div. of Square D Co., 80-08 45th Ave., Elmhurst, N. Y.  
 See Advertisement on Page 46  
 Magnetic Products Corp., The, Norwalk, Conn.  
 Minneapolis-Honeywell Regulator Co., 2753 Fourth St., Minneapolis, Minn.  
 Oster Mfg. Co., John, Racine, Wisc.

## MOTORS—Servo

Controls Labs. Inc., 98 Union St., Worcester 8, Mass.  
 Cyclohm Motor Corp., 5-17 46 Rd., L. I. City 1, N. Y.  
 See Advertisement on Page 252  
 Diehl Manufacturing Co., 1129 FINDERNE Ave., Somerville, N. J.  
 Eastern Air Devices Inc., 585 Dean St., Brooklyn 17, N. Y.  
 See Advertisement on Page 172  
 Eclipse Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.  
 Electric Indicator Co., 21 Parker Ave., Stamford, Conn.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Kollsman Instrument Div. of Square D Co., 80-08 45th Ave., Elmhurst, N. Y.  
 See Advertisement on Page 46  
 Magnetic Products Corp., The, Norwalk, Conn.  
 Oster Mfg. Co., John, Racine, Wisc.  
 Powell & Co., Inc., R. C., 57 William St., New York, N. Y.

## MOTORS—Synchronous

Anglo Corp., 4234 Lincoln Ave., Chicago 18, Ill.  
 Arnessen Electric Co., Inc., 116 Broad St., New York 4, N. Y.  
 Barber Colman Co., River & Loomis Sts., Rockford, Ill.  
 Bodine Electric Co., Ohio St. & Oakley Blvd., Chicago, Ill.  
 Burke Electric Co., 12th & Cranberry Sts., Erie, Pa.  
 Century Electric Co., 1806 Pine St., St. Louis 3, Mo.  
 Clarostat Mfg. Co. Inc., 285-7 6th St., Brooklyn, N. Y.  
 Columbia Electric Mfg. Co., 4519 Hamilton Ave., N.E., Cleveland 14, Ohio  
 Continental Electric Co., Inc., 323-327 Ferry St., Newark, N. J.  
 Cramer Co., R. W., Centerbrook, Conn.  
 See Advertisement on Page 233  
 Cyclohm Motor Corp., 5-17 46 Rd., Long Island City 1, N. Y.  
 See Advertisement on Page 252  
 Eastern Air Devices Inc., 385 Dean St., Brooklyn 17, N. Y.  
 See Advertisement on Page 172  
 Eicor, Inc., 1501 W. Congress St., Chicago 7, Ill.  
 See Advertisement on Page 210  
 Electric Indicator Co., 21 Parker Ave., Stamford, Conn.  
 Electric Machinery Mfg. Co., 1331 NE Tyler St., Minneapolis 13, Minn.  
 Electric Products Co., 1725 Clarkstone Rd., Cleveland 12, Ohio  
 Electric Specialty Co., 211 South St., Stamford, Conn.  
 Fairchild Camera & Instrument Corp., 88-06 Van Wyck Blvd., Jamaica 1, N. Y.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Gorrell & Gorrell, Haworth, N. J.  
 Haydon Mfg. Co. Inc., Forestville, Conn.  
 Kollsman Instrument Div. of Square D Co., 80-08 45th Ave., Elmhurst, N. Y.  
 See Advertisement on Page 46  
 Kurman Electronics Corp., 35-18 37th St., Long Island City 1, N. Y.  
 Leich Electric Co., 565 W. Washington Blvd., Chicago 6, Ill.  
 Magnetic Products Corp., The, Norwalk, Conn.  
 Reynolds Electric Co., 2560 W. Congress St., Chicago 12, Ill.  
 Star Electric Motor Co., 200 Bloomfield Ave., Bloomfield, N. J.  
 Synchronous Products, Inc., 4513 Brooklyn Ave., Cleveland 9, Ohio  
 Times Facsimile Corp., 229 W. 43rd St., New York, N. Y.

Westinghouse Electric Corp., Motor Div., Buffalo, N. Y.

## MOTORS—Timing

Alliance Mfg. Co., Lake Park Blvd., Alliance, Ohio  
 See Advertisement on Page 182  
 Bodine Electric Co., Ohio St. & Oakley Blvd., Chicago, Ill.  
 Clarostat Mfg. Co. Inc., 285-7 6th St., Brooklyn, N. Y.  
 Cramer Co., R. W., Centerbrook, Conn.  
 See Advertisement on Page 233  
 Delco Appliance Div., General Motors Corp., 391 Lyell Ave., Rochester, N. Y.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Haydon Co., A. W., The, Waterbury 32, Conn.  
 Haydon Mfg. Co., Inc., Forestville, Conn.  
 Kurman Electronics Corp., 35-18 37th St., Long Island City 1, N. Y.  
 Magnetic Products Corp., The, Norwalk, Conn.  
 Russell Electric Co., Affiliated with Raytheon Mfg. Co., 340 W. Huron St., Chicago 10, Ill.  
 Synchronous Products, Inc., 4513 Brooklyn Ave., Cleveland 9, Ohio

## MOUNTINGS—Meter Back

Littelfuse Inc., 4757 Ravenswood Ave., Chicago 40, Ill.  
 See Advertisement on Page 43

## MOUNTINGS—Vibration and Shock

A B C Products, Inc., 2131-35 Stoner Ave., W. Los Angeles 25, Calif.  
 Barry Co., L. N., 178 Sidney St., Cambridge, Mass.  
 General Tire & Rubber Co., Silentbloc Div., Wabash, Ind.  
 Gordon Specialties Co., 823 S. Wabash Ave., Chicago 5, Ill.  
 Hamilton Kent Mfg. Co. Inc., Kent, Ohio  
 Lord Mfg. Co., 1635 W. 12th St., Erie, Pa.  
 See Advertisement on Page 19  
 Lorentzen, H. K., Inc., 391 W. Broadway, New York 12, N. Y.  
 Robinson Aviation Inc., Teterboro Air Terminal, Teterboro, N. J.  
 Ucinite Co., Div. United-Carr Fastener Corp., 459 Watertown St., Newtonville, Mass.  
 U. S. Rubber Co., 1230 Sixth Ave., New York 20, N. Y.  
 Vendo Co., 1907 Grand Ave., Kansas City 3, Mo.

## MOUNTS—Antenna

Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Lavoie Labs., Morganville, N. J.  
 Premax Products Div., Chisholm-Ryder Co., Inc., Niagara Falls 2, N. Y.  
 See Advertisement on Page 90  
 Shur-Antenna-Mount, Inc., Sealcliff, N. Y.

## MOUNTS—Thermistor

Barber Colman Co., River & Loomis Sts., Rockford, Ill.  
 Cover Dual Signal Systems, Inc., Div. of Electra Voice Corp., 5215-25 Ravenswood Ave., Chicago 40, Ill.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B

## MULTIPLIERS—Meter

Ballantine Labs., Inc., Boonton, N. J.  
 See Advertisement on Page 42  
 Cinema Engineering Co., 1503 W. Verdugo Ave., Burbank, Calif.  
 Daven Co., 191 Central Ave., Newark 4, N. J.  
 Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska  
 General Electronics, Inc., 101 Hazel St., Paterson, N. J.

Instrument Resistors Co., 1036 Commerce Ave., Union, N. J.

See Advertisement on Page 39  
 Madison Electrical Products Div., John G. Ruckelshaus Co., 74 Main St., Madison, N. J.  
 Marion Electrical Instrument Co., Manchester, N. H.  
 Measurement Engineering Ltd., 61 Duke St., Toronto, Can.  
 See Advertisement on Page 193  
 Nilsson Electrical Lab., Inc., 103 Lafayette St., New York 13, N. Y.  
 Scientific Service Lab., Subsidiary Electronics, Inc., 915 Meridian Ave., South Pasadena, Calif.  
 Shallcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.  
 Tech Labs., 337 Central Ave., Jersey City, N. J.  
 Westinghouse Electric Corp., Meter Div., Newark, N. J.  
 Weston Electrical Instrument Corp., 618 Frelinghuysen Ave., Newark 5, N. J.

## MULTITESTERS

Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska  
 Electronic Measurements Co., Red Bank, N. J.  
 See Advertisement on Page 68  
 Gem Radio & Television Co., 72 Cortlandt St., New York 6, N. Y.  
 McMurdo Silver Co., Inc., 1249 Main St., Hartford 3, Conn.  
 Measurement Engineering Ltd., 61 Duke St., Toronto, Can.  
 See Advertisement on Page 193  
 Meters, Inc., 915 Riveria Dr., Indianapolis 5, Ind.  
 Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
 Precision Apparatus Co., 92-97 Horace Harding Blvd., Elmhurst, N. Y.  
 RMS Electronics, Inc., 73-39 68th Ave., Middle Village, N. Y.  
 Radio Design Co., 1353 Sterling Pl., Brooklyn, N. Y.  
 Reiner Electronics Co., 152 W. 25th St., New York, N. Y.  
 Robson-Burges Co., 5002 N. 30th St., Omaha 11, Nebraska  
 Star Measurements Co., 442 East 166th St., New York 56, N. Y.  
 Superior Instruments Co., 227 Fulton St., New York 7, N. Y.  
 Supreme Instruments Corp., Greenwood, Miss.  
 Universal Instrument Co., 306 E. McMillan St., Cincinnati 19, Ohio  
 Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.

## MULTIVIBRATORS

Atomic Instrument Co., 160 Charles St., Boston, Mass.  
 Electronic Engineers, 1039-B Pacific St., Santa Monica, Calif.  
 Electronic Measurements Co., Red Bank, N. J.  
 See Advertisement on Page 68  
 General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
 Gibbs Div., George W. Borg Corp., 814 Michigan St., Delavan, Wisc.  
 See Advertisement on Page 250  
 Measurement Engineering Ltd., 61 Duke St., Toronto, Canada  
 See Advertisement on Page 193  
 Monitor Products Co., 815 Fremont St., So. Pasadena, Calif.  
 Radar Engineers, 4004 Arcade Bldg., Seattle 1, Wash.

## MUSIC SYSTEMS—Industrial and Commercial

Amplifier Corp. of America, 396 Broadway, New York 13, N. Y.  
 Collins Audio Products Co., 126 Park St., Westfield, N. J.  
 See Advertisement on Page 253  
 Communicating Systems, Inc., 203 E. 18th St., New York 3, N. Y.  
 Dayton Acme Co., 930 York St., Cincinnati 14, Ohio  
 Electronic Measurements Co., Red Bank, N. J.  
 See Advertisement on Page 68  
 Electronic Sound Engineering Co., 4344-46 W. Armitage Ave., Chicago 39, Ill.  
 Executone, Inc., 415 Lexington Ave., New York 17, N. Y.

General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
 Hallicrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Hose-McCann Telephone Co., 177 Pacific St., Brooklyn 2, N. Y.  
 Magnavox Co., The, Fort Wayne 4, Ind.  
 Newcomb Audio Products Co., 6824 Lexington Ave., Hollywood 38, Calif.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
**See Advertisements on Inside Back Cover & Back Cover, 251**  
 Radio Engineering Products, Div. of Raymond Rosen & Co., Philadelphia 4, Pa.  
 Rowe Industries, 3120 Monroe St., Toledo 6, Ohio  
 Stark Sound Engineering Co., P. O. Box 493, Fort Wayne 1, Ind.  
 Stromberg-Carlson Co., Rochester, N. Y.  
 Webster Electric Co., 1900 Clark St., Racine, Wisc.  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
**See Advertisements on Pages 88, 89**

**NAME PLATES**

See Plates, Name

**NEEDLES—Cutting**

Acton Co., H. W., 370 7th Ave., New York, N. Y.  
**Audio Devices Inc., 444 Madison Ave., New York 22, N. Y.**  
**See Advertisement on Page 91**  
 Duotone Co., 799 Broadway, New York, N. Y.  
 Eldeen Co., The, 610-616 W. National Ave., Milwaukee 4, Wisc.  
 Electrovox Co., Inc., 31 Fulton St., Newark 2, N. J.  
**See Advertisement on Page 55**  
 Favorite Mfg. Co., 105 E. 12th St., New York 3, N. Y.  
 Gatti, Inc., Aurele M., 1909 Liberty St., Trenton, N. J.  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
**See Advertisement on Page 90**  
 International Merit Products Corp., 254 W. 54th St., New York 19, N. Y.  
 J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkway., Brooklyn, N. Y.  
**Miles Reproducer Co., Inc., 812 Broadway, New York 3, N. Y.**  
**See Advertisement on Page 256**  
 Miller Mfg. Co., M. A., 1169 E. 43rd St., Chicago 15, Ill.  
 Mirror Record Corp., 1133 Broadway, New York 10, N. Y.  
 Permo Inc., 6415 Ravenswood Ave., Chicago, Ill.  
 Phonograph Needle Mfg. Co., 42 Dudley St., Providence 5, R. I.  
**Presto Recording Corp., 242 West 55th Street, New York 19, N. Y.**  
**See Advertisements on Pages 50, 51**  
 Radio Corp of America, RCA Victor Div., Camden, N. J.  
**See Advertisements on Inside Back Cover & Back Cover, 251**  
 Recotone Corp., 212 Fifth Ave., New York, N. Y.  
 Wilcox-Gay Corp., Charlotte, Mich.  
 Zephyr Products Corp., 160 E. 116th St., New York 29, N. Y.

**NEEDLES—Playback**

Acton Co., H. W., 370 7th Ave., New York, N. Y.  
 Aero Needle Co., 619 N. Michigan Ave., Chicago 11, Ill.  
**Audio Devices Inc., 444 Madison Ave., New York 22, N. Y.**  
**See Advertisement on Page 91**  
 Clarkstan Corp., 11927 W. Pico Blvd., Los Angeles 34, Calif.  
 Decca Records, Inc., 50 W. 57th St., New York 19, N. Y.  
 Duotone Co., 799 Broadway, New York, N. Y.  
 Eldeen Co., The, 610-616 W. National Ave., Milwaukee 4, Wisc.  
 Electrovox Co., Inc., 31 Fulton Street, Newark 2, N. J.  
**See Advertisement on Page 55**  
 Favorite Mfg. Co., 105 E. 12th St., New York 3, N. Y.  
 Gatti, Inc., Aurele M., 1909 Liberty St., Trenton, N. J.  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
**See Advertisement on Page 90**

Gould Moody Co., 395 Broadway, New York, N. Y.  
**See Advertisement on Page 165**  
 International Merit Products Corp., 254 W. 54th St., New York 19, N. Y.  
 J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkway., Brooklyn, N. Y.  
 Jensen Industries Inc., 329 S. Wood St., Chicago, Ill.  
**Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.**  
**See Advertisements on Pages 257 to 260**  
**Miles Reproducer Co., Inc., 812 Broadway, New York 3, N. Y.**  
**See Advertisement on Page 256**  
 Miller Mfg. Co., M. A., 1169 E. 43rd St., Chicago 15, Ill.  
 Mirror Record Corp., 1133 Broadway, New York 10, N. Y.  
 Monitor Products Co., 815 Fremont St., So. Pasadena, Calif.  
 Permo Inc., 6415 Ravenswood Ave., Chicago, Ill.  
 Pfanstiehl Chemical Co., 104 Lake View Ave., Waukegan, Ill.  
 Phonograph Needle Mfg. Co., 42 Dudley St., Providence 5, R. I.  
**Presto Recording Corp., 242 West 55th Street, New York 19, N. Y.**  
**See Advertisements on Pages 50, 51**  
 Recotone Corp., 212 Fifth Ave., New York, N. Y.  
 Stark Sound Engineering Co., P. O. Box 493, Fort Wayne 1, Ind.  
 Webster-Chicago Corp., 5622 Bloomingdale Ave., Chicago 39, Ill.  
 Wilcox-Gay Corp., Charlotte, Mich.  
 Zephyr Products Corp., 160 E. 116th St., New York 29, N. Y.

**NETWORKS—Directional Antenna Phasing**

Acme Fire Alarm Co., Inc., 106 Seventh Ave., New York 11, N. Y.  
 American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
 Andrew Co., 363 E. 75th St., Chicago 19, Ill.  
 Johnson Co., E. F., Waseca, Minn.  
 Westinghouse Electric Corp., Industrial Electronics Div., Baltimore, Md.

**NETWORKS—Matching**

Aero Communications, Inc., 231 Main Street, Hempstead, N. Y.  
 Altec Lansing Corp., 1161 N. Vine St., Hollywood 38, Calif.  
 Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.  
**Burnell & Co., 45 Warburton Ave., Yonkers 2, N. Y.**  
**See Advertisement on Page 192**  
 Clarke Instrument Corp., 910 King St., Silver Spring, Md.  
 Daven Co., 191 Central Ave., Newark 4, N. J.  
 Erco Radio Labs. Inc., Fenimore Ave., Hempstead, N. Y.  
 Stephens Mfg. Co., 10416 National Blvd., Los Angeles 34, Calif.  
 Tech Labs., 337 Central Ave., Jersey City, N. J.  
 Westinghouse Electric Corp., Industrial Electronics Div., Baltimore, Md.

**NUTS**

Allmetal Screw Products Co., 80 Grand St., New York 13, N. Y.  
 American Screw Co., Providence, R. I.  
 Automatic Metal Products Co., 315 Berry St., Brooklyn 1, N. Y.  
 Autoscrew Co., 216-222 W. 18th St., New York, N. Y.  
 Birnbach Radio Co. Inc., 145 Hudson St., New York, N. Y.  
 Central Screw Co., 3511 Shields Ave., Chicago 9, Ill.  
 Chase Brass & Copper Co., Inc., Waterbury 91, Conn.  
 Continental Screw Co., New Bedford, Mass.  
 Cook Electric Co., 2700 Southport Ave., Chicago, Ill.  
 Corbin Screw Div., American Hardware Corp., High, Myrtle & Grove Sts., New Britain, Conn.  
 Federal Screw Products Co., 224 W. Huron St., Chicago 10, Ill.  
 Garrett Co., Inc., George K, 1421 Chestnut St., Philadelphia 2, Pa.  
**General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.**  
**See Advertisement on Page 90**  
 Harper Co., H. M., 2620 Fletcher St., Chicago 18, Ill.

Insuline Corp. of America 36-02 35th Ave., Long Island City, N. Y.  
**See Advertisement on Page 166**  
 International Merit Products Corp., 254 W. 54th St., New York 19, N. Y.  
 Lamson & Sessions Co., 1971 W. 85th St., Cleveland, Ohio  
 Manufacturers Screw Products, 270 W. Hubbard St., Chicago, Ill.  
 National Screw & Mfg. Co., The, Cleveland 4, Ohio  
 New England Screw Co., Keene, New Hampshire  
 Palnut Co. Inc., 39 Cordier St., Irvington 11, N. J.  
 Parker-Kalon Corp., 200 Varick St., New York 14, N. Y.  
 Pheoil Mfg. Co., 5700 Roosevelt Rd., Chicago 50, Ill.  
 Progressive Mfg. Co., 52 Norwood St., Torrington, Conn.  
 Pure Carbon Co., St. Marys, Pa.  
 Rattan Mfg. Co., The, P. O. Box 1745, New Haven 7, Conn.  
 Republic Steel Corp., Republic Bldg., Cleveland 1, Ohio  
 Russell, Burdall & Ward Bolt & Nut Co., Midland Ave., Port Chester, N. Y.  
 St. Louis Screw & Bolt Co., 6900 Broadway, St. Louis 15, Mo.  
 Schott Co., Walter L., 9306 Santa Monica Blvd., Beverly Hills, Calif.  
 Standard Locknut & Lockwasher Inc., 33-35 W. St. Clair St., Indianapolis, Ind.  
 Sterling Bolt Co., 209 W. Jackson Blvd., Chicago 6, Ill.  
 Stronghold Screw Products, 216 West Hubbard St., Chicago 10, Ill.  
 United Screw & Bolt Corp., 2513 W. Cullerton St., Chicago, Ill.  
 Westfield Metal Products Co. Inc., Westfield, Mass.

**NUTS—Self-Locking**

Boots Aircraft Nut Corp., New Canaan, Conn.  
 Columbia Nut & Bolt Co., 945 M Main St., Bridgeport, Conn.  
 Elastic Stop Nut Corp. of America, 2330 Vauxhall Road, Union, N. J.  
**General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.**  
**See Advertisement on Page 90**  
 Laminated Shim Co., Inc., 56 Union St., Glenbrook, Conn.  
 National Screw & Mfg. Co., The, Cleveland 4, Ohio  
 New England Screw Co., Keene, New Hampshire  
 Palnut Co. Inc., 39 Cordier St., Irvington 11, N. J.  
 Penn Engineering & Mfg. Corp., Box 311, Doylestown, Pa.  
 Prestole Corp., 3150 Bellevue Rd., Toledo 6, Ohio  
**Standard Pressed Steel Co., Jenkintown, Pa.**  
**See Advertisement on Page 204**  
 Sterling Bolt Co., 209 W. Jackson Blvd., Chicago 6, Ill.  
 Stover Lock Nut & Machinery Corp., 101 Park Avenue, New York 17, N. Y.  
 Stronghold Screw Products, 216 West Hubbard St., Chicago 10, Ill.  
 Tinnerman Products Inc., 2106 Fulton Rd., Cleveland 13, Ohio

**NUTS—Self-Sealing**

Elastic Stop Nut Corp. of America, 2330 Vauxhall Rd., Union, N. J.  
**General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.**  
**See Advertisement on Page 90**  
 Laminated Shim Co., Inc., 56 Union St., Glenbrook, Conn.  
 Radio Frequency Labs., Inc., Boonton, N. J.

**OHMMETERS**

Assembly Products, Inc., Chagrin Falls, Ohio  
 Biddle Co., James G., 1316 Arch St., Philadelphia 7, Pa.  
 Bristol Co., The, Waterbury 91, Conn.  
 Cinema Engineering Co., 1508 W. Verdugo Ave., Burbank, Calif.  
 Clippard Instrument Lab., 1440 Chase Ave., Cincinnati 23, Ohio  
 Dayton Acme Co., 930 York St., Cincinnati 14, Ohio  
 Development Engineering Co., Inc., The, 1818 Ashland St., Houston 8, Texas  
 Eastern Electronics Corp., 41 Chestnut St., New Haven, Conn.

Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska  
 Leeds & Northrup Co., 4970 Stenton Ave., Philadelphia, Pa.  
 Lyman Electronic Corp., 12 Cass St., Springfield, Mass.  
 MB Instruments, Inc., 1060 State St., New Haven 11, Conn.  
 McMurdo Silver Co., Inc., 1249 Main St., Hartford 3, Conn.  
 Marion Electrical Instrument Co., Manchester, N. H.  
 Martindale Electric Co., Box 617, Edgewater Branch, Cleveland 7, Ohio  
 Measurement Engineering Ltd., 61 Duke St., Toronto, Can.  
**See Advertisement on Page 193**  
 Meters, Inc., 915 Riveria Dr., Indianapolis 5, Ind.  
 Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
 Nilsson Electrical Lab., Inc., 103 Lafayette St., New York 13, N. Y.  
 Precision Apparatus Co., 92-27 Horace Harding Blvd., Elmhurst, N. Y.  
 Precision Resistor Co., 334 Badger Ave., Newark 8, N. J.  
 RMS Electronics, Inc., 73-39 65th Ave., Middle Village, N. Y.  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 Radio Design Co., 1353 Sterling Pl., Brooklyn, N. Y.  
 Roller-Smith, Bethlehem, Pa.  
**See Advertisement on Page 214**  
 Rowe Radio Research Lab., 2422 N. Pulaski Rd., Chicago 39, Ill.  
 Shallcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.  
 Sidward Products Co., 261 Broadway, New York, N. Y.  
 Simpson Electric Co., 5218 W. Kinzie St., Chicago 44, Ill.  
 Star Measurements Co., 442 East 166th St., New York 56, N. Y.  
 Sterling Mfg. Co., 9205 Detroit Ave., Cleveland 2, Ohio  
 Sticht Co., Inc., Herman H., 27 Park Place, New York 7, N. Y.  
 Superior Instruments Co., 227 Fulton St., New York 7, N. Y.  
 Supreme Instruments Corp., Greenwood, Miss.  
 Technical Apparatus Co., 167 Washington St., Boston 8, Mass.  
 Welch Scientific Co., 1515 Sedgwick St., Chicago 10, Ill.  
 Westinghouse Electric Corp., Meter Div., Newark, N. J.  
 Weston Electrical Instrument Corp., 618 Frelinghuysen Ave., Newark 5, N. J.  
 Winslow Co., The, 9 Liberty St., Newark 5, N. J.

## OPTICAL EQUIPMENT AND OPTICAL SPECIALTIES

American Lens Co., Inc., 45 Lispenard St., New York 13, N. Y.  
 American Optical Co., Scientific Instrument Div., Buffalo 11, N. Y.  
 Argus, Inc., Ann Arbor, Mich.  
 Art Wire & Stamping Co., 227 High St., Newark 2, N. J.  
 Bache & Co., Semon, 636 Greenwich St., New York 14, N. Y.  
 Buhl Optical Co., 1009 Beech Ave., Pittsburgh 12, Pa.  
 Eastman Kodak Co., Industrial Photographic Sales Div., 343 State St., Rochester 4, N. Y.  
 Eclipse Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.  
 Farrand Optical Co., Inc., Bronx Blvd. at 238th St., New York 66, N. Y.  
 Fish-Schurman Corp., 230 East 45th St., New York 17, N. Y.  
 Gaertner Scientific Corp., 1201 Wrightwood Ave., Chicago 14, Ill.  
 Gardner Lab., Inc., Henry A., 4723 Elm St., Bethesda 14, Md.  
 General Scientific Corp., 4829 S. Kedzie Ave., Chicago, Ill.  
 Geophysical Instrument Co., Key Blvd. & Nash St., Arlington, Va.  
 Jarrell-Ash Co., 165 Newberry St., Boston 16, Mass.  
 Pancor Mirrors Inc., 2958 Los Feliz Blvd., Los Angeles, Calif.  
 Perkin Elmer Corp., Glenbrook, Conn.  
 Process & Instruments, 60 Greenpoint Ave., Brooklyn 22, N. Y.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
**See Advertisements on Inside Back Cover & Back Cover, 251**  
 Times Facsimile Corp., 229 W. 43rd St., New York, N. Y.  
 Valpey Crystals, Highland St., Holliston, Mass.  
 Viewlex Inc., Div. of Andrews & Perillo, 39-30 Crescent St., Long Island City, N. Y.

Zenith Optical Co., Div. Polan Industries, Huntington, West Virginia

## OSCILLATORS—Audio Fork Controlled

Alden Products Co., 117 No. Main St., Brockton 64, Mass.  
 American Instrument Co., 8030 Georgia Ave., Silver Springs, Md.  
 American Time Products, Inc., 580 Fifth Ave., New York 19, N. Y.  
**See Advertisement on Page 168**  
 Brown Engineering Co., 4635 S. E. Hawthorne Blvd., Portland 15, Oregon  
 General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
 Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.  
 Measurement Engineering Ltd., 61 Duke St., Toronto, Can.  
**See Advertisement on Page 193**  
 Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
 Pickering and Co., Audio Laboratories, Oceanside, New York  
 Times Facsimile Corp., 229 W. 43rd St., New York, N. Y.

## OSCILLATORS—Audio Frequency

Aermotive Equipment Corp., 1632-8 Central St., Kansas City 10, Mo.  
 American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
 Amplifier Corp. of America, 396 Broadway, New York, N. Y.  
 Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.  
 Boonton Radio Corp., Boonton, N. J.  
**See Advertisement on Page 205**  
 Brown Engineering Co., 4635 S. E. Hawthorne Blvd., Portland 15, Oregon  
 Central Scientific Co., 1700 Irving Park Blvd., Chicago 13, Ill.  
 Clough Brengle Co., 6014 N. Broadway, Chicago, Ill.  
 Collins Radio Co., Cedar Rapids, Iowa  
**See Advertisements on Pages 30 to 33**  
 Development Engineering Co., Inc., The, 1818 Ashland St., Houston 8, Texas  
 Electrodyne Co., The, 899 Boylston St., Boston 15, Mass.  
 Electronic Apparatus, Inc., 347 Madison Ave., New York 17, N. Y.  
 Electronic Development Lab., 2655 W. 19th St., Chicago 8, Ill.  
 Electronic Measurements Co., Red Bank, N. J.  
**See Advertisement on Page 68**  
 Espey Mfg. Co., Inc., 33 West 46th St., New York, N. Y.  
 Espy Radio & Electronic Corp., 1218 Lincoln Ave., Santa Monica, Calif.  
**See Advertisement on Page 156**  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
**See Advertisements on Pages 48A to 48D**  
 Freed Transformer Co., 72 Spring St., New York 12, N. Y.  
**See Advertisement on Page 253**  
 General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
 General Electric Co., Syracuse, N. Y.  
**See Advertisements on Pages 96, 96A**  
 General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
 Herbach & Rademan, Inc., 517 Ludlow St., Philadelphia 6, Pa.  
 Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.  
**See Advertisements on Pages 94, 95**  
 Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland, Ohio  
 Jackson Electrical Instrument Co., 16 S. Patterson Blvd., Dayton 1, Ohio  
 MacLeod & Hanopol, 24 Chelsea St., Charlestown 29, Mass.  
 Maico Co., Inc., 25 North 3rd St., Minneapolis 1, Minn.  
 Measurement Engineering Ltd., 61 Duke St., Toronto, Can.  
**See Advertisement on Page 193**  
 Metropolitan Electronic & Instrument Co., 6 Murray St., New York 6, N. Y.  
 Pickering and Co., Audio Laboratories, Oceanside, New York  
 Radio City Products, 127 W. 26th St., New York, N. Y.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
**See Advertisements on Inside Back Cover & Back Cover, 251**  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 Reiner Electronics Co., 152 W. 25th St., New York, N. Y.  
 Rowe Radio Research Laboratory, 2422 N. Pulaski Rd., Chicago 39, Ill.

Televiso Products Inc., 7466 West Irving Park Road, Chicago 34, Ill.  
 United Transformer Corp., 150 Varick St., New York 13, N. Y.  
**See Advertisement on Inside Front Cover**  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
**See Advertisements on Pages 88, 89**

## OSCILLATORS—Cavity

Aircraft Radio Corp., Boonton, N. J.  
**See Advertisement on Page 185**  
 DeciMeter, 742 W. Colfax Ave., Denver 4, Colorado  
 Diamond Instrument Co., North Ave., Wakefield, Mass.  
 Electronic Measurements Co., Red Bank, N. J.  
**See Advertisement on Page 68**  
 General Electric Co., Syracuse, N. Y.  
**See Advertisements on Pages 96, 96A**  
 Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
 Rice's Sons Inc., Bernard, 325 Fifth Ave., New York 16, N. Y.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
**See Advertisements on Pages 80A, 80B**  
 Televiso Products Inc., 7466 West Irving Park Road, Chicago 34, Ill.

## OSCILLATORS—Crystal

Biley Electric Co., Union Station Bldg., Erie, Pa.  
**See Advertisement on Page 67**  
 Burnett Radio Lab., Wm. W. L., 4814 Idaho St., San Diego, Calif.  
 Electronic Measurements Co., Red Bank, N. J.  
**See Advertisement on Page 68**  
 Federal Engineering Co., 37 Murray St., New York 7, N. Y.  
 General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
 Gibbs Div., George W. Borg Corp., Delavan, Wis.  
**See Advertisement on Page 250**  
 Hunt Corp., The, 544 Hanover St., Carlisle, Pa.  
**See Advertisement on Page 155**  
 Measurement Engineering Ltd., 61 Duke St., Toronto, Can.  
**See Advertisement on Page 193**  
 Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
 Norman Labs., Ernst, Williams Bay, Wisc.  
 Omicron Electric Co., 718 Columbus Ave., New York 25, N. Y.  
 Radio Specialty Mfg. Co., 2023 S. E. Sixth Ave., Portland 14, Ore.  
 Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.  
 Standard Piezo Co., Woolworth Bldg., Carlisle, Pa.  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
**See Advertisements on Pages 88, 89**

## OSCILLATORS—Microwave Power

Aircraft Radio Corp., Boonton, N. J.  
**See Advertisement on Page 185**  
 DeciMeter, 742 W. Colfax Ave., Denver 4, Colorado  
 Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
 Polaroid Electronics Co., 135 Liberty St., New York 6, N. Y.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
**See Advertisements on Pages 80A, 80B**  
 Televiso Products Inc., 7466 West Irving Park Road, Chicago 34, Ill.  
 Weymouth Instrument Co., 1440 Commercial St., East Weymouth, Mass.

## OSCILLATORS—Oven Crystal Control

Biley Electric Co., Union Station Bldg., Erie, Pa.  
**See Advertisement on Page 67**  
 Burnett Radio Lab., Wm. W. L., 4814 Idaho St., San Diego, Calif.  
 Measurement Engineering Ltd., 61 Duke St., Toronto, Can.  
**See Advertisement on Page 193**  
 Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
 Monroe Coil Co., 2659 W. 19th St., Chicago, Ill.

Norman Labs., Ernst, Williams Bay, Wisc.  
Precision Piezo Service, 427 Mayflower St.,  
Baton Rouge, La.  
Precision Scientific Co., 1750 N. Springfield  
Ave., Chicago 47, Ill.  
Valpey Crystals, Highland St., Holliston,  
Mass.  
Western Electric Co., Inc., 195 Broadway,  
New York 7, N. Y.  
See Advertisement on Page 88, 89

**OSCILLATORS—Radio Frequency**

Barker & Williamson, 235 Fairfield Ave.,  
Upper Darby, Pa.  
Brown Engineering Co., 4635 S. E. Haw-  
thorne Blvd., Portland 15, Oregon  
Burnett Radio Lab., Wm. W. L., 4814 Idaho  
St., San Diego, Calif.  
Cardwell Mfg. Corp., Allen D., 97 Whiting  
St., Plainville, Conn.  
Clarke Instrument Corp., 910 King St.,  
Silver Spring, Md.  
Collins Radio Co., Cedar Rapids, Iowa  
See Advertisements on Pages 30 to 33  
D. & M. Mfg. Co., 2 Delford Ave., Bergen-  
field, N. J.  
Decimeter, 742 W. Colfax Ave., Denver 4,  
Colorado  
Electronic Apparatus, Inc., 347 Madison  
Ave., New York 17, N. Y.  
Electronic Development Lab., 2655 W. 19th  
St., Chicago 8, Ill.  
Electronic Measurements Co., Red Bank,  
N. J.  
See Advertisement on Page 68  
Feiler Engineering Co., 803 Milwaukee Ave.,  
Chicago 22, Ill.  
General Communication Co., 530 Common-  
wealth Ave., Boston 15, Mass.  
General Radio Co., 275 Massachusetts Ave.,  
Cambridge 39, Mass.  
Hallcrafters Co., 4401 W. Fifth Ave.,  
Chicago 24, Ill.  
Hazeltine Electronics Corp., 1775 Broadway,  
New York, N. Y.  
Hickok Electrical Instrument Co., 10514  
Dupont Ave., Cleveland, Ohio  
Jackson Electrical Instrument Co., 16 S.  
Patterson Blvd., Dayton 1, Ohio  
McMurdo Silver Co., Inc., 1249 Main St.,  
Hartford 3, Conn.  
Measurement Engineering Ltd., 61 Duke St.,  
Toronto, Can.  
See Advertisement on Page 193  
Metropolitan Electronic & Instrument Co.,  
6 Murray St., New York 7, N. Y.  
Omicron Electric Co., 718 Columbus Ave.,  
New York 25, N. Y.  
Precision Apparatus Co., 92-27 Horace  
Harding Blvd., Elmhurst, N. Y.  
Press Wireless Mfg. Corp., 1475 Broadway,  
New York 18, N. Y.  
Radio Corp. of America, RCA Victor Div.,  
Camden, N. J.  
See Advertisements on Inside Back Cover &  
Back Cover, 251  
Radio Corp. of America, Tube Div., Harrison,  
N. J.  
Rollin Co., 2070 N. Fair Oaks Ave., Pasa-  
dena 3, Calif.  
Rowe Radio Research Lab., 2422 N. Pulaski  
Rd., Chicago 37, Ill.  
Simpson Electric Co., 5218 W. Kinzie St.,  
Chicago 44, Ill.  
Superior Instruments Co., 227 Fulton St.,  
New York 7, N. Y.  
Technical Apparatus Co., 167 Washington  
St., Boston 8, Mass.  
Waterman Products Co., Inc., 2445-63 Em-  
erald St., Philadelphia 25, Pa.  
See Advertisement on Page 76  
Western Electric Co., Inc., 195 Broadway,  
New York 7, N. Y.  
See Advertisements on Pages 88, 89

**OSCILLATORS—Ultrasonic**

Boonton Radio Corp., Boonton, N. J.  
See Advertisement on Page 205  
Electronic Apparatus, Inc., 347 Madison  
Ave., New York 17, N. Y.  
Electronic Measurements Co., Red Bank,  
N. J.  
See Advertisement on Page 68  
Freed Transformer Co., 72 Spring St., New  
York 12, N. Y.  
See Advertisement on Page 253  
Hewlett-Packard Co., 395 Page Mill Rd.,  
Palo Alto, Calif.  
See Advertisements on Pages 94, 95  
Measurement Engineering Ltd., 61 Duke  
St., Toronto, Can.  
See Advertisement on Page 193  
National-Simplex-Bludworth, Inc., Marine  
Div., 100 Gold St., New York 7, N. Y.  
Telesco Products Inc., 7466 West Irving  
Parkway, Chicago, Ill.

Wilson & Co., G. C., 2 N. Passaic Ave.,  
Chatham, N. J.

**OSCILLOGRAPHS—Direct Writing**

Brush Development Co., 3405 Perkins Ave.,  
Cleveland 14, Ohio  
Electro Medical Lab. Inc., Holliston, Mass.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Metropolitan Electronic & Instrument Co.,  
6 Murray St., New York 7, N. Y.  
Offner Electronics, Inc., 5320 N. Kedzie  
Avenue, Chicago 25, Ill.  
Rahm Instruments, Inc., 12 West Broadway,  
New York 7, N. Y.

**OSCILLOGRAPHS—Multi-Element**

Brush Development Co., The, 3405 Perkins  
Ave., Cleveland 14, Ohio  
Consolidated Engineering Corp., 595 E.  
Colorado St., Pasadena 1, Calif.  
Du Mont Labs., Inc., Allen B., 2 Main Ave.,  
Passaic, N. J.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Hathaway Instrument Co., 1315 S. Clarkson  
St., Denver 10, Colo.  
Heiland Research Corp., 130 E. 5th St.,  
Denver 9, Colo.  
Metropolitan Electronic & Instrument Co.,  
6 Murray St., New York 7, N. Y.  
Miller Corp., William, 362 W. Colorado St.,  
Pasadena, Calif.  
Westinghouse Electric Corp., Meter Div.,  
Newark, N. J.  
Westinghouse Electric Corp., Switchgear &  
Control Div., East Pittsburgh, Pa.

**OSCILLOGRAPHS—Recording**

Brush Development Co., 3405 Perkins Ave.,  
Cleveland 14, Ohio  
Consolidated Engineering Corp., 595 E.  
Colorado St., Pasadena 1, Calif.  
Du Mont Labs., Inc., Allen B., 2 Main Ave.,  
Passaic, N. J.  
Electrodyn Co., The, 899 Boylston St.,  
Boston 15, Mass.  
Electro Products Labs., 549 W. Randolph  
St., Chicago 6, Ill.  
Engineering Lab., Inc., 602 E. 4th St.,  
Tulsa 3, Okla.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Hathaway Instrument Co., 1315 S. Clark-  
son St., Denver 10, Colo.  
Heiland Research Corp., 130 E. 5th St.,  
Denver 9, Colo.  
Miller Corp., William, 362 W. Colorado St.,  
Pasadena, Calif.  
Raytron, Inc., 407 N. Jackson St., Jackson,  
Mich.  
Triumph Mfg. Co., 913 W. Van Buren St.,  
Chicago 7, Ill.  
Westinghouse Electric Corp., Meter Div.,  
Newark, N. J.  
Westinghouse Electric Corp., Switchgear &  
Control Div., East Pittsburgh, Pa.

**OSCILLOGRAPHS—Transient Study**

Atomic Instrument Co., 160 Charles St.,  
Boston, Mass.  
Brush Development Co., The, 3405 Perkins  
Ave., Cleveland 14, Ohio  
General Communication Co., 530 Common-  
wealth Ave., Boston 15, Mass.  
Hathaway Instrument Co., 1315 S. Clarkson  
St., Denver 10, Colo.  
Raytron, Inc., 407 N. Jackson St., Jackson,  
Mich.  
Westinghouse Electric Corp., Meter Div.,  
Newark, N. J.  
Westinghouse Electric Corp., Switchgear &  
Control Div., East Pittsburgh, Pa.

**OSCILLOMETERS**

Electro-Physical Labs., Div. of Electronic  
Corp. of America, 25 W. 18th Street,  
New York 11, N. Y.

**OSCILLOSCOPES—Cathode Ray**

Atomic Instrument Co., 160 Charles St.,  
Boston, Mass.

Browning Labs., Inc., 750 Main St., Win-  
chester, Mass.

See Advertisement on Page 65  
Central Scientific Co., 1700 Irving Park  
Blvd., Chicago 13, Ill.  
Clough Brengle Co., 6014 N. Broadway,  
Chicago, Ill.  
Commercial Research Labs., Inc., 20 Bart-  
lett Ave., Detroit 3, Mich.  
Diamond Instrument Co., North Ave., Wake-  
field, Mass.  
Du Mont Laboratories, Inc., Allen B., 2  
Main Ave., Passaic, N. J.  
Electronic Development Lab., 2655 W. 19th  
St., Chicago 8, Ill.  
Electronic Tube Corp., 1200 E. Mermaid  
Ave., Philadelphia 18, Pa.  
Furst Electronics, 800 W. North Ave., Chi-  
cago 22, Ill.

See Advertisement on Page 248  
General Communication Co., 530 Common-  
wealth Ave., Boston 15, Mass.

General Electric Co., Syracuse, N. Y.  
See Advertisements on Pages 96, 96A  
Hazeltine Electronics Corp., 1775 Broadway,  
New York, N. Y.

Hickok Electrical Instrument Co., 10514  
Dupont Ave., Cleveland, Ohio  
Industrial Electronics, Inc., 21 Henry St.,  
Detroit 1, Mich.

See Advertisement on Page 254  
Industrial Instruments Inc., 17 Pollack Ave.,  
Jersey City 5, N. J.

Instrument Electronics, 253-21 Northern  
Blvd., Little Neck, N. Y.

Jackson Electrical Instrument Co., 16 S.  
Patterson Blvd., Dayton 1, Ohio

Lear, Inc., 110 Ionia Ave., N. W., Grand  
Rapids 2, Mich.

Madison Electrical Products Div., John G.  
Ruckelshaus Co., 74 Main St., Madison,  
N. J.

Measurement Engineering Ltd., 61 Duke St.,  
Toronto, Can.  
See Advertisement on Page 193

Metropolitan Electronic & Instrument Co.,  
6 Murray St., New York 7, N. Y.

Millen Mfg. Co., James, 150 Exchange St.,  
Malden, Mass.  
See Advertisement on Page 44

National Co., 61 Sherman St., Malden 48,  
Mass.  
See Advertisement on Page 78

Precision Apparatus Co., 92-27 Horace  
Harding Blvd., Elmhurst, N. Y.

Radio Corp. of America, RCA Victor Div.,  
Camden, N. J.  
See Advertisements on Inside Back Cover &  
Back Cover, 251

Radio Corp. of America, Tube Div., Har-  
rison, N. J.

Rahm Instruments, Inc., 12 West Broadway,  
New York 7, N. Y.

Raytron, Inc., 407 N. Jackson Street, Jack-  
son, Mich.

Reiner Electronics Co., 152 West 25th St.,  
New York, N. Y.

Rowe Radio Research Lab., 2422 N. Pulaski  
Rd., Chicago 39, Ill.

Sherron Electronics Co., 1201 Flushing Ave.,  
Brooklyn 6, New York

Supreme Instrument Corp., Greenwood, Miss.  
Sylvania Electric Products, Inc., 500 Fifth  
Ave., New York 18, N. Y.

See Advertisements on Pages 158 to 161  
Technical Apparatus Co., 167 Washington  
St., Boston 8, Mass.

Tektronix, Inc., 1516 S. E. 7th Ave., Port-  
land 14, Ore.

Waterman Products Co., Inc., 2445-63 Em-  
erald St., Philadelphia 25, Pa.  
See Advertisement on Page 76

**OVENS—Infra-Red Drying**

Diamond Instrument Co., North Ave., Wake-  
field, Mass.  
Fostoria Pressed Steel Corp., Fostoria,  
Ohio  
Infra-Red Engineers & Designers, E. 73rd  
& Grand Ave., Cleveland 4, Ohio  
North American Electric Lamp Co., 1014  
Tyler St., St. Louis 6, Mo.  
Special Chemicals Co., 30 Irving Pl., New  
York 3, N. Y.  
Trumbull Electric Mfg. Co., Plainville,  
Conn.

**PANELS—Instrument**

Ansonia Clock Co., Inc., 103 Lafayette St.,  
New York 13, N. Y.  
Art-Lloyd Metal Products Corp., 2973 Crop-  
sey Ave., Brooklyn 14, N. Y.  
See Advertisement on Page 236  
Austin Co., O., 335 Throop Ave., Brooklyn  
21, N. Y.  
Bailey Meter Co., 1044 Ivanhoe Rd., Cleve-  
land 10, Ohio

Bud Radio Inc., 2118 E. 55th St., Cleveland 3, Ohio  
 Dahlstrom Metallic Door Co., Jamestown, N. Y.  
 Electric Tachometer Corp., Broad & Spring Garden Sts., Philadelphia, Pa.  
 Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska  
 Enfield Art Works, Hazardville, Conn.  
 See Advertisement on Page 256  
 Flock Process Co., Velvetone Div., 3 Quincy St., Norwalk, Conn.  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 General Electric Co., Schenectady, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Greenhut Insulation Co., 31 W. 21st St., New York, N. Y.  
 Hopp Press, Inc., 460 W. 34th St., New York, N. Y.  
 Insulating Fabricators of New England, Inc., 22 Elkins St., S. Boston, Mass.  
 Insulation Mfg. Co., 11 New York Ave., Brooklyn, N. Y.  
 Karp Metal Products Co., Inc., 139 30th St., Brooklyn, N. Y.  
 See Advertisement on Page 81  
 Lamico Fabricators, 3600 W. Potomac Ave., Chicago 51, Ill.  
 Measurement Engineering Ltd., 61 Duke St., Toronto, Canada  
 See Advertisement on Page 193  
 National Co., Inc., 61 Sherman St., Malden 48, Mass.  
 See Advertisement on Page 78  
 Nilsson Electrical Lab., Inc., 103 Lafayette St., New York 13, N. Y.  
 Pierce Template Corp., 2646 N. Coral St., Philadelphia 25, Pa.  
 Premier Metal Etching Co., 21-03 44th Ave., Long Island City, N. Y.  
 See Advertisement on Page 206  
 Radiad Service, 720 W. Schubert Ave., Chicago 14, Ill.  
 Reiner Electronics Co., 152 W. 25th St., New York, N. Y.  
 Robinson Aviation Inc., Teterboro Air Terminal, Teterboro, N. J.  
 Rohm & Haas, 222 W. Washington Sq., Philadelphia, Pa.  
 Screenmakers Co., 64 Fulton St., New York 7, N. Y.  
 Stewart-Warner Corp., 1826 Diversey Parkway, Chicago 14, Ill.  
 Sun Dial Corp., Runnymede Rd., Essex Falls, N. J.  
 Synthane Corp., Oaks, Pa.  
 Walter Co., S., 144 Centre St., Brooklyn 31, N. Y.  
 See Advertisement on Page 57  
 Westinghouse Electric Corp., Meter Div., Newark, N. J.  
 Westinghouse Electric Corp., Micarta Dept., Trafford, Pa.  
 Westinghouse Electric Corp., Switchgear & Control Div., East Pittsburgh, Pa.  
 Willson Plastics Div., Willson Magazine Camera Co., 6022 Media St., Philadelphia 31, Pa.

**PANELS—Receiver & Transmitter**

Art-Lloyd Metal Products Corp., 2973 Croysey Ave., Brooklyn 14, N. Y.  
 See Advertisement on Page 236  
 Audio Development Co., 2833 13th Ave., S., Minneapolis 7, Minn.  
 See Advertisement on Page 26  
 Dahlstrom Metallic Door Co., Jamestown, N. Y.  
 Federal Electric Products Co., Inc., 50 Paris St., Newark, N. J.  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Johnson Co., E. F., Waseca, Minn.  
 Karp Metal Products Co., Inc., 139 30th St., Brooklyn, N. Y.  
 See Advertisement on Page 81  
 Measurement Engineering Ltd., 61 Duke St., Toronto, Canada  
 See Advertisement on Page 193  
 National Co., Inc., 61 Sherman St., Malden 48, Mass.  
 See Advertisement on Page 78  
 Pierce Template Corp., 2646 N. Coral St., Philadelphia 25, Pa.  
 Robinson Aviation Inc., Teterboro Air Terminal, Teterboro, N. J.  
 Screenmakers Co., 64 Fulton St., New York 7, N. Y.  
 Sun Dial Corp., Runnymede Rd., Essex Falls, N. J.  
 Synthane Corp., Oaks, Pa.  
 Taylor Western Transmitters, Inc., 6127 So. Western Ave., Los Angeles 44, Calif.  
 United Radio Mfg. Co., 191 Greenwich St., New York, N. Y.  
 Walter Co., S., 144 Centre St., Brooklyn 31, N. Y.  
 See Advertisement on Page 57

Westinghouse Electric Corp., Micarta Dept., Trafford, Pa.

**PANELS—Relay Rack**

Art-Lloyd Metal Products Corp., 2973 Croysey Ave., Brooklyn 14, N. Y.  
 See Advertisement on Page 236  
 Autocall Co., The, Shelby, Ohio  
 Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.  
 Bardwell & McAllister, 7636 Santa Monica Blvd., Hollywood, Calif.  
 Bud Radio Inc., 2118 E. 55th St., Cleveland 3, Ohio  
 Dahlstrom Metallic Door Co., Jamestown, N. Y.  
 Eclipse Mfg. Co., Inc., 294 East 137th St., New York 54, N. Y.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Johnson Co., E. F., Waseca, Minn.  
 Karp Metal Products Co., Inc., 139 30th St., Brooklyn, N. Y.  
 See Advertisement on Page 81  
 Measurement Engineering Ltd., 61 Duke St., Toronto, Canada  
 See Advertisement on Page 193  
 Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44  
 National Co., Inc., 61 Sherman St., Malden 48, Mass.  
 See Advertisement on Page 78  
 Nilsson Electrical Lab., Inc., 103 Lafayette St., New York 13, N. Y.  
 Par-Metal Products Corp., 32-62 49th St., Long Island City 3, N. Y.  
 See Advertisement on Page 162  
 Screenmakers Co., 64 Fulton St., New York 7, N. Y.  
 Sun Dial Corp., Runnymede Rd., Essex Falls, N. J.  
 Taylor Western Transmitter, Inc., 6127 So. Western Ave., Los Angeles 44, Calif.  
 Walter Co., S., 144 Centre St., Brooklyn 31, N. Y.  
 See Advertisement on Page 57

**PAPER**

See Insulation Materials

**PAPERS—Facsimile Recording**

Alden Products Co., 117 N. Main St., Brockton 64, Mass.  
 Radio Inventions, Inc., 155 Perry St., New York 14, N. Y.  
 Times Facsimile Corp., 229 W. 43rd St., New York, N. Y.  
 Western Union Telegraph Co., 60 Hudson St., New York 13, N. Y.

**PERMEAMETERS—High H**

Rubicon Co., 3751 Ridge Ave., Philadelphia, Pa.

**PHENOLIC MOLDING COMPOUNDS**

See Insulating Compounds

**PHONOGRAPHS—Electric Phonographs & Record Players**

Admiral Corp., 3800 Cortland St., Chicago 47, Ill.  
 Aireon Mfg. Corp., Fairfax & Funston Rds., Kansas City 15, Kansas  
 Air-King Products Co., Inc., 1523 63rd St., Brooklyn, N. Y.  
 Andrea Radio Corp., 43-20 34th St., L. I. City, N. Y.  
 Ansley Radio Corp., 41 St. Joes Ave., Trenton 3, N. J.  
 Audak Co., 500 Fifth Ave., New York, N. Y.  
 Audio Industries, Michigan City, Ind.  
 Autocrat Radio Co., 3855 N. Hamilton Ave., Chicago, Ill.  
 Aviola Radio Corp., Phoenix, Arizona  
 Bardwell & McAllister, 7636 Santa Monica Blvd., Hollywood, Calif.  
 Bell Sound Systems, Inc., 1183 Essex Ave., Columbus, Ohio

Belmont Radio Co., Div. Raytheon Mfg. Co., 5921 W. Dickens Ave., Chicago 39, Ill.  
 Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
 Biltmore Radio Corp., 15 Ave. A., New York 3, N. Y.  
 Bogen Co., David, 663 Broadway, New York 12, N. Y.  
 Calvert Motors Associates, Ltd., 505 Morse St., N. E., Washington 2, D. C.  
 Carron Mfg. Co., 415 S. Aberdeen St., Chicago, Ill.  
 Collins Audio Products Co., 126 Park St., Westfield, N. J.  
 See Advertisement on Page 253  
 Communicating Systems Inc., 203 E. 18th St., New York 3, N. Y.  
 Communications Parts, 1101 N. Paulina St., Chicago 22, Ill.  
 Decca Records, Inc., 50 W. 57th St., New York 19, N. Y.  
 Eastern Amplifier Corp., 794 E. 140th St., New York 54, N. Y.  
 Eastern Electronics Corp., 41 Chestnut St., New Haven, Conn.  
 Electronic Corp. of America, 170 53rd St., Brooklyn, N. Y.  
 Electronic Devices Co., 601 W. 26th St., New York, N. Y.  
 Electronic Enterprises, Inc., 1314 Forest Ave., Dallas 15, Texas  
 Emerson Radio & Phonograph Corp., 111 Eighth Ave., New York, N. Y.  
 Espy Mfg. Co., Inc., 33 W. 46th St., New York 19, N. Y.  
 Fada Radio & Electric Co., Inc., 30-20 Thomson Ave., Long Island City, N. Y.  
 Farnsworth Television & Radio Corp., Ft. Wayne, Ind.  
 Favorite Mfg. Co., 105 E. 12th St., New York 3, N. Y.  
 Fisher Radio Co., 41 E. 47th St., New York, N. Y.  
 Five Star Radio Co., 416 Broadway, Cambridge, Mass.  
 Garod Radio Corp., 70 Washington St., Brooklyn 1, N. Y.  
 Garrard Sales Corp., 401 Broadway, New York 13, N. Y.  
 Gem Radio & Television Co., 72 Cortlandt St., New York 6, N. Y.  
 General Electric Co., Bridgeport 2, Conn.  
 Globe Electronics, Inc., 225 W. 17th St., New York, N. Y.  
 Godfrey Mfg. Co., 171 S. 2nd St., Milwaukee 4, Wisc.  
 Hallicrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Harris Mfg. Co., 2422 W. Seventh St., Los Angeles 5, Calif.  
 Hoffman Radio Corp., 3430 S. Hill St., Los Angeles 7, Calif.  
 Hunt Corp., The, 544 Hanover St., Carlisle, Pa.  
 See Advertisement on Page 155  
 International Detrola Corp., 1501 Beard Ave., Detroit, Mich.  
 Intex Co., 303 W. 42nd St., New York 18, N. Y.  
 See Advertisement on Page 68  
 Lincoln Electronics Corp., 653 11th Ave., New York, N. Y.  
 London Gramophone Corp., The, 16 W. 22nd St., New York 10, N. Y.  
 Magnavox Co., The, 2131 Bueter Rd., Fort Wayne 4, Ind.  
 Magnetic Products Corp., The, Norwalk, Conn.  
 Maguire Industries Inc., Electronics Dept., Bridgeport, Conn.  
 Majestic Radio & Television Corp., St. Charles, Ill.  
 Makan Inc., 79 Thurman Ave., Columbus 6, Ohio  
 Meck Industries, John, Plymouth Ind.  
 Motorola Radio, Galvin Mfg. Corp., 4545 Augusta Blvd., Chicago, Ill.  
 National Co., Inc., 61 Sherman St., Malden 48, Mass.  
 See Advertisement on Page 78  
 Newcomb Audio Products Co., 6824 Lexington Ave., Hollywood 38, Calif.  
 Parker Engineering Products Co., 16 W. 22nd St., New York 10, N. Y.  
 Philharmonic Radio Corp., 528 E. 72nd St., New York 21, N. Y.  
 Radiad Service, 720 W. Schubert Ave., Chicago 14, Ill.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Radio Electronic Products Co., 230 S. Spring St., Los Angeles, Calif.  
 Rauland Corp., 4245 N. Knox Ave., Chicago 41, Ill.  
 Ray-Dyne Mfg. Corp., 141 W. 24th St., New York 11, N. Y.  
 Robinson Recording Labs., 2022 Sansom St., Phila., Pa.  
 Sonora Radio & Television Corp., 325 N. Hoyne Ave., Chicago, Ill.  
 Sparks Withington Co., Jackson, Mich.  
 Speak-O-Phone Recording & Equipment Co., 28 W. 60th St., New York, N. Y.

Stark Sound Engineering Co., P. O. Box 493, Fort Wayne 1, Ind.  
 Talk-A-Phone Co., 1512 S. Pulaski Rd., Chicago 23, Ill.  
 Tech-Master Products Co., 123 Prince St., New York, N. Y.  
 Telequip Radio Co., 1901 S. Washtenaw, Chicago, Ill.  
 Teletone Radio Co., 609 W. 51st St., New York 19, N. Y.  
 Templetone Radio Mfg. Corp., New London, Conn.  
 Tone Products Corp. of America, 351 Fourth Ave., New York 10, N. Y.  
 United Radio Electronics Corp., 901 W. Jackson Blvd., Chicago, Ill.  
 Waters Conley Co., 501 First St., N. W., Rochester, Minn.  
 Watterson Radio Mfg. Co., P. O. Box 54, Dallas, Texas  
 West Coast Electronics Co., 1601 S. Burlington St., Los Angeles 6, Calif.  
 Western Sound & Electric Labs., Inc., 808 S. Fifth St., Milwaukee 4, Wisc.  
 Wilcox-Gay Corp., Charlotte, Mich.

**PHOTOTUBES AND PHOTOCELLS**  
 See Tubes

**PICKUPS—Industrial**

Brush Development Co., 3405 Perkins Ave., Cleveland 14, Ohio  
 Commercial Research Labs. Inc., 20 Bartlett Ave., Detroit 3, Mich.  
 Rowe Radio Research Lab., 2422 N. Pulaski Rd., Chicago 39, Ill.  
 Wilson & Co., G. C., 2 N. Passaic Ave., Chatham, N. J.

**PICKUPS—Magnetic**

Audak Co., 500 Fifth Ave., New York, N. Y.  
 Caltron Co., 11916 W. Pico Blvd., Los Angeles 34, Calif.  
 Clarkstan Corp., 11927 W. Pico Blvd., Los Angeles 34, Calif.  
 Commercial Research Labs., Inc., 20 Bartlett Ave., Detroit 3, Mich.  
 Consolidated Engineering Corp., 595 E. Colorado St., Pasadena 1, Calif.  
 Favorite Mfg. Co., 105 E. 12th St., New York 3, N. Y.  
 Gray Research & Development Co., 50 N. Central Ave., Elmsford, N. Y.  
 See Advertisement on Page 241  
 Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.  
 See Advertisements on Pages 257 to 260  
 Rowe Radio Research Lab., 2422 N. Pulaski Rd., Chicago 39, Ill.  
 Turner Co., 909 17th St., Cedar Rapids, Iowa  
 Webster Electric Co., 1900 Clark St., Racine, Wisc.  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89

**PICKUPS—Photoelectric**

Electronic Products Co., 19 No. First St., Geneva, Ill.

**PICKUPS—Transcription and Phonograph**

American Microphone Co., 370 So. Fairroads Ave., Pasadena 2, Calif.  
 Astatic Corp., Conneaut, Ohio  
 Audak Co., 500 Fifth Ave., New York, N. Y.  
 Brush Development Co., 3405 Perkins Ave., Cleveland 14, Ohio  
 Caltron Co., 11916 W. Pico Blvd., Los Angeles 34, Calif.  
 Clark Radio Equipment Corp., 4313 Lincoln Ave., Chicago 18, Ill.  
 Clarkstan Corp., 11927 W. Pico Blvd., Los Angeles 34, Calif.  
 Fairchild Camera & Instrument Corp., 88-06 Van Wyck Blvd., Jamaica 1, N. Y.  
 Favorite Mfg. Co., 105 E. 12th St., New York 3, N. Y.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 Garrard Sales Corp., 401 Broadway, New York 13, N. Y.  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Gray Research & Development Co., 50 N. Central Ave., Elmsford, N. Y.  
 See Advertisement on Page 241  
 London Gramophone Corp., The, 16 W. 22nd St., New York 16, N. Y.  
 National Co., Inc., 61 Sherman St., Malden 48, Mass.  
 See Advertisement on Page 78  
 Pfanstiehl Chemical Co., 104 Lakeview Ave., Waukegan, Ill.  
 Pickering and Co., Audio Labs., Oceanside, N. Y.  
 Presto Recording Corp., 242 W. 55th St., New York 19, N. Y.  
 See Advertisements on Pages 50, 51  
 Radio-Music Corp., East Port Chester, Conn.  
 See Advertisement on Page 215  
 Rek-O-Nut Co., 146 Grand St., New York 13, N. Y.  
 See Advertisement on Page 245  
 Robinson Recording Labs., 2022 Sansom St., Philadelphia, Pa.  
 Shure Brothers, 225 W. Huron St., Chicago, Ill.  
 See Advertisement on Page 157  
 Tibbetts Labs., Inc., Camden, Maine  
 Webster Electric Co., 1900 Clark St., Racine, Wisc.

West Coast Electronics Co., 1601 S. Burlington St., Los Angeles 6, Calif.  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89

**PILOTS—Automatic**

Eclipse Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.  
 Mettler Co., Lee B., 406 S. Main St., Los Angeles 13, Calif.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B

**PITCH**

See Insulating Compounds

**PIVOTS—Instrumental Jewel**

Baker & Co., 113 Astor St., Newark 5, N. J.  
 Electrovox Co., Inc., 31 Fulton St., Newark 2, N. J.  
 See Advertisement on Page 55  
 Gatti, Inc., A. M., 1909 Liberty St., Trenton, N. J.  
 International Merit Products Corp., 254 W. 54th St., New York 19, N. Y.  
 New Hampshire Ball Bearings, 5 Main St., Peterborough, N. H.  
 Ney Co., J. M., Hartford, Conn.  
 Permo Inc., 6415 Ravenswood Ave., Chicago, Ill.  
 Steel Co., Herman D., Lafayette Bldg., Philadelphia 6, Pa.  
 Swiss Jewel Co., Lafayette Bldg., Philadelphia 6, Pa.

**PLASTIC MATERIALS**

**Allyls**

Columbia Chemical Div., Pittsburgh Plate Glass Co., Grant Bldg., Pittsburgh 19, Pa.  
 Goodrich Chemical Co., E. F., Cleveland 15, Ohio.

**Cellulose Acetate**

American Products Mfg. Co., Oleander & Dublin Sts., New Orleans 18, La.  
 Austin Co., O., 335 Throop Ave., Brooklyn 21, N. Y.  
 Bamberger, A., 44 Hewes St., Brooklyn, N. Y.  
 Blum & Co., Julius, 532 W. 22nd St., New York 11, N. Y.  
 Celanese Plastics Corp., 180 Madison Ave., New York 16, N. Y.  
 Chemaco Corp., Subs. of Manufacturers Chemical Corp., Berkeley Heights, N. J.  
 Davis Plastics Co., Joseph, Schuyler & Ft. of Quincy Ave., Arlington, N. J.  
 du Pont de Nemours Co., Inc., E. I., Plastics Dept., 626 Schuyler Ave., Arlington, N. J.  
 Eastman Kodak Co., Industrial Photographic Sales Div., 343 State St., Rochester 4, N. Y.  
 Emeloid Co., Inc., The, 291 Laurel Ave., Arlington, N. J.  
 Felsenthal & Son, G., 4100 W. Grand Ave., Chicago 51, Ill.  
 Hercules Powder Co., Inc., 900 Market St., Wilmington 99, Del.  
 Insulating Fabricators, Inc., 12 E. 12th St., New York 3, N. Y.  
 Insulation Mfrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.  
 See Advertisement on Page 87  
 Jersey Plastic Corp., Lodi, N. J.  
 LaMagna Mfg. Co., Inc., East Rutherford, N. J.  
 Manufacturers Chemical Corp., Berkeley Heights, N. J.  
 Monsanto Chemical Co., Plastics Div., Springfield 2, Mass.  
 Nixon Nitration Works, Nixon, N. J.  
 Oppenheimer, Inc., Alan D., 582-586 Exchange St., Buffalo, N. Y.  
 Pacific Plastic & Mfg. Co., 4865 Exquisite Blvd., Los Angeles, Calif.  
 Plastic Accessories, Inc., 460 Broome St., New York 13, N. Y.  
 Plastic Fabricators Co., 440 Sansome St., San Francisco 11, Calif.  
 Plasticraft Products Co., 20 Hudson St., New York 13, N. Y.

**PHOSPHORS**

du Pont de Nemours Co. Inc., Wilmington 98, Delaware.  
 du Pont de Nemours & Co., E. I., Patterson Screen Div., Towanda, Pa.  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 Westinghouse Electric Corp., Bloomfield Lamp Div., Bloomfield, N. J.  
 See Advertisement on Page 45

**PHOTOGRAPHIC MATERIALS—Films and Papers for Recording Instruments**

Agfa Ansco, Binghamton, N. Y.  
 Eastman Kodak Co., Industrial Photographic Sales Div., 343 State St., Rochester 4, N. Y.  
 Haloid Co., The, 6 Haloid St., Rochester, N. Y.

**PHOTOGRAPHIC MATERIALS—Spectrographic Instruments**

Eastman Kodak Co., Industrial Photographic Sales Div., 343 State St., Rochester 4, N. Y.

**PHOTOGRAPHIC MATERIALS—X-Ray Films**

Agfa Ansco, Binghamton, N. Y.  
 du Pont de Nemours & Co., Inc., E. I., Wilmington 98, Del.  
 Eastman Kodak Co., Industrial Photographic Sales Div., 343 State St., Rochester 4, N. Y.

**PHOTOMETERS**

Adair & Rhanstine, 301 Beaubien St., Detroit 26, Mich.  
 Communication Measurements Lab. Inc., 120 Greenwich St., New York, N. Y.  
 Farrand Optical Co., Inc., Bronx Blvd. at 238th St., New York 66, N. Y.  
 Fish-Schurman Corp., 230 East 45th St., New York 17, N. Y.  
 Perkin Elmer Corp., Glenbrook, Conn.  
 Photovolt Corp., 95 Madison Ave., New York 16, N. Y.  
 Rhein Engineering, 120 W. North St., Springfield, Ohio  
 Rubicon Co., 3751 Ridge Ave., Philadelphia, Pa.

**PH METERS, RECORDERS AND COMPARATORS**

See Meters

**PHOTOCOPIERS**

See Machines

Tennessee Eastman Corp., Div. Eastman Kodak Co., Kingsport, Tenn.  
Willson Plastics Div., Willson Magazine Camera Co., 6022 Media St., Philadelphia 31, Pa.

## Cellulose Acetate Butyrate

Bamberger Corp., A., 44 Hewes St., Brooklyn, N. Y.  
Blum & Co., Julius, 532 W. 22nd St., New York 11, N. Y.  
Davis Plastics Co., Joseph, Schuyler at Ft. of Quincy Ave., Arlington, N. J.  
Eastman Kodak Co., Industrial Photographic Sales Div., 343 State St., Rochester 4, N. Y.  
Felsenthal & Sons, G., 4100 W. Grand Ave., Chicago 51, Ill.  
Oppenheimer, Inc., Alan D., 582-586 Exchange St., Buffalo, N. Y.  
Plastic Accessories, Inc., 460 Broome St., New York 13, N. Y.  
Plasticraft Products Co., 20 Hudson St., New York 13, N. Y.  
Tennessee Eastman Corp., Div., Eastman Kodak Co., Kingsport, Tenn.

## Cellulose Nitrate

American Products Mfg. Co., Oleander & Dublin Sts., New Orleans 18, La.  
Celanese Plastics Corp., 180 Madison Ave., New York 16, N. Y.  
Davis Plastics Co., Joseph, Schuyler & Ft. of Quincy Ave., Arlington, N. J.  
du Pont de Nemours Co., Inc., E. I., Plastics Dept., 626 Schuyler Ave., Arlington, N. J.  
Emeloid Co., Inc., The, 291 Laurel Ave., Arlington, N. J.  
Felsenthal & Sons, G., 4100 W. Grand Ave., Chicago 51, Ill.  
Hercules Powder Co., Inc., 900 Market St., Wilmington 99, Del.  
Monsanto Chemical Co., Plastics Div., Springfield 2, Mass.  
Nixon Nitration Wks., Nixon, N. J.  
Oppenheimer Inc., Alan D., 582-584 Exchange St., Buffalo, N. Y.  
Willson Plastics Div., Willson Magazine Camera Co., 6022 Media St., Philadelphia 31, Pa.

## Ethyl Cellulose

American Products Mfg. Co., Oleander & Dublin Sts., New Orleans 18, La.  
Bamberger Corp., A., 44 Hewes St., Brooklyn, N. Y.  
Celanese Plastics Corp., 180 Madison Ave., New York 16, N. Y.  
Chemaco Corp.—Subsidiary of Manufacturers Chemical Corp., Berkeley Heights, N. J.  
Davis Plastics Co., Joseph, Schuyler at Ft. of Quincy Ave., Arlington, N. J.  
Felsenthal & Sons, G., 4100 W. Grand Ave., Chicago 51, Ill.  
Insulation Mfrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.  
See Advertisement on Page 87  
Manufacturers Chemical Corp., Berkeley Heights, N. J.  
Nixon Nitration Works, Nixon, N. J.  
Oppenheimer Inc., Alan D., 582-586 Exchange St., Buffalo, N. Y.  
Plastic Accessories, Inc., 460 Broome St., New York 13, N. Y.

## Melamine Formaldehyde

American Cyanamid Co., Plastics Div., 30 Rockefeller Plaza, New York 20, N. Y.  
Ciba Products Co., Inc., 627 Greenwich St., New York 14, N. Y.  
Hercules Powder Co., Inc., 900 Market St., Wilmington 99, Del.  
Insulating Fabricators, Inc., 12 E. 12th St., New York 3, N. Y.  
Insulating Fabricators of New England, Inc., 22 Elkins St., Boston, Mass.  
Mica Insulator Co., Schenectady 1, N. Y.  
Monsanto Chemical Co., Plastics Div., Springfield 2, Mass.  
Plaskon Div., Libbey-Owens-Ford Glass Co., 2112-14 Sylvan Ave., Toledo 6, Ohio  
Synthane Corp., Oaks, Pa.  
Westinghouse Electric Corp., Micarta Dept., Trafford, Pa.

## Methyl Methacrylate

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
See Advertisement on Page 23  
American Resinous Chemical Co., 104 Foster St., Peabody, Mass.  
Bamberger Corp., A., 44 Hewes St., Brooklyn, N. Y.  
du Pont de Nemours Co., Inc., E. I., Plastics Dept., 626 Schuyler Ave., Arlington, N. J.  
Emeloid Co., Inc., The, 291 Laurel Ave., Arlington, N. J.  
Felsenthal & Sons, G., 4100 W. Grand Ave., Chicago 51, Ill.  
Oppenheimer Inc., Alan D., 582-586 Exchange St., Buffalo, N. Y.  
Peters Chemical Mfg. Co., 3623 Lake St., Melrose Park, Ill.  
Plastic Accessories, Inc., 460 Broome St., New York 13, N. Y.  
Plasticraft Products Co., 20 Hudson St., New York 13, N. Y.  
Rohm & Haas, 222 W. Washington Sq., Philadelphia, Pa.

## Phenol Formaldehyde—(Phenolics)

Adhesive Products Co., 3400 13th St., SW, Seattle, Wash.  
Alden Products Co., 117 No. Main St., Brockton 64, Mass.  
American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
See Advertisement on Page 23  
American Resinous Chemical Co., 104 Foster St., Peabody, Mass.  
Baer Co., N.S., 9 Montgomery St., Hillside, N. J.  
See Advertisement on Page 227  
Bakelite Corp., 300 Madison Ave., New York 17, N. Y.  
Catalin Corp., 1 Park Ave., New York, N. Y.  
Drackett Co., 5020 Spring Grove Ave., Cincinnati 27, Ohio  
Durite Plastics, Inc., 5010 Summerdale Ave., Philadelphia 24, Pa.  
General Electric Co., Chemical Dept., 1 Plastics Ave., Pittsfield Mass.  
See Advertisement on Page 97  
Heresite & Chemical Co., Manitowoc, Wisc.  
Howard Mfg. Co., 15 Fourth St., Council Bluffs, Iowa  
Insulating Fabricators, Inc., 12 E. 12th St., New York 3, N. Y.  
Insulating Fabricators of New England, Inc., 22 Elkins St., S. Boston, Mass.  
Interlake Chemical Corp., Union Commerce Bldg., Cleveland 14, Ohio  
Kuhn & Jacob Molding & Tool Co., 1200 Southard St., Trenton, N. J.  
LaPointe-Plascomold Corp., Unionville, Conn.  
Mica Insulator Co., Schenectady 1, N. Y.  
Monsanto Chemical Co., Plastics Div., Springfield 2, Mass.  
Pennsylvania Coil Products Co., Petrolia, Pa.  
Plastic Accessories, Inc., 460 Broome St., New York 13, N. Y.  
Plasticraft Products Co., 20 Hudson St., New York 13, N. Y.  
Reilly Tar & Chemical Corp., Merchants Bank Bldg., Indianapolis, Ind.  
Skoning Corp., 319-325 Taunton Ave., E. Providence 14, R. I.  
Synthane Corp., Oaks, Pa.  
Synvar Corp., 415 E. Front St., Wilmington, Del.  
Taylor Fibre Co., Norristown, Pa.  
U. S. Plastics Corp., 2835-53 Irving Park Road, Chicago, Ill.  
Watertown Mfg. Co., Watertown, Conn.  
Westinghouse Electric Corp., Micarta Dept., Trafford, Pa.  
Wilmington Fibre Specialty Co., P. O. Drawer 1028, Wilmington 99, Del.

## Polyethylene

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
See Advertisement on Page 23  
Bakelite Corp., 300 Madison Ave., New York 17, N. Y.  
Bamberger Corp., A., 44 Hewes St., Brooklyn, N. Y.  
Davis Plastics Co., Joseph, Schuyler at Ft. of Quincy Ave., Arlington, N. J.  
du Pont de Nemours Co., Inc., E. I., Plastics Dept., 626 Schuyler Ave., Arlington, N. J.  
Felsenthal & Sons, G., 4100 W. Grand Ave., Chicago 51, Ill.  
Insulating Fabricators, Inc., 12 E. 12th St., New York 3, N. Y.

Plastic Accessories, Inc., 460 Broome St., New York 13, N. Y.  
Plasticraft Products Co., 20 Hudson St., New York 13, N. Y.  
Westinghouse Electric Corp., Micarta Dept., Trafford, Pa.  
Willson Plastics Div., Willson Magazine Camera Co., 6022 Media St., Phila. 31, Pa.

## Polystyrene

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
See Advertisement on Page 23  
Bakelite Corp., 300 Madison Ave., New York 17, N. Y.  
Bamberger Corp., A., 44 Hewes St., Brooklyn, N. Y.  
Blum & Co., Julius, 532 W. 22nd St., New York, N. Y.  
Catalin Corp., 1 Park Ave., New York, N. Y.  
Chemaco Corp., Subsidiary of Manufacturers Chemical Corp., Berkeley Heights, N. J.  
Davis Plastics Co., Joseph, Schuyler at Ft. of Quincy Ave., Arlington, N. J.  
Emeloid Co., Inc., The, 291 Laurel Ave., Arlington, N. J.  
Felsenthal & Sons, G., 4100 W. Grand Ave., Chicago 51, Ill.  
General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
See Advertisement on Page 90  
Manufacturers Chemical Corp., Berkeley Heights, N. J.  
Monsanto Chemical Co., Plastic Div., Springfield 2, Mass.  
Oppenheimer Inc., Alan D., 582-586 Exchange St., Buffalo, N. Y.  
Plastic Accessories, Inc., 460 Broome St., New York 13, N. Y.  
Plasticraft Products Co., 20 Hudson St., New York 13, N. Y.  
Rohm & Haas, 222 W. Washington Sq., Philadelphia, Pa.  
Willson Plastics Div., Willson Magazine Camera Co., 6022 Media St., Philadelphia 31, Pa.

## Polytetrafluoroethylene

du Pont de Nemours Co., Inc., E. I., Plastics Dept., 626 Schuyler Ave., Arlington, N. J.

## Resins

Bamberger Corp., A., 44 Hewes St., Brooklyn, N. Y.  
Barrett Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.  
Catalin Corp., One Park Ave., New York 16, N. Y.  
Ciba Co., Inc., 627 Greenwich St., New York 14, N. Y.  
Columbia Chemical Div., Pittsburgh Plate Glass Co., Grant Bldg., Pittsburgh 19, Pa.  
Drackett Co., 5020 Spring Grove Ave., Cincinnati 27, Ohio  
du Pont de Nemours, E. I. & Co., Inc., Plastics Dept., 626 Schuyler Ave., Arlington, N. J.  
Durite Plastics Inc., 5010 Summerdale Ave., Philadelphia 24, Pa.  
Firestone Tire & Rubber Co., 1 Firestone Ave., Fall River, Mass.  
General Aniline & Film Corp., Special Prods. Sales Dept., 270 Park Ave., New York 17, N. Y.  
See Advertisement on Page 17  
General Electric Co., Chemical Dept., 1 Plastics Ave., Pittsfield, Mass.  
See Advertisement on Page 97  
Goodrich Chemical Co., B. F., Cleveland 15, Ohio  
Goodyear Tire & Rubber Co., Plastics and Chemical Div., 1144 E. Market St., Akron, Ohio  
Hercules Powder Co., Inc., 900 Market St., Wilmington 99, Del.  
Knoedler Chemical Co., Lancaster, Pa.  
Monsanto Chemical Co., Plastics Div., 600 Monsanto Ave., Springfield 2, Mass.  
Plaskon Div., Libbey-Owens-Ford Glass Co., 2112-14 Sylvan Ave., Toledo 6, Ohio  
Reichhold Chemicals, Inc., 601 Woodward Heights Blvd., Ferndale Sta., Detroit 20, Mich.  
Resinous Products & Chemical Co., Inc., 222 W. Washington Square, Philadelphia, Pa.  
Rohm & Haas Co., 222 W. Washington Square, Philadelphia 5, Pa.

Shawinigan Products Corp., 350 5th Ave., New York 1, N. Y.  
 Synvar Corp., 415 E. Front St., Wilmington, Delaware  
 Tennessee-Eastman Corp. Div. Eastman Kodak Co., Kingsport, Tenn.  
 U. S. Rubber Co., 1230 6th Ave., New York, New York  
 U. S. Stoneware Co., Akron 9, Ohio  
 Valite Corp., Whitney Bldg., New Orleans 12, La.  
 Westinghouse Electric Corp., Micarta Dept., Trafford, Pa.

**Silicone Resin**

Dow Corning Corp., Midland, Mich.

**Urea Formaldehyde**

American Cyanamid Co., Plastics Div., 30 Rockefeller Plaza, New York 20, N. Y.  
 American Resinous Chemical Co., 104 Foster St., Peabody, Mass.  
 Kuhn & Jacob Molding & Tool Co., 1200 Southard St., Trenton, N. J.  
 Mica Insulator Co., Schenectady 1, N. Y.  
 Plaskon Division, Libbey-Owens-Ford Glass Co., 2112-14 Sylvan Ave., Toledo 6, Ohio  
 Resinous Products & Chemical Co. Inc., 222 W. Washington Square, Phila., Pa.  
 Sylvan Plastics, Inc., 122 E. 42nd St., New York, N. Y.

**Vinyl Compounds**

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 American Resinous Chemical Co., 104 Foster St., Peabody, Mass.  
 Bakelite Corp., 300 Madison Ave., New York 17, N. Y.  
 Bamberger Corp., A., 44 Hewes St., Brooklyn, N. Y.  
 du Pont de Nemours Co., Inc., E. I., Plastics Dept., 626 Schuyler Ave., Arlington, N. J.  
 Emeloid Co., Inc., The, 291 Laurel Ave., Arlington, N. J.  
 Goodrich Chemical Co., B. F., Cleveland 15, Ohio  
 Manufacturers Chemical Corp., Berkeley Heights, N. J.  
 Monsanto Chemical Co., Plastics Div., Springfield 2, Mass.  
 Oppenheimer Inc., Alan D., 582-586 Exchange St., Buffalo, N. Y.  
 Plastic Fabricators Co., 440 Sansome St., San Francisco 11, Calif.  
 Respro, Inc., Wellington Ave., Cranston 10, R. I.  
 Rohm & Haas, 222 W. Washington Square, Philadelphia, Pa.

**PLATES—Flock Turntable**

Flock Process Co., Velvefone Div., 3 Quincy St., Norwalk, Conn.  
 Lamicold Fabricators, 3600 W. Potomac Ave., Chicago 51, Ill.  
 Plastic Enterprises, 129 Bloomfield Ave., Bloomfield, N. J.

**PLATES—Instruction**

Acromark Co., 9-13 Morrell St., Elizabeth 4, N. J.  
 Austin Co., O., 335 Throop Ave., Brooklyn 21, N. Y.  
 Colonial Brass Co., 100 Vine St., Middleboro, Mass.  
 Emeloid Co., Inc., The, 291 Laurel Ave., Arlington, N. J.  
 Etched Products Corp., 39-01 Queens Blvd., Long Island City, N. Y.  
 Hopp Press Inc., 460 W. 34th St., New York, N. Y.  
 Insulating Fabricators of New England, Inc., 22 Elkins St., S. Boston, Mass.  
 Plastic Fabricators Co., 440 Sansome Street, San Francisco 11, Calif.  
 Premier Metal Etching Co., 21-03 44th Ave., Long Island City, N. Y.  
 See Advertisement on Page 206  
 Waterbury Companies, Inc., Waterbury 90, Conn.

**PLATES—Name**

Acromark Co., 9-13 Morrell St., Elizabeth 4, N. J.  
 American Emblem Co., Utica, N. Y.  
 Ansonia Clock Co. Inc., 103 Lafayette St., New York 13, N. Y.  
 Austin Co., O., 335 Throop Ave., Brooklyn 21, N. Y.  
 Bostonian Process Co., 40 W. 13th St., New York 11, N. Y.  
 Bud Radio Inc., 2118 E. 55th St., Cleveland 3, Ohio  
 Colonial Brass Co., 100 Vine St., Middleboro, Mass.  
 Control Corp., 718 Central Ave., Minneapolis 14, Minn.  
 Croname, Inc., 3701 Ravenswood Ave., Chicago, Ill.  
 Emeloid Co., Inc., The, 291 Laurel Ave., Arlington, N. J.  
 Etched Products Corp., 39-01 Queens Blvd., Long Island City, N. Y.  
 Gordon Specialties Co., 823 S. Wabash Ave., Chicago 5, Ill.  
 Grammes & Sons Inc., L. F., 389 Union St., Allentown 2, Pa.  
 Hopp Press Inc., 460 W. 34th St., New York, N. Y.  
 Insulating Fabricators of New England, Inc., 22 Elkins St., S. Boston, Mass.  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Lamicold Fabricators, 3600 W. Potomac Ave., Chicago 51, Ill.  
 Mica Insulator Co., Schenectady 1, N. Y.  
 New England Etching & Plating Co., 25 Spring Street, Holyoke, Mass.  
 Plastic Fabricators Co., 440 Sansome Street, San Francisco 11, Calif.  
 Ports Mfg. Co., 3265 E. Belmont Ave., Fresno 3, Calif.  
 Premier Metal Etching Co., 21-03 44th Ave., Long Island City, N. Y.  
 See Advertisement on Page 206  
 Reynolds Metals Co., 2500 So. Third St., Louisville 1, Ky.  
 Sillocks-Miller Co., 10 Parker Ave. W., So. Orange, N. J.

**PLATING Metal on Plastic**

Austin Co., O., 335 Throop Ave., Brooklyn 21, N. Y.  
 Baker & Co., 113 Astor St., Newark 5, N. J.  
 Bart Labs, Inc., 227 Main St., Belleville 9, N. J.  
 Electro Plastic Processes, 2035 West Charleston St., Chicago 47, Ill.  
 Headen Co., The, 17 Academy St., Newark 2, N. J.  
 Waterbury Companies, Inc., Waterbury 90, Conn.

**PLUGS—Terminal**

Aerolite Electronic Hardware Corp., 24 Cliff St., Jersey City, N. J.  
 See Advertisement on Page 246  
 Aircraft-Marine Products, Inc., 1523 N. Fourth St., Harrisburg, Pa.  
 Amalgamated Radio Television Corp., 476 Broadway, New York 13, N. Y.  
 American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 Autocal Co., The, Shelby, Ohio  
 Automatic Metal Products Co., 315 Berry St., Brooklyn 1, N. Y.  
 Bead Chain Mfg. Co., 110 Mountain Grove St., Bridgeport 5, Conn.  
 See Advertisement on Page 194  
 Buggie & Co., H. H., 2141 Madison Ave., Toledo 1, Ohio  
 Cannon Electric Development Co., 3209 Humboldt St., Los Angeles 31, Calif.  
 See Advertisement on Page 70  
 Carter Radio Div., Precision Parts Co., 213 Institute Pl., Chicago 10, Ill.  
 Diamond Instrument Co., North Ave., Wakefield, Mass.  
 Eagle Electric Mfg. Co., Inc., 23-10 Bridge Plaza S., Long Island City, N. Y.  
 Eby, Inc., Hugh H., 18 W. Chelton Ave., Philadelphia 13, Pa.  
 Franklin Airloop Corp., 43-20 34th St., Long Island City, N. Y.  
 See Advertisement on Page 61  
 Franklin Mfg. Corp., A. W., 43-20 34th St., Long Island City, N. Y.  
 See Advertisement on Page 98  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 Hermaseal Co., Inc., Riverside Dr., Elkhart, Ind.  
 See Advertisements on Pages 90, 222

Instruments Parts Corp., Snowden Ave. & Water St., Ossining, N. Y.  
 See Advertisement on Page 222  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Kings Electronics Co., 372 Classon Ave., Brooklyn 5, N. Y.  
 Maico Co. Inc., 25 North 3rd St., Minneapolis, Minn.  
 Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44  
 National Co., Inc., 61 Sherman St., Malden 48, Mass.  
 See Advertisement on Page 78  
 National Research Corp., Vacuum Engineering Div., 100 Brookline Ave., Boston 15, Mass.  
 Parker-Kalon Corp., 200 Varick St., New York 14, N. Y.  
 Plastic Enterprises, 129 Bloomfield Ave., Bloomfield, N. J.  
 Pyle-National Co., 1334 N. Kostner Ave., Chicago 51, Ill.  
 Russell & Stoll Co., 125 Barclay St., New York 7, N. Y.  
 Star Expansion Products Co., 147-149 Cedar St., New York 6, N. Y.  
 States Co., 19 New Park Ave., Hartford 6, Conn.  
 Wood Electric Co., Inc., C. D., 826 Broadway, New York 3, N. Y.

**PLUGS AND JACKS**

A B C Products, Inc., 2131-35 Stoner Ave., W Los Angeles 25, Calif.  
 Aerolite Electronic Hardware Corp., 24 Cliff St., Jersey City, N. J.  
 See Advertisement on Page 246  
 Aircraft Radio Corp., Boonton, N. J.  
 See Advertisement on Page 185  
 Alden Prods. Co., 117 N. Main St., Brockton 64, Mass.  
 Amalgamated Radio & Television Corp., 476 Broadway, New York 13, N. Y.  
 American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 Audio Development Co., 2833 13th Ave. S., Minneapolis 7, Minn.  
 See Advertisement on Page 26  
 Automatic Metal Products Co., 315 Berry St., Brooklyn 1, N. Y.  
 Bead Chain Mfg. Co., 110 Mountain Grove St., Bridgeport 5, Conn.  
 See Advertisement on Page 194  
 Bimbach Radio Co., Inc., 145 Hudson St., New York, N. Y.  
 Bud Radio Inc., 2118 E. 55th St., Cleveland 3, Ohio  
 Buggie & Co., H. H., 2141 Madison Ave., Toledo 1, Ohio  
 Cannon Electric Development Co., 3209 Humboldt St., Los Angeles 31, Calif.  
 See Advertisement on Page 70  
 Carter Radio Div., Precision Parts Co., 213 Institute Place, Chicago 10, Illinois  
 Cinch Mfg. Corp., 2335 W. Van Buren St., Chicago 12, Ill.  
 See Advertisement on Page 75  
 Cords Ltd., 26 Camp St., Newark 5, N. J.  
 Diamond Instrument Co., North Ave., Wakefield, Mass.  
 Eby, Inc., Hugh H., 18 W. Chelton Ave., Phila., 13, Pa.  
 Electro Motive Mfg. Co., South Park & John St., Williamantic, Conn.  
 See Advertisement on Page 27  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisement on Pages 48A to 48D  
 Franklin Airloop Corp., 43-20 34th St., Long Island City, N. Y.  
 See Advertisement on Page 61  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
 Hubbell Inc., Harvey, Bridgeport 2, Conn.  
 Insuline Corp. of America, 36-02 35th Ave., L. I. City, N. Y.  
 See Advertisement on Page 166  
 J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkway., Brooklyn, N. Y.  
 Johnson Co., E. F., Waseca, Minn.  
 Jones, Howard B., 2460 W. George St., Chicago 18, Ill.  
 See Advertisement on Page 52  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Keystone Electronics Co., 50-52 Franklin St., New York 13, N. Y.  
 Kings Electronics Co., 372 Classon Ave., Brooklyn 5, N. Y.  
 Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.  
 See Advertisements on Pages 257 to 260

Morse Co., Frank W., 1300 Soldiers Field Rd., Boston 35, Mass.  
**National Co., 61 Sherman St., Malden 48, Mass.**  
 See Advertisement on Page 78  
 Runzel Cord & Wire Co., 4731 W. Montrose Ave., Chicago, Ill.  
 States Co., 19 New Park Ave., Hartford 6, Conn.  
**Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.**  
 See Advertisements on Pages 88, 89  
 Wood Electric Co., Inc., C. D., 826 Broadway, New York 3, N. Y.

## POINTERS—Dial

**Aerolite Electronic Hardware Corp., 24 Cliff St., Jersey City, N. J.**  
 See Advertisement on Page 246  
**Aermotive Equipment Corp., 1632-8 Central St., Kansas City 10, Mo.**  
**Austin Co., O., 335 Throop Ave., Brooklyn 21, N. Y.**  
**Diebel Die & Mfg. Co., 3658 N. Lincoln Ave., Chicago 13, Ill.**  
**Emeloid Co., Inc., The, 291 Laurel Ave., Arlington, N. J.**  
**Eric Resistor Corp., 644 W. 12th St., Erie, Pa.**  
 See Advertisement on Page 47  
**Felsenthal & Sons, G., 4100 W. Grand Ave., Chicago 51, Ill.**  
**Gemloid Corp., 79-10 Albion Ave., Elmhurst, N. Y.**  
**General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.**  
 See Advertisement on Page 90  
**Grammes & Sons, Inc., L. F., 389 Union St., Allentown 2, Pa.**  
**Insuline Corp. of America, 36-02 35th Ave., L. I. City, N. Y.**  
 See Advertisement on Page 166  
**J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkway., Brooklyn, N. Y.**  
**La Magna Mfg. Co., Inc., East Rutherford, N. J.**  
**Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.**  
 See Advertisement on Page 44  
**National Co., Inc., 61 Sherman St., Malden 48, Mass.**  
 See Advertisement on Page 78  
**New England Radiocrafters, 1156 Commonwealth Ave., Boston 34, Mass.**  
**Parisian Novelty Co., 3510 South Western Ave., Chicago 8, Ill.**  
**Precision Tube Co., 3828 Terrace St., Philadelphia 28, Pa.**  
 See Advertisement on Page 218  
**Searle Aero Industries, Inc., Orange, Calif.**  
**Standard Molding Corp., Dayton, Ohio**  
**Ucinite Co., Div. United-Carr Fastener Corp., 459 Watertown St., Newtonville, Mass.**  
**Uniform Tubes, Shurs Lane & Larniston Sts., Roxborough, Phila., Pa.**

## POINTS—Contact

**Brainin Co., C. S., 233 Spring St., New York 13, N. Y.**  
 See Advertisement on Page 244  
**Callite Tungsten Corp., 540 39th St., Union City, N. J.**  
**Cleveland Tungsten, Inc., 10200 Meech Ave., Cleveland, Ohio**  
**Fanstel Metallurgical Corp., 2200 Sheridan Rd., No. Chicago, Ill.**  
**Gibson Electric Co., 8350 Frankstown Avenue, Pittsburgh 21, Pa.**  
**Graphite Metallizing Corp., 1044 Nepperhan Ave., Yonkers 3, N. Y.**  
**Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.**  
 See Advertisement on Page 166  
**Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.**  
 See Advertisements on Pages 257 to 260  
**Speer Carbon Co., Lincoln Ave., St. Marys, Pa.**  
**Tricon Mfg. Co., 3318 S. Racine Ave., Chicago, Ill.**  
**Wilson Co., H. A., 97 Chestnut St., Newark, N. J.**  
 See Advertisement on Page 191

## POST—Binding

**Aerolite Electronic Hardware Corp., 24 Cliff St., Jersey City, N. J.**  
 See Advertisement on Page 246  
**Aircraft Radio Corp., Boonton, N. J.**  
 See Advertisement on Page 185  
**Amalgamated Radio Television Corp., 476 Broadway, New York 13, N. Y.**

**Brown Engineering Co., 4635 S. E. Hawthorne Blvd., Portland 15, Oregon**  
**Cinch Mfg. Corp., 2335 W. Van Buren St., Chicago 12, Ill.**  
 See Advertisement on Page 75  
**Eastern Specialty Co., Phila. 40, Pa.**  
**Eby, Inc., Hugh H., 18 W. Chelton Ave., Phila. 13, Pa.**  
**Franklin Mfg. Co., A. W., 43-20 34th St., Long Island City, N. Y.**  
 See Advertisement on Page 98  
**General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.**  
**Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.**  
 See Advertisements on Pages 94, 95  
**Insulation Mfg. Co., 11 New York Ave., Brooklyn, N. Y.**  
**Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.**  
 See Advertisement on Page 166  
**Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.**  
**Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.**  
 See Advertisement on Page 44  
**National Co., Inc., 61 Sherman St., Malden 48, Mass.**  
 See Advertisement on Page 78  
**Schott Co., Walter L., 9306 Santa Monica Blvd., Beverly Hills, Calif.**  
**Shalleross Mfg. Co., 10 Jackson Ave., Colingdale, Pa.**  
**States Co., 19 New Park Ave., Hartford 6, Conn.**  
**Stronghold Screw Products, 216 West Hubbard St., Chicago 10, Ill.**  
**Superior Electric Co., 83 Laurel St., Bristol, Conn.**  
 See Advertisements on Pages 5 to 16  
**Thwing-Albert Instrument Co., 5351 Pulaski Ave., Philadelphia 44, Pa.**

## POTENTIOMETERS

**Amalgamated Electronic Associated, 60 E. 42nd St., New York 17, N. Y.**  
**Atlas Resistor Co., 423 Broome St., New York, N. Y.**  
**Audio Products Co., 2101 W. Olive Ave., Burbank, Calif.**  
**Bailey Meter Co., 1044 Ivanhoe Rd., Cleveland 10, Ohio**  
**Bradley Co., Allen, 136 W. Greenfield Ave., Milwaukee 2, Wisc.**  
**Brown Engineering Co., 4635 S. E. Hawthorne Blvd., Portland 15, Oregon**  
**Carter Radio Div., Precision Parts Co., 213 Institute Place, Chicago 10, Ill.**  
**Centralab, Div. Globe Union Inc., 900 E. Keefe Ave., Milwaukee 1, Wisc.**  
 See Advertisements on Pages 24, 25  
**Clarostat Mfg. Co. Inc., 285-7 6th St., Brooklyn, N. Y.**  
**Dalmo Victor Co., San Carlos, Calif.**  
**Daven Co., 191 Central Ave., Newark 4, N. J.**  
**DeJur-Amsco Corp., Northern Blvd. at 45th St., L. I. City 1, N. Y.**  
**Electronic Associates Inc., 61 Brighton Ave., Long Branch, N. J.**  
**Electronic Development Lab., 2655 W. 19th St., Chicago 8, Ill.**  
**Fairchild Camera & Instrument Corp., 88-06 Van Wyck Blvd., Jamaica 1, N. Y.**  
**Foxboro Co., Foxboro, Mass.**  
**General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.**  
**Giannini & Co., Inc., G. M., Autoflight Instruments Div., 285 W. Colorado St., Pasadena 1, Calif.**  
**Gibbs Div., George W. Borg Corp., 814 Michigan St., Delavan, Wisc.**  
 See Advertisement on Page 250  
**Hardwick, Hindle, Inc., 40 Hermon St., Newark, N. J.**  
 See Advertisement on Page 322  
**HELLPOT Corp., 1011 Mission St., South Pasadena, Calif.**  
 See Advertisement on Page 229  
**International Resistance Co., 401 N. Broad St., Phila. 8, Pa.**  
**Legri-8 Co., Inc., 846-850 Amsterdam Ave., New York, N. Y.**  
 See Advertisement on Page 202  
**Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.**  
 See Advertisements on Pages 257 to 260  
**Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.**  
**Monitor Controller Co., 51 S. Gay St., Baltimore 2, Md.**  
**Muter Co., 1255 S. Michigan Ave., Chicago, Ill.**  
**National Electric Controller Co., 5307 Ravenswood Ave., Chicago, Ill.**  
**Ohmite Manufacturing Co., 4835 W. Flournoy St., Chicago 44, Ill.**  
 See Advertisement on Page 179  
**Precision Resistor Co., 334 Badger Ave., Newark 8, N. J.**

**Rex Rheostat Co., 3 Foxhurst Rd., Baldwin, N. Y.**  
 See Advertisement on Page 256  
**Rubicon Co., 3751 Ridge Ave., Phila., Pa.**  
**Schaefer Bros. Co., 1059 W. 11th St., Chicago, Ill.**  
**Stackpole Carbon Co., St. Marys, Pa.**  
**Tagliabue Division, C. J. Portable Products Corp., 550 Park Ave., Brooklyn 5, N. Y.**  
**Tech Labs., 337 Central Ave., Jersey City, N. J.**  
**Thwing-Albert Instrument Co., 5351 Pulaski Ave., Philadelphia 44, Pa.**  
**Trefz Mfg. Co., 511 E. 164th St., New York 56, N. Y.**  
**Utah Radio Products Co., 820 Orleans St., Chicago, Ill.**  
**Van Dyke Instruments, Inc., Tarzana, Calif.**  
**Ward Leonard Electric Co., 31 South St., Mount Vernon, N. Y.**  
 See Advertisement on Page 175  
**Westinghouse Electric Corp., East Pittsburgh, Pa.**  
**Weston Electrical Instrument Co., 618 Frelinghuysen Avenue, Newark 5, N. J.**  
**Wheelco Instruments Co., 847 W. Harrison St., Chicago 7, Ill.**  
**Wirt Co., 5221 Greene St., Phila., Pa.**

## POTENTIOMETERS—Portable Instrument

**Brown Instrument Co., 4428 Wayne Ave., Philadelphia 44, Pa.**  
**Centralab Div., Globe Union Inc., 900 Keefe Ave., Milwaukee 1, Wisc.**  
 See Advertisements on Pages 24, 25  
**Foxboro Co., Foxboro, Mass.**  
**Leeds & Northrup Co., 4970 Stenton Ave., Philadelphia, Pa.**  
**Rubicon Co., 3751 Ridge Ave., Philadelphia, Pa.**  
**Thwing-Albert Instrument Co., 5351 Pulaski Ave., Philadelphia 44, Pa.**  
**Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.**  
**Wheelco Instruments Corp., 847 W. Harrison St., Chicago 7, Ill.**  
**Winslow Co., 9 Liberty St., Newark 5, N. J.**

## POTS—Soldering

**Acme Electric Heating Co., 1217 Washington St., Boston, Mass.**  
**Electric Soldering Iron Co., 1845 W. Elm St., Deep River, Conn.**  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
**Lectrohm, Inc., 5125 W. 25th St., Cicero 50, Ill.**  
**Meissner Mfg. Div., Maguire Industries, Inc., Mt. Carmel, Ill.**  
**Special Chemicals Co., 30 Irving Pl., New York 3, N. Y.**  
**Sta-Warm Electric Co., Ravenna, Ohio**  
**Vulcan Electric Co., 88 Holten St., Danvers, Mass.**  
**Waage Electric Co., A. H., 54 Park Place, New York 7, N. Y.**

## POTS AND TANKS—Heating

**Aerolite Products Co., 5701 Park Ave., West New York, N. J.**  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
**Lukens Steel Co., Coatesville, Pa.**  
**Sta-Warm Electric Co., Ravenna, Ohio**  
**Vulcan Electric Co., 88 Holten St., Danvers, Mass.**  
**Waage Electric Co., A. H., 54 Park Pl., New York 7, N. Y.**

## POWDERS—Polishing

**Linick Chemical Co., 29 E. Madison Street, Chicago 2, Ill.**

## POWER PACKS

**Airpax Products Co., P. O. Box 6766, Baltimore 4, Maryland**  
**American Radio Co., 611 E. Garfield Ave., Glendale, Calif.**  
**American Television & Radio Co., 300 E. Fourth St., St. Paul 1, Minn.**  
**Amplifier Corp. of America, 396 Broadway, New York 13, N. Y.**

Chatham Electronics, 475 Washington St., Newark 2, N. J.  
See Advertisement on Page 247  
Collins Audio Products Co., 126 Park St., Westfield, N. J.  
See Advertisement on Page 253  
Electrical Windings, Inc., 2015 N. Kolmar Ave., Chicago 39, Ill.  
Electro Products Labs., 549 W. Randolph St., Chicago 6, Ill.  
Electronic Apparatus, Inc., 347 Madison Ave., New York 17, N. Y.  
Electronic Labs, Inc., 24 W. 24th St., Indianapolis, Indiana  
Electronic Products Co., 19 No. First St., Geneva, Ill.  
Espy Radio & Electronic Corp., 1218 Lincoln Ave., Santa Monica, Calif.  
See Advertisement on Page 156  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
General Transformer Corp., 1260 W. Van Buren St., Chicago 7, Ill.  
Inductive Equipment Co., Gettysburg, Pa.  
Kaar Engineering Co., 619 Emerson St., Palo Alto, Calif.  
Maguire Industries Inc., Electronics Dept., Bridgeport, Conn.  
Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.  
See Advertisement on Page 257 to 260  
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
See Advertisement on Page 44  
National Co., Inc., 61 Sherman St., Malden 48, Mass.  
See Advertisement on Page 78  
Pan American Electric Co., Inc., 2912 Atlantic Ave., Brooklyn 7, N. Y.  
Radiart Corp., 3571 W. 62nd St., Cleveland, Ohio  
Shauer Machine Co., Cincinnati 2, Ohio  
Sorensen & Co., 375 Fairfield Ave., Stamford, Conn.  
See Advertisement on Page 154  
Standard Transformer Corp., 1500 N. Halsted St., Chicago, Ill.  
Transmitter Equipment Co., Inc., 345 Hudson St., New York 14, N. Y.  
Vibrapower Co., James, 3125 N. Oconto Ave., Chicago, Ill.  
Western Cable Battery Co. Inc., 395 Sibley St., St. Paul, Minn.

## POWER SUPPLIES

Airpax Products Co., P. O. Box 6766, Baltimore 4, Md.  
American Television & Radio Co., 300 E. Fourth St., St. Paul, Minn.  
Amplifier Corp. of America, 396 Broadway, New York 13, N. Y.  
Audio Products Co., 2101 W. Olive Ave., Burbank, Calif.  
Benwood Linze Co., 1815 Locust St., St. Louis, Mo.  
See Advertisement on Page 212  
Chatham Electronics, 475 Washington St., Newark 2, N. J.  
See Advertisement on Page 247  
Cinema Engineering Co., 1508 W. Verdugo Ave., Burbank, Calif.  
Collins Audio Products Co., 126 Park St., Westfield, N. J.  
See Advertisement on Page 253  
Communication Measurements Lab., 120 Greenwich St., New York, N. Y.  
De Mornay-Budd Inc., 475 Grand Concourse, New York, N. Y.  
See Advertisement on Page 171  
Development Engineering Co., Inc., The, 1818 Ashland St., Houston 8, Texas  
Eclipse Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.  
Electro Products Labs., 549 W. Randolph St., Chicago, Ill.  
Electronic Apparatus, Inc., 347 Madison Ave., New York 17, N. Y.  
Electronic Associates Inc., 61 Brighton Ave., Long Branch, N. J.  
Electronic Labs, Inc., 24 W. 24th St., Indianapolis, Ind.  
Espy Radio & Electronic Corp., 1218 Lincoln Ave., Santa Monica, Calif.  
See Advertisement on Page 156  
Essex Electronics, 1060 Broad St., Newark 2, N. J.  
See Advertisement on Page 241  
Farnsworth Television & Radio Corp., 3700 Pontiac St., Ft. Wayne, Ind.  
Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
See Advertisements on Pages 48A to 48D  
Ferris Instrument Co., 110-112 Cornelia St., Boonton, N. J.  
Freed Transformer Co., 72 Spring St., New York 12, N. Y.  
See Advertisement on Page 253  
Furst Electronics, 800 W. North Ave., Chicago 22, Ill.  
See Advertisement on Page 248  
General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
General Electric Co., Syracuse, N. Y.  
See Advertisements on Pages 96, 96A  
Green Electric Co., Inc., 130 Cedar St., New York 6, N. Y.  
Harvey Radio Labs., Inc., 447 Concord Ave., Cambridge, Mass.  
Inductive Equipment Co., Gettysburg, Pa.  
Industrial Instruments Inc., 17 Pollack Ave., Jersey City 5, N. Y.  
International Transformer Co., 326 Broadway, New York, N. Y.

Gem Radio & Television Co., 72 Cortlandt St., New York 6, N. Y.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
Goslin Electric & Mfg. Co., 2921 W. Olive St., Burbank, Calif.  
See Advertisement on Page 180  
Green Electric Co., Inc., 130 Cedar St., New York 6, N. Y.  
Harvey Radio Labs., Inc., 447 Concord Ave., Cambridge, Mass.  
Hercules Electric & Mfg. Co., Inc., 2500 Atlantic Ave., Brooklyn 7, N. Y.  
Inductive Equipment Co., Gettysburg, Pa.  
Industrial Instruments Inc., 17 Pollack Ave., Jersey City 5, N. J.  
Measurement Engineering Ltd., 61 Duke St., Toronto, Canada  
See Advertisement on Page 193  
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
See Advertisement on Page 44  
Monroe Coil Co., 2659 W. 19th St., Chicago, Ill.  
National Co., Inc., 61 Sherman St., Malden 48, Mass.  
See Advertisement on Page 78  
Pan American Electric Co., Inc., 2912 Atlantic Ave., Brooklyn 7, N. Y.  
Polarad Electronics Co., 135 Liberty St., New York 6, N. Y.  
Radio Corp. of America, RCA Victor Div., Camden, N. J.  
See Advertisements on Inside Back Cover & Back Cover, 251  
Shallcross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.  
Sorensen & Co., 375 Fairfield Ave., Stamford, Conn.  
See Advertisement on Page 154  
Superior Electric Co., 83 Laurel St., Bristol, Conn.  
Takk Corp., Newark, Ohio  
Technical Apparatus Co., 167 Washington St., Boston 8, Mass.  
Telequip Radio Co., 1901 S. Washtenaw, Chicago, Ill.  
Tracerlab, Inc., 55 Oliver St., Boston 10, Mass.  
Transmitter Equipment Co., Inc., 345 Hudson St., New York 14, N. Y.  
U. S. Television Mfg. Corp., 3 W. 61st St., New York, N. Y.  
United Transformer Corp., 150 Varick St., New York 13, N. Y.  
See Advertisement on Inside Front Cover  
Waterman Products Co., Inc., 2445-63 Emerald St., Philadelphia 25, Pa.  
See Advertisement on Page 76  
Weltronic Co., 19500 West 8 Mile Rd., Detroit 19, Mich.

## POWER SUPPLIES—Electronically Regulated

American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
Amplifier Corp. of America, 396 Broadway, New York, N. Y.  
Atomic Instrument Co., 160 Charles St., Boston, Mass.  
Bardwell & McAllister, 7636 Santa Monica Blvd., Hollywood, Calif.  
Communication Measurements Lab. Inc., 120 Greenwich St., New York, N. Y.  
Development Engineering Co., Inc., The, 1818 Ashland St., Houston 8, Texas  
Electronic Apparatus, Inc., 347 Madison Ave., New York 17, N. Y.  
Electronic Associates, Inc., 61 Brighton Ave., Long Branch, N. J.  
Espy Radio & Electronic Corp., 1218 Lincoln Ave., Santa Monica, Calif.  
See Advertisement on Page 156  
Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
See Advertisements on Pages 48A to 48D  
Freed Transformer Co., 72 Spring St., New York 12, N. Y.  
See Advertisement on Page 253  
Furst Electronics, 800 W. North Ave., Chicago 22, Ill.  
See Advertisement on Page 248  
General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
General Electric Co., Syracuse, N. Y.  
See Advertisements on Pages 96, 96A  
Green Electric Co., Inc., 130 Cedar St., New York 6, N. Y.  
Harvey Radio Labs., Inc., 447 Concord Ave., Cambridge, Mass.  
Inductive Equipment Co., Gettysburg, Pa.  
Industrial Instruments Inc., 17 Pollack Ave., Jersey City 5, N. Y.  
International Transformer Co., 326 Broadway, New York, N. Y.

Measurement Engineering Ltd., 61 Duke St., Toronto, Can.  
See Advertisement on Page 193  
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
See Advertisement on Page 44  
Moulie Specialties Co., 1005-1007 W. Washington St., Bloomington, Ill.  
Pan American Electric Co., Inc., 2912 Atlantic Ave., Brooklyn 7, N. Y.  
Polarad Electronics Co., 135 Liberty St., New York 6, N. Y.  
Radio Corp. of America, RCA Victor Div., Camden, N. J.  
See Advertisements on Inside Back Cover & Back Cover, 251  
Richardson Allen Corp., 15 W. 20th St., New York 11, N. Y.  
Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.  
Sorensen & Co., 375 Fairfield Ave., Stamford, Conn.  
See Advertisement on Page 154  
Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
See Advertisements on pages 80A, 80B  
Technical Apparatus Co., 167 Washington St., Boston 8, Mass.  
Tracerlab, Inc., 55 Oliver St., Boston 10, Mass.  
Transmitter Equipment Co., Inc., 345 Hudson St., New York 14, N. Y.  
United Transformer Corp., 150 Varick St., New York 13, N. Y.  
See Advertisement on Inside Front Cover  
Ward Leonard Electric Co., 31 South St., Mt. Vernon, N. Y.  
See Advertisement on Page 175  
Weltronic Co., 19500 West 8 Mile Rd., Detroit 19, Mich.  
West Coast Electronics Co., 1601 S. Burlington St., Los Angeles 6, Calif.  
Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
See Advertisements on Pages 88, 89  
Weymouth Instrument Co., 1440 Commercial St., East Weymouth, Mass.

## POWER SUPPLIES—Voltage Regulated

American Communications Corp., 306 Broadway, New York 7, N. Y.  
American Radio Co., 611 E. Garfield Av., Glendale, Calif.  
Amplifier Corp. of America, 396 Broadway, New York 13, N. Y.  
Atomic Instruments Co., 160 Charles St., Boston, Mass.  
Collins Audio Products Co., 126 Park St., Westfield, N. J.  
See Advertisement on Page 253  
Communication Measurements Lab. Inc., 120 Greenwich St., New York, N. Y.  
Electronic Apparatus, Inc., 347 Madison Ave., New York 17, N. Y.  
Electronic Measurements Co., Red Bank, N. J.  
See Advertisement on Page 68  
Espy Radio & Electronic Corp., 1218 Lincoln Ave., Santa Monica, Calif.  
See Advertisement on Page 156  
Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
See Advertisements on Pages 48A to 48D  
Freed Transformer Co., 72 Spring St., New York 12, N. Y.  
See Advertisement on Page 253  
Furst Electronics, 800 W. North Ave., Chicago 22, Ill.  
See Advertisement on Page 248  
General Electric Co., Syracuse, N. Y.  
See Advertisements on Pages 96, 96A  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Green Electric Co., Inc., 130 Cedar St., New York 6, N. Y.  
Harvey Radio Labs., Inc., 447 Concord Ave., Cambridge, Mass.  
Industrial Instruments, Inc., 17 Pollack Ave., Jersey City 5, N. J.  
International Transformer Co., 326 Broadway, New York, N. Y.  
MacLeod & Hanopol, 24 Chelsea St., Charlestown 29, Mass.  
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
See Advertisement on Page 44  
National Co., Inc., 61 Sherman St., Malden 48, Mass.  
See Advertisement on Page 78  
Pan American Electric Co., Inc., 2912 Atlantic Ave., Brooklyn 7, N. Y.  
Radio Television Institute, Inc., 480 Lexington Ave., New York 17, N. Y.  
Richardson Allen Corp., 15 W. 20th St., New York 11, N. Y.  
Sorensen & Co., 375 Fairfield Ave., Stamford, Conn.  
See Advertisement on Page 154

Superior Electric Co., 83 Laurel St., Bristol, Conn.  
 See Advertisements on Pages 5 to 16  
 Technical Apparatus Co., 167 Washington St., Boston 8, Mass.  
 Thermionic Engineering Corp., Pomptain Plains, N. J.  
 Transmitter Equipment Co., Inc., 345 Hudson St., New York 14, N. Y.  
 United Transformer Corp., 150 Varick St., New York 13, N. Y.  
 See Advertisement on Inside Front Cover  
 Ward Leonard Electric Co., 31 South St., Mt. Vernon, N. Y.  
 See Advertisement on Page 175  
 Weymouth Instrument Co., 1440 Commercial St., East Weymouth, Mass.

## PRE-AMPLIFIERS for COMMUNICATION RECEIVERS

American Communications Corp., 306 Broadway, New York 7, N. Y.  
 Barone Co., S. A., 143 W. 22nd St., New York 11, N. Y.  
 Eckstein Radio & Television Co., 914 LaSalle Ave., Minneapolis 2, Minn.  
 McElroy Mfg. Corp., Littleton, Mass.  
 McMurdo Silver Co., Inc., 1249 Main St., Hartford 3, Conn.  
 Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44  
 Pan American Electric Co., Inc., 2912 Atlantic Ave., Brooklyn 7, N. Y.  
 Stark Sound Engineering Co., P. O. Box 493, Port Wayne 1, Ind.  
 Technical Apparatus Co., 167 Washington St., Boston 8, Mass.

## PRE-SELECTORS

American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
 Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44  
 National Co., Inc., 61 Sherman St., Malden 48, Mass.  
 See Advertisement on Page 78  
 Radio Mfg. Engineers Inc., Peoria, Ill.  
 S-W Inductor Co., 1056 N. Wood St., Chicago, Ill.

## PRESSES—Hydraulic Molding

Hydraulic Press Mfg. Co., Mt. Gilead, Ohio  
 Stokes Machine Co., F. J., 5850 Tabor Road, Olney P. O., Philadelphia 20, Pa.

## PROBES

Barber Labs., A. W., 34-04 Francis Lewis Blvd., Flushing, N. Y.  
 Development Engineering Co., Inc., The, 1818 Ashland St., Houston 8, Texas  
 Kartron, Inc., 821A South 4th St., Alhambra, Calif.  
 Keystone Electronics Co., 50-52 Franklin St., New York 13, N. Y.  
 Radio City Products, 127 W. 26th St., New York, N. Y.  
 Radio Frequency Labs., Inc., Boonton, N. J.  
 Reiner Electronics Co., 152 W. 25th St., New York, N. Y.

## PRODUCTION TUBE TESTING EQUIPMENT

Buck Engineering Co., 37-41 Marey St., Freehold, N. J.  
 See Advertisement on Page 242  
 Chatham Electronics, 475 Washington St., Newark 2, N. J.  
 See Advertisement on Page 247  
 Electronic Apparatus, Inc., 347 Madison Ave., New York 17, N. Y.  
 Electronic Controls, Inc., 44 Sumner Ave., Newark, N. J.  
 Kahle Engineering Co., 1307 7th St., North Bergen, N. J.  
 See Advertisement on Page 256  
 Lyman Electric Corp., 12 Cass St., Springfield, Mass.  
 Pan American Electric Co., Inc., 2912 Atlantic Ave., Brooklyn 7, N. Y.  
 Precision Resistor Co., 334 Badger Ave., Newark 8, N. J.  
 Radio City Products, 127 W. 26th St., New York, N. Y.

Radio Corp. of America, Tube Div., Harrison, N. J.  
 Reiner Electronics Co., 152 W. 25th St., New York, N. Y.  
 Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.  
 Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.

## PROTECTIVE SEALERS

See Insulating Compounds

## PSYCHO GALVANOMETERS

Electric Medical Lab. Inc., Holliston, Mass.  
 Moulis Specialties Co., 1005-1007 W. Washington St., Bloomington, Ill.

## PUBLIC ADDRESS SYSTEMS

See Sound Systems, Complete

## PULLERS—Radio Tube

General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkway., Brooklyn, N. Y.  
 Kellemis Co., Saugatuck, Conn.

## PULLEYS—Dial

Aerolite Electronic Hardware Corp., 24 Cliff St., Jersey City, N. J.  
 See Advertisement on Page 246  
 Amalgamated Radio Television Corp., 476 Broadway, New York 13, N. Y.  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 La Magna Mfg. Co., Inc., East Rutherford, N. J.  
 Lamicold Fabricators, 3600 W. Potomac Ave., Chicago 51, Ill.  
 Searle Aero Industries, Inc., Orange, Calif.

## PUNCHES—Metal

General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 Greenlee Tool Co., 2136 12th St., Rockford, Ill.  
 Haydu Bros., Plainfield, N. J.  
 Hovis Screwlock Co., 8100 E. Nine Mile Rd., Van Dyke, Mich.  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Parker-Kalon Corp., 200 Varick St., New York 14, New York  
 Radiad Service, 720 W. Schubert Ave., Chicago 14, Ill.  
 Searle Aero Industries, Inc., Orange, Calif.  
 Wiedemann Machine Co., 1875 W. Sedgley Ave., Philadelphia 32, Pa.

## PUSH BOTTONS

Chicago Die Mold Corp., 4001 Wrightwood Ave., Chicago 39, Ill.  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Plastic Enterprises, 129 Bloomfield Ave., Bloomfield, N. J.  
 R. B. M. Div., Essex Wire Corp., Logansport, Ind.  
 Warrick Co., Chas. F., 16251 Hamilton Ave., Detroit 3, Mich.

## PYROMETERS AND POTENTIOMETER PYROMETERS

Bailey Meter Co., 1044 Ivanhoe Rd., Cleveland 10, Ohio  
 Bristol Co., The, Waterbury 91, Conn.  
 Brown Instrument Co., 4428 Wayne Ave., Philadelphia 44, Pa.  
 Electro-Tech Equipment Co., 331 Canal St., New York 13, N. Y.  
 Elematic Equipment Corp., 6046 S. Wentworth Ave., Chicago 21, Ill.  
 Foxboro Co., Foxboro, Mass.  
 General Electronics, Inc., 101 Hazel St., Paterson, N. J.  
 Gordon Co., Claude S., 3000 S. Wallace St., Chicago 16, Ill.  
 Illinois Testing Labs. Inc., 420 N. La Salle St., Chicago 10, Ill.  
 J B T Instruments, Inc., 441 Chapel St., New Haven 8, Conn.  
 Leeds & Northrup Co., 4970 Stenton Ave., Philadelphia, Pa.  
 Lewis Engineering Co., 52 Rubber Ave., Naugatuck, Conn.  
 Meters, Inc., 915 Riveria Dr., Indianapolis 5, Ind.  
 Nurnberg Thermometer Co., Inc., 112 Broadway, Cambridge 42, Mass.  
 Pyrometer Instrument Co., 103 Lafayette St., New York, N. Y.  
 Richards Co., Inc., Arklay S., 78 Winchester St., Newton Highlands, Mass.  
 Scientific Service Lab., Subsidiary Electronics, Inc., 915 Meridian Ave., South Pasadena, Calif.  
 Tagliabue Div., C. J., Portable Products Corp., 550 Park Ave., Brooklyn 5, N. Y.  
 Thwing-Albert Instrument Co., 5351 Pulaski Ave., Philadelphia 44, Pa.  
 Wheelco Instruments Corp., 846 W. Harrison St., Chicago 7, Ill.  
 Winslow Co., 9 Liberty St., Newark 5, N. J.

## QUARTZ—Unfinished Crystals

American Gem & Pearl Co., 6 West 48th St., New York 19, N. Y.  
 Cadie Chemical Products, Inc., 621 Sixth Ave., New York 11, N. Y.  
 Commercial Equipment Co., 1416 McGee St., Kansas City, Mo.  
 Crystal Research Labs., Inc., 29 Allyn St., Hartford, Conn.  
 Dallons Labs., 5066 Santa Monica Blvd., Los Angeles, Calif.  
 Eidson Electronic Co., 1802 N. Third St., Temple, Texas  
 Monitor Products Co., 815 Fremont St., So. Pasadena, Calif.  
 Nebel Lab., R. E., 1104 Lincoln Pl., Brooklyn 13, N. Y.  
 Premier Crystal Labs., Inc., 63 Park Row, New York, N. Y.  
 Reeves-Hoffman Corp., 215 E. 91st St., New York, N. Y.  
 See Advertisement on Page 180  
 Standard Piezo Co., Woolworth Bldg., Carlisle, Pa.

## QUARTZ—Raw

Dallons Labs., 5066 Santa Monica Blvd., Los Angeles, Calif.  
 Diamond Drill Carbon Co., 53-63 Park Row, New York 7, N. Y.  
 Mica Products Mfg. Co., 69 Wooster St., New York, N. Y.

## RACKS—Relay

Art-Lloyd Metal Products Corp., 2973 Cropsy Ave., Brooklyn 14, N. Y.  
 See Advertisement on Page 236  
 Audio Products Co., 2101 W. Olive Ave., Burbank, Calif.  
 Autocall Co., The, Shelby, Ohio  
 Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.  
 Bud Radio Inc., 2118 E. 55th St., Cleveland 3, Ohio  
 Dahlstrom Metallic Door Co., Jamestown, N. Y.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to D  
 Ferranti Electric Inc., 30 Rockefeller Plaza, New York 20, N. Y.  
 See Advertisement on Page 196  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Johnson Co., E. F., Waseca, Minn.

Karp Metal Products Co., Inc., 139 Thirtieth St., Brooklyn, N. Y.  
 See Advertisement on Page 81  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero 38, Ill.  
 Measurement Engineering Ltd., 61 Duke St., Toronto, Canada  
 See Advertisement on Page 193  
 National Co., Inc., 61 Sherman St., Malden 48, Mass.  
 See Advertisement on Page 78  
 Par-Metal Products Corp., 32-62 49th St., Long Island City 3, N. Y.  
 See Advertisement on Page 162  
 Raytheon Mfg. Co., Commercial Products Div., Waltham 54, Mass.  
 Walter Co., S., 144 Centre St., Brooklyn 31, N. Y.  
 See Advertisement on Page 57  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89

**RADAR NAVIGATIONAL DEVICES**

Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
 De Mornay-Budd Inc., 475 Grand Concourse, New York 51, N. Y.  
 See Advertisement on Page 171  
 Electronic Associates Inc., 61 Brighton Ave., Long Branch, N. J.  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Hazeltine Electronics Corp., 1775 Broadway, New York, N. Y.  
 Radar Engineers, 4004 Arcade Bldg., Seattle 1, Wash.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Ripley Co., Torrington, Conn.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B  
 Submarine Signal Co., Affiliated with Raytheon Mfg. Co., 160 State St., Boston, Mass.  
 Televiso Products, Inc., 7466 W. Irving Park Rd., Chicago 34, Ill.  
 Westinghouse Electric Corp., Industrial Electronics Div., Baltimore, Md.

**RADAR SYSTEMS AND EQUIPMENT—  
Aircraft Landing**

Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
 De Mornay-Budd Inc., 475 Grand Concourse, New York 51, N. Y.  
 See Advertisement on Page 171  
 Gillfillan Bros., Inc., 1815 Venice Blvd., Los Angeles 15, Calif.  
 Hazeltine Electronics Corp., 1775 Broadway, New York, N. Y.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Rowe Radio Research Lab., 2422 N. Pulaski Rd., Chicago 39, Ill.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B  
 Televiso Products, Inc., 7466 W. Irving Park Rd., Chicago 34, Ill.

**RADAR SYSTEMS AND EQUIPMENT—  
Altimeters**

De Mornay-Budd Inc., 475 Grand Concourse, New York 51, N. Y.  
 See Advertisement on Page 171  
 Hazeltine Electronics Corp., 1775 Broadway, New York, N. Y.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Raytheon Mfg. Co., Power Tube Div., Waltham, Mass.  
 Rowe Radio Research Lab., 2422 N. Pulaski Rd., Chicago 39, Ill.

**RADAR SYSTEMS AND EQUIPMENT—  
Receivers**

A. R. F. Products, 7713 Lake St., River Forest, Ill.

Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
 De Mornay-Budd Inc., 475 Grand Concourse, New York 51, N. Y.  
 See Advertisement on Page 171  
 Electronic Associates Inc., 61 Brighton Ave., Long Branch, N. J.  
 General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Hammarlund Mfg. Co., 460 W. 34th St., New York 1, N. Y.  
 Hazeltine Electronics Corp., 1775 Broadway, New York, N. Y.  
 National-Simplex-Bludworth, Inc., Marine Div., 100 Gold St., New York 7, N. Y.  
 Philco Corp., Tioga & C Sts., Phila. 34, Pa.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Radiomarine Corp. of America, 75 Varick St., New York 13, N. Y.  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Rayton Inc., 407 N. Jackson St., Jackson, Mich.  
 Reeves-Hoffman Corp., 215 E. 91st St., New York, N. Y.  
 See Advertisement on Page 180  
 Reeves Instrument Corp., 215 E. 91st St., New York, N. Y.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161  
 Televiso Products, Inc., 7466 W. Irving Park Rd., Chicago 34, Ill.

**RADAR SYSTEMS AND EQUIPMENT—  
Trainers**

Airplane & Marine Instruments, Inc., Clearfield, Pa.  
 Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
 Reeves-Hoffman Corp., 215 E. 91st St., New York, N. Y.  
 See Advertisement on Page 180  
 Reeves Instrument Corp., 215 E. 91st St., New York, N. Y.  
 Televiso Products, Inc., 7466 W. Irving Park Rd., Chicago 34, Ill.  
 Wilmotte Mfg. Co., 1713 Kalorama Rd. N. W., Washington 9, D. C.

**RADAR SYSTEMS AND EQUIPMENT—  
Transmitters**

Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
 De Mornay-Budd Inc., 475 Grand Concourse, New York 51, N. Y.  
 See Advertisement on Page 171  
 Electronic Associates Inc., 61 Brighton Ave., Long Branch, N. J.  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Hammarlund Mfg. Co., 460 W. 34th St., New York 1, N. Y.  
 Hazeltine Electronics Corp., 1775 Broadway, New York, N. Y.  
 National-Simplex-Bludworth, Inc., Marine Div., 100 Gold St., New York 7, N. Y.  
 Philco Corp., Tioga & C Sts., Philadelphia 34, Pa.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Radiomarine Corp. of America, 75 Varick St., New York 13, N. Y.  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Reeves-Hoffman Corp., 215 E. 91st St., New York, N. Y.  
 See Advertisement on Page 180  
 Smith-Meeker Engineering Co., 125 Barclay St., New York 7, N. Y.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161  
 Televiso Products, Inc., 7466 W. Irving Park Rd., Chicago 34, Ill.  
 Transmitter Equipment Mfg. Co., Inc., 345 Hudson St., New York 14, N. Y.

**RADIOACTIVE ISOTOPES**

See Isotopes

**RATIOMETERS**

Sensitive Research Instrument Co., 9 Elm Ave., Mt. Vernon, N. Y.  
 Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.

**RECEIVERS—Aircraft**

Aermotive Equipment Corp., 1632-8 Central St., Kansas City 10, Mo.  
 Aircraft Radio Corp., Boonton, N. J.  
 See Advertisement on Page 185  
 Airadio Inc., Melrose Ave. & Battery Pl., Stamford, Conn.  
 Bassett Inc., Rex, 500 SE 2nd St., Ft. Lauderdale, Fla.  
 Belmont Radio Corp., Div. Raytheon Mfg. Co., 5921 W. Dickens Ave., Chicago 39, Ill.  
 Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
 Collins Radio Co., Cedar Rapids, Iowa  
 See Advertisements on Pages 30 to 33  
 Communications Co. Inc., 300 Greco Ave., Coral Gables 34, Fla.  
 Eckstein Radio & Television Co., 914 La Salle Ave., Minneapolis 2, Minn.  
 Electronic Specialty Co., 3456 Glendale Blvd., Los Angeles, Calif.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Hallcrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Harvey Wells Electronics Inc., North St., Southbridge, Mass.  
 Heath Co., Benton Harbor, Mich.  
 Herbach & Rademan Inc., 517 Ludlow St., Phila. 6, Pa.  
 Lear, Inc., 110 Ionia Ave., N. W., Grand Rapids 2, Mich.  
 Midwest Radio Corp., 909 Broadway, Cincinnati 2, Ohio  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Radio Navigational Instrument Corp., 500 Fifth Ave., New York 18, N. Y.  
 Searle Aero Industries, Inc., Orange, Calif.  
 Setchell Carlson, 2233 University Ave., St. Paul, Minn.  
 Technical Devices Corp., Beaufort & Eagle Rock Ave., Roseland, N. J.  
 Thompson Co., John E., 1440 W. 47th St., Chicago 9, Ill.  
 Western Electric Co. Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89  
 Wilcox Electric Co., 1400 Chestnut St., Kansas City, Mo.

**RECEIVERS—Automatic Radio Alarm**

Bendix Aviation Corp., Pacific Div., 11600 Sherman Way, North Hollywood, Calif.  
 Federal Telephone & Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 General Electric Co., Bridgeport 2, Conn.  
 Radiomarine Corp. of America, 75 Varick St., New York 13, N. Y.  
 Telechron Inc., Homer Ave., Ashland, Mass.

**RECEIVERS—a-m/f-m Communication**

Aero Communications, Inc., 231 Main St., Hempstead, N. Y.  
 Dine and Co., Inc., F. E., 2221 Warwick Ave., Santa Monica, Calif.  
 Erco Radio Labs. Inc., Fenimore Ave., Hempstead, N. Y.  
 Hallcrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Measurement Engineering Ltd., 61 Duke St., Toronto, Can.  
 See Advertisement on Page 193  
 Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44  
 National Co., Inc., 61 Sherman St., Malden 48, Mass.  
 See Advertisement on Page 78  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251

## RECEIVERS—*a-m* Fixed Frequency

Aero Communications, Inc., 231 Main St., Hempstead, N. Y.  
 American Communications Corp., 306 Broadway, New York 7, N. Y.  
 Breco Electronics Corp., 55 Vandam St., New York 13, N. Y.  
**Collins Radio Co., Cedar Rapids, Iowa**  
 See Advertisements on Pages 30 to 33  
 Eckstein Radio & Television Co., 914 La Salle Ave., Minneapolis 2, Minn.  
 Erco Radio Labs. Inc., Fenimore Ave., Hempstead, N. Y.  
 Garod Radio Corp., 70 Washington St., Brooklyn 1, N. Y.  
 Hallcrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Kaar Engineering Co., 619 Emerson St., Palo Alto, Calif.  
 Lavoie Labs., Morganville, N. J.  
 Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44  
**National Co., Inc., 61 Sherman St., Malden 48, Mass.**  
 See Advertisement on Page 78  
 Press Wireless Mfg. Corp., 1475 Broadway, New York 18, N. Y.  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Searle Aero Industries, Inc., Orange, Calif.  
 Smith-Meecker Engineering Co., Inc., 125 Barclay St., New York 7, N. Y.  
 Transmitter Equipment Co., Inc., 345 Hudson St., New York 14, N. Y.  
**Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.**  
 See Advertisements on Pages 88, 89

## RECEIVERS—Automobile

Bassett Inc., Rex, 500 SE 2nd St., Ft. Lauderdale, Fla.  
 Colonial Radio Corp., 254 Rano St., Buffalo 7, N. Y.  
 Delco Radio Div., General Motors Corp., Kokomo, Ind.  
 Eckstein Radio & Television Co., 914 La Salle Ave., Minneapolis 2, Minn.  
 Farnsworth Television & Radio Corp., Ft. Wayne, Ind.  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
 Harvey Radio Labs., Inc., 447 Concord Ave., Cambridge, Mass.  
 International Detrola Corp., 1501 Beard Ave., Detroit, Mich.  
 Pan American Electric Co., Inc., 2912 Atlantic Ave., Brooklyn 7, N. Y.  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Sonora Radio & Television Corp., 325 N. Hoyne Ave., Chicago, Ill.  
 Wells-Gardner & Co., 2701 N. Kildare Ave., Chicago, Ill.

## RECEIVERS—Communication and Amateur

Aero Communications, Inc., 231 Main St., Hempstead, N. Y.  
 American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
 Banks Mfg. Co., 1105 W. Lawrence Ave., Chicago 40, Ill.  
 Bassett Inc., Rex, 500 SE 2nd St., Ft. Lauderdale, Fla.  
 Beach Mfg. Inc., 322 East Beach Ave., Inglewood, Calif.  
 See Advertisement on Page 76  
**Browning Labs., Inc., 750 Main St., Winchester, Mass.**  
 See Advertisement on Page 65  
 Cardwell Mfg. Corp., Allen D., 97 Whiting St., Plainville, Conn.  
**Collins Radio Co., Cedar Rapids, Iowa**  
 See Advertisements on Pages 30 to 33  
 Communications Co. Inc., 300 Greco Ave., Coral Gables 34, Fla.  
 Dine and Co., Inc., F. E., 2221 Warwick Ave., Santa Monica, Calif.  
 Eckstein Radio & Television Co., 914 La Salle Ave., Minneapolis 2, Minn.  
 Erco Radio Labs. Inc., Fenimore Ave., Hempstead, N. Y.  
 General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Hallcrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.

Hammarlund Mfg. Co., 460 W. 34th St., New York 1, N. Y.  
 Harvey Wells Electronics Inc., North St., Southbridge, Mass.  
 Herbach & Rademan Inc., 517 Ludlow St., Phila. 6, Pa.  
 Hoffman Radio Corp., 3430 S. Hill St., Los Angeles 7, Calif.  
 Islip Radio Mfg. Co., Beech St., New York, N. Y.  
 Kaar Engineering Co., 619 Emerson St., Palo Alto, Calif.  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Link, Fred M., 125 W. 17th St., New York, N. Y.  
 McMurdo Silver Co., 1249 Main St., Hartford 3, Conn.  
**Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.**  
 See Advertisement on Page 44  
**National Co., Inc., 61 Sherman St., Malden 48, Mass.**  
 See Advertisement on Page 78  
 Northern Radio Co., 2208 4th Ave., Seattle 1, Wash.  
 Pierson Electronic Corp., 533 E. Fifth St., Los Angeles 13, Calif.  
 Press Wireless Mfg. Corp., 1475 Broadway, New York 18, N. Y.  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Radio Development & Research Co., 26 Cornell Ave., Jersey City, N. J.  
 Radio Labs. Inc., 2701 Calif. Ave., Seattle 6, Wash.  
 Radio Mfg. Engineers Inc., Peoria, Ill.  
**Radio Receptor Co., 251 W. 19th St., New York, N. Y.**  
 See Advertisement on Page 40  
 Radio Specialty Mfg. Co., 2023 S. E. 6th Ave., Portland 14, Oregon  
 Sargent Co., E. M., 212 Ninth St., Oakland, Calif.  
 Technical Apparatus Co., 167 Washington St., Boston 8, Mass.  
 Technical Devices Corp., Beaufort & Eagle Rock Ave., Roseland, N. J.  
 Waterproof Electric Co., 72 E. Verdugo Ave., Burbank, Calif.  
 Wilcox Electric Co., 1400 Chestnut St., Kansas City, Mo.

## RECEIVERS—Crystal Sets

American Communications Corp., 306 Broadway, New York 7, N. Y.  
 Brush Development Co., 3405 Perkins Ave., Cleveland 14, Ohio  
 Carron Mfg. Co., 415 S. Aberdeen St., Chicago, Ill.  
 E. A. M. Corp., The, 57 Fourth Ave., Brooklyn 17, N. Y.  
 Electronic Designs, Inc., Irvington, N. Y.  
**Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.**  
 See Advertisement on Page 166  
 Laurehk Radio Mfg. Co., 3931 Monroe Ave., Wayne, Mich.  
 Taybern Equipment Co., 120 Greenwich St., New York 6, N. Y.  
 Telemup Radio Co., 1901 S. Washtenaw, Chicago, Ill.

## RECEIVERS—Diversity Reception

Aero Communications, Inc., 231 Main St., Hempstead, N. Y.  
 Barone Co., S.A., 143 W. 22nd St., New York 11, N. Y.  
**Collins Radio Co., Cedar Rapids, Iowa**  
 See Advertisements on Pages 30 to 33  
 Ellinwood Industries, 150 W. Slauson Ave., Los Angeles 3, Calif.  
 Erco Radio Labs. Inc., Fenimore Ave., Hempstead, N. Y.  
**National Co., Inc., 61 Sherman St., Malden 48, Mass.**  
 See Advertisement on Page 78  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Schuttig & Co., 9th & Kearney Sts., N. E., Washington 17, D. C.

## RECEIVERS—*f-m*

Admiral Corp., 3800 W. Cortland St., Chicago 47, Ill.  
 Aero Communications, Inc., 231 Main St., Hempstead, N. Y.

Air Associates Inc., 5827 W. Century Blvd., Los Angeles 45, Calif.  
 American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
**Browning Labs., Inc., 750 Main St., Winchester, Mass.**  
 See Advertisement on Page 65  
 Communications Co. Inc., 300 Greco Ave., Coral Gables 34, Fla.  
 Dine and Co., Inc., F. E., 2221 Warwick Ave., Santa Monica, Calif.  
 Erco Radio Labs. Inc., Fenimore Ave., Hempstead, N. Y.  
 Espy Mfg. Co. Inc., 33 W. 46th St., New York 19, N. Y.  
 Fada Radio & Electric Co., Inc., 30-20 Thompson Ave., L. I. City, N. Y.  
 Farnsworth Television & Radio Corp., Ft. Wayne, Ind.  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
 Fisher Radio Co., 41 E. 47th St., New York, N. Y.  
 Garod Radio Corp., 70 Washington St., Brooklyn 1, N. Y.  
 General Electric Co., Bridgeport 2, Conn.  
 General Electric Co., Syracuse, N. Y.  
 Hallcrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Harvey Radio Labs., Inc., 447 Concord Ave., Cambridge, Mass.  
 Harvey Wells Electronics Inc., North St., Southbridge, Mass.  
 International Detrola Corp., 1501 Beard Ave., Detroit, Mich.  
 Kaar Engineering Co., 619 Emerson St., Palo Alto, Calif.  
 La Magna Mfg. Co., Inc., East Rutherford, N. J.  
 Lavoie Labs., Morganville, N. J.  
 Magnavox Co., The, Fort Wayne 4, Indiana  
**Measurement Engineering Ltd., 61 Duke St., Toronto, Can.**  
 See Advertisement on Page 193  
 Meissner Mfg. Div., Maguire Industries Inc., Mt. Carmel, Ill.  
 Mobile Communications Co., 202 E. Fourth St., Long Beach 2, Calif.  
**National Co., Inc., 61 Sherman St., Malden 48, Mass.**  
 See Advertisement on Page 78  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Radio Engineering Labs. Inc., 35-54 36th St., Long Island City, N. Y.  
 Schuttig & Co., 9th & Kearney Sts., N.E., Washington 17, D. C.  
**Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.**  
 See Advertisements on Pages 80A, 80B  
 Telicon Corp., 851 Madison Ave., New York 21, N. Y.  
 West Coast Electronics Co., 1601 S. Burlington St., Los Angeles 6, Calif.

## RECEIVERS—Fixed Frequency

Aero Communications, Inc., 231 Main St., Hempstead, N. Y.  
 American Communications Corp., 306 Broadway, New York 7, N. Y.  
 American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
 Bassett Inc., Rex, 500 SE 2nd St., Ft. Lauderdale, Fla.  
**Browning Laboratories, Inc., 750 Main St., Winchester, Mass.**  
 See Advertisement on Page 65  
**Collins Radio Co., Cedar Rapids, Iowa**  
 See Advertisements on Pages 30 to 33  
 Dine and Co., Inc., F. E., 2221 Warwick Ave., Santa Monica, Calif.  
 Electronic Sound Engineering Co., 4344-46 W. Armitage Ave., Chicago 39, Ill.  
 Erco Radio Labs. Inc., Fenimore Ave., Hempstead, N. Y.  
 Garod Radio Corp., 70 Washington St., Brooklyn 1, N. Y.  
 Hallcrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 International Detrola Corp., 1501 Beard Ave., Detroit, Mich.  
 Kaar Engineering Co., 619 Emerson St., Palo Alto, Calif.  
**Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.**  
 See Advertisement on Page 44  
**National Co., Inc., 61 Sherman St., Malden 48, Mass.**  
 See Advertisement on Page 78  
 Radio Labs. Inc., 2701 Calif. Ave., Seattle 6, Wash.  
 Schuttig & Co., 9th & Kearney Sts., N.E., Washington 17, D. C.  
 Searle Aero Industries, Inc., Orange, Calif.  
 Transmitter Equipment Co., Inc., 345 Hudson St., New York 14, N. Y.

Western Electric Co., Inc., 195 Broadway,  
New York 7, N. Y.  
See Advertisements on Pages 88, 89

**RECEIVERS—Loran**

National-Simplex-Bludworth, Inc., Marine  
Div., 100 Gold St., New York 7, N. Y.  
Philco Corp., Tioga & C Sts., Phila. 34, Pa.  
Radio Corp. of America, RCA Victor Div.,  
Camden, N. J.  
See Advertisements on Inside Back Cover &  
Back Cover, 251  
Sperry Gyroscope Co., Inc., Great Neck,  
L. I., N. Y.  
See Advertisements on Pages 80A, 80B

**RECEIVERS—Marine**

Aero Communications, Inc., 231 Main St.,  
Hempstead, N. Y.  
Bassett Inc., Rex, 500 SE 2nd St., Ft.  
Lauderdale, Fla.  
Communications Co., Inc., 300 Greco Ave.,  
Coral Gables 34, Fla.  
Dine and Co., Inc., F. E., 2221 Warwick  
Ave., Santa Monica, Calif.  
Erco Radio Labs., Inc., Fenimore Ave.,  
Hempstead, N. Y.  
Fisher Research Lab., 1961 University Ave.,  
Palo Alto, Calif.  
General Communication Co., 530 Common-  
wealth Ave., Boston 15, Mass.  
General Electric Co., Syracuse, N. Y.  
See Advertisements on Pages 96, 96A  
Gray Radio Co., 730 Okeeshobee Rd., W.  
Palm Beach, Fla.  
Hallcrafters Co., 4401 W. Fifth Ave.,  
Chicago 24, Ill.  
Harvey Wells Electronics Inc., North St.,  
Southbridge, Mass.  
Hose-McCann Telephone Co., 177 Pacific St.,  
Brooklyn 2, N. Y.  
Hudson American Corp., 25 W. 43rd St.,  
New York 18, N. Y.  
Jefferson, Inc., Ray, 40 E. Merrick Rd.,  
Freeport, N. Y.  
Jefferson-Travis Inc., 380 Second Ave., New  
York 10, N. Y.  
Kaar Engineering Co., 619 Emerson St.,  
Palo, Alto, Calif.  
National Co., Inc., 61 Sherman St., Malden  
48, Mass.  
See Advertisement on Page 78  
Northern Radio Co., 2208 Fourth Ave.,  
Seattle 1, Wash.  
Radio Development and Research Co., 26  
Cornellson Ave., Jersey City, N. J.  
Radiomarine Corp. of America, 75 Varick  
Street, New York 13, N. Y.  
Radio Navigational Instrument Corp., 500  
Fifth Ave., New York 18, N. Y.  
Sperry Gyroscope Co., Inc., Great Neck,  
L. I., N. Y.  
See Advertisements on Pages 80A, 80B  
Thompson Co., John E., 1440 W. 47th St.,  
Chicago 9, Ill.  
Transmitter Equipment Co., Inc., 345 Hud-  
son St., New York 14, N. Y.  
Westinghouse Electric Corp., Industrial  
Electronics Div., Baltimore, Md.

**RECEIVERS—Microwave**

Bendix Radio Div., Bendix Aviation Corp.,  
Baltimore 4, Md.  
De Mornay-Budd Inc., 475 Grand Concourse,  
New York 51, N. Y.  
See Advertisement on Page 171  
Federal Telephone and Radio Corp., 100  
Kingsland Rd., Clifton, N. J.  
See Advertisements on Pages 48A to 48D  
Radar Engineers, 4004 Arcade Bldg., Seattle  
1, Wash.  
Radio Corp. of America, RCA Victor Div.,  
Camden, N. J.  
See Advertisements on Inside Back Cover &  
Back Cover, 251  
Raytron, Inc., 407 N. Jackson Street, Jack-  
son, Mich.  
Sperry Gyroscope Co., Inc., Great Neck,  
L. I., N. Y.  
See Advertisements on Pages 80A, 80B  
Televiso Products Co., 7466 W. Irving Park  
Rd., Chicago 34, Ill.

**RECEIVERS—Panoramic**

Hallcrafters Co., 4401 W. Fifth Ave.,  
Chicago 24, Ill.  
Panoramic Radio Corp., 242 W. 55th St.,  
New York 19, N. Y.

**RECEIVERS—Police & Fire**

Aero Communications, Inc., 231 Main St.,  
Hempstead, N. Y.  
Bassett Inc., Rex, 500 SE 2nd St., Ft.  
Lauderdale, Fla.  
Dine and Co., Inc., F. E., 2221 Warwick  
Ave., Santa Monica, Calif.  
Doolittle Radio Inc., 7421 S. Loomis Blvd.,  
Chicago 36, Ill.  
Eckstein Radio & Television Co., 914  
La Salle Ave., Minneapolis 2, Minn.  
Erco Radio Labs., Inc., Fenimore Ave.,  
Hempstead, N. Y.  
Farnsworth Television & Radio Corp., Ft.  
Wayne, Ind.  
Federal Telephone and Radio Corp., 100  
Kingsland Rd., Clifton, N. J.  
See Advertisements on Pages 48A to 48D  
General Electric Co., Syracuse, N. Y.  
See Advertisements on Pages 96, 96A  
Hallcrafters Co., 4401 W. Fifth Ave.,  
Chicago 24, Ill.  
Hose-McCann Telephone Co., 177 Pacific  
St., Brooklyn 2, N. Y.  
Kaar Engineering Co., 619 Emerson St.,  
Palo Alto, Calif.  
Link, Fred M., 125 W. 17th St., New York,  
N. Y.  
Mobile Communications Co., 202 East  
Fourth St., Long Beach 2, Calif.  
Radio Corp. of America, RCA Victor Div.,  
Camden, N. J.  
See Advertisements on Inside Back Cover &  
Back Cover, 251  
Searle Aero Industries, Inc., Orange, Calif.  
Transmitter Equipment Co., Inc., 345 Hud-  
son St., New York 14, N. Y.  
West Coast Electronics Co., 1601 S. Burling-  
ton St., Los Angeles 6, Calif.  
Wilcox Electric Co., 1400 Chestnut St.,  
Kansas City, Mo.

**RECEIVERS—Radio Direction Finder**

Airplane & Marine Instruments, Inc., Clear-  
field, Pa.  
Bendix Radio Div., Bendix Aviation Corp.,  
Baltimore 4, Md.  
Collins Radio Co., Cedar Rapids Iowa  
See Advertisements on Pages 30 to 33  
Electronic Associates Inc., 61 Brighton Ave.,  
Long Branch, N. J.  
Fairchild Camera & Instrument Corp., 88-06  
Van Wyck Blvd., Jamaica 1, N. Y.  
Federal Telephone and Radio Corp., 100  
Kingsland Rd., Clifton, N. J.  
See Advertisements on Pages 48A to 48D  
Fisher Research Lab., 1961 University Ave.,  
Palo Alto, Calif.  
General Communication Co., 530 Common-  
wealth Ave., Boston 15, Mass.  
General Electric Co., Syracuse, N. Y.  
See Advertisements on Pages 96, 96A  
Grady Instrument Co., 689 Belmont St.,  
Belmont 78, Mass.  
Hallcrafters Co., 4401 W. Fifth Ave.,  
Chicago 24, Ill.  
Hose-McCann Telephone Co., 177 Pacific St.,  
Brooklyn 2, N. Y.  
Jarvis, Kenneth W., 1140 Cherry St.,  
Winnetka, Ill.  
Jefferson, Inc., Ray, 40 E. Merrick Rd.,  
Freeport, N. Y.  
Jefferson-Travis Inc., 380 Second Ave., New  
York 10, N. Y.  
McGrade Mfg. Co., Inc., E. W., 406 W. 34th  
St., Kansas City 2, Mo.  
National Co., Inc., 61 Sherman St., Malden  
48, Mass.  
See Advertisement on Page 78  
National-Simplex-Bludworth, Inc., Marine  
Div., 100 Gold St., New York 7, N. Y.  
Northern Radio Co., 2208 Fourth Ave.,  
Seattle 1, Wash.  
Paulsen-Webber Cordage Corp., 176 John  
St., New York 7, N. Y.  
Philco Corp., Tioga & C Sts., Phila. 34, Pa.  
Radio Corp. of America, RCA Victor Div.,  
Camden, N. J.  
See Advertisements on Inside Back Cover &  
Back Cover, 251  
Radio Labs. Inc., 2701 Calif. Ave., Seattle 6,  
Wash.  
Radio Navigational Instrument Corp., 500  
Fifth Ave., New York 18, N. Y.  
Sargent Co., E. M., 212 Ninth St., Oakland,  
Calif.  
Sperry Gyroscope Co., Inc., Great Neck,  
L. I., N. Y.  
See Advertisements on Pages 80A, 80B  
Western Electric Co., Inc., 195 Broadway,  
New York 7, N. Y.  
See Advertisements on Pages 88, 89

**RECEIVERS—Railroad**

Airplane & Marine Instruments, Inc., Clear-  
field, Pa.

Bendix Radio Div., Bendix Aviation Corp.,  
Baltimore 4, Md.  
Collins Radio Co., Cedar Rapids, Iowa  
See Advertisements on Pages 30 to 33  
Communications Co. Inc., 300 Greco Ave.,  
Coral Gables 34, Fla.  
Dine and Co., Inc., F. E., 2221 Warwick  
Ave., Santa Monica, Calif.  
Farnsworth Television & Radio Corp., Ft.  
Wayne, Ind.  
General Electric Co., Syracuse, N. Y.  
See Advertisements on Pages 96, 96A  
Hallcrafters Co., 4401 W. Fifth Ave.,  
Chicago 24, Ill.  
Motorola Radio, Galvin Mfg. Corp., 4545  
Augusta Blvd., Chicago, Ill.  
Radio Corp. of America, RCA Victor Div.,  
Camden, N. J.  
See Advertisements on Inside Back Cover &  
Back Cover, 251  
Raytheon Mfg. Co., Power Tube Div.,  
Waltham 54, Mass.  
Sperry Gyroscope Co., Inc., Great Neck,  
L. I., N. Y.  
See Advertisements on Pages 80A, 80B  
Transmitter Equipment Co., Inc., 345 Hud-  
son St., New York 14, N. Y.  
West Coast Electronics Co., 1601 S. Burling-  
ton St., Los Angeles 6, Calif.  
Western Electric Co., Inc., 195 Broadway,  
New York 7, N. Y.  
See Advertisements on Pages 88, 89  
Westinghouse Electric Corp., Industrial  
Electronics Div., Baltimore, Md.

**RECEIVERS—Television**

Admiral Corp., 3800 Cortland St., Chicago  
47, Ill.  
Air-King Products Co., Inc., 1523 63rd St.,  
Brooklyn, N. Y.  
American Electronics, 37 E. 18th St., New  
York 3, N. Y.  
Ansley Radio Corp., 41 St. Joes Ave.,  
Trenton 9, N. J.  
Biltmore Radio Corp., 15 Ave. A, New York  
3, N. Y.  
Colonial Radio Corp., 254 Rano St., Buffalo  
7, N. Y.  
Crosley Corp., 1329 Arlington St., Cincinnati  
3, Ohio  
Du Mont Labs., Inc., Allen B., 2 Main Ave.,  
Passaic, N. J.  
Electronic Apparatus, Inc., 347 Madison  
Ave., New York 17, N. Y.  
Electronic Corp. of America, 170 53rd St.,  
Brooklyn, N. Y.  
Espey Mfg. Co., Inc., 33 W. 46th St., New  
York 19, N. Y.  
Fada Radio & Electric Co., Inc., 30-20  
Thomson Ave., L. I. City, N. Y.  
Farnsworth Television & Radio Corp., Ft.  
Wayne, Ind.  
Federal Telephone and Radio Corp., 100  
Kingsland Rd., Clifton, N. J.  
See Advertisements on Pages 48A to 48D  
Fisher Radio Co., 41 E. 47th St., New York,  
N. Y.  
Garod Radio Corp., 70 Washington St.,  
Brooklyn, N. Y.  
Gem Radio & Television Co., 72 Cortlandt  
St., New York 6, N. Y.  
Hallcrafters Co., 4401 W. Fifth Ave.,  
Chicago 24, Ill.  
Hoffman Radio Corp., 3430 S. Hill St., Los  
Angeles 7, Calif.  
Howard Radio Co., 1735 Belmont Ave.,  
Chicago 13, Ill.  
Lear, Inc., 110 Ionia Ave., N. W., Grand  
Rapids 2, Mich.  
Magnavox Co., The, Ft. Wayne 4, Indiana  
Majestic Radio & Television Corp., St.  
Charles, Ill.  
Minerva Corp. of America, 238 William St.,  
New York, N. Y.  
Motorola Radio, Galvin Mfg. Corp., 4545  
Augusta Blvd., Chicago, Ill.  
Pan American Electric Co., Inc., 2912 At-  
lantic Ave., Brooklyn 7, N. Y.  
Philco Corp., Tioga & C Sts., Phila. 34, Pa.  
Philharmonic Radio Corp., 528 E. 72nd St.,  
New York 21, N. Y.  
Pilot Radio Corp., 37-06 36th St., L. I. City,  
N. Y.  
Polarad Electronics Co., 135 Liberty St.,  
New York 6, N. Y.  
Radio Corp. of America, RCA Victor Div.,  
Camden, N. J.  
See Advertisements on Inside Back Cover &  
Back Cover, 251  
Radio Development and Research Co., 26  
Cornellson Ave., Jersey City, N. J.  
Radio Electronic Products Co., 230 S.  
Spring St., Los Angeles, Calif.  
Raytheon Mfg. Co., Power Tube Div.,  
Waltham 54, Mass.  
Signal Electronics, Inc., 114 East 16th St.,  
New York, N. Y.  
Sonora Radio & Television Corp., 325 N.  
Hoyle Ave., Chicago, Ill.  
Sparks Withington Co., 2400 E. Ganson St.,  
Jackson, Mich.

Stewart-Warner Corp., 1826 Diversey Pkwy., Chicago 14, Ill.  
 Stromberg-Carlson Co., Rochester, N. Y.  
 Telequip Radio Co., 1901 S. Washtenaw, Chicago, Ill.  
 Telicon Corp., 851 Madison Ave., New York 21, N. Y.  
 Thompson Co., John E., 1440 W. 47th St., Chicago 9, Ill.  
 U. S. Television Mfg. Corp., 3 W. 61st St., New York 23, N. Y.  
 Westinghouse Electric Corp., Receiver Div., Sunbury, Pa.

## RECEIVERS—uhf

Abbott Instrument Inc., 8 W. 18th St., New York, N. Y.  
**Aircraft Radio Corp., Boonton, N. J.**  
 See Advertisement on Page 185  
 Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
**Collins Radio Co., Cedar Rapids, Iowa**  
 See Advertisements on Pages 30 to 33  
 Coronet Radio & Television Corp., 1083 Bergen St., Brooklyn 16, N. Y.  
 DeciMeter, 742 W. Colfax Ave., Denver 4, Colorado  
 Dine and Co., Inc., F. E., 2221 Warwick Ave., Santa Monica, Calif.  
 Hallicrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 McMurdo Silver Co., 1249 Main St., Hartford 3, Conn.  
**National Co., Inc., 61 Sherman St., Malden 78, Mass.**  
 See Advertisement on Page 78  
 Panoramic Radio Corp., 242 W. 55th St., New York 19, N. Y.  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Radio Development and Research Co., 26 Cornellison Ave., Jersey City, N. J.  
 Searle Aero Industries, Inc., Orange, Calif.  
 Transmitter Equipment Co., Inc., 345 Hudson St., New York 14, N. Y.

## RECEIVERS—vhf

Abbott Instrument Inc., 8 W. 18th St., New York, N. Y.  
 Aero Communications, Inc., 231 Main St., Hempstead, N. Y.  
 Airadio Inc., Melrose Ave. & Battery Pl., Stamford, Conn.  
**Aircraft Radio Corp., Boonton, N. J.**  
 See Advertisement on Page 185  
 Bassett Inc., Rex, 500 SE 2nd St., Ft. Lauderdale, Fla.  
**Collins Radio Co., Cedar Rapids, Iowa**  
 See Advertisements on Pages 30 to 33  
 Communications Co. Inc., 300 Greco Ave., Coral Gables 34, Fla.  
 Dine and Co., Inc., F. E., 2221 Warwick Ave., Santa Monica, Calif.  
 Doolittle Radio, Inc., 7421 Loomis Bldg., Chicago 36, Ill.  
 Erco Radio Labs. Inc., Fenimore Ave., Hempstead, N. Y.  
 Farnsworth Television & Radio Corp., Ft. Wayne, Ind.  
 Hallicrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Harvey Wells Electronics Inc., North St., Southbridge, Mass.  
 Kaar Engineering Co., 619 Emerson St., Palo Alto, Calif.  
 McMurdo Silver Co., Inc., 1249 Main St., Hartford 3, Conn.  
 Mobile Communications Co., 202 East Fourth St., Long Beach 2, Calif.  
 Motorola Radio, Galvin Mfg. Corp., 4545 Augusta Blvd., Chicago, Ill.  
**National Co., Inc., 61 Sherman St., Malden 48, Mass.**  
 See Advertisement on Page 78  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Radio Development and Research Co., 26 Cornellison Ave., Jersey City, N. J.  
**Radio Receptor Co., 251 W. 19th St., New York, N. Y.**  
 See Advertisement on Page 40  
 Schuttig & Co., 9th & Kearney Sts., N. E., Washington 17, D. C.  
 Searle Aero Industries, Inc., Orange, Calif.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B  
 West Coast Electronics Co., 1601 S. Burlington St., Los Angeles 6, Calif.  
**Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.**  
 See Advertisements on Pages 88, 89

## RECEIVERS, HOME—a-m Combinations

A. R. F. Products, 7713 Lake St., River Forest, Ill.  
 Admiral Corp., 3800 Cortland St., Chicago 47, Ill.  
 Air-King Products Co., Inc., 1523 63rd St., Bklyn., N. Y.  
 American Communications Corp., 306 Broadway, New York 7, N. Y.  
 American Electronics, 37 E. 18th St., New York, N. Y.  
 Andrea Radio Corp., 43-20 34th St., L. I. City, N. Y.  
 Ansley Radio Corp., 41 St. Joes Ave., Trenton 9, N. J.  
 Automatic Radio Mfg. Co., Inc., 122 Brookline Ave., Boston, Mass.  
 Aviola Radio Corp., Phoenix, Arizona  
 Barr Electronic Co., 1314 Forest Ave., Dallas, Texas  
 Belmont Radio Co., Div. Raytheon Mfg. Co., 5921 W. Dickens Ave., Chicago 39, Ill.  
 Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
 Biltmore Radio Corp., 15 Ave. A, New York 3, N. Y.  
 Colonial Radio Corp., 254 Rano St., Buffalo, N. Y.  
 Continental Electronics Ltd., Brooklyn 22, N. Y.  
 Coronet Radio & Television Corp., 1083 Bergen St., Brooklyn 16, N. Y.  
 Crosley Corp., 1329 Arlington St., Cincinnati 3, Ohio  
 Delco Radio Div., General Motors Corp., Kokomo, Indiana  
 DeWald Radio Mfg. Corp., 35-15 37th Ave., Long Island City, N. Y.  
 Eastern Electronics Corp., 41 Chestnut St., New Haven, Conn.  
 Echophone Radio, Div. of Hallicrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Electromatic Mfg. Corp., 88 University Pl., New York, N. Y.  
 Electronic Corp. of America, 170 53rd St., Bklyn., N. Y.  
 Electronic Devices Co., 601 W. 26th St., New York, N. Y.  
 Electronic Enterprises, Inc., 1314 Forest Ave., Dallas 15, Texas  
 Electronic Labs., Inc., 24 W. 24th St., Indianapolis 4, Ind.  
 Emerson Radio & Phonograph Corp., 111 8th Ave., New York, N. Y.  
 Espey Mfg. Co., Inc., 33 W. 46th St., New York, N. Y.  
 Fada Radio & Electric Co., Inc., 30-20 Thomson Ave., Long Island City, N. Y.  
 Farnsworth Television & Radio Corp., Ft. Wayne, Ind.  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
 Garod Radio Corp., 70 Washington St., Brooklyn 1, N. Y.  
 Gem Radio & Television Co., 72 Cortlandt St., New York 6, N. Y.  
 General Electric Co., Bridgeport 2, Conn.  
 Gilner Mfg. Co., Steger, Ill.  
 Hallicrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Hoffman Radio Corp., 3430 S. Hill St., Los Angeles, Calif.  
 Howard Radio Co., 1735 Belmont Ave., Chicago 13, Ill.  
 International Detrola Corp., 1501 Beard Ave., Detroit, Mich.  
 Kingston Products Corp., Kokomo, Indiana  
 La Magna Mfg. Co., Inc., East Rutherford, N. J.  
 Lear, Inc., 110 Ionia Ave., N. W., Grand Rapids 2, Mich.  
 Magnavox Co., 2131 Bueter Rd., Fort Wayne, Ind.  
 Maguire Industries Inc., Electronics Dept., Bridgeport, Conn.  
 Majestic Radio & Television Corp., St. Charles, Ill.  
**Measurement Engineering Ltd., 61 Duke St., Toronto, Canada**  
 See Advertisement on Page 193  
 Meck Industries, John, Liberty at Pennsylvania, Plymouth, Ind.  
 Meissner Mfg. Div., Maguire Industries, Inc., Mt. Carmel, Ill.  
 Minerva Corp. of America, 238 William St., New York, N. Y.  
 Motorola Radio, Galvin Mfg. Corp., 4545 Augusta Blvd., Chicago, Ill.  
 National Union Radio Corp., 350 Scotland Rd., Orange, N. J.  
 Noblitt Sparks Industries, Columbus, Indiana  
 Northeastern Engineering, Inc., Manchester, N. H.  
 Packard-Bell Co., 3443 Welshire Blvd., Los Angeles 5, Calif.  
 Philco Corp., Tioga & C Sts., Phila. 34, Pa.  
 Pilot Radio Corp., 37-06 36th St., L. I. City, N. Y.  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover & Back Cover, 251

Radio Development and Research Co., 26 Cornellison Ave., Jersey City, N. J.  
 Radio Electronic Products Co., 230 S. Spring St., Los Angeles, Calif.  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Remler Co., Ltd., 2101 Bryant St., San Francisco 10, Calif.  
 Scott Radio Labs., Inc., 4450 N. Ravenswood Ave., Chicago 40, Ill.  
 Searle Aero Industries, Inc., Orange, Calif.  
 Sentinel Radio Corp., 2020 Ridge Ave., Evanston, Ill.  
 Signal Electronics, Inc., 114 East 16th St., New York, N. Y.  
 Sonora Radio & Television Corp., 325 N. Hoyne Ave., Chicago, Ill.  
 Sparks Withington Co., 2400 E. Ganson St., Jackson, Mich.  
 Stewart-Warner Corp., 1826 Diversey Parkway, Chicago 14, Ill.  
 Stromberg-Carlson Co., Rochester, N. Y.  
 Tech-Master Products Co., 123 Prince St., New York, N. Y.  
 Telephone Radio Co., 609 W. 51st St., New York 19, N. Y.  
 Telicon Corp., 851 Madison Ave., New York 21, N. Y.  
 Templetone Radio Mfg. Corp., Templetone Building, New London, Conn.  
 United States Television Mfg. Corp., 3 W. 61st St., New York 23, N. Y.  
 Vibracloc Mfg. Co., 3597 Mission St., San Francisco, Calif.  
 Watterson Radio Mfg. Co., P. O. Box 54, Dallas, Texas  
 Wells Gardner & Co., 2701 North Kildare, Chicago 39, Ill.  
 Westinghouse Electric Corp., Receiver Div., Sunbury, Pa.  
 Wilcox-Gay Corp., Charlotte, Mich.  
 Zenith Radio Corp., 6001 Dickens Ave., Chicago, Ill.

## RECEIVERS, HOME—a-m Consoles

Admiral Corp., 3800 W. Cortland St., Chicago 47, Ill.  
 Air-King Products Co., Inc., 1523 63rd St., Brooklyn, N. Y.  
 Automatic Radio Mfg. Co. Inc., 122 Brookline Ave., Boston, Mass.  
 Aviola Radio Corp., Phoenix, Arizona  
 Belmont Radio Co., Div. Raytheon Mfg. Co., 5921 W. Dickens Ave., Chicago 39, Ill.  
 Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
 Colonial Radio Corp., 254 Rano St., Buffalo 7, N. Y.  
 Crosley Corp., 1329 Arlington St., Cincinnati 3, Ohio  
 Delco Radio Div., General Motors Corp., Kokomo, Indiana  
 DeWald Radio Mfg. Corp., 35-15 37th Ave., Long Island City, N. Y.  
 Eckstein Radio & Television Co., 914 La Salle Ave., Minneapolis 2, Minn.  
 Electronic Corp. of America, 170 53rd St., Brooklyn 32, N. Y.  
 Electronic Enterprises, Inc., 1314 Forest Ave., Dallas 15, Texas  
 Emerson Radio & Phonograph Corp., 111 8th Ave., New York, N. Y.  
 Fada Radio & Electric Co., Inc., 30-20 Thomson Ave., Long Island City, N. Y.  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
 Garod Radio Corp., 70 Washington St., Brooklyn 1, N. Y.  
 Gem Radio & Television Co., 72 Cortlandt St., New York 6, N. Y.  
**General Electric Co., Syracuse, N. Y.**  
 See Advertisements on Pages 96, 96A  
 General Electric Co., Bridgeport 2, Conn.  
 Hallicrafters Co., 4401 W. Fifth Ave., Chicago 22, Ill.  
 Hoffman Radio Corp., 3430 S. Hill St., Los Angeles 7, Calif.  
 Howard Radio Co., 1735 Belmont Ave., Chicago 13, Ill.  
 International Detrola Corp., 1501 Beard Ave., Detroit, Mich.  
 Kingston Products Corp., Kokomo, Indiana  
 La Magna Mfg. Co., Inc., East Rutherford, N. J.  
 Lear, Inc., 110 Ionia Ave., N. W., Grand Rapids 2, Mich.  
 Magnavox Co., The, 2131 Bueter Rd., Fort Wayne, Ind.  
 Majestic Radio & Television Corp., St. Charles, Ill.  
**Measurement Engineering Ltd., 61 Duke St., Toronto, Canada**  
 See Advertisement on Page 193  
 Meck Industries, John, Liberty at Pennsylvania, Plymouth, Ind.  
 Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
 Midwest Radio Corp., 909 Broadway, Cincinnati, Ohio

Minerva Corp. of America, 238 William St., New York, N. Y.  
 Motorola Radio, Galvin Mfg. Corp., 4545 Augusta Blvd., Chicago, Ill.  
 Noblitt Sparks Industries, Columbus, Indiana  
 Philharmonic Radio Corp., 528 E. 72nd St., New York 21, N. Y.  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
**See Advertisements on Inside Back Cover & Back Cover, 251**  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Scott Radio Labs., Inc., 4450 N. Ravenswood Ave., Chicago 40, Ill.  
 Searle Aero Industries, Inc., Orange, Calif.  
 Sentinel Radio Corp., 2020 Ridge Ave., Evanston, Ill.  
 Sparks Withington Co., 2400 E. Ganson St., Jackson, Mich.  
 Stewart Warner Corp., 1826 Diversey Pkway., Chicago, Ill.  
 Stromberg-Carlson Co., Rochester, N. Y.  
 Telicon Corp., 851 Madison Ave., New York, N. Y.  
 Templetone Radio Mfg. Corp., Templetone Building, New London, Conn.  
 United States Television Mfg. Corp., 3 W. 61st St., New York 23, N. Y.  
 Wells Gardner & Co., 2701 North Kildare, Chicago 39, Ill.  
 Westinghouse Electric Corp., Receiver Div., Sunbury, Pa.  
 Zenith Radio Corp., 6001 Dickens Ave., Chicago, Ill.

**RECEIVERS, HOME—*a-m* Portables**

Admiral Corp., 3800 W. Cortland St., Chicago, Ill.  
 Air-King Products Co., Inc., 1523 63rd St., Bklyn., N. Y.  
 Andrea Radio Corp., 43-20 34th St., Long Island City, N. Y.  
 Audar Inc., Argos, Ind.  
 Automatic Radio Mfg. Co., Inc., 122 Brookline Ave., Boston, Mass.  
 Aviola Radio Corp., Phoenix, Arizona  
 Belmont Radio Co., Div. Raytheon Mfg. Co., 5921 W. Dickens Ave., Chicago 39, Ill.  
 Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
 Biltmore Radio Corp., 15 Ave. A, New York 3, N. Y.  
 Bowers Battery & Spark Plug Co., Reading, Pa.  
 Calvert Motors Associates, Ltd., 505 Morse St., N.E., Washington 2, D. C.  
 Colonial Radio Corp., 254 Rano St., Buffalo 7, N. Y.  
 Continental Electronics, Ltd., Brooklyn 22, N. Y.  
 Croslev Corp., 1329 Arlington St., Cincinnati 3, Ohio  
 Delco Radio Div., General Motors Corp., Kokomo, Ind.  
 DeWald Radio Mfg. Corp., 35-15 37th Ave., Long Island City, N. Y.  
 Eastern Electronics Corp., 41 Chestnut St., New Haven, Conn.  
 Eckstein Radio & Television Co., 914 La Salle Ave., Minneapolis 2, Minn.  
 Electromatic Mfg. Corp., 88 University Pl., New York, N. Y.  
 Electronic Corp. of America, 170 53rd St., Brooklyn, N. Y.  
 Electronic Enterprises, Inc., 1314 Forest Ave., Dallas 15, Texas  
 Emerson Radio & Phonograph Corp., 111 8th Ave., New York, N. Y.  
 Fada Radio & Electric Co. Inc., 30-20 Thomson Ave., Long Island City, N. Y.  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
**See Advertisements on Pages 48A to 48D**  
 Garod Radio Corp., 70 Washington St., Brooklyn 1, N. Y.  
 Gem Radio & Television Co., 72 Cortlandt St., New York 6, N. Y.  
 General Electric Co., Bridgeport 2, Conn.  
 General Television & Radio Corp., 2701 N. Lehmann St., Chicago 14, Ill.  
 Gilner Manufacturing Co., Steger, Ill.  
 Globe Electronics, Inc., 225 W. 17th St., New York, N. Y.  
 Hallcrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Hoffman Radio Corp., 3430 S. Hill St., Los Angeles 7, Calif.  
 Howard Radio Co., 1735 Belmont Ave., Chicago, Ill.  
 International Detrola Corp., 1501 Beard Ave., Detroit, Mich.  
**Intex Co., 303 W. 42nd St., New York 18, N. Y.**  
**See Advertisement on Page 68**  
 Kingston Products Corp., Kokomo, Indiana  
 La Magna Mfg. Co., Inc., East Rutherford, N. J.  
 Lear, Inc., 110 Ionia Ave., N. W., Grand Rapids 2, Mich.

Majestic Radio & Television Corp., St. Charles, Ill.  
 Meck Industries, John, Liberty at Pennsylvania, Plymouth, Ind.  
 Meissner Mfg. Div., Maguire Industries, Inc., Mt. Carmel, Ill.  
 Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
 Midwest Radio Corp., 909 Broadway, Cincinnati 2, Ohio  
 Motorola Radio, Galvin Mfg. Corp., 4545 Augusta Blvd., Chicago, Ill.  
 National Union Radio Corp., 350 Scotland Rd., Orange, N. J.  
 Noblitt Sparks Industries, Columbus, Indiana  
 Packard-Bell Co., 3443 Wilshire Blvd., Los Angeles 5, Calif.  
 Philco Corp., Tioga & C Sts., Phila. 34, Pa.  
 Philharmonic Radio Corp., 528 E. 72nd St., New York 21, N. Y.  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
**See Advertisements on Inside Back Cover & Back Cover, 251**  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Remler Co., Ltd., 2101 Bryant St., San Francisco 10, Calif.  
 Searle Aero Industries, Inc., Orange, Calif.  
 Sentinel Radio Corp., 2020 Ridge Ave., Evanston, Ill.  
 Signal Electronics, Inc., 114 East 16th St., New York, N. Y.  
 Sonora Radio & Television Corp., 325 N. Hoyne Ave., Chicago, Ill.  
 Sparks Withington Co., 2400 E. Ganson St., Jackson, Mich.  
 Stewart-Warner Corp., 1826 Diversey Parkway, Chicago 14, Ill.  
 Stromberg-Carlson Co., Rochester, N. Y.  
 Tech-Master Prods., Co., 123 Prince St., New York, N. Y.  
 Telicon Corp., 851 Madison Ave., New York 21, N. Y.  
 Teletone Radio Co., 609 W. 51st St., New York 19, N. Y.  
 Templetone Radio Mfg. Corp., New London, Conn.  
 Watterson Radio Mfg. Co., P. O. Box 54, Dallas 1, Texas  
 Wells Gardner & Co., 2701 N. Kildare, Chicago 39, Ill.  
 Westinghouse Electric Corp., Receiver Div., Sunbury, Pa.  
 Zenith Radio Corp., 6001 Dickens Ave., Chicago, Ill.

**RECEIVERS, HOME—*a-m* Table Models**

A. R. F. Products Co., 7713 Lake St., River Forest, Ill.  
 Admiral Corp., 3800 Cortland St., Chicago 47, Ill.  
 Aermotive Equipment Corp., 1632-8 Central St., Kansas City 10, Mo.  
 Air-King Products Co., Inc., 1523 63rd St., Brooklyn, N. Y.  
 Algene Radio Corp., 305 Throop Ave., Brooklyn 6, N. Y.  
 American Communications Corp., 306 Broadway, New York 7, N. Y.  
 American Electronics, 37 E. 18th St., New York 3, N. Y.  
 Andrea Radio Corp., 43-20 34th St., L. I. City, N. Y.  
 Autocrat Radio Co., 3855 N. Hamilton Ave., Chicago, Ill.  
 Automatic Radio Mfg. Co. Inc., 122 Brookline Ave., Boston, Mass.  
 Aviola Radio Corp., Phoenix, Arizona  
 Belmont Radio Co., Div. Raytheon Mfg. Co., 5921 W. Dickens Ave., Chicago 39, Ill.  
 Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
 Bowers Battery & Spark Plug Co., Reading, Pa.  
 Colonial Radio Corp., 254 Rano St., Buffalo 7, N. Y.  
**Concord Radio Corp., 901 W. Jackson Blvd., Chicago, Ill.**  
**See Advertisement on Page 177**  
 Coronet Radio & Television Corp., 1083 Bergen St., Brooklyn 16, N. Y.  
 Croslev Corp., 1329 Arlington St., Cincinnati 3, Ohio  
 Crystal Products Co., 1519 McGee Trafficway, Kansas City, Mo.  
 Delco Radio Div., General Motors Corp., Kokomo, Indiana  
 Eastern Electronics Corp., 41 Chestnut St., New Haven, Conn.  
 Echophone Radio, Div. of Hallcrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Eckstein Radio & Television Co., 914 La Salle Ave., Minneapolis 2, Minn.  
 Electromatic Mfg. Corp., 88 University Pl., New York, N. Y.  
 Electronic Corp. of America, 170 53rd St., Brooklyn, N. Y.  
 Electronic Devices Co., 601 W. 26th St., New York, N. Y.

Electronic Enterprises, Inc., 1314 Forest Ave., Dallas 15, Texas  
 Electronic Labs., Inc., 24 W. 24th St., Indianapolis 4, Ind.  
 Emerson Radio & Phonograph Corp., 111 8th Ave., New York, N. Y.  
 Espey Mfg. Co., Inc., 33 West 46th St., New York, N. Y.  
 Fada Radio & Electric Co. Inc., 30-20 Thomson Ave., Long Island City, N. Y.  
 Farnsworth Television & Radio Corp., Ft. Wayne, Ind.  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
**See Advertisements on Pages 48A to 48D**  
 Five Star Radio Co., 416 Broadway, Cambridge, Mass.  
 Garod Radio Corp., 70 Washington St., Brooklyn, N. Y.  
 Gem Radio & Television Co., 72 Cortlandt St., New York 6, N. Y.  
 General Electric Co., Bridgeport 2, Conn.  
 General Television & Radio Corp., 2701 North Lehmann Court, Chicago 14, Ill.  
 Gilner Manufacturing Co., Steger, Ill.  
 Globe Electronics, Inc., 225 W. 17th St., New York, N. Y.  
 Hallcrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Hoffman Radio Corp., 3430 S. Hill St., Los Angeles 7, Calif.  
 Howard Radio Co., 1735 Belmont Ave., Chicago 13, Ill.  
 International Detrola Corp., 1501 Beard Ave., Detroit, Mich.  
**Intex Co., 303 W. 42nd St., New York 18, N. Y.**  
**See Advertisement on Page 68**  
 Kingston Products Corp., Kokomo, Indiana  
 La Magna Mfg. Co., Inc., East Rutherford, N. J.  
 Laurehk Radio Mfg. Co., 3931 Monroe Ave., Wayne, Mich.  
 Lavoie Labs., Morganville, N. J.  
 Lear, Inc., 110 Ionia Ave., N. W., Grand Rapids 2, Mich.  
 Maguire Industries Inc., Electronics Dept., Bridgeport, Conn.  
 Majestic Radio & Television Corp., St. Charles, Ill.  
 Maken Inc., 79 Thurman Ave., Columbus 6, Ohio  
 Marco Industries, 245 S. Beverly Dr., Beverly Hills, Calif.  
 Meck Industries, John, Liberty at Pennsylvania, Plymouth, Ind.  
 Meissner Mfg. Div., Maguire Industries, Inc., Mt. Carmel, Ill.  
 Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
 Midwest Radio Corp., 909 Broadway, Cincinnati, Ohio  
 Minerva Corp. of America, 238 William St., New York, N. Y.  
 Molded Insulation Co., Aircraft Control Div., 335 E. Price St., Phila., Pa.  
 Motorola Radio, Galvin Mfg. Corp., 4545 Augusta Blvd., Chicago, Ill.  
 National Union Radio Corp., 350 Scotland Rd., Orange, N. J.  
 Noblitt Sparks Industries, Columbus, Indiana  
 Northeastern Engineering Inc., Manchester, N. H.  
 Packard-Bell Co., 3443 Wilshire Blvd., Los Angeles 5, Calif.  
 Philco Corp., Tioga & C Sts., Phila. 34, Pa.  
 Philharmonic Radio Corp., 528 E. 72nd St., New York 21, N. Y.  
 Pilot Radio Corp., 37-06 36th St., L. I. City, N. Y.  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
**See Advertisements on Inside Back Cover & Back Cover, 251**  
 Radio Craftsmen, 1341 S. Michigan Ave., Chicago 5, Ill.  
 Radio Electronic Products Co., 230 S. Spring St., Los Angeles, Calif.  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Remler Co., Ltd., 2101 Bryant St., San Francisco 10, Calif.  
 Searle Aero Industries, Inc., Orange, Calif.  
 Sentinel Radio Corp., 2020 Ridge Ave., Evanston, Ill.  
 Setchell Carlson, 2233 University Ave., St. Paul, Minn.  
 Sonora Radio & Television Corp., 325 N. Hoyne Ave., Chicago, Ill.  
 Sparks Withington Co., 2400 E. Ganson St., Jackson, Mich.  
 Stewart-Warner Corp., 1826 Diversey Parkway, Chicago 14, Ill.  
 Stromberg-Carlson Co., Rochester, N. Y.  
 Tech-Master Products Co., 123 Prince St., New York, N. Y.  
 Teletone Radio Co., 609 W. 51st St., New York 19, N. Y.  
 Telicon Corp., 851 Madison Ave., New York 21, N. Y.  
 Templetone Radio Mfg. Corp., New London, Conn.  
 United States Television Mfg. Corp., 3 W. 61st St., New York 23, N. Y.

Watterson Radio Mfg. Co., P. O. Box 54, Dallas, Texas  
 Wells-Gardner & Co., 2701 North Kildare, Chicago 39, Ill.  
 Westinghouse Electric Corp., Receiver Div., Sunbury, Pa.  
 Zenith Radio Corp., 6001 Dickens Ave., Chicago, Ill.

## RECEIVERS, HOME—a-m Vest Pockets

Automatic Radio Mfg. Co. Inc., 122 Brookline Ave., Boston, Mass.  
 Belmont Radio Co., Div. Raytheon Mfg. Co., 5921 Dickens Ave., Chicago 39, Ill.  
 Colonial Radio Corp., 254 Rano St., Buffalo 7, N. Y.  
 Coronet Radio & Television Corp., 1083 Bergen St., Brooklyn 16, N. Y.  
 Delco Radio Division, General Motors Corp., Kokomo, Ind.  
 Electronic Corp. of America 170 53rd St., Brooklyn, N. Y.  
 Electronic Devices Co., 601 W. 26th St., New York, N. Y.  
 Emerson Radio & Phonograph Corp., 111 8th Ave., New York, N. Y.  
 Farnsworth Television & Radio Corp., Ft. Wayne, Ind.  
 Lauehik Radio Mfg. Co., 3931 Monroe Ave., Wayne, Mich.  
 Meck Industries, John, Liberty at Pennsylvania, Plymouth, Ind.  
 Meissner Mfg. Div., Maguire Industries, Inc., Mt. Carmel, Ill.  
 Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
 Packard-Bell Co., Inc., 3443 Wilshire Blvd., Los Angeles 5, Calif.  
 Pan American Electric Co., Inc., 2912 Atlantic Ave., Brooklyn 7, N. Y.  
 Philharmonic Radio Corp., 528 E. 72nd St., New York 21, N. Y.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
**See Advertisements on Inside Back Cover & Back Cover, 251**  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Remler Co., Ltd., 2101 Bryant St., San Francisco 10, Calif.  
 Sentinel Radio Corp., 2020 Ridge Ave., Evanston, Ill.  
 Telicon Corp., 851 Madison Ave., New York 21, N. Y.

## RECEIVERS, HOME—a-m/f-m Combinations

A. R. F. Products, 7713 Lake St., River Forest, Ill.  
 Admiral Corp., 3800 W. Cortland St., Chicago, Ill.  
 American Electronics, 37 E. 18th St., New York 3, N. Y.  
 Ansley Radio Corp., 41 St. Joes Ave., Trenton 9, N. J.  
 Belmont Radio Co., Div. Raytheon Mfg. Co., 5921 W. Dickens Ave., Chicago 39, Ill.  
 Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
 Biltmore Radio Corp., 15 Ave. A, New York 3, N. Y.  
 Brook Electronics, Inc., Elizabeth, N. J.  
 Colonial Radio Corp., 254 Rano St., Buffalo 7, N. Y.  
 Crosley Corp., 1329 Arlington St., Cincinnati 3, Ohio  
 Crystal Products Co., 1519 McGee Trafficway, Kansas City, Mo.  
 Delco Radio Div., General Motors Corp., Kokomo, Ind.  
 Echophone Radio, Div. of Hallicrafters Co., 4401 W. Fifth Ave., Chicago, Ill.  
 Electronic Corp. of America, 170 53rd St., Brooklyn, N. Y.  
 Electronic Enterprises, Inc., 1314 Forest Ave., Dallas 15, Texas  
 Emerson Radio & Phonograph Corp., 111 8th Ave., New York, N. Y.  
 Espey Mfg. Co. Inc., 33 W. 46th St., New York, N. Y.  
 Fada Radio & Electric Co. Inc., 30-20 Thomson Ave., Long Island City, N. Y.  
 Farnsworth Television & Radio Corp., 3700 Pontiac St., Fort Wayne, Ind.  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
**See Advertisements on Pages 48A to 48D**  
 Fisher Radio Co., 41 E. 47th St., New York, N. Y.  
 Five Star Radio Co., 416 Broadway, Cambridge, Mass.  
 Hallicrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Herbach & Rademan Inc., 517 Ludlow St., Phila. 6, Pa.

Hoffman Radio Corp., 3430 S. Hill St., Los Angeles 7, Calif.  
 Howard Radio Co., 1735 Belmont Ave., Chicago, Ill.  
 International Detrola Corp., 1501 Beard Ave., Detroit, Mich.  
 Kingston Products Corp., Kokomo, Ind.  
 Lear, Inc., 110 Ionia Ave., N. W., Grand Rapids 2, Mich.  
 Magnavox Co., The, Fort Wayne, Ind.  
 Maguire Industries Inc., Electronics Dept., Bridgeport, Conn.  
 Majestic Radio & Television Corp., St. Charles, Ill.  
**Measurement Engineering Ltd., 61 Duke St., Toronto, Canada**  
**See Advertisement on Page 193**  
 Meck Industries, John, Liberty at Pennsylvania, Plymouth, Ind.  
 Meissner Mfg. Div., Maguire Industries, Inc., Mt. Carmel, Ill.  
 Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
 Midwest Radio Corp., 909 Broadway, Cincinnati 2, Ohio  
 Minerva Corp. of America, 238 William St., New York, N. Y.  
 Motorola Radio, Galvin Mfg. Corp., 4545 Augusta Blvd., Chicago, Ill.  
 Music Master Radio Corp., 750 Main St., Hartford, Conn.  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
**See Advertisements on Inside Back Cover & Back Cover, 251**  
 Radio Electronic Products Co., 230 S. Spring St., Los Angeles, Calif.  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Remler Co., Ltd., 2101 Bryant St., San Francisco 10, Calif.  
 Sentinel Radio Corp., 2020 Ridge Ave., Evanston, Ill.  
 Signal Electronics, Inc., 114 East 16th St., New York, N. Y.  
 Sonora Radio & Television Corp., 325 N. Hoyne Ave., Chicago, Ill.  
 Sparks Withington Co., 2400 E. Ganson St., Jackson, Mich.  
 Stewart-Warner Corp., 1826 Diversey Parkway, Chicago 14, Ill.  
 Stromberg-Carlson Co., Rochester, N. Y.  
 Telicon Corp., 851 Madison Ave., New York, N. Y.  
 Templetone Radio Mfg. Corp., New London, Conn.  
 Wells Gardner & Co., 2701 N. Kildare, Chicago 39, Ill.  
 Westinghouse Electric Corp., Receiver Div., Sunbury, Pa.  
 Zenith Radio Corp., 6001 Dickens Ave., Chicago, Ill.

## RECEIVERS, HOME—a-m/f-m Consoles

A. R. F. Products, 7713 Lake St., River Forest, Ill.  
 Admiral Corp., 3800 Cortland St., Chicago 47, Ill.  
 American Electronics, 37 E. 18th St., New York 3, N. Y.  
 American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
 Ayiola Radio Corp., Phoenix, Arizona  
 Belmont Radio Co., Div. Raytheon Mfg. Co., 5921 West Dickens Ave., Chicago 39, Ill.  
 Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
 Colonial Radio Corp., 254 Rano St., Buffalo 7, N. Y.  
 Crosley Corp., 1329 Arlington St., Cincinnati 3, Ohio  
 Delco Radio Div., General Motors Corp., Kokomo, Ind.  
 Echophone Radio, Div. of Hallicrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Electronic Corp. of America, 170 53rd St., Brooklyn, N. Y.  
 Electronic Enterprises, Inc., 1314 Forest Ave., Dallas 15, Texas  
 Electronic Labs, Inc., 24 W. 24th St., Indianapolis 4, Ind.  
 Emerson Radio & Phonograph Corp., 111 8th Ave., New York, N. Y.  
 Fada Radio & Electric Co. Inc., 30-20 Thomson Ave., Long Island City, N. Y.  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
**See Advertisements on Pages 48A to 48D**  
 General Electric Co., Bridgenort 2, Conn.  
 Hallicrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Herbach & Rademan, Inc., 517 Ludlow St., Phila. 6, Pa.  
 International Detrola Corp., 1501 Beard Ave., Detroit, Mich.  
 Kingston Radio Products Corp., Kokomo, Indiana

Lear, Inc., 110 Ionia Ave., N. W., Grand Rapids 2, Mich.  
 Magnavox Co., The, Fort Wayne, Ind.  
 Majestic Radio & Television Corp., St. Charles, Illinois  
**Measurement Engineering Ltd., 61 Duke St., Toronto, Canada**  
**See Advertisement on Page 193**  
 Meck Industries, John, Liberty at Pennsylvania, Plymouth, Ind.  
 Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
 Midwest Radio Corp., 909 Broadway, Cincinnati, Ohio  
 Minerva Corp. of America, 238 William St., New York, N. Y.  
 Motorola Radio, Galvin Mfg. Corp., 4545 Augusta Blvd., Chicago, Ill.  
 Music Master Radio Corp., 750 Main St., Hartford, Conn.  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
**See Advertisements on Inside Back Cover & Back Cover, 251**  
 Radio Electronic Products Co., 230 S. Spring St., Los Angeles, Calif.  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Remler Co., Ltd., 2101 Bryant St., San Francisco 10, Calif.  
 Sentinel Radio Corp., 2020 Ridge Ave., Evanston, Ill.  
 Signal Electronics, Inc., 114 East 16th St., New York, N. Y.  
 Sonora Radio & Television Corp., 325 N. Hoyne Ave., Chicago, Ill.  
 Sparks Withington Co., 2400 E. Ganson St., Jackson, Mich.  
 Stewart-Warner Corp., 1826 Diversey Parkway, Chicago 14, Ill.  
 Stromberg-Carlson Co., Rochester, N. Y.  
 Telicon Corp., 851 Madison Ave., New York 21, N. Y.  
 Templetone Radio Mfg. Corp., New London, Conn.  
 Wells Gardner & Co., 2701 N. Kildare, Chicago 39, Ill.  
 Westinghouse Electric Corp., Receiver Div., Sunbury, Pa.  
 Zenith Radio Corp., 6001 Dickens Ave., Chicago, Ill.

## RECEIVERS, HOME—a-m/f-m Portables

Belmont Radio Co., Div. Raytheon Mfg. Co., 5921 W. Dickens Ave., Chicago 39, Ill.  
 Crosley Corp., 1329 Arlington St., Cincinnati 3, Ohio  
 Electronic Corp. of America, 170 53rd St., Brooklyn, N. Y.  
 Electronic Enterprises, Inc., 1314 Forest Ave., Dallas 15, Texas  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
**See Advertisements on Pages 48A to 48D**  
 Hallicrafters Co., 440 W. Fifth Ave., Chicago 24, Ill.  
 Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
 Motorola Radio, Galvin Mfg. Corp., 4545 Augusta Blvd., Chicago, Ill.  
 Noblitt Sparks Industries, Columbus, Ind.  
 Packard-Bell Co., 3443 Wilshire Blvd., Los Angeles 5, Calif.  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Sentinel Radio Corp., 2020 Ridge Ave., Evanston, Ill.  
 Telicon Corp., 851 Madison Ave., New York 21, N. Y.  
 Templetone Radio Mfg. Corp., New London, Conn.

## RECEIVERS, HOME—a-m/f-m Table Models

A. R. F. Products Co., 7713 W. Lake St., River Forest, Ill.  
 Admiral Corp., 3800 W. Cortland St., Chicago 47, Ill.  
 Air-King Products Co., Inc., 1523 63rd St., Brooklyn, N. Y.  
 American Communications Corp., 306 Broadway, New York 7, N. Y.  
 Andrea Radio Corp., 43-20 34th St., Long Island City, N. Y.  
 Belmont Radio Corp., 5921 W. Dickens Ave., Chicago 39, Ill.  
 Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
 Colonial Radio Corp., 254 Rano St., Buffalo 7, N. Y.  
 Crosley Corp., Cincinnati 25, Ohio  
 Crystal Products Co., 1519 McGee Trafficway, Kansas City, Mo.  
 Delco Radio Div., General Motors Corp., Kokomo, Ind.  
 Echophone Radio, Div. of Hallicrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.

Electronic Corp. of America, 170 53rd St., Brooklyn, N. Y.  
 Electronic Devices Co., 601 W. 26th St., New York, N. Y.  
 Electronic Labs., Inc., 24 W. 24th St., Indianapolis 4, Ind.  
 Emerson Radio & Phonograph Corp., 111 8th Ave., New York, N. Y.  
 Espey Mfg. Co. Inc., 33 W. 46th St., New York 19, N. Y.  
 Fada Radio & Electric Co. Inc., 30-20 Thomson Ave., Long Island City, N. Y.  
 Farnsworth Television & Radio Corp., Ft. Wayne, Ind.  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
 Gilner Manufacturing Co., Steger, Ill.  
 Hallcrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Howard Radio Co., 1735 Belmont Ave., Chicago, Ill.  
 Lear, Inc., 110 Ionia Ave., N. W., Grand Rapids 2, Mich.  
 Magnavox Co., The, Fort Wayne 4, Ind.  
 Majestic Radio & Television Corp., St. Charles, Ill.  
 Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
 Minerva Corp. of America, 238 William St., New York, N. Y.  
 Motorola Radio, Galvin Mfg. Corp., 4545 Augusta Blvd., Chicago, Ill.  
 Noblitt Sparks Industries, Columbus, Ind.  
 Packard-Bell Co., 3443 Wilshire Blvd., Los Angeles 5, Calif.  
 Philco Corp., Tioga & C Sts., Phila. 34, Pa.  
 Pilot Radio Corp., 37-06 36th St., L. I. City, N. Y.  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Radio Electronic Products Co., 230 S. Spring St., Los Angeles, Calif.  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Remler Co., Ltd., 2101 Bryant St., San Francisco 10, Calif.  
 Sentinel Radio Corp., 2020 Ridge Ave., Evanston, Ill.  
 Signal Electronics, Inc., 114 East 16th St., New York, N. Y.  
 Stewart-Warner Corp., 1826 Diversey Park-wav, Chicago 14, Ill.  
 Stromberg-Carlson Co., Rochester, N. Y.  
 Telicon Corp., 851 Madison Ave., New York, N. Y.  
 Templetone Radio Mfg. Corp., New London, Conn.  
 Wells-Gardner & Co., 2701 N. Kildare, Chicago 39, Ill.  
 Westinghouse Electric Corp., Receiver Div., Sunbury, Pa.  
 Zenith Radio Corp., 6001 Dickens Ave., Chicago, Ill.

**RECEIVERS, HOME—f-m Combinations**

A. R. F. Products, 7713 Lake St., River Forest, Ill.  
 Admiral Corp., 2800 Cortland St., Chicago, Ill.  
 Belmont Radio Co., Div. Raytheon Mfg. Co., 5921 W. Dickens Ave., Chicago 39, Ill.  
 Electronic Enterprises, Inc., 1314 Forest Ave., Dallas 5, Texas  
 Emerson Radio & Phonograph Corp., 111 8th Ave., New York, N. Y.  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Page 48A to 48D  
 Freed Radio Corp., 200 Hudson St., New York, N. Y.  
 Garod Radio Corp., 70 Washington St., Brooklyn 1, N. Y.  
 Howard Radio Co., 1735 Belmont Ave., Chicago 13, Ill.  
 Magnavox Co., The, Fort Wayne 4, Ind.  
 Maguire Industries Inc., Electronics Dept., Bridgeport, Conn.  
 Majestic Radio & Television Corp., St. Charles, Ill.  
**Measurement Engineering Ltd., 61 Duke St., Toronto, Canada**  
 See Advertisement on Page 193  
 Meek Industries, John, Liberty at Pa., Plymouth, Ind.  
 Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
 Minerva Corp. of America, 238 William St., New York, N. Y.  
 Motorola Radio, Galvin Mfg. Corp., 4545 Augusta Blvd., Chicago, Ill.  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Radio Electronic Products Co., 230 S. Spring St., Los Angeles, Calif.

Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Sentinel Radio Corp., 2020 Ridge Ave., Evanston, Ill.  
 Telicon Corp., 851 Madison Ave., New York 21, N. Y.  
 Zenith Radio Corp., 6001 Dickens Ave., Chicago, Ill.

**RECEIVERS, HOME—f-m Consoles**

Admiral Corp., 3800 Cortland St., Chicago 47, Ill.  
 Air-King Products Co., Inc., 1523 63rd St., Brooklyn, N. Y.  
 Belmont Radio Co., Div. Raytheon Mfg. Co., 5921 W. Dickens Ave., Chicago 39, Ill.  
 Electronic Enterprises, Inc., 1314 Forest Ave., Dallas 15, Texas.  
 Emerson Radio & Phonograph Corp., 111 8th Ave., New York, N. Y.  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
 Garod Radio Corp., 70 Washington St., Brooklyn 1, N. Y.  
 Kingston Radio Co., Inc., Kokomo, Ind.  
 Magnavox Co., The, Fort Wayne 4, Ind.  
 Majestic Radio & Television Corp., St. Charles, Ill.  
**Measurement Engineering Ltd., 61 Duke St., Toronto, Canada**  
 See Advertisement on Page 193  
 Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
 Minerva Corp. of America, 238 William St., New York, N. Y.  
 Motorola Radio, Galvin Mfg. Corp., 4545 Augusta Blvd., Chicago, Ill.  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Radio Electronic Products Co., 230 S. Spring St., Los Angeles, Calif.  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Sentinel Radio Corp., 2020 Ridge Ave., Evanston, Ill.  
 Telicon Corp., 851 Madison Ave., New York 21, N. Y.  
 Templetone Radio Mfg. Corp., New London, Conn.  
 Zenith Radio Corp., 6001 Dickens Ave., Chicago, Ill.

**RECEIVERS, HOME—f-m Portables**

Air-King Products Co., Inc., 1523 63rd St., Brooklyn, N. Y.  
 Belmont Radio Co., Div. Raytheon Mfg. Co., 5921 W. Dickens Ave., Chicago 39, Ill.  
 Garod Radio Corp., 70 Washington St., Brooklyn 1, N. Y.  
 Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Sentinel Radio Corp., 2020 Ridge Ave., Evanston, Ill.  
 Telicon Corp., 851 Madison Ave., New York 21, N. Y.

**RECEIVERS, HOME—f-m Table Models**

A. R. F. Products, 7713 Lake St., River Forest, Ill.  
 Admiral Corp., 2800 Cortland St., Chicago 47, Ill.  
 American Communications Corp., 306 Broadway, New York 7, N. Y.  
 Belmont Radio Co., Div. Raytheon Mfg. Co., 5921 W. Dickens Ave., Chicago 39, Ill.  
 Electronic Enterprises, Inc., 1314 Forest Ave., Dallas 15, Texas  
 Emerson Radio & Phonograph Corp., 111 8th Ave., New York, N. Y.  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Page 48A to 48D  
 Garod Radio Corp., 70 Washington St., Brooklyn, N. Y.  
 Kingston Radio Co., Inc., Kokomo, Ind.  
 Magnavox Co., The, Fort Wayne 4, Ind.  
 Maguire Industries Inc., Electronics Dept., Bridgeport, Conn.  
 Majestic Radio & Television Corp., St. Charles, Ill.  
 Metropolitan Electronic & Instrument Co., 6 Murray St., New York 6, N. Y.  
 Minerva Corp. of America, 238 William St., New York, N. Y.  
 Motorola Radio, Galvin Mfg. Corp., 4545 Augusta Blvd., Chicago, Ill.

**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Radio Electronic Products Co., 230 S. Spring St., Los Angeles, Calif.  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Sentinel Radio Corp., 2020 Ridge Ave., Evanston, Ill.  
 Signal Electronics, Inc., 114 East 16th St., New York, N. Y.  
 Telicon Corp., 851 Madison Ave., New York 21, N. Y.  
 Zenith Radio Corp., 6001 Dickens Ave., Chicago, Ill.

**RECEIVERS, HOME—f-m Vest Pockets**

Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.

**RECEIVERS, HOME—Built-in Wall Type**

American Communications Corp., 306 Broadway, New York 7, N. Y.  
 Ansley Radio Corp., 41 St. Joes Ave., Trenton 9, N. J.  
 DeWald Radio Mfg. Corp., 35-15 37th Ave., Long Island City, N. Y.  
 Electronic Enterprises, Inc., 1314 Forest Ave., Dallas 15, Texas  
 Flush Wall Radio Co., 15 Washington St., Newark, N. J.  
 General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
**Measurements Engineering Ltd., 61 Duke St., Toronto, Can.**  
 See Advertisement on Page 193  
 Remler Co., Ltd., 2101 Bryant St., San Francisco 10, Calif.  
 Smith-Meeker Engineering Co., 125 Barclay St., New York 7, N. Y.

**RECEIVERS, HOME—Recorders & Phonograph Combinations**

Airadio Inc., Melrose Ave. & Battery Pl., Stamford, Conn.  
 Air-King Products Co., Inc., 1523 63rd St., Brooklyn, N. Y.  
 Andrea Radio Corp., 43-20 34th St., Long Island City, N. Y.  
 Ansley Radio Corp., 41 St. Joes Ave., Trenton 9, N. J.  
 Audar Inc., Argos, Ind.  
 Automatic Radio Mfg. Co., Inc., 122 Brookline Ave., Boston, Mass.  
 Belmont Radio Co., Div. Raytheon Mfg. Co., 5921 W. Dickens Ave., Chicago 39, Ill.  
 Biltmore Radio Corp., 15 Ave. A., New York 3, N. Y.  
 Calvert Motors Associates, Ltd., 505 Morse St., N. E., Washington 2, D. C.  
**Collins Audio Products Co., 126 Park St., Westfield, N. J.**  
 See Advertisement on Page 253  
 Colonial Radio Corp., 254 Rano St., Buffalo 7, N. Y.  
 Conn Ltd., C. G., Elkhart, Ind.  
 Emerson Radio & Phonograph Corp., 111 8th Ave., New York, N. Y.  
 Favorite Mfg. Co., 105 E. 12th St., New York 2, N. Y.  
 Garod Radio Corp., 70 Washington St., Brooklyn 1, N. Y.  
 Hallcrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Hoffman Radio Corp., 3430 S. Hill St., Los Angeles 7, Calif.  
 Magnavox Co., The, Fort Wayne 4, Ind.  
 Mekan Inc., 79 Thurman Ave., Columbus 6, Ohio  
 Meissner Mfg. Div., Maguire Industries, Inc., Mt. Carmel, Ill.  
 Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
 Packard-Bell Co., 3443 Wilshire Blvd., Los Angeles 5, Calif.  
 Quality Industries, Electronic Dept., 25 E. Jackson Blvd., Chicago 4, Ill.  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Radio Electronic Products Co., 230 S. Spring St., Los Angeles, Calif.  
 Sonora Radio & Television Corp., 325 N. Hoyne Ave., Chicago, Ill.  
 Stromberg-Carlson Co., Rochester, N. Y.  
 Wilcox-Gay Corp., Charlotte, Mich.

## RECEIVERS, HOME—Television Combination

Andrea Radio Corp., 43-20 34th St., L. I. City, N. Y.  
 Ansley Radio Corp., 41 St. Joes Ave., Trenton 9, N. J.  
 Belmont Radio Co., Div. Raytheon Mfg. Co., 5921 W. Dickens Ave., Chicago 39, Ill.  
 Colonial Radio Corp., 254 Rano St., Buffalo 7, N. Y.  
 Crosley Corp., 1329 Arlington St., Cincinnati 3, Ohio  
 Du Mont Labs., Inc., Allen B., 2 Main Ave., Passaic, N. J.  
 Electronic Corp. of America, 170 53rd St., Brooklyn 32, N. Y.  
 Emerson Radio & Phonograph Corp., 111 8th Ave., New York, N. Y.  
 Farnsworth Television & Radio Corp., Ft. Wayne, Ind.  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
 Garod Radio Corp., 70 Washington St., Brooklyn 1, N. Y.  
 General Electric Co., Bridgeport 2, Conn.  
 Hallcrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Majestic Radio & Television Corp., St. Charles, Ill.  
 Radio Development and Research Co., 26 Cornellson Ave., Jersey City, N. J.  
 Radio Electronic Products Co., 230 S. Spring St., Los Angeles, Calif.  
 Remler Co., Ltd., 2101 Bryant St., San Francisco 10, Calif.  
 Signal Electronics, Inc., 114 East 16th St., New York, N. Y.  
 Stromberg-Carlson Co., Rochester, N. Y.  
 Templetone Radio Mfg. Corp., New London, Conn.  
 United States Television Mfg. Corp., 3 W. 61st St., New York 23, N. Y.  
 Westinghouse Electric Corp., Receiver Div., Sunbury, Pa.

## RECORDERS—Combustion

Bailey Meter Co., 1044 Ivanhoe Rd., Cleveland 10, Ohio  
**Furst Electronics, 800 W. North Ave., Chicago 22, Ill.**  
 See Advertisement on Page 248

## RECORDERS—Dielectric Constant

Tech Labs., 337 Central Ave., Jersey City, N. J.

## RECORDERS—Electronic Office Recorders & Playbacks

Dictaphone Corp., 420 Lexington Ave., New York, N. Y.  
 Edison Inc., Thomas A., 51 Lakeside Ave., West Orange, N. J.  
 Ellinwood Industries, 150 W. Slauson Ave., Los Angeles 3, Calif.  
 Emerson Radio & Phonograph Corp., 111 8th Ave., New York, N. Y.  
 General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
**Gray Research & Development Co., 50 N. Central Ave., Elmsford, N. Y.**  
 See Advertisement on Page 241  
**Miles Reproducer Co., Inc., 812 Broadway, New York 3, N. Y.**  
 See Advertisement on Page 256  
 Patrick's Industries, 397 W. Marshall Ave., Ferndale 20, Mich.  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Sound Scriber Corp., 146 Munson St., New Haven 4, Conn.  
 Speak-O-Phone Recording & Equipment Co., 23 W. 60th St., New York, N. Y.  
 Western Sound & Electric Labs., Inc., 808 S. Fifth St., Milwaukee 4, Wisc.  
 Wilcox-Gay Corp., Charlotte, Mich.

## RECORDERS—Electronic Rotary Stylus

Brush Development Co., The, 3405 Perkins Ave., Cleveland 14, Ohio  
 Cook Laboratories, 139 Gordon Blvd., Floral Park, N. Y.  
**Miles Reproducer Co., Inc., 812 Broadway, New York 3, N. Y.**  
 See Advertisement on Page 256

## RECORDERS—Electronic Self-Balancing Recorders and Indicators

Bailey Meter Co., 1044 Ivanhoe Rd., Cleveland 10, Ohio  
 Brown Instrument Co., 4428 Wayne Ave., Philadelphia 44, Pa.  
 Foxboro Co., Foxboro, Mass.  
 Industrial Instruments Inc., 17 Pollack Ave., Jersey City 5, N. J.  
 Lectronic Research Labs., Howell and Hegerman Sts., Philadelphia, Pa.  
 Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.

## RECORDERS—Facsimile

Alden Products Co., 117 N. Main St., Brockton 64, Mass.  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisement on Page 48A to 48D  
 Finch Telecommunication Inc., Passaic, N. J.  
 Radio Inventions, Inc., 155 Perry St., New York 14, N. Y.  
 Times Facsimile Corp., 229 W. 43rd St., New York, N. Y.  
 Western Union Telegraph Co., 60 Hudson St., New York 13, N. Y.

## RECORDERS—Film

Dayton Acme Co., 930 York St., Cincinnati 14, Ohio  
 Electronic Chemical Engineering Co., 1233 E. Olympic Blvd., Los Angeles 21, Calif.  
**Miles Reproducer Co., Inc., 812 Broadway, New York 3, N. Y.**  
 See Advertisement on Page 256  
 SOS Cinema Supply Co., 449 W. 42nd St., New York 18, N. Y.  
**Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.**  
 See Advertisements on Pages 88, 89  
 Westinghouse Electric Corp., Meter Div., Newark, N. J.

## RECORDERS—Frequency

Consolidated Engineering Corp., 595 E. Colorado St., Pasadena 1, Calif.  
 Leeds & Northrup Co., 4970 Stenton Ave., Philadelphia 44, Pa.  
**Potter Instrument Co., 136-56 Roosevelt Ave., Flushing, N. Y.**  
 See Advertisement on Page 243  
 Sound Apparatus Co., 233 Broadway, New York 7, N. Y.  
 See Advertisement on Page 228  
 Westinghouse Electric Corp., Meter Div., Newark, N. J.

## RECORDERS—Mechanical

Annis Co., R. B., 1101 N. Delaware St., Indianapolis, Ind.  
 Autocall Co., The, Shelby, Ohio  
 Electric Tachometer Corp., Broad & Spring Garden Sts., Philadelphia, Pa.  
 Herbach & Rademan Inc., 517 Ludlow St., Philadelphia 6, Pa.  
**Miles Reproducer Co., Inc., 812 Broadway, New York 3, N. Y.**  
 See Advertisement on Page 256  
 Rahm Instruments, Inc., 12 West Broadway, New York 7, N. Y.

## RECORDERS—Oxygen

Bailey Meter Co., 1044 Ivanhoe Rd., Cleveland 10, Ohio  
 Leeds & Northrup Co., 4970 Stenton Ave., Philadelphia, Pa.

## RECORDERS—Potentiometer

Bailey Meter Co., 1044 Ivanhoe Rd., Cleveland 10, Ohio  
 Brown Instrument Co., 4428 Wayne Ave., Philadelphia 44, Pa.  
 Ess Instrument Co., 96 So. Washington Ave., Bergenfield, N. J.  
 Foxboro Co., Foxboro, Mass.

Leeds & Northrup Co., 4970 Stenton Ave., Philadelphia, Pa.  
 Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., Minneapolis, Minn.  
**Sound Apparatus Co., 233 Broadway, New York 7, N. Y.**  
 See Advertisement on Page 228

## RECORDERS—Sound and Phonograph

**Allied Recording Products Co., 21-09 43rd Ave., Long Island City 1, N. Y.**  
 See Advertisement on Page 233  
 Audak Co., 500 Fifth Ave., New York, N. Y.  
 Audar Inc., Argos, Ind.  
 Bardwell & McAllister, 7636 Santa Monica Blvd., Hollywood, Calif.  
 Bell Sound Systems, Inc., 1183 Essex Ave., Columbus, Ohio  
 Colonial Radio Corp., 254 Rano St., Buffalo 7, N. Y.  
 Conn Ltd., C. G., Elkart, Ind.  
 Cook Laboratories, 139 Gordon Blvd., Floral Park, N. Y.  
 Dictaphone Corp., 420 Lexington Ave., New York, N. Y.  
 Ellinwood Industries, 150 W. Slauson, Los Angeles 3, Calif.  
 Emerson Radio & Phonograph Corp., 111 8th Ave., New York, N. Y.  
 Fada Radio & Electric Co., Inc., 30-20 Thomson Ave., Long Island City, N. Y.  
 Fairchild Camera & Instrument Corp., 88-06 Van Wyck Blvd., Jamaica 1, N. Y.  
**Gray Research & Development Co., 50 N. Central Ave., Elmsford, N. Y.**  
 See Advertisement on Page 241  
 Lear, Inc., 110 Ionia Ave., N. W., Grand Rapids 2, Mich.  
 Maguire Industries Inc., Electronics Dept., Bridgeport, Conn.  
 Maico Co., Inc., 25 N. 3rd St., Minneapolis, Minn.  
 Makan Inc., 79 Thurman Ave., Columbus 6, Ohio  
 Meck Industries, John, Liberty at Pa., Plymouth, Ind.  
 Meissner Mfg. Div., Maguire Industries, Inc., Mt. Carmel, Ill.  
**Miles Reproducer Co., Inc., 812 Broadway, New York 3, N. Y.**  
 See Advertisement on Page 256  
 Mirror Record Corp., 1133 Broadway, New York 10, N. Y.  
**Rek-O-Kut Co., 146 Grand St., New York 13, N. Y.**  
 See Advertisement on Page 245  
 Robinson Recording Labs., 2022 Sansome St., Philadelphia, Pa.  
 Simpson Mfg. Co., Inc., Mark, 183 W. 4th St., New York 14, N. Y.  
 Speak-O-Phone Recording & Equipment Co., 23 W. 60th St., New York, N. Y.  
 Techno-Craft Products, 200 Hudson St., New York 13, N. Y.  
 Webster-Chicago Corp., 5622 Bloomingdale Ave., Chicago 39, Ill.  
**Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.**  
 See Advertisements on Pages 88, 89  
 Western Sound & Electric Labs., Inc., 808 S. Fifth St., Milwaukee 4, Wisc.  
 Wilcox-Gay Corp., Charlotte, Mich.

## RECORDERS—Tape

Boehme Inc., H. O., 915 Broadway, New York, N. Y.  
 Brush Development Co., 3405 Perkins Ave., Cleveland 14, Ohio  
 General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
 Gorrell & Gorrell, Haworth, N. J.  
 Lear, Inc., 110 Ionia Ave., N. W., Grand Rapids 2, Mich.  
 McElroy Mfg. Corp., Littleton, Mass.  
 Madison Electrical Products Div., John G. Ruckleshaus Co., 74 Main St., Madison, N. J.  
**Magnecord, Inc., 304 W. 63rd St., Chicago 21, Ill.**  
 See Advertisement on Page 193  
 Magnograph Corp., 5300 W. 3rd St., Los Angeles, Calif.  
**Miles Reproducer Co., Inc., 812 Broadway, New York 3, N. Y.**  
 See Advertisement on Page 256  
 Press Wireless Mfg. Corp., 1475 Broadway, New York City 18, N. Y.  
 Radio Development & Research Co., 26 Cornellson Ave., Jersey City, N. J.  
**Rek-O-Kut Co., 146 Grand St., New York 13, N. Y.**  
 See Advertisement on Page 245  
 Rowe Industries, 3120 Monroe St., Toledo 6, Ohio  
 Webster-Chicago Corp., 5622 Bloomingdale Ave., Chicago 39, Ill.

Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
See Advertisements on Pages 88, 89

**RECORDERS—Telephone Recording Equipment**

Dictaphone Corp., 420 Lexington Ave., New York, N. Y.  
Federal Telephone & Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
See Advertisements on Pages 48A to 48D  
Foote, Pierson & Co., Inc., 75 Hudson St., Newark 4, N. J.  
Gray Research & Development Co., 50 N. Central Ave., Elmsford, N. Y.  
See Advertisement on Page 241  
Miles Reproducer Co., Inc., 812 Broadway, New York 3, N. Y.  
See Advertisement on Page 256  
Sound Scriber Corp., 146 Munson St., New Haven 4, Conn.  
Speak-O-Phone Recording & Equipment Co., 23 W. 60th St., New York, N. Y.

**RECORDERS—Time**

Electric Tachometer Corp., Broad & Spring Garden Sts., Philadelphia, Pa.  
Engineering Lab., Inc., 602 E. 4th St., Tulsa 3 Okla.  
Esterline-Angus Co., Inc., P. O. Box 596, Indianapolis, Ind.  
Foxboro Co., Foxboro, Mass.  
Gibbs Div., George W. Borg Corp., Delavan, Wis.  
See Advertisement on Page 250  
Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.

**RECORDERS—Wire**

Air-King Products Co., Inc., 1523 63rd St., Brooklyn, N. Y.  
Ansley Radio Corp., 41 St. Joes Ave., Trenton 9, N. J.  
Aurex Corp., 1117 N. Franklin St., Chicago, Ill.  
Brush Development Co., 3405 Perkins Ave., Cleveland 14, Ohio  
Colonial Radio Corp., 254 Rano St., Buffalo 7, N. Y.  
General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
General Electric Co., Syracuse, N. Y.  
See Advertisements on Pages 96, 96A  
Hallcrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
Lear, Inc., 110 Ionia Ave., N. W., Grand Rapids 2, Mich.  
Madison Electrical Products Div., John G. Ruckelshaus Co., 74 Main St., Madison, N. J.  
Magnecord, Inc., 304 W. 63rd St., Chicago 21, Ill.  
See Advertisement on Page 193  
Melssner Mfg. Div., Maguire Industries, Inc., Mt. Carmel, Ill.  
Miles Reproducer Co., Inc., 812 Broadway, New York 3, N. Y.  
See Advertisement on Page 256  
Mirror Record Corp., 1133 Broadway, New York 10, N. Y.  
Molded Insulation Co., Aircraft Control Div., 335 E. Price St., Phila., Pa.  
Peirce Wire Recorder Corp., 1328 Sherman Ave., Evanston, Illinois  
Powell & Co., Inc., R. C., 57 William St., New York, N. Y.  
Radio Corp. of America, RCA Victor Div., Camden, N. J.  
See Advertisements on Inside Back Cover & Back Cover, 251  
Sonora Radio & Television Corp., 325 N. Hoyne Ave., Chicago, Ill.  
Stromberg-Carlson, Rochester, N. Y.  
Webster-Chicago Corp., 5622 Bloomingdale Ave., Chicago 39, Illinois.

**RECORDING HEADS**

See Heads, Recording

**RECORDS—Phonograph**

Bibletone, Inc., 354 Fourth Ave., New York 10, N. Y.  
Coda Record Co., 1291 Sixth Ave., New York 19, N. Y.

Commodore Record Co., 415 Lexington Ave., New York, N. Y.  
Decca Records, Inc., 50 West 57th St., New York 19, N. Y.  
Favorite Mfg. Co., 105 E. 12th St., New York 3, N. Y.  
Harmonia Records, 1328 Broadway, New York, N. Y.  
Kismet Record Co., 227 E. 14th St., New York 3, N. Y.  
Majestic Radio & Television Corp., St. Charles, Ill.  
Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
Pilot Radio Corp., 37-06 36th St., Long Island City, N. Y.  
Poinsettia, Inc., 95 Cedar Ave., Pitman, N. J.  
Radio Corp. of America, RCA Victor Div., Camden, N. J.  
See Advertisements on Inside Back Cover & Back Cover, 251  
Robinson Recording Laboratories, 2023 Sansom St., Philadelphia, Pa.  
Tone Products Corp. of America, 351 Fourth Ave., New York 10, N. Y.

**RECTIFIERS—Crystal**

Electro Products Labs., 549 W. Randolph St., Chicago 6, Ill.  
Standard Arcturus Corp., 99 Sussex Ave., Newark, N. J.  
Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
See Advertisement on Pages 88, 89

**RECTIFIERS—Metallic**

Acme Fire Alarm Co., Inc., 106 Seventh Ave., New York 11, N. Y.  
Benwood Linze Co., 1815 Locust St., St. Louis 3, Mo.  
See Advertisement on Page 212  
Bradley Labs., Inc., 82 Meadow St., New Haven, Conn.  
Conant Electrical Labs., 6500 O St., Lincoln 5, Nebr.  
See Advertisement on Page 226  
Electrocoil Transformer Co., 421 Canal St., New York 13, N. Y.  
Electro Products Labs., 549 W. Randolph St., Chicago 6, Ill.  
Electro-Tech Equipment Co., 331 Canal St., New York 13, N. Y.  
Electron Equipment Corp., 917 Meridian Ave., South Pasadena, Calif.  
Fansteel Metallurgical Corp., 2200 Sheridan Rd., North Chicago, Ill.  
Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
See Advertisements on Pages 48A to 48D  
General Electric Co., Bridgeport, Conn.  
Green Electric Co., Inc., 130 Cedar St., New York 6, N. Y.  
Hercules Electric & Mfg. Co. Inc., 2500 Atlantic Ave., Brooklyn 7, N. Y.  
Inductive Equipment Co., Gettysburg, Pa.  
Mallory & Co., Inc., P. O., 3029 E. Washington St., Indianapolis 6, Ind.  
See Advertisements on Pages 257 to 260  
McColpin-Christie Corp., 4922 S. Figueroa St., Los Angeles 37, Calif.  
Mellaphone Corp., Rochester 2, N. Y.  
Radio Receptor Co., Inc., 251 W. 19th St., New York, N. Y.  
See Advertisement on Page 40  
Rectifier Engineering Co., 1803 E. Seventh St., Los Angeles 21, Calif.  
Richardson Allen Corp., 15 W. 20th St., New York 11, N. Y.  
Schauer Machine Co., Cincinnati 2, Ohio  
Selenium Corp. of America, 1719 W. Pico Blvd., Los Angeles 15, Calif.  
See Advertisement on Page 217  
Sorgel Electric Co., 838 W. National Ave., Milwaukee 4, Wis.  
Ther Electric & Machine Works, 17 South Jefferson St., Chicago, Ill.  
Westinghouse Electric Corp., Motor Div., Buffalo, N. Y.  
Xervac Instrument Co., 101 Vine St., Hartford 5, Conn.

**RECTIFIERS—Tube Rectifying Units**

Chatham Electronics, 475 Washington St., Newark 2, N. J.  
See Advertisement on Page 247  
Davis & Murphy, 5252 Broadway, Chicago 40, Ill.  
Electrocoil Transformer Co., 421 Canal St., New York 13, N. Y.  
Electron Equipment Corp., 917 Meridian Ave., South Pasadena, Calif.

Espy Radio and Electronic Corp., 1218 Lincoln Ave., Santa Monica, Calif.  
See Advertisement on Page 156  
Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
See Advertisement on Page 48A to 48D  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Green Electric Co., Inc., 130 Cedar St., New York 6, N. Y.  
Hercules Electric & Mfg. Co., Inc., 2500 Atlantic Ave., Brooklyn 7, N. Y.  
Langevin Co. Inc., 37 W. 65th St., New York, N. Y.  
See Advertisement on Page 153  
Machlett Labs., Springdale, Conn.  
See Advertisement on Page 77  
McColpin-Christie Corp., 4922 S. Figueroa St., Los Angeles 37, Calif.  
Mellaphone Corp., Rochester 2, N. Y.  
Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
Rectifier Engineering Co., 1803 E. Seventh St., Los Angeles 21, Calif.  
Richardson Allen Corp., 15 W. 20th St., New York 11, N. Y.  
Sorgel Electric Co., 838 W. National Ave., Milwaukee 4, Wis.  
Special Chemicals Co., 30 Irving Pl., New York 3, N. Y.  
Sylvania Electric Products Inc., 500 5th Ave., New York 18, N. Y.  
Ther Electric & Machine Works, 17 South Jefferson St., Chicago, Ill.  
United Transformer Corp., 150 Varick St., New York 13, N. Y.  
See Advertisement on Inside Front Cover  
Ward Leonard Electric Co., 31 South St., Mt. Vernon, N. Y.  
See Advertisement on Page 175  
Westinghouse Electric Corp., Motor Div., Buffalo, N. Y.

**REGULATORS—Current**

American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
Espy Radio & Electronic Corp., 1218 Lincoln Ave., Santa Monica, Calif.  
See Advertisement on Page 156  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
Rectifier Engineering Co., 1803 E. Seventh St., Los Angeles 21, Calif.  
Sola Electric Co., 2525 Clybourn Ave., Chicago 14, Ill.  
Sorensen & Co., 375 Fairfield Ave., Stamford, Conn.  
See Advertisement on Page 154  
Ward Leonard Electric Co., 31 South St., Mt. Vernon, N. Y.  
See Advertisement on Page 175  
Westinghouse Electric Corp., Switchgear & Control Div., East Pittsburgh, Pa.

**REGULATORS—Frequency**

American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Sorensen & Co., 375 Fairfield Ave., Stamford, Conn.  
See Advertisement on Page 154  
Ward Leonard Electric Co., 31 South St., Mt. Vernon, N. Y.  
See Advertisement on Page 175

**REGULATORS — Voltage Regulators and Stabilizers**

Aerolux Light Corp., 653 11th Ave., New York 19, N. Y.  
American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
Amplifier Corp. of America, 396 Broadway, New York 13, N. Y.  
Audio Products Co., 2101 W. Olive Ave., Burbank, Calif.  
Burlington Instrument Corp., 214 North 4th St., Burlington, Iowa  
Clarostat Mfg. Co., Inc., 285-7 6th St., Brooklyn, N. Y.  
Commercial Research Labs., Inc., 20 Bartlett Ave., Detroit 3, Mich.  
Dayton Acme Co., 930 York St., Cincinnati 14, Ohio  
Espy Radio and Electronic Corp., 1218 Lincoln Ave., Santa Monica, Calif.  
See Advertisement on Page 156  
General Aviation Equipment Co., Inc., 630 5th Ave., New York 20, N. Y.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C

Inductive Equipment Co., Gettysburg, Pa.  
Oeram Corp., Auburn Rd., Seneca Falls, N. Y.  
R. B. M. Div., Essex Wire Corp., Logansport, Ind.  
Raytheon Mfg. Co., Commercial Products Div., Waltham 54, Mass.  
Rectifier Engineering Co., 1803 E. Seventh St., Los Angeles 21, Calif.  
Rowe Radio Research Lab., 2422 N. Pulaski Rd., Chicago 39, Ill.  
Sola Electric Co., 2525 Clybourn Ave., Chicago 14, Ill.  
Sorensen & Co., 375 Fairfield Ave., Stamford, Conn.  
See Advertisement on Page 154  
SOS Cinema Supply Co., 449 West 42nd St., New York 18, N. Y.  
Superior Electric Co., 83 Laurel St., Bristol, Conn.  
See Advertisement on Page 5 to 16  
United Transformer Corp., 150 Varick St., New York 13, N. Y.  
See Advertisement on Inside Front Cover  
Ward Leonard Electric Co., 31 South St., Mount Vernon, N. Y.  
See Advertisement on Page 175  
Westinghouse Electric Corp., Switchgear & Control Div., East Pittsburgh, Pa.

## RELAYS—Aircraft Type

Advance Electric & Relay Co., 1260 W. Second St., Los Angeles, Calif.  
Aircraft Radio Corp., Boonton, N. J.  
See Advertisement on Page 185  
Allied Control Co., Inc., 2 East End Ave., New York 21, N. Y.  
See Advertisement on Page 221  
Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.  
Clare & Co., C. P., 4719 Sunnyside Ave., Chicago 30, Ill.  
Clarostat Mfg. Co., Inc., 285-7 6th St., Brooklyn, N. Y.  
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.  
Federal Instrument Corp., 3609 Vernon Blvd., L. I. City 1, N. Y.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Guardian Electric Mfg. Co., 1400 Washington Blvd., Chicago 7, Ill.  
Leach Relay Co., Inc., 5915 Avalon Blvd., Los Angeles 3, Calif.  
Phillips Control Corp., 612 N. Michigan Avenue, Chicago 11, Ill.  
Potter & Brumfield Mfg. Co., 617 N. Gibson St., Princeton, Ind.  
Price Electric Corp., East Church & 2nd Sts., Frederick, Md.  
Sigma Instruments, Inc., 70 Ceylon St., Boston 22, Mass.  
See Advertisement on Page 59  
Standard Electrical Products Co., Dayton 3, Ohio  
Struthers-Dunn, Inc., 150 N. 13th Street, Philadelphia 7, Pa.  
Ward Leonard Electric Co., 31 South St., Mt. Vernon, N. Y.  
See Advertisement on Page 175

## RELAYS—Capacitance Operated

Banks Mfg. Co., 1105 W. Lawrence Ave., Chicago 40, Ill.  
Browning Labs., Inc., 750 Main St., Winchester, Mass.  
See Advertisement on Page 65  
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.  
Guardian Electric Mfg. Co., 1400 Washington Blvd., Chicago 7, Ill.  
Weksler Thermometer Corp., 52 W. Houston St., New York, N. Y.

## RELAYS—Coaxial

Advance Electric & Relay Co., 1260 W. Second St., Los Angeles, Calif.  
Allied Control Co., Inc., 2 East End Ave., New York 21, N. Y.  
See Advertisement on Page 221  
Andrew Co., 363 E. 75th St., Chicago 19, Ill.  
Price Electric Corp., East Church and 2nd Sts., Frederick, Md.  
Signal Engineering & Mfg. Co., 154 W. 14th St., New York, N. Y.  
See Advertisement on Page 254  
Struthers-Dunn, Inc., 150 N. 13th St., Philadelphia 7, Pa.

## RELAYS—d'Arsonval

Assembly Products, Inc., Chagrin Falls, Ohio  
Edison, Inc., Thomas A., Instrument Div., West Orange, N. J.  
See Advertisement on Page 18  
General Electronics, Inc., 101 Hazel St., Paterson, N. J.  
Scientific Service Lab., Subs. of Electronics, Inc., 915 Meridian Ave., South Pasadena, Calif.  
Triplett Electrical Instrument Co., 286 Harmon Road, Bluffton, Ohio  
Westinghouse Electric Corp., Meter Div., Newark, N. J.  
Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.

## RELAYS—Differential

Allied Control Co., Inc., 2 East End Ave., New York 21, N. Y.  
See Advertisement on Page 221  
Automatic Switch Co., 41 E. 11th St., New York 3, N. Y.  
Barber Colman Co., River & Loomis Sts., Rockford, Ill.  
Clare & Co., C. P., 4719 Sunnyside Ave., Chicago 30, Ill.  
Clarostat Mfg. Co., Inc., 285-7 6th St., Brooklyn, N. Y.  
Edison, Inc., Thomas A., Instrument Div., West Orange, N. J.  
See Advertisement on Page 18  
Fisher-Pierce Co., 70 Ceylon St., Boston 21, Mass.  
See Advertisement on Page 163  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Guardian Electric Mfg. Co., 1400 Washington Blvd., Chicago 7, Ill.  
Price Electric Corp., East Church and 2nd Sts., Frederick, Md.  
Sigma Instruments, Inc., 70 Ceylon St., Boston 22, Mass.  
See Advertisement on Page 59  
Signal Engineering & Mfg. Co., 154 W. 14th St., New York, N. Y.  
See Advertisement on Page 254  
Struthers-Dunn, Inc., 150 N. 13th St., Philadelphia 7, Pa.  
Westinghouse Electric Corp., Meter Div., Newark, N. J.

## RELAYS—Electronic Current

Advance Electric & Relay Co., 1260 W. Second St., Los Angeles, Calif.  
Aerolux Light Corp., 653 11th Ave., New York 19, N. Y.  
Allied Control Co., Inc., 2 East End Ave., New York 21, N. Y.  
See Advertisement on Page 221  
Automatic Switch Co., 41 E. 11th St., New York 3, N. Y.  
Automatic Temperature Control Co., 18 W. Shelton Ave., Philadelphia 44, Pa.  
Barber & Colman Co., River & Loomis Sts., Rockford, Ill.  
Barton Co., The, 968 Farmington Ave., West Hartford, Conn.  
Central Scientific Co., 1700 Irving Park Blvd., Chicago 13, Ill.  
Clare & Co., C. P., 4719 Sunnyside Ave., Chicago 30, Ill.  
Electronic Control Corp., 1573 E. Forest St., Detroit, Mich.  
Fischer Scientific Co., 717 Forbes St., Pittsburgh 16, Pa.  
Fisher-Pierce Co., 70 Ceylon St., Boston 21, Mass.  
See Advertisement on Page 163  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Guardian Electric Mfg. Co., 1400 Washington Blvd., Chicago 7, Ill.  
Langevin Co., Inc., The, Industrial Control Div., 37 W. 67th St., New York 23, N. Y.  
Parker Engineering Products Co., 16 W. 22nd St., New York 10, N. Y.  
Phillips Control Corp., 612 N. Michigan Ave., Chicago 11, Ill.  
Price Electric Corp., East Church and 2nd Sts., Frederick, Md.  
Ripley Co., Torrington, Conn.  
Struthers-Dunn, Inc., 150 N. 13th St., Philadelphia 7, Pa.  
Tung-Sol Lamp Works, Inc., 95 Eighth Ave., Newark, N. J.  
See Advertisement on Page 181

## RELAYS—Frequency Selective

Control Corp., 718 Central Ave., Minneapolis 14, Minn.

Stevens Arnold Co., 22 Elkins St., So. Boston, Mass.  
Wallace & Tiernan Products, Inc., Belleville, N. J.  
Westinghouse Electric Corp., Meter Div., Newark, N. J.

## RELAYS—General Purpose

Adams & Westlake Co., Michigan St., Elkhart, Ind.  
Advance Electric & Relay Co., 1260 W. Second St., Los Angeles, Calif.  
Allied Control Co., Inc., 2 East End Ave., New York 21, N. Y.  
See Advertisement on Page 221  
Arrow-Hart & Hegeman Electric Co., 103 Hawthorne St., Hartford 6, Conn.  
Assembly Prods., Inc., Chagrin Falls, Ohio  
Autocall Co., The, Shelby, Ohio  
Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.  
Automatic Signal Div., Eastern Industries, Inc., 100 Regent St., East Norwalk, Conn.  
Automatic Switch Co., 41 E. 11th St., New York 3, N. Y.  
Betts & Betts Corp., 551 W. 52nd St., New York, N. Y.  
Clare & Co., C. P., 4719 Sunnyside Ave., Chicago 30, Ill.  
Clark Controller Co., The, 1146 E. 152nd St., Cleveland 10, Ohio  
Clarostat Mfg. Co., Inc., 285-7 6th St., Brooklyn, N. Y.  
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.  
Davis & Co., Dean W., Kentland, Ind.  
Federal Instrument Corp., 3609 Vernon Blvd., L. I. City, N. Y.  
Fisher-Pierce Co., 70 Ceylon St., Boston 21, Mass.  
See Advertisement on Page 163  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Gordon Specialties Co., 823 S. Wabash Ave., Chicago 5, Ill.  
Grayhill Corp., 1 N. Pulaski Rd., Chicago 24, Ill.  
Guardian Electric Mfg. Co., 1400 Washington Blvd., Chicago 7, Ill.  
Kurman Electronics Co., 35-18 37th St., Long Island City 1, N. Y.  
Kurman Electronics Co., 35-18 37th St., Long Island City 1, N. Y.  
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave. S., Minneapolis, Minn.  
North Electric Mfg. Co., 501 S. Market St., Gallon, Ohio  
Oeram Corp., Auburn Rd., Seneca Falls, N. Y.  
Potter & Brumfield Mfg. Co., 617 N. Gibson St., Princeton, Ind.  
Price Electric Corp., East Church and 2nd Sts., Frederick, Md.  
R. B. M. Div., Essex Wire Corp., Logansport, Ind.  
Remler Co., Ltd., 2101 Bryant St., San Francisco 10, Calif.  
Ripley Co., Torrington, Conn.  
Sigma Instruments, Inc., 70 Ceylon St., Boston 22, Mass.  
See Advertisement on Page 59  
Signal Engineering & Mfg. Co., 154 W. 14th St., New York, N. Y.  
See Advertisement on Page 254  
Standard Electrical Products Co., Dayton 3, Ohio  
Struthers-Dunn, Inc., 150 N. 13th St., Philadelphia 7, Pa.  
Warrick Co., Chas. F., 16251 Hamilton Ave., Detroit 3, Mich.  
Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
See Advertisements on Pages 88, 89  
Westinghouse Electric Corp., Meter Div., Newark, N. J.  
Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.

## RELAYS—Impulse

Advance Electric & Relay Co., 1260 W. Second Street, Los Angeles, Calif.  
Autocall Co., The, Shelby, Ohio  
Automatic Switch Co., 41 E. 11th St., New York 3, N. Y.  
Clare & Co., C. P., 4719 Sunnyside Ave., Chicago 30, Ill.  
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Guardian Electric Mfg. Co., 1400 Washington Blvd., Chicago 7, Ill.  
Langevin Co., Inc., The, Industrial Control Div., 37 W. 65th St., New York 23, N. Y.

Leach Relay Co., Inc., 5915 Avalon Blvd., Los Angeles 3, Calif.  
 Sigma Instruments, Inc., 70 Ceylon St., Boston 22, Mass.  
 See Advertisement on Page 59  
 Signal Engineering Mfg. Co., 154 W. 14th St., New York, N. Y.  
 See Advertisement on Page 254  
 Struthers-Dunn, Inc., 150 N. 13th St., Philadelphia 7, Pa.  
 Westinghouse Electric Corp., Meter Div., Newark, N. J.

**RELAYS—Industrial Control**

Adams & Westlake Co., Michigan St., Elkhart, Ind.  
 Advance Electric & Relay Co., 1260 W. Second St., Los Angeles, Calif.  
 Aerolux Light Corp., 653 11th Ave., New York 19, N. Y.  
 Allied Control Co., Inc., 2 East End Ave., New York 21, N. Y.  
 See Advertisement on Page 221  
 Arrow-Hart & Hegemann Electric Co., 103 Hawthorn St., Hartford 6, Conn.  
 Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.  
 Automatic Switch Co., 41 E. 11th St., New York 3, N. Y.  
 Brown Instrument Co., 4428 Wayne Ave., Philadelphia 44, Pa.  
 Clare & Co., C. P., 4719 Sunnyside Ave., Chicago 30, Ill.  
 Clark Controller Co., The, 1146 E. 152nd St., Cleveland 10, Ohio  
 Clarostat Mfg. Co., Inc., 285-7 6th St., Brooklyn, N. Y.  
 Cutler-Hammer, Inc., 315 No. 12th St., Milwaukee 1, Wisc.  
 Federal Electric Products Co., Inc., 50 Paris St., Newark, N. J.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Langevin Co., Inc., The, Industrial Control Div., 37 W. 65th St., New York 23, N. Y.  
 Magnavox Co., The, Fort Wayne 4, Ind.  
 Monitor Controller Co., 51 S. Gay St., Baltimore 2, Md.  
 Phillips Control Corp., 612 N. Michigan Ave., Chicago 11, Ill.  
 Potter & Brumfield Mfg. Co., 617 N. Gibson St., Princeton, Ind.  
 Price Electric Corp., East Church and 2nd Sts., Frederick, Md.  
 R. B. M. Div., Essex Wire Corp., Logansport, Ind.  
 Ripley Co., Torrington, Conn.  
 Sigma Instruments, Inc., 70 Ceylon St., Boston 22, Mass.  
 See Advertisement on Page 59  
 Signal Engineering & Mfg. Co., 154 W. 14th St., New York, N. Y.  
 See Advertisement on Page 254  
 Square D Co., 6060 Rivard St., Detroit 11, Mich.  
 Struthers-Dunn, Inc., 150 N. 13th St., Philadelphia 7, Pa.  
 Tork Clock Co., 1 Grove St., Mt. Vernon, N. Y.  
 Ward Leonard Electric Co., 31 South St., Mt. Vernon, N. Y.  
 See Advertisement on Page 175  
 Westinghouse Electric Corp., Meter Div., Newark, N. J.  
 Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.

**RELAYS—Instrument**

Assembly Products, Inc., Chagrin Falls, Ohio  
 Baker Instrument Co., 310 Main St., Orange, N. J.  
 Brown Instrument Co., 4428 Wayne Ave., Philadelphia 44, Pa.  
 Clarostat Mfg. Co., Inc., 285-7 6th St., Brooklyn, N. Y.  
 Fisher-Pierce Co., 70 Ceylon St., Boston 21, Mass.  
 See Advertisement on Page 163  
 Guardian Electric Mfg. Co., 1400 Washington Blvd., Chicago 7, Ill.  
 Potter & Brumfield Mfg. Co., 617 N. Gibson St., Princeton, Ind.  
 Roller-Smith, Bethlehem, Pa.  
 See Advertisement on Page 214  
 Sigma Instruments, Inc., 70 Ceylon St., Boston 22, Mass.  
 See Advertisement on Page 59  
 Signal Engineering & Mfg. Co., 154 W. 14th St., New York, N. Y.  
 See Advertisement on Page 254  
 Struthers-Dunn, Inc., 150 N. 13th St., Philadelphia 7, Pa.  
 Triplett Electrical Instrument Co., 286 Harmon Rd., Bluffton, Ohio

Ward Leonard Electric Co., 31 South St., Mt. Vernon, N. Y.  
 See Advertisement on Page 175  
 Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.

**RELAYS—Keying and Break-in**

Advance Electric & Relay Co., 1260 W. Second St., Los Angeles, Calif.  
 Allied Control Co., Inc., 2 East End Ave., New York 21, N. Y.  
 See Advertisement on Page 221  
 Clare & Co., C. P., 4719 Sunnyside Ave., Chicago 30, Ill.  
 Clarostat Mfg. Co., Inc., 285-7 6th St., Brooklyn, N. Y.  
 Cook Electric Co., 2700 Southport Ave., Chicago, Ill.  
 Fisher-Pierce Co., 70 Ceylon St., Boston 21, Mass.  
 See Advertisement on Page 163  
 Guardian Electric Mfg. Co., 1400 Washington Blvd., Chicago 7, Ill.  
 Leach Relay Co., Inc., 5915 Avalon Blvd., Los Angeles 3, Calif.  
 Potter & Brumfield Mfg. Co., 617 N. Gibson St., Princeton, Ind.  
 Price Electric Corp., East Church and 2nd Sts., Frederick, Md.  
 Sigma Instruments, Inc., 70 Ceylon St., Boston 22, Mass.  
 See Advertisement on Page 59  
 Signal Engineering & Mfg. Co., 154 W. 14th St., New York, N. Y.  
 See Advertisement on Page 254  
 Standard Electrical Products Co., Dayton 3, Ohio  
 Stevens-Arnold Co., 22 Elkins St., S. Boston, Mass.  
 Struthers-Dunn, Inc., 150 N. 13th St., Philadelphia 7, Pa.  
 Ward Leonard Electric Co., 31 South St., Mt. Vernon, N. Y.  
 See Advertisement on Page 175

**RELAYS—Latching**

Advance Electric & Relay Co., 1260 W. Second St., Los Angeles, Calif.  
 Allied Control Co., Inc., 2 East End Ave., New York 21, N. Y.  
 See Advertisement on Page 221  
 Autocall Co., The, Shelby, Ohio  
 Automatic Switch Co., 41 E. 11th St., New York 3, N. Y.  
 Control Corp., 718 Central Ave., Minneapolis 14, Minn.  
 Cook Electric Co., 2700 Southport Ave., Chicago, Ill.  
 Grayhill Corp., 1 N. Pulaski Rd., Chicago 24, Ill.  
 Guardian Electric Mfg. Co., 1400 Washington Blvd., Chicago 7, Ill.  
 Leach Relay Co., Inc., 5915 Avalon Blvd., Los Angeles 3, Calif.  
 North Electric Mfg. Co., 501 S. Market St., Gallon, Ohio  
 Potter & Brumfield Mfg. Co., 617 N. Gibson St., Princeton, Ind.  
 Price Electric Corp., East Church and 2nd Sts., Frederick, Md.  
 Sigma Instruments, Inc., 70 Ceylon St., Boston 22, Mass.  
 See Advertisement on Page 59  
 Signal Engineering & Mfg. Co., 154 W. 14th St., New York, N. Y.  
 See Advertisement on Page 254  
 Standard Electrical Products Co., Dayton 3, Ohio  
 Struthers-Dunn, Inc., 150 N. 13th St., Philadelphia 7, Pa.  
 Ward Leonard Electric Co., 31 South St., Mt. Vernon, N. Y.  
 See Advertisement on Page 175

**RELAYS—Mercury**

Adams & Westlake, Michigan St., Elkhart, Ind.  
 Autocall Co., The, Shelby, Ohio  
 Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.  
 Baker Instrument Co., 310 Main St., Orange, N. J.  
 Brown Instrument Co., 4428 Wayne Ave., Philadelphia 44, Pa.  
 Chatham Electronics, 475 Washington St., Newark 2, N. J.  
 See Advertisement on Page 247  
 Clare & Co., C. P., 4719 Sunnyside Ave., Chicago 30, Ill.  
 Durakool, Inc., 1010 N. Main St., Elkhart, Ind.  
 H-B Instrument Co., 2518 North Broad St., Philadelphia 32, Pa.

Hermaseal Co., Riverside Dr., Elkhart, Ind.  
 See Advertisements on Pages 90, 222  
 North Electric Mfg. Co., 501 S. Market St., Gallon, Ohio  
 Signal Engineering & Mfg. Co., 154 W. 14th St., New York, N. Y.  
 See Advertisement on Page 254  
 Standard Electrical Products Co., Dayton 3, Ohio  
 Struthers-Dunn, Inc., 150 N. 13th St., Philadelphia 7, Pa.  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisement on Pages 88, 89

**RELAYS—Multipole**

Advance Electric & Relay Co., 1260 W. Second St., Los Angeles, Calif.  
 Allied Control Co., Inc., 2 East End Ave., New York 21, N. Y.  
 See Advertisement on Page 221  
 Auth Electric Specialty Co., 422 E. 53rd St., New York 22, N. Y.  
 Clare & Co., C. P., 4719 Sunnyside Ave., Chicago 30, Ill.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Guardian Electric Mfg. Co., 1400 Washington Blvd., Chicago 7, Ill.  
 Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave. S., Minneapolis, Minn.  
 Phillips Control Corp., 612 N. Michigan Ave., Chicago 11, Ill.  
 Potter & Brumfield Mfg. Co., 617 N. Gibson St., Princeton, Ind.  
 Price Electric Corp., East Church and 2nd Sts., Frederick, Md.  
 R. B. M. Div., Essex Wire Corp., Logansport, Ind.  
 Sigma Instruments, Inc., 70 Ceylon St., Boston 22, Mass.  
 See Advertisement on Page 59  
 Signal Engineering & Mfg. Co., 154 W. 14th St., New York, N. Y.  
 See Advertisement on Page 254  
 Standard Electrical Products Co., Dayton 3, Ohio  
 Struthers-Dunn, Inc., 150 N. 13th St., Philadelphia 7, Pa.  
 Ward Leonard Electric Co., 31 South St., Mt. Vernon, N. Y.  
 See Advertisement on Page 175  
 Westinghouse Electric Corp., Meter Div., Newark, N. J.

**RELAYS—Overload and Underload**

Adams & Westlake Co., Michigan St., Elkhart, Ind.  
 Advance Electric & Relay Co., 1260 W. Second St., Los Angeles, Calif.  
 Allied Control Co., Inc., 2 East End Ave., New York 21, N. Y.  
 See Advertisement on Page 221  
 Barton Co., The, 968 Farmington Ave., West Hartford, Conn.  
 Bradley Co., Allen, 136 W. Greenfield Ave., Milwaukee 2, Wisc.  
 Clark Controller Co., The, 1146 E. 152nd St., Cleveland 10, Ohio  
 Cook Electric Co., 2700 Southport Ave., Chicago, Ill.  
 Cutler-Hammer, Inc., 315 N. 12th St., Milwaukee 1, Wisc.  
 Edison, Inc., Thomas A., Instrument Div., West Orange, N. J.  
 See Advertisement on Page 18  
 Fisher-Pierce Co., 70 Ceylon St., Boston 21, Mass.  
 See Advertisement on Page 163  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Guardian Electric Mfg. Co., 1400 Washington Blvd., Chicago 7, Ill.  
 Hartman Electrical Mfg. Co., 175 N. Diamond St., Mansfield, Ohio  
 Leach Relay Co., 5915 Avalon Blvd., Los Angeles, Calif.  
 Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave. S., Minneapolis, Minn.  
 Monitor Controller Co., 51 S. Gay St., Baltimore 2, Md.  
 Potter & Brumfield Mfg. Co., 617 N. Gibson St., Princeton, Ind.  
 Price Electric Corp., East Church and 2nd Sts., Frederick, Md.  
 Sigma Instruments, Inc., 70 Ceylon Street, Boston 22, Mass.  
 See Advertisement on Page 59  
 Signal Engineering & Mfg. Co., 154 W. 14th St., New York, N. Y.  
 See Advertisement on Page 254  
 Standard Electrical Products Co., Dayton 3, Ohio  
 Struthers-Dunn, Inc., 150 N. 13th St., Philadelphia 7, Pa.  
 Ward Leonard Electric Co., 31 South St., Mt. Vernon, N. Y.  
 See Advertisement on Page 175

Westinghouse Electric Corp., Meter Div., Newark, N. J.

## RELAYS—Photoelectric

Advance Electric & Relay Co., 1260 W. Second St., Los Angeles, Calif.  
**Allied Control Co., Inc., 2 East End Ave., New York 21, N. Y.**  
 See Advertisement on Page 221  
 Barton Co., The, 968 Farmington Ave., West Hartford, Conn.  
 Budd Induction Heating Inc., Detroit, Mich.  
 Clarostat Mfg. Co. Inc., 285-7 6th St., Brooklyn, N. Y.  
 Cook Electric Co., 2700 Southport Ave., Chicago, Ill.  
 D. & M. Mfg. Co., 2 Delford Ave., Bergenfield, N. J.  
 Eby, Inc., Hugh H., 18 W. Chelton Ave., Phila. 13, Pa.  
 Electronic Control Corp., 1573 E. Forest St., Detroit, Mich.  
 Electronic Mechanical Products Co., 13-15-17 N. Virginia Ave., Atlantic City, N. J.  
 Electronic Products Co., 19 No. First St., Geneva, Ill.  
 Ess Instrument Co., 96 So. Washington Ave., Bergenfield, N. J.  
**Fisher-Pierce Co., 70 Ceylon St., Boston 21, Mass.**  
 See Advertisement on Page 163  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
 Guardian Electric Mfg. Co., 1400 Washington Blvd., Chicago 7, Ill.  
 Langevin Co. Inc., The, Industrial Control Div., 37 W. 65th St., New York 23, N. Y.  
 Photoswitch, Inc., 77 Broadway, Cambridge 42, Mass.  
 Potter & Brumfield Mfg. Co., 617 N. Gibson St., Princeton, Ind.  
 Ripley Co., Torrington, Conn.  
 Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.  
 Worner Electronic Devices, Rankin, Ill.

## RELAYS—Plate Circuit

Adams & Westlake Co., Michigan St., Elkhart, Ind.  
 Advance Electric & Relay Co., 1260 W. Second St., Los Angeles, Calif.  
**Allied Control Co., Inc., 2 East End Ave., New York 21, N. Y.**  
 See Advertisement on Page 221  
 Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.  
 Clare & Co., C. P., 4719 Sunnyside Ave., Chicago 30, Ill.  
 Cook Electric Co., 2700 Southport Ave., Chicago, Ill.  
 Federal Instrument Corp., 3609 Vernon Blvd., L. I. City 1, N. Y.  
**Fisher-Pierce Co., 70 Ceylon St., Boston 21, Mass.**  
 See Advertisement on Page 163  
 Guardian Electric Mfg. Co., 1400 Washington Blvd., Chicago 7, Ill.  
 Monitor Controller Co., 51 S. Gay St., Baltimore 2, Md.  
 Potter & Brumfield Mfg. Co., 617 N. Gibson St., Princeton, Ind.  
 Price Electric Corp., East Church & 2nd Sts., Frederick, Md.  
 R. B. M. Div., Essex Wire Corp., Logansport, Ind.  
 Ripley Co., Torrington, Conn.  
**Sigma Instruments, Inc., 70 Ceylon St., Boston 22, Mass.**  
 See Advertisement on Page 59  
**Signal Engineering & Mfg. Co., 154 W. 14th St., New York, N. Y.**  
 See Advertisement on Page 251  
 Struthers-Dunn, Inc., 150 N. 13th St., Philadelphia 7, Pa.  
 Standard Electrical Products Co., Dayton 3, Ohio  
**Ward Leonard Electric Co., 31 South St., Mt. Vernon, N. Y.**  
 See Advertisement on Page 175  
 Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.

## RELAYS—Polarized

Barber Colman Co., River & Loomis Sts., Rockford, Ill.  
 Clarostat Mfg. Co. Inc., 285-7 6th St., Brooklyn, N. Y.  
 Edison, Inc., Thomas A., Instrument Div., West Orange, N. J.  
 See Advertisement on Page 18

**Fisher-Pierce Co., 70 Ceylon St., Boston 21, Mass.**  
 See Advertisement on Page 163  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
 Hartman Electrical Mfg. Co., 175 N. Diamond St., Mansfield, Ohio  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Price Electric Corp., East Church and 2nd Sts., Frederick, Md.  
**Sigma Instruments, Inc., 70 Ceylon St., Boston 22, Mass.**  
 See Advertisement on Page 59  
**Signal Engineering & Mfg. Co., 154 W. 14th St., New York, N. Y.**  
 See Advertisement on Page 254  
 Stevens Arnold Co., 22 Elkins St., So. Boston, Mass.  
 Struthers-Dunn, Inc., 150 N. 13th St., Philadelphia 7, Pa.  
 Westinghouse Electric Corp., Meter Div., Newark, N. J.  
 Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.

## RELAYS—Power

Adams & Westlake Co., Michigan St., Elkhart, Ind.  
 Advance Electric & Relay Co., 1260 W. Second St., Los Angeles, Calif.  
**Allied Control Co., Inc., 2 East End Ave., New York 21, N. Y.**  
 See Advertisement on Page 221  
 Bradley Co., Allen, 136 W. Greenfield Ave., Milwaukee 2, Wisc.  
 Clark Controller Co., The, 1146 E. 152nd St., Cleveland 10, Ohio  
 Clarostat Mfg. Co. Inc., 285-7 6th St., Brooklyn, N. Y.  
 Cook Electric Co., 2700 Southport Ave., Chicago, Ill.  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
 Grayhill Corp., 1 N. Pulaski Rd., Chicago 24, Ill.  
 Leach Relay Co., 5915 Avalon Blvd., Los Angeles 3, Calif.  
 Magnetic Devices, Inc., Frederick, Md.  
 Minneapolis-Honeywell Reg. Co., 2753 Fourth Ave. S., Minneapolis, Minn.  
 Monitor Controller Co., 51 S. Gay St., Baltimore 2, Md.  
 Phillips Control Corp., 612 N. Michigan Ave., Chicago 11, Ill.  
 Potter & Brumfield Mfg. Co., 617 N. Gibson St., Princeton, Ind.  
 Price Electric Corp., East Church and 2nd Sts., Frederick, Md.  
**Signal Engineering & Mfg. Co., 154 W. 14th St., New York, N. Y.**  
 See Advertisement on Page 254  
 Square D Co., 6060 Rivard St., Detroit 11, Mich.  
 Standard Electrical Products Co., Dayton 3, Ohio  
 Struthers-Dunn, Inc., 150 N. 13th St., Philadelphia 7, Pa.  
 Tork Clock Co., 1 Grove St., Mt. Vernon, N. Y.  
**Ward Leonard Electric Co., 31 South St., Mt. Vernon, N. Y.**  
 See Advertisement on Page 175  
 Westinghouse Electric Corp., Meter Div., Newark, N. J.  
 Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.

## RELAYS—Rotary

**Allied Control Co., Inc., 2 East End Ave., New York 21, N. Y.**  
 See Advertisement on Page 221  
 Autocall Co., The, Shelby, Ohio  
 Clare & Co., C. P., 4719 Sunnyside Ave., Chicago 30, Ill.  
 Clarostat Mfg. Co. Inc., 285-7 6th St., Brooklyn, N. Y.  
 North Electric Mfg. Co., 501 S. Market St., Galion, Ohio  
 Price Electric Corp., East Church and 2nd Sts., Frederick, Md.

## RELAYS—Sensitive Control

Adams & Westlake Co., Michigan St., Elkhart, Ind.  
 Advance Electric & Relay Co., 1260 W. Second St., Los Angeles, Calif.  
**Allied Control Co., Inc., 2 East End Ave., New York 22, N. Y.**  
 See Advertisement on Page 221

Auth Electric Specialty Co., 422 E. 53rd St., New York 22, N. Y.  
 Autocall Co., The, Shelby, Ohio  
 Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.  
 Automatic Switch Co., 41 E. 11th St., New York 3, N. Y.  
 Automatic Temperature Control Co., 18 W. Chelton Ave., Philadelphia 44, Pa.  
 Barber Colman Co., River & Loomis Sts., Rockford, Ill.  
 Clare & Co., C. P., 4719 Sunnyside Ave., Chicago 30, Ill.  
 Clarostat Mfg. Co. Inc., 285-7 6th St., Brooklyn, N. Y.  
 Cook Electric Co., 2700 Southport Ave., Chicago, Ill.  
**Edison, Inc., Thomas A., Instrument Div., West Orange, N. J.**  
 See Advertisement on Page 18  
 Ess Instrument Co., 96 So. Washington Ave., Bergenfield, N. J.  
**Fisher-Pierce Co., 70 Ceylon St., Boston 22, Mass.**  
 See Advertisement on Page 163  
 General Controls Co., 801 Allen Ave., Glendale 1, Calif.  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
 Guardian Electric Mfg. Co., 1400 Washington Blvd., Chicago 7, Ill.  
 H-B Instrument Co., 2518 North Broad St., Philadelphia 32, Pa.  
 Kurman Electronics Co., 35-18 37th St., Long Island City 1, N. Y.  
 Leach Relay Co., 5915 Avalon Blvd., Los Angeles 3, Calif.  
 Phillips Control Corp., 612 N. Michigan Ave., Chicago 11, Ill.  
 Price Electric Corp., East Church and 2nd Sts., Frederick, Md.  
**Sigma Instruments, Inc., 70 Ceylon St., Boston 22, Mass.**  
 See Advertisement on Page 59  
**Signal Engineering & Mfg. Co., 154 W. 14th St., New York, N. Y.**  
 See Advertisement on Page 254  
 Standard Electrical Products Co., Dayton 3, Ohio  
 Stevens Arnold Co., 22 Elkins St., So. Boston, Mass.  
 Struthers-Dunn, Inc., 150 N. 13th St., Philadelphia 7, Pa.  
**Tung-Sol Lamp Works Inc., 95 Eighth Ave., Newark, N. J.**  
 See Advertisement on Page 181  
**Ward Leonard Electric Co., 31 South St., Mt. Vernon, N. Y.**  
 See Advertisement on Page 175  
 Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.

## RELAYS—Sequence

Clare & Co., C. P., 4719 Sunnyside Ave., Chicago 30, Ill.  
 Guardian Electric Mfg. Co., 1400 Washington Blvd., Chicago 7, Ill.  
 Phillips Control Corp., 612 N. Michigan Ave., Chicago 11, Ill.  
 Price Electric Corp., East Church & 2nd Sts., Frederick, Md.  
**Signal Engineering & Mfg. Co., 154 W. 14th St., New York, N. Y.**  
 See Advertisement on Page 254  
 Struthers-Dunn, Inc., 150 N. 13th St., Philadelphia 7, Pa.  
 Westinghouse Electric Corp., Meter Div., Newark, N. J.

## RELAYS—Shock-Resisting

Advance Electric & Relay Co., 1260 W. Second St., Los Angeles, Calif.  
**Allied Control Co., Inc., 2 East End Ave., New York 21, N. Y.**  
 See Advertisement on Page 221  
 Auth Electric Specialty Co., 422 E. 53rd St., New York 22, N. Y.  
 Clare & Co., C. P., 4719 Sunnyside Ave., Chicago 30, Ill.  
**Fisher-Pierce Co., 70 Ceylon St., Boston 22, Mass.**  
 See Advertisement on Page 163  
 Guardian Electric Mfg. Co., 1400 Washington Blvd., Chicago 7, Ill.  
 Kurman Electronics Co., 35-18 37th St., Long Island City 1, N. Y.  
 Potter & Brumfield Mfg. Co., 617 N. Gibson St., Princeton, Ind.  
 Price Electric Corp., East Church & 2nd Sts., Frederick, Md.  
**Sigma Instruments, Inc., 70 Ceylon St., Boston 22, Mass.**  
 See Advertisement on Page 59  
**Signal Engineering & Mfg. Co., 154 W. 14th St., New York, N. Y.**  
 See Advertisement on Page 254

Struthers-Dunn, Inc., 150 N. 13th St., Philadelphia 7, Pa.  
Westinghouse Electric Corp., Meter Div., Newark, N. J.

**RELAYS—Snap-Action**

Adams & Westlake Co., Michigan St., Elkhart, Ind.  
Allied Control Co. Inc., 2 East End Ave., New York 21, N. Y.  
See Advertisement on Page 221  
Clare & Co., C. P., 4719 Sunnyside Ave., Chicago 30, Ill.  
Clarostat Mfg. Co. Inc., 285-7 6th St., Brooklyn, N. Y.  
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Guardian Electric Mfg. Co., 1400 Washington Blvd., Chicago 7, Ill.  
McQuay-Norris Mfg. Co., Electric Products Div., 6319 Manchester Ave., St. Louis 10, Mo.  
Potter & Brumfield Mfg. Co., 617 N. Gibson St., Princeton, Ind.  
Price Electric Corp., East Church and 2nd Sts., Frederick, Md.  
Sigma Instruments, Inc., 70 Ceylon St., Boston 22, Mass.  
See Advertisement on Page 59  
Signal Engineering & Mfg. Co., 154 W. 14th St., New York, N. Y.  
See Advertisement on Page 254  
Struthers-Dunn, Inc., 150 N. 13th St., Philadelphia 7, Pa.  
Tung-Sol Lamp Works Inc., 95 Eighth Ave., Newark, N. J.  
See Advertisement on Page 181

**RELAYS—Stepping**

Autocall Co., The, Shelby, Ohio  
Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.  
Clare & Co., C. P., 4719 Sunnyside Ave., Chicago 30, Ill.  
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.  
Guardian Electric Mfg. Co., 1400 Washington Blvd., Chicago 7, Ill.  
North Electric Mfg. Co., 501 S. Market St., Gallion, Ohio  
Price Electric Corp., East Church and 2nd Sts., Frederick, Md.  
Signal Engineering & Mfg. Co., 154 W. 14th St., New York, N. Y.  
See Advertisement on Page 254  
Struthers-Dunn, Inc., 150 N. 13th St., Philadelphia 7, Pa.

**RELAYS—Telephone**

Adams & Westlake Co., Michigan St., Elkhart, Ind.  
Advance Electric & Relay Co., 1260 W. Second St., Los Angeles, Calif.  
Allied Control Co. Inc., 2 East End Ave., New York 21, N. Y.  
See Advertisement on Page 221  
Auth Electric Specialty Co., 422 E. 53rd St., New York 22, N. Y.  
Autocall Co., The, Shelby, Ohio  
Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.  
Clare & Co., C. P., 4719 Sunnyside Ave., Chicago 30, Ill.  
Clarostat Mfg. Co. Inc., 285-7 6th St., Brooklyn, N. Y.  
Control Corp., 718 Central Ave., Minneapolis 14, Minn.  
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.  
Cover Dual Signal Systems, Inc., Div. of Electra Voice Corp., 5215-25 Ravenswood Ave., Chicago 40, Ill.  
Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
See Advertisement on Page 48A to 48D  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Guardian Electric Mfg. Co., 1400 Washington Blvd., Chicago 7, Ill.  
Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
Kurman Electronics Corp., 35-18 37th St., Long Island City 1, N. Y.  
Leach Relay Co., 5915 Avalon Blvd., Los Angeles 3, Calif.  
Leich Electric Co., 565 W. Washington Blvd., Chicago 6, Ill.  
North Electric Mfg. Co., 501 S. Market St., Gallion, Ohio  
Phillips Control Corp., 612 N. Michigan Ave., Chicago 11, Ill.

Potter & Brumfield Mfg. Co., 617 N. Gibson St., Princeton, Ind.  
R. B. M. Div., Essex Wire Corp., Logansport, Ind.  
Signal Engineering & Mfg. Co., 154 W. 14th St., New York, N. Y.  
See Advertisement on Page 254  
Standard Electrical Products Co., Dayton 3, Ohio  
Transelectric Mfg. Co., Oxford, Pa.  
Western Electric Co. Inc., 195 Broadway, New York 7, N. Y.  
See Advertisement on Pages 88, 89

**RELAYS—Temperature Compensated**

Fisher-Pierce Co., 70 Ceylon St., Boston 22, Mass.  
See Advertisement on Page 163  
Guardian Electric Mfg. Co., 1400 Washington Blvd., Chicago 7, Ill.  
Kurman Electronics Co., 35-18 37th St., Long Island City 1, N. Y.  
Sigma Instruments, Inc., 70 Ceylon St., Boston 22, Mass.  
See Advertisement on Page 59  
Signal Engineering & Mfg. Co., 154 W. 14th St., New York, N. Y.  
See Advertisement on Page 254  
Ward Leonard Electric Co., 31 South St., Mt. Vernon, N. Y.  
See Advertisement on Page 175

**RELAYS—Time Delay**

Adams & Westlake Co., Michigan St., Elkhart, Ind.  
Advance Electric and Relay Co., 1260 W. Second St., Los Angeles, Calif.  
Allied Control Co. Inc., 2 East End Ave., New York 21, N. Y.  
See Advertisement on Page 221  
American Gas Accumulator Co., 1029 Newark Ave., Elizabeth, N. J.  
See Advertisement on Page 223  
Amperite Co., 561 Broadway, New York, N. Y.  
See Advertisement on Page 202  
Autocall Co., The, Shelby, Ohio  
Automatic Temperature Control Co., 18 W. Chelton Ave., Philadelphia 44, Pa.  
Betts & Betts Corp., 551 W. 52nd St., New York, N. Y.  
Clare & Co., C. P., 4719 Sunnyside Ave., Chicago 30, Ill.  
Clark Controller Co., 1146 E. 152nd St., Cleveland, Ohio  
Clarostat Mfg. Co. Inc., 385-7 6th St., Brooklyn, N. Y.  
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.  
Cramer Co., R. W., Centerbrook, Conn.  
See Advertisement on Page 233  
Diamond Instrument Co., North Ave., Wakefield, Mass.  
Eagle Signal Corp., Moline, Ill.  
Edison, Inc., Thomas A., Instrument Div., West Orange, N. J.  
See Advertisement on Page 18  
Electric Auto-Lite Co., The, Toledo 1, Ohio  
Electronic Control Corp., 1573 E. Forest St., Detroit, Mich.  
Fisher-Pierce Co., 70 Ceylon St., Boston 22, Mass.  
See Advertisement on Page 163  
General Electric Mfg. Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Guardian Electric Mfg. Co., 1400 Washington Blvd., Chicago 7, Ill.  
Hartman Electrical Mfg. Co., 175 N. Diamond St., Mansfield, Ohio.  
Haydon Co., A. W., The, Waterbury 32, Conn.  
Haydon Mfg. Co. Inc., Forestville, Conn.  
Industrial Timer Corp., 115 Edison Pl., Newark 5, N. J.  
Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
Kurman Electronics Co., 35-18 37th St., Long Island City 1, N. Y.  
Langevin Co. Inc., The, Industrial Control Div., 37 W. 65th St., New York 23, N. Y.  
Leach Relay Co., 5915 Avalon Blvd., Los Angeles 3, Calif.  
Lektra Labs., 30 E 10th St., New York, N. Y.  
Magnetic Devices, Inc., Frederick, Md.  
Meletron Corp., 950 N. Highland Ave., Los Angeles 28, Calif.  
Monitor Controller Co., 51 S. Gay St., Baltimore 2, Md.  
North Electric Mfg. Co., 501 S. Market St., Gallion, Ohio  
Paragon Electric Co., 37 W. Van Buren St., Chicago 5, Ill.  
Phillips Control Corp., 612 N. Michigan Ave., Chicago 11, Ill.

Photoswitch, Inc., 77 Broadway, Cambridge 42, Mass.  
Price Electric Corp., East Church and 2nd Sts., Frederick, Md.  
Reynolds Electric Co., 2560 W. Congress St., Chicago 12, Ill.  
Ripley Co., Torrington, Conn.  
Sigma Instruments, Inc., 70 Ceylon St., Boston 22, Mass.  
See Advertisement on Page 59  
Signal Engineering & Mfg. Co., 154 W. 14th St., New York, N. Y.  
See Advertisement on Page 254  
Spencer Thermostat Co., 34 Forest St., Attleboro, Mass.  
Standard Electrical Products Co., Dayton 3, Ohio  
Struthers-Dunn, Inc., 150 N. 13th St., Philadelphia 7, Pa.  
Tork Clock Co., 1 Grove St., Mt. Vernon, N. Y.  
Ulanet Co., George, 83 E. Kinney St., Newark 5, N. J.  
Ward Leonard Electric Co., 31 South St., Mt. Vernon, N. Y.  
See Advertisement on Page 175  
Westinghouse Electric Corp., Meter Div., Newark, N. J.  
Weston Electrical Instrument Corp., 618 Praelinghuysen Ave., Newark 5, N. J.

**RELAYS—Transfer**

Adams & Westlake Co., Michigan St., Elkhart, Ind.  
Advance Electric & Relay Co., 1260 W. Second St., Los Angeles, Calif.  
Allied Control Co. Inc., 2 East End Ave., New York 21, N. Y.  
See Advertisement on Page 221  
Autocall Co., The, Shelby, Ohio  
Automatic Switch Co., 41 E. 11th St., New York 3, N. Y.  
Clare & Co., C. P., 4719 Sunnyside Ave., Chicago 30, Ill.  
Cook Electric Co., 2700 Southport Ave., Chicago, Ill.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Guardian Electric Mfg. Co., 1400 Washington Blvd., Chicago 7, Ill.  
Monitor Controller Co., 51 S. Gay St., Baltimore 3, Md.  
Phillips Control Corp., 612 N. Michigan Ave., Chicago 11, Ill.  
Signal Engineering & Mfg. Co., 154 W. 14th St., New York, N. Y.  
See Advertisement on Page 254  
Standard Electrical Products Co., Dayton 3, Ohio  
Struthers-Dunn, Inc., 150 N. 13th St., Philadelphia 7, Pa.  
Ward Leonard Electric Co., 31 South St., Mt. Vernon, N. Y.  
See Advertisement on Page 175

**RELAYS—Vacuum Contact**

American Instrument Co., 8030 Georgia Ave., Silver Springs, Md.  
Clarostat Mfg. Co., Inc., 285-7 6th St., Brooklyn, N. Y.  
Eitel McCullough, Inc., San Bruno, Calif.  
Monitor Controller Co., 51 S. Gay St., Baltimore 2, Md.  
Struthers-Dunn, Inc., 150 N. 13th St., Philadelphia 7, Pa.  
Western Electric Co. Inc., 195 Broadway, New York 7, N. Y.  
See Advertisements on Pages 88, 89

**RELAYS—Vibrating Reed Type**

Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.  
Biddle Co., Jas. G., 1316 Arch St., Philadelphia 7, Pa.  
Clarostat Mfg. Co., Inc., 285-7 6th St., Brooklyn, N. Y.  
Control Corp., 718 Central Ave., Minneapolis 14, Minn.  
Stevens-Arnold Co., 22 Elkins St., S. Boston, Mass.

**RESINS**

See Insulating Compounds

**RESISTANCE SPECIALTIES**

Acheson Colloids Corp., Port Huron, Mich.

**Ballantine Labs. Inc.,** Boonton, N. J.  
 See Advertisement on Page 42  
**Brown Engineering Co.,** 4635 S. Hawthorne Blvd., Portland 15, Oregon  
**Centralab Div., Globe Union Inc.,** 900 Keefe Ave., Milwaukee 1, Wisc.  
 See Advertisements on Pages 24, 25  
**Clarostat Mfg. Co. Inc.,** 285-7 6th St., Brooklyn, N. Y.  
**Conant Electrical Labs.,** 6500 O St., Lincoln 5, Nebraska  
 See Advertisement on Page 226  
**Continental Carbon, Inc.,** 13900 Lorain Ave., Cleveland 11, Ohio  
**Erie Resistor Corp.,** 644 W. 12th St., Erie, Pa.  
 See Advertisement on Page 47  
**Friez Instrument Div., Bendix Aviation Corp.,** Taylor Ave., Baltimore 4, Md.  
**General Radio Co.,** 275 Massachusetts Ave., Cambridge 39, Mass.  
**Giannini & Co. Inc.,** G. M., Autoflight Instruments Div., 285 W. Colorado St., Pasadena 1, Calif.  
**Global Div., Carborundum Co.,** Buffalo Ave., Niagara Falls, N. Y.  
**Helipot Corp.,** 1011 Mission St., So. Pasadena, Calif.  
 See Advertisement on Page 229  
**Keystone Carbon Co., Inc.,** Saint Marys, Pa.  
**Precision Resistor Co.,** 334 Badger Ave., Newark 8, N. J.  
**Rubicon Co.,** 3751 Ridge Ave., Phila., Pa.  
**States Co.,** 19 New Park Ave., Hartford 6, Conn.  
**Van Dyke Instruments, Inc.,** Tarzana, Calif.  
**Western Electric Co., Inc.,** 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89

**Muter Co.,** 1255 S. Michigan Ave., Chicago, Ill.  
**Ohio Carbon Co.,** 12508 Berea Rd., Cleveland, Ohio  
**Ohmite Mfg. Co.,** 4835 W. Flournoy St., Chicago, Ill.  
 See Advertisement on Page 179  
**Precision Machine Works, Inc.,** 730 Lyndale Ave., N., Minneapolis 11, Minn.  
**Precision Resistor Co.,** 334 Badger Ave., Newark 8, N. J.  
**Rex Rheostat Co.,** 3 Foxhurst Rd., Baldwin, N. Y.  
 See Advertisement on Page 256  
**Rubicon Co.,** 3751 Ridge Ave., Philadelphia, Pa.  
**Schaefer Bros. Co.,** 1059 W. 11th St., Chicago, Ill.  
**Shallcross Mfg. Co.,** 10 Jackson Ave., Colingdale, Pa.  
**Speer Resistor Corp.,** St. Marys, Pa.  
**Sprague Electric Co.,** North Adams, Mass.  
**Stackpole Carbon Co.,** St. Marys, Pa.  
**States Co.,** 19 New Park Ave., Hartford 6, Conn.  
**Sticht Co. Inc.,** Herman H., 27 Park Pl., New York 7, N. Y.  
**Trefz Mfg. Co.,** 511 E. 164th St., New York 56, N. Y.  
**Ward Leonard Electric Co.,** 31 South St., Mt. Vernon, N. Y.  
 See Advertisement on Page 175  
**Western Electric Co., Inc.,** 195 Broadway, New York 7, N. Y.  
 See Advertisement on Page 88, 89  
**Westinghouse Electric Corp.,** Meter Div., Newark, N. J.  
**White Dental Mfg. Co.,** S. S., Industrial Div., 10 E. 40th St., New York, N. Y.  
 See Advertisement on Page 66  
**Wirt Co.,** 52221 Greene St., Philadelphia, Pa.

**Industrial Instruments Inc.,** 17 Pollack Ave., Jersey City 5, N. J.  
**Instrument Resistors Co.,** 1036 Commerce Ave., Union, N. J.  
 See Advertisement on Page 39  
**International Resistance Co.,** 401 N. Broad St., Philadelphia 8, Pa.  
**Madison Electrical Products Div.,** John G. Ruckleshaus Co., 74 Main St., Madison, N. J.  
**Marion Electrical Instrument Co.,** Manchester, N. H.  
**Measurement Engineering Ltd.,** 61 Duke St., Toronto, Cana.  
 See Advertisement on Page 193  
**Milwaukee Resistor Co.,** 748 W. Virginia St., Milwaukee 4, Wisc.  
**Model Engineering & Mfg., Inc.,** Huntington, Ind.  
**National Technical Lab.,** 820 Mission St., South Pasadena, Calif.  
**Nilsson Electrical Lab., Inc.,** 103 Lafayette St., New York 13, N. Y.  
**Ohmite Mfg. Co.,** 4835 W. Flournoy St., Chicago 44, Ill.  
 See Advertisement on Page 179  
**Resistance Products Co.,** 140 S. Second St., Harrisburg, Pa.  
**Rubicon Co.,** 3751 Ridge Ave., Philadelphia, Pa.  
**Shallcross Mfg. Co.,** 10 Jackson Ave., Colingdale, Pa.  
**Trefz Mfg. Co.,** 511 E. 164th St., New York 56, N. Y.  
**Weston Electrical Instrument Co.,** 618 Frelinghuysen Ave., Newark 5, N. J.  
**Westinghouse Electrical Corp.,** Meter Div., Newark, N. J.  
**Wilkor Products, Inc.,** 3835 W. 150th St., Cleveland 11, Ohio  
**Winslow Co.,** The, 9 Liberty St., Newark 5, N. J.

## RESISTOR BOARDS

See Boards, Resistor

## RESISTORS—Ceramic

**Global Div., Carborundum Co.,** Buffalo Ave., Niagara Falls, N. Y.

## RESISTORS—Fixed

**Aerovox Corp.,** 740 Belleville Ave., New Bedford, Mass.  
**Atlas Resistor Co.,** 423 Broome St., New York, N. Y.  
**Audio Products Co.,** 2101 W. Olive Ave., Burbank, Calif.  
**Avia Products Co.,** 7266 Beverly Blvd., Los Angeles 36, Calif.  
**Bradley Co.,** Alien, 136 W. Greenfield Ave., Milwaukee 2, Wisc.  
**Brown Engineering Co.,** 4635 S. E. Hawthorne Blvd., Portland 15, Oregon  
**Carborundum Co.,** Global Div., Niagara Falls, N. Y.  
**Cinema Engineering Co.,** 1508 W. Verdugo Ave., Burbank, Calif.  
**Clarostat Mfg. Co., Inc.,** 285-7 6th St., Brooklyn, N. Y.  
**Consolidated Wire & Associated Companies,** 1635 S. Clinton St., Chicago 16, Ill.  
**Continental Carbon Inc.,** 13900 Lorain Ave., Cleveland, Ohio  
**Corning Glass Works,** Corning, N. Y.  
**Daven Co.,** 191 Central Ave., Newark 4, N. J.  
**Electrical Reactance Corp.,** Franklinville, N. Y.  
**Erie Resistor Corp.,** 644 W. 12th St., Erie, Pa.  
 See Advertisement on Page 47  
**General Electric Co.,** Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
**General Radio Co.,** 275 Massachusetts Ave., Cambridge 39, Mass.  
**Global Div., Carborundum Co.,** Buffalo Ave., Niagara Falls, N. Y.  
**Hardwick, Hindle Inc.,** 49 Hermon St., Newark, N. J.  
 See Advertisement on Page 222  
**Instrument Resistors Co.,** 1036 Commerce Ave., Union, N. J.  
 See Advertisement on Page 39  
**International Resistance Co.,** 401 N. Broad St., Philadelphia 8, Pa.  
**Legri-S Co., Inc.,** 846-850 Amsterdam Ave., New York, N. Y.  
 See Advertisement on Page 202  
**Mallory & Co. Inc.,** P. R., 3029 Washington St., Indianapolis, Ind.  
 See Advertisements on Pages 257 to 260  
**Micamold Radio Corp.,** 1087 Flushing Ave., Brooklyn 6, N. Y.  
**Monitor Controller Co.,** 51 S. Gay St., Baltimore 2, Md.

## RESISTORS—Hermetically Sealed

**Daven Co.,** 191 Central Ave., Newark 4, N. J.  
**Instrument Resistors Co.,** 1036 Commerce Ave., Union, N. J.  
 See Advertisement on Page 39  
**International Resistance Co.,** 401 N. Broad St., Philadelphia 3, Pa.  
**Ohmite Mfg. Co.,** 4835 W. Flournoy St., Chicago 44, Ill.  
 See Advertisement on Page 179  
**Precision Resistor Co.,** 334 Badger Ave., Newark 8, N. J.  
**Shallcross Mfg. Co.,** 10 Jackson Ave., Colingdale, Pa.  
**Sprague Electric Co.,** North Adams, Mass.  
**Trefz Mfg. Co.,** 511 E. 164th St., New York 56, N. Y.  
**Western Electric Co., Inc.,** 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89  
**Westinghouse Electric Corp.,** Meter Div., Newark, N. J.

## RESISTORS—High Megohm

**Ohio Carbon Co.,** 12508 Berea Rd., Cleveland, Ohio  
**Precision Resistor Co.,** 334 Badger Ave., Newark 8, N. J.  
**Resistance Products Co.,** 140 South Second St., Harrisburg, Pa.  
**Victoren Instrument Co.,** 5806 Hough Ave., Cleveland 3, Ohio  
**Westinghouse Electric Corp.,** Meter Div., Newark, N. J.

## RESISTORS—Precision

**Brown Engineering Co.,** 4635 S. E. Hawthorne Blvd., Portland 15, Oregon  
**Cinema Engineering Co.,** 1508 W. Verdugo Ave., Burbank, Calif.  
**Clarostat Mfg. Co., Inc.,** 285-7 6th St., Brooklyn, N. Y.  
**Daven Co.,** 191 Central Ave., Newark 4, N. J.  
**Davis Electric Co.,** Camp Glardeau, Mo.  
**Eastern Electronics Corp.,** 41 Chestnut St., New Haven, Conn.  
**Elco Resistors Co.,** 114 W. 18th St., New York, N. Y.  
**Fairchild Camera & Instrument Corp.,** 88-06 Van Wyck Blvd., Jamaica 1, N. Y.  
**Federal Instrument Corp.,** 3609 Vernon Blvd., L. I. City 1, N. Y.  
**General Electronics, Inc.,** 101 Hazel St., Paterson, N. J.  
**General Radio Co.,** 275 Massachusetts Ave., Cambridge 39, Mass.  
**Gibbs Div., George W. Borg Corp.,** 814 Michigan St., Delavan, Wisc.  
 See Advertisement on Page 250

## RESISTORS—Precision Wire Wound Potentiometer

**Brown Engineering Co.,** 4635 S. E. Hawthorne Blvd., Portland 15, Ore.  
**Centralab Div., Globe Union Inc.,** 900 Keefe Ave., Milwaukee 1, Wisc.  
 See Advertisements on Pages 24, 25  
**Clarostat Mfg. Co., Inc.,** 285-7 6th St., Brooklyn, N. Y.  
**Daven Co.,** 191 Central Ave., Newark 4, N. J.  
**Gamewell Co.,** Newton Upper Falls 64, Mass.  
**Gibbs Div., George W. Borg Corp.,** Delavan, Wisc.  
 See Advertisement on Page 250  
**International Resistance Co.,** 401 N. Broad St., Philadelphia 8, Pa.  
**Measurement Engineering Ltd.,** 61 Duke St., Toronto, Can.  
 See Advertisement on Page 193  
**Precision Resistor Co.,** 334 Badger Ave., Newark 8, N. J.  
**Rubicon Co.,** 3751 Ridge Ave., Philadelphia, Pa.  
**Shallcross Mfg. Co.,** 10 Jackson Ave., Colingdale, Pa.  
**Tech Labs.,** 337 Central Ave., Jersey City, N. J.  
**Technology Instrument Corp.,** 1058 Main St., Waltham, Mass.  
**Trefz Mfg. Co.,** 511 E. 164th St., New York 56, N. Y.  
**Van Dyke Instruments, Inc.,** Tarzana, Calif.

## RESISTORS—Temperature Sensitive

**Global Division, The Carborundum Company,** Niagara Falls, New York  
**Keystone Carbon Company, Inc.,** St. Marys Pennsylvania  
**Western Electric Company, Inc.,** 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89

## RESISTORS—Voltage Sensitive

**General Electric Company,** Schenectady, New York  
 See Advertisements on Pages 96B, 96C  
**Global Division, The Carborundum Company,** Niagara Falls, New York

## RESISTORS—Wire Wound

**Acme Electric Heating Co.,** 1217 Washington St., Boston, Mass.  
**Amalgamated Electronics Associated,** 60 E. 42nd St., New York 17, N. Y.

American Coil & Engineering Co., 1271 N. Hermitage Ave., Chicago 22, Ill.  
 Audio Products Co., 2101 W. Olive Ave., Burbank, Calif.  
 Brown Engineering Co., 4635 S. E. Hawthorne Blvd., Portland 15, Oregon  
 Carter Radio Div., Precision Parts Co., 213 Institute Pl., Chicago 10, Ill.  
 Clark Controller Co., The, 1146 E. 152nd St., Cleveland 10, Ohio  
 Clarostat Mfg. Co., Inc., 285-7 6th St., Brooklyn, N. Y.  
 Consolidated Wire & Associated Companies, 1635 S. Clinton St., Chicago 16, Ill.  
 Continental Carbon, Inc., 13900 Lorain Ave., Cleveland, Ohio  
 Daven Co., 191 Central Ave., Newark 4, N. J.  
 Electrical Reactance Corp., Franklinville, N. Y.  
 General Electric Co., Schenectady 5, N. Y. See Advertisements on Pages 96B, 96C  
 Hardwick, Hindle Inc., 40 Hermon St., Newark, N. J. See Advertisement on Page 222  
 Houlihan Co., T. J., The, 2508-14 W. Lawrence Ave., Chicago 25, Ill.  
 I-T-E Circuit Breaker Co., 19th & Hamilton Sts., Philadelphia 30, Pa. See Advertisement on Page 199  
 Industrial Instruments Inc., 17 Pollack Ave., Jersey City 5, N. J.  
 Instrument Resistors Co., 1036 Commerce Ave., Union, N. J. See Advertisement on Page 39  
 International Resistance Co., 401 N. Broad St., Philadelphia 8, Pa.  
 Lectrohm, Inc., 5125 W. 25th St., Cicero 50, Ill.  
 Legri-S Co., Inc., 846-850 Amsterdam Ave., New York, N. Y. See Advertisement on Page 202  
 Madison Electrical Products Div., John G. Ruckleshaus Co., 174 Main St., Madison, N. J.  
 Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind. See Advertisements on Pages 257 to 260  
 Milwaukee Resistor Co., 743 W. Virginia St., Milwaukee 4, Wisc.  
 Model Engineering & Mfg., Inc., Huntington, Ind.  
 Monitor Controller Co., 51 S. Gay St., Baltimore 2, Md.  
 Muter Co., 1255 S. Michigan Ave., Chicago, Ill.  
 Ohio Carbon Co., 12508 Berea Rd., Cleveland, Ohio  
 Ohmite Mfg. Co., 4835 W. Flournoy St., Chicago 44, Ill. See Advertisement on Page 179  
 Precision Machine Works, Inc., 730 Lyndale Ave. No., Minneapolis 11, Minn.  
 Precision Resistor Co., 334 Badger Ave., Newark 8, N. J.  
 Presto Electric Co., 4511 New York Ave., Union City, N. J.  
 Reimers Electric Appliance Co., Inc., 596 56th St., West New York, N. J.  
 Rex Rheostat Co., 3 Foxhurst Rd., Baldwin, N. Y. See Advertisement on Page 256  
 Rubicon Co., 3751 Ridge Ave., Philadelphia, Pa.  
 Shalleross Mfg. Co., 10 Jackson Ave., Colingdale, Pa.  
 Sprague Electric Co., North Adams, Mass.  
 Trefz Mfg. Co., 511 E. 164th St., New York 56, N. Y.  
 Utah Radio Products Co., 820 Orleans St., Chicago, Ill.  
 Van Dyke Instruments, Inc., Tarzana, Calif.  
 Ward Leonard Electric Co., 31 South St., Mt. Vernon, N. Y. See Advertisement on Page 175  
 Westinghouse Electric Corp., Meter Div., Newark, N. J.  
 Wirt Co., 5221 Greene St., Philadelphia, Pa.

## RHEOSTATS

Acme Electric Heating Co., 1217 Washington St., Boston, Mass.  
 Amalgamated Electronic Associated, 60 E. 42nd St., New York 17, N. Y.  
 Atlas Resistor Co., 423 Broome St., New York, N. Y.  
 Audio Products Co., 2101 W. Olive Ave., Burbank, Calif.  
 Biddle Co., James G., 1316 Arch St., Phila. 7, Pa.  
 Bradley Co., Allen, 136 W. Greenfield Ave., Milwaukee 2, Wisc.  
 Brown Engineering Co., 4635 S. E. Hawthorne Blvd., Portland 15, Oregon  
 Carter Radio Div., Precision Parts Co., 213 Institute Place, Chicago 10, Ill.  
 Clark Controller Co., The, 1146 E. 152nd St., Cleveland 10, Ohio  
 Clarostat Mfg. Co., Inc., 285-7 6th St., Brooklyn, N. Y.

Cutler-Hammer, Inc., 315 No. 12th St., Milwaukee 1, Wisc.  
 Dalmo Victor Co., San Carlos, Calif.  
 Daven Co., 191 Central Ave., Newark 4, N. J.  
 DeJur-Amsco Corp., Northern Blvd. at 45th St., L. I. City, N. Y.  
 Eastern Specialty Co., Phila. 40, Pa.  
 Electronic Associates Inc., 61 Brighton Ave., Long Branch, N. J.  
 General Electric Co., Schenectady 5, N. Y. See Advertisements on Pages 96B, 96C  
 General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
 Giannini & Co., Inc., G. M., Autoflight Instruments Div., 285 W. Colorado St., Pasadena 1, Calif.  
 Gibbs Div., George W. Borg Corp., Delavan, Wisc. See Advertisement on Page 250  
 Hardwick, Hindle, Inc., 40 Hermon St., Newark, N. J. See Advertisement on Page 222  
 International Resistance Co., 401 N. Broad St., Phila. 8, Pa.  
 Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind. See Advertisements on Pages 257 to 260  
 Muter Co., 1255 S. Michigan Ave., Chicago, Ill.  
 National Electric Controller Co., 5307 Ravenswood Ave., Chicago, Ill.  
 Ohmite Manufacturing Co., 4835 W. Flournoy St., Chicago 44, Ill. See Advertisement on Page 179  
 Precision Resistor Co., 334 Badger Ave., Newark 8, N. J.  
 Rex Rheostat Co., 3 Foxhurst Rd., Baldwin, N. Y. See Advertisement on Page 256  
 Rubicon Co., 3751 Ridge Ave., Phila., Pa.  
 Schaefer Bros. Co., 1059 W. 11th St., Chicago, Ill.  
 Special Chemicals Co., 30 Irving Pl., New York 3, N. Y.  
 Tech Labs., 337 Central Ave., Jersey City, N. J.  
 Technology Instrument Corp., 1058 Main St., Waltham, Mass.  
 Thwing-Albert Instrument Co., 5351 Pulaski Ave., Philadelphia 44, Pa.  
 Trefz Mfg. Co., 511 E. 164th St., New York 56, N. Y.  
 Utah Radio Products Co., 820 Orleans St., Chicago, Ill.  
 Ward Leonard Electric Co., 31 South St., Mt. Vernon, N. Y. See Advertisement on Page 175

## RHEOSTATS—Slide Wire

Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.  
 Hardwick, Hindle Inc., 40 Hermon St., Newark, N. J. See Advertisement on Page 222  
 Helipot Corp., 1011 Mission St., So. Pasadena, Calif. See Advertisement on Page 229  
 Precision Resistor Co., 334 Badger Ave., Newark 8, N. J.  
 Rex Rheostat Co., 3 Foxhurst Rd., Baldwin, N. Y. See Advertisement on Page 256  
 Sticht Co., Inc., Herman H., 27 Park Pl., New York 7, N. Y.  
 Thwing-Albert Instrument Co., 5351 Pulaski Ave., Philadelphia 44, Pa.  
 Ward Leonard Electric Co., 31 South St., Mt. Vernon, N. Y. See Advertisement on Page 175

## RINGS—Carbon Packing

Electro-Nite Carbon Co., 1133 E. Columbia Ave., Philadelphia 25, Pa.

## RINGS—Collector

Makepeace Co., D. E., Attleboro, Mass. See Advertisement on Page 28

## RINGS—Oil Sealing

Auburn Mfg. Co., Middletown, Conn.  
 Penn Fibre & Specialty Co., 2030 E. Westmoreland St., Phila. 44, Pa.  
 Sealor Corp., 45 Willard St., Providence, R. I.

## RINGS—Retaining

Barnes-Gibson-Raymond Div. of Associated Spring Corp., 6400 Miller Ave., Detroit 11, Mich.  
 Garrett Co., Inc., George K., 1421 Chestnut St., Philadelphia 2, Pa.  
 Grammes & Sons Inc., L. F., 389 Union St., Allentown 2, Pa.  
 National Lock Washer Co., 40 Hermon St., Newark 5, N. J.  
 Penn Fibre & Specialty Co., 2030 E. Westmoreland St., Philadelphia 44, Pa.  
 Schott Co., Walter L., 9306 Santa Monica Blvd., Beverly Hills, Calif.  
 Waldes Kohinoor Inc., Long Island City 1, N. Y.

## RIVETS

Allmetal Screw Products Co., 80 Grand St., New York 13, N. Y.  
 American Rivet Co., 1301 W. Congress St., Chicago 7, Ill.  
 Atlas Tack Corp., Pleasant St., Fairhaven, Mass.  
 Autoscrew Co., 216-222 W. 18th St., New York, N. Y.  
 Chase Brass & Copper Co., Inc., Waterbury 91, Conn.  
 Cherry Rivet Co., 231 Winston St., Los Angeles 13, Calif. See Advertisement on Page 211  
 Chicago Rivet & Machine Co., 9600 W. Jackson Blvd., Chicago, Ill.  
 Clendenin Bros., 108 South St., Baltimore, Md.  
 du Pont de Nemours & Co., Inc., E. I., Wilmington 98, Del.  
 Federal Screw Products Co., 224 W. Huron St., Chicago 10, Ill.  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill. See Advertisement on Page 90  
 Harper Co., H. M., 2630 Fletcher St., Chicago 13, Ill.  
 Hassall Inc., John, Clay & Oakland Sts., Brooklyn, N. Y.  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y. See Advertisement on Page 166  
 Manufacturers Screw Products, 270 W. Hubbard St., Chicago, Ill.  
 National Screw & Mfg. Co., The, Cleveland 4, Ohio  
 New England Screw Co., Keene, New Hampshire  
 Plume & Atwood Mfg. Co., 470 Bank St., Waterbury, Conn.  
 Public Metal Products, Inc., 100 6th Ave., New York 13, N. Y.  
 Republic Steel Corp., Republic Bldg., Cleveland 4, Ohio  
 Russell, Burdall & Ward Bolt & Nut Co., Midland Ave., Port Chester, N. Y.  
 Sterling Bolt Co., 209 W. Jackson Blvd., Chicago 6, Ill.  
 Stimpson Co., Inc., Edwin B., 74 Franklin Ave., Brooklyn 5, N. Y.  
 Stronghold Screw Products, 216 West Hubbard St., Chicago 10, Ill.  
 Tubular Rivet & Stud Co., Wollaston 70, Mass.

## RUBBER

See Insulation Materials

## SCALES—Oscilloscope

Du Mont Labs., Inc., Allen B., 2 Main Ave., Passaic, N. J.  
 Millen Mfg. Co., James, 150 Exchange St., Malden, Mass. See Advertisement on Page 44  
 Sun Dial Corp., Runnymede Road, Essex Falls, N. J.

## SCANNERS—Reflected &amp; Transmitted Light

Alden Products Co., 117 No. Main St., Brockton 64, Mass.  
 Fisher-Pierce Co., 70 Ceylon St., Boston 22, Mass. See Advertisement on Page 163  
 Press Wireless Mfg. Corp., 1475 Broadway, New York 18, N. Y.  
 Radio Inventions, Inc., 155 Perry St., New York 14, N. Y.

## SCRAMBLERS—Speech

Amplifier Corp. of America, 396 Broadway, New York, N. Y.  
 Development Engineering Co., Inc., The, 1818 Ashland St., Houston 8, Texas  
**Electronic Measurements Co., Red Bank, N. J.**  
 See Advertisement on Page 68  
 McMurdo Silver Co., Inc., 1249 Main St., Hartford 3, Conn.

## SCREWDRIVERS AND SMALL INSULATED TOOLS

See Tools

## SCREWS

**Aerolite Electronic Hardware Corp., 24 Cliff St., Jersey City, N. J.**  
 See Advertisement on Page 246  
 Aircraft Screw Products Co., Inc., 47-23 35th St., Long Island City 1, N. Y.  
 Allen Mfg. Co., Hartford, Conn.  
 Allmetal Screw Products Co., 80 Grand St., New York 13, N. Y.  
 American Screw Co., Providence, R. I.  
 Automatic Metal Products Co., 315 Berry St., Brooklyn 1, N. Y.  
 Autoscrew Co., 216-222 W. 18th St., New York, N. Y.  
 Birnbach Radio Co., Inc., 145 Hudson St., New York, N. Y.  
 Central Screw Co., 3511 Shields Ave., Chicago 9, Ill.  
 Chandler Products Co., 1475 Chardon Rd., Cleveland, Ohio  
 Chase Brass & Copper Co., Inc., Waterbury 91, Conn.  
 Continental Screw Co., New Bedford, Mass.  
 Cook Electric Co., 2700 Southport Ave., Chicago, Ill.  
 Ericsson Screw Machine Products Co., 25 Lafayette St., Brooklyn 1, N. Y.  
**General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.**  
 See Advertisement on Page 90  
 Harper Co., H. M., The, 2620 Fletcher St., Chicago 18, Ill.  
 Hassall, Inc., John, Clay & Oakland Sts., Brooklyn, N. Y.  
 Hubbell Inc., Harvey, Bridgeport 2, Conn.  
**Instrument Parts Corp., Snowden Ave. & Water St., Ossining, N. Y.**  
 See Advertisement on Page 222  
 International Merit Products Corp., 254 W. 54th St., New York 19, N. Y.  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 33, Ill.  
 Lamson & Sessions Co., 1971 W. 85th St., Cleveland, Ohio  
 National Screw & Mfg. Co., The, Cleveland 4, Ohio  
 New England Screw Co., Keene, New Hampshire  
 Progressive Mfg. Co., 52 Norwood St., Torrington, Conn.  
 Publix Metal Products, Inc., 100 6th Ave., New York 13, N. Y.  
 Russell, Burdall & Ward Bolt & Nut Co., Midland Ave., Port Chester, N. Y.  
 St. Louis Screw & Bolt Co., 6900 Broadway, St. Louis 15, Mo.  
 Shakeproof Inc., Div. of Ill. Tool Wks., 2501 N. Keeler Ave., Chicago 39, Ill.  
 Southington Hardware Mfg. Co., Southington, Conn.  
**Standard Pressed Steel Co., Jenkintown, Pa.**  
 See Advertisement on Page 204  
 Sterling Bolt Co., 209 W. Jackson Blvd., Chicago 6, Ill.  
 Stronghold Screw Products, 216 West Hubbard St., Chicago 10, Ill.  
 United Screw & Bolt Corp., 2513 W. Cullerton St., Chicago, Ill.  
 Waltham Screw Co., 77 Rumford Ave., Waltham, Mass.

## SCREWS—Self-Tapping

Allmetal Screw Products Co. 80 Grand St., New York 13, N. Y.  
 American Screw Co., Providence, R. I.  
 Central Screw Co., 3511 Shields Ave., Chicago 9, Ill.  
 Continental Screw Co., New Bedford, Mass.  
 Corbin Screw Div., Amer. Hardware Corp., High, Myrtle & Grove Sts., New Britain, Conn.  
 Federal Screw Products Co., 224 W. Huron St., Chicago 10, Ill.

General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
**Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.**  
 See Advertisement on Page 166  
 Lamson & Sessions Co., 1971 W. 85th St., Cleveland, Ohio  
 Manufacturers Screw Products, 270 W. Hubbard St., Chicago, Ill.  
 Milford Rivet & Machine Co., Milford, Conn.  
 National Screw & Mfg. Co., The, Cleveland 4, Ohio  
 New England Screw Co., Keene, New Hampshire  
 Parker-Kalon Corp., 200 Varick St., New York 14, N. Y.  
 Pheoll Mfg. Co., 5700 Roosevelt Rd., Chicago 50, Ill.  
 Publix Metal Products, Inc., 100 6th Ave., New York 13, N. Y.  
 Schott Co., Walter L., 9306 Santa Monica Blvd., Beverly Hills, Cal.  
 Scovill Mfg. Co., Waterville Screw Products Div., Waterbury, Conn.  
 Shakeproof Inc., Div. of Ill. Tool Wks., 2501 N. Keeler Ave., Chicago 39, Ill.  
 Sterling Bolt Co., 209 W. Jackson Blvd., Chicago 6, Ill.  
 Stronghold Screw Products, 216 West Hubbard St., Chicago 10, Ill.  
 United Screw & Bolt Corp., 2513 W. Cullerton St., Chicago, Ill.

## SCREWS—Set

Allen Mfg. Co., Hartford, Conn.  
 Allmetal Screw Products Co., 80 Grand St., New York 13, N. Y.  
 Birnbach Radio Co. Inc., 145 Hudson St., New York, N. Y.  
 Bristol Co., Waterbury 91, Conn.  
**General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.**  
 See Advertisement on Page 90  
 Harper Co., H. M. The, 2620 Fletcher St., Chicago 18, Ill.  
**Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.**  
 See Advertisement on Page 166  
 J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkwy., Brooklyn, N. Y.  
 Lamson & Sessions Co., 1971 W. 85th St., Cleveland, Ohio  
 National Screw & Mfg. Co., The, Cleveland 4, Ohio  
 New England Screw Co., Keene, New Hampshire  
 Parker-Kalon Corp., 200 Varick St., New York 14, N. Y.  
 Publix Metal Products Inc., 100 6th Ave., New York 13, N. Y.  
 St. Louis Screw & Bolt Co., 6900 Broadway, St. Louis 15, Mo.  
 Schott Co., Walter L., 9306 Santa Monica Blvd., Beverly Hills, Cal.  
 Scovill Mfg. Co., Waterville Screw Prods. Div., Waterbury, Conn.  
 Shakeproof Inc., Div. of Ill. Tool Wks., 2501 N. Keeler Ave., Chicago 39, Ill.  
 Stronghold Screw Products, 216 West Hubbard St., Chicago 10, Ill.  
 United Screw & Bolt Corp., 2513 W. Cullerton St., Chicago, Ill.

## SCREWS—Carbon

Electro-Nite Carbon Co., 1133 E. Columbia Ave., Philadelphia 25, Pa.  
 Pure Carbon Co., St. Marys, Pa.  
 Sealol Corp., 45 Willard Ave., Providence 5, R. I.

## SCREWS—Hermetic

Cincinnati Electric Products Co., Carthage at Hannaford, Cincinnati 12, Ohio  
 Colonial Electric Products Co., North Bergen, N. J.  
 Corning Glass Works, Corning, N. Y.  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
**Hermaseal Co., Riverside Dr., Elkhart, Ind.**  
 See Advertisements on Pages 90, 222  
 Hermetic Seal Products Co., 414 Morris Ave., Newark 3, N. J.  
 Locke Insulator Corp., P. O. Box 57, Baltimore 3, Md.  
 Mykroy Inc., 1917 N. Springfield Ave., Chicago 47, Ill.  
 Stupakoff Ceramic & Mfg. Co., Latrobe, Pa.  
 Vitroscel Corp., 28 East Electric, Covington, Kentucky.

## SEALS—Metal-To-Glass

Aerolux Light Corp., 653 11th Ave., New York 19, N. Y.  
 Andrew Co., 363 E. 75th St., Chicago 19, Ill.  
 Carpenter Steel Co., Reading, Pa.  
**Chatham Electronics, 475 Washington St., Newark 2, N. J.**  
 See Advertisement on Page 247  
 Cincinnati Electric Products Co., Carthage at Hannaford, Cincinnati 12, Ohio  
 Corning Glass Works, Corning, N. Y.  
**Electrical Industries, Inc., 42 Summer Ave., Newark 4, N. J.**  
 See Advertisement on Page 236  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
**Fredericks Co., Geo. E., Bethayres, Pa.**  
**Hermaseal Co., Riverside Dr., Elkhart, Ind.**  
 See Advertisements on Pages 90, 222  
 Hermetic Seal Products Co., 414 Morris Ave., Newark 3, N. J.  
 Litton Engineering Labs., Redwood City, Calif.  
 Sperti, Inc., Norwood Station, Cincinnati 12, Ohio  
 Stupakoff Ceramic & Mfg. Co., Latrobe, Pa.  
 Titanium Alloy Mfg. Co., Niagara Falls, N. Y.  
 Triplett & Barton Inc., Burbank, Calif.  
 Wheaton Co., T. C., Industrial Div., Millville, N. J.  
 Xervac Instrument Co., 101 Vine St., Hartford 5, Conn.

## SEALS—Oil

Auburn Mfg. Co., Middletown, Conn.  
 Sealol Corp., 45 Willard Ave., Providence 5, R. I.

## SELECTIVE CALLING APPARATUS

Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
**Hammarlund Mfg. Co., 460 W. 34th St., New York 1, N. Y.**  
 Link, Fred M., 125 W. 17th St., New York, N. Y.  
 Stevens-Arnold Co., 22 Elkins St., S. Boston, Mass.  
 Transmitter Equipment Co., Inc., 345 Hudson St., New York 14, N. Y.  
 West Coast Electronics Co., 1601 S. Burlington St., Los Angeles 6, Calif.

## SERVOMECHANISMS

See Controls, Servo

## SHAFTS

**Aerolite Electronic Hardware Corp., 24 Cliff St., Jersey City, N. J.**  
 See Advertisement on Page 246  
**Centralab Div., Globe Union Inc., 900 Keefe Ave., Milwaukee 1, Wisc.**  
 See Advertisements on Pages 24, 25  
 Electronic Mechanics Inc., 70 Clifton Blvd., Clifton, N. J.  
 Gardiner Mfg. Co., 2711 Union St., Oakland 7, Calif.  
**General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.**  
 See Advertisement on Page 90

## SHAFTS—Flexible

Birnbach Radio Co. Inc., 145 Hudson St., New York, N. Y.  
 Bud Radio, Inc., 2118 E. 55th St., Cleveland 3, Ohio  
**Insuline Corp. of America, 36-02 35th Ave., L. I. City, N. Y.**  
 See Advertisement on Page 166  
 J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkwy., Brooklyn, N. Y.  
 Johnson Co., E. F., Waseca, Minn.  
**National Co., Inc., 61 Sherman St., Malden 48, Mass.**  
 See Advertisement on Page 78  
 Stewart Mfg. Corp., F. W., 4311 Ravenswood Ave., Chicago 13, Ill.  
 Stewart-Warner Corp., 1826 Diversey Parkway, Chicago 14, Ill.

Stow Mfg. Co., 445 State St., Binghamton, N. Y.  
Walker-Turner Co. Inc., 1463 Berckman St., Plainfield, N. J.  
White Dental Mfg. Co., S. S., Industrial Div., 10 E. 40th St., New York, N. Y.  
See Advertisement on Page 66

**SHAPERS—Television Signal**

Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.  
Telegrip Radio Co., 1901 S. Washtenaw, Chicago, Ill.

**SHEILDING—Radio Ignition**

Acheson Colloids Corp., Port Huron, Mich.  
Air-Shield, Inc., Hatboro, Pa.  
American Brass Co., American Metal Hose Branch, Waterbury 88, Conn.  
American Electric Cable Co., Holyoke, Mass.  
Birnbach Radio Co. Inc., 145 Hudson St., New York, N. Y.  
Breeze Corp., 41 S. 6th St., Newark, N. J.  
Hallett Mfg. Co., 603 S. Redono Blvd., Inglewood, Calif.  
Prevision Tube Co., 3828 Terrace St., Philadelphia 28, Pa.  
See Advertisement on Page 218  
Reynolds Metals Co., 2500 So. Third St., Louisville 1, Ky.  
Runzel Cord & Wire Co., 4731 W. Montrose Ave., Chicago, Ill.  
Searle Aero Industries, Inc., Orange, Calif.

**SHIELDS—Capacitor**

Fishwick Radio Co., 423 Colorado Bldg., Washington, D. C.  
Kling Metal Spinning Co., 174 Centre St., New York 13, N. Y.  
Reynolds Metals Co., 2500 So. Third St., Louisville 1, Ky.

**SHIELDS—Cathode Ray Tube**

Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
See Advertisement on Page 44  
Reynolds Metals Co., 2500 So. Third St., Louisville 1, Ky.  
Rice's Sons Inc., Bernard, 325 Fifth Avenue, New York 16, N. Y.

**SHIELDS—Coil**

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
See Advertisement on Page 23  
Guthman, Inc., Edwin I., 15 S. Throop St., Chicago, Ill.  
Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
See Advertisement on Page 166  
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
See Advertisement on Page 44  
Miller Co., J. W., 5917 S. Main St., Los Angeles, Calif.  
National Co., Inc., 61 Sherman St., Malden 48, Mass.  
See Advertisement on Page 78  
Paul & Beekman Div., Portable Products Corp., 1801 Cortland St., Phila. 40, Pa.  
Reynolds Metals Co., 2500 So. Third St., Louisville 1, Ky.

**SHIELDS—Transformer**

Paul & Beekman Div., Portable Products Corp., 1801 Cortland St., Philadelphia 40, Pa.  
United Transformer Corp., 150 Varick St., New York 13, N. Y.  
See Advertisement on Inside Front Cover

**SHIELDS—Tube**

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
See Advertisement on Page 23

Cinch Mfg. Corp., 2335 W. Van Buren St., Chicago 12, Ill.  
See Advertisement on Page 75  
Dayco Radio Corp., 915 Valley St., Dayton 4, Ohio  
Eby, Inc., Hugh H., 18 W. Chelton Ave., Phila. 13, Pa.  
Franklin Mfg. Co., A. W., 43-20 34th St., Long Island City, N. Y.  
See Advertisement on Page 98  
Goat Co., Inc., Fred, 314 Dean St., Brooklyn, N. Y.  
See Advertisement on Page 202  
Insuline Corp. of America, 36-02 35th Ave., L. I. City, N. Y.  
See Advertisement on Page 166  
National Co., Inc., 61 Sherman St., Malden 48, Mass.  
See Advertisement on Page 78  
Paul & Beekman Div., Portable Products Corp., 1801 Cortland St., Philadelphia 40, Pa.  
Reynolds Metals Co., 2500 So. Third St., Louisville 1, Ky.  
Staver Mfg. Co., 33-21 85th St., Jackson Heights, N. Y.  
See Advertisement on Page 253  
Uniform Tubes, Shurs Lane & Larviston St., Roxborough, Phila., Pa.

**SHIFTER—Signal**

Communication Measurements Lab. Inc., 120 Greenwich St., New York, N. Y.  
Hallcrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
Harvey Radio Labs, Inc., 447 Concord Ave., Cambridge, Mass.  
Measurement Engineering Ltd., 61 Duke St., Toronto, Can.  
See Advertisement on Page 193  
Meissner Mfg. Div., Maguire Industries, Mt. Carmel, Ill.  
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
See Advertisement on Page 44  
Rhein Engineering, 120 W. North St., Springfield, Ohio  
Simpson Electric Co., 5218 W. Kinzie St., Chicago 44, Illinois

**SHUNTS—Meter**

Assembly Products, Inc., Chagrin Falls, Ohio  
Ballantine Labs, Inc., Boonton, N. J.  
See Advertisement on Page 42  
Burlington Instrument Corp., 214 North 4th St., Burlington, Iowa  
Eastern Electronics Corp., 41 Chestnut St., New Haven, Conn.  
Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska  
Esterline-Angus Co., Inc., P. O. Box 596, Indianapolis, Ind.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
General Electronics, Inc., 101 Hazel St., Paterson, N. J.  
Instrument Resistors Co., 1036 Commerce Ave., Union, N. J.  
See Advertisement on Page 39  
Lewis Engineering Co., 52 Rubber Ave., Naugatuck, Conn.  
Marion Electrical Instrument Co., Manchester, N. H.  
Nilsson Electrical Lab. Inc., 103 Lafayette St., New York 13, N. Y.  
Precision Resistor Co., 334 Badger Avenue, Newark 8, N. J.  
Rubicon Co., 3751 Ridge Ave., Philadelphia, Pa.  
Scientific Service Lab., Subsidiary Electronics Inc., 915 Meridian Ave., South Pasadena, Calif.  
Sensitive Research Instrument Co., 9 Elm Ave., Mt. Vernon, N. Y.  
Triplett Electrical Instrument Co., 286 Harmon Road, Bluffton, Ohio  
Westinghouse Electric Corp., Meter Div., Newark, N. J.  
Weston Electrical Instrument Corp., 618 Frelinghuysen Ave., Newark 5, N. J.

**SIGNAL SHIFTER**

See Shifter, Signal

**SILICON**

See Metals

**SILICONE—Compounds**

See Insulating Compounds

**SLEEVES—Antenna Copper Splicing**

High Tension Co., Inc., 36 N. Main Street, Phillipsbury, N. J.  
Rusgreen Mfg. Co., 14262 Birwood Ave., Detroit 4, Mich.  
Sherman Mfg. Co., H. B., 22 Barney St., Battle Creek, Mich.

**SOCKETS—Battery**

Cinch Mfg. Corp., 2335 W. Van Buren St., Chicago 12, Ill.  
See Advertisement on Page 75  
Eby, Inc., Hugh H., 18 W. Chelton Ave., Phila. 13, Pa.  
Franklin Mfg. Co., A. W., 43-20 34th St., Long Island City, N. Y.  
See Advertisement on Page 98  
Magnavox Co., The, Fort Wayne 4, Ind.  
Maico Co. Inc., 25 N. 3rd St., Minneapolis, Minn.  
Spitfire Tools, Inc., 2931-35 North Pulaski Rd., Chicago 41, Ill.

**SOCKETS—Crystal**

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
See Advertisement on Page 23  
Cinch Mfg. Corp., 2335 W. Van Buren St., Chicago 12, Ill.  
See Advertisement on Page 75  
Eby, Inc., Hugh H., 18 W. Chelton Ave., Philadelphia 13, Pa.  
Franklin Mfg. Co., A. W., 43-20 34th St., Long Island City, N. Y.  
See Advertisement on Page 98  
Insuline Corp. of America, 36-02 35th Ave., L. I. City, N. Y.  
See Advertisement on Page 166  
Johnson Co., E. F., Waseca, Minn.  
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
See Advertisement on Page 44  
National Co., Inc., 61 Sherman St., Malden 48, Mass.  
See Advertisement on Page 78

**SOCKETS—Dial and Pilot Light**

Aerolite Electronic Hardware Corp., 24 Cliff St., Jersey City, N. J.  
See Advertisement on Page 246  
Alden Products Co., 117 North Main St., Brockton 64, Mass.  
Drake Mfg. Co., 1713 Hubbard St., Chicago, Ill.  
See Advertisement on Page 174  
Franklin Mfg. Co., A. W., 43-20 34th St., Long Island City, N. Y.  
See Advertisement on Page 98  
Johnson Co., E. F., Waseca, Minn.  
Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
Kulka Electric Mfg. Co., Inc., 30 South St., Mt. Vernon, N. Y.  
Morse Co., Frank W., 1300 Soldiers Rd., Boston 35, Mass.  
Rogan Bros., 2001 S. Michigan Ave., Chicago, Ill.  
See Advertisement on Page 164  
Ucinite Co., The, Div. United-Carr Fastener Corp., 459 Watertown St., Newtonville, Mass.

**SOCKETS—Microwave Tube**

Johnson Co., E. F., Waseca, Minn.

**SOCKETS—Miniature Sockets & Connectors**

Alden Products Co., 117 No. Main St., Brockton 64, Mass.  
American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
See Advertisement on Page 23  
Buggie & Co., H. H., 2141 Madison Ave., Toledo 1, Ohio

Cinch Mfg. Corp., 2335 W. Van Buren St., Chicago 12, Ill.  
 See Advertisement on Page 75  
 Dial Light Co. of America, 900 Broadway, New York 3, N. Y.  
 Franklin Airloop Corp., 43-20 34th St., Long Island City, N. Y.  
 See Advertisement on Page 61  
 Franklin Mfg. Co., A. W., 43-20 34th St., Long Island City, N. Y.  
 See Advertisement on Page 98  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 Insulating Fabricators, Inc., 12 E. 12th St., New York 3, N. Y.  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Johnson Co., E. F., Waseca, Minn.  
 Kulka Electric Mfg. Co. Inc., 30 South St., Mt. Vernon, N. Y.  
 La Magna Mfg. Co., Inc., East Rutherford, N. J.  
 McMurdo Silver Co., Inc., 1249 Main St., Hartford 3, Conn.  
 Maico Co., Inc., 25 N. 3rd St., Minneapolis, Minn.  
 Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44  
 Morse Co., Frank W., 1300 Soldiers Rd., Boston 35, Mass.  
 National Co., Inc., 61 Sherman St., Malden 48, Mass.  
 See Advertisement on Page 78  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 Rogan Bros., 2001 S. Michigan Ave., Chicago 11, Ill.  
 See Advertisement on Page 164  
 Wood Electric Co., Inc., C. D., 826 Broadway, New York 3, N. Y.

## SOCKETS—Tube

Alden Products Co., 117 No. Main St., Brockton 64, Mass.  
 American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 Bud Radio, Inc., 2118 E. 55th St., Cleveland 3, Ohio  
 Cinch Mfg. Co., 2335 W. Van Buren St., Chicago, Ill.  
 See Advertisement on Page 75  
 Crowley & Co., Inc., Henry L., 1 Central Ave., West Orange, N. J.  
 Ebu Inc., H. H., 18 W. Chelton Ave., Phil. 13, Pa.  
 Electronic Mechanics, Inc., 70 Clifton Blvd., Clifton, N. J.  
 Franklin Airloop Corp., 43-20 34th St., Long Island City, N. Y.  
 See Advertisement on Page 61  
 Franklin Mfg. Co., A. W., 43-20 34th St., Long Island City, N. Y.  
 See Advertisement on Page 98  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 General Electronics Inc., 1319 Broadway, New York 23, N. Y.  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkway, Brooklyn, N. Y.  
 Johnson Co., E. F., Waseca, Minn.  
 McMurdo Silver Co., 1249 Main St., Hartford 3, Conn.  
 Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44  
 Mykroy, Inc., 1917 N. Springfield Ave., Chicago 47, Ill.  
 National Co., Inc., 61 Sherman St., Malden 48, Mass.  
 See Advertisement on Page 78  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 Remler Co. Ltd., 2101 Bryant St., San Francisco 10, Cal.  
 Ucinite Co., The Div. United-Carr Fastener Corp., 459 Watertown St., Newtonville, Mass.

## SOLDER

Alpha Metals, Inc., 363 Hudson Ave., Brooklyn 1, N. Y.  
 American Smelting and Refining Co., Federated Metals Div., 120 Broadway, New York 5, N. Y.  
 Belmont Smelting & Refining Works, Inc., 330 Belmont Ave., Brooklyn 7, N. Y.  
 Division Lead Co., 836 W. Kinzie St., Chicago 22, Ill.

Farrelloy Co., 1245 N. 26th St., Philadelphia 21, Pa.  
 Glaser Lead Co., Inc., 31 Wycoff Ave., Brooklyn, N. Y.  
 See Advertisement on Page 240  
 Johnson Co., Lloyd S., 2241 Indiana Ave., Chicago, Ill.  
 Kester Solder Co., 4212 Wrightwood Ave., Chicago 33, Ill.  
 National Lead Co., 111 Broadway, New York 6, N. Y.  
 New York Solder Co., 15 Crosby St., New York, N. Y.  
 Ruby Chemical Co., 68 McDowell St., Columbus 1, Ohio  
 Tricon Mfg. Co., 8318 S. Racine Ave., Chicago, Ill.

## SOLDER—Platinum

Eutetic Welding Alloys Co., 40 Worth St., New York 13, N. Y.  
 Goldsmith Bros. Smelting & Refining Co., 58 E. Washington St., Chicago, Ill.  
 Makepeace Co., D. E., Attleboro, Mass.  
 See Advertisement on Page 23  
 Ney Co., J. M., Hartford, Conn.  
 Wildberg Bros. Smelting & Refining Co., 742 Market St., San Francisco, Calif.

## SOLDER—Rings and Preforms

Alpha Metals, Inc., 363 Hudson Ave., Brooklyn 1, N. Y.  
 Belmont Smelting & Refining Works, Inc., 330 Belmont Ave., Brooklyn 7, N. Y.  
 Division Lead Co., 836 W. Kinzie St., Chicago 22, Ill.  
 Electronic Specialties Mfg. Co., 125 N. Main St., Elkhart, Indiana  
 Eutetic Welding Alloys Co., 40 Worth St., New York 13, N. Y.  
 Makepeace Co., D. E., Attleboro, Mass.  
 See Advertisement on Page 23  
 Tricon Mfg. Co., 8318 S. Racine Ave., Chicago, Ill.

## SOLDER—Silver

Baker & Co., 113 Astor St., Newark 5, N. J.  
 Belmont Smelting and Refining Works, Inc., 330 Belmont Ave., Brooklyn 7, N. Y.  
 Division Lead Co., 836 W. Kinzie St., Chicago 22, Ill.  
 Goldsmith Bros. Smelting & Refining Co., 58 E. Washington St., Chicago, Ill.  
 Makepeace Co., D. E., Attleboro, Mass.  
 See Advertisement on Page 23  
 Tricon Mfg. Co., 8318 S. Racine Ave., Chicago, Ill.

## SOLDERING GUNS

See Tools, Soldering Guns

## SOLDERING IRONS, ELECTRIC

See Irons, Electric Soldering

## SOLENOIDS

Allied Control Co. Inc., 2 East End Ave., New York 21, N. Y.  
 See Advertisement on Page 221  
 American Coil & Engineering Co., 1271 N. Hermitage Ave., Chicago 22, Ill.  
 Assembly Products Inc., Chagrin Falls, Ohio  
 Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.  
 Automatic Switch Co., 41 E. 11th St., New York 3, N. Y.  
 Bitterman Electric Co., 50 Henry St., Brooklyn, N. Y.  
 Bradley Co., A., 136 W. Greenfield Ave., Milwaukee 2, Wisc.  
 Cannon Electric Development Co., 3209 Humboldt St., Los Angeles 31, Calif.  
 See Advertisement on Page 70  
 Clippard Instrument Lab., 1440 Chase Ave., Cincinnati 23, Ohio  
 Cutler-Hammer, Inc., 315 No. 12th St., Milwaukee 1, Wisc.  
 Davis & Co., Dean W., Kentland, Ind.  
 Electrocoil Transformer Co., 421 Canal St., New York 13, N. Y.

Electronic Transformer Co., 207 W. 25th St., New York, N. Y.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Guardian Electric Mfg. Co., 1400 Washington Blvd., Chicago 7, Ill.  
 Instrument Resistors Co., 1036 Commerce Ave., Union, N. J.  
 See Advertisement on Page 39  
 K-V Transformer Corp., 1697 First Ave., New York, N. Y.  
 Leach Relay Co., Inc., 5915 Avalon Blvd., Los Angeles 3, Calif.  
 McQuay-Norris Mfg. Co. Electric Products Div., 6319 Manchester Ave., St. Louis 10, Mo.  
 Magnavox Co., The, Fort Wayne 4, Indiana  
 Magnetic Devices Corp., 76-14 Woodside Ave., Elmhurst, N. Y.  
 Meletron Corp., 950 N. Highland Ave., Los Angeles 38, Calif.  
 Northern Communications Mfg. Co., 210 E. 40th St., New York 16, N. Y.  
 See Advertisement on Page 242  
 Phillips Control Corp., 612 N. Michigan Ave., Chicago 11, Ill.  
 R. B. M. Div., Essex Wire Corp., Logansport, Ind.  
 Roebbling's Sons Co., John A., 640 Broad St., Trenton 2, N. J.  
 Sorensen & Co., 375 Fairfield Ave., Stamford, Conn.  
 See Advertisement on Page 154  
 Standard Coil Products Co., 2329 N. Pulaski Rd., Chicago 18, Ill.  
 Struthers-Dunn, Inc., 150 N. 13th St., Phila. 7, Pa.

## SOLENOIDS—Rotary

Leland, George H., 123 Webster St., Dayton 2, Ohio  
 Magnavox Co., The, Fort Wayne 4, Ind.  
 Radio Condenser Co., Camden, N. J.

## SONIC PRESSURE MEASURING EQUIPMENT

Massa Labs. Inc., 3868 Carnegie Ave., Cleveland, Ohio  
 See Advertisement on Page 174  
 Techno-Scientific Co., 901 Nepperhan Ave., Yonkers 3, N. Y.

## SORTERS—Electronic

Electric Sorting Machine Co., 410 44th St. SW, Grand Rapids, Mich.

## SOUND SYSTEMS—Complete

Altec Lansing Corp., 1161 N. Vine St., Hollywood 38, Calif.  
 American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
 Audar Inc., Argos, Indiana  
 Audio Products Co., 2101 W. Olive Ave., Burbank, Calif.  
 Bell Sound Systems, Inc., 1183 Essex Ave., Columbus, Ohio  
 Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
 Bogen Co., David, 663 Broadway, New York 12, N. Y.  
 Boom Electric & Amplifier Co., 1227 W. Washington Blvd., Chicago 7, Ill.  
 Collins Audio Products Co., 126 Park St., Westfield, N. J.  
 See Advertisement on Page 253  
 Communicating Systems Inc., 203 E. 18th St., New York 3, N. Y.  
 Communication Equipment & Engineering Co., 5646 W. Race St., Chicago 44, Ill.  
 Concord Radio Corp., 901 W. Jackson Blvd., Chicago, Ill.  
 See Advertisement on Page 177  
 Dayton Acme Co., 930 York St., Cincinnati 14, Ohio  
 Dilks, Inc., Norwalk, Conn.  
 Electronic Apparatus, Inc., 347 Madison Ave., New York 17, N. Y.  
 Electronic Sound Engineering Co., 4344-46 W. Armitage Ave., Chicago 39, Ill.  
 Executone, Inc., 415 Lexington Ave., New York 17, N. Y.  
 Gates Radio Co., 123 Hampshire St., Quincy, Ill.  
 Gem Radio & Television Co., 72 Cortlandt St., New York 6, N. Y.  
 General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.

General Electric Co., Syracuse, N. Y.  
See Advertisements on Pages 96, 96A  
Globe Phone Mfg. Co., 2 Linden St., Reading, Mass.  
Hallcrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
Harris Mfg. Co., 2422 W. Seventh St., Los Angeles 5, Calif.  
Hose-McCann Telephone Co., 177 Pacific St., Brooklyn 2, N. Y.  
Langevin Co., Inc., 37 W. 65th St., New York, N. Y.  
See Advertisement on Page 153  
Lincophone Co., 1661 Howard Ave., Utica, N. Y.  
Magnavox Co., The, Fort Wayne 4, Ind.  
Miles Reproducer Co., Inc., 812 Broadway, New York, N. Y.  
See Advertisement on Page 256  
National Intercommunicating Systems, 1531 Devon Ave., Chicago 26, Ill.  
Newcomb Audio Products Co., 6824 Lexington Ave., Hollywood 38, Calif.  
Operadio Mfg. Co., 135th & Indiana Sts., St. Charles, Ill.  
Radio Corp. of America, RCA Victor Div., Camden, N. J.  
See Advertisements on Inside Back Cover & Back Cover, 251  
Radio Engineering Products, Div. of Raymond Rosen & Co., Philadelphia 4, Pa.  
Rauland Corp., 4245 N. Knox Ave., Chicago 41, Ill.  
Riggs & Jeffreys, Inc., 73 Winthrop St., Newark 4, N. J.  
Rowe Industries, 3120 Monroe St., Toledo 6, Ohio  
SOS Cinema Supply Corp., 449 W. 42nd St., New York, N. Y.  
Simpson Mfg. Co., Inc., Mark, 188 W. 4th St., New York 14, N. Y.  
Smith-Meeker Engineering Co., 125 Barclay St., New York 7, N. Y.  
Speak-O-Phone Recording & Equipment Co., 23 W. 60th St., New York, N. Y.  
Stark Sound Engrg. Corp., Box 493, Fort Wayne 1, Ind.  
Stromberg-Carlson, Rochester, N. Y.  
Task Electronics Co., 245 W. 54th St., New York, N. Y.  
Television Projects, Inc., 24 Walnut St., Newark 2, N. J.  
Webster Electric Co., 1900 Clark St., Racine, Wisc.  
Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
See Advertisements on Pages 88, 89  
Western Sound & Electric Labs., Inc., 808 S. Fifth St., Milwaukee 4, Wisc.

**SOURCES—Alpha Ray**

Atomic Instrument Co., 160 Charles St., Boston, Mass.  
Isotope Section, Research Div., Manhattan Engineer District, P. O. Box 9, Oakridge, Tenn.  
Tracerlab, Inc., 55 Oliver St., Boston 10, Mass.  
U. S. Radium Corp., 535 Pearl St., New York 7, N. Y.

**SPEAKERS—Tweeters and Woofers**

Altec Lansing Corp., 1161 N. Vine St., Hollywood 38, Calif.  
Atlas Sound Corp., 1443 39th St., Brooklyn 18, N. Y.  
See Advertisement on Page 96D  
Magnavox Co., The, Fort Wayne 4, Ind.  
University Loudspeakers, Inc., 225 Varick St., New York 14, N. Y.  
Utah Radio Products Co., 820 Orleans St., Chicago, Ill.  
Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
See Advertisements on Pages 88, 89

**SPECIAL NAILS**

Chase Brass & Copper Co., Inc., Waterbury 91, Conn.  
Hassall, Inc., John Clay & Oakland Sts., Brooklyn, N. Y.

**SPECTROMETERS and SPECTROGRAPHS**

Applied Research Labs., 4336 San Fernando Rd., Glendale 4, Calif.  
Consolidated Engineering Corp., 595 E. Colorado St., Pasadena 1, Calif.  
Electronic Engineers, 1039-B Pacific St., Santa Monica, Calif.

Farrand Optical Co., Inc., Bronx Blvd. at 238th St., New York 66, N. Y.  
Gaertner Scientific Corp., 1201 Wrightwood Ave., Chicago 14, Ill.  
Jarrell-Ash Co., 165 Newbury St., Boston 16, Mass.  
North American Phillips Co., Inc., 100 E. 42nd St., New York 17, N. Y.  
Perkin Elmer Corp., Glenbrook, Conn.  
Process & Instruments, 60 Greenpoint Ave., Brooklyn 22, N. Y.  
Victoreen Instrument Co., 5806 Hough Ave., Cleveland 3, Ohio

**SPECTROPHOTOMETERS**

Applied Physics Corp., 40 South Oak Knoll Ave., Pasadena 1, Calif.  
Baker Instrument Co., 310 Main St., Orange, N. J.  
Coleman Electric Co., 318 Madison St., Maywood, Ill.  
Farrand Optical Co., Inc., Bronx Blvd. at 238th St., New York 66, N. Y.  
Gaertner Scientific Corp., 1201 Wrightwood Ave., Chicago 14, Ill.  
Jarrell-Ash Co., 165 Newbury St., Boston 16, Mass.  
National Technical Lab., 820 Mission St., South Pasadena, Calif.

**SPECTROSCOPIC SOURCE UNITS**

Gaertner Scientific Corp., 1201 Wrightwood Ave., Chicago 14, Ill.

**SPEEDOMETERS—Electric**

Electric Tachometer Corp., Broad & Spring Garden Sts., Philadelphia, Pa.  
Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska  
Potter Instrument Co., 136-56 Roosevelt Ave., Flushing, N. Y.  
See Advertisement on Page 243  
Rowe Radio Research Lab., 2422 N. Pulaski Road, Chicago 39, Ill.  
Westinghouse Electric Corp., Meter Div., Newark, N. J.

**SPRINGS**

Accurate Spring Mfg. Co., 3811 W. Lake St., Chicago, Ill.  
See Advertisement on Page 48  
American Spiral Spring & Mfg. Co., 5528 Harrison St., Pittsburgh, Pa.  
American Steel & Wire Co., U. S. Steel Corp. Subs., Rockefeller Bldg., Cleveland 13, Ohio  
Barnes-Gibson-Raymond Div. of Associated Spring Corp., 6400 Miller Ave., Detroit 11, Mich.  
Cuyahoga Spring Co., 10272 Berea Rd., Cleveland, Ohio  
Dzus Fasteners Co. Inc., Box 605, Babylon, N. Y.  
Garrett Co., Inc., G. K., 1421 Chestnut St., Phila. 2, Pa.  
General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
See Advertisement on Page 90  
Gibson Co., Wm. D., Div. of Associated Spring Corp., 1800 Clybourn Ave., Chicago, Ill.  
Hubbard Spring Co., M. D., Central Ave., Pontiac, Mich.  
Hunter Pressed Steel Co., Lansdale, Pa.  
Instrument Specialties Co. Inc., 254 Bergen Blvd., Little Falls, N. J.  
J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkway., Brooklyn, N. Y.  
Jones Spring Co., W. B., 124 E. 7th St., Cincinnati, Ohio  
Lee Spring Co., 30 Main St., Brooklyn, N. Y.  
Mid-West Spring Mfg. Co., 4632 S. Western Ave., Chicago 9, Ill.  
Muelhausen Spring Corp., 255 Michigan Ave., Logansport, Ind.  
Palnut Co. Inc., 39 Cordier St., Irvington 11, N. J.  
Reliable Spring & Wire Forms Co., Fulton Rd. & Paris Ave., Cleveland 9, Ohio  
Schott Co., Walter L., 9306 Santa Monica Blvd., Beverly Hills, Calif.  
Thomas & Skinner Steel Products Co., 1122 E. 23rd St., Indianapolis, Ind.  
Wickwire Spencer Steel, Div. Colorado Fuel and Iron Corp., 361 Delaware Ave., Buffalo 2, N. Y.

**SPRINGS—Antenna Tension**

Aeronautical Radio Mfg. Co., 155 First St., Mineola, N. Y.  
American Steel & Wire Co., U. S. Steel Corp. Subs., Rockefeller Bldg., Cleveland 13, Ohio  
Birnbach Radio Co. Inc., 145 Hudson St., New York, N. Y.  
General Electric Co., Syracuse, N. Y.  
See Advertisements on Pages 96, 96A  
Lee Spring Co., 30 Main St., Brooklyn, N. Y.  
Muelhausen Spring Corp., 255 Michigan Ave., Logansport, Ind.

**SPRINGS—Instrument Hairsprings**

American Steel & Wire Co., U. S. Steel Corp. Subs., Rockefeller Bldg., Cleveland 13, Ohio  
Manross & Son, F. N., Div. of Associated Spring Corp., Bristol, Conn.  
Muelhausen Spring Corp., 255 Michigan Ave., Logansport, Ind.  
Precision Products Co., 26 Bedford St., Waltham 54, Mass.

**SPRINGS—Precision**

All Weather Springs, 140 Cedar St., New York 6, N. Y.  
American Steel & Wire Co., U. S. Steel Corp. Subs., Rockefeller Bldg., Cleveland 13, Ohio  
Chatillon & Sons, John, 93 Cliff St., New York 7, N. Y.  
Instrument Specialties Co. Inc., 254 Bergen Blvd., Little Falls, N. J.  
Lee Spring Co., 30 Main St., Brooklyn, N. Y.  
Muelhausen Spring Corp., 255 Michigan Ave., Logansport, Ind.  
Palnut Co. Inc., 39 Cordier St., Irvington 11, N. J.

**STANDARDS—Capacitance**

General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
Herlec Corp., The 422 N. Fifth St., Milwaukee 3, Wisc.  
Leeds & Northrup Co., 4970 Stenton Ave., Philadelphia 44, Pa.  
MacLeod & Hanopol, 24 Chelsea St., Charlestown 29, Mass.  
Rowe Radio Research Labs., 2422 N. Pulaski Rd., Chicago 39, Ill.  
Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
See Advertisements on Pages 88, 89

**STANDARDS—Frequency**

American Time Products, Inc., 580 Fifth Ave., New York 19, N. Y.  
See Advertisement on Page 168  
Barker & Williamson, 255 Fairfield Ave., Upper Darby, Pa.  
Breon Labs., 607 Rose St., Williamsport, Pa.  
Browning Labs., Inc., 750 Main St., Winchester, Mass.  
See Advertisement on Page 65  
Electronic Measurements Co., Red Bank, N. J.  
See Advertisement on Page 68  
Ferris Instrument Co., 110-112 Cornelia St., Boonton, N. J.  
General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
Gibbs Division, George W. Borg Corp., Delavan, Wisc.  
See Advertisement on Page 250  
Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.  
Knights Co., James, 131 S. Wells St., Sandwich, Ill.  
Lavoie Labs., Morganville, N. J.  
Measurement Engineering Ltd., 61 Duke St., Toronto, Can.  
See Advertisement on Page 193  
Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
See Advertisement on Page 44  
Monitor Products Co., 815 Fremont St., So. Pasadena, Calif.  
Norman Labs., Ernst, Williams Bay, Wisc.  
Premier Crystal Labs., Inc., 63 Park Row, New York, N. Y.

Rowe Radio Research Labs., 2422 N. Pulaski Rd., Chicago 39, Ill.  
Times Facsimile Corp., 229 W. 43rd St., New York, N. Y.  
Western Electric Co. Inc., 195 Broadway, New York 7, N. Y.  
See Advertisements on Pages 88, 89

### STANDARDS—Gamma Ray

Atomic Instrument Co., 160 Charles St., Boston, Mass.  
Victoreen Instrument Co., 5806 Hough Ave., Cleveland 3, Ohio

### STANDARDS—Inductance

General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
Industrial Transformer Corp., 2540 Belmont Ave., New York 58, N. Y.  
See Advertisement on Page 188  
Leeds & Northrup Co., 4970 Stenton Ave., Philadelphia 44, Pa.  
S-W Inductor Co., 1056 N. Wood St., Chicago, Ill.  
United Transformer Corp., 150 Varick St., New York 13, N. Y.  
See Advertisement on Inside Front Cover

### STANDARDS—Laboratory Time

General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
Gibbs Div., George W. Borg Corp., Delavan, Wisc.  
See Advertisement on Page 250  
Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.  
Norrmann Labs., Ernst, Williams Bay, Wisc.  
Standard Electric Time Co., 89 Logan St., Springfield, Mass.

### STANDARDS—Resistance

Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
Cinema Engineering Co., 1508 W. Verdugo Ave., Burbank, Calif.  
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
Leeds & Northrup Co., 4970 Stenton Ave., Philadelphia 44, Pa.  
Nilsson Electrical Lab., Inc., 103 Lafayette St., New York 13, N. Y.  
Rowe Radio Research Labs., 2422 N. Pulaski Rd., Chicago 39, Ill.  
Rubicon Co., 3751 Ridge Ave., Philadelphia, Pa.  
Shallcross Mfg. Co., 10 Jackson Ave., Colliugdale, Pa.

### STANDARDS—Microphone

American Microphone Co., 370 So. Fair-Oaks Ave., Pasadena 2, Calif.  
Amperite Co., 561 Broadway, New York, N. Y.  
See Advertisement on Page 202  
Art Specialty Co., 3245 Lake St., Chicago, Ill.  
Astatic Corp., Conneaut, Ohio  
Atlas Sound Corp., 1443 39th St., Brooklyn 18, N. Y.  
See Advertisement on Page 96D  
Bud Radio, Inc., 2118 E. 55th St., Cleveland 3, Ohio  
Electro Voice Corp., 1239 South Bend Ave., South Bend 24, Ind.  
See Advertisement on Page 29  
Meletron Corp., 950 N. Highland Ave., Los Angeles 38, Calif.  
Racon Electric Co., Inc., 52 East 19th St., New York 3, N. Y.  
See Advertisement on Page 213  
Radio Corp. of America, RCA Victor Div., Camden, N. J.  
See Advertisements on Inside Back Cover & Back Cover, 251  
Shure Brothers, 225 W. Huron St., Chicago, Ill.  
See Advertisement on Page 157  
Simpson Mfg. Co., Mark, 188 W. 4th St., New York 14, N. Y.  
Turner Co., Cedar Rapids, Iowa  
Universal Microphone Co., Inglewood, Calif.  
See Advertisement on Page 56

University Loudspeakers Inc., 225 Varick St., New York, N. Y.  
Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
See Advertisements on Pages 88, 89

### STANDS—Speaker

Atlas Sound Corp., 1443 39th St., Brooklyn 18, N. Y.  
See Advertisement on Page 96D  
Racon Electric Co., 52 E. 19th St., New York 3, N. Y.  
See Advertisement on Page 213  
University Loudspeakers Inc., 225 Varick St., New York, N. Y.

### STEATITE

See Insulation Materials

### STENCILS—Metal Marking

Acromark Co., 9-13 Morrell St., Elizabeth 4, N. J.  
Austin Co., O., 335 Throop Ave., Brooklyn 21, N. Y.  
Luma Electric Equipment Co., P. O. Box 132, Toledo 1, Ohio  
Numberall Stamp & Tool Co., Huguenot Park, Staten Island 12, N. Y.

### STETHOGRAPHS AND STETHOPHONES

Shure Brothers, 225 W. Huron St., Chicago, Ill.  
See Advertisement on Page 157

### STETHOSCOPES—Amplifying

Audio Development Co., 2833 13th Ave. S., Minneapolis 7, Minn.  
See Advertisement on Page 26  
Dalmo Victor Co., San Carlos, Calif.  
Electro-Physical Labs., Div. of Electronic Corp. of America, 25 W. 18th St., New York 11, N. Y.  
Maico Co. Inc., 25 N. 3rd St., Minneapolis, Minn.  
Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
See Advertisements on Pages 88, 89

### STRAIN RELIEFS

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
See Advertisement on Page 23  
Campbell-Reader, 1027 W. McKinley Street, Milwaukee, Wisc.  
Heyman Mfg. Co., Kenilworth, N. J.  
Walker Co., George, 118 Amsterdam Ave., Passaic, N. J.  
See Advertisement on Page 246

### STRAPS—Leather

Auburn Mfg. Co., Middletown, Conn.

### STRIPPERS—Wire

Division Lead, Co., 836 W. Kinzie St., Chicago 22, Ill.  
Eraser Co., 231 W. Water St., Syracuse 2, N. Y.  
General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
See Advertisement on Page 90  
Martindale Electric Co., Box 617, Edgewater Branch, Cleveland 7, Ohio  
Pyramid Products Co., 2224 S. State St., Chicago, Ill.

### STROBOSCOPES

Communication Measurements Lab., 120 Greenwich St., New York, N. Y.

Conn Ltd., C. G. Elkhart, Ind.  
Electric Eye Equipment Co., 16 W. Fairchild St., Danville, Ill.  
Electronic Engineers, 1039-B Pacific St., Santa Monica, Calif.  
General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkway, Brooklyn, N. Y.  
Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
See Advertisements on Pages 158 to 161  
Universal Microphone Co., Inglewood, Calif.  
See Advertisement on Page 56

### STROBOTRONS

See Tubes

### SUPPRESSORS—Auto Radio Ignition

Consolidated Wire & Associated Companies, 1635 S. Clinton St., Chicago 16, Ill.  
Continental Carbon, Inc., 13900 Lorain Ave., Cleveland 11, Ohio  
Erle Resistor Corp., 644 W. 12th St., Erie, Pa.  
See Advertisement on Page 47  
General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
See Advertisement on Page 90  
Insuline Corp. of America, 36-02 35th Ave., L. I. City, N. Y.  
See Advertisement on Page 166  
J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkway, Brooklyn, N. Y.  
Wirt Co., 5221 Green St., Philadelphia, Pa.

### SUPPRESSORS—Fluorescent Light

Atlas Condenser Products Co., 3120 Third Ave., New York, N. Y.  
Centralab Div., Globe Union Inc., 900 Keefe Ave., Milwaukee 1, Wisc.  
See Advertisements on Pages 24, 25  
Solar Mfg. Corp., 285 Madison Ave., New York 17, N. Y.

### SUPPRESSORS—Ionotron Static Eliminator

U. S. Radium Corp., 535 Pearl St., New York 7, N. Y.

### SUPPRESSORS—Noise

Amplifier Corp. of America, 396 Broadway, New York 13, N. Y.  
Atlas Condenser Products Co., 3120 Third Ave., New York, N. Y.  
Consolidated Wire & Associated Companies, 1635 S. Clinton St., Chicago 16, Ill.  
Continental Carbon, Inc., 13900 Lorain Ave., Cleveland 11, Ohio  
Erle Resistor Corp., 644 W. 12th St., Erie, Pa.  
See Advertisement on Page 47  
Fast & Co., John E., 3101 N. Pulaski Rd., Chicago 41, Ill.  
Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
See Advertisements on Pages 48A to 48D  
Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
See Advertisement on Page 166  
National Electronic Mfg. Corp., 22-78 Stelway St., Long Island City 5, N. Y.  
Pyramid Electric Co., 155 Oxford St., Paterson, N. J.  
Searle Aero Industries, Inc., Orange, Calif.  
Solar Mfg. Corp., 285 Madison Ave., New York 17, N. Y.  
Sprague Electric Co., North Adams, Mass.  
Technology Instrument Corp., 1058 Main St., Waltham, Mass.

### SUPPRESSORS—Parasitic

Clarostat Mfg. Co., Inc., 285-7 6th St., Brooklyn, N. Y.  
Erle Resistor Corp., 644 W. 12th St., Erie, Pa.  
See Advertisement on Page 47  
Global Div., Carborundum Co., Buffalo Ave., Niagara Falls, N. Y.

Ohmite Mfg. Co., 4835 W. Flournoy St., Chicago 44, Ill.

See Advertisement on Page 179

Sprague Electric Co., North Adams, Mass.

**SURFACE ANALYSERS AND COMPARATORS**

See Analyzers

**SUSPENSIONS—Speaker**

Hawley Products Co., St. Charles, Ill.  
J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkway, Brooklyn, N. Y.

Kay Electric Co., 34 Marshall St., Newark, N. J.

See Advertisement on Page 184

Searle Aero Industries, Inc., Orange, Calif.

**SWITCH PARTS**

**Call Letter Tabs**

Bostonian Process Co., 40 W. 13th St., New York 11, N. Y.

Cardy-Lundmark Co., 1801 W. Byron St., Chicago 13, Ill.

Ever Ready Label Corp., 141-155 E. 25th St., New York 10, N. Y.

General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.

See Advertisement on Page 90

Insuline Corp. of America, 36-02 35th Ave., Long Island City 10, N. Y.

See Advertisement on Page 166

Parisian Novelty Co., 3510 South Western Ave., Chicago 9, Ill.

Plastic Accessories, Inc., 460 Broome St., New York 13, N. Y.

Plastic Fabricators Co., 440 Sansome St., San Francisco 11, Calif.

Ports Mfg. Co., 3265 E. Belmont Ave., Fresno 3, Calif.

Printloid, Inc., 95 Mercer St., New York 12, N. Y.

See Advertisement on Page 198

**Contacts**

Fansteel Metallurgical Corp., 2200 Sheridan Rd., No. Chicago, Ill.

Grammes & Sons Inc., L. F., 389 Union St., Allentown 2, Pa.

Leach Relay Co. Inc., 5915 Avalon Blvd., Los Angeles 3, Calif.

Superior Carbon Products Inc., 9112 George Ave., Cleveland, Ohio

Switchcraft, Inc., 1735 West Diversey Parkway, Chicago 14, Ill.

**Telegraph Tape**

Foote Pierson & Co., Inc., 75 Hudson St., Newark 4, N. J.

**SWITCHBOARDS—Radio**

American Communications Corp., 306 Broadway, New York 7, N. Y.

Federal Electric Products Co., Inc., 50 Paris St., Newark, N. J.

General Electric Co., Schenectady 5, N. Y.

See Advertisements on Pages 96B, 96C

**SWITCHES—Automatic**

Autocall Co., The, Shelly, Ohio

Bradley Co., Allen, 136 W. Greenfield Ave., Milwaukee 2, Wisc.

Cook Electric Co., 2700 Southport Ave., Chicago, Ill.

Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.

See Advertisements on Pages 48A to 48D

Hart Mfg. Co., 110 Bartholomew Ave., Hartford 1, Conn.

Ocrum Corp., Auburn Rd., Seneca Falls, N. Y.

Signal Engineering & Mfg. Co., 154 W. 14th St., New York, N. Y.

See Advertisement on Page 254

**SWITCHES—Coaxial Cable**

Bird Electronic Corp., 1800 E. 38th St., Cleveland 14, Ohio

Cover Dual Signal Systems, Inc., Div. of Electra Voice Corp., 5215-25 Ravenswood Ave., Chicago 40, Ill.

General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.

Kings Electronics Co., 372 Classon Ave., Brooklyn 5, N. Y.

**SWITCHES—Control**

Adams & Westlake Co., Michigan St., Elkhart, Ind.

Avlometer Corp., 370 W. 35th St., New York 1, N. Y.

See Advertisement on Page 224

Barber Colman Co., River & Loomis Sts., Rockford, Ill.

Cook Electric Co., 2700 Southport Ave., Chicago, Ill.

Cutler-Hammer, Inc., 315 No. 12th St., Milwaukee 1, Wisc.

Electronic Controls, Inc., 44 Summer Ave., Newark, N. J.

General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.

See Advertisement on Page 90

General Electric Co., Schenectady 5, N. Y.

See Advertisements on Pages 96B, 96C

Hart Mfg. Co., 110 Bartholomew Ave., Hartford 1, Conn.

Langevin Co., Inc., The, Industrial Control Div., 37 W. 67th St., New York 23, N. Y.

Magnavox Co., The, Fort Wayne 4, Ind.

Micro Switch Div., First Industrial Corp., 7 Spring St., Freeport, Ill.

Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.

Trumbull Electric Mfg. Co., Plainville, Conn.

Ward Leonard Electric Co., 31 South St., Mt. Vernon, N. Y.

See Advertisement on Page 175

Westinghouse Electric Corp., Switchgear & Control Div., East Pittsburgh, Pa.

**SWITCHES—Decade**

Brown Engineering Co., 4635 S. E. Hawthorne Blvd., Portland 15, Oregon

Daven Co., 191 Central Ave., Newark 4, N. J.

General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.

Grigsby-Allison Co., Inc., 407 N. Salem Ave., Arlington Heights, Ill.

Industrial Instruments Inc., 17 Pollack Ave., Jersey City 5, N. J.

Industrial Tool & Die Works, Inc., 2824 University Ave., SE, Minneapolis, Minn.

Sensitive Research Instrument Co., 9 Elm Ave., Mt. Vernon, N. Y.

Shallcross Mfg. Co., 10 Jackson Ave., Colingdale, Pa.

Tech Laboratories, 337 Central Ave., Jersey City, N. J.

Thwing-Albert Instrument Co., 5351 Pulaski Ave., Philadelphia 44 Pa.

**SWITCHES—Electronic**

Du Mont Labs, Inc., Allen B., 2 Main Ave., Passaic, N. J.

Electronic Development Lab., 2655 W. 19th St., Chicago 8, Ill.

Electronic Engineers, 1039-B Pacific St., Santa Monica, Calif.

General Electric Co., Schenectady 5, N. Y.

See Advertisements on Pages 96B, 96C

General Electric Co., Syracuse, N. Y.

See Advertisements on Pages 96, 96A

Herlec Corp., The, 422 N. Fifth St., Milwaukee 3, Wisc.

Langevin Co. Inc., The, Industrial Control Div., 37 W. 65th St., New York 23, N. Y.

Measurement Engineering Ltd., 61 Duke St., Toronto, Can.

See Advertisement on Page 193

Potter Instrument Co., 136-56 Roosevelt Ave., Flushing, N. Y.

See Advertisement on Page 243

Ripley Co., Torrington, Conn.

**SWITCHES—Float Type**

Alco Valve Co., 865 Kingsland, St. Louis 5, Mo.

Bradley Co., Allen, 136 W. Greenfield Ave., Milwaukee 2, Wisc.

Cutler-Hammer, Inc., 315 No. 12th St., Milwaukee 1, Wisc.

General Electric Co., Schenectady 5, N. Y.

See Advertisements on Pages 96B, 96C

Westinghouse Electric Corp., Switchgear & Control Div., East Pittsburgh, Pa.

**SWITCHES—Key**

Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.

Clare & Co., C. P., 4719 Sunnyside Ave., Chicago 30, Ill.

General Electric Co., Bridgeport 2, Conn.

Herlec Corp., The, 422 N. Fifth St., Milwaukee 3, Wisc.

Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.

See Advertisement on Page 166

Switchcraft, Inc., 1735 West Diversey Parkway, Chicago 14, Ill.

Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.

See Advertisements on Pages 88, 89

**SWITCHES—Knife**

Arrow-Hart & Hegeman Electric Co., 103 Hawthorn St., Hartford 6, Conn.

Birnbach Radio Co. Inc., 145 Hudson St., New York, N. Y.

General Electric Co., Schenectady 5, N. Y.

See Advertisements on Pages 96B, 96C

Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.

See Advertisement on Page 166

I-T-E Circuit Breaker Co., 19th & Hamilton Sts., Phila. 30, Pa.

See Advertisement on Page 199

Kolton Electric Mfg. Co., 123 N. J. Railroad Ave., Newark 5, N. J.

Trumbull Electric Mfg. Co., Plainville, Conn.

Westinghouse Electric Corp., Switchgear & Control Div., East Pittsburgh, Pa.

**SWITCHES—Lever**

Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.

Centralab, Div. of Globe Union Inc., 900 Keefe Ave., Milwaukee 1, Wisc.

See Advertisements on Pages 24, 25

Clare & Co., C. P., 4719 Sunnyside Ave., Chicago 30, Ill.

Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.

See Advertisements on Pages 48A to 48D

General Control Co., 1200 Soldiers Field Rd., Boston 34, Mass.

Guardian Electric Mfg. Co., 1400 Washington Blvd., Chicago 7, Ill.

Herlec Corp., The, 422 N. Fifth St., Milwaukee 3, Wisc.

Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.

See Advertisement on Page 166

Loge Sound Engineers, J. M., 986 S. Western Ave., Los Angeles 6, Calif.

Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.

See Advertisements on Pages 257 to 260

Mossman, Donald P., 612 N. Michigan Ave., Chicago 11, Ill.

Switchcraft, Inc., 1735 West Diversey Parkway, Chicago 14, Ill.

Triplet Electrical Instrument Co., 286 Harmon Road, Bluffton, Ohio

Westinghouse Electric Corp., Switchgear & Control Div., East Pittsburgh, Pa.

**SWITCHES—Limit**

Acro Electric Co., 1316 Superior Ave., Cleveland, Ohio

Ark-Les Switch Corp., 51 Water St., Watertown 72, Mass.

Bradley Co., Allen, 136 W. Greenfield Ave., Milwaukee 2, Wisc.

Cook Electric Co., 2700 Southport Ave., Chicago, Ill.

Cutler-Hammer, Inc., 315 North 12th St., Milwaukee 1, Wisc.

Friez Instrument Div., Bendix Aviation Corp., Baltimore 4, Md.

General Electric Co., Schenectady 5, N. Y.

See Advertisements on Pages 96B, 96C

Hetherington & Son, Inc., Robert, Sharon Hill, Pa.

Mercoid Corp., 4201 Belmont Ave., Chicago 41, Ill.

Micro Switch Div. First Industrial Corp., 7 Spring St., Freeport, Ill.  
 Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave. S., Minneapolis, Minn.  
 Monitor Controller Co., 51 S. Gay St., Baltimore 2, Md.  
 Mu Switch Corp., Canton 31, Mass.  
 Westinghouse Electric Corp., Switchgear & Control Div., East Pittsburgh, Pa.

## SWITCHES—Mercury

Adams & Westlake Co., Michigan St., Elkhart, Ind.  
 Chatham Electronics, 475 Washington St., Newark 2, N. J.  
 See Advertisement on Page 247  
 Durakool, Inc., 1010 N. Main St., Elkhart, Ind.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Hermascol Co., Riverside Dr., Elkhart, Ind.  
 See Advertisements on Pages 90, 222  
 Littlufuse, Inc., 4757 Ravenswood Ave., Chicago 40, Ill.  
 See Advertisement on Page 43  
 Mercoid Corp., 4201 Belmont Ave., Chicago 41, Ill.  
 Mercontrol Inc., 278 Pearl St., New York 7, N. Y.  
 Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave. S., Minneapolis, Minn.  
 Pass & Seymour, Inc., Solvay Station, Syracuse, N. Y.  
 Rhodes Inc., M. H., 30 Bartholomew Ave., Hartford, Conn.  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89

## SWITCHES—Precision Snap Action

Acro Electric Co., 1305 Superior Ave., Cleveland, Ohio  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Guardian Electric Mfg. Co., 1400 Washington Blvd., Chicago 7, Ill.  
 Hetherington & Son Inc., Robert, Sharon Hill, Pa.  
 Micro Switch Div. of First Industrial Corp., 7 Spring St., Freeport, Ill.  
 Mu Switch Corp., Canton 31, Mass.

## SWITCHES—Pressure Operated

Bradley Co., Allen, 136 W. Greenfield Ave., Milwaukee 2, Wisc.  
 Cutler-Hammer, Inc., 315 N. 12th St., Milwaukee 1, Wisc.  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.  
 McQuay-Norris Mfg. Co., Electric Products Div., 6319 Manchester Ave., St. Louis 10, Mo.  
 Meletron Corp., 950 N. Highland Ave., Los Angeles 38, Calif.  
 Mercoid Corp., 4201 Belmont Ave., Chicago 41, Ill.  
 Simonds Machine Co., Inc., 246-48 Worcester St., Southbridge, Mass.  
 Westinghouse Electric Corp., Switchgear & Control Div., East Pittsburgh, Pa.  
 White-Rodgers Electric Co., 1209 Cass Ave., St. Louis 6, Mo.

## SWITCHES—Rotary and Band Change

Aircraft Radio Corp., Boonton, N. J.  
 See Advertisement on Page 185  
 American Phenolic Corp., 1830 S. 5th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 Ark-Les Switch Corp., 51 Water St., Watertown 72, Mass.  
 Audio Products Co., 2101 W. Olive Ave., Burbank, Calif.  
 Autocall Co., The, Shelby, Ohio  
 Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.  
 Bradley Co., Allen, 136 W. Greenfield Ave., Milwaukee 2, Wisc.  
 Brown Engineering Co., 4635 S. E. Hawthorne Blvd., Portland 15, Oregon  
 Bud Radio, Inc., 2118 East 55th St., Cleveland 3, Ohio  
 Centralab Div., Globe Union Inc., 900 Keefe Ave., Milwaukee 1, Wisc.  
 See Advertisements on Pages 24, 25

Cinema Engineering Co., 1508 W. Verdugo Ave., Burbank, Calif.  
 Clarostat Mfg. Co., Inc., 285-7 6th St., Brooklyn, N. Y.  
 Communication Products Co., Inc., Broadway & Clark St., Keyport, N. J.  
 Cover Dual Signal Systems, Inc., Div. of Electra Voice Corp., 5215-25 Ravenswood Ave., Chicago 40, Ill.  
 Daven Co., 191 Central Ave., Newark 4, N. J.  
 Dielectric Products Co., Inc., 125 Virginia Ave., Jersey City 5, N. J.  
 Eastern Electronics Corp., 41 Chestnut St., New Haven, Conn.  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 General Control Co., 1200 Soldiers Field Rd., Boston 34, Mass.  
 General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
 Grarhill Corp., 1 N. Pulaski Rd., Chicago 24, Ill.  
 Grigsby-Allison Co., Inc., 407 N. Salem Ave., Arlington Heights, Ill.  
 Herlec Corp., The, 422 N. Fifth St., Milwaukee 3, Wis.  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166

J-B-L Instrument Co., 420 E. Providence Rd., Aldan, Pa.  
 J B T Instruments Inc., 441 Chapel St., New Haven 8, Conn.  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Lewis Engineering Co., 52 Rubber Ave., Naugatuck, Conn.  
 Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.  
 See Advertisements on Pages 257 to 260  
 Miller Co., J. W., 5917 S. Main St., Los Angeles, Calif.  
 Monitor Controller Co., 51 S. Gay St., Baltimore 2, Md.  
 Mossman, Donald P., 612 N. Michigan Ave., Chicago 11, Ill.  
 Oak Mfg. Co., 1260 N. Clybourn Ave., Chicago 10, Ill.  
 Roller-Smith, Bethlehem, Pa.  
 See Advertisement on Page 214  
 Shalross Mfg. Co., 10 Jackson Ave., Colingdale, Pa.  
 Stackpole Carbon Co., St. Marys, Pa.  
 Switchcraft, Inc., 1735 West Diversey Parkway, Chicago 14, Ill.  
 Tech Laboratories, 337 Central Ave., Jersey City, N. J.  
 Thwing-Albert Instrument Co., 5351 Pulaski Ave., Phila. 44, Pa.  
 Triplett Electrical Instrument Co., 286 Harmon Road, Bluffton, Ohio  
 Ucinite Co., The, Div. United-Carr Fastener Corp., 459 Watertown St., Newtonville, Mass.  
 U. S. Instrument Corp., 19 South Harrison St., East Orange, N. J.  
 See Advertisement on Page 255

## SWITCHES—Safety

Cook Electric Co., 2700 Southport Ave., Chicago, Ill.  
 Cutler-Hammer, Inc., 315 No. 12th St., Milwaukee 1, Wisc.  
 Federal Electric Products Co. Inc., 50 Paris St., Newark, N. J.  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Hart Mfg. Co., 110 Bartholomew Ave., Hartford 1, Conn.  
 Kolton Electric Mfg. Co., 123 N. J. Railroad Ave., Newark 5, N. J.  
 Micro Switch Div., First Industrial Corp., 7 Spring St., Freeport, Ill.  
 Simonds Machine Co., Inc., 246-48 Worcester St., Southbridge, Mass.  
 Trumbull Electric Mfg. Co., Plainville, Conn.  
 Wadsworth Electric Mfg. Co., 20 W. 11th St., Covington, Ky.

## SWITCHES—Slide

Centralab Div., Globe Union Inc., 900 Keefe Ave., Milwaukee 1, Wisc.  
 See Advertisements on Pages 24, 25  
 Cutler-Hammer, Inc., 315 No. 12th St., Milwaukee 1, Wisc.  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Muter Co., 1255 S. Michigan Ave., Chicago, Ill.

Oak Mfg. Co., 1260 N. Clybourn Ave., Chicago 10, Ill.  
 Wirt Co., 5221 Greene Street, Philadelphia, Pa.

## SWITCHES—Snap Action

Acro Electric Co., 1316 Superior Ave., Cleveland, Ohio  
 Arrow-Hart & Hegeman Electric Co., 103 Hawthorne St., Hartford 6, Conn.  
 Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Grayhill Corp., 1 N. Pulaski Rd., Chicago 24, Ill.  
 Guardian Electric Mfg. Co., 1400 Washington Blvd., Chicago 7, Ill.  
 Hetherington & Son, Inc., Robert, Sharon Hill, Pa.  
 Hubbell, Inc., Harvey, Bridgeport 2, Conn.  
 McQuay-Norris Mfg. Co., Electric Products Div., 6319 Manchester Ave., St. Louis 10, Mo.  
 Micro Switch Div., First Industrial Corp., 7 Spring St., Freeport, Ill.  
 Muter Co., 1255 S. Michigan Ave., Chicago, Ill.  
 Stackpole Carbon Co., St. Marys, Pa.  
 Unimax Switch Corp., Subs. of W. L. Maxson Corp., 460 W. 34th St., New York 1, N. Y.  
 See Advertisement on Page 219  
 Wood Electric Co., Inc., C. D. 826 Broadway, New York 3, N. Y.

## SWITCHES—Step Type

Autocall Co., The, Shelby, Ohio  
 Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.  
 Aviometer Corp., 370 W. 35th St., New York 1, N. Y.  
 See Advertisement on Page 224  
 Centralab Div., Globe Union Inc., 900 Keefe Ave., Milwaukee 1, Wisc.  
 See Advertisements on Pages 24, 25  
 Clare & Co., C. P., 4719 Sunnyside Ave., Chicago 30, Ill.  
 Collins Radio Co., Cedar Rapids, Iowa  
 See Advertisements on Pages 30 to 33  
 Daven Co., 191 Central Ave., Newark 4, N. J.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 Guardian Electric Mfg. Co., 1400 Washington Blvd., Chicago 7, Ill.  
 Simonds Machine Co., Inc., 246-48 Worcester St., Southbridge, Mass.  
 Tech Laboratories, 337 Central Ave., Jersey City, N. J.

## SWITCHES—Tap

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 Ark-Les Switch Corp., 51 Water St., Watertown 72, Mass.  
 Brown Engineering Co., 4635 S. E. Hawthorne Blvd., Portland 15, Oregon  
 Centralab Div., Globe Union Inc., 900 Keefe Ave., Milwaukee 1, Wisc.  
 See Advertisements on Pages 24, 25  
 Ecco High Frequency Corp., 7020 Hudson Blvd., North Bergen, N. J.  
 Grigsby-Allison Co., Inc., 407 N. Salem Ave., Arlington Heights, Ill.  
 J-B-L Instrument Co., 420 E. Providence Rd., Aldan, Pa.  
 Peerless Labs., 461-467 10th Ave., New York 18, N. Y.  
 Switchcraft, Inc., 1735 West Diversey Parkway, Chicago 14, Ill.  
 Tech Laboratories, 337 Central Ave., Jersey City, N. J.

## SWITCHES—Thermal

Betts & Betts Corp., 551 W. 52nd St., New York, N. Y.  
 Edison, Inc., Thomas A., Instrument Div., West Orange, N. J.  
 See Advertisement on Page 18  
 Fenwal Inc., 43 Pleasant St., Ashland, Mass.  
 See Advertisement on Page 49  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C

Hartman Electrical Mfg. Co., 175 N. Diamond St., Mansfield, Ohio.  
 Micro Switch Div., First Industrial Corp., 7 Spring St., Freeport, Ill.  
 Rowe Radio Research Labs., 2422 N. Pulaski Rd., Chicago 39, Ill.  
 Standard Electrical Products Co., Dayton 3, Ohio.  
 Ulanet Co., George, 88 East Kinney St., Newark 5, N. J.  
 White-Rodgers Electric Co., 1209 Cass Ave., St. Louis 6, Mo.

**SWITCHES—Time**

Adams & Westlake Co., Michigan St., Elkhart, Ind.  
 Autocall Co., The, Shelby, Ohio  
 Cramer Co., R. W., Centerbrook, Conn.  
 See Advertisement on Page 233  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Haydon Co., A. W., The, Waterbury 32, Conn.  
 International Register Co., 2620 W. Washington Blvd., Chicago 12, Ill.  
 Landis & Gyr, Inc., 104 Fifth Ave., New York, N. Y.  
 Langevin Co. Inc., The, Industrial Control Div., 37 W. 65th St., New York 23, N. Y.  
 Lumenite Electric Co., 407 S. Dearborn St., Chicago, Ill.  
 Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.  
 Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.  
 Monitor Controller Co., 51 S. Gay St., Baltimore 2, Md.  
 Paragon Electric Co., 37 W. Van Buren St., Chicago 5, Ill.  
 Reliance Automatic Lighting Co., 1927 Mead St., Racine, Wis.  
 Rhodes, Inc., M. H., 30 Bartholomew Ave., Hartford, Conn.  
 Sangamo Electric Co., Springfield, Ill.  
 Tech Laboratories, 337 Central Ave., Jersey City, N. J.  
 Ulanet Co., George, 88 E. Kinney St., Newark 5, N. J.  
 Wadsworth Electric Mfg. Co., Inc., 20 W. 11th St., Covington, Ky.  
 Zenith Electric Co., 152 W. Walton St., Chicago, Ill.

**SWITCHES—Toggle and Pushbutton**

Aerolite Electronic Hardware Corp., 24 Cliff St., Jersey City, N. J.  
 See Advertisement on Page 246  
 Aircraft Radio Corp., Boonton, N. J.  
 See Advertisement on Page 185  
 American Plastic Products, 2907 S. Main St., Los Angeles 7, Calif.  
 Ark-Les Switch Corp., 51 Water St., Watertown 72, Mass.  
 Arrow-Hart & Hegeman Electric Co., 103 Hawthorne St., Hartford 6, Conn.  
 Birnbach Radio Co. Inc., 145 Hudson St., New York, N. Y.  
 Bradley Co., Allen, 136 W. Greenfield Ave., Milwaukee 2, Wis.  
 Bud Radio, Inc., 2118 E. 55th St., Cleveland 3, Ohio.  
 Carter Radio Div., Precision Parts Co., 213 Institute Place, Chicago 10, Ill.  
 Clark & Co., C. F., 4719 Sunnyside Ave., Chicago 30, Ill.  
 Cutler-Hammer, Inc., 315 North 12th St., Milwaukee 1, Wis.  
 Dual Remote Control Co., Wayne, Mich.  
 Electric Auto-Lite Co., The, Toledo 1, Ohio  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 General Control Co., 1200 Soldiers Field Rd., Boston 34, Mass.  
 General Electric Co., Bridgeport, Conn.  
 Grayhill Corp., 1 N. Pulaski Rd., Chicago 24, Ill.  
 Grigsby-Allison Co., Inc., 407 N. Salem Ave., Arlington Heights, Ill.  
 Hart Mfg. Co., 110 Bartholomew Ave., Hartford 1, Conn.  
 Hetherington & Son, Inc., Robert, Sharon Hill, Pa.  
 Hubbell, Inc., Harvey, Bridgeport 2, Conn.  
 Industrial Tool & Die Works, Inc., 2824 University Ave., SE, Minneapolis, Minn.  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 J. F. D. Mfg. Co., 4111 Fort Hamilton Parkway, Brooklyn, N. Y.  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Kulka Electric Mfg. Co., Inc., 30 South St., Mt. Vernon, N. Y.  
 Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.  
 See Advertisements on Pages 257 to 260

Monitor Controller Co., 51 S. Gay St., Baltimore 2, Md.  
 Morse Co., Frank W., 1300 Soldiers Field Rd., Boston 35, Mass.  
 Mossman, Donald P., 612 N. Michigan Ave., Chicago 11, Ill.  
 Muter Co., 1255 S. Michigan Ave., Chicago, Ill.  
 Pass & Seymour, Inc., Solvay Station, Syracuse, N. Y.  
 R. B. M. Div., Essex Wire Corp., Logansport, Ind.  
 Switchcraft, Inc., 1735 West Diversey Parkway, Chicago 14, Ill.  
 Trumbull Electric Mfg. Co., Plainville, Conn.  
 Ucinite Co., The, Div. United-Carr Fastener Corp., 459 Watertown St., Newtonville, Mass.  
 Utah Radio Products Co., 820 Orleans St., Chicago, Ill.  
 Ward Leonard Electric Co., 31 South St., Mt. Vernon, N. Y.  
 See Advertisement on Page 175  
 Wood Electric Co., Inc., C. D., 826 Broadway, New York 3, N. Y.

**SWITCHES—TR**

General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161

**SWITCHES—Vacuum**

Cover Dual Signal Systems, Inc., Div. of Electra Voice Corp., 5215-25 Ravenswood Ave., Chicago 40, Ill.  
 Cutler-Hammer, Inc., 315 No. 12th St., Milwaukee 1, Wis.  
 Eitel-McCullough Inc., San Bruno, Calif.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Meletron Corp., 950 N. Highland Ave., Los Angeles 38, Calif.  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89

**SYNCHRONIZERS—Electronic**

Atomic Instrument Co., 160 Charles St., Boston, Mass.  
 Burlington Instrument Co., 214 N. 4th St., Burlington, Iowa  
 Control Corp., 718 Central Ave., Minneapolis 14, Minn.  
 DeMornay-Budd Inc., 475 Grand Concourse, New York 51, N. Y.  
 See Advertisement on Page 171  
 Robnette Co., W. C., 802 Fair Oaks Ave., South Pasadena, Calif.  
 Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.

**SYNCHRONIZERS—Electronic Aircraft Magneto**

Electric Heat Control Co., The, 9123 Inman Ave., Cleveland 5, Ohio  
 Lyman Electronic Corp., 12 Cass St., Springfield, Mass.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B

**SYNCSOPIES**

American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
 Atomic Instrument Co., 160 Charles St., Boston, Mass.  
 Diamond Instrument Co., North Ave., Wakefield, Mass.  
 General Electric Co., Schenectady 5, N. Y.  
 Hazeltine Electronics Corp., 1775 Broadway, New York, N. Y.  
 Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44  
 Polarad Electronics Co., 135 Liberty St., New York 6, N. Y.  
 Radar Engineers, 4004 Arcade Bldg., Seattle 1, Wash.

Roller-Smith, Bethlehem, Pa.  
 See Advertisement on Page 214  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161  
 Tektronix, Inc., 1516 S. E. 7th Ave., Portland 14, Ore.  
 Westinghouse Electric Corp., Meter Div., Newark, N. J.

**TACHOMETERS—Electronic**

Balley Meter Co., 1044 Ivanhoe Rd., Cleveland 10, Ohio  
 Biddle Co., Jas. G., 1316 Arch St., Philadelphia 7, Pa.  
 Brown Instrument Co., 4428 Wayne Ave., Philadelphia 44, Pa.  
 Electric Heat Control Co., The, 9123 Inman Ave., Cleveland 5, Ohio  
 Electric Tachometer Corp., Broad & Spring Garden Sts., Philadelphia, Pa.  
 Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska  
 Foxboro Co., Foxboro, Mass.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
 Hewlett-Packard Co., 895 Page Mill Rd., Palo Alto, Calif.  
 See Advertisements on Pages 94, 95  
 Ideal Industries, Inc., Park & Borden Avenues, Sycamore, Ill.  
 Jones Motrola Corp., 432 Fairfield Ave., Stamford, Conn.  
 Measurement Engineering Ltd., 61 Duke St., Toronto, Can.  
 See Advertisement on Page 193  
 Metron Instrument Co., 432 Lincoln St., Denver 9, Colo.  
 Potter Instrument Co., 136-56 Roosevelt Ave., Flushing, N. Y.  
 See Advertisement on Page 243  
 Ripley Co., Torrington, Conn.  
 Sticht Co., Inc., Herman H., 27 Park Pl., New York 7, N. Y.  
 Westinghouse Electric Corp., Meter Div., Newark, N. J.  
 Zernickow Co., O., 15 Park Row, New York 7, N. Y.

**TAPE—Magnetic Recorder**

Brush Development Co., The, 3405 Perkins Ave., Cleveland 14, Ohio  
 Controls Labs. Inc., 98 Union St., Worcester 8, Mass.  
 Indiana Steel Products Co., 6 N. Michigan Ave., Chicago 2, Ill.  
 See Advertisement on Page 54  
 Miles Reproducer Co., Inc., 812 Broadway, New York 3, N. Y.  
 See Advertisement on Page 256  
 Minnesota Mining & Mfg. Co., 900 Fauquier Ave., St. Paul, Minn.

**TAPES**

See Insulation Parts

**TELEMETERING SYSTEMS—Electronic**

Atomic Instrument Co., 160 Charles St., Boston, Mass.  
 Balley Meter Co., 1044 Ivanhoe Rd., Cleveland 10, Ohio  
 Bendix Aviation Corp., Pacific Div., 11600 Sherman Way, North Hollywood, Calif.  
 Control Corp., 718 Central Ave., Minneapolis 14, Minn.  
 Esterline-Angus Co., Inc., P. O. Box 596, Indianapolis, Ind.  
 Farnsworth Television & Radio Corp., Ft. Wayne, Ind.  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Giannini & Co., Inc., G. M., Autoflight Instrument Div., 285 W. Colorado St., Pasadena 1, Calif.  
 Hathaway Instrument Co., 1315 S. Clark St., Denver 10, Colo.  
 Leupold & Stevens Instruments, 4445 N. E. Glisan St., Portland 13, Ore.  
 Melpar, Inc., 718 Fifth St., N. W., Washington 1, D. C.  
 Radio Engineering Products, Div. of Raymond Rosen & Co., Philadelphia 4, Pa.  
 Robnette Co., W. C., 802 Fair Oaks Ave., South Pasadena, Calif.  
 Westinghouse Electric Corp., Meter Div., Newark, N. J.

## TELEPHONES—Handsets

Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.  
 Avlometer Corp., 370 West 35th St., New York 1, N. Y.  
 See Advertisement on Page 224  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 Guided Radio Corp., 161 6th Ave., New York 13, N. Y.  
 Hose-McCann Telephone Co., 177 Pacific St., Brooklyn 2, N. Y.  
 Murdock Mfg. Co., Wm. J., Chelsea, Mass.  
 North Electric Mfg. Co., 501 S. Market St., Galion, Ohio  
 Northeastern Engineering Inc., Manchester, N. H.  
 Stromberg-Carlson Co., Rochester, N. Y.  
 U. S. Instrument Corp., 19 South Harrison St., East Orange, N. J.  
 See Advertisement on Page 255  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89

## TELEVISION SYSTEMS—Industrial

Electronic Apparatus, Inc., 347 Madison Ave., New York 17, N. Y.  
 Farnsworth Television & Radio Corp., Ft. Wayne, Ind.  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Keystone Electronics Co., 50-52 Franklin St., New York 13, N. Y.  
 Polarad Electronics Co., 135 Liberty St., New York 6, N. Y.  
 Remington Rand, Electronic Div., Middletown, Conn.  
 Teleguip Radio Co., 1901 S. Washtenaw, Chicago, Ill.  
 Television Projects, Inc., 24 Walnut St., Newark 2, N. J.  
 Telicon Corp., 851 Madison Ave., New York 21, N. Y.

## TERMINAL BLOCKS

Aircraft-Marine Products, Inc., 1523 N. Fourth St., Harrisburg, Pa.  
 Aircraft Radio Corp., Boonton, N. J.  
 See Advertisement on Page 185  
 American Communications Corp., 306 Broadway, New York 7, N. Y.  
 American Lava Corp., Chattanooga 5, Tenn.  
 See Advertisement on Page 69  
 Autocall Co., The, Shelby, Ohio  
 Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.  
 Buggie & Co., H. H., 2141 Madison Ave., Toledo 1, Ohio  
 Burke Elect. Co., 12th & Cranberry Sts., Erie, Pa.  
 Burndy Engineering Co., 107 Bruckner Blvd., New York 54, N. Y.  
 Cannon Electric Development Co., 3209 Humboldt St., Los Angeles 31, Calif.  
 See Advertisement on Page 70  
 Centralab Div., Globe Union Inc., 900 Keefe Ave., Milwaukee 1, Wisc.  
 See Advertisements on Pages 24, 25  
 Consolidated Molded Products Corp., Scranton 2, Pa.  
 Continental Diamond Fibre Co., 16 Chapel St., Newark, Del.  
 Curtis Development & Mfg. Co., 1 N. Crawford Ave., Chicago 24, Ill.  
 Electronic Mechanics Inc., 70 Clifton Blvd., Clifton, N. J.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 Franklin Airloop Corp., 43-20 34th St., Long Island City, N. Y.  
 See Advertisement on Page 61  
 Franklin Mfg. Co., A. W., 43-20 34th St., Long Island City, N. Y.  
 See Advertisement on Page 98  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Hart Mfg. Co., 110 Bartholomew Ave., Hartford 1, Conn.  
 Insulation Mfg. Co., 11 New York Ave., Brooklyn, N. Y.  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Keystone Electronics Co., 50-52 Franklin St., New York 13, N. Y.  
 Kolton Electric Mfg. Co., 123 New Jersey Railroad Ave., Newark 5, N. J.  
 Littelfuse Inc., 4757 Ravenswood Ave., Chicago 40, Ill.  
 See Advertisement on Page 43

Micarta Fabricators, Inc., 5324 Ravenswood Ave., Chicago 40, Ill.  
 Murdock Mfg. Co., Wm. J., Chelsea, Mass.  
 National Vulcanized Fibre Co., Wilmington, Del.  
 See Advertisement on Page 58  
 North Electric Mfg. Co., 501 S. Market St., Galion, Ohio  
 R. B. M. Div., Essex Wire Corp., Logansport, Ind.  
 States Co., 19 New Park Ave., Hartford 6, Conn.  
 Taylor Fibre Co., Norristown, Pa.  
 Ther Electric & Machine Works, 17 South Jefferson St., Chicago, Ill.  
 Thomas & Betts Co., Inc., 36 Butler St., Elizabeth 1, N. J.  
 U. S. Instrument Corp., 19 S. Harrison St., East Orange, N. J.  
 See Advertisement on Page 255

## TERMINAL BOARDS

Aerolite Electronic Hardware Corp., 24 Cliff St., Jersey City, N. J.  
 See Advertisement on Page 246  
 Aircraft-Marine Prods., Inc., 1523 No. 4th St., Harrisburg, Pa.  
 Amalgamated Radio Television Corp., 476 Broadway, New York 13, N. Y.  
 American Communications Corp., 306 Broadway, New York 7, N. Y.  
 Ansonia Clock Co., Inc., 103 Lafayette St., New York 13, N. Y.  
 Austin Co., O., 335 Throop Ave., Brooklyn 21, N. Y.  
 Autocall Co., The, Shelby, Ohio  
 Baer Co., N. S., 9 Montgomery St., Hillside, N. J.  
 See Advertisement on Page 227  
 Cambridge Thermionic Corp., 445 Concord Ave., Cambridge, Mass.  
 Centralab Div., Globe Union Inc., 900 Keefe Ave., Milwaukee 1, Wisc.  
 See Advertisements on Pages 24, 25  
 Cinch Manufacturing Corp., 2335 W. Van Buren Street, Chicago 12, Ill.  
 See Advertisement on Page 75  
 Eby, Inc., Hugh H., 18 W. Chelton Ave., Philadelphia 13, Pa.  
 Electronic Mechanics Inc., 70 Clifton Blvd., Clifton, N. J.  
 Ferranti Electric Inc., 30 Rockefeller Plaza, New York 20, N. Y.  
 See Advertisement on Page 196  
 Five Star Radio Co., 416 Broadway, Cambridge, Mass.  
 Franklin Airloop Corp., 43-20 34th St., Long Island City, N. Y.  
 See Advertisement on Page 61  
 Franklin Mfg. Co., A. W., 43-20 34th St., Long Island City, N. Y.  
 See Advertisement on Page 98  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Greenhut Insulation Co., 31 W. 21st St., New York, N. Y.  
 Insulation Mfg. Co., 11 New York Ave., Brooklyn, N. Y.  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Johnson Co., E. F., Waseca, Minn.  
 Joyner Corp., The, 462 N. Parkside Ave., Chicago 44, Ill.  
 Keystone Electronics Co., 50-52 Franklin St., New York 13, N. Y.  
 Micarta Fabricators, Inc., 5324 Ravenswood Ave., Chicago 40, Ill.  
 Miller Co., J. W., 5917 S. Main St., Los Angeles, Calif.  
 Molded Insulation Co., Aircraft Control Div., 335 E. Price St., Philadelphia, Pa.  
 Mykroy Inc., 1917 N. Springfield Ave., Chicago 47, Ill.  
 National Co., Inc., 61 Sherman St., Malden 48, Mass.  
 See Advertisement on Page 78  
 National Vulcanized Fibre Co., Wilmington, Del.  
 See Advertisement on Page 58  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover, Back Cover, & 251  
 States Co., 19 New Park Ave., Hartford 6, Conn.  
 Ucinite Co., The, Div. United-Carr Fastener Corp., 459 Watertown St., Newtonville, Mass.  
 Yates Engineering Services, 2 Hampton Rd., Cranford, N. J.

## TERMINAL STRIPS

Aerolite Electronic Hardware Corp., 24 Cliff St., Jersey City, N. J.  
 See Advertisement on Page 246

Amalgamated Radio Television Corp., 476 Broadway, New York 13, N. Y.  
 American Communications Corp., 306 Broadway, New York 7, N. Y.  
 American Lava Corp., Chattanooga 5, Tenn.  
 See Advertisement on Page 69  
 Austin Co., O., 335 Throop Ave., Brooklyn 21, N. Y.  
 Autocall Co., The, Shelby, Ohio  
 Birnbach Radio Co., Inc., 145 Hudson St., New York, N. Y.  
 Brach Mfg. Corp., 55 Dickerson St., Newark 4, N. J.  
 Burke Electric Co., 12th & Cranberry Sts., Erie, Pa.  
 Burndy Engineering Co., 107 Bruckner Blvd., New York 54, N. Y.  
 Cannon Electric Development Co., 3209 Humboldt St., Los Angeles 31, Calif.  
 See Advertisement on Page 70  
 Centralab Div., Globe Union Inc., 900 Keefe Ave., Milwaukee 1, Wisc.  
 See Advertisements on Pages 24, 25  
 Cinch Mfg. Corp., 2334 W. Van Buren St., Chicago 12, Ill.  
 See Advertisement on Page 75  
 Eby, Inc., Hugh H., 18 Chelton Ave., Philadelphia 13, Pa.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 Five Star Radio Co., 416 Broadway, Cambridge, Mass.  
 Franklin Mfg. Co., A. W., 43-20 34th St., Long Island City, N. Y.  
 See Advertisement on Page 98  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Greene Mfg. Corp., G. G., Warren, Pa.  
 Hermetic Seal Prods. Co., 414 Morris Ave., Newark 3, N. J.  
 Insulation Mfg. Co., 11 New York Ave., Brooklyn, N. Y.  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Jones, Howard B., 2460 W. George St., Chicago 18, Ill.  
 See Advertisement on Page 52  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Keystone Electronics Co., 50-52 Franklin St., New York 13, N. Y.  
 Kulka Electric Mfg. Co., Inc., 30 South St., Mt. Vernon, N. Y.  
 Langevin Co., Inc., 37 W. 65th St., New York, N. Y.  
 See Advertisement on Page 153  
 Littelfuse, Inc., 4757 Ravenswood Ave., Chicago 40, Ill.  
 See Advertisement on Page 43  
 Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44  
 Miller Co., J. W., 5917 S. Main St., Los Angeles, Calif.  
 Mykroy Inc., 1917 N. Springfield Ave., Chicago 47, Ill.  
 National Co., Inc., 61 Sherman St., Malden 48, Mass.  
 See Advertisement on Page 78  
 National Vulcanized Fibre Co., Wilmington, Del.  
 See Advertisement on Page 58  
 Northern Industrial Chemical Co., 7-11 Elkins St., South Boston 27, Mass.  
 Penn-Union Electric Corp., 315 State St., Erie, Pa.  
 Precision Fabricators, Inc., 120 N. Fitzburgh St., Rochester, N. Y.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover, Back Cover & 251  
 Schott Co., Walter L., 9306 Santa Monica Blvd., Beverly Hills, Calif.  
 Searle Aero Industries, Inc., Orange, Calif.  
 Snyder Mfg. Co., 22nd & Ontario Sts., Philadelphia 40, Pa.  
 States Co., 19 New Park Ave., Hartford 6, Conn.  
 Thomas & Betts Co., Inc., 36 Butler St., Elizabeth 1, N. J.  
 Waterbury Companies, Inc., Waterbury 90, Conn.  
 West Coast Electronics Co., 1601 S. Burlington St., Los Angeles 6, Calif.  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89  
 Yates Engineering Services, 2 Hampton Rd., Cranford, N. J.

## TERMINALS

Aircraft-Marine Prods., Inc., 1523 No. 4th St., Harrisburg, Pa.  
 Amalgamated Radio Television Corp., 476 Broadway, New York 13, N. Y.

Bead Chain Manufacturing Co., 110 Mountain Grove St., Bridgeport 5, Conn.  
See Advertisement on Page 194

Burndy Engineering Co., 107 Bruckner Blvd., New York 54, N. Y.

Cambridge Thermionic Corp., 445 Concord Ave., Cambridge, Mass.

Cannon Electric Development Co., 3209 Humboldt St., Los Angeles 31, Calif.  
See Advertisement on Page 70

Dante Electric Mfg. Co., Bantam, Conn.

Eastern Specialty Co., Philadelphia 40, Pa.

Frankel Connector Co., 27 Vestry St., New York, N. Y.

Franklin Airloop Corp., 43-20 34th St., Long Island City, N. Y.  
See Advertisement on Page 61

Franklin Mfg. Co., A. W., 43-20 34th St., Long Island City, N. Y.  
See Advertisement on Page 98

General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
See Advertisement on Page 90

Grammes & Sons, Inc., L. F., 389 Union St., Allentown 2, Pa.

Ilco Copper Tube & Products Inc., Mariemont Ave., Mariemont, Cincinnati 27, Ohio

Insull Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
See Advertisement on Page 166

Johnson Co., E. F., Waseca, Minn.

Keystone Electronics Co., 50-52 Franklin St., New York 13, N. Y.

Kolton Electric Mfg. Co., 123 N. J. Railroad Ave., Newark 5, N. J.

Lewis Engineering Co., 52 Rubber Ave., Naugatuck, Conn.

Littelfuse Inc., 4757 Ravenswood Ave., Chicago 40, Ill.  
See Advertisement on Page 43

McQuay-Norris Mfg. Co., Electric Products Div., 6319 Manchester Ave., St. Louis 10, Mo.

Micarta Fabricators, Inc., 5324 Ravenswood Ave., Chicago 40, Ill.

National Co., Inc., 61 Sherman St., Malden 48, Mass.  
See Advertisement on Page 78

Patton-MacGuyer Co., 17 Virginia Ave., Providence 5, R. I.

Sherman Mfg. Co., H. B., 22 Barney St., Battle Creek, Mich.

Stimpson Co., Inc., Edwin B., 74 Franklin Ave., Brooklyn 5, N. Y.

Thompson-Bremer & Co., 1640 W. Hubbard St., Chicago, Ill.

Waterbury Companies, Inc., Waterbury 90, Conn.

**TERMINALS—Hermetically Sealed**

Cincinnati Electric Products Co., Carthage at Hannaford, Cincinnati 12, Ohio

Cook Electric Co., 2700 Southport Ave., Chicago, Ill.

Corning Glass Works, Corning, N. Y.

Doolittle Radio Inc., 7421 Loomis Bldg., Chicago 36, Ill.

Hermaseal Co., Riverside Dr., Elkhart, Ind.  
See Advertisements on Pages 90, 222

Hermetic Seal Products Co., 414 Morris Ave., Newark 3, N. J.

Morse Co., Frank W., 1300 Soldiers Field Rd., Boston 35, Mass.

Mykroy Inc., 1917 N. Springfield Ave., Chicago 47, Ill.

Stupakoff Ceramic & Mfg. Co., Latrobe, Pa.

Vitroseal Corp., 28 East Electric, Covington, Ky.

**TESTERS—Automatic Tube and Set**

Buck Engineering Co., 37-41 Marcy St., Freehold, N. J.  
See Advertisement on Page 242

Clough Bregle Co., 5501 N. Broadway, Chicago 22, Ill.

Dayton Acme Co., 930 York St., Cincinnati 14, Ohio

Dilks, Inc., Norwalk, Conn.

Ecco High Frequency Corp., 7020 Hudson Blvd., North Bergen, N. J.

Electronic Instrument Co., Inc., 926 Clarkson Ave., Brooklyn 3, N. Y.

Feiler Engineering Co., 803 Milwaukee Ave., Chicago 22, Ill.

General Electric Co., Syracuse, N. Y.  
See Advertisements on Pages 96, 96A

Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland, Ohio

Intex Co., 303 W. 42nd St., New York 18, N. Y.  
See Advertisement on Page 68

Jackson Electrical Instrument Co., 16 S. Patterson Blvd., Dayton 1, Ohio

MacLeod & Hanopol, 24 Chelsea St., Charlestown 29, Mass.

Measurement Engineering Ltd., 61 Duke St., Toronto, Can.  
See Advertisement on Page 193

Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.

Peirce Wire Recorder Corp., 1328 Sherman Ave., Evanston, Ill.

Philco Corp., Tioga & C Sts., Phila. 34, Pa.

Precision Apparatus Co., 92-27 Horace Harding Blvd., Elmhurst, N. Y.

Radio City Products Co., 127 W. 26th St., New York, N. Y.

Robson-Burgess Co., 5002 N. 30th St., Omaha 11, Nebr.

Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.

Simpson Electric Co., 5213 W. Kinzie St., Chicago, Ill.

Star Measurements Co., 442 East 166th St., New York 56, N. Y.

Superior Instruments Co., 227 Fulton St., New York 7, N. Y.

Supreme Instruments Corp., Greenwood, Miss.

Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
See Advertisements on Pages 158 to 161

Technical Apparatus Co., 167 Washington St., Boston 8, Mass.

Triplet Electrical Instrument Co., 286 Harmon Rd., Bluffton, Ohio

Universal Instrument Co., 306 E. McMillan St., Cincinnati 19, Ohio

Weston Electrical Instrument Corp., 618 Frelinghuysen Ave., Newark 5, N. J.

**TESTERS—Battery**

Assembly Products, Inc., Chagrin Falls, Ohio

Chaslyn Co., The, 1952 Irving Park Bldg., Chicago 13, Ill.

Daven Co., 191 Central Ave., Newark 4, N. J.

Electric Heat Control Co., 9123 Inman Ave., Cleveland 5, Ohio

Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska

Electro-Mechanical Instrument Co., 812 Chestnut St., Perkasie, Pa.

MB Instruments, Inc., 1060 State St., New Haven 11, Conn.

Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.

Precision Apparatus Co., 92-27 Horace Harding Blvd., Elmhurst, N. Y.

Sterling Mfg. Co., 9205 Detroit Ave., Cleveland 2, Ohio

Sun Mfg. Co., 6323 Avondale Ave., Chicago 31, Ill.

Supreme Instruments Corp., Greenwood, Miss.

**TESTERS—Capacitor**

Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.

Assembly Products, Inc., Chagrin Falls, Ohio

Deutschmann Corp., Tobe, Filterette Div., Canton, Mass.  
See Advertisement on Page 82

Electric Heat Control Co., 9123 Inman Ave., Cleveland 5, Ohio

Hazeltine Electronics Corp., 1775 Broadway, New York, N. Y.

Industrial Instruments Inc., 17 Pollack Ave., Jersey City 5, N. J.

Jackson Electrical Instrument Co., 16 S. Patterson Blvd., Dayton 1, Ohio

MacLeod & Hanopol, 24 Chelsea St., Charlestown 29, Mass.

Malda Development Co., Box 588, Erie, Pa.

McMurdo Silver Co., Inc., 1249 Main St., Hartford 3, Conn.

Measurement Engineering Ltd., 61 Duke St., Toronto, Can.  
See Advertisement on Page 193

Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.

Radio City Products Co., 127 West 26th St., New York, N. Y.

Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.

Solar Mfg. Corp., 285 Madison Ave., New York 17, N. Y.

Sprague Electric Co., North Adams, Mass.

Technical Apparatus Co., 167 Washington St., Boston 8, Mass.

United Condenser Corp., 422 E. 138th St., New York 54, N. Y.

Weston Electrical Instrument Corp., 618 Frelinghuysen Ave., Newark 5, N. J.

Wheeler Laboratories, Inc., 259-09 Northern Blvd., Great Neck, N. Y.

**TESTERS—Circuit**

Assembly Products, Inc., Chagrin Falls, Ohio

Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska

Electronic Instrument Co., Inc., 926 Clarkson Ave., Brooklyn 3, N. Y.

Feiler Engineering Co., 803 Milwaukee Ave., Chicago 22, Ill.

General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
See Advertisement on Page 90

General Electric Co., Syracuse, N. Y.  
See Advertisements on Pages 96, 96A

Jackson Electrical Instrument Co., 16 S. Patterson Blvd., Dayton 1, Ohio

Littelfuse Inc., 4757 Ravenswood Ave., Chicago 40, Ill.  
See Advertisement on Page 43

Martindale Electric Co., Box 617 Edgewater Branch, Cleveland 7, Ohio

Measurement Engineering Ltd., 61 Duke St., Toronto, Can.  
See Advertisement on Page 193

Meters, Inc., 915 Riveria Dr., Indianapolis 5, Ind.

Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.

Precision Apparatus Co., 92-27 Horace Harding Blvd., Elmhurst, N. Y.

Radio City Products, 127 W. 26th St., New York, N. Y.

Radio Corp. of America, Tube Div., Harrison, N. J.  
See Advertisements on Inside Back Cover & Back Cover, 251

Supreme Instruments Corp., Greenwood, Miss.

Westinghouse Electric Corp., Meter Div., Newark, N. J.

Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.

**TESTERS—Coating Thickness**

American Instrument Co., 8030 Georgia Ave., Silver Springs, Md.

Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.

**TESTERS—Coil**

Assembly Products, Inc., Chagrin Falls, Ohio

Electric Heat Control Co., 9123 Inman Ave., Cleveland 5, Ohio

Feiler Engineering Co., 803 Milwaukee Ave., Chicago 22, Ill.

General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C

Industrial Instruments Inc., 17 Pollack Ave., Jersey City 5, N. J.

Kartron, Inc., 821A South 4th St., Alhambra, Calif.

Pioneer Electric & Research Corp., The, Forest Park, Ill.

Weston Electrical & Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.

Wheeler Laboratories, Inc., 259-09 Northern Blvd., Great Neck, N. Y.

Wilmotte Mfg. Co., 1713 Kalorama Rd., N-W, Washington 9, D. C.

**TESTERS—Continuity**

Assembly Products, Inc., Chagrin Falls, Ohio

Dayton Acme Co., 930 York St., Cincinnati 14, Ohio

Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska

Feiler Engineering Co., 803 Milwaukee Ave., Chicago 22, Ill.

Measurement Engineering Ltd., 61 Duke St., Toronto, Can.  
See Advertisement on Page 193

Meters, Inc., 915 Riveria Dr., Indianapolis 5, Ind.

Robson-Burgess Co., 5002 N. 30th St., Omaha 11, Nebraska

Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.

Supreme Instruments Corp., Greenwood, Miss.

Technical Apparatus Co., 167 Washington St., Boston 8, Mass.

Thermionic Engineering Corp., Pompton Plains, N. J.

Triplet Electrical Instrument Co., 286 Harmon Road, Bluffton, Ohio

Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.

## TESTERS—Crystal Testing

Crystal Research Labs. Inc., 29 Allyn St., Hartford, Conn.  
 Monitor Products Co., 815 Fremont St., So. Pasadena, Calif.  
 Panoramic Radio Corp., 242 W. 55th St., New York 19, N. Y.  
 Radio Specialty Mfg. Co., 2023 S. E. Sixth Ave., Portland 14, Ore.  
 Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.  
 Telicon Corp., 851 Madison Ave., New York 21, N. Y.

## TESTERS—Ink Penetration

Tech Laboratories, 337 Central Ave., Jersey City, N. J.

## TESTERS—Insulation

Amplifier Corp. of America, 396 Broadway, New York, N. Y.  
 Associated Research, Inc., 231 S. Green St., Chicago 7, Ill.  
 Biddle Co., Jas. G., 1316 Arch St., Philadelphia 7, Pa.  
 Boonton Radio Corp., Boonton, N. J.  
     See Advertisement on Page 205  
 Cinema Enginering Co., 1508 W. Verdugo Ave., Burbank, Calif.  
 Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska  
 Electronic Measurements Co., Red Bank, N. J.  
     See Advertisement on Page 68  
 Freed Transformer Co., 72 Spring St., New York 12, N. Y.  
     See Advertisement on Page 253  
 General Electric Co., Schenectady 5, N. Y.  
     See Advertisements on Pages 96B, 96C  
 Hazeltine Electronics Corp., 1775 Broadway, New York, N. Y.  
 Holtzer-Cabot, Div. of First Industrial Corp., 125 Amory St., Boston, Mass.  
 Ideal Industries Inc., Park & Borden Avenues, Sycamore, Ill.  
 Industrial Instruments Inc., 17 Pollack Ave., Jersey City 5, N. J.  
 Industrial Transformer Corp., 2510 Belmont Ave., New York, N. Y.  
     See Advertisement on Page 188  
 La Rose & Associates, W. T., 646 Second Ave., Troy, N. Y.  
 Leeds & Northrup Co., 4970 Stenton Ave., Philadelphia 44, Pa.  
 Lyman Electronic Corp., 12 Cass St., Springfield, Mass.  
 MacLeod & Hanopol, 24 Chelsea St., Charlestown 29, Mass.  
 Measurements Corp., Boonton, N. J.  
     See Advertisement on Page 56  
 Nilsson Electrical Lab., Inc., 103 Lafayette St., New York 13, N. Y.  
 Radio City Products Co., 127 W. 26th St., New York, N. Y.  
 Radio Frequency Labs., Inc., Boonton, N. Y.  
 Reiner Electronics Co., 152 W. 25th St., New York, N. Y.  
 Rubicon Co., 3751 Ridge Ave., Phila., Pa.  
 Shallcross Mfg. Co., 10 Jackson Ave., Colingdale, Pa.  
 Standard Electrical Products Co., Dayton 3, Ohio  
 Sticht Co., Inc., Herman H., 27 Park Pl., New York 7, N. Y.  
 Superior Instruments Co., 227 Fulton St., New York 7, N. Y.  
 Takk Corp., Newark, Ohio  
 Thermionic Engineering Corp., Pompton Plains, N. J.  
 United Transformer Corp., 150 Varick St., New York 13, N. Y.  
     See Advertisement on Inside Front Cover  
 Weston Electrical Instrument Corp., 618 Frelinghuysen Ave., Newark 5, N. J.  
 Winslow Co., The, 9 Liberty St., Newark 5, N. J.

## TESTERS—Meter

Eastern Specialty Co., Philadelphia 40, Pa.  
 Electro-Mechanical Instrument Co., 812 Chestnut St., Perkasie, Pa.  
 Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska  
 Electronic Measurements Co., Red Bank, N. J.  
     See Advertisement on Page 68  
 Marion Electrical Instrument Co., Manchester, N. H.

Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
 Mobile Communications Co., 202 East Fourth St., Long Beach 2, Calif.  
 Radio City Products, 127 W. 26th St., New York, N. Y.  
 Reiner Electronics Co., 152 W. 25th St., New York, N. Y.  
 Rubicon Co., 3751 Ridge Ave., Philadelphia, Pa.  
 States Co., 19 New Park Ave., Hartford 6, Conn.  
 Triplett Electrical Instrument Co., 286 Harmon Road, Bluffton, Ohio  
 Weston Electrical Instrument Corp., 618 Frelinghuysen Ave., Newark 5, N. Y.

## TESTERS—Microwave Radar Testing Equipment

Aircraft Radio Corp., Boonton, N. J.  
     See Advertisement on Page 185  
 Cover Dual Signal Systems, Inc., Div. of Electra Voice Corp., 5215-25 Ravenswood Ave., Chicago 40, Ill.  
 DeMornay-Budd Inc., 475 Grand Concourse, New York 51, N. Y.  
     See Advertisement on Page 171  
 Diamond Instrument Co., North Ave., Wakefield, Mass.  
 Electronic Measurements Co., Red Bank, N. J.  
     See Advertisement on Page 68  
 General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
 Hazeltine Electronics Corp., 1775 Broadway, New York, N. Y.  
 Rollin Co., 2070 N. Fair Oaks Ave., Pasadena 3, Calif.  
 Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
     See Advertisements on Pages 80A, 80B  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
     See Advertisements on Pages 158 to 161  
 Televiso Products, Inc., 7466 West Irving Park Road, Chicago 34, Ill.

## TESTERS—Moisture Detection

Delmhorst Instrument Co., 115 Cornelia St., Boonton, N. J.  
 Illinois Testing Labs., Inc., 420 N. LaSalle St., Chicago 10, Ill.  
 Industrial Instruments Inc., 17 Pollack Ave., Jersey City 5, N. J.  
 Sidward Mfg. Co., Inc., 261 Broadway, New York 7, N. Y.

## TESTERS—Radar Tube

Aircraft Radio Corp., Boonton, N. J.  
     See Advertisement on Page 185  
 General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
     See Advertisements on Pages 80A, 80B  
 Televiso Products Inc., 7466 West Irving Park Rd., Chicago 34, Ill.

## TESTERS—Transconductance Tube

Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
 Precision Apparatus Co., 92-27 Horace Harding Blvd., Elmhurst, N. Y.  
 Radio City Products, 127 W. 26th St., New York, N. Y.  
 Sensitive Research Instrument Co., 9 Elm Ave., Mt. Vernon, N. Y.  
 Supreme Instruments Corp., Greenwood, Miss.  
 Technical Apparatus Co., 167 Washington St., Boston 8, Mass.  
 Triplett Electrical Instrument Co., 286 Harmon Rd., Bluffton, Ohio  
 Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.

## TESTERS—Voltage Neon

Assembly Products, Inc., Chagrin Falls, Ohio  
 Dante Electric Mfg. Co., Bantam, Conn.

Fordham Mfg. Co., 2736 Creston Ave., New York 58, N. Y.  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
     See Advertisement on Page 90  
 Haydu Bros., Plainfield, N. J.  
 Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
 Minerallic Electric Co., 25 N Peoria St., Chicago, Ill.  
 Standard Electrical Products Co., Dayton 3, Ohio  
 Superior Instruments Co., 227 Fulton St., New York 7, N. Y.

## THERMOCOUPLES

American Thermo Electric Co., 67 E. 8th St., New York 3, N. Y.  
 Ballantine Labs., Inc., Boonton, N. J.  
     See Advertisement on Page 42  
 Bird Electronic Corp., 1800 E. 38th St., Cleveland 14, Ohio  
 Bristol Co., The, Waterbury 91, Conn.  
 Brown Instrument Co., 4428 Wayne Ave., Philadelphia 44, Pa.  
 Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska  
 Elematic Equipment Corp., 6046 S. Wentworth Ave., Chicago 21, Ill.  
 Foxboro Co., Foxboro, Mass.  
 General Controls Co., 801 Allen Ave., Glendale, Calif.  
 General Electric Co., Schenectady 5, N. Y.  
     See Advertisements on Pages 96B, 96C  
 General Electronics, Inc., 101 Hazel St., Paterson, N. J.  
 Gordon Co., Claud S., 3000 S. Wallace St., Chicago 16, Ill.  
 Illinois Testing Labs., Inc., 420 N. LaSalle St., Chicago 10, Ill.  
 J B T Instruments Inc., 441 Chapel St., New Haven 8, Conn.  
 Lewis Engineering Co., 52 Rubber Ave., Naugatuck, Conn.  
 Measurement Engineering Ltd., 61 Duke St., Toronto, Can.  
     See Advertisement on Page 193  
 Precision Tube Co., 3828 Terrace St., Philadelphia 28, Pa.  
     See Advertisement on Page 218  
 Pyrometer Instrument Co., 103 Lafayette St., New York, N. Y.  
 Rawson Electrical Instrument Co., 110 Potter St., Cambridge 42, Mass.  
     See Advertisement on Page 244  
 Richards, Co., Inc., Arklay S., 78 Winchester St., Newton Highlands 61, Mass.  
 Roller-Smith, Bethlehem, Pa.  
     See Advertisement on Page 214  
 Scientific Service Lab., Subsidiary of Electronics, Inc., 915 Meridian Ave., South Pasadena, Calif.  
 Sensitive Research Instrument Co., 9 Elm Ave., Mt. Vernon, N. Y.  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
     See Advertisements on Pages 158 to 161  
 Tagliabue Division, C. J., Portable Products Corp., 550 Park Ave., Brooklyn 5, N. Y.  
 Thwing-Albert Instrument Co., 5351 Pulaski Ave., Philadelphia 44, Pa.  
 Westinghouse Electric Corp., Meter Div., Newark, N. J.  
 Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.  
 Wheelco Instruments Co., 647 W. Harrison St., Chicago 7, Ill.  
 Winslow Co., The, 9 Liberty St., Newark 5, N. J.  
 Xervac Instrument Co., 101 Vine St., Hartford 5, Conn.

**THERMOCOUPLES—Pyrometric**

Bristol Co., The, Waterbury 91, Conn.  
 Brown Instrument Co., 4428 Wayne Ave., Philadelphia 44, Pa.  
 Elematic Equipment Corp., 6046 S. Wentworth Ave., Chicago 21, Ill.  
 Foxboro Co., Foxboro, Mass.  
 General Electronics, Inc., 101 Hazel St., Paterson, N. J.  
 Gordon Co., Claud S., 3000 S. Wallace St., Chicago 16, Ill.  
 Illinois Testing Labs., Inc., 420 N. LaSalle St., Chicago 10, Ill.  
 Leeds & Northrup Co., 4970 Stenton Ave., Philadelphia, Pa.  
 Meters, Inc., 915 Riveria Dr., Indianapolis 5, Ind.  
 Pyrometer Instrument Co., 103 Lafayette St., New York, N. Y.  
 Roller-Smith, Bethlehem, Pa.  
     See Advertisement on Page 214  
 Thwing-Albert Instrument Co., 5351 Pulaski Ave., Philadelphia 44, Pa.

Wheelco Instruments Co., 647 W. Harrison St., Chicago 7, Ill.  
Winslow Co., The, 9 Liberty St., Newark 5, N. J.

**THERMOMETERS—Platinum Contact**

Bailey Meter Co., 1044 Ivanhoe Rd., Cleveland 10, Ohio  
Gordon Co., Claud S., 3000 S. Wallace St., Chicago 16, Ill.  
Illinois Testing Labs., Inc., 420 N. LaSalle St., Chicago 10, Ill.  
Weksler Thermometer Corp., 52 W. Houston St., New York, N. Y.

**THERMOMETERS—Resistance**

Assembly Products, Inc., Chagrin Falls, Ohio  
Bailey Meter Co., 1044 Ivanhoe Rd., Cleveland 10, Ohio  
Breeze Corp., 41 S. 6th St., Newark, N. J.  
Bristol Co., The, Waterbury 91, Conn.  
Brown Instrument Co., 4428 Wayne Ave., Philadelphia 44, Pa.  
Foxboro Co., Foxboro, Mass.  
General Electric Co., Schenectady 5, N. Y. See Advertisements on Pages 96B, 96C  
Gordon Co., Claud S., 3000 S. Wallace St., Chicago 16, Ill.  
Illinois Testing Labs., Inc., 420 N. LaSalle St., Chicago 10, Ill.  
Leeds & Northrup Co., 4970 Stenton Ave., Philadelphia, Pa.  
Lewis Engineering Co., 52 Rubber Ave., Naugatuck, Conn.  
Precision Resistor Co., 334 Badge Ave., Newark 8, N. J.  
Tagliabue Division, C. J., Portable Products Corp., 550 Park Ave., Brooklyn 5, N. Y.  
Thwing-Albert Instrument Co., 5351 Pulaski Ave., Philadelphia 44, Pa.  
United Condenser Corp., 422 E. 138th St., New York 54, N. Y.  
Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.  
Wheelco Instruments Co., 647 W. Harrison St., Chicago 7, Ill.  
Winslow Co., The, 9 Liberty St., Newark 5, N. J.

**THERMOPILES**

Bird Electronic Corp., 1800 E. 38th St., Cleveland 14, Ohio  
Eppley Lab., Inc., The, Newport, R. I.  
Illinois Testing Labs., Inc., 420 N. LaSalle St., Chicago 10, Ill.  
Jarrell-Ash Co., 165 Newbury St., Boston 16, Mass.  
National Technical Lab., 820 Mission St., South Pasadena, Calif.  
Pyrometer Instrument Co., 103 Lafayette St., New York, N. Y.

**THYRATRONS**

See Tubes

**TIMERS—Automatic Cycle**

Adams & Westlake Co., Michigan St., Elkhart, Ind.  
Allied Control Co., Inc., 2 East End Ave., New York 21, N. Y. See Advertisement on Page 221  
Ansonja Clock Co., Inc., 103 Lafayette St., New York 13, N. Y.  
Barber-Colman Co., River & Loomis Sts., Rockford, Ill.  
Cramer Co., R. W., Centerbrook, Conn. See Advertisement on Page 233  
Cutler-Hammer, Inc., 315 North 12th Street, Milwaukee 1, Wisc.  
D. & M. Manufacturing Co., 2 Delford Ave., Bergenfield, N. J.  
Diamond Instrument Co., North Ave., Wakefield, Mass.  
Eagle Signal Corp., Moline, Ill.  
Electronic Control Corp., 1573 E. Forest St., Detroit, Mich.  
Electronic Controls, 44 Summer Ave., Newark, N. J.  
Fisher-Pierce Co., 70 Ceylon St., Boston 21, Mass. See Advertisement on Page 163  
Foxboro Co., Foxboro, Mass.

General Control Co., 1200 Soldiers Field Rd., Boston 34, Mass.  
General Electric Co., Schenectady 5, N. Y. See Advertisements on Pages 96B, 96C  
Gorrell & Gorrell, Haworth, N. J.  
Haydon Co., A. W., The, Waterbury 32, Conn.  
Haydon Mfg. Co., Inc., Forestville, Conn.  
Langevin Co., Inc., The, Industrial Control Div., 37 W. 65th St., New York 23, N. Y.  
Lektra Labs., 30 E. 10th St., New York, N. Y.  
Lumenite Electric Co., 407 S. Dearborn St., Chicago, Ill.  
Minneapolis-Honeywell Regulator Co., 2753 Fourth Ave., S., Minneapolis, Minn.  
Paragon Electric Co., 37 W. Van Buren St., Chicago 5, Ill.  
Photoswitch, Inc., 77 Broadway, Cambridge 42, Mass.  
Potter & Brumfield Mfg. Co., 617 N. Gibson St., Princeton, Ind.  
Reynolds Electric Co., 2560 W. Congress St., Chicago 12, Ill.  
Rowe Radio Research Laboratory Co., 2422 N. Pulaski Rd., Chicago 39, Ill.  
Self Winding Clock Co., 205 Willoughby Ave., Brooklyn 5, N. Y.  
Tork Clock Co., 1 Grove St., Mt. Vernon, N. Y.  
White-Rodgers Electric Co., 1209 Cass Ave., St. Louis 6, Mo.

**TIMERS—Automatic Interval**

Adams & Westlake Co., Michigan St., Elkhart, Ind.  
Allied Control Co., Inc., 2 East End Ave., New York 21, N. Y. See Advertisement on Page 221  
Aurex Corp., 1117 N. Franklin St., Chicago, Ill.  
Claroat Mfg. Co., Inc., 285-7 6th St., Brooklyn, N. Y.  
Cramer Co., R. W., Centerbrook, Conn. See Advertisement on Page 233  
D. & M. Manufacturing Co., 2 Delford Ave., Bergenfield, N. J.  
Eagle Signal Corp., Moline, Ill.  
Edison, Inc., Thomas A., Instrument Div., West Orange, N. J. See Advertisement on Page 18  
Electronic Associates, Inc., 61 Brighton Ave., Long Branch, N. J.  
Electronic Controls, Inc., 44 Summer Ave., Newark, N. J.  
Electronic Engineers, 1039-B Pacific St., Santa Monica, Calif.  
Fisher-Pierce Co., 70 Ceylon St., Boston 21, Mass. See Advertisement on Page 163  
General Electric Co., Schenectady 5, N. Y. See Advertisements on Pages 96B, 96C  
Gorrell & Gorrell, Haworth, N. J.  
Haydon Co., A. W., The, Waterbury 32, Conn.  
Industrial Timer Corp., 115 Edison Pl., Newark 5, N. J.  
Instrument Development Labs., 817 E. 55th St., Chicago 15, Ill.  
Kay Electric Co., 34 Marshall St., Newark, N. J. See Advertisement on Page 184  
Kelley-Koett Mfg. Co., Inc., The, Covington, Ky.  
Langevin Co., Inc., The, Industrial Control Div., 37 W. 65th St., New York 23, N. Y.  
Lektra Labs., 30 E. 10th St., New York, N. Y.  
Lumenite Electric Co., 407 S. Dearborn St., Chicago, Ill.  
Paragon Electric Co., 37 W. Van Buren St., Chicago 5, Ill.  
Photoswitch, Inc., 77 Broadway, Cambridge 42, Mass.  
Potter & Brumfield Mfg. Co., 617 N. Gibson St., Princeton, Ind.  
Potter Instrument Co., 136-56 Roosevelt Ave., Flushing, N. Y. See Advertisement on Page 243  
Radio Corp. of America, RCA Victor Div., Camden, N. J.  
See Advertisements on Inside Back Cover & Back Cover, 251  
Reliance Automatic Lighting Co., 1927 Mead St., Racine, Wisc.  
Reynolds Electric Co., 2560 W. Congress St., Chicago 12, Ill.  
Rhodes Inc., M. A., 30 Bartholomew Ave., Hartford, Conn.  
Rowe Radio Research Laboratory, 2422 N. Pulaski Rd., Chicago 29, Ill.  
Self Winding Clock Co., 205 Willoughby Ave., Brooklyn 5, N. Y.  
Signal Engineering & Manufacturing Co., 154 W. 14th St., New York, N. Y. See Advertisement on Page 254  
Tech Labs., 337 Central Ave., Jersey City, N. J.  
Technical Devices Corp., Beaufort & Eagle Rock Ave., Roseland, N. J.  
Telechron Inc., Homer Ave., Ashland, Mass.

Tork Clock Co., 1 Grove St., Mt. Vernon, N. Y.  
Tracerlab Inc., 55 Oliver St., Boston 10, Mass.  
Tricon Mfg. Co., 8318 S. Racine Ave., Chicago, Ill.  
United Condenser Corp., 422 E. 138th St., New York 54, N. Y.  
Walser Automatic Timer Co., 420 Lexington Ave., New York, N. Y.

**TIMERS—Automatic Reset**

Allied Control Co., Inc., 2 East End Ave., New York 21, N. Y. See Advertisement on Page 221  
Bostonian Process Co., 40 W. 13th St., New York 11, N. Y.  
Cramer Co., R. W., Centerbrook, Conn. See Advertisement on Page 233  
D. & M. Manufacturing Co., 2 Delford Ave., Bergenfield, N. J.  
Eagle Signal Corp., Moline, Ill.  
Fisher-Pierce Co., 70 Ceylon St., Boston 21, Mass. See Advertisement on Page 163  
General Control Co., 1200 Soldiers Field Rd., Boston 34, Mass.  
General Electric Co., Schenectady 5, N. Y. See Advertisements on Pages 96B, 96C  
Gorrell & Gorrell, Haworth, N. J.  
Haydon Co., A. W., The, Waterbury 32, Conn.  
Haydon Mfg. Co., Inc., Forestville, Conn.  
Hetherington & Son Inc., Robert, Sharon Hill, Pa.  
Industrial Timer Corp., 115 Edison Pl., Newark 5, N. J.  
Langevin Co., Inc., The, Industrial Control Div., 37 W. 65th St., New York 23, N. Y.  
Lumenite Electric Co., 407 S. Dearborn St., Chicago, Ill.  
Paragon Electric Co., 37 W. Van Buren St., Chicago 5, Ill.  
Photoswitch, Inc., 77 Broadway, Cambridge 42, Mass.  
Reliance Automatic Lighting Co., 1927 Mead St., Racine, Wisc.  
Reynolds Electric Co., 2560 W. Congress St., Chicago 12, Ill.  
Ripley Co., Torrington, Conn.  
Ulanet Co., George, 88 E. Kinney St., Newark 5, N. J.  
Zenith Electric Co., 152 W. Walton St., Chicago, Ill.

**TIMERS—Hour Counting**

Cramer Co., R. W., Centerbrook, Conn. See Advertisement on Page 233  
General Electric Co., Schenectady 5, N. Y. See Advertisements on Pages 96B, 96C  
Gorrell & Gorrell, Haworth, N. J.  
Haydon Co., A. W., The, Waterbury 32, Conn.  
Lektra Labs., 30 E. 10th St., New York, N. Y.  
Monroe Coil Co., 2659 W. 19th St., Chicago, Ill.  
National Instrument Co., 246 Walnut St., Newtonville 60, Mass.  
Potter & Brumfield Mfg. Co., 617 N. Gibson St., Princeton, Ind.  
Westinghouse Electric Corp., Meter Div., Newark, N. J.

**TIMERS—Impulse**

Atomic Instrument Co., 160 Charles St., Boston, Mass.  
Cramer Co., R. W., Centerbrook, Conn. See Advertisement on Page 233  
Eagle Signal Corp., Moline, Ill.  
Fisher-Pierce Co., 70 Ceylon St., Boston 21, Mass. See Advertisement on Page 163  
Hartman Electrical Mfg. Co., 175 N. Diamond St., Mansfield, Ohio  
Haydon Co., A. W., The, Waterbury 32, Conn.  
Industrial Timer Corp., 115 Edison Pl., Newark 5, N. J.  
Kelley-Koett Mfg. Co. Inc., The, Covington, Ky.  
Potter Instrument Co., 136-56 Roosevelt Ave., Flushing, N. Y. See Advertisement on Page 243  
Ripley Co., Torrington, Conn.  
Self-Winding Clock Co., 205 Willoughby Ave., Brooklyn 5, N. Y.

**TIMERS—Inertia**

Struthers-Dunn, Inc., 150 N. 13th St., Philadelphia 7, Pa.

## TIMERS—Motor Operated

Ansonia Clock Co., Inc., 103 Lafayette St., New York 13, N. Y.  
 Barber Colman Co., River & Loomis Sts., Rockford, Ill.  
 Clarostat Mfg. Co., Inc., 285-7 6th St., Brooklyn, N. Y.  
 Cramer Co., R. W., Centerbrook, Conn.  
 See Advertisement on Page 233  
 Eagle Signal Corp., Moline, Ill.  
 Electrodyne Co., The, 899 Boylston St., Boston 15, Mass.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Gorrell & Gorrell, Haworth, N. J.  
 Haydon Co., A. W., The, Waterbury 32, Conn.  
 Haydon Mfg. Co., Inc., Forestville, Conn.  
 Industrial Timer Corp., 115 Edison Pl., Newark 5, N. J.  
 Lumenite Electric Co., 407 S. Dearborn St., Chicago, Ill.  
 Paragon Electric Co., 37 W. Van Buren St., Chicago 5, Ill.  
 Potter & Brumfield Mfg. Co., 617 N. Gibson St., Princeton, Ind.  
 Reynolds Electric Co., 2560 W. Congress St., Chicago 12, Ill.  
 Self Winding Clock Co., 205 Willoughby Ave., Brooklyn 5, N. Y.  
 Telechron Inc., Homer Ave., Ashland, Mass.  
 Tork Clock Co., 1 Grove St., Mt. Vernon, N. Y.  
 Ward Leonard Electric Co., 31 South St., Mt. Vernon, N. Y.  
 See Advertisement on Page 175  
 White-Rodgers Electric Co., 1209 Cass Ave., St. Louis 6, Mo.

## TIMERS—Multicontact

Allied Control Co., Inc., 2 East End Ave., New York 21, N. Y.  
 See Advertisement on Page 221  
 Cramer Co., R. W., Centerbrook, Conn.  
 See Advertisement on Page 233  
 Eagle Signal Corp., Moline, Ill.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Gorrell & Gorrell, Haworth, N. J.  
 Haydon Co., A. W., The, Waterbury 32, Conn.  
 Industrial Timer Corp., 115 Edison Pl., Newark 5, N. J.  
 Paragon Electric Co., 37 W. Van Buren St., Chicago 5, Ill.  
 Potter & Brumfield Mfg. Co., 617 N. Gibson St., Princeton, Ind.  
 Tork Clock Co., 1 Grove St., Mt. Vernon, N. Y.  
 Westinghouse Electric Corp., Meter Div., Newark, N. J.

## TIMERS—Percentage

Cramer Co., R. W., Centerbrook, Conn.  
 See Advertisement on Page 233  
 Eagle Signal Corp., Moline, Ill.  
 Paragon Electric Co., 37 W. Van Buren St., Chicago 5, Ill.

## TIMERS—Photoelectric

Electric Eye Equipment Co., 16 W. Fairchild St., Danville, Ill.  
 Electronic Instrument Co., Inc., 926 Clarkson Ave., Brooklyn 3, N. Y.  
 Electronic Mechanical Products Co., 13-15-17 N. Virginia Ave., Atlantic City, N. J.  
 Fisher-Pierce Co., 70 Ceylon St., Boston 21, Mass.  
 See Advertisement on Page 163  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Langevin Co. Inc., The, Industrial Control Div., 37 W. 65th St., New York 23, N. Y.  
 Photoswitch, Inc., 77 Broadway, Cambridge 42, Mass.  
 Pho Tron Instrument Co., 5713 Euclid Ave., Cleveland, Ohio  
 Potter Instrument Co., 136-56 Roosevelt Ave., Flushing, N. Y.  
 See Advertisement on Page 243  
 Rhodes Inc., M. H., 30 Bartholomew Ave., Hartford, Conn.  
 Ripley Co., Torrington, Conn.  
 Wilson & Co., G. C., 2 N. Passaic Ave., Chatham, N. J.

## TIMERS—Sequence

Adams & Westlake Co., Michigan St., Elkhart, Ind.

Allied Control Co. Inc., 2 East End Ave., New York 21, N. Y.  
 See Advertisement on Page 221  
 Control Corp., 718 Central Ave., Minneapolis 14, Minn.  
 Cramer Co., R. W., Centerbrook, Conn.  
 See Advertisement on Page 233  
 Eagle Signal Corp., Moline, Ill.  
 Electronic Controls, Inc., 44 Summer Ave., Newark, N. J.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Haydon Co., A. W., The, Waterbury 32, Conn.  
 Haydon Mfg. Co., Inc., Forestville, Conn.  
 Industrial Timer Corp., 115 Edison Pl., Newark 5, N. J.  
 Langevin Co. Inc., The, Industrial Control Div., 37 W. 65th St., New York 23, N. Y.  
 Paragon Electric Co., 37 W. Van Buren St., Chicago 5, Ill.  
 Photoswitch, Inc., 77 Broadway, Cambridge 42, Mass.  
 Ripley Co., Torrington, Conn.  
 Self Winding Clock Co., 205 Willoughby Ave., Brooklyn 5, N. Y.  
 Serdex, Inc., 91 Cambridge St., Boston, Mass.  
 Tricon Mfg. Co., 8318 S. Racine Ave., Chicago, Ill.  
 Westinghouse Electric Corp., Meter Div., Newark, N. J.  
 Westinghouse Electric Corp., Motor Div., Buffalo, N. Y.

## TIMERS—Thermal

Edison, Inc., Thomas A., Instrument Div., West Orange, N. J.  
 See Advertisement on Page 18  
 General Controls Co., 801 Allen Ave., Glendale 1, Calif.  
 Lektra Labs., 30 E. 10th St., New York, N. Y.  
 Reynolds Electric Co., 2560 W. Congress St., Chicago 12, Ill.  
 Standard Electrical Products Co., Dayton 3, Ohio  
 Struthers-Dunn, Inc., 150 N. 13th St., Philadelphia 7, Pa.  
 Ulanet Co., George, 88 E. Kinney St., Newark 5, N. J.

## TIMERS—Welding

Bradley Co., Allen, 136 W. Greenfield Ave., Milwaukee 2, Wisc.  
 Clark Controller Co., The, 1146 E. 152nd St., Cleveland 10, Ohio  
 Cutler-Hammer, Inc., 315 No. 12th St., Milwaukee 1, Wisc.  
 Electronic Controls, Inc., 44 Summer Ave., Newark, N. J.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Langevin Co. Inc., The, Industrial Control Div., 37 W. 65th St., New York 23, N. Y.  
 Photoswitch, Inc., 77 Broadway, Cambridge 42, Mass.  
 Square D Co., 6060 Rivard St., Detroit 11, Mich.  
 Tricon Mfg. Co., 8318 S. Racine Ave., Chicago, Ill.  
 Weltron Co., 19500 West 8 Mile Rd., Detroit 19, Mich.  
 Westinghouse Electric Corp., Motor Div., Buffalo, N. Y.

## TITRATION APPARATUS

Baker Instrument Co., 310 Main St., Orange, N. J.  
 Fischer Scientific Co., 717 Forbes St., Pittsburgh 16, Pa.  
 Herbach & Rademan Inc., 517 Ludlow St., Philadelphia 6, Pa.  
 Precision Scientific Co., 1750 N. Springfield Ave., Chicago 47, Ill.

## TOOLS—Acetylene Soldering

Linde Air Products Co., Unit of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.  
 See Advertisements on Pages 38, 167  
 Torit Mfg. Co., Walnut & Exchange Sts., St. Paul 2, Minn.

## TOOLS—Resistance Soldering

Ideal Industries, Inc., Park & Borden Avenues, Sycamore, Ill.

Luma Electric Equipment Co., P. O. Box 132, Toledo 1, Ohio

## TOOLS—Screwdrivers and Small Insulated

Aerolite Electronic Hardware Corp., 24 Cliff St., Jersey City, N. J.  
 See Advertisement on Page 246  
 American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 Bonney Forge & Tool Works, Allentown, Pa.  
 Bridgeport Hardware Mfg. Corp., Iranistan Ave., Bridgeport, Conn.  
 Eastern Specialty Co., Philadelphia 40, Pa.  
 General Cement Mfg. Co., 919 Taylor, Rockford, Ill.  
 See Advertisement on Page 90  
 Greenlee Tool Co., 2136 12th St., Rockford, Ill.  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Metzger & Son, F. F., 2600 N. 6th St., Philadelphia 33, Pa.  
 O'Neil-Irwin Mfg. Co., 316 Eighth Ave. S., Minneapolis 15, Minn.  
 Park Metalware Co., 28 Bank St., Orchard Park, N. Y.  
 Scherr Co., Inc., George D., 200 Lafayette St., New York 12, N. Y.  
 Speedway Mfg. Co., 1834 South 52nd Ave., Cicero 50, Ill.  
 Standard Pressed Steel Co., Jenkintown, Pa.  
 See Advertisement on Page 204  
 Stanley Works, The, New Britain, Conn.  
 Stevens-Walden, Inc., 468 Shrewsbury St., Worcester, Mass.  
 Vaco Products Co., 317 E. Ontario St., Chicago 11, Ill.  
 Waterbury Companies, Inc., Waterbury 80, Conn.  
 Wyse Laboratories, 211 S. Ludlow St., Dayton 2, Ohio

## TOOLS—Soldering Guns

Baker-Phillips Co., 3057 Lyndale Ave. S., Minneapolis 8, Minn.  
 Wyse Labs., 211 S. Ludlow St., Dayton 2, Ohio

## TRACERS, RADIOACTIVE

See Isotopes

## TRACERS—Signal

Aermotive Equipment Corp., 1632-8 Central St., Kansas City 10, Mo.  
 Dayton Acme Co., 930 York St., Cincinnati 14, Ohio  
 Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska  
 Electronic Instrument Co., 926 Clarkson Ave., Brooklyn 3, N. Y.  
 Feller Engineering Co., 803 Milwaukee Ave., Chicago 22, Ill.  
 Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland, Ohio  
 Hillburn Electronic Products Co., 1 Worth St., New York 13, N. Y.  
 H-W Mfg. Co., P. O. Box 1781, Los Angeles 28, Calif.  
 Jackson Electrical Instrument Co., 16 S. Paterson Blvd., Dayton 1, Ohio  
 McMurdo Silver Co., 1249 Main St., Hartford 3, Conn.  
 Meissner Mfg. Div., Maguire Industries, Inc., Mt. Carmel, Ill.  
 Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
 Omicron Electric Co., 718 Columbus Ave., New York 25, N. Y.  
 Radio City Products Co., 127 W. 26th St., New York, N. Y.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Reiner Electronics Co., 152 W. 25th St., New York, N. Y.  
 Superior Instruments Co., 227 Fulton St., New York 7, N. Y.  
 Supreme Instruments Corp., Greenwood, Miss.  
 Waterman Products Co., Inc., 2445-63 Emerald St., Phila. 25, Pa.  
 See Advertisement on Page 76

**TRANSCEIVERS—Aviation**

Bassett Inc., Rex, 500 SE 2nd St., Ft. Lauderdale, Fla.  
 Belmont Radio Co., Div. Raytheon Mfg. Co., 5921 Dickens Ave., Chicago 39, Ill.  
 Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
 Collins Radio Co., Cedar Rapids, Iowa  
 See Advertisements on pages 30 to 33  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Hallcrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Radio Mfg. Engineers Inc., Peoria, Ill.  
 Ripley Co., Torrington, Conn.  
 Rowe Radio Research Labs., 2422 N. Pulaski Rd., Chicago 39, Ill.  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89

**TRANSCEIVERS—Back-Pack**

Gross Communications Prods., 1865-71 Prospect Ave., Cleveland 15, Ohio  
 Radio Specialty Mfg. Co., 2023 SE Sixth Ave., Portland 14, Ore.

**TRANSCEIVERS—Hand-Pack**

Gross Communication Products, 1865-71 Prospect Ave., Cleveland 15, Ohio  
 Hallcrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Radio Specialty Mfg. Co., 2023 SE Sixth Ave., Portland 14, Ore.  
 Transmitter Equipment Co., Inc., 345 Hudson St., New York 14, N. Y.

**TRANSCEIVERS—Lifeboat**

Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
 Hallcrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Hose-McCann Telephone Co., 117 Pacific St., Brooklyn 2, N. Y.  
 McGrade Mfg. Co., Inc., E. W., 406 W. 34th St., Kansas City 2, Mo.  
 Radiomarine Corp. of America, 75 Varick St., New York 13, N. Y.

**TRANSCEIVERS—uhf**

Abbott Instrument, Inc., 8 W. 18th St., New York, N. Y.  
 Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
 Collins Radio Co., Cedar Rapids, Iowa  
 See Advertisements on Pages 30 to 33  
 Electronic Associates, Inc., 61 Brighton Ave., Long Branch, N. J.  
 Gross Communication Products, 1865-71 Prospect Ave., Cleveland 15, Ohio  
 Hallcrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Radio Specialty Mfg. Co., 2023 SE Sixth Ave., Portland 14, Ore.  
 Rowe Radio Research Lab., 2422 N. Pulaski Road, Chicago 39, Ill.

**TRANSCEIVERS—vhf**

Abbott Instrument, Inc., 8 W. 18th St., New York, N. Y.  
 Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
 Collins Radio Co., Cedar Rapids, Iowa  
 See Advertisements on Pages 30 to 33  
 Gross Communication Products, 1865-71 Prospect Ave., Cleveland 15, Ohio  
 Hallcrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Radio Specialty Mfg. Co., 2023 S. E. Sixth Ave., Portland 14, Ore.  
 Rowe Radio Research Lab. 2422 N. Pulaski Road, Chicago 39, Ill.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B

**TRANSFORMERS—Audio**

Acme Electric Corp., Cuba, N. Y.  
 Airdesign, Inc., 241 Fairfield Ave., Upper Darby, Pa.

Altec Lansing Corp., 1161 N. Vine St., Hollywood 38, Calif.  
 American Coil & Engineering Co., 1271 N. Hermitage Ave., Chicago 22, Ill.  
 American Transformer Co., 178 Emmett St., Newark, N. J.  
 Audio Development Co., 2833 13th Ave. S., Minneapolis 7, Minn.  
 See Advertisement on Page 26  
 Baxter and Turner Mfg. Co., 148 E. Larned St., Detroit 26, Mich.  
 Best Mfg. Co., Inc., 1200 Grove St., Irvington 11, N. J.  
 Chicago Transformer Div., Essex Wire Corp., 3501 W. Addison St., Chicago 18, Ill.  
 Columbus Process Co., Inc., State & Maple Sts., East Columbus, Ind.  
 Commercial Equipment Co., 1416 McGee St., Kansas City, Mo.  
 Control Corp., 718 Central Ave., Minneapolis 14, Minn.  
 D. & M. Manufacturing Co., 2 Delford Ave., Bergenfield, N. J.  
 Davis & Co., Dean W., Kentland, Ind.  
 Delco Radio Div., General Motors Corp., Kokomo, Ind.  
 Dinion Coil Co., Inc., Caledonia, N. Y.  
 See Advertisement on Page 166  
 Electran Mfg. Co., 4587 Elston Ave., Chicago 30, Ill.  
 Electrical Specialty Co., 2304 Washington St., Boston, Mass.  
 Electrical Windings, Inc., 201<sup>1</sup>/<sub>2</sub> N. Kolmar Ave., Chicago 39, Ill.  
 Electrocoil Transformer Co., 421 Canal St., New York 13, N. Y.  
 Electronic Engineering Co., Inc., 3223 W. Armitage Ave., Chicago, Ill.  
 See Advertisement on Page 38  
 Electronic Transformer Co., Inc., 207 W. 25th St., New York, N. Y.  
 Empire Coil Co., 233 Huguenot St., New Rochelle, N. Y.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 Ferranti Electric Inc., 30 Rockefeller Plaza, New York 20, N. Y.  
 See Advertisement on Page 196  
 Five Star Radio Co., 416 Broadway, Cambridge, Mass.  
 Foster Co., A. P., 719 Wyoming Ave., Lockland 15, Ohio  
 Freed Transformer Co., 72 Spring St., New York 12, N. Y.  
 See Advertisement on Page 253  
 General Aviation Equipment Co., Inc., 630 5th Ave., New York 20, N. Y.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 General Transformer Corp., 1250 W. Van Buren St., Chicago 7, Ill.  
 Goslin Electric & Mfg. Co., 2921 W. Olive St., Burbank, Calif.  
 See Advertisement on Page 180  
 Gramer Company, The, 2734 N. Pulaski Rd., Chicago 39, Ill.  
 Halldorson Co., The, 4500 Ravenswood Ave., Chicago 28, Ill.  
 Hercules Electric & Mfg. Co., Inc., 2500 Atlantic Ave., Brooklyn 7, N. Y.  
 Inductive Equipment Co., Gettysburg, Pa.  
 Industrial Transformer Corp., 2540 Belmont Ave., New York 58, N. Y.  
 See Advertisement on Page 188  
 International Transformer Co., 396 Broadway, New York, N. Y.  
 Intex Co., 303 W. 42nd St., New York 18, N. Y.  
 See Advertisement on Page 68  
 Islip Radio Mfg. Co., Beech St., Islip, N. Y.  
 Jefferson Electric Co., Bellwood, Ill.  
 Jensen Radio Mfg. Co., 6601 S. Laramie Ave., Chicago, Ill.  
 K-V Transformer Corp., 1697 First Ave., New York, N. Y.  
 Kenyon Transformer Co., 840 Barry St., New York 59, N. Y.  
 See Advertisements on Pages 149 to 152  
 Kyle Corp., South Milwaukee, Wis.  
 Langevin Co. Inc., 37 W. 65th St., New York, N. Y.  
 See Advertisement on Page 153  
 Lenkurt Electric Co., 1138 Howard St., San Francisco 3, Calif.  
 Magnavox Co., The, Fort Wayne 4, Ind.  
 Magnetic Devices Corp., 76-14 Woodside Ave., Elmhurst, N. Y.  
 Magnetic Products Corp., Norwalk, Conn.  
 Magnetic Windings Co., Div. of Essex Wire Corp., 416 South 16th St., Easton, Pa.  
 Maguire Industries Inc., Electronics Dept., Bridgeport, Conn.  
 Malco Co. Inc., 25 N. 3rd St., Minneapolis, Minn.  
 Marcus Transformer Co., 32-34 Montgomery St., Hillside 5, N. J.  
 Melco Products, Inc., 22 E. Hennepin Ave., Minneapolis 1, Minn.  
 See Advertisement on Page 223  
 Miller Co., B. F., Trenton 4, N. J.

New York Transformer Co., 62 William St., New York, N. Y.  
 New York Transformer Co., Alpha, N. J.  
 See Advertisement on Page 165  
 Newcomb Audio Products Co., 6824 Lexington Ave., Hollywood 38, Calif.  
 Osborne Transformer Corp., 948 E. Lafayette Ave., Detroit 7, Mich.  
 Peerless Electrical Products Co., 6920 McKinley Ave., Los Angeles 1, Calif.  
 Permoflux Corp., 4900 W. Grand Ave., Chicago, Ill.  
 Pickering & Co., Audio Labs., Oceanside, N. Y.  
 Precision Transformer Co., 733 W. Ohio St., Chicago 10, Ill.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover, Back Cover & 251  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 Radio Development & Research Co., 26 Cornellson Ave., Jersey City, N. J.  
 Radionic Controls, Inc., 3758 Belmont Ave., Chicago 18, Ill.  
 Raytheon Mfg. Co., Commercial Products Div., Waltham 54, Mass.  
 Red Arrow Electric Corp., 100 Coit St., Irvington, N. J.  
 Rola Co. Inc., 2530 Superior Ave., Cleveland, Ohio  
 S. N. C. Mfg. Co., Inc., Box 156, Glenview, Ill.  
 Sorensen & Co., 375 Fairfield Ave., Stamford, Conn.  
 See Advertisement on Page 154  
 Standard Electrical Products Co., Dayton 3, Ohio  
 Standard Transformer Corp., 1500 N. Halsted St., Chicago, Ill.  
 Super Electric Products Corp., 1057 Summit Ave., Jersey City, N. J.  
 See Advertisement on Page 86  
 Thermador Electric Mfg. Co., 5119 S. Riverside Drive, Los Angeles 22, Calif.  
 Thordarson Electric Mfg. Div., Maguire Industries, Inc., 500 W. Horn St., Chicago 10, Ill.  
 Transformer Engineers, 389 South Arroyo Parkway, Pasadena, Calif.  
 Transformer Products Inc., 143 W. 51st St., New York, N. Y.  
 Triad Transformer Mfg. Co., 423 N. Western Ave., Los Angeles 4, Calif.  
 United Transformer Corp., 150 Varick St., New York 13, N. Y.  
 See Advertisement on Inside Front Cover  
 University Loudspeakers, Inc., 225 Varick St., New York 14, N. Y.  
 Utah Radio Products Co., 820 Orleans St., Chicago, Ill.  
 Walsh Engineering Co., 34 DeHart Pl., Elizabeth, N. J.  
 Webster Electric Co., 1900 Clark St., Racine, Wis.  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89

**TRANSFORMERS—Auto**

Acme Electric Corp., Cuba, N. Y.  
 Airdesign, Inc., 241 Fairfield Ave., Upper Darby, Pa.  
 American Coil & Engineering Co., 1271 N. Hermitage Ave., Chicago 22, Ill.  
 American Transformer Co., 178 Emmett St., Newark, N. J.  
 Chicago Transformer Div., Essex Wire Corp., 3501 W. Addison St., Chicago 18, Ill.  
 Commercial Equipment Co., 1416 McGee St., Kansas City, Mo.  
 D. & M. Manufacturing Co., 2 Delford Ave., Bergenfield, N. J.  
 Davis & Co., Dean W., Kentland, Ind.  
 Dinion Coil Co., Inc., Caledonia, N. Y.  
 See Advertisement on Page 166  
 Dongan Electric Mfg. Co., 2937 Franklin St., Detroit, Mich.  
 Eisler Engineering Co., Inc., 740 S. 13th St., Newark 3, N. J.  
 Electrical Specialty Co., 2304 Washington St., Boston, Mass.  
 Electrocoil Transformer Co., 421 Canal St., New York 13, N. Y.  
 Electronic Transformer Co., Inc., 207 W. 25th St., New York, N. Y.  
 Five Star Radio Co., 416 Broadway, Cambridge, Mass.  
 Foster Co., A. P., 719 Wyoming Ave., Lockland 15, Ohio  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
 Gramer Company, The, 2734 N. Pulaski Rd., Chicago 39, Ill.  
 Gulow Corp., 99 Park Pl., New York 7, N. Y.

Inductive Equipment Co., Gettysburg, Pa.  
K-V Transformer Corp., 1697 First Ave.,  
New York, N. Y.

Kenyon Transformer Co., 840 Barry St.,  
New York 59, N. Y.

See Advertisements on Pages 149 to 152  
Langevin Co., Inc., 37 W. 65th St., New  
York, N. Y.

See Advertisement on Page 153  
Lenkurt Electric Co., 1138 Howard St., San  
Francisco 3, Calif.

Magnetic Devices Corp., 76-14 Woodside  
Ave., Elmhurst, N. Y.

Magnetic Products Corp., The, Norwalk,  
Conn.

Melco Products, Inc., 22 E. Hennepen Ave.,  
Minneapolis 1, Minn.

See Advertisement on Page 223  
Miller Co., B. F., Trenton 4, N. J.

Newark Transformer Co., 17 Frelinghuysen  
Ave., Newark 5, N. J.

New York Transformer Co., Alpha, N. J.  
See Advertisement on Page 165

New York Transformer Co., 62 William  
St., New York, N. Y.

Notthelfer Winding Labs., 111 Albemarle  
Ave., Trenton, N. J.

Osborne Transformer Corp., 948 E. Lafay-  
ette Ave., Detroit 7, Mich.

Radio Corp. of America, RCA Victor Div.,  
Camden, N. J.

See Advertisements on Inside Back Cover,  
Back Cover & 251

Radio Corp. of America, Tube Div., Harri-  
son, N. J.

Raytheon Mfg. Co., Power Tube Div., Wal-  
tham 54, Mass.

Red Arrow Electric Corp., 100 Coit St.,  
Irvington, N. J.

S.N.C. Mfg. Co., Inc., Box 156, Glenview,  
Ill.

Sorensen & Co., 375 Fairfield Ave., Stam-  
ford, Conn.

See Advertisement on Page 154  
Sorgel Electric Co., 838 W. National Ave.,  
Milwaukee 4, Wisc.

Standard Electrical Products Co., Dayton  
3, Ohio

Standard Transformer Corp., 1500 N. Hal-  
sted St., Chicago, Ill.

Superior Electric Co., 83 Laurel St., Bris-  
tol, Conn.

See Advertisements on Pages 5 to 16  
Thermador Electric Mfg. Co., 5119 S. River-  
side Dr., Los Angeles 22, Calif.

Thordarson Electric Mfg. Div., Maguire In-  
dustries, Inc., 500 W. Horn St., Chi-  
cago 10, Ill.

Transformer Products Inc., 143 W. 51st St.,  
New York, N. Y.

Triad Transformer Mfg. Co., 423 N. West-  
ern Ave., Los Angeles 4, Calif.

United Transformer Corp., 150 Varick St.,  
New York 13, N. Y.

See Advertisement on Inside Front Cover  
Western Electric Co., Inc., 195 Broadway,  
New York 7, N. Y.

See Advertisements on Pages 88, 89  
Westinghouse Electric Corp., Transformer  
Div., Sharon, Pa.

**TRANSFORMERS—Blocking Oscillator**

American Transformer Co., 178 Emmett  
St., Newark, N. J.

Burnell & Co., 45 Warburton Ave., Yon-  
kers 2, N. Y.

See Advertisement on Page 192  
Chicago Transformer Div., Essex Wire  
Corp., 3501 W. Addison St., Chicago  
18, Ill.

Davis & Co., Dean W., Kentland, Ind.  
Dietz Design & Mfg. Co., 5810 Park Ave.,  
Kansas City 4, Mo.

Electronic Transformer Co. Inc., 207 W.  
25th St., New York, N. Y.

Freed Transformer Co., 72 Spring St., New  
York 12, N. Y.

See Advertisement on Page 253  
Goslin Electric & Mfg. Co., 2921 W. Olive  
St., Burbank, Calif.

See Advertisement on Page 180  
K-V Transformer Corp., 1697 First Ave.,  
New York, N. Y.

Lenkurt Electric Co., 1138 Howard St., San  
Francisco 3, Calif.

Magnetic Products Corp., The, Norwalk,  
Conn.

New York Transformer Co., Alpha, N. J.  
See Advertisement on Page 165

Radio Corp. of America, RCA Victor Div.,  
Camden, N. J.

See Advertisements on Inside Back Cover,  
Back Cover & 251

Super Electric Products Corp., 1057 Sum-  
mit Ave., Jersey City, N. J.

See Advertisement on Page 253  
United Transformer Corp., 150 Varick St.,  
New York 13, N. Y.

See Advertisement on Inside Front Cover  
Westinghouse Electric Corp., Transformer  
Div., Sharon, Pa.

## TRANSFORMERS—Current

American Coil & Engineering Co., 1271 N.  
Hermitage Ave., Chicago 22, Ill.

Annis Co., R. B., 1101 N. Delaware St.,  
Indianapolis, Ind.

Assembly Products, Inc., Chagrin Falls,  
Ohio

Burlington Instrument Corp., 214 North  
4th St., Burlington, Iowa

Chicago Transformer Div., Essex Wire  
Corp., 3501 W. Addison St., Chicago 18,  
Ill.

Davis & Co., Dean W., Kentland, Ind.  
Electran Mfg. Co., 4587 Elston Ave.,  
Chicago 30, Ill.

Electronic Engineering Co., Inc., 3223 W.  
Armitage Ave., Chicago 47, Ill.

See Advertisement on Page 38  
Electronic Transformer Co., Inc., 207 W.  
25th St., New York, N. Y.

Esterline-Angus Co., Inc., P. O. Box 596,  
Indianapolis, Ind.

Federal Telephone and Radio Corp., 100  
Kingsland Rd., Clifton, N. J.

See Advertisements on Pages 48A to 48D  
Freed Transformer Co., 72 Spring St.,  
New York 12, N. Y.

See Advertisement on Page 253  
General Electric Co., Schenectady 5, N. Y.

See Advertisements on Pages 96B, 96C  
General Electronics, Inc., 101 Hazel St.,  
Paterson, N. J.

Inductive Equipment Co., Gettysburg, Pa.  
Instrument Electronics, 253-21 Northern  
Blvd., Little Neck, N. Y.

Lenkurt Electric Co., 1138 Howard St., San  
Francisco 3, Calif.

Magnetic Products Corp., The, Norwalk,  
Conn.

Melco Products, Inc., 22 E. Hennepen Ave.,  
Minneapolis 1, Minn.

See Advertisement on Page 223  
Miller Co., B. F., Trenton 4, N. J.

New York Transformer Co., 62 William  
St., New York, N. Y.

New York Transformer Co., Alpha, N. J.  
See Advertisement on Page 165

Notthelfer Winding Labs., 111 Albemarle  
Ave., Trenton, N. J.

Radio Corp. of America, RCA Victor Div.,  
Camden, N. J.

See Advertisements on Inside Back Cover,  
Back Cover & 251

Raytheon Mfg. Co., Power Tube Div., Wal-  
tham 54, Mass.

Red Arrow Electric Corp., 100 Coit St.,  
Irvington, N. J.

Scientific Service Lab., Subs. Electronics  
Inc., 915 Meridian Ave., South Pasa-  
dena, Calif.

Sorensen & Co., 375 Fairfield Ave., Stam-  
ford, Conn.

See Advertisement on Page 154  
Sorgel Electric Co., 838 W. National Ave.,  
Milwaukee 4, Wisc.

Standard Electrical Products Co., Dayton  
3, Ohio

Thordarson Electric Mfg. Div., Maguire In-  
dustries, Inc., 500 W. Horn St., Chi-  
cago 10, Ill.

Transformer Products, Inc., 143 W. 51st  
St., New York, N. Y.

United Transformer Corp., 150 Varick St.,  
New York 13, N. Y.

See Advertisement on Inside Front Cover  
Webster Electric Co., 1900 Clark St., Ra-  
cine, Wisc.

Westinghouse Electric Corp., Industrial  
Electronics Div., Baltimore, Md.

Westinghouse Electric Corp., Transformer  
Div., Sharon, Pa.

**TRANSFORMERS—Discriminator**

American Coil & Engineering Co., 1271 N.  
Hermitage Ave., Chicago 22, Ill.

Burnell & Co., 45 Warburton Ave., Yon-  
kers 2, N. Y.

See Advertisement on Page 192  
Davis & Co., Dean W., Kentland, Ind.

Dietz Design & Mfg. Co., 5810 Park Ave.,  
Kansas City 4, Mo.

Electronic Engineering Co., Inc., 3223 W.  
Armitage Ave., Chicago 47, Ill.

See Advertisement on Page 38  
Electronic Transformer Co., Inc., 207 W.  
25th St., New York, N. Y.

Essex Electronics, 1060 Broad St., New-  
ark 2, N. J.

See Advertisement on Page 241  
Freed Transformer Co., 72 Spring St.,  
New York 12, N. Y.

See Advertisement on Page 253  
Joyner Corp., The, 462 N. Parkside Ave.,  
Chicago 44, Ill.

Kraft & Kraft, Hicksville, N. Y.

Lenkurt Electric Co., 1138 Howard St., San  
Francisco 3, Calif.

Madison Electrical Products Div., John G.  
Ruckelshaus Co., 74 Main St., Madison,  
N. J.

Maguire Industries Inc., Electronics Dept.,  
Bridgeport, Conn.

Millen Mfg. Co., James, 150 Exchange St.,  
Malden, Mass.

See Advertisement on Page 44  
Monroe Coil Co., 2659 W. 19th St., Chi-  
cago, Ill.

Pioneer Electric & Research Corp., The,  
Forest Park, Ill.

Radio Corp. of America, RCA Victor Div.,  
Camden, N. J.

See Advertisements on Inside Back Cover,  
Back Cover & 251

S-W Inductor Co., 1056 N. Wood St., Chi-  
cago, Ill.

Super Electric Products Corp., 1057 Sum-  
mit Ave., Jersey City, N. J.

See Advertisement on Page 86  
Transformer Products Inc., 143 W. 51st St.,  
New York, N. Y.

West Coast Electronics Co., 1601 S. Bur-  
lington St., Los Angeles 6, Calif.

**TRANSFORMERS—Instrument**

Annis Co., R. B., 1101 N. Delaware St.,  
Indianapolis, Ind.

Assembly Products, Inc., Chagrin Falls,  
Ohio

Burlington Instrument Corp., 214 N. 4th St.,  
Burlington, Iowa

Chicago Transformer Div., Essex Wire  
Corp., 3501 W. Addison St., Chicago  
18, Ill.

Davis & Co., Dean W., Kentland, Ind.  
Dinon Coil Co., Inc., Caledonia, N. Y.

See Advertisement on Page 166  
Electric Machinery Mfg. Co., 1331 NE Tyler  
St., Minneapolis 13, Minn.

Electronic Engineering Co., Inc., 3223 W.  
Armitage Ave., Chicago 47, Ill.

See Advertisement on Page 38  
Electronic Transformer Co., Inc., 207 W.  
25th St., New York, N. Y.

Esterline-Angus Co., Inc., P. O. Box 596,  
Indianapolis, Ind.

Foster Co., A. P., 719 Wyoming Ave., Lock-  
land 15, Ohio

General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C

Inductive Equipment Co., Gettysburg, Pa.  
K-V Transformer Corp., 1697 First Ave.,  
New York, N. Y.

Kellogg Switchboard & Supply Co., 6650 S.  
Cicero Ave., Chicago 38, Ill.

Kenyon Transformer Co., 840 Barry St.,  
New York 59, N. Y.

See Advertisements on Pages 149 to 152  
Lenkurt Electric Co., 1138 Howard St.,  
San Francisco 3, Calif.

Miller Co., B. F., Trenton 4, N. J.

New York Transformer Co., 62 Williams St.,  
New York, N. Y.

Notthelfer Winding Labs., 111 Albemarle  
Ave., Trenton, N. J.

Red Arrow Electric Corp., 100 Coit St., Ir-  
vington, N. J.

Sorensen & Co., 375 Fairfield Ave., Stam-  
ford, Conn.

See Advertisement on Page 154  
Superior Electric Co., 83 Laurel St., Bris-  
tol, Conn.

See Advertisements on Pages 5 to 16  
Thordarson Electric Mfg. Div., Maguire In-  
dustries, Inc., 500 W. Horn St., Chi-  
cago 10, Ill.

Transformer Products Inc., 143 W. 51st St.,  
New York, N. Y.

United Transformer Corp., 150 Varick St.,  
New York 13, N. Y.

See Advertisement on Inside Front Cover  
Westinghouse Electric Corp., Meter Div.,  
Newark, N. J.

Westinghouse Electric Corp., Transformer  
Div., Sharon, Pa.

Weston Electrical Instrument Corp., 618  
Frelinghuysen Ave., Newark 5, N. J.

**TRANSFORMERS—Microphone**

Acme Electric Corp., Cuba, N. Y.

Aircraft Radio Corp., Bonton, N. J.  
See Advertisement on Page 185

Airdesign, Inc., 241 Fairfield Ave., Upper  
Darby, Pa.

American Coil & Engineering Co., 2171 N.  
Hermitage Ave., Chicago 22, Ill.

American Transformer Co., 178 Emmett St.,  
Newark, N. J.

Chicago Transformer Div., Essex Wire  
Corp., 3501 W. Addison St., Chicago 18,  
Ill.

Columbus Process Co., Inc., State & Maple  
Sts., East Columbus, Ind.

Davis & Co., Dean W., Kentland, Ind.

Dinon Coil Co., Inc., Caledonia, N. Y.

See Advertisement on Page 166

Electrical Windings, Inc., 2015 N. Kolmar Ave., Chicago 39, Ill.  
 Electro-Voice Inc., 1239 South Bend Ave., South Bend, Ind.  
 See Advertisement on Page 29  
 Electronic Engineering Co., Inc., 3223 W. Armitage Ave., Chicago 47, Ill.  
 See Advertisement on Page 38  
 Electronic Transformer Co., Inc., 207 W. 25th St., New York, N. Y.  
 Freed Transformer Co., 72 Spring St., New York 12, N. Y.  
 See Advertisement on Page 253  
 Goslin Electric & Mfg. Co., 2921 W. Olive St., Burbank, Calif.  
 See Advertisement on Page 180  
 Halldorson Co., The, 4500 Ravenswood Ave., Chicago 28, Ill.  
 Inductive Equipment Co., Gettysburg, Pa.  
 K-V Transformer Corp., 1697 First Ave., New York, N. Y.  
 Kenyon Transformer Co., 840 Barry St., New York 59, N. Y.  
 See Advertisements on Pages 149 to 152  
 Lenkurt Electric Co., 1138 Howard St., San Francisco 3, Calif.  
 Magnetic Products Corp., The, Norwalk, Conn.  
 Miller Co., B. F., Trenton 4, N. J.  
 New York Transformer Co., Alpha, N. J.  
 See Advertisement on Page 165  
 Permoflux Corp., 4900 W. Grand Ave., Chicago, Ill.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover, Back Cover & 251  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Red Arrow Electric Corp., 100 Coit St., Irvington, N. J.  
 Shure Brothers, 225 W. Huron St., Chicago, Ill.  
 See Advertisement on Page 157  
 Sorensen & Co., 375 Fairfield Ave., Stamford, Conn.  
 See Advertisement on Page 154  
 Standard Transformer Corp., 1500 N. Halstead St., Chicago 22, Ill.  
 Transformer Products Inc., 143 W. 51st St., New York, N. Y.  
 Triad Transformer Mfg. Co., 423 N. Western Ave., Los Angeles 4, Calif.  
 United Transformer Corp., 150 Varick St., New York 13, N. Y.  
 See Advertisement on Inside Front Cover  
 Utah Radio Products Co., 820 Orleans St., Chicago, Ill.  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89

**TRANSFORMERS—Microwave**

Goslin Electric & Mfg. Co., 2921 W. Olive St., Burbank, Calif.  
 See Advertisement on Page 180  
 K-V Transformer Corp., 1697 First Ave., New York, N. Y.  
 Lenkurt Electric Co., 1138 Howard St., San Francisco 3, Calif.  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Rice's Sons Inc., Bernard, 325 Fifth Ave., New York, N. Y.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B  
 Transformer Products Inc., 143 W. 51st St., New York, N. Y.  
 Weymouth Instrument Co., 1440 Commercial St., East Weymouth, Mass.

**TRANSFORMERS—Miniature**

Airdesign, Inc., 241 Fairfield Ave., Upper Darby, Pa.  
 Chicago Transformer Div., Essex Wire Corp., 3501 W. Addison St., Chicago 18, Ill.  
 Columbus Process Co., Inc., State St., East Columbus, Ind.  
 Commercial Equipment Co., 1416 McGee St., Kansas City, Mo.  
 Electronic Engineering Co., Inc., 3223 W. Armitage Ave., Chicago 47, Ill.  
 See Advertisement on Page 38  
 Electronic Transformer Co., Inc., 207 W. 25th St., New York, N. Y.  
 Freed Transformer Co., 72 Spring St., New York 12, N. Y.  
 See Advertisement on Page 253  
 Goslin Electric & Mfg. Co., 2921 W. Olive St., Burbank, Calif.  
 See Advertisement on Page 180  
 Joyner Corp., The, 462 Parkside Ave., Chicago 44, Ill.

K-V Transformer Corp., 1697 First Ave., New York, N. Y.  
 Kenyon Transformer Co., 840 Barry St., New York 59, N. Y.  
 See Advertisements on Pages 149 to 152  
 Magnetic Products Corp., The, Norwalk, Conn.  
 Maguire Industries Inc., Electronics Dept., Bridgeport, Conn.  
 New York Transformer Co., Alpha, N. J.  
 See Advertisement on Page 165  
 Permoflux Corp., 4900 W. Grand Ave., Chicago, Ill.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover, Back Cover & 251  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Standard Transformer Corp., 1500 N. Halstead St., Chicago 22, Ill.  
 Thermador Electric Mfg. Co., 5119 S. River Drive, Los Angeles 22, Calif.  
 Thordarson Electric Mfg. Div., Maguire Industries, Inc., 500 W. Horn St., Chicago 10, Ill.  
 Transformer Products Inc., 143 W. 51st St., New York, N. Y.  
 Triad Transformer Mfg. Co., 423 N. Western Ave., Los Angeles 4, Calif.  
 United Transformer Corp., 150 Varick St., New York 13, N. Y.  
 See Advertisement on Inside Front Cover

**TRANSFORMERS—Plug-in**

Airdesign, Inc., 241 Fairfield Ave., Upper Darby, Pa.  
 American Coil & Engineering Co., 1271 N. Hermitage Ave., Chicago 22, Ill.  
 Chicago Transformer Div., Essex Wire Corp., 3501 W. Addison St., Chicago 18, Ill.  
 Commercial Equipment Co., 1416 McGee St., Kansas City, Mo.  
 Davis & Co., Dean W., Kentland, Ind.  
 Electrocoil Transformer Co., 421 Canal St., New York 13, N. Y.  
 Electronic Transformer Co., Inc., 207 W. 25th St., New York, N. Y.  
 Industrial Transformer Corp., 2540 Belmont Ave., New York 58, N. Y.  
 See Advertisement on Page 188  
 K-V Transformer Corp., 1697 First Ave., New York, N. Y.  
 Kenyon Transformer Co., Inc., 840 Barry St., New York 59, N. Y.  
 See Advertisements on Pages 149 to 152  
 Magnetic Products Corp., The, Norwalk, Conn.  
 Newcomb Audio Products Co., 6814 Lexington Ave., Hollywood 38, Calif.  
 New York Transformer Co., 62 William St., New York, N. Y.  
 Radionic Transformer Co., 411 S. Sangamon St., Chicago 7, Ill.  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Rittenhouse Co., A. E., Honeoye Falls, N. Y.  
 Super Electric Products Corp., 1057 Summit Ave., Jersey City, N. J.  
 See Advertisement on Page 86  
 Thermador Electric Mfg. Co., 5119 S. Riverside Drive, Los Angeles 22, Calif.  
 Triad Transformer Mfg. Co., 423 N. Western Ave., Los Angeles 4, Calif.  
 United Transformer Corp., 150 Varick St., New York 13, N. Y.  
 See Advertisement on Inside Front Cover  
 Westinghouse Electric Corp., Transformer Div., Sharon, Pa.

**TRANSFORMERS—Power**

Acme Electric Corp., Cuba, N. Y.  
 Airdesign, Inc., 241 Fairfield Ave., Upper Darby, Pa.  
 Altec Lansing Corp., 1161 N. Vine St., Hollywood 38, Calif.  
 American Television & Radio Co., 300 E. Fourth St., St. Paul 1, Minn.  
 American Transformer Co., 178 Emmett St., Newark, N. J.  
 Amplifier Corp. of America, 396 Broadway, New York 13, N. Y.  
 Audio Development Co., 2833 13th Ave. S., Minneapolis 7, Minn.  
 See Advertisement on Page 26  
 Baxter and Turner Mfg. Co., 148 E. Larned St., Detroit 26, Mich.  
 Bitterman Electric Co., 50 Henry St., Brooklyn, N. Y.  
 Chicago Transformer Div., Essex Wire Corp., 3501 W. Addison St., Chicago 18, Ill.  
 Columbus Process Co., Inc., State & Maple Sts., East Columbus, Ind.

Commercial Equipment Co., 1416 McGee St., Kansas City, Mo.  
 Control Corp., 718 Central Ave., Minneapolis 14, Minn.  
 Controls Labs. Inc., 98 Union St., Worcester 8, Mass.  
 D. & M. Mfg. Co., 2 Delford Ave., Bergenfield, N. J.  
 Delco Radio Div., General Motors Corp., Kokomo, Ind.  
 Dinton Coll Co., Inc., Caledonia, N. Y.  
 See Advertisement on Page 166  
 Dongan Electric Mfg. Co., 2987 Franklin St., Detroit, Mich.  
 Ecco High Frequency Corp., 7020 Hudson Blvd., North Bergen, N. J.  
 Eisler Engineering Co., 740 S. 13th St., Newark 3, N. J.  
 Electron Mfg. Co., 4587 Elston Ave., Chicago 30, Ill.  
 Electric Heat Control Co., The, 9123 Inman Ave., Cleveland 5, Ohio  
 Electrical Specialty Co., 2304 Washington St., Boston, Mass.  
 Electrical Windings, Inc., 2015 N. Kolmar Ave., Chicago 39, Ill.  
 Electrocoil Transformer Co., 421 Canal St., New York 13, N. Y.  
 Electronic Labs., Inc., 24 W. 24th St., Indianapolis 4, Ind.  
 Electronic Transformer Co., Inc., 207 W. 25th St., New York, N. Y.  
 Empire Coil Co., 238 Huguenot St., New Rochelle, N. Y.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 Ferranti Electric Inc., 30 Rockefeller Plaza, New York 20, N. Y.  
 See Advertisement on Page 196  
 Five Star Radio Co., 416 Broadway, Cambridge, Mass.  
 Franklin Transformer Mfg. Co., 65 22nd Ave., N. E., Minneapolis 13, Minn.  
 Freed Transformer Co., 72 Spring St., New York 12, N. Y.  
 See Advertisement on Page 253  
 Gardner Electric Mfg. Co., 4227 Hollis St., Emeryville 8, Calif.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 General Transformer Corp., 1250 W. Van Buren St., Chicago 7, Ill.  
 Goslin Electric & Mfg. Co., 2921 W. Olive St., Burbank, Calif.  
 See Advertisement on Page 180  
 Gulow Corp., 99 Park Pl., New York 7, N. Y.  
 Halldorson Co., The, 4500 Ravenswood Ave., Chicago 28, Ill.  
 Hercules Electric & Mfg. Co., Inc., 2500 Atlantic Ave., Brooklyn 7, N. Y.  
 Inductive Equipment Co., Gettysburg, Pa.  
 Industrial Transformer Corp., 2540 Belmont Ave., New York 58, N. Y.  
 See Advertisement on Page 188  
 International Transformer Co., 396 Broadway, New York, N. Y.  
 Islip Radio Mfg. Co., Beech St., Islip, N. Y.  
 Jefferson Electric Co., Bellwood, Ill.  
 K-V Transformer Corp., 1697 First Ave., New York, N. Y.  
 Kenyon Transformer Co., 840 Barry St., New York 59, N. Y.  
 See Advertisements on Pages 149 to 152  
 Kyle Corp., South Milwaukee, Wisc.  
 Langevin Co., Inc., 37 W. 65th St., New York, N. Y.  
 See Advertisement on Page 153  
 Lenkurt Electric Co., 1138 Howard St., San Francisco 3, Calif.  
 Magnetic Devices Corp., 76-14 Woodside Ave., Elmhurst, N. Y.  
 Magnetic Products Corp., Norwalk, Conn.  
 Magnetic Windings Co., Div. of Essex Wire Corp., 416 South 16th St., Easton, Pa.  
 Maguire Industries Inc., Electronics Dept., Bridgeport, Conn.  
 Marcus Transformer Co., 32-34 Montgomery St., Hillside 5, N. J.  
 Melco Products, Inc., 22 E. Hennepin Ave., Minneapolis 1, Minn.  
 See Advertisement on Page 223  
 Miller Co., B. F., Trenton 4, N. J.  
 New York Transformer Co., 62 William St., New York, N. Y.  
 New York Transformer Co., Alpha, N. J.  
 See Advertisement on Page 165  
 Nothelfer Winding Labs., 111 Albemarle Ave., Trenton, N. J.  
 Osborne Transformer Corp., 948 E. Lafayette Ave., Detroit 7, Mich.  
 Peerless Electrical Products Co., 6920 McKinley Ave., Los Angeles 1, Calif.  
 Precision Transformer Co., 733 W. Ohio St., Chicago 10, Ill.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover, Back Cover & 251  
 Radio Corp. of America, Tube Div., Harrison, N. J.

Radio Development & Research Co., 26 Cornellison Ave., Jersey City, N. J.  
 Radionic Controls, Inc., 3758 Belmont Ave., Chicago 18, Ill.  
 Raytheon Mfg. Co., Commercial Products Div., Waltham 54, Mass.  
 Red Arrow Electric Corp., 100 Coit St., Irvington, N. J.  
 S. N. C. Mfg. Co., Inc., Box 156, Glenview, Ill.  
 "S" Corrugated Quenched Gap Co., Scientific Electric Div., 107 Monroe St., Garfield, N. J.  
 See Advertisement on Page 255  
 Sorensen & Co., 375 Fairfield Ave., Stamford, Conn.  
 See Advertisement on Page 154  
 Stamford Electric Products Co., Inc., Sunnyside Ave., Stamford, Conn.  
 Standard Electrical Products Co., Dayton 3, Ohio  
 Standard Transformer Corp., 1500 N. Halstead St., Chicago, Ill.  
 Super Electric Products Corp., 1057 Summit Ave., Jersey City, N. J.  
 See Advertisement on Page 86  
 Superior Electric Co., 83 Laurel St., Bristol, Conn.  
 See Advertisements on Pages 5 to 16  
 Thermador Electric Mfg. Co., 5119 S. Riverside Drive, Los Angeles 22, Calif.  
 Thordarson Electric Mfg. Div., Maguire Industries, Inc., 500 W. Horn St., Chicago 10, Ill.  
 Transformer Products Inc., 143 W. 51st St., New York, N. Y.  
 Triad Transformer Mfg. Co., 423 N. Western Ave., Los Angeles 4, Calif.  
 United Transformer Corp., 150 Varick St., New York 13, N. Y.  
 See Advertisement on Inside Front Cover  
 Utah Radio Products Co., 820 Orleans St., Chicago, Ill.  
 Walsh Engineering Co., 34 De Hart Pl., Elizabeth, N. J.  
 Westinghouse Electric Corp., Transformer Div., Sharon, Pa.  
 Weymouth Instrument Co., 1440 Commercial St., East Weymouth, Mass.

## TRANSFORMERS—Pulse

Airdesign, Inc., 241 Fairfield Ave., Upper Darby, Pa.  
 American Coil & Engineering Co., 1271 N. Hermitage Ave., Chicago 22, Ill.  
 American Transformer Co., 178 Emmett St., Newark, N. J.  
 Dinlon Coil Co., Inc., Caledonia, N. Y.  
 See Advertisement on Page 166  
 Electronic Transformer Co., 178 Emmett St., Newark, N. J.  
 Freed Transformer Co., 72 Spring St., New York 12, N. Y.  
 See Advertisement on Page 253  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Goslin Electric & Mfg. Co., 2921 W. Olive St., Burbank, Calif.  
 See Advertisement on Page 180  
 K-V Transformer Corp., 1697 First Ave., New York, N. Y.  
 Kenyon Transformer Co., 840 Barry St., New York 59, N. Y.  
 See Advertisements on Pages 149 to 152  
 Lenkurt Electric Co., 1138 Howard St., San Francisco 3, Calif.  
 Magnetic Products Corp., The, Norwalk, Conn.  
 Maguire Industries Inc., Electronics Dept., Bridgeport, Conn.  
 New York Transformer Co., Alpha, N. J.  
 See Advertisement on Page 165  
 New York Transformer Co., 62 William St., New York, N. Y.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover, Back Cover & 251  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 S-W Inductor Co., 1056 N. Wood St., Chicago, Ill.  
 Sorensen & Co., 375 Fairfield Ave., Stamford, Conn.  
 See Advertisement on Page 154  
 United Transformer Corp., 150 Varick St., New York 13, N. Y.  
 See Advertisement on Inside Front Cover  
 Westinghouse Electric Corp., Transformer Div., Sharon, Pa.

## TRANSFORMERS—r-f and i-f

Acme Electric Corp., Cuba, N. Y.  
 Aladdin Radio Industries, Inc., 501 W. 35th St., Chicago 16, Ill.

American Coil & Engineering Co., 1271 N. Hermitage Ave., Chicago 22, Ill.  
 Automatic Mfg. Co., 900 Passaic Ave., East Passaic, N. J.  
 See Advertisement on Page 60  
 Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.  
 Bittermann Electric Co., 50 Henry St., Brooklyn, N. Y.  
 Cambridge Thermionic Corp., 445 Concord Ave., Cambridge, Mass.  
 Clarke Instrument Corp., 910 King St., Silver Spring, Md.  
 Clippard Instrument Lab., 1440 Chase Ave., Cincinnati 23, Ohio  
 Communication Parts, 1101 N. Paulina St., Chicago 22, Ill.  
 Delco Radio Div., General Motors Corp., Kokomo, Ind.  
 Dietz Design & Mfg. Co., 5810 Park Ave., Kansas City 4, Mo.  
 Essex Electronics, 1060 Broad St., Newark 2, N. J.  
 See Advertisement on Page 241  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 Five Star Radio Co., 416 Broadway, Cambridge, Mass.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Harnett Electric Corp., 138 Haven Ave., Port Washington, N. Y.  
 See Advertisement on Page 162  
 Hillburn Electronic Products Co., 1 Worth St., New York 13, N. Y.  
 Honlihan Co., T. J., The, 2508-14 W. Lawrence Ave., Chicago 25, Ill.  
 Johnson Co., E. F., Waseca, Minn.  
 Joynor Corp., The, 462 N. Parkside Ave., Chicago 44, Ill.  
 Kraft & Kraft, Hicksville, N. Y.  
 McMurdo Silver Co., 1249 Main St., Hartford 3, Conn.  
 Madison Electrical Products Div., John G. Rockelshaus Co., 74 Main St., Madison, N. J.  
 Maguire Industries Inc., Electronics Dept., Bridgeport, Conn.  
 Meissner Mfg. Div., Maguire Industries, Inc., Mt. Carmel, Ill.  
 Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44  
 Miller Co., J. W., 5917 S. Main St., Los Angeles, Calif.  
 Monarch Mfg. Co., 2014 N. Major Ave., Chicago 39, Ill.  
 Monroe Coil Co., 2659 W. 19th St., Chicago, Ill.  
 Muter Co., 1255 S. Michigan Ave., Chicago, Ill.  
 National Co., Inc., 61 Sherman St., Malden 48, Mass.  
 See Advertisement on Page 78  
 New York Transformer Co., 62 William St., New York, N. Y.  
 Pioneer Electric & Research Corp., The, Forest Park, Ill.  
 Precision Tube Co., 3828 Terrace St., Philadelphia 28, Pa.  
 See Advertisement on Page 218  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover, Back Cover & 251  
 Radio Development & Research Co., 26 Cornellison Ave., Jersey City, N. J.  
 S-W Inductor Co., 1056 N. Wood St., Chicago, Ill.  
 Super Electric Products Corp., 1057 Summit Ave., Jersey City, N. J.  
 See Advertisement on Page 86  
 Teleradio Engineering Corp., 99 Wall St., New York 5, N. Y.  
 Transformer Products Inc., 143 W. 51st St., New York, N. Y.  
 West Coast Electronics Co., 1601 S. Burlington St., Los Angeles 6, Calif.

## TRANSFORMERS—Tone Oscillator

Aircraft Radio Corp., Boonton, N. J.  
 See Advertisement on Page 185  
 American Coil & Engineering Co., 1271 N. Hermitage Ave., Chicago 22, Ill.

Amplifier Corp. of America, 396 Broadway, New York 13, N. Y.  
 Burnell & Co., 45 Warburton Ave., Yonkers 2, N. Y.  
 See Advertisement on Page 192  
 Chicago Transformer Div., Essex Wire Corp., 3501 W. Addison St., Chicago 18, Ill.  
 Davis & Co., Dean W., Kentland, Ind.  
 Electronic Transformer Co., Inc., 207 W. 25th St., New York, N. Y.  
 Freed Transformer Co., 72 Spring St., New York 12, N. Y.  
 See Advertisement on Page 253  
 Inductive Equipment Co., Gettysburg, Pa.  
 K-V Transformer Corp., 1697 First Ave., New York, N. Y.  
 Kenyon Transformer Co., 840 Barry St., New York 59, N. Y.  
 See Advertisements on Pages 149 to 152  
 Lenkurt Electric Co., 1138 Howard St., San Francisco 3, Calif.  
 Magnetic Products Corp., The, Norwalk, Conn.  
 Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44  
 Monroe Coil Co., 2659 W. 19th St., Chicago, Ill.  
 Transformer Products Inc., 143 W. 51st St., New York, N. Y.  
 United Transformer Corp., 150 Varick St., New York 13, N. Y.  
 See Advertisement on Inside Front Cover

## TRANSFORMERS—Ultrasonic

Electronic Transformer Co., Inc., 207 W. 25th St., New York, N. Y.  
 Freed Transformer Co., 72 Spring St., New York 12, N. Y.  
 See Advertisement on Page 253  
 Inductive Equipment Co., Gettysburg, Pa.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover, Back Cover & 251  
 Radio Development and Research Co., 26 Cornellison Ave., Jersey City, N. J.  
 S-W Inductor Co., 1056 N. Wood St., Chicago, Ill.  
 Sorensen & Co., 375 Fairfield Ave., Stamford, Conn.  
 See Advertisement on Page 154  
 Thordarson Electric Mfg. Div., Maguire Industries, Inc., 500 W. Horn St., Chicago 10, Ill.

## TRANSFORMERS—Vacuum Microwave

Jennings Radio Mfg. Co., 1098 E. William St., San Jose 12, Calif.

## TRANSFORMERS—Voltage Regulating

Acme Electric Corp., Cuba, N. Y.  
 American Coil & Engineering Co., 1271 N. Hermitage Ave., Chicago 22, Ill.  
 Amplifier Corp. of America, 396 Broadway, New York 13, N. Y.  
 Davis & Co., Dean W., Kentland, Ind.  
 Electrical Specialty Co., 2304 Washington St., Boston, Mass.  
 Electrical Windings, Inc., 2015 N. Kolmar Ave., Chicago 39, Ill.  
 Electronic Engineering Co., Inc., 3223 W. Armitage Ave., Chicago 47, Ill.  
 See Advertisement on Page 38  
 Electronic Transformer Co., Inc., 207 W. 25th St., New York, N. Y.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Gulow Corp., 99 Park Pl., New York 7, N. Y.  
 Halldorson Co., 4500 Ravenswood Ave., Chicago 28, Ill.  
 Inductive Equipment Co., Gettysburg, Pa.  
 K-V Transformer Corp., 1697 First Ave., New York, N. Y.  
 Maguire Industries Inc., Electronics Dept., Bridgeport, Conn.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover, Back Cover & 251  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Sola Electric Co., 2525 Clybourn Ave., Chicago 14, Ill.  
 Sorensen & Co., 375 Fairfield Ave., Stamford, Conn.  
 See Advertisement on Page 154

Standard Electrical Products Co., Dayton 3, Ohio  
 Standard Transformer Corp., 1500 N. Halsted St., Chicago, Ill.  
 Superior Electric Co., 83 Laurel St., Bristol, Conn.  
 See Advertisements on Pages 5 to 16  
 Thordarson Electric Mfg. Div., Maguire Industries, Inc., 500 W. Horn St., Chicago 10, Ill.  
 Transformer Products Inc., 143 W. 51st St., New York, N. Y.  
 United Transformer Corp., 150 Varick St., New York 13, N. Y.  
 See Advertisement on Inside Front Cover  
 Westinghouse Electric Corp., Transformer Div., Sharon, Pa.

**TRANSFORMERS—Welding**

Acme Electric Corp., Cuba, N. Y.  
 Airdesign Inc., 241 Fairfield Ave., Upper Darby, Pa.  
 Chicago Transformer Div., Essex Wire Corp., 3501 W. Addison St., Chicago 18, Ill.  
 Eisler Engrg. Co., 740 S. 13th St., Newark 3, N. J.  
 Electran Mfg. Co., 4587 Elston Ave., Chicago 30, Ill.  
 Electrocoil Transformer Co., 421 Canal St., New York 13, N. Y.  
 Electronic Engineering Co., Inc., 3223 W. Armitage Ave., Chicago 47, Ill.  
 See Advertisement on Page 38  
 Electronic Transformer Co., Inc., 207 W. 25th St., New York, N. Y.  
 Gardner Electric Mfg. Co., 4227 Hollis St., Emeryville 8, Calif.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Inductive Equipment Co., Gettysburg, Pa.  
 Magnetic Devices Corp., 76-14 Woodside Ave., Elmhurst, N. Y.  
 Marcus Transformer Co., 32-34 Montgomery St., Hillside 5, N. J.  
 Meico Products, Inc., 22 E. Hennepin Ave., Minneapolis 1, Minn.  
 See Advertisement on Page 223  
 Miller Co., B. F., Trenton 4, N. J.  
 New York Transformer Co., Alpha, N. J.  
 See Advertisement on Page 165  
 Radio Development and Research Co., 26 Cornellison Ave., Jersey City, N. J.  
 Sciaky Bros., 4915 W. 67th Street, Chicago 38, Ill.  
 Sorgel Electric Co., 838 W. National Ave., Milwaukee 4, Wisc.  
 Standard Electrical Products Co., Dayton 3, Ohio  
 Standard Transformer Corp., 1500 N. Halsted St., Chicago, Ill.  
 Thordarson Electric Mfg. Div., Maguire Industries, Inc., 500 W. Horn St., Chicago 10, Ill.  
 United Transformer Corp., 150 Varick St., New York 13, N. Y.  
 See Advertisement on Inside Front Cover

**TRANSFORMERS—X-Ray**

Electrocoil Transformer Co., 421 Canal St., New York 13, N. Y.

**TRANSMISSION LINES**

See Cable or Guides, Wave

**TRANSmitters—Aircraft**

Aero Communications, Inc., 231 Main St., Hempstead, N. Y.  
 Alradio Inc., Melrose Ave. & Battery Pl., Stamford, Conn.  
 Air Associates Inc., 5827 W. Century Blvd., Los Angeles 45, Calif.  
 Aircraft Radio Corp., Boonton, N. J.  
 See Advertisement on Page 185  
 American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
 Belmont Radio Co., Div. Raytheon Mfg. Co., 5921 Dickens Ave., Chicago 39, Ill.  
 Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
 Collins Radio Co., Cedar Rapids, Iowa  
 See Advertisement on Pages 30 to 33  
 Communications Co., Inc., 300 Greco Ave., Coral Gables 34, Fla.  
 Electronic Specialty Co., 3456 Glendale Blvd., Los Angeles, Calif.  
 Erco Radio Labs. Inc., Fenimore Ave., Hempstead, N. Y.

Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 Gates Radio Co., 123 Hampshire St., Quincy, Ill.  
 General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Hallicrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Harvey Wells Electronics Inc., North St., Southbridge, Mass.  
 Heath Co., Benton Harbor, Michigan  
 Herbach & Rademan Inc., 517 Ludlow St., Phila. 6, Pa.  
 Islip Radio Mfg. Co., Beech St., Islip, N. Y.  
 Lear, Inc., 110 Ionia Ave., N. W., Grand Rapids 2, Mich.  
 Midwest Radio Corp., 909 Broadway, Cincinnati, Ohio  
 Northern Communications Mfg. Co., 210 E. 40th St., New York 16, N. Y.  
 See Advertisement on Page 42  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover, Back Cover & 251  
 Radio Receptor Co., 251 W. 19th St., New York, N. Y.  
 See Advertisement on Page 40  
 Radio Specialty Mfg. Co., 2023 S. E. 6th Ave., Portland 14, Oregon  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Searle Aero Industries, Inc., Orange, Calif.  
 Thompson Co., John E., 1440 W. 47th St., Chicago 9, Ill.  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89  
 Wilcox Electric Co., 1400 Chestnut St., Kansas City, Mo.

**TRANSmitters—Amateur**

Audar, Inc., Argos, Indiana  
 Beach Mfg. Inc., 322 East Beach Ave., Inglewood, Calif.  
 See Advertisement on Page 76  
 Collins Radio Co., Cedar Rapids, Iowa  
 See Advertisements on Pages 30 to 33  
 Dine and Co., Inc., E. E., 2221 Warwick Ave., Santa Monica, Calif.  
 Gem Radio & Television Co., 72 Cortlandt St., New York 6, N. Y.  
 Gross Communication Prods., 1865-71 Prospect Ave., Cleveland 15, Ohio  
 Hallicrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Hammarlund Mfg. Co., 460 W. 34th St., New York 1, N. Y.  
 Harvey Radio Labs., Inc., 447 Concord Ave., Cambridge, Mass.  
 Hudson American Corp., 25 W. 43rd St., New York 18, N. Y.  
 McMurdo Silver Co., Inc., 1249 Main St., Hartford 3, Conn.  
 Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44  
 National Co., Inc., 61 Sherman St., Malden 48, Mass.  
 See Advertisement on Page 78  
 Standard Transformer Corp., 1500 N. Halsted St., Chicago 22, Ill.  
 Taylor Western Transmitters Inc., 6127 South Western Ave., Los Angeles 44, Calif.  
 Technical Apparatus Co., 167 Washington St., Boston 8, Mass.  
 Transmitter Equipment Mfg. Co., Inc., 345 Hudson St., New York 14, N. Y.

**TRANSmitters—Broadcast**

Aero Communications, Inc., 231 Main St., Hempstead, N. Y.  
 American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
 Collins Radio Co., Cedar Rapids, Iowa  
 See Advertisements on Pages 30 to 33  
 Electronic Engineering Co., 616 G St., San Diego 1, Calif.  
 Erco Radio Labs. Inc., Fenimore Ave., Hempstead, N. Y.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 Gates Radio Co., 123 Hampshire St., Quincy, Ill.  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Link, Fred M., 125 W. 17th St., New York, N. Y.

Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover, Back Cover & 251  
 Radio Development and Research Co., 26 Cornellison Ave., Jersey City, N. J.  
 Radio Engineering Labs. Inc., 35-54 36th St., Long Island City, N. Y.  
 Raytheon Mfg. Co., Commercial Products Div., Waltham 54, Mass.  
 Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.  
 Taylor Western Transmitters Inc., 6127 South Western Ave., Los Angeles 44, Calif.  
 Transmitter Equipment Co., Inc., 345 Hudson St., New York 14, N. Y.  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89  
 Westinghouse Electric Corp., Industrial Electronic Div., Baltimore, Md.

**TRANSmitters—Broadcast STL**

Aero Communications, Inc., 231 Main St., Hempstead, N. Y.  
 Erco Radio Labs. Inc., Fenimore Ave., Hempstead, N. Y.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Link, Fred M., 125 W. 17th St., New York, N. Y.  
 Radio Engineering Labs. Inc., 35-54 36th St., Long Island City, N. Y.  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Raytheon Mfg. Co., Commercial Products Div., Waltham 54, Mass.  
 Taylor Western Transmitters Inc., 6127 South Western Ave., Los Angeles 44, Calif.

**TRANSmitters—Ceramic Transmitting**

Erie Resistor Corp., 644 W. 12th St., Erie, Pa.  
 See Advertisement on Page 47

**TRANSmitters—Direction Finding**

Aero Communications, Inc., 231 Main St., Hempstead, N. Y.  
 Airplane & Marine Instruments, Inc., Clearfield, Pa.  
 Erco Radio Labs. Inc., Fenimore Ave., Hempstead, N. Y.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
 Grady Instrument Co., 689 Belmont St., Belmont 78, Mass.  
 Radiomarine Corp. of America, 75 Varick St., New York 13, N. Y.  
 Transmitter Equipment Co., Inc., 345 Hudson St., New York 14, N. Y.

**TRANSmitters—f-m**

Aero Communications, Inc., 231 Main St., Hempstead, N. Y.  
 Air Associates Inc., 5827 W. Century Blvd., Los Angeles 45, Calif.  
 Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
 Collins Radio Co., Cedar Rapids, Iowa  
 See Advertisements on Pages 30 to 33  
 Communications Co., Inc., 300 Greco Ave., Coral Gables 34, Fla.  
 Dine and Co., Inc., E. E., 2221 Warwick Ave., Santa Monica, Calif.  
 Erco Radio Labs. Inc., Fenimore Ave., Hempstead, N. Y.  
 Farnsworth Television & Radio Corp., Ft. Wayne, Ind.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 Gates Radio Co., 123 Hampshire St., Quincy, Ill.  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Gross Communication Products, 1865-71 Prospect Ave., Cleveland 15, Ohio  
 Hallicrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.

Harvey Radio Labs., Inc., 447 Concord Ave., Cambridge, Mass.  
 Harvey Wells Electronics Inc., North St., Southbridge, Mass.  
 Hoffman Radio Corp., 3430 S. Hill St., Los Angeles 7, Calif.  
 Kaar Engineering Co., 619 Emerson St., Palo Alto, Calif.  
 Mobile Communications Co., 202 East Fourth St., Long Beach 2, Calif.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover.  
**Back Cover & 251**  
 Radiomarine Corp. of America, 75 Varick St., New York 13, N. Y.  
 Raytheon Mfg. Co., Commercial Products Div., Waltham 54, Mass.  
 Schuttig & Co., 9th & Kearney Sts., N. E., Washington 17, D. C.  
 Transmitter Equipment Mfg. Co., Inc., 345 Hudson St., New York 14, N. Y.  
 West Coast Electronics Co., 1601 S. Burlington St., Los Angeles 6, Calif.  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89  
 Westinghouse Electric Corp., Industrial Electronics Div., Baltimore, Md.

## TRANSMITTERS—Facsimile

Aldep Products Co., 117 No. Main St., Brockton 64, Mass.  
 Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Press Wireless Mfg. Corp., 1475 Broadway, New York 18, N. Y.  
 Times Facsimile Corp., 229 W. 43rd St., New York, N. Y.  
 Transmitter Equipment Mfg. Co., Inc., 345 Hudson St., New York 14, N. Y.  
 Western Union Telegraph Co., 60 Hudson St., New York 13, N. Y.  
 Westinghouse Electric Corp., Industrial Electronic Div., Baltimore, Md.

## TRANSMITTERS—Fixed Frequency

Aero Communications, Inc., 231 Main St., Hempstead, N. Y.  
 Collins Radio Co., Cedar Rapids, Iowa  
 See Advertisements on Pages 30 to 33  
 Dine and Co., Inc., F. E., 2221 Warwick Ave., Santa Monica, Calif.  
 Electronic Sound Engineering Co., 4344-46 W. Armitage Ave., Chicago 39, Ill.  
 Erco Radio Labs. Inc., Fenimore Ave., Hempstead, N. Y.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 Hallicrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Kaar Engineering Co., 619 Emerson St., Palo Alto, Calif.  
 Lavoie Labs., Morganville, N. J.  
 Mobile Communications Co., 202 East Fourth St., Long Beach 2, Calif.  
 Radio Specialty Mfg. Co., 2023 S. E. Sixth Ave., Portland 14, Ore.  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Schuttig & Co., 9th & Kearney Sts., Washington 17, D. C.  
 Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.  
 Taylor Western Transmitters Inc., 6127 South Western Ave., Los Angeles 44, Calif.  
 Technical Apparatus Co., 167 Washington St., Boston 8, Mass.  
 Transmitter Equipment Co., Inc., 345 Hudson St., New York 14, N. Y.  
 Wilcox Electric Co., 1400 Chestnut St., Kansas City, Mo.

## TRANSMITTERS—Fixed Station Communication

Aero Communications, Inc., 231 Main St., Hempstead, N. Y.  
 Airadio Inc., Melrose Ave. & Battery Pl., Stamford, Conn.  
 Air Associates, Inc., 5827 W. Century Blvd., Los Angeles 45, Calif.  
 Aireon Mfg. Corp., Fairfax & Funston Rds., Kansas City 15, Kansas

American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
 Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.  
 Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
 Collins Radio Co., Cedar Rapids, Iowa  
 See Advertisements on Pages 30 to 33  
 Communications Co. Inc., 300 Greco Ave., Coral Gables 34, Fla.  
 Dine and Co., Inc., F. E., 2221 Warwick Ave., Santa Monica, Calif.  
 Doolittle Radio, Inc., 7421 S. Loomis Blvd., Chicago 36, Ill.  
 Electronic Engineering Co., 616 G St., San Diego 1, Calif.  
 Erco Radio Labs. Inc., Fenimore Ave., Hempstead, N. Y.  
 Farnsworth Television & Radio Corp., Ft. Wayne, Ind.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 Gates Radio Co., 123 Hampshire St., Quincy, Ill.  
 Gem Radio & Television, 72 Cortlandt St., New York 6, N. Y.  
 General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Hallicrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Hammarlund Mfg. Co., 460 W. 34th St., New York 1, N. Y.  
 Harvey Wells Electronics Inc., North St., Southbridge, Mass.  
 Herbach & Rademan Inc., 517 Ludlow St., Philadelphia 6, Pa.  
 Hoffman Radio Corp., 3430 S. Hill St., Los Angeles 7, Calif.  
 Kaar Engineering Co., 619 Emerson St., Palo Alto, Calif.  
 Link, Fred M., 125 W. 17th St., New York, N. Y.  
 McMurdo Silver Co., 1249 Main St., Hartford 3, Conn.  
 Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44  
 Mobile Communications Co., 202 East Fourth St., Long Beach 2, Calif.  
 Press Wireless Mfg. Corp., 1475 Broadway, New York 18, N. Y.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover.  
**Back Cover & 251**  
 Radio Receptor Co., 251 W. 19th St., New York, N. Y.  
 See Advertisement on Page 40  
 Radio Specialty Mfg. Co., 2023 S. E. Sixth Ave., Portland 14, Ore.  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.  
 Taylor Western Transmitters Inc., 6127 South Western Ave., Los Angeles 44, Calif.  
 Technical Apparatus Co., 167 Washington St., Boston 8, Mass.  
 Technical Devices Corp., Beaufort & Eagle Rock Ave., Roseland N. J.  
 Transmitter Equipment Mfg. Co., Inc., 345 Hudson St., New York 14, N. Y.  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89  
 Westinghouse Electric Corp., Industrial Electronics Div., Baltimore, Md.  
 Wilcox Electric Co., 1400 Chestnut St., Kansas City, Mo.

## TRANSMITTERS—Loran

Harvey Radio Labs., Inc., 447 Concord Ave., Cambridge, Mass.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover,  
**Back Cover & 251**  
 Televiso Products Inc., 7466 West Irving Park Road, Chicago 34, Ill.

## TRANSMITTERS—Marine

Aero Communications, Inc., 231 Main St., Hempstead, N. Y.  
 American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
 Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.  
 Dine and Co., Inc., F. E., 2221 Warwick Ave., Santa Monica, Calif.  
 Electronic Engineering Co., 616 G St., San Diego 1, Calif.

Erco Radio Labs. Inc., Fenimore St., Hempstead, N. Y.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 Fisher Research Lab., 1961 University Ave., Palo Alto, Calif.  
 Gates Radio Co., 123 Hampshire St., Quincy, Ill.  
 General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Gray Radio Co., 730 Okeshobee Rd., W. Palm Beach, Fla.  
 Hallicrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Harvey Wells Electronics Inc., North St., Southbridge, Mass.  
 Hose-McCann Telephone Co., 177 Pacific St., Brooklyn 2, N. Y.  
 Islip Radio Mfg. Co., Beech St., Islip, N. Y.  
 Jefferson-Travis Inc., 380 Second Ave., New York 10, N. Y.  
 Kaar Engineering Co., 619 Emerson St., Palo Alto, Calif.  
 Kalbfell Labs., 1076 Morena Blvd., San Diego 10, Calif.  
 Northern Radio Co., 2208 4th Ave., Seattle 1, Wash.  
 Radio Labs. Inc., 2701 Calif. Ave., Seattle 6, Wash.  
 Radiomarine Corp. of America, 72 Varick St., New York 13, N. Y.  
 Raytheon Mfg. Co., Power Tube Div. Waltham 54, Mass.  
 Smith-Meeker Engineering Co., 125 Barclay St., New York 7, N. Y.  
 Submarine Signal Co., Affiliated with Raytheon Mfg. Co., 160 State St., Boston, Mass.  
 Televiso Products Inc., 7466 West Irving Park Rd., Chicago, Ill.  
 Thompson Co., John E., 1440 W. 47th St., Chicago 9, Ill.  
 Transmitter Equipment Mfg. Co., Inc., 345 Hudson St., New York 14, N. Y.  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89  
 Westinghouse Electric Corp., Industrial Electronics Div., Baltimore, Md.

## TRANSMITTERS—Microwave

Bendix Radio Div., Bendix Aviation Div., Baltimore 4, Md.  
 DeMornay-Budd Inc., 475 Grand Concourse, New York 51, N. Y.  
 See Advertisement on Page 171  
 Dine and Co., Inc., F. E., 2221 Warwick Ave., Santa Monica, Calif.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisement on Pages 48A to 48D  
 Radar Engineers, 4004 Arcade Bldg., Seattle 1, Wash.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover,  
**Back Cover & 251**  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B  
 Televiso Products Inc., 7466 West Irving Park Rd., Chicago 34, Ill.  
 Transmitter Equipment Co., Inc., 345 Hudson St., New York 14, N. Y.  
 Weymouth Instrument Co., 1440 Commercial St., East Weymouth, Mass.

## TRANSMITTERS—Portable and Mobile Radiotelephone

Aero Communications, Inc., 231 Main St., Hempstead, N. Y.  
 American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
 Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.  
 Bassett Inc., Rex, 500 SE 2nd St., Ft. Lauderdale, Fla.  
 Belmont Radio Co., Div. Raytheon Mfg. Co., 5921 Dickens Ave., Chicago 39, Ill.  
 Collins Radio Co., Cedar Rapids, Iowa  
 See Advertisements on Pages 30 to 33  
 Communications Co. Inc., 300 Greco Ave., Coral Gables 34, Fla.  
 Dine and Co., Inc., F. E., 2221 Warwick Ave., Santa Monica, Calif.  
 Doolittle Radio, Inc., 7421 S. Loomis Blvd., Chicago 36, Ill.  
 Erco Radio Labs. Inc., Fenimore Ave., Hempstead, N. Y.

Farnsworth Television and Radio Corp., Ft. Wayne, Ind.  
**General Electric Co., Syracuse, N. Y.**  
 See Advertisements on Pages 96, 96A  
 Gray Radio Co., 730 Okeeshbee Rd., W. Palm Beach, Fla.  
 Hallcrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
 Harvey Radio Labs., Inc., 447 Concord Ave., Cambridge, Mass.  
 Harvey Wells Electronics Inc., North St., Southbridge, Mass.  
 Herbach & Rademan Inc., 517 Ludlow St., Philadelphia 6, Pa.  
 Hose-McCann Telephone Co., 177 Pacific St., Brooklyn 2, N. Y.  
 Hudson American Corp., 25 W. 43rd St., New York, N. Y.  
 Jefferson, Inc., Ray, 40 E. Merrick Rd., Freeport, N. Y.  
 Kaar Engineering Co., 619 Emerson St., Palo Alto, Calif.  
 Kalbfell Labs., 1076 Morena Blvd., San Diego 10, Calif.  
 Link, Fred M., 125 W. 17th St., New York, N. Y.  
 Meck Industries, John, Liberty at Pa., Plymouth, Ind.  
 Mobile Communications Co., 202 East Fourth St., Long Beach 2, Calif.  
**National Co., Inc., 61 Sherman St., Malden 18, Mass.**  
 See Advertisement on Page 78  
 Northern Radio Co., 2208 4th Ave., Seattle 1, Wash.  
 Pan American Electric Co., Inc., 2912 Atlantic Ave., Brooklyn 7, N. Y.  
 Philco Corp., Tioga & C Sts., Philadelphia 34, Pa.  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover, Back Cover & 251  
 Radio Development and Research Co., 26 Cornellson Ave., Jersey City, N. J.  
 Radio Engineering Labs, Inc., 35-54 36th St., Long Island City, N. Y.  
 Radio Labs, Inc., 2701 Calif. Ave., Seattle 6, Wash.  
 Radio Specialty Mfg. Co., 2023 S. E. 6th Ave., Portland 14, Ore.  
 Radiomarine Corp. of America, 75 Varick St., New York 13, N. Y.  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Transmitter Equipment Co., Inc., 345 Hudson St., New York 14, N. Y.  
 West Coast Electronics Co., 1601 S. Burlington St., Los Angeles 6, Calif.  
**Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.**  
 See Advertisements on Pages 88, 89

**TRANSMITTERS—Pulse Time Modulation**  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 Televiso Products Inc., 7466 West Irving Park Road, Chicago 34, Ill.

**TRANSMITTERS—Radar**  
 DeMornay-Budd Inc., 475 Grand Concourse, New York 51, N. Y.  
 See Advertisement on Page 171  
**General Electric Co., Syracuse, N. Y.**  
 See Advertisements on Pages 96, 96A  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover, Back Cover & 251  
 Radiomarine Corp. of America, 75 Varick St., New York 13, N. Y.  
**Reeves-Hoffman Corp., 215 E. 91st St., New York, N. Y.**  
 See Advertisement on Page 180  
 Reeves Instrument Corp., 215 E. 91st St., New York, N. Y.  
**Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.**  
 See Advertisements on Pages 80A, 80B  
 Submarine Signal Co. Affiliated with Raytheon Mfg. Co., 160 State St., Boston, Mass.  
 Transmitter Equipment Co., Inc., 345 Hudson St., New York 14, N. Y.

**TRANSMITTERS—Radio Range**  
 Aero Communications, Inc., 231 Main St., Hempstead, N. Y.  
 Air Associates Inc., 5827 W. Century Blvd., Los Angeles 45, Calif.

Bassett Inc., Rex, 500 SE 2nd St., Ft. Lauderdale, Fla.  
 Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
 Cover Dual Signal Systems, Inc., Div. of Electra Voice Corp., 5215-25 Ravenswood Ave., Chicago 40, Ill.  
 Erco Radio Labs, Inc., Fenimore Ave., Hempstead, N. Y.  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
 Lavoie Labs., Morganville, N. J.  
**Radio Receptor Co., 251 W. 19th St., New York, N. Y.**  
 See Advertisement on Page 40  
 Westinghouse Electric Corp., Industrial Electronics Div., Baltimore, Md.

**TRANSMITTERS—Railroad**  
 Airplane & Marine Instruments, Inc., Clearfield, Pa.  
 Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.  
 Communications Co. Inc., 300 Greco Ave., Coral Gables 34, Fla.  
 Dine and Co., Inc., F. E., 2221 Warwick Ave., Santa Monica, Calif.  
 Farnsworth Television & Radio Corp., Ft. Wayne, Ind.  
 Hallcrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover, Back Cover & 251  
 Searle Aero Industries, Inc., Orange, Calif.  
**Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.**  
 See Advertisements on Pages 80A, 80B  
 Transmitter Equipment Co., Inc., 345 Hudson St., New York 14, N. Y.  
 West Coast Electronics Co., 1601 S. Burlington St., Los Angeles 6, Calif.  
**Western Electric Co. Inc., 195 Broadway, New York 7, N. Y.**  
 See Advertisement on Pages 88, 89  
 Westinghouse Electric Corp., Industrial Electronics Div., Baltimore, Md.

**TRANSMITTERS—Television**  
 Farnsworth Television & Radio Corp., Ft. Wayne, Ind.  
**Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
**General Electric Co., Syracuse, N. Y.**  
 See Advertisements on Pages 96, 96A  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover, Back Cover & 251  
 Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.  
 Television Projects, Inc., 24 Walnut St., Newark 2, N. J.  
 Westinghouse Electric Corp., Industrial Electronics Div., Baltimore, Md.

**TRANSMITTERS—uhf**  
 Abbott Instrument, Inc., 8 W. 18th St., New York, N. Y.  
**Aircraft Radio Corp., Boonton, N. J.**  
 See Advertisement on Page 185  
 American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
 Bendix Radio Div., Bendix Aviation Corp., Baltimore, Md.  
 DeciMeter, 742 W. Colfax Ave., Denver 4, Colo.  
 Dine & Co., Inc., F. E., 2221 Warwick Ave., Santa Monica, Calif.  
 Electronic Engineering Co., 616 G St., San Diego 1, Calif.  
**Federal Telephone and Radio Corp., 100 Kingsland Road, Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
**General Electric Co., Syracuse, N. Y.**  
 Hallcrafters Co., 4401 W. 5th Ave., Chicago 24, Ill.  
 McMurdo Silver Co., 1249 Main St., Hartford 3, Conn.  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover, Back Cover & 251  
 Radio Specialty Mfg. Co., 2023 S. E. 6th Ave., Portland 14, Ore.  
 Remington Rand, Electronic Div., Middletown, Conn.

Taylor Western Transmitters, Inc., 6127 S. Western Ave., Los Angeles 44, Calif.  
 Thermionic Engineering Corp. Pompton Plains, N. J.  
 Transmitter Equipment Co., Inc., 345 Hudson St., New York 14, N. Y.  
 West Coast Electronics Co., 1601 S. Burlington St., Los Angeles 6, Calif.  
 Weymouth Instrument Co., 1440 Commercial St., East Weymouth, Mass.

**TRANSMITTERS—vhf**  
 Abbott Instrument Inc., 8 W. 18th St., New York, N. Y.  
 Aero Communications, Inc., 231 Main St., Hempstead, N. Y.  
 Airadio Inc., Melrose Ave., & Battery Place, Stamford, Conn.  
 Air Associates Inc., 5827 W. Century Blvd., Los Angeles 45, Calif.  
**Aircraft Radio Corp., Boonton, N. J.**  
 See Advertisement on Page 185  
 Bassett Inc., 500 S. E. 2nd St., Fort Lauderdale, Fla.  
**Collins Radio Co., Cedar Rapids, Iowa**  
 See Advertisements on Pages 30 to 33  
 Communications Co., Inc., 300 Greco Ave., Coral Gables 34, Fla.  
 Cover Dual Signal Systems, Inc., Div. of Electra Voice Corp., 5215-25 Ravenswood Ave., Chicago 40, Ill.  
 Dine & Co., Inc., F. E., 2221 Warwick Ave., Santa Monica, Calif.  
 Electronic Engineering Co., 616 G St., San Diego 1, Calif.  
 Erco Radio Labs., Inc., Fenimore Ave., Hempstead, N. Y.  
 Farnsworth Television & Radio Corp., Fort Wayne, Ind.  
**Federal Telephone & Radio Corp., 100 Kingsland Road, Clifton, N. J.**  
 See Advertisements on Pages 48A to 48D  
**General Electric Co., Syracuse, N. Y.**  
 See Advertisements on Pages 96, 96A  
 Gross Communication Prods., 1865-71 Prospect Ave., Cleveland 15, Ohio  
 Hallcrafters Co., 4401 5th Ave., Chicago 24, Ill.  
 Harvey Wells Electronics Inc., North St., Southbridge, Mass.  
 Islip Radio Mfg. Co., Beech St., Islip, N. Y.  
 Kaar Engineering Co., 619 Emerson St., Palo Alto, Calif.  
 McMurdo Silver Co., Inc., 1249 Main St., Hartford 3, Conn.  
 Mobile Communications Co., 202 E. Fourth St., Long Beach 2, Calif.  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover, Back Cover & 251  
**Radio Receptor Co., 251 W. 19th St., New York, N. Y.**  
 See Advertisement on Page 40  
 Radio Specialty Mfg. Co., 2023 S. E. 6th Ave., Portland 14, Ore.  
 Schuttig & Co., 9th & Kearney Sts., N. E., Washington 17, D. C.  
**Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.**  
 See Advertisements on Pages 80A, 80B  
 Transmitter Equipment Co., Inc., 345 Hudson St., New York 14, N. Y.  
 West Coast Electronics Co., 1601 S. Burlington St., Los Angeles 6, Calif.  
**Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.**  
 See Advertisements on Pages 88, 89  
 Westinghouse Electric Corp., Industrial Electronics Div., Baltimore, Md.

**TRAPS—Wave**  
 Essex Electronics, 1060 Broad St., Newark 2, N. J.  
 See Advertisement on Page 241  
 Hillburn Electronic Products Co., 1 Worth St., New York 13, N. Y.  
 Kings Electronics Co., 372 Classon Ave., Brooklyn 5, N. Y.  
 Miller Co., J. W., 5917 S. Main St., Los Angeles, Calif.  
 Pioneer Electric & Research Corp., The Forest Park, Ill.  
 S-W Inductor Co., 1056 N. Wood St., Chicago, Ill.

**TRIMMER—Capacitors**  
 See Capacitors

### TUBE PARTS

#### Anodes, Carbon

Becker Bros. Carbon Co., 3450 S. 52nd Ave., Chicago, Ill.  
 National Carbon Co., Inc., 30 E. 42nd St., New York, N. Y.  
 See Advertisement on Page 167  
 Stackpole Carbon Co., St. Marys, Pa.

#### Anodes, Gold

Baker & Co., 113 Astor St., Newark 5, N. J.  
 Handy & Harman, 82 Fulton St., New York 7, N. Y.  
 Makepeace Co., D. E., Attleboro, Mass.  
 See Advertisement on Page 28

#### Anodes, Graphite

Baker & Co., 113 Astor St., Newark 5, N. J.  
 National Carbon Co., Inc., 30 E. 42nd St., New York, N. Y.  
 See Advertisement on Page 167  
 Speer Carbon Co., Lincoln Ave., St. Marys, Pa.  
 Stackpole Carbon Co., St. Marys, Pa.

#### Anodes, Metal

American Smelting & Refining Co., Federated Metals Div., 120 Broadway, New York 5, N. Y.  
 Art Wire & Stamping Co., 227 High St., Newark 2, N. J.  
 Baker & Co., 113 Astor St., Newark 5, N. J.  
 Chase Brass & Copper Co., Inc., Waterbury 91, Conn.  
 du Pont de Nemours & Co., Inc., E. I., Wilmington 98, Del.  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 See Advertisements on Inside Back Cover, Back Cover, 251  
 Rice's Sons Inc., Bernard, 325 Fifth Ave., New York 16, N. Y.  
 Staver Mfg. Co., 33-21 85th St., Jackson Heights, N. Y.  
 See Advertisement on Page 253  
 Superior Tube Co., Norristown, Pa.  
 See Advertisements on Pages 36, 37  
 Sylvania Electric Products, Inc., 500 Fifth Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161

#### Anodes, Metallized Graphite

Becker Bros. Carbon Co., 3450 S. 52nd Ave., Chicago, Ill.  
 Speer Carbon Co., Lincoln Ave., St. Marys, Pa.  
 Superior Tube Co., Norristown, Pa.  
 See Advertisements on Pages 36, 37

#### Anodes, Silver

Baker & Co., 113 Astor St., Newark 5, N. J.  
 Handy & Harman, 82 Fulton St., New York 7, N. Y.  
 Makepeace Co., D. E., Attleboro, Mass.  
 See Advertisement on Page 28

#### Base - Pins

Art Wire and Stamping Co., 22 High Street, Newark 2, N. J.  
 Bead Chain Mfg. Co., 110 Mountain Grove St., Bridgeport 5, Conn.  
 See Advertisement on Page 194  
 Instruments Parts Corp., Snowden Ave. & Water St., Ossining, N. Y.  
 See Advertisement on Page 222  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161

#### Bases

American Lava Corp., Chattanooga 5, Tenn.  
 See Advertisement on Page 69

Centralab Div., Globe Union Inc., 900 Keefe Ave., Milwaukee 1, Wisc.  
 See Advertisements on Pages 24, 25  
 Crowley & Co. Inc., Henry L., 1 Central Ave., West Orange, N. J.  
 Electronic Mechanics Inc., 70 Clifton Blvd., Clifton, N. J.  
 Engineering Co., 27 Wright St., Newark, N. J.  
 See Advertisements on Pages 38, 218, 228  
 Howard Mfg. Co., 15 Fourth St., Council Bluffs, Iowa  
 Owens-Illinois Glass Co., Plastics Div., Toledo, Ohio  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Rice's Sons Inc., Bernard, 325 Fifth Ave., New York 16, N. Y.  
 Steward Mfg. Co., D. M. E., 36th St., Chattanooga, Tenn.  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161

#### Caps

Engineering Co., 27 Wright St., Newark, N. J.  
 See Advertisements on Pages 38, 218, 228  
 Goat Co., Inc., Fred, 314 Dean St., Brooklyn, N. Y.  
 See Advertisement on Page 202  
 Insuline Corp. of America, 36-02 35th Ave., L. I. City, N. Y.  
 See Advertisement on Page 166  
 Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44  
 National Co., Inc., 61 Sherman St., Malden 48, Mass.  
 See Advertisement on Page 78  
 Owens-Illinois Glass Co., Plastics Div., Toledo, Ohio  
 Staver Mfg. Co., 33-21 85th St., Jackson Heights, N. Y.  
 See Advertisement on Page 253  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161

#### Cathode Sleeves and Tubes

Crowley & Co. Inc., Henry L., 1 Central Ave., West Orange, N. J.  
 Precision Labs., Inc., Irvington, N. J.  
 Precision Tube Co., 3828 Terrace St., Phila. 28, Pa.  
 See Advertisement on Page 218  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 See Advertisements on Inside Back Cover, Back Cover, 251  
 Rice's Sons Inc., Bernard, 325 Fifth Ave., New York 16, N. Y.  
 Superior Tube Co., Norristown, Pa.  
 See Advertisements on Pages 36, 37  
 Swedish Iron & Steel Corp., 17 Battery Pl., New York, N. Y.  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161

#### Cathode Ray Tube Powders

Callite Tungsten Corp., 540 39th St., Union City, N. J.  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 See Advertisements on Inside Back Cover, Back Cover, 251  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161  
 U. S. Radium Corp., 535 Pearl St., New York 7, N. Y.

#### Cathode Ray Tube Side Contacts

Krementsz & Co., 49 Chestnut St., Newark 5, N. J.  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161

#### Envelopes

Corning Glass Works, Corning, N. Y.  
 Libbey Div., Owens Illinois Glass Co., P. O. Box 1035, Toledo 1, Ohio

Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161

#### Filament Wire

Alloy Metal Wire Co., Prospect Park (Moore Sta.), Pa.  
 Art Wire & Stamping Co., 227 High St., Newark 2, N. J.  
 Baker & Co., 113 Astor St., Newark 5, N. J.  
 Callite Tungsten Corp., 540 39th St., Union City, N. J.  
 Cleveland Tungsten, Inc., 10200 Meech Ave., Cleveland, Ohio  
 Driver Co., Wilbur B., 150 Riverside Ave., Newark, N. J.  
 Driver-Harris Co., 201 Middlesex St., Harrison, N. J.  
 See Advertisement on Page 187  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 See Advertisements on Inside Back Cover, Back Cover, 251  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161  
 Westinghouse Electric Corp., Bloomfield Lamp Div., Bloomfield, N. J.  
 See Advertisement on Page 45  
 Wildberg Bros. Smelting & Refining Co., 742 Market St., San Francisco 2, Calif.

#### Getters

Callite Tungsten Corp., 540 39th St., Union City, N. J.  
 Fansteel Metallurgical Corp., 2200 Sheridan Rd., North Chicago, Ill.  
 Kemet Lab. Co. Inc., Unit of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.  
 King Laboratories Inc., 127 Solar St., Syracuse 4, N. Y.  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161

#### Grids and Supports

Baker & Co., 113 Astor St., Newark 5, N. J.  
 Cleveland Wire Cloth & Mfg. Co., 3573 E. 78th St., Cleveland 5, Ohio  
 Goat Co., Inc., Fred, 314 Dean St., Brooklyn, N. Y.  
 See Advertisement on Page 202  
 Haydu Bros., Plainfield, N. J.  
 National Carbon Co., Inc., 30 E. 42nd Street, New York, N. Y.  
 See Advertisement on Page 167  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 See Advertisements on Inside Back Cover, Back Cover, 251  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161  
 Westinghouse Electric Corp., Bloomfield Lamp Div., Bloomfield, N. J.  
 See Advertisement on Page 45

#### Grid Wire

Alloy Metal Wire Co., Prospect Park (Moore Sta.), Pa.  
 Baker & Co., 113 Astor St., Newark 5, N. J.  
 Callite Tungsten Corp., 540 39th St., Union City, N. J.  
 Driver Co., Wilbur B., 150 Riverside Ave., Newark, N. J.  
 Driver-Harris Co., 201 Middlesex St., Harrison, N. J.  
 See Advertisement on Page 187  
 Haydu Bros., Plainfield, N. J.  
 Kemet Labs. Co., Inc., Unit of Union Carbide and Carbon Corp., 30 E. 42nd St., New York 17, N. Y.  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 See Advertisements on Inside Back Cover, Back Cover, 251  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161  
 Westinghouse Electric Corp., Bloomfield Lamp Div., Bloomfield, N. J.  
 See Advertisement on Page 45

#### Heat Radiators

Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D

Precision Labs., Inc., Irvington, N. J.  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 See Advertisements on Inside Back Cover, Back Cover, 251  
 Rice's Sons Inc., Bernard, 2325 Fifth Ave., New York 16, N. Y.  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161

**Metal Supports**

Art Wire and Stamping Co., 227 High St., Newark 2, N. J.  
 Fansteel Metallurgical Corp., 2200 Sheridan Rd., North Chicago, Ill.  
 Goat Co., Inc., Fred, 314 Dean St., Brooklyn, N. Y.  
 See Advertisement on Page 202  
 Haydu Bros., Plainfield, N. J.  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Rice's Sons Inc., Bernard, 325 Fifth Ave., New York 16, N. Y.  
 Staver Mfg. Co., 33-21 85th St., Jackson Heights, N. Y.  
 See Advertisement on Page 253  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161

**Mica Supports**

Ford Radio & Mica Corp., 536 63rd St., Brooklyn, New York  
 Mica Insulator Co., Schenectady 1, N. Y.  
 Mica Products Mfg. Co., 69 Wooster St., New York, N. Y.  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161

**Tube Seal Leads**

Bead Chain Mfg. Co., 110 Mountain Grove St., Bridgeport 5, Conn.  
 See Advertisement on Page 194  
 Callite Tungsten Corp., 540 39th St., Union City, N. J.  
 Cleveland Tungsten, Inc., 10200 Meech Ave., Cleveland 5, Ohio  
 Engineering Co., 27 Wright St., Newark, N. J.  
 See Advertisements on Pages 38, 218, 228  
 Hermaseal Co., Riverside Dr., Elkhart, Ind.  
 See Advertisements on Pages 90, 222  
 Hermetic Seal Products Co., 414 Morris Ave., Newark, N. J.  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 See Advertisements on Inside Back Cover, Back Cover, 251  
 Sylvania Electric Products, Inc., 500 Fifth Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161  
 Westinghouse Electric Corp., Bloomfield Lamp Div., Bloomfield, N. J.  
 See Advertisement on Page 45

**Water Jackets**

Eastern Industries Co., 26 Elm St., New Haven, Conn.  
 Ecco High Frequency Corp., 7020 Hudson Blvd., North Bergen, N. J.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisement on Inside Back Cover, Back Cover, Page 251  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 Rice's Sons, Inc., Bernard, 325 Fifth Ave., New York 16, N. Y.

**Wire Parts**

Art Wire and Stamping Co., 227 High St., Newark 2, N. J.  
 Bead Chain Mfg. Co., 110 Mountain Grove St., Bridgeport 5, Conn.  
 See Advertisement on Page 194  
 Cleveland Tungsten, Inc., 10200 Meech Ave., Cleveland, Ohio  
 Fansteel Metallurgical Corp., 2200 Sheridan Rd., North Chicago, Ill.

Goat Co., Inc., Fred, 314 Dean St., Brooklyn, N. Y.  
 See Advertisement on Page 202  
 Haydu Bros., Plainfield, N. J.  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 See Advertisements on Inside Back Cover, Back Cover, 251  
 Staver Mfg. Co., 33-21 85th St., Jackson Heights, N. Y.  
 See Advertisement on Page 253  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161  
 Westinghouse Electric Corp., Bloomfield Lamp Div., Bloomfield, N. J.  
 See Advertisement on Page 45

**TUBES—Ballast**

Amperite Co., 561 Broadway, New York, N. Y.  
 See Advertisement on Page 202  
 Chatham Electronics, 475 Washington St., Newark 2, N. J.  
 See Advertisement on Page 247  
 Clarostat Mfg. Co., Inc., 285-7 6th St., Brooklyn, N. Y.  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Hytron Radio & Electronics Corp., 76 Lafayette St., Salem, Mass.  
 J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkwy., Brooklyn, N. Y.  
 Kuthe Laboratories, Inc., 150 Summit St., Newark 4, N. J.  
 Meissner Mfg. Div., Maguire Industries, Inc., Mt. Carmel, Ill.  
 National Union Radio Corp., 350 Scotland Rd., Orange, N. J.  
 Raytheon Mfg. Co., Receiving Tube Div., Newton 58, Mass.  
 Trefz Mfg. Co., 511 E. 164th St., New York 56, N. Y.  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89

**TUBES—Battery Charger**

Baldor Electric Co., 4353 Duncan Ave., St. Louis, Mo.  
 Chatham Electronics, 475 Washington St., Newark 2, N. J.  
 See Advertisement on Page 247  
 Electric Heat Control Co., The, 9123 Inman Ave., Cleveland 5, Ohio  
 General Electric Co., Bridgeport 2, Conn.  
 Radio Corp. of America, Tube Div., Harrison, N. J.

**TUBES—Bolometer**

Ballantine Labs., Inc., Boonton, N. J.  
 See Advertisement on Page 42  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 See Advertisements on Inside Back Cover, Back Cover, 251  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161

**TUBES—Cathode Ray**

DuMont Labs., Inc., Allen B., 2 Main Ave., Passaic, N. J.  
 Electronic Tube Corp., 1200 E. Mermaid Ave., Chestnut Hill, Phila., Pa.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 National Union Radio Corp., 350 Scotland Rd., Orange, N. J.  
 North American Philips Co., 100 East 42nd St., New York 17, N. Y.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 See Advertisements on Inside Back Cover, Back Cover, 251  
 Rauland Corp., 4245 N. Knox Ave., Chicago 41, Ill.  
 Standard Arcturus Corp., 99 Sussex Ave., Newark, N. J.  
 Sylvania Electric Products, Inc., 500 Fifth Ave., New York, N. Y.  
 See Advertisements on Pages 158 to 161  
 Transvision Inc., 108 4th St., New Rochelle, N. Y.  
 U. S. Television Mfg. Corp., 3 W. 61st St., New York 23, N. Y.  
 Zetka Lab. Inc., 198-10-12 32nd Ave., Bay-side, N. Y.

**TUBES—Electrometer**

Radio Corp. of America, Tube Div., Harrison, N. J.  
 Raytheon Mfg. Co., Special Tube Section, 55 Chapel St., Newton 58, Mass.  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89

**TUBES—Fiber**

Cleveland Container Co., The, 10630 Berea Road, Cleveland 2, Ohio  
 See Advertisement on Page 244  
 Continental Diamond Fiber Co., 16 Chapel St., Newark, Del.  
 See Advertisements on Pages 72, 73  
 Diamond Straw & Machine Co., 114-116 E. 16th St., New York 3, N. Y.  
 Franklin Fibre-Lamitex Corp., 12th & French Sts., Wilmington, Del.  
 See Advertisement on Page 232  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 Insulation Mfgs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.  
 See Advertisement on Page 87  
 Insulation Mfg. Co., 11 New York Ave., Brooklyn, N. Y.  
 National Vulcanized Fibre Co., Wilmington, Del.  
 See Advertisement on Page 58  
 Penn Fibre & Specialty Corp., 2030 E. Westmoreland St., Phila., 44, Pa.  
 Spaulding Fibre Co., Inc., 310 Wheeler St., Tonawanda, N. Y.  
 Sythane Corp., Oaks, Pa.  
 Wilmington Fibre Specialty Co., P. O. Drawer 1028, Wilmington, 99, Del.

**TUBES—Geiger Mueller**

Aerolux Light Corp., 653 11th Ave., New York 18, N. Y.  
 Atomic Instruments Co., 160 Charles St., Boston, Mass.  
 Ballantine Labs., Inc., Boonton, N. J.  
 See Advertisement on Page 42  
 Cyclotron Specialties Co., Morago 8, Calif.  
 Engineering Lab., Inc., 602 E. 4th St., Tulsa 3, Okla.  
 General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
 Geophysical Instrument Co., Key Blvd. & Nash St., Arlington, Va.  
 Herbach & Rademan Inc., 517 Ludlow St., Phila. 6, Pa.  
 Instrumts Development Labs., 817 E. 55th St., Chicago 15, Ill.  
 National Technical Lab., 820 Mission St., South Pasadena, Calif.  
 North American Philips Co., Inc., 100 E. 42nd St., New York 17, N. Y.  
 Raytheon Mfg. Co., Special Tube Section, 55 Chapel St., Newton 58, Mass.  
 Rowe Radio Research Labs., 2422 N. Pulaski Rd., Chicago 39, Ill.  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161  
 Tracerlab Inc., 55 Oliver St., Boston 10, Mass.  
 Trion Electric Corp., 76 Ellicott St., Buffalo 3, N. Y.  
 Victoreon Instrument Co., 3806 Hough Ave., Cleveland 3, Ohio

**TUBES—Germicidal**

Ultra-Violet Products, Inc., 5205 Santa Monica Blvd., Los Angeles 27, Calif.  
 Westinghouse Electric Corp., Electronic Tube Sales Dept., Bloomfield, N. J.  
 See Advertisements on Pages 230, 231

**TUBES—Hearing Aid**

General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Sonotone Corp., P. O. Box 200, Saw Mill River Rd., Elmsford, N. Y.  
 Standard Arcturus Corp., 99 Sussex Ave., Newark, N. J.  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161

## TUBES—Industrial

Amperex Electronic Corp., 25 Washington St., Brooklyn 1, N. Y.  
 Chatham Electronics, 475 Washington St., Newark 2, N. J.  
 See Advertisement on Page 247  
 Eitel-McCullough, Inc., San Bruno, Calif.  
 Electronic Enterprises Inc., 65 7th Ave., Newark 4, N. J.  
 Electronic Products Co., 111 E. 3rd St., Mt. Vernon, N. Y.  
 See Advertisement on Page 220  
 Electrons Inc., 127 Sussex Ave., Newark, N. J.  
 See Advertisement on Page 183  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 General Electronics, Inc., 1819 Broadway, New York 23, N. Y.  
 Hytron Radio & Electronics Corp., 76 Lafayette St., Salem, Mass.  
 Kuthe Laboratories, 150 Summit St., Newark 4, N. J.  
 Machlett Labs., Springdale, Conn.  
 See Advertisement on Page 77  
 National Union Radio Corp., 350 Scotland Rd., Orange, N. J.  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 See Advertisements on Inside Back Cover, Back Cover & 251  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Raytheon Mfg. Co., Special Tube Section, 55 Chapel St., Newton 58, Mass.  
 Standard Arcturus Corp., 99 Sussex Ave., Newark, N. J.  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161  
 Tung-Sol Lamp Works Inc., 95 Eighth Ave., Newark, N. J.  
 See Advertisement on Page 181  
 United Electronics Co., 42 Spring St., Newark 2, N. J.  
 Victoreen Instrument Co., 5806 Hough Ave., Cleveland 3, Ohio  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89  
 Westinghouse Electric Corp., Electronic Tube Sales Dept., Bloomfield, N. J.  
 See Advertisements on Pages 230, 231

## TUBES—Infra-Red

General Electric Co., Schenectady 5, N. Y.  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 Westinghouse Electric Corp., Electronic Tube Sales Dept., Bloomfield, N. J.

## TUBES—Klystron

General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Raytheon Mfg. Co., Receiving Tube Div., Newton 58, Mass.  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 See Advertisements on Inside Back Cover, Back Cover, 251  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161

## TUBES—Magnetron

Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Machlett Labs., Springdale, Conn.  
 See Advertisement on Page 77  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 See Advertisements on Inside Back Cover, Back Cover, 251  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161

## TUBES—Microwave Receiving or Transmitting

Amperex Electronics Corp., 25 Washington St., Brooklyn 1, N. Y.

Chatham Electronics, 475 Washington St., Newark 2, N. J.  
 See Advertisement on Page 247  
 Eitel-McCullough Inc., San Bruno, Calif.  
 Federal Telephone & Radio Corp., 100 Kingsland Road, Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Kuthe Laboratories, Inc., 150 Summit St., Newark 4, N. J.  
 Machlett Labs., Springdale, Conn.  
 See Advertisement on Page 77  
 National Union Radio Corp., 350 Scotland Rd., Orange, N. J.  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 See Advertisements on Inside Back Cover, Back Cover, 251  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161

## TUBES—Phototubes and Photocells

Bradley Laboratories, 82 Meadow St., New Haven, Conn.  
 Continental Electric Co., Geneva, Ill.  
 Cover Dual Signal Systems, Inc., Div. of Electra Voice Corp., 5215-25 Ravenswood Ave., Chicago 40, Ill.  
 Eby, Inc., Hugh H., 18 W. Chelton Ave., Philadelphia 13, Pa.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 General Scientific Corp., 4829 S. Kedzie Ave., Chicago, Ill.  
 National Technical Lab., 320 Mission St., South Pasadena, Calif.  
 National Union Radio Corp., 350 Scotland Rd., Orange, N. J.  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 See Advertisements on Inside Back Cover, Back Cover, 251  
 Rauland Corp., 4245 N. Knox Ave., Chicago 41, Ill.  
 Standard Arcturus Corp., 99 Sussex Ave., Newark, N. J.  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89  
 Westinghouse Electric Corp., Electronic Tube Sales Dept., Bloomfield, N. J.  
 See Advertisements on Pages 230, 231  
 Westinghouse Electric Corp., Bloomfield Lamp Div., Bloomfield, N. J.  
 See Advertisement on Page 45  
 Weston Electrical Instrument Corp., 618 Froelinguysen Ave., Newark 5, N. J.  
 Worner Electronic Devices, Rankin, Ill.

## TUBES—Pirani

Ballantine Labs., Inc., Boonton, N. J.  
 See Advertisement on Page 42  
 Distillation Products, Inc., 755 Ridge Rd. W., Rochester, N. Y.  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 See Advertisements on Inside Back Cover, Back Cover, 251  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161

## TUBES—Quartz (for Short Wave Medical Apparatus)

Dallons Labs., 5066 Santa Monica Blvd., Los Angeles, Calif.  
 Kemlite Labs., 1809 N. Ashland Ave., Chicago, Ill.  
 Richardson Co., The, Melrose Park, Ill.  
 See Advertisement on Page 209  
 Ultra-Violet Products, Inc., 5205 Santa Monica Blvd., Los Angeles 27, Calif.

## TUBES—Receiving

Chatham Electronics, 475 Washington St., Newark 2, N. J.  
 See Advertisement on Page 247  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 General Electronics, Inc., 101 Hazel St., Paterson, N. J.

Hytron Radio & Electronics Corp., 76 Lafayette St., Salem, Mass.  
 National Union Radio Corp., 350 Scotland Rd., Orange, N. J.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 See Advertisements on Inside Back Cover, Back Cover, 251  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Standard Arcturus Corp., 99 Sussex Ave., Newark, N. J.  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161  
 Tung-Sol Lamp Works Inc., 95 Eighth Ave., Newark, N. J.  
 See Advertisement on Page 181  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89  
 Zetka Labs, Inc., 198-10-12 32nd Ave., Bay-side, N. Y.

## TUBES—Rectifying

Amperex Electronic Corp., 25 Washington St., Brooklyn, N. Y.  
 Chatham Electronics, 475 Washington St., Newark 2, N. J.  
 See Advertisement on Page 247  
 Continental Electric Co., Geneva, Ill.  
 Eitel-McCullough, Inc., San Bruno, Calif.  
 Electric Heat Control Co., 9123 Inman Ave., Cleveland 5, Ohio  
 Electronic Enterprises Inc., 65 7th Ave., Newark 4, N. J.  
 Electronic Power Co. Inc., 19 W. 44th St., New York, N. Y.  
 Electronic Products Co., 111 E. Third St., Mt. Vernon, N. Y.  
 See Advertisement on Page 220  
 Electrons, Inc., 127 Sussex Ave., Newark, N. J.  
 See Advertisement on Page 183  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 General Electronics, Inc., 1819 Broadway, New York 23, N. Y.  
 General Electronics, Inc., 101 Hazel St., Paterson, N. J.  
 Heintz & Kaufman, Ltd., South San Francisco, Calif.  
 Hytron Radio & Electronics Corp., 76 Lafayette St., Salem, Mass.  
 Kuthe Laboratories, Inc., 150 Summit St., Newark 4, N. J.  
 Machlett Laboratories, Springdale, Conn.  
 See Advertisement on Page 77  
 National Union Radio Corp., 350 Scotland Rd., Orange, N. J.  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 See Advertisements on Inside Back Cover, Back Cover, 251  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Raytheon Mfg. Co., Special Tube Section, 55 Chapel St., Newton 58, Mass.  
 Standard Arcturus Corp., 99 Sussex Ave., Newark, N. J.  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161  
 Taylor Tubes, Inc., 2312 Wabansia Ave., Chicago 47, Ill.  
 Tung-Sol Lamp Works Inc., 95 Eighth Ave., Newark, N. J.  
 See Advertisement on Page 181  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89  
 Westinghouse Electric Corp., Electronic Tube Sales Dept., Bloomfield, N. J.  
 See Advertisements on Pages 230, 231  
 Westinghouse Electric Corp., Bloomfield Lamp Div., Bloomfield, N. J.  
 See Advertisement on Page 45

## TUBES—Sonic Gas-Filled

Ballantine Labs., Inc., Boonton, N. J.  
 See Advertisement on Page 42  
 Chatham Electronics, 475 Washington St., Newark 2, N. J.  
 See Advertisement on Page 247  
 J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkway., Brooklyn, N. Y.

## TUBES—Strobotrons

Electronic Products Co., 111 E. 3rd St., Mt. Vernon, N. Y.  
 See Advertisement on Page 220

General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
General Radio Co., 275 Massachusetts Ave.,  
Cambridge 39, Mass.  
Sylvania Electric Products, Inc., 500 5th  
Ave., New York 18, N. Y.  
See Advertisements on Pages 158 to 161

**TUBES—Subminiature**

Chatham Electronics, 475 Washington St.,  
Newark 2, N. J.  
See Advertisement on Page 247  
Raytheon Mfg. Co., Special Tube Section, 55  
Chapel St., Newton 58, Mass.  
Victoreen Instrument Co., 5806 Hough St.,  
Cleveland 3, Ohio

**TUBES—Television Pickup**

Radio Corp. of America, Tube Div., Har-  
rison, N. J.  
See Advertisements on Inside Back Cover,  
Back Cover, 251  
Remington Rand, Electronic Div., Middle-  
town, Conn.

**TUBES—Thyratron**

Continental Electric Co., Geneva, Ill.  
Du Mont Labs., Inc., Allen B., 2 Main Ave.,  
Passaic, N. J.  
Electrons, Inc., 127 Sussex Ave., Newark,  
N. J.  
See Advertisement on Page 183  
Federal Telephone & Radio Corp., 100  
Kingsland Rd., Clifton, N. J.  
See Advertisements on Pages 48A to 48D  
General Electric Co., Syracuse, N. Y.  
See Advertisements on Pages 96, 96A  
Sylvania Electric Products, Inc., 500 5th  
Ave., New York 18, N. Y.  
See Advertisements on Pages 158 to 161  
Westinghouse Electric Corp., Switchgear &  
Control Div., East Pittsburgh, Pa.

**TUBES—Transmitting and Power**

Amperex Electronic Corp., 25 Washington  
St., Brooklyn, N. Y.  
Chatham Electronics, 475 Washington St.,  
Newark 2, N. J.  
See Advertisement on Page 247  
Eitel-McCullough, Inc., San Bruno, Cal.  
Electronic Products Co., 111 E. Third St.,  
Mt. Vernon, N. Y.  
See Advertisement on Page 220  
Federal Telephone and Radio Corp., 100  
Kingsland Rd., Clifton, N. J.  
See Advertisements on Pages 48A to 48D  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
General Electronics, Inc., 1819 Broadway,  
New York 23, N. Y.  
General Electronics, Inc., 101 Hazel St.,  
Paterson, N. J.  
Heintz & Kaufman, Ltd., South San Fran-  
cisco, Calif.  
Hytron Radio & Electronics Corp., 76 La-  
fayette St., Salem, Mass.  
Jennings Radio Mfg. Co., 1098 E. William  
St., San Jose 12, Calif.  
See Advertisement on Page 200  
Kluge Electronics Co., 1913 Montrose St.,  
Los Angeles 26, Calif.  
Kuthe Laboratories, Inc., 150 Summit St.,  
Newark 4, N. J.  
Machlett Laboratories, Springdale, Conn.  
See Advertisement on Page 77  
National Union Radio Corp., 350 Scotland  
Rd., Orange, N. J.  
Radio Corp. of America, RCA Victor Div.,  
Camden, N. J.  
Radio Corp. of America, Tube Div., Har-  
rison, N. J.  
See Advertisements on Inside Back Cover,  
Back Cover, 251  
Raytheon Mfg. Co., Power Tube Div., Wal-  
tham 54, Mass.  
Standard Arcturus Corp., 99 Sussex Ave.,  
Newark, N. J.  
Sylvania Electric Products, Inc., 500 5th  
Ave., New York 18, N. Y.  
See Advertisements on Pages 158 to 161  
Taylor Tubes, Inc., 2312 Wabansia Ave.,  
Chicago 47, Ill.  
United Electronics Co., 42 Spring St., New-  
ark 2, N. J.  
Western Electric Co., Inc., 195 Broadway,  
New York 7, N. Y.  
See Advertisements on Pages 88, 89  
Westinghouse Electric Corp., Bloomfield  
Lamp Div., Bloomfield, N. J.  
See Advertisement on Page 45

Westinghouse Electric Corp., Electronic  
Tube Sales Dept., Bloomfield, N. J.  
See Advertisements on Pages 230, 231  
Zetka Labs., Inc., 198-10-12 32nd Ave., Bay-  
side, N. Y.

**TUBES—TR and Anti TR**

General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Sperry Gyroscope Co., Inc., Great Neck,  
L. I., N. Y.  
See Advertisements on Pages 80A, 80B  
Sylvania Electric Products, Inc., 500 5th  
Ave., New York 18, N. Y.  
See Advertisements on Pages 158 to 161

**TUBES—uhf**

Amperex Electronic Corp., 25 Washington  
St., Brooklyn 1, N. Y.  
Chatham Electronics, 455 Washington St.,  
Newark 2, N. J.  
See Advertisement on Page 247  
Eitel-McCullough, Inc., San Bruno, Calif.  
Federal Telephone & Radio Corp., 100  
Kingsland Road, Clifton, N. J.  
See Advertisements on Pages 48A to 48D  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
Hytron Radio & Electronics Corp., 76 La-  
fayette St., Salem, Mass.  
Machlett Labs., Springdale, Conn.  
See Advertisement on Page 77  
National Union Radio Corp., 350 Scotland  
Rd., Orange, N. J.  
Radio Corp. of America, Tube Div., Har-  
rison, N. J.  
See Advertisements on Inside Back Cover,  
Back Cover, 251  
Raytheon Mfg. Co., Power Tube Div., Wal-  
tham 54, Mass.  
Raytheon Mfg. Co., Special Tube Section,  
55 Chapel St., Newton 58, Mass.  
Sperry Gyroscope Co., Inc., Great Neck,  
L. I., N. Y.  
See Advertisements on Pages 80A, 80B  
Standard Arcturus Corp., 99 Sussex Ave.,  
Newark, N. J.  
Sylvania Electric Products, Inc., 500 5th  
Ave., New York 18, N. Y.  
See Advertisements on Pages 158 to 161  
Taylor Tubes, Inc., 2312 Wabansia Ave.,  
Chicago 47, Ill.  
Tung-Sol Lamp Works, Inc., 95 8th Ave.,  
Newark, N. J.  
See Advertisement on Page 181  
Western Electric Co., Inc., 195 Broadway,  
New York 7, N. Y.  
See Advertisements on Pages 88, 89

**TUBES—Vacuum Thermocouple**

American Thermo Electric Co., 67 E. 8th  
St., New York 3, N. Y.  
Ballantine Labs., Inc., Boonton, N. J.  
See Advertisement on Page 42  
Brown Instrument Co., 4423 Wayne Ave.,  
Philadelphia 44, Pa.  
National Research Corp., Vacuum Engrg.  
Div., 100 Brookline Ave., Boston 15,  
Mass.  
Radio Corp. of America, Tube Div., Har-  
rison, N. J.  
See Advertisements on Inside Back Cover,  
Back Cover, 251  
Western Electric Co., Inc., 195 Broadway,  
New York 7, N. Y.  
See Advertisements on Pages 88, 89

**TUBES—Voltage Regulating**

Aerolux Light Corp., 653 11th Ave., New  
York 19, N. Y.  
Amperex Electronic Corp., 25 Washington  
St., Brooklyn 1, N. Y.  
Chatham Electronics, 455 Washington St.,  
Newark 2, N. J.  
See Advertisement on Page 247  
Federal Telephone and Radio Corp., 100  
Kingsland Rd., Clifton, N. J.  
See Advertisements on Pages 48A to 48D  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
General Electronics, Inc., 101 Hazel St.,  
Paterson, N. J.  
General Electronics, Inc., 1819 Broadway,  
New York 23, N. Y.  
Hytron Radio & Electronics Corp., 76 La-  
fayette St., Salem, Mass.  
Kuthe Laboratories, Inc., 150 Summit St.,  
Newark 4, N. J.  
Radio Corp. of America, Tube Div., Har-  
rison, N. J.  
See Advertisements on Inside Back Cover,  
Back Cover, 251  
Raytheon Mfg. Co., Special Tube Section,  
55 Chapel St., Newton 58, Mass.

Sorensen & Co., 375 Fairfield Ave., Stamford,  
Conn.  
See Advertisement on Page 154  
Sylvania Electric Products, Inc., 500 5th  
Ave., New York 18, N. Y.  
See Advertisements on Pages 158 to 161  
Taylor Tubes, Inc., 2312 Wabansia Ave.,  
Chicago 47, Ill.  
Victoreen Instrument Co., 5806 Hough Ave.,  
Cleveland 3, Ohio  
Western Electric Co., Inc., 195 Broadway,  
New York 7, N. Y.  
See Advertisements on Pages 88, 89  
Westinghouse Electric Corp., Bloomfield  
Lamp Div., Bloomfield, N. J.  
See Advertisement on Page 45  
Westinghouse Electric Corp., Electronic  
Tube Sales Dept., Bloomfield, N. J.  
See Advertisements on Pages 230, 231

**TUBES—X-Ray**

Amperex Electronic Corp., 25 Washington  
St., Brooklyn 1, N. Y.  
General Electric Co., Schenectady 5, N. Y.  
See Advertisements on Pages 96B, 96C  
General Electric X-Ray Corp., 2012 Jackson  
Blvd., Chicago, Ill.  
General Electronics, Inc., 101 Hazel St.,  
Paterson, N. J.  
Machlett Laboratories, Springdale, Conn.  
See Advertisement on Page 77  
North American Philips Co., Inc., 100 East  
42nd St., New York, N. Y.  
Picker X-Ray Corp., 300 Fourth Ave., New  
York 10, N. Y.  
Sheboygan X-Ray Co., 817 Center St., She-  
boygan, Wisc.  
Standard Arcturus Corp., 99 Sussex Ave.,  
Newark 2, N. J.  
Triplett & Barton Inc., Burbank, Calif.  
Westinghouse Electric Corp., Bloomfield  
Lamp Div., Bloomfield, N. J.  
See Advertisement on Page 45  
Westinghouse Electric Corp., Electronic  
Tube Sales Dept., Bloomfield, N. J.  
See Advertisements on Pages 230, 231

**TUBING—Brass & Copper**

American Brass Co., American Metal Hose  
Branch, Waterbury 88, Conn.  
Bundy Tubing Co., 8109 E. Jefferson Ave.,  
Detroit 14, Mich.  
Chase Brass & Copper Co., Inc., Waterbury  
91, Conn.  
Diamond Instrument Co., North Ave.,  
Wakefield, Mass.  
Jelliff Mfg. Corp., C. O., 200 Pequot Ave.,  
Southport, Conn.  
Precision Tube Co., 3828 Terrace St., Phila-  
delphia 28, Pa.  
See Advertisement on Page 218  
Uniform Tubes, Shurs Lane & Lauriston  
St., Roxborough, Philadelphia, Pa.

**TUBING—Ceramic**

American Lava Corp., Chattanooga 5, Tenn.  
See Advertisement on Page 69  
Centralab Div., Globe Union Inc., 900 Keefe  
Ave., Milwaukee 1, Wisc.  
See Advertisements on Pages 24, 25  
Crowley & Co., Inc., Henry L., 1 Central  
Ave., West Orange, N. J.  
General Ceramics & Steatite Corp., Keas-  
bey, N. J.  
See Advertisement on Page 79  
Kirchberger & Co., Inc., M., 1425 37th St.,  
Brooklyn 18, N. Y.  
Mica Products Co., 61 Wooster St., New  
York, N. Y.  
Radio Corp. of America, Tube Div., Har-  
rison, N. J.  
See Advertisements on Inside Back Cover,  
Back Cover, 251  
Saxonburg Potteries, Saxonburg, Pa.  
Star Porcelain Co., 61 Muirhead Ave., Tren-  
ton 9, N. J.  
Steward Mfg. Co., D.M.E., 36th St., Chat-  
tanooga, Tenn.  
Taylor Fibre Co., Norristown, Pa.  
Union Electrical Porcelain Works, Van St.,  
Trenton 5, N. J.

**TUBING—Fabric**

Anchor Webbing Co., 1005 Main St., Paw-  
tucket, R. I.  
Bentley, Hires Mfg. Co., Conshohocken, Pa.  
Franklin Fibre-Lamitex Corp., 12th and  
French Sts., Wilmington, Delaware  
See Advertisement on Page 232

General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 Insulating Tube Co., 26 Cottage St., P. O. Box 1, Poughkeepsie, N. Y.  
 Insulation Mfrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.  
 See Advertisement on Page 87  
 Irvington Varnish & Insulator Co., 10 Argyle Terrace, Irvington 11, N. J.  
 See Advertisements on Pages 20, 21  
 Mitchell Rand Insulation Co., Inc., 51 Murray St., New York 7, N. Y.  
 See Advertisement on Page 173  
 National Varnished Products Corp., 211 Randolph Ave., Woodbridge, N. J.  
 See Advertisement on Page 249  
 National Vulcanized Fibre Co., Wilmington, Del.  
 See Advertisement on Page 58  
 Taylor Fibre Co., Norristown, Pa.

## TUBING—Glass

Bache & Co., Semon, 636 Greenwich St., New York 14, N. Y.  
 Corning Glass Works, Corning, N. Y.  
 Fischer & Porter Co., Hatboro, Pa.  
 Fish-Schurman Corp., 230 E. 45th St., New York 17, N. Y.  
 Haydu Bros. Plainfield, N. J.  
 Insulation Mfg. Co., 11 New York Ave., Brooklyn, N. Y.  
 Insulation Mfrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.  
 See Advertisement on Page 87  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 See Advertisements on Inside Back Cover, Back Cover, 251  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.

## TUBING—Glass Fiber Insulation

Alpha Wire Corp., 50 Howard St., New York, N. Y.  
 Bentley, Harris Mfg. Co., Conshohocken, Pa.  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 Hope Webbing Co., Providence, R. I.  
 Insulation Mfrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.  
 See Advertisement on Page 87  
 Mica Insulator Co., Schenectady 1, N. Y.  
 Mitchell Rand Insulation Co., Inc., 51 Murray St., New York 7, N. Y.  
 See Advertisement on Page 173  
 Owens-Corning Fiberglass Corp., 1860 Nicholas Bldg., Toledo 1, Ohio  
 Varflex Corp., N. Jay St., Rome, N. Y.  
 See Advertisement on Page 190

## TUBING—Knitted Wire

Alden Products Co., 117 North Main Street, Brockton 64, Mass.  
 Alpha Wire Corp., 50 Howard Street, New York, N. Y.  
 Chicago Metal Hose Corp., 1315 S. 3rd Ave., Maywood, Ill.  
 Essex Wire Corp., 1601 Wall St., Fort Wayne, Ind.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 York Materials Co., Inc., 150 Nassau St., New York 7, N. Y.

## TUBING—Metal and Alloy

Agaloy Tubing Co., 75 West St., New York 6, N. Y.  
 American Brass Co., American Metal Hose Branch, Waterbury 88, Conn.  
 Bundy Tubing Co., 8109 E. Jefferson Ave., Detroit 14, Mich.  
 Carpenter Steel Co., Kenilworth, N. J.  
 Division Lead Co., 336 W. Kinzie St., Chicago 22, Ill.  
 Gordon Co., Claud S., 3000 S. Wallace St., Chicago 16, Ill.  
 Haynes Stellite Co., Unit of Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.  
 International Nickel Co., Inc., 67 Wall St., New York 5, N. Y.  
 Makepeace Co., D. E., Attleboro, Mass.  
 See Advertisement on Page 28  
 National Lead Co., 111 Broadway, New York 6, N. Y.  
 Precision Tube Co., 3828 Terrace St., Philadelphia 28, Pa.  
 See Advertisement on Page 218

Reynolds Metals Co., 2500 So. Third St., Louisville 1, Ky.  
 Summerill Tubing Co., Bridgeport, Pa.  
 Superior Tube Co., Norristown, Pa.  
 See Advertisements on Pages 36, 37  
 Swedish Iron & Steel Corp., 17 Battery Place, New York, N. Y.  
 Uniform Tubes, Shurs Lane & Lauriston St., Roxborough, Phila., Pa.  
 York Materials Co., Inc., 150 Nassau St., New York 7, N. Y.

## TUBING—Mica

Continental Diamond Fibre Co., 16 Chapel St., Newark, Del.  
 See Advertisements on Pages 72, 73  
 Insulation Mfrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.  
 See Advertisement on Page 87  
 Mica Insulator Co., Schenectady 1, N. Y.  
 Mica Products Mfg. Co., 69 Wooster St., New York, N. Y.  
 Mitchell Rand Insulation Co., Inc., 51 Murray St., New York 7, N. Y.  
 See Advertisement on Page 173  
 Raytheon Mfg. Co., Power Tube Div., Waltham 54, Mass.  
 Schoonmaker Insulation Co., Inc., A. O., 635 Greenwich St., New York 14, N. Y.  
 Tar Heel Mica Co., Plumtree, N. C.

## TUBING—Nickel

Bundy Tubing Co., 8109 E. Jefferson Ave., Detroit 14, Mich.  
 Carpenter Steel Co., Kenilworth, N. J.  
 Gordon Co., Claud S., 3000 S. Wallace St., Chicago 16, Ill.  
 International Nickel Co., Inc., The, 67 Wall St., New York 5, N. Y.  
 Precision Tube Co., 3828 Terrace St., Philadelphia 28, Pa.  
 See Advertisement on Page 218  
 Superior Tube Co., Norristown, Pa.  
 See Advertisements on Pages 36, 37

## TUBING—Paper

Cleveland Container Co., The, 10630 Berea Rd., Cleveland 2, Ohio  
 See Advertisement on Page 244  
 Diamond Straw and Machine Co., 114-116 East 16th St., New York 3, N. Y.  
 Franklin Fibre-Lamitex Corp., 12th and French Sts., Wilmington, Del.  
 See Advertisement on Page 232  
 Insulation Mfg. Co., 11 New York Ave., Brooklyn, N. Y.  
 Insulation Mfrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.  
 See Advertisement on Page 87  
 Insulating Tube Co., 26 Cottage St., P. O. Box 1, Poughkeepsie, N. Y.  
 National Varnished Products Corp., 211 Randolph Ave., Woodbridge, N. J.  
 See Advertisement on Page 249  
 National Vulcanized Fibre Co., Wilmington, Del.  
 See Advertisement on Page 58  
 Paramount Paper Tube Co., 801 Classgaw Ave., Fort Wayne, Ind.  
 Precision Paper Tube Co., 2033 W. Charleston St., Chicago 47, Ill.

## TUBING—Plastic

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 Anchor Plastics Co., Inc., 533-541 Canal St., New York 13, N. Y.  
 B & C Insulation Products, Inc., Lincoln Highway, Iselin, N. J.  
 Blum & Co., Julius, 532 W. 22nd St., New York, N. Y.  
 Celanese Plastics Corp., 180 Madison Ave., New York 16, N. Y.  
 Continental Diamond Fibre Co., 16 Chapel St., Newark, Del.  
 See Advertisements on Pages 72, 73  
 du Pont de Nemours Co., Inc., E. I., Plastics Dept., 626 Schuyler Ave., Arlington, N. J.  
 Formica Insulation Co., 4662 Spring Grove Ave., Cincinnati, Ohio  
 Franklin Fibre-Lamitex Corp., 12th & French Sts., Wilmington, Del.  
 See Advertisement on Page 232  
 Gamloid Corp., 79-10 Albion Ave., Elmhurst, N. Y.

General Electric Co., Chemical Dept., 1 Plastics Ave., Pittsfield, Mass.  
 See Advertisement on Page 97  
 Industrial Synthetics Corp., 60 Woolsey St., Irvington, N. J.  
 See Advertisement on Page 169  
 Insulating Tube Co., 26 Cottage St., P. O. Box 1, Poughkeepsie, N. Y.  
 Insulation Mfrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.  
 See Advertisement on Page 87  
 Irvington Varnish & Insulator Co., 10 Argyle Terrace, Irvington, N. J.  
 See Advertisements on Pages 20, 21  
 Lamicold Fabricators, 3600 W. Potomac Ave., Chicago 51, Ill.  
 Mica Insulator Co., Schenectady 1, N. Y.  
 Mitchell Rand Insulation Co., Inc., 51 Murray St., New York 7, N. Y.  
 See Advertisement on Page 173  
 National Varnished Products Corp., 211 Randolph Ave., Woodbridge, N. J.  
 See Advertisement on Page 249  
 Penn Fibre & Specialty Co., 2030 E. Westmoreland St., Phila. 44, Pa.  
 Plastex Corp., 402 Mt. Vernon Ave., Columbus 3, Ohio  
 Precision Paper Tube Co., 2033 W. Charleston St., Chicago 47, Ill.  
 Spaulding Fibre Co., Inc., 310 Wheeler St., Tonawanda, N. Y.  
 Suprenant Electrical Insulation Co., 84 Purchase St., Boston 10, Mass.  
 Synthane Corp., Oaks, Penna.  
 Taylor Fibre Co., Norristown, Pa.  
 United Radio Mfg. Co., 191 Greenwich St., New York, N. Y.  
 Westinghouse Electric Corp., Micarta Dept., Trafford, Pa.  
 Wilmington Fibre Specialty Co., P. O. Drawer 1028, Wilmington 99, Del.

## TUBING—Precious Metal

Baker & Co., 113 Astor St., Newark 5, N. J.  
 Callite Tungsten Corp., 540 39th St., Union City, N. J.  
 Makepeace Co., D. E., Attleboro, Mass.  
 See Advertisement on Page 28  
 Ney Co., J. M., Hartford, Conn.

## TUBING—Steel

Agaloy Tubing Co., 75 West St., New York 6, N. Y.  
 Carpenter Steel Co., Kenilworth, N. J.  
 Carpenter Steel Co., Reading, Pa.  
 Republic Steel Corp., Republic Bldg., Cleveland 1, Ohio  
 Superior Tube Co., Norristown, Pa.  
 See Advertisements on Pages 36, 37

## TUBING—Synthetic Resin

American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 Brand & Co., Wm., 276 Fourth Ave., New York 10, N. Y.  
 Insulating Tube Co., 26 Cottage St., P. O. Box 1, Poughkeepsie, N. Y.  
 Insulation Mfrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.  
 See Advertisement on Page 87  
 Lamicold Fabricators, 3600 W. Potomac Ave., Chicago 51, Ill.  
 Mica Insulator Co., Schenectady 1, N. Y.  
 Mitchell Rand Insulation Co., Inc., 51 Murray St., New York 7, N. Y.  
 See Advertisement on Page 173  
 Plastex Corp., 402 Mt. Vernon Ave., Columbus 3, Ohio  
 Spaulding Fibre Co., Inc., 310 Wheeler St., Tonawanda, N. Y.  
 Taylor Fibre Co., Norristown, Pa.  
 Western Felt Works, 4029 Ogden Ave., Chicago, Ill.

## TUBING—Varnished or Lacquered

Aerolite Electronic Hardware Corp., 24 Cliff St., Jersey City, N. J.  
 See Advertisement on Page 246  
 Anchor Webbing Co., 1005 Main St., Pawtucket, R. I.  
 B & C Insulation Products, Inc., Lincoln Highway, Iselin, N. J.  
 Cleveland Container Co., The, 10630 Berea Rd., Cleveland 2, Ohio  
 See Advertisement on Page 244

General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 Hope Webbing Co., Providence, R. I.  
 Insulation Mfrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.  
 See Advertisement on Page 87  
 Inuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Mitchell Rand Insulation Co., Ins., 51 Murray St., New York 7, N. Y.  
 See Advertisement on Page 173  
 National Varnished Products Corp., 211 Randolph Ave., Woodbridge, N. J.  
 See Advertisement on Page 249  
 Saxonburg Potteries, Saxonburg, Pa.

**TUBING—Varnished Cambric Insulation**

Bentley, Harris Mfg. Co., Conshohocken, Pa.

**TUNERS—f-m/a-m**

Browning Labs., Inc., 750 Main St., Winchester, Mass.  
 See Advertisement on Page 65

**TUNERS—Klystron**

Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B

**TUNERS—Permeability**

Aeromotive Equipment Corp., 1632-8 Central St., Kansas City 10, Mo.  
 Aladdin Radio Industries, Inc., 501 W. 35th St., Chicago 16, Ill.  
 Aviola Radio Corp., Phoenix, Arizona  
 Electronic Labs., Inc., 24 W. 24th St., Indianapolis 4, Ind.  
 Essex Electronics, 1060 Broad St., Newark 2, N. J.  
 See Advertisement on Page 241  
 Maico Co., Inc., 25 N. 3rd St., Minneapolis, Minn.  
 Meissner Mfg. Div., Maguire Industries, Inc., Mt. Carmel, Ill.  
 Miller Co., J. W., 5917 S. Main St., Los Angeles, Calif.  
 Teleradio Engineering Corp., 99 Wall St., New York 5, N. Y.

**TUNING DEVICES—Receiver Mechanical**

Aeromotive Equipment Corp., 1632-8 Central St., Kansas City 10, Mo.  
 Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.  
 Collins Audio Products Co., 126 Park St., Westfield, N. J.  
 See Advertisement on Page 253  
 Collins Radio Co., Cedar Rapids, Iowa.  
 See Advertisements on Pages 30 to 33  
 Croname, Inc., 3701 Ravenswood Ave., Chicago, Ill.  
 Delco Radio Div., General Motors Corp., Kokomo, Ind.  
 Electric Tachometer Corp., Broad & Spring Garden Sts., Philadelphia, Pa.  
 Electronic Products Mfg. Co., 7300 Huron River Dr., Dexter, Mich.  
 General Instrument Corp., 829 Newark Ave., Elizabeth 3, N. J.  
 See Advertisement on Page 71  
 Hammariund Mfg. Co., 460 W. 34th St., New York 1, N. Y.  
 La Magna Mfg. Co., Inc., East Rutherford, N. J.  
 Maguire Industries Inc., Electronics Dept., Bridgeport, Conn.  
 Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.  
 See Advertisements on Pages 257 to 260  
 Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.  
 See Advertisement on Page 44  
 National Co., Inc., 61 Sherman St., Malden 48, Mass.  
 See Advertisement on Page 78  
 Radio Condenser Co., Camden, N. J.  
 Yates Engineering Services, Two Hampton Rd., Cranford, N. J.

**TUNING DEVICES—Transmitter Mechanical**

Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.  
 Collins Radio Co., Cedar Rapids, Iowa  
 See Advertisements on Pages 30 to 33

Electric Tachometer Corp., Broad & Spring Garden Sts., Philadelphia, Pa.  
 Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.  
 See Advertisements on Pages 257 to 260  
 National Co., Inc., 61 Sherman St., Malden 48, Mass.  
 See Advertisement on Page 78  
 Transmitter Equipment Co., Inc., 345 Hudson St., New York 14, N. Y.

**TUNING DEVICES—Turntable Units**

Eastern Electronics Corp., 41 Chestnut St., New Haven, Conn.  
 General Industries Co., Taylor & Olive Sts., Elyria, Ohio  
 Lear, Inc., 110 Ionla Ave., N. W., Grand Rapids 2, Mich.  
 Magnetic Products Corp., The, Norwalk, Conn.  
 Maguire Industries Inc., Electronics Dept., Bridgeport, Conn.  
 Robinson Recording Labs., 2022 Sansom St., Philadelphia, Pa.

**TURNTABLES—Recording and Transcription**

Alliance Mfg. Co., Lake Park Blvd., Alliance, Ohio  
 See Advertisement on Page 182  
 Allied Recording Products Co., 21-09 43rd Ave., Long Island City 1, N. Y.  
 Clark Radio Equipment Corp., 4313 Lincoln Ave., Chicago 18, Ill.  
 Collins Radio Co., Cedar Rapids, Iowa  
 See Advertisements on Pages 30 to 33  
 Eastern Electronics Corp., 41 Chestnut St., New Haven, Conn.  
 Ellinwood Industries, 150 W. Slauson Ave., Los Angeles 3, Calif.  
 Fairchild Camera & Instrument Corp., 88-06 Van Wyck Blvd., Jamaica 1, N. Y.  
 Flock Process Co., Velvetone Div., 3 Quincy St., Norwalk, Conn.  
 Gats Radio Co., 123 Hampshire St., Quincy, Ill.  
 General Industries Co., Taylor & Olive Sts., Elyria, Ohio  
 Harris Mfg. Co., 2422 W. Seventh St., Los Angeles 5, Calif.  
 Mekan Inc., 79 Thurman Ave., Columbus 6, Ohio  
 Press Recording Corp., 242 W. 55th St., New York, N. Y.  
 See Advertisements on Pages 50, 51  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover, Back Cover & 251  
 Radio Engineering Labs., Inc., 35-54 36th St., L. I. City, N. Y.  
 Radio-Music Corp., East Port Chester, Conn.  
 See Advertisement on Page 215  
 Rek-O-Kut Co., 146 Grand St., New York 13, N. Y.  
 See Advertisement on Page 245  
 Robinson Recording Labs., 2022 Sansom St., Phila., Pa.  
 Rowe Industries, 3120 Monroe St., Toledo 6, Ohio  
 Russell Electric Co., Affiliated with Raytheon Mfg. Co., 340 W. Huron St., Chicago 10, Ill.  
 Sonora Radio & Television Corp., 325 N. Hoyne Ave., Chicago 23, Ill.  
 Techno-Craft Products, 200 Hudson St., New York 13, N. Y.  
 Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.  
 See Advertisements on Pages 88, 89

**VACUUM GAGES**

See Gages, Vacuum or Pirani

**VACUUM INDICATING, RECORDING AND CONTROL EQUIPMENT**

Bailey Meter Co., 1044 Ivanhoe Rd., Cleveland 10, Ohio  
 Bristol Co., The, Waterbury 91, Conn.  
 Brown Instrument Co., 4428 Wayne Ave., Philadelphia 44, Pa.  
 Distillation Products Inc., 755 Ridge Rd. W., Rochester, N. Y.  
 Ecco High Frequency Corp., 7020 Hudson Blvd., North Bergen, N. J.  
 Fredericks Co., Geo. E., Bethayres, Pa.  
 Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
 Moulic Specialties Co., 1005-1007 W. Washington St., Bloomington, Ill.  
 National Research Corp., Vacuum Engineering Div., 100 Brookline Ave., Boston 15, Mass.

Precision Scientific Co., 1750 N. Springfield Ave., Chicago 47, Ill.  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 Vacuum Electronic Engineering Co., 316-37th St., Brooklyn 2, N. Y.  
 Winslow Co., 9 Liberty St., Newark 5, N. J.

**VACUUM PUMPS—High**

Beach-Russ Co., 50 Church St., New York 7, N. Y.  
 Callite Tungsten Corp., 540 39th St., Union City, N. J.  
 See Advertisement on Page 35  
 Central Scientific Co., 1700 Irving Park Blvd., Chicago 13, Ill.  
 Distillation Products, Inc., 755 Ridge Rd. W., Rochester, N. Y.  
 Eisler Engineering Co., 740 S. 13th St., Newark 3, N. J.  
 Eitel-McCullough, Inc., San Bruno, Calif.  
 Fredericks Co., Geo. E., Bethayres, Pa.  
 Haydu Bros., Plainfield, N. J.  
 International Machine Works, 2027 46th St., North Bergen, N. J.  
 See Advertisement on Page 186  
 Kahle Engineering Co., 1307 Seventh St., North Bergen, N. J.  
 See Advertisement on Page 256  
 Kinney Mfg. Co., 3529 Washington St., Boston, Mass.  
 Leiman Bros., 203 Christie St., Newark 5, N. J.  
 Litton Engineering Labs., Redwood City, Calif.  
 National Research Corp., Vacuum Engrg. Div., 100 Brookline Ave., Boston 15, Mass.  
 Nelson Vacuum Pump Co., Geo. F., 2133 Fourth St., Berkeley 2, Calif.  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 Stokes Machine Co., F. J., 5850 Tabor Rd., Olney P. O., Philadelphia 20, Pa.  
 Welch Scientific Co., 1515 Sedgwick St., Chicago 10, Ill.

**VACUUM UNITS**

Distillation Products, Inc., 755 Ridge Rd. W., Rochester, N. Y.  
 Electro-Mechanical Instrument Co., 812 Chestnut St., Perkasie, Pa.  
 Litton Engineering Labs., Redwood City, Calif.  
 National Research Corp., Vacuum Engineering Div., 100 Brookline Ave., Boston 15, Mass.  
 Process & Instruments, 60 Greenpoint Ave., Brooklyn 22, N. Y.  
 Radio Corp. of America, RCA Victor Div., Camden, N. J.  
 See Advertisements on Inside Back Cover & Back Cover, 251

**VALVES—Solenoid**

Alco Valve Co., 865 Kingsland St., St. Louis 5, Mo.  
 Allied Control Valve Co., Inc., 85 Spring St., South Norwalk, Conn.  
 Automatic Switch Co., 41 E. 11th St., New York 3, N. Y.  
 Barber Colman Co., River & Loomis Sts., Rockford, Ill.  
 Brown Instrument Co., 4428 Wayne Ave., Philadelphia 44, Pa.  
 Cutler-Hammer Inc., 315 N. 12th St., Milwaukee 1, Wisc.  
 Distillation Products, Inc., 755 Ridge Road W., Rochester, N. Y.  
 General Controls Co., 801 Allen Ave., Glendale 1, Calif.  
 McQuay-Norris Mfg. Co., Electric Products Div., 6319 Manchester Ave., St. Louis 10, Mo.  
 Sarco Co., Inc., 475 5th Ave., New York 17, N. Y.  
 Tagliabue Division, C. J., Portable Products Corp., 550 Park Ave., Brooklyn 5, N. Y.

**VARNISH CAMBRIC COATINGS**

See Insulating Compounds

**VIBRATION ANALYSIS EQUIPMENT**

Commercial Research Labs, Inc., 20 Bartlett Ave., Detroit 3, Mich.  
 Conn Ltd., C. G., Elkhart, Ind.  
 Consolidated Engineering Corp., 595 E. Colorado St., Pasadena 1, Calif.  
 Diamond Instrument Co., North Ave., Wakefield, Mass.

Electronic Engineers, 1039-B Pacific St., Santa Monica, Calif.  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
 General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
 Hathaway Instrument Co., 1315 S. Clark-ston St., Denver 10, Colo.  
 Heiland Research Corp., 130 E. 5th St., Denver 9, Colo.  
**Miles Reproducer Co. Inc., 812 Broadway, New York 3, N. Y.**  
 See Advertisement on Page 256  
 Miller Corp., William, 362 W. Colorado St., Pasadena, Calif.  
 Rollin Co., 2070 N. Fair Oaks Ave., Pasadena 3, Calif.  
**Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.**  
 See Advertisements on Pages 80A, 80B  
 Televiso Products Inc., 7466 West Irving Park Road, Chicago, Ill.  
 Triplett Electrical Instrument Co., 286 Harmon Rd., Bluffton, Ohio  
**Western Electric Co. Inc., 195 Broadway, New York 7, N. Y.**  
 See Advertisements on Pages 88, 89  
 Westinghouse Electric Corp., Industrial Electronics Div., Baltimore, Md.

## VIBRATION ANALYSIS EQUIPMENT — Electronic Balancing

Diamond Instrument Co., North Ave., Wakefield, Mass.  
 Electro-Mechanical Instrument Co., 812 Chestnut St., Perkasie, Pa.  
 Gisholt Machine Co., 1245 E. Washington Ave., Madison 3, Wisc.  
**Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.**  
 See Advertisements on Pages 80A, 80B  
 Televiso Products Inc., 7466 West Irving Park Road, Chicago 34, Ill.  
 Vibroscope Co., 6 East 39th St., New York 16, N. Y.  
 Westinghouse Electric Corp., Industrial Electronics Div., Baltimore, Md.

## VIBRATION ANALYSIS EQUIPMENT — High Temperature Fatigue

**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
 Westinghouse Electric Corp., Industrial Electronics Div., Baltimore, Md.

## VIBRATION ANALYSIS EQUIPMENT — Vibration Fatigue

**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
 Westinghouse Electric Corp., Industrial Electronics Div., Baltimore, Md.

## VIBRATORS

Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.  
 Airpax Products Co., P.O. Box 6766, Baltimore 4, Md.  
 American Television & Radio Co., 300 E. Fourth St., St. Paul, Minn.  
 Clarostat Mfg. Co., Inc., 235-7 6th St., Brooklyn, N. Y.  
 Cover Dual Signal Systems Inc., Div. of Electra Voice Corp., 5215-25 Ravenswood Ave., Chicago 40, Ill.  
 Electronic Labs., Inc., 24 W. 24th St., Indianapolis 4, Ind.  
 Electronic Power Co. Inc., 19 W. 44th St., New York, N. Y.  
 Electronic Products Co., 19 No. First St., Geneva, Ill.  
 Electronic Products Mfg. Co., 7300 Huron River Dr., Dexter, Mich.  
 Kurman Electronics Corp., 35-18 37th St., Long Island City 1, N. Y.  
 Maguire Industries Inc., Electronics Dept., Bridgeport, Conn.  
**Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.**  
 See Advertisements on Pages 257 to 260  
**National Co. Inc., 61 Sherman St., Malden 48, Mass.**  
 See Advertisement on Page 78  
 National Union Radio Corp., 350 Scotland Rd., Orange, N. J.  
 Oak Mfg. Co., 1260 N. Clybourn Ave., Chicago 10, Ill.  
 Radiart Corp., 3571 W. 62nd St., Cleveland 2, Ohio  
 Raytron, Inc., 407 N. Jackson St., Jackson, Mich.

Rollin Co., 2070 N. Fair Oaks Ave., Pasadena 3, Calif.  
 Utah Radio Products Co., 820 Orleans St., Chicago, Ill.  
 Vibrapower Co., James, 3125 N. Oconto Ave., Chicago, Ill.  
 Vokar Corp., 7300 Huron River Dr., Dexter, Mich.

## VISCOSIMETERS WITH ELECTRONIC RECORDERS

Electric Eye Equipment Co., 16 W. Fairchild St., Danville, Ill.  
 Fisa-Schurman Corp., 230 E. 45th St., New York 17, N. Y.  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C

## VOLTAGE SUPPLIES—Decade

Clippard Instrument Lab., 1440 Chase Ave., Cincinnati 23, Ohio  
**Sorensen & Co., 375 Fairfield Ave., Stamford, Conn.**  
 See Advertisement on Page 154  
 United Transformer Corp., 150 Varick St., New York 13, N. Y.  
 See Advertisement on Inside Front Cover

## VOLTMETERS

Assembly Products, Inc., Chagrin Falls, Ohio  
 Bristol Co., The, Waterbury 91, Conn.  
 Burlington Instrument Co., 214 North 4th St., Burlington, Iowa  
 Burton-Rogers Co., 857 Boylston St., Boston 16, Mass.  
 Cinema Engineering Co., 1508 W. Verdugo Ave., Burbank, Calif.  
 Control Corp., 718 Central Ave., Minneapolis 14, Minn.  
 DeJur-Amsco Corp., Northern Blvd. at 45th St., Long Island City 1, N. Y.  
 Eastern Electronics Corp., 41 Chestnut St., New Haven, Conn.  
 Electro-Mechanical Instrument Co., 812 Chestnut St., Perkasie, Pa.  
 Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska  
 Electronic Development Lab., 2655 W. 19th St., Chicago 3, Ill.  
**Electronic Measurements Co., Red Bank, N. J.**  
 See Advertisement on Page 68  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
 General Electronics, Inc., 101 Hazel St., Paterson, N. J.  
 Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland, Ohio.  
 JBT Instruments, Inc., 441 Chapel St., New Haven 8, Conn.  
 Lewis Engineering Co., 52 Rubber Ave., Naugatuck, Conn.  
 Madison Electrical Products Div., John G. Ruckelshaus Co., 74 Main St., Madison, N. J.  
 Marion Electrical Instrument Co., Manchester, N. H.  
 MB Instruments, Inc., 1060 State St., New Haven 11, Conn.  
 Measurements Corp., Boonton, N. J.  
 Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
 Norton Electrical Instrument Co., 59 Hilliard St., Manchester, Conn.  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover, Back Cover & 251  
**Rawson Electrical Instrument Co., Inc., 110 Potter St., Cambridge 42, Mass.**  
 See Advertisement on Page 244  
 Reliance Instrument Co., 715 N. Kedzie Ave., Chicago, Ill.  
**Roller-Smith, Bethlehem, Pa.**  
 See Advertisement on Page 214  
 Scientific Service Lab., Subsidiary Electronics, Inc., 915 Meridian Ave., S. Pasadena, Calif.  
 Shalleross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.  
 Simpson Electric Co., 5218 W. Kinzie St., Chicago 44, Ill.  
 Star Measurements Co., 442 East 166th St., New York 56, N. Y.  
 Sterling Mfg. Co., 9205 Detroit Ave., Cleveland, Ohio  
 Sticht Co., Inc., Herman H., 27 Park Pl., New York 7, N. Y.  
 Sun Mfg. Co., 6323 Avondale Ave., Chicago 31, Ill.  
 Triplett Electrical Instrument Co., 286 Harmon Rd., Bluffton, Ohio

U. S. Gauge Div., American Machine & Metals, Inc., Sellersville, Pa.  
 Welch Scientific Co., W. M., 1515 Sedgwick St., Chicago 10, Ill.  
 Westinghouse Electric Corp., Meter Div., Newark, N. J.  
 Weston Electrical Instrument Corp., 618 Frelinghuysen Ave., Newark 5, N. J.

## VOLTMETERS—Crystal

General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
 Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.

## VOLTMETERS—Electronic

American Radio Co., 611 E. Garfield Ave., Glendale, Calif.  
**Ballantine Labs., Inc., Boonton, N. J.**  
 See Advertisement on Page 42  
 Barber Labs., Alfred W., 34-04 Francis Lewis Blvd., Flushing, N. Y.  
 Clippard Instrument Lab., 1440 Chase Ave., Cincinnati 23, Ohio  
 Development Engineering Co., Inc., 1818 Ashland St., Houston 8, Texas  
 Eastern Electronics Corp., 41 Chestnut St., New Haven, Conn.  
 Electrodyne Co., The, 899 Boylston St., Boston 15, Mass.  
 Electronic Designs, Inc., Irvington, N. Y.  
 Electronic Instrument Co., Inc., 926 Clarkson Ave., Brooklyn 3, N. Y.  
 Electronic Mfg. Co., 714 Race Street, Harrisburg, Pa.  
**Electronic Measurements Co., Red Bank, N. J.**  
 See Advertisement on Page 68  
**Freed Transformer Co., 72 Spring St., New York 12, N. Y.**  
 See Advertisement on Page 253  
**General Electric Co., Schenectady 5, N. Y.**  
 See Advertisements on Pages 96B, 96C  
 General Electronics Inc., 101 Hazel St., Paterson, N. J.  
 General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.  
 Hazeltine Electronics Corp., 1775 Broadway, New York, N. Y.  
**Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.**  
 See Advertisements on Pages 94, 95  
 Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland, Ohio.  
 Instrument Electronics, 253-21 Northern Blvd., Little Neck, N. Y.  
 Jackson Electrical Instrument Co., 16 S. Patterson Blvd., Dayton 1, Ohio  
 McMurdo Silver Co., Inc., 1249 Main St., Hartford 3, Conn.  
 MacLeod & Hanopol, 24 Chelsea St., Charlestown 29, Mass.  
 Maico Co., Inc., 25 N. 3rd St., Minneapolis, Minn.  
**Measurement Engineering Ltd., 61 Duke St., Toronto, Can.**  
 See Advertisement on Page 193  
**Measurements Corp., Boonton, N. J.**  
 See Advertisement on Page 56  
 Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
 National Technical Labs., 820 Mission St., South Pasadena, Calif.  
 Omicron Electric Co., 718 Columbus Ave., New York 25, N. Y.  
 Precision Apparatus Co., 92-27 Horace Harding Blvd., Elmhurst, N. Y.  
 Radio City Products Co., 127 W. 26th St., New York, N. Y.  
**Radio Corp. of America, RCA Victor Div., Camden, N. J.**  
 See Advertisements on Inside Back Cover, Back Cover & 251  
 Radio Design Co., 1353 Sterling Pl., Brooklyn, N. Y.  
 Reiner Electronics Co., 152 W. 25th St., New York, N. Y.  
 Rowe Radio Research Lab., 2422 N. Pulaski Road, Chicago 39, Ill.  
 Schottland, Frederick D., 104-18 Metropolitan Ave., Forest Hills, N. Y.  
 Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.  
 Simpson Electric Co., 5218 W. Kinzie St., Chicago 44, Ill.  
**Sound Apparatus Co., 233 Broadway, New York 7, N. Y.**  
 See Advertisement on Page 228  
 Superior Instrument Co., 227 Fulton St., New York 7, N. Y.  
 Supreme Instruments Corp., Greenwood, Miss.  
**Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.**  
 See Advertisements on Pages 158 to 161  
 Technical Apparatus Co., 167 Washington St., Boston 8, Mass.

Technical Devices Corp., Beaufort & Eagle Rock Ave., Roseland, N. J.  
 Techno-Scientific Co., 901 Nepperhan Ave., Yonkers 3, N. Y.  
 Televiso Products, Inc., 7466 West Irving Park Road, Chicago, Ill.  
 Triplett Electrical Instrument Co., 286 Harmon Rd., Bluffton, Ohio  
**Waterman Products Co., Inc., 2445-63 Emerald St., Phila. 25, Pa.**  
 See Advertisement on Page 76

**VOLTMETERS—Electrostatic**

Electronic Measurements Co., Red Bank, N. J.  
 See Advertisement on Page 68  
 Ferranti Electric Inc., 30 Rockefeller Plaza, New York 20, N. Y.  
 See Advertisement on Page 196  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Rawson Electrical Instrument Co., 110 Potter St., Cambridge 42, Mass.  
 See Advertisement on Page 244  
 Sensitive Research Instrument Co., 9 Elm Ave., Mt. Vernon, N. Y.

**VOLTAGE REGULATORS & STABILIZERS**  
 See Regulators, Voltage Regulators & Stabilizers

**VOLT-OHM-MILLIAMMETERS**

Dayton Acme Co., 930 York St., Cincinnati 14, Ohio  
 Development Engineering Co., Inc., The, 1818 Ashland St., Houston 8, Texas.  
 Electro-Mechanical Instrument Co., 812 Chestnut St., Perkasie, Pa.  
 Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska  
 Electronic Measurements Co., Red Bank, N. J.  
 See Advertisement on Page 68  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 General Electric Co., Syracuse, N. Y.  
 See Advertisements on Pages 96, 96A  
 Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland, Ohio  
 Jackson Electrical Instrument Co., 16 Patterson Blvd., Dayton 1, Ohio  
 Lear, Inc., 110 Ionia Ave., N. W., Grand Rapids 2, Mich.  
 McMurdo Silver Co., 1249 Main St., Hartford 3, Conn.  
 Marion Electrical Instrument Co., Manchester, N. H.  
 Measurement Engineering Ltd., 61 Duke St., Toronto, Can.  
 See Advertisement on Page 193  
 Meters, Inc., Riveria Dr., Indianapolis, 5, Ind.  
 Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.  
 Philco Corp., Tioga & C Sts., Philadelphia 34, Pa.  
 Precision Apparatus Co., 92-27 Horace Harding Blvd., Elmhurst, N. Y.  
 Radio City Products, 127 W. 26th St., New York, N. Y.  
 Radio Corp. of America, Tube Div., Harrison, N. J.  
 See Advertisements on Inside Back Cover, Back Cover, 251  
 Rawson Electrical Instrument Co., 110 Potter St., Cambridge 42, Mass.  
 See Advertisement on Page 244  
 Reiner Electronics Co., 152 W. 25th St., New York, N. Y.  
 Robson-Burgess Co., 5002 N. 30th St., Omaha 11, Nebr.  
 Scientific Service Lab., Subs. Electronics Inc., 915 Meridian Ave., South Pasadena, Calif.  
 Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.  
 Simpson Electric Co., 5218 W. Kinzie St., Chicago 44, Ill.  
 Star Measurements Co., 442 East 166th St., New York 56, N. Y.  
 Sterling Mfg. Co., 9205 Detroit Ave., Cleveland 2, Ohio  
 Superior Instruments Co., 227 Fulton St., New York 7, N. Y.  
 Supreme Instruments Corp., Greenwood, Miss.  
 Sylvania Electric Products Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161  
 Triplett Electrical Instrument Co., 286 Harmon Rd., Bluffton, Ohio  
 Triumph Mfg. Co., 913 W. Van Buren St., Chicago 7, Ill.  
 Westinghouse Electric Corp., Meter Div., Newark, N. J.  
 Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.

**WASHERS—Insulating**

Aetna Felt Co., Centre & Hester Sts., New York, N. Y.  
 American Felt Co., Glenville, Conn.  
 American Lava Corp., Chattanooga 5, Tenn.  
 See Advertisement on Page 69  
 American Plastic Products, 2907 S. Main St., Los Angeles 7, Calif.  
 Auburn Mfg. Co., Middletown, Conn.  
 Baer Co., N. S., 9 Montgomery St., Hillside, N. J.  
 See Advertisement on Page 227  
 Centralab Div., Globe Union Inc., 900 Keefe Ave., Milwaukee 1, Wisc.  
 See Advertisements on Pages 24, 25  
 Continental Diamond Fibre Co., 16 Chapel St., Newark, Del.  
 See Advertisements on Pages 72, 73  
 Crowley & Co. Inc., Henry L., 1 Central Ave., West Orange, N. J.  
 Federal Screw Products Co., 224 W. Huron St., Chicago 10, Ill.  
 Felsenthal & Sons, G., 4100 W. Grand Ave., Chicago 51, Ill.  
 Felt Products Mfg. Co., 1504 W. Carroll Ave., Chicago 7, Ill.  
 Firestone Tire & Rubber Co., 1 Firestone Ave., Fall River, Mass.  
 Franklin Airloop Corp., 43-20 34th St., Long Island City, N. Y.  
 See Advertisement on Page 61  
 Gasket Engineering Co., 2440 Charlotte St., Kansas City 8, Mo.  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 Headden Co., The, 17 Academy St., Newark 2, N. J.  
 Insulation Mfrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.  
 See Advertisement on Page 87  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.  
 Keystone Electronics Co., 50-52 Franklin St., New York 13, N. Y.  
 Kirshenger & Co., Inc., M., 1425 37th St., Brooklyn 18, N. Y.  
 Laminicold Fabricators, 3600 W. Potomac Ave., Chicago 51, Ill.  
 Melrath Supply & Gasket Co., Tioga St. & Aramingo Ave., Philadelphia, Pa.  
 Moore Co., Howard J., 103 Park Row, New York 7, N. Y.  
 Mykroy Inc., 1917 N. Springfield Ave., Chicago 47, Ill.  
 National Gasket & Washer Mfg. Co., Inc., 122 E. 25th St., New York 10, N. Y.  
 National Vulcanized Fibre Co., Wilmington, Del.  
 See Advertisement on Page 58  
 Penn Fibre & Specialty Co., 2030 E. Westmoreland St., Philadelphia 14, Pa.  
 Precision Fabricators, Inc., 120 N. Fitzbush St., Rochester, N. Y.  
 Rogan Bros., 2001 S. Michigan Ave., Chicago, Ill.  
 See Advertisement on Page 164  
 Saxonburg Potteries, Saxonburg, Pa.  
 Schott Co., Walter L., 9306 Santa Monica Blvd., Beverly Hills, Calif.  
 Schoonmaker Insulation Co., Inc., A. O. 635 Greenwich St., New York 14, N. Y.  
 Spaulding Fibre Co. Inc., 310 Wheeler St., Tonawanda, N. Y.  
 Stupakoff Ceramic & Mfg. Co., Latrobe, Pa.  
 Switchcraft, Inc., 1735 West Diversey Parkway, Chicago 14, Ill.  
 Tar Heel Mica Co., Plumtree, N. C.  
 Union Electrical Porcelain Works, Van St., Trenton 5, N. J.  
 Willard's, Hampden, Mass.  
 Wilmington Fibre Specialty Co., P. O. Drawer 1028, Wilmington 99, Del.

**WASHERS—Lock**

Allmetal Screw Products Co., 80 Grand St., New York 13, N. Y.  
 American Nut & Bolt Fastener Co., 2045 Doerr St., Pittsburgh, Pa.  
 Birnbach Radio Co. Inc., 145 Hudson St., New York, N. Y.  
 Chase Brass & Copper Co., Inc., Waterbury 91, Conn.  
 Federal Screw Products Co., 224 W. Huron St., Chicago 10, Ill.  
 Garrett Co., Inc., G. K., 1421 Chestnut St., Phila. 2, Pa.  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 Harper Co., H. M., 2620 Fletcher St., Chicago 18, Ill.  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166

Lamson & Sessions Co., 1971 W. 85th St., Cleveland, Ohio  
 Manufacturers Screw Prods., 270 W. Hubbard St., Chicago, Ill.  
 National Lock Washer Co., 40 Hermon St., Newark 5, N. J.  
 New England Screw Co., Keene, New Hampshire  
 Penn Union Electric Corp., 315 State St., Erie, Pa.  
 Pheoll Mfg. Co., 5700 Roosevelt Rd., Chicago 50, Ill.  
 Philadelphia Steel & Wire Corp., Penn St. & Belfield Avenue, Philadelphia, Pa.  
 Positive Lock Washer Co., 181 Miller St., Newark, N. J.  
 Richardson Co., Melrose Park, Ill.  
 See Advertisement on Page 209  
 St. Louis Screw & Bolt Co., 6900 Broadway, St. Louis 15, Mo.  
 Schott Co., Walter L., 9306 Santa Monica Blvd., Beverly Hills, Cal.  
 Standard Locknut & Lockwasher Inc., 33-35 W. St. Clair St., Indianapolis, Ind.  
 Sterling Bolt Co., 209 W. Jackson Blvd., Chicago 6, Ill.  
 Stronghold Screw Products, 216 West Hubbard St., Chicago 10, Ill.  
 Thompson-Bremer & Co., 1640 W. Hubbard St., Chicago, Ill.

**WASHERS—Metal**

Allmetal Screw Products Co., 80 Grand St., New York 13, N. Y.  
 American Nut & Bolt Fastener Co., 2045 Doerr St., Pittsburgh, Pa.  
 Auburn Mfg. Co., Middletown, Conn.  
 Autoscrew Co., 216-222 W. 18th St., New York, N. Y.  
 Barnes-Gibson-Raymond Div. of Associated Spring Corp., 6400 Miller Ave., Detroit 11, Mich.  
 Belmont Smelting & Refining Works, Inc., 330 Belmont Ave., Brooklyn 7, N. Y.  
 Bound Brook Oil-Less Bearing Co., Bound Brook, N. J.  
 Chase Brass & Copper Co., Inc., Waterbury 91, Conn.  
 Clendenin Bros., 108 South St., Baltimore, Md.  
 Continental Screw Co., New Bedford, Mass.  
 Corbin Screw Div., Amer. Hardware Corp., High, Myrtle & Grove Sts., New Britain, Conn.  
 Diebel Die & Mfg. Co., 3658 N. Lincoln Ave., Chicago 13, Ill.  
 Federal Screw Products Co., 224 W. Huron St., Chicago 10, Ill.  
 Franklin Airloop Corp., 43-20 34th St., Long Island City, N. Y.  
 See Advertisement on Page 61  
 Gardiner Mfg. Co., 2711 Union St., Oakland 7, Calif.  
 Garrett Co., Inc., G. K., 1421 Chestnut St., Phila. 2, Pa.  
 General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.  
 See Advertisement on Page 90  
 Grammes & Sons Inc., L. F., 389 Union St., Allentown 2, Pa.  
 Harper Co., H. M., 2620 Fletcher Ct., Chicago 18, Ill.  
 Hubbard Spring Co., M. D., Central Ave., Pontiac, Mich.  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 Lamson & Sessions Co., 1971 W. 85th St., Cleveland, Ohio  
 Manufacturers Screw Prods., 270 W. Hubbard St., Chicago, Ill.  
 Paul & Beekman Div., Portable Products Corp., 1801 Cortland St., Philadelphia 40, Pa.  
 Penn Fibre & Specialty Co., 2030 E. Westmoreland St., Phila. 44, Pa.  
 Plume & Atwood Mfg. Co., 470 Bank St., Waterbury, Conn.  
 Quadriga Mfg. Co., 213 W. Grand Ave., Chicago 11, Ill.  
 St. Louis Screw & Bolt Co., 6900 Broadway, St. Louis 15, Mo.  
 Schott Co., Walter L., 9306 Santa Monica Blvd., Beverly Hills, Calif.  
 Sterling Bolt Co., 209 W. Jackson Blvd., Chicago 6, Ill.  
 Stimpson Co., Inc., Edwin B., 74 Franklin Ave., Brooklyn 5, N. Y.  
 Stronghold Screw Products, 216 West Hubbard St., Chicago 10, Ill.  
 Switchcraft, Inc., 1735 West Diversey Parkway, Chicago 14, Ill.  
 Tricon Mfg. Co., 8318 S. Racine Ave., Chicago, Ill.  
 United Screw & Bolt Co., 2513 W. Cullerton St., Chicago, Ill.  
 Whitehead Stamping Co., 1691 W. Lafayette Blvd., Detroit 16, Mich.  
 Wrought Washer Mfg. Co., 2100 S. Bay St., Milwaukee 7, Wisc.

## WATTMETERS

Bird Electronic Corp., 1800 E. 38th St., Cleveland 14, Ohio  
 Esterline-Angus Co., Inc., P. O. Box 596, Indianapolis, Ind.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 General Electronics, Inc., 101 Hazel St., Paterson, N. J.  
 Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland, Ohio  
 Rawson Electrical Instrument Co., Inc., 110 Potter St., Cambridge 42, Mass.  
 See Advertisement on Page 244  
 Reliance Instrument Co., 715 N. Kedzie Ave., Chicago, Ill.  
 Roller-Smith, Bethlehem, Pa.  
 See Advertisement on Page 214  
 Sensitive Research Instrument Co., 9 Elm Ave., Mt. Vernon, N. Y.  
 Simpson Electric Co., 5218 W. Kinzie St., Chicago 44, Ill.  
 Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.  
 See Advertisements on Pages 80A, 80B  
 Triplett Electrical Instrument Co., 286 Harmon Road, Bluffton, Ohio  
 Waterman Products Co., Inc., 2145-63 Emerald St., Phila. 25, Pa.  
 See Advertisement on Page 76  
 Westinghouse Electric Corp., Meter Div., Newark, N. J.  
 Weston Electrical Instrument Corp., 618 Frelinghuysen Ave., Newark 5, N. J.

## WAXES

See *Insulating Compounds*

## WEDGES—Wood Slot

Bogert & Hopper, 225 Varick St., New York, N. Y.  
 B-P Specialties Works, Third National Bldg., Dayton 2, Ohio  
 Continental-Diamond Fibre Co., 16 Chapel St., Newark, Del.  
 See Advertisements on Pages 72, 73  
 General Electric Co., Bridgeport 2, Conn.  
 Insulation Mfrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.  
 See Advertisement on Page 87  
 Mica Insulator Co., Schenectady 1, N. Y.  
 Motor City Electric Co., 1456 E. Ferry St., Detroit 11, Mich.  
 National Vulcanized Fibre Co., Wilmington, Del.  
 See Advertisement on Page 58  
 Stiles & Co., H. A., 174 Portland St., Boston, Mass.  
 Westinghouse Electric Corp., East Pittsburgh, Pa.  
 White Supply Co., 4347 Duncan Ave., St. Louis, Mo.

## WELDERS—Electronic Controlled

Davis & Murphy, 5252 Broadway, Chicago 40, Ill.  
 Eisler Engineering Co., Inc., 740 S. 13th St., Newark 3, N. J.  
 Electronic Controls, Inc., 44 Summer Ave., Newark, N. J.  
 Electronic Power Co., Inc., 19 W. 44th St., New York, N. Y.  
 Sciaky Bros. 4915 W. 67th St., Chicago 38, Ill.  
 Vangtronic Corp., The, 87 Washburn St., Bridgeport, Conn.

## WINDING MACHINES, COIL

See *Coil Winding Machines*

## WIRE—Annunciator

Alden Products Co., 117 Main St., Brockton 64, Mass.  
 Alpha Wire Corp., 50 Howard St., New York, N. Y.  
 American Electric Cable Co., Holyoke, Mass.  
 American Steel & Wire Co., U. S. Steel Corp. Subs., Rockefeller Bldg., Cleveland 13, Ohio  
 Anaconda Wire & Cable Co., 25 Broadway, New York 4, N. Y.  
 Birnbach Radio Co., Inc., 145 Hudson St., New York, N. Y.  
 Consolidated Wire & Associated Companies, 1635 S. Clinton St., Chicago 16, Ill.  
 Cornish Wire Co., 15 Park Row, New York, N. Y.  
 See Advertisement on Page 170  
 Diamond Wire & Cable Co., 128 East 16th St., Chicago Heights, Ill.

Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 New England Electrical Works Inc., Lisbon, N. H.  
 Plastoid Corp., 19 W. 44th St., New York 18, N. Y.  
 See Advertisement on Page 63  
 Roebing's Sons Co., John A., 640 Broad St., Trenton 2, N. J.  
 Runzel Cord & Wire Co., 4731 W. Montrose Ave., Chicago, Ill.  
 White Electric Cable Co., Maple Avenue, Haverstraw, N. Y.

## WIRE—Antenna

Alloy Metal Wire Co., Prospect Park (Moore Station), Pa.  
 American Electric Cable Co., Holyoke, Mass.  
 American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 Anaconda Wire & Cable Co., 25 Broadway, New York 4, N. Y.  
 Birnbach Radio Co., Inc., 145 Hudson St., New York, N. Y.  
 Consolidated Wire & Associated Companies, 1635 S. Clinton St., Chicago 16, Ill.  
 Cornish Wire Co., 15 Park Row, New York, N. Y.  
 See Advertisement on Page 170  
 Diamond Wire & Cable Co., 128 E. 16th St., Chicago Heights, Ill.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 General Cable Corp., 420 Lexington Ave., New York, N. Y.  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Interstate Mfg. Corp., 125 Sussex Ave., Newark 4, N. J.  
 See Advertisements on Pages 180, 215  
 J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkway., Brooklyn, N. Y.  
 Johnson Co., E. F., Waseca, Minn.  
 New England Electrical Works, Inc., Lisbon, N. H.  
 Plastic Wire & Cable Corp., Norwich, Conn.  
 Plastoid Corp., 19 W. 44th St., New York 18, N. Y.  
 See Advertisement on Page 63  
 Runzel Cord & Wire Co., 4731 W. Montrose Ave., Chicago, Ill.  
 Shur-Antenna-Mount Inc., Seacliffe, N. Y.  
 Technical Appliance Corp., 41-06 DeLong St., Flushing, N. Y.  
 U. S. Rubber Co., 1230 6th Ave., New York 20, N. Y.  
 White Electric Cable Co., Maple Ave., Haverstraw, N. Y.  
 Wilson Co., H. A., 97 Chestnut St., Newark, N. J.  
 See Advertisement on Page 191

## WIRE—Asbestos Insulated

American Steel & Wire Co., U. S. Steel Corp. Subs., Rockefeller Bldg., Cleveland 13, Ohio  
 Anaconda Wire & Cable Co., 25 Broadway, New York 4, N. Y.  
 Boston Insulated Wire & Cable Co., 63 Bay St., Boston 25, Mass.  
 Consolidated Wire & Associated Companies, 1635 S. Clinton St., Chicago 16, Ill.  
 Cords Ltd., 26 Camp St., Newark 5, N. J.  
 Diamond Wire & Cable Co., 128 East 16th St., Chicago Heights, Ill.  
 General Cable Corp., 420 Lexington Ave., New York, N. Y.  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Interstate Mfg. Corp., 125 Sussex Ave., Newark 4, N. J.  
 See Advertisements on Pages 180, 215  
 Lewis Engineering Co., 52 Rubber Ave., Naugatuck, Conn.  
 Okonite Co., Canal St., Passaic, N. J.  
 Rockbestos Products Corp., 308 Nicoll St., New Haven 4, Conn.  
 Roebing's Sons Co., John B., 640 Broad St., Trenton 2, N. J.  
 White Electric Cable Co., Maple Ave., Haverstraw, N. Y.

## WIRE—Ceramic Insulated

Sprague Electric Co., North Adams, Mass.  
 Stupakoff Ceramic & Mfg. Co., Latrobe, Pa.

## WIRE—Copper

Alpha Wire Corp., 50 Howard St., New York, N. Y.  
 American Electric Cable Co., Holyoke, Mass.  
 American Steel & Wire Co., U. S. Steel Corp. Subs., Rockefeller Bldg., Cleveland 13, Ohio  
 Anaconda Wire & Cable Co., 25 Broadway, New York 4, N. Y.  
 Birnbach Radio Co., Inc., 145 Hudson St., New York, N. Y.  
 Clendenin Bros., 108 South St., Baltimore, Md.  
 Columbia Wire & Supply Co., 5734 N. Elson Ave., Chicago 30, Ill.  
 See Advertisement on Page 206  
 Consolidated Wire & Associated Companies, 1635 S. Clinton St., Chicago 16, Ill.  
 Cords Ltd., 26 Camp St., Newark 5, N. J.  
 Cornish Wire Co., 15 Park Row, New York 7, N. Y.  
 See Advertisement on Page 170  
 Diamond Wire & Cable Co., 128 East 16th St., Chicago Heights, Ill.  
 Electric Auto-Lite Co., Toledo 1, Ohio  
 Flexo Wire Co., 638 Genesee St., Syracuse, N. Y.  
 General Cable Corp., 420 Lexington Ave., New York, N. Y.  
 Goldmark Wire Co., James, 116 West St., New York 7, N. Y.  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 Lenz Electric Mfg. Co., 1751 N. Western Ave., Chicago 4, Ill.  
 New England Electrical Works, Inc., Lisbon, N. H.  
 Nonotuck Mfg. Co., Holyoke, Mass.  
 North American Philips Co., Inc., 100 E. 42nd St., New York 17, N. Y.  
 Roebing's Sons Co., John A., 640 Broad St., Trenton 2, N. J.  
 Rome Cable Corp., 330 Ridge St., Rome, N. Y.  
 See Advertisement on Page 80  
 Runzel Cord & Wire Co., 4731 W. Montrose Ave., Chicago, Ill.  
 Western Insulated Wire Co., 1001 E. 62nd St., Los Angeles 1, Calif.  
 Whitaker Cable Corp., Kansas City 16, Mo.

## WIRE—Copper Insulated

Accurate Insulated Wire Corp., 25 Fox St., New Haven 1, Conn.  
 Alden Products Co., 117 Main St., Brockton 64, Mass.  
 Alpha Wire Corp., 50 Howard St., New York, N. Y.  
 American Electric Cable Co., Holyoke, Mass.  
 American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 American Steel & Wire Co., U. S. Steel Corp. Subs., Rockefeller Bldg., Cleveland 13, Ohio  
 Anaconda Wire & Cable Co., 25 Broadway, New York 4, N. Y.  
 Birnbach Radio Co., Inc., 145 Hudson St., New York, N. Y.  
 Boston Insulated Wire & Cable Co., 63 Bay St., Boston 25, Mass.  
 Brand & Co., Wm., 276 4th Ave., New York 10, N. Y.  
 Chase Brass & Copper Co., Inc., Waterbury 91, Conn.  
 Collyer Insulated Wire Co., 249 Roosevelt Ave., P. O. Box 61, Pawtucket, R. I.  
 Columbia Wire & Supply Co., 5734 N. Elson Ave., Chicago 30, Ill.  
 See Advertisement on Page 206  
 Consolidated Wire & Associated Companies, 1635 S. Clinton St., Chicago 16, Ill.  
 Cords Ltd., 26 Camp St., Newark 5, N. J.  
 Cornish Wire Co., 15 Park Row, New York 7, N. Y.  
 See Advertisement on Page 170  
 Diamond Wire & Cable Co., 128 East 16th St., Chicago Heights, Ill.  
 Electric Auto-Lite Co., Toledo 1, Ohio  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 General Cable Corp., 420 Lexington Ave., New York, N. Y.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 General Insulated Wire Works, Inc., 69 Gordon Ave., Providence 5, R. I.  
 Goldmark Wire Co., James, 116 West Street, New York 7, N. Y.  
 Hazard Insulated Wire Works, The Okonite Co. Div., Wilkes Barre, Pa.  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166

**Interstate Mfg. Corp.**, 125 Sussex Ave., Newark 4, N. J.  
**See Advertisements on Pages 180, 215**  
**J. F. D. Mfg. Co.**, 4111 Ft. Hamilton Pkway., Brooklyn, N. Y.  
**Lowell Insulated Wire Co.**, Lowell, Mass.  
**New England Electrical Works, Inc.**, Lisbon, N. H.  
**North American Philips Co., Inc.**, 100 E. 42nd St., New York 17, N. Y.  
**Okonite Co.**, Canal St., Passaic, N. J.  
**Plasticides, Inc.**, 43 Leon St., Boston 15, Mass.  
**Plastoid Corp.**, 19 W. 44th St., New York 18, N. Y.  
**See Advertisement on Page 63**  
**Rhode Island Insulation Wire Co.**, 50 Burnham Ave., Providence, R. I.  
**Rockbestos Products Corp.**, 308 Nicoll St., New Haven 4, Conn.  
**Roebbling's Sons Co.**, John A., 640 Broad St., Trenton 2, N. J.  
**Rome Cable Corp.**, 330 Ridge St., Rome, N. Y.  
**See Advertisement on Page 80**  
**Runzel Cord & Wire Co.**, 4731 W. Montrose Ave., Chicago, Ill.  
**Simplex Wire & Cable Co.**, 79 Sidney St., Cambridge 39, Mass.  
**Suprenant Electrical Insulation Co.**, 84 Purchase St., Boston 10, Mass.  
**U. S. Rubber Co.**, 1230 6th Ave., New York 20, N. Y.  
**Western Insulated Wire Co.**, 1001 E. 62nd St., Los Angeles 1, Calif.  
**White Electric Cable Co.**, Maple Ave., Haverstraw, N. Y.  
**Whitney Blake Co.**, New Haven, Conn.

**WIRE—Enameled**

**Acme Wire Co.**, New Haven 14, Conn.  
**Alpha Wire Corp.**, 50 Howard St., New York, N. Y.  
**American Steel & Wire Co.**, U. S. Steel Corp., Subs., Rockefeller Bldg., Cleveland 13, Ohio  
**Anaconda Wire & Cable Co.**, 25 Broadway, New York 4, N. Y.  
**Birnback Radio Co., Inc.**, 145 Hudson St., New York, N. Y.  
**Chase Brass & Copper Co., Inc.**, Waterbury 91, Conn.  
**Consolidated Wire & Associated Companies**, 1635 S. Clinton St., Chicago 16, Ill.  
**Electric Auto-Lite Co.**, The, Toledo 1, Ohio  
**General Cable Corp.**, 420 Lexington Ave., New York, N. Y.  
**General Electric Co., Schenectady 5, N. Y.**  
**See Advertisements on Pages 96B, 96C**  
**Goldmark Wire Co., Jas.**, 116 West St., New York 7, N. Y.  
**Inductive Equipment Co.**, Gettysburg, Pa.  
**Insuline Corp. of America**, 36-02 35th Ave., Long Island City, N. Y.  
**Johnson Co., E. F.**, Waseca, Minn.  
**National Molding Co.**, 2141 W. Washington Blvd., Los Angeles 7, Calif.  
**New England Electrical Works, Inc.**, Lisbon, N. H.  
**North American Philips Co., Inc.**, 100 E. 42nd St., New York 17, N. Y.  
**Rea Magnet Wire Co.**, E. Pontiac St., Extended Port Wayne, Ind.  
**Roebbling's Sons, John A.**, 640 Broad St., Trenton 2, N. J.

**WIRE—Fine Wire Specialties**

**Alpha Wire Corp.**, 50 Howard St., New York, N. Y.  
**American Electric Cable Co.**, Holyoke, Mass.  
**Baker & Co.**, 113 Astor St., Newark 5, N. J.  
**Boston Insulated Wire & Cable Co.**, 63 Bay St., Boston 25, Mass.  
**Callite Tungsten Corp.**, 540 39th St., Union City, N. J.  
**Cohn, Sigmund**, 44 Gold St., New York, N. Y.  
**Federal Telephone and Radio Corp.**, 100 Kingsland Rd., Clifton, N. J.  
**See Advertisements on Pages 48A to 48D**  
**General Electric Co.**, Bridgeport 2, Conn.  
**Goldmark Wire Co.**, James, 116 West St., New York 7, N. Y.  
**Little Falls Alloys, Inc.**, 189 Cardwell Ave., Paterson 1, N. J.  
**Makepeace Co., D. E.**, Attleboro, Mass.  
**See Advertisement on Page 28**  
**New England Electrical Works Inc.**, Lisbon, N. H.  
**North American Philips Co., Inc.**, 100 E. 42nd St., New York 17, N. Y.  
**Plastic Wire & Cable Corp.**, Norwich, Conn.  
**Varilex Corp.**, N. Jay St., Rome, N. Y.  
**See Advertisement on Page 190**  
**Wickwire Spencer Steel, Div.**, Colorado Fuel and Iron Corp., 361 Delaware Ave., Buffalo 2, N. Y.

**WIRE—Glass Insulated**

**Acme Wire Co.**, New Haven 14, Conn.  
**Alden Products Co.**, 117 Main St., Brockton 64, Mass.  
**Alpha Wire Corp.**, 50 Howard St., New York, N. Y.  
**American Electric Cable Co.**, Holyoke, Mass.  
**American Steel & Wire Co.**, U. S. Steel Corp. Subs., Rockefeller Bldg., Cleveland 13, Ohio  
**Anaconda Wire & Cable Co.**, 25 Broadway, New York 4, N. Y.  
**Boston Insulated Wire & Cable Co.**, 63 Bay St., Boston 25, Mass.  
**Chase Brass & Copper Co., Inc.**, Waterbury 91, Conn.  
**Columbia Wire & Supply Co.**, 5734 N. Elson Ave., Chicago 30, Ill.  
**See Advertisement on Page 206**  
**Consolidated Wire & Associated Companies**, 1635 S. Clinton St., Chicago 16, Ill.  
**Diamond Wire & Cable Co.**, 128 East 16th St., Chicago Heights, Ill.  
**Electric Auto-Lite Co.**, The, Toledo 1, Ohio  
**General Cable Corp.**, 420 Lexington Ave., New York, N. Y.  
**General Electric Co., Schenectady 5, N. Y.**  
**See Advertisements on Pages 96B, 96C**  
**Insuline Corp. of America**, 36-02 35th Ave., Long Island City, N. Y.  
**See Advertisement on Page 166**  
**Interstate Mfg. Corp.**, 125 Sussex Ave., Newark 4, N. J.  
**See Advertisements on Pages 180, 215**  
**Lewis Engineering Co.**, 52 Rubber Ave., Naugatuck, Conn.  
**Rockbestos Products Corp.**, 308 Nicoll St., New Haven, Conn.  
**Roebbling's Sons, Co., John A.**, 640 Broad St., Trenton 2, N. J.  
**Rome Cable Corp.**, 330 Ridge St., Rome, N. Y.  
**See Advertisement on Page 80**  
**Runzel Cord & Wire Co.**, 4731 W. Montrose Ave., Chicago, Ill.

**WIRE—Guy**

**Alpha Wire Corp.**, 50 Howard St., New York 13, N. Y.  
**American Steel & Wire Co.**, U. S. Steel Corp. Subs., Rockefeller Bldg., Cleveland 13, Ohio  
**Birnback Radio Co., Inc.**, 145 Hudson St., New York, N. Y.  
**Cornish Wire Co., Inc.**, 15 Park Row, New York 7, N. Y.  
**See Advertisement on Page 170**  
**Indiana Steel & Wire Co.**, 700 S. Council St., Muncie, Ind.  
**Kellogg Switchboard & Supply Co.**, 6650 S. Cicero Ave., Chicago 38, Ill.  
**Roebbling's Sons, Co., John A.**, 640 Broad St., Trenton 2, N. J.

**WIRE—Hookup**

**Alden Products Co.**, 117 No. Main St., Brockton 64, Mass.  
**Alpha Wire Corp.**, 50 Howard St., New York, N. Y.  
**American Electric Cable Co.**, Holyoke, Mass.  
**American Phenolic Corp.**, 1830 S. 54th Ave., Chicago 54, Ill.  
**See Advertisement on Page 23**  
**Anaconda Wire & Cable Co.**, 25 Broadway, New York 4, N. Y.  
**Belden Mfg. Co.**, 4647 W. Van Buren St., Chicago 44, Ill.  
**Birnback Radio Co., Inc.**, 145 Hudson St., New York, N. Y.  
**Boston Insulated Wire & Cable Co.**, 63 Bay St., Boston 25, Mass.  
**Columbia Wire & Supply Co.**, 5734 N. Elson Ave., Chicago 30, Ill.  
**See Advertisement on Page 206**  
**Consolidated Wire & Associated Companies**, 1635 S. Clinton St., Chicago 16, Ill.  
**Cornish Wire Co.**, 15 Park Row, New York, N. Y.  
**See Advertisement on Page 170**  
**Diamond Wire & Cable Co.**, 128 East 16th St., Chicago Heights, Ill.  
**Federal Telephone and Radio Corp.**, 100 Kingsland Rd., Clifton, N. J.  
**See Advertisements on Pages 48A to 48D**  
**General Cable Corp.**, 420 Lexington Ave., New York, N. Y.  
**General Electric Co.**, Bridgeport 2, Conn.  
**General Insulated Wire Works, Inc.**, 69 Gordon Ave., Providence 5, R. I.  
**Insuline Corp. of America**, 36-02 35th Ave., Long Island City, N. Y.  
**See Advertisement on Page 166**  
**Kellogg Switchboard & Supply Co.**, 6650 S. Cicero Ave., Chicago 38, Ill.  
**Lenz Electric Mfg. Co.**, 1751 N. Western Ave., Chicago 47, Ill.

**New England Electrical Works, Inc.**, Lisbon, N. H.  
**Philadelphia Insulated Wire Co.**, 200 N. 3rd St., Phila., Pa.  
**Plastic Wire & Cable Corp.**, Norwich, Conn.  
**Plastoid Corp.**, 19 W. 44th St., New York 18, N. Y.  
**See Advertisement on Page 63**  
**Rockbestos Products Corp.**, 308 Nicoll St., New Haven 4, Conn.  
**Roebbling's Sons, Co., John A.**, 640 Broad St., Trenton 2, N. J.  
**Rome Cable Corp.**, 330 Ridge St., Rome, N. Y.  
**See Advertisement on Page 80**  
**Runzel Cord & Wire Co.**, 4731 W. Montrose Ave., Chicago, Ill.  
**Suprenant Electrical Insulation Co.**, 84 Purchase St., Boston 10, Mass.  
**U. S. Rubber Co.**, 1230 Sixth Ave., New York 20, N. Y.  
**White Electric Cable Co.**, Maple Ave., Haverstraw, N. Y.

**WIRE—Litz**

**Anaconda Wire & Cable Co.**, 25 Broadway, New York 4, N. Y.  
**Belden Mfg. Co.**, 4647 W. Van Buren St., Chicago 44, Ill.  
**Consolidated Wire & Associated Companies**, 1635 S. Clinton St., Chicago 16, Ill.  
**General Electric Co., Schenectady 5, N. Y.**  
**See Advertisements on Pages 96B, 96C**  
**Goldmark Wire Co., Jas.**, 116 West St., New York 7, N. Y.  
**Guthman, Inc.**, Edwin I., 15 S. Throop St., Chicago, Ill.  
**Lenz Electric Mfg. Co.**, 1751 N. Western Ave., Chicago, Ill.  
**Meissner Mfg. Div.**, Maguire Industries, Inc., Mt. Carmel, Ill.  
**New England Electrical Works, Inc.**, Lisbon, N. H.  
**Philadelphia Insulated Wire Co.**, 200 N. 3rd St., Philadelphia, Pa.  
**Ross Mfg. Co.**, 2241 S. Indiana Ave., Chicago 27, Ill.

**WIRE—Magnet**

**Acme Wire Co.**, New Haven 14, Conn.  
**Alpha Wire Corp.**, 50 Howard St., New York, N. Y.  
**American Steel & Wire Co.**, U. S. Steel Corp., Subs., Rockefeller Bldg., Cleveland 13, Ohio  
**Anaconda Wire & Cable Co.**, 25 Broadway, New York 4, N. Y.  
**Anco Products Corp.**, 975 Market St., Paterson, N. J.  
**Birnback Radio Co., Inc.**, 145 Hudson St., New York, N. Y.  
**Chase Brass & Copper Co., Inc.**, Waterbury 91, Conn.  
**Consolidated Wire & Associated Companies**, 1635 S. Clinton St., Chicago 16, Ill.  
**Electric Auto-Lite Co.**, The, Toledo 1, Ohio  
**General Cable Corp.**, 420 Lexington Ave., New York, N. Y.  
**General Electric Co., Schenectady 5, N. Y.**  
**See Advertisements on Pages 96B, 96C**  
**Goldmark Wire Co., Jas.**, 116 West St., New York 7, N. Y.  
**Guthman & Co.**, Edwin I., 15 S. Throop St., Chicago, Ill.  
**Hudson Wire Co.**, Winstead, Conn.  
**Inductive Equipment Co.**, Gettysburg, Pa.  
**Kellogg Switchboard & Supply Co.**, 6650 S. Cicero Ave., Chicago 38, Ill.  
**Legri-S Co., Inc.**, 846-850 Amsterdam Ave., New York, N. Y.  
**See Advertisement on Page 202**  
**Meissner Mfg. Div.**, Maguire Industries, Inc., Mt. Carmel, Ill.  
**New England Electrical Works, Inc.**, Lisbon, N. H.  
**Philadelphia Insulated Wire Co.**, 200 N. Third St., Philadelphia, Pa.  
**Rea Magnet Wire Co., Inc.**, E. Pontiac St., Extended Port Wayne, Ind.  
**Rockbestos Products Corp.**, 308 Nicoll St., New Haven 4, Conn.  
**Roebbling's Sons, Co., John A.**, 640 Broad St., Trenton 2, N. J.  
**Rome Cable Corp.**, 330 Ridge St., Rome, N. Y.  
**See Advertisement on Page 80**  
**Ross Mfg. Co.**, 2241 S. Indiana Ave., Chicago 27, Ill.  
**U. S. Rubber Co.**, 1230 Sixth Ave., New York 20, N. Y.  
**Wheeler Insulated Wire Co., Inc.**, Bridgeport 4, Conn.

**WIRE—Molybdenum**

**Callite Tungsten Corp.**, 540 39th St., Union City, N. J.

## WIRE—Nickel Clad Copper

Alloy Metal Wire Co., Prospect Park, (Moore Sta.), Pa.  
 Baker & Co., 113 Astor St., Newark 5, N. J.  
 Callite Tungsten Corp., 540 39th St., Union City, N. J.  
 J.F.D. Mfg. Co., 4111 Ft. Hamilton Pkway., Brooklyn, N. Y.  
 Westinghouse Electric Corp., Bloomfield Lamp Div., Bloomfield, N. J.  
 See Advertisement on Page 45

## WIRE—Phosphor Bronze

Alpha Wire Corp., 50 Howard St., New York, N. Y.  
 American Electric Cable Co., Holyoke, Mass.  
 Baker & Co., 113 Astor St., Newark 5, N. J.  
 Birnbach Radio Co., Inc., 145 Hudson St., New York, N. Y.  
 Callite Tungsten Corp., 540 39th St., Union City, N. J.  
 Chase Brass and Copper Co., Inc., Waterbury 91, Conn.  
 Consolidated Wire & Associated Companies, 1635 S. Clinton St., Chicago 16, Ill.  
 Little Falls Alloys, Inc., 189 Caldwell Ave., Paterson 1, N. J.  
 Riverside Metal Co., Riverside, N. J.

## WIRE—Plastic Insulated

Alpha Wire Corp., 50 Howard St., New York, N. Y.  
 American Electric Cable Co., Holyoke, Mass.  
 American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.  
 See Advertisement on Page 23  
 American Steel & Wire Co., U. S. Steel Corp., Subs., Rockefeller Bldg., Cleveland 13, Ohio  
 Anaconda Wire & Cable Co., 25 Broadway, New York 4, N. Y.  
 Birnbach Radio Co., Inc., 145 Hudson St., New York, N. Y.  
 Boston Insulated Wire & Cable Co., 63 Bay St., Boston 25, Mass.  
 Brand & Co., Wm., 276 4th Ave., New York 10, N. Y.  
 Consolidated Wire & Associated Companies, 1635 S. Clinton St., Chicago 16, Ill.  
 Cords, Ltd., 26 Camp St., Newark 5, N. J.  
 Cornish Wire Co., 15 Park Row, New York, N. Y.  
 See Advertisement on Page 170  
 Diamond Wire & Cable Co., 128 East 16th St., Chicago Heights, Ill.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 General Cable Co., 420 Lexington Ave., New York, N. Y.  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 General Insulated Wire Wks., Inc., 69 Gordon Ave., Providence 5, R. I.  
 Interstate Mfg. Corp., 125 Sussex Ave., Newark 4, N. J.  
 See Advertisements on Pages 180, 215  
 Philadelphia Insulated Wire Co., 200 N. 3rd St., Phila., Pa.  
 Plasticides Inc., 43 Leon St., Boston 15, Mass.  
 Plastic Wire & Cable Corp., Norwich, Conn.  
 Plastod Corp., 19 W. 44th St., New York 18, N. Y.  
 See Advertisement on Page 63  
 Roebling's Sons Co., John A., 640 Broad St., Trenton 2, N. J.  
 Rome Cable Corp., 330 Ridge St., Rome, N. Y.  
 See Advertisement on Page 80  
 Simplex Wire & Cable Co., 79 Sidney St., Cambridge 39, Mass.  
 Suprenant Electrical Insulation Co., 84 Purchase St., Boston 10, Mass.  
 U. S. Rubber Co., 1230 6th Ave., New York 20, N. Y.  
 White Electric Cable Co., Maple Ave., Hav-erstraw, N. Y.  
 Whitney Blake Co., New Haven, Conn.

## WIRE—Platinum

Baker & Co., 113 Astor St., Newark 5, N. J.  
 Wildberg Bros. Smelting & Refining Co., 742 Market St., San Francisco 2, Calif.

## WIRE—Resistance and Filament

Alloy Metal Wire Co., Prospect Park, (Moore Sta.), Pa.  
 Baker & Co., 113 Astor St., Newark 5, N. J.  
 Consolidated Wire & Associated Companies, 1635 S. Clinton St., Chicago 16, Ill.

Driver Co., Wilbur B., 150 Riverside Ave., Newark, N. J.  
 Driver-Harris Co., 201 Middlesex St., Har-ri-son, N. J.  
 See Advertisement on Page 187  
 Eagle Electric Mfg. Co., Inc., 23-10 Bridge Plaza S., Long Island City, N. Y.  
 Essex Wire Corp., 1601 Wall St., Ft. Wayne, Ind.  
 Goldmark Wire Co., James, 116 West St., New York 7, N. Y.  
 Hoskins Mfg. Co., 4445 Lawton Ave., Detroit 8, Mich.  
 J. F. D. Manufacturing Co., 4111 Fort Hamilton Pkway., Brooklyn, N. Y.  
 Jelff Mfg. Corp., C. O., 200 Pequot Ave., Southport, Conn.  
 Mallory & Co., Inc., P. R., 3029 E. Wash-ington St., Indianapolis 6, Ind.  
 See Advertisements on Pages 257 to 260  
 North American Phillips Co., 100 E. 42nd St., New York 17, N. Y.

## WIRE—Shielded

Alden Products Co., 117 No. Main St., Brockton 64, Mass.  
 Alpha Wire Corp., 50 Howard St., New York, N. Y.  
 American Electric Cable Co., Holyoke, Mass.  
 American Steel & Wire Co., U. S. Steel Corp. Sub., Rockefeller Bldg., Cleve-land 13, Ohio  
 Anaconda Wire & Cable Co., 25 Broadway, New York 4, N. Y.  
 Belden Mfg. Co., 4647 W. Van Buren St., Chicago 44, Ill.  
 Birnbach Radio Co., Inc., 145 Hudson St., New York, N. Y.  
 Boston Insulated Wire & Cable Co., 63 Bay St., Boston 25, Mass.  
 Breeze Corp., 41 S. 6th St., Newark, N. J.  
 Columbia Wire & Supply Co., 5734 N. Elson Ave., Chicago 30, Ill.  
 See Advertisement on Page 206  
 Consolidated Wire & Associated Companies, 1635 S. Clinton St., Chicago 16, Ill.  
 Cornish Wire Co., Inc., 15 Park Row, New York, N. Y.  
 See Advertisement on Page 170  
 Diamond Wire & Cable Co., 128 East 16th St., Chicago Heights, Ill.  
 Essex Wire Corp., 1601 Wall St., Fort Wayne, Ind.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 General Electric Co., Schenectady 5, N. Y.  
 See Advertisements on Pages 96B, 96C  
 Insuline Corp. of America, 36-02 35th Ave., Long Island City, N. Y.  
 See Advertisement on Page 166  
 J.F.D. Mfg. Co., 4111 Ft. Hamilton Pkway., Brooklyn, N. Y.  
 New England Electrical Works, Inc., Lis-bon, N. H.  
 Okonite Co., Canal St., Passaic, N. J.  
 Philadelphia Insulated Wire Co., 200 N. 3rd St., Phila., Pa.  
 Plastoid Corp., 19 W. 44th St., New York 18, N. Y.  
 See Advertisement on Page 63  
 Precision Tube Co., 3828 Terrace St., Phila-delphia, Pa.  
 See Advertisement on Page 218  
 Rockbestos Products Corp., 308 Nicoll St., New Haven 4, Conn.  
 Roebling's Sons Co., John A., 640 Broad St., Trenton 2, N. J.  
 Rome Cable Corp., 330 Ridge St., Rome, N. Y.  
 See Advertisement on Page 80  
 Runzel Cord & Wire Co., 4731 W. Montrose Ave., Chicago, Ill.  
 Simplex Wire & Cable Co., 79 Sidney St., Cambridge 39, Mass.  
 U. S. Rubber Co., 1230 6th Ave., New York 20, N. Y.  
 White Electric Cable Co., Maple Ave., Hav-erstraw, N. Y.  
 Whitney Blake Co., New Haven, Conn.

## WIRE—Silver Plated

Baker & Co., 113 Astor St., Newark 5, N. J.  
 Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.  
 See Advertisements on Pages 48A to 48D  
 Flexo Wire Co., 638 Genesee St., W., Syra-cuse, N. Y.  
 General Insulaed Wire Works Inc., 69 Gor-don Ave., Providence 5, R. I.  
 Little Falls Alloys, Inc., 189 Caldwell Ave., Paterson 1, N. J.  
 Makepeace Co., D. E., Attleboro, Mass.  
 See Advertisement on Page 28  
 North American Phillips Co., 100 E. 42nd St., New York 17, N. Y.

Wilson Co., H. A., 97 Chestnut St., New-ark, N. J.  
 See Advertisement on Page 191

## WIRE—Stainless Steel

Aircraft Screw Products Co., Inc., 47-23 35th St., Long Island City 1, N. Y.  
 Alloy Metal Wire Co., Prospect Park, (Moore Sta.), Pa.  
 American Steel & Wire Co., U. S. Steel Corp. Subs., Rockefeller Bldg., Cleve-land 13, Ohio  
 Crucible Steel Co. of America, 405 Lexing-ton Ave., New York 17, N. Y.  
 Driver Co., Wilbur B., 150 Riverside Ave., Newark, N. J.  
 Driver-Harris Co., 201 Middlesex St., Harri-son, N. J.  
 See Advertisement on Page 187  
 North American Phillips Co., Inc., 100 E. 42nd St., New York 17, N. Y.  
 Powell & Co., Inc., R. C., 57 William St., New York, N. Y.  
 Republic Steel Corp., Republic Block, Cleve-land 1, Ohio.

## WIRE—Tungsten

Baker & Co., 113 Astor St., Newark 5, N. J.  
 Callite Tungsten Corp., 540 39th St., Union City, N. J.  
 Cleveland Tungsten, Inc., 10200 Meech Ave., Cleveland, Ohio  
 Fansteel Metallurgical Corp., 2200 Sheridan Rd., No. Chicago, Ill.  
 North American Phillips Co., 100 E. 42nd St., New York 17, N. Y.  
 Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.  
 See Advertisements on Pages 158 to 161  
 Westinghouse Electric Corp., Bloomfield Lamp Div., Bloomfield, N. J.  
 See Advertisement on Page 45  
 Wildberg Bros. Smelting & Refining Co., 742 Market St., San Francisco 2, Calif.

## WIRE RECORDER ASSEMBLIES

Aurex Corp., 1117 N. Franklin St., Chi-cago, Ill.  
 Brush Development Co., The, 3405 Perkins Ave., Cleveland 14, Ohio  
 General Insulated Wire Works, Inc., 69 Gor-don Ave., Providence 5, R. I.  
 Magnecord, Inc., 304 W. 63rd St., Chicago 21, Ill.  
 See Advertisement on Page 193  
 Powell & Co., Inc., R. C., 57 William St., New York, N. Y.  
 Rowe Industries, 3120 Monroe St., Toledo 6, Ohio  
 Runzel Cord & Wire Co., 4731 W. Montrose Ave., Chicago, Ill.  
 Webster Electric Co., 1900 Clark St., Racine, Wisc.  
 Wi-Recorder Corp., 1807 Stroh Bldg., De-troit 26, Mich.

## X-RAY EQUIPMENT—Industrial

du Pont de Nemours & Co., Inc., E. I., Wil-mington 98, Del.  
 General Electric X-Ray Corp., 2012 Jackson Blvd., Chicago, Ill.  
 Kelley-Koett Mfg. Co. Inc., The, Coving-ton, Ky.  
 North American Phillips Co., Inc., 100 E. 42nd St., New York 17, N. Y.  
 Picker X-Ray Corp., 300 Fourth Ave., New York 10, N. Y.  
 St. John X-Ray Laboratory, Callfon, N. J.  
 Triplett & Barton Inc., Burbank, Calif.  
 Westinghouse Electric Corp., Industrial Electronics Div., Baltimore, Md.

## X-RAY EQUIPMENT—Medical

du Pont de Nemours & Co., Inc., E. I., Wil-mington 98, Del.  
 General Electric X-Ray Corp., 2012 Jackson Blvd., Chicago, Ill.  
 Kelley-Koett Mfg. Co. Inc., The, Coving-ton, Ky.  
 Mattern Mfg. Co., F., 4647 N. Cicero Ave-nue, Chicago 30, Ill.  
 North American Phillips Co., Inc., 100 E. 42nd St., New York 17, N. Y.  
 Peerless Labs., 461-467 10th Ave., New York 18, N. Y.  
 Picker X-Ray Corp., 300 Fourth Ave., New York 10, N. Y.  
 Westinghouse Electric Corp., Industrial Electronics Div., Baltimore, Md.

# TRADE NAME INDEX

The following list, provided by manufacturers, comprises the registered trade names of products in or related to the electronic field. It is intended for use in determining the manufacturer's name when only a trade name is known. Addresses can be obtained by referring to the Manufacturers Index on page D-134.

Only coined trade names are listed, as it was deemed unnecessary to include a company name, even though it was a registered trade name, inasmuch as the manufacturer's identity was immediately apparent.

- ACCWIRE**  
Accurate Insulated Wire Corp.
- AC-2**  
Automatic Signal Div.  
Eastern Industries, Inc.
- ACE**  
American Hard Rubber Co.
- ACOUSTICEL**  
Brush Development Co.
- ACRAWAX C**  
Glyco Products Co., Inc.
- ACROCUT**  
Acromark Co.
- ACROCRAVE**  
Acromark Co.
- ACROFLEX**  
Anchor Plastics Co., Inc.
- ACROMARKER**  
Acromark Co.
- ACRO PLAC**  
Acromark Co.
- ACROSNAP**  
Acro Electric Co.
- ACROTOOL**  
Acromark Co.
- ACRYWELD**  
American Phenolic Corp.
- ACTIVAPOR**  
Airadio Inc.
- ADJUST-A-VOLT**  
Standard Electrical Products Co.
- ADVANCE**  
Driver-Harris Co.
- AERO-MAGNETTE**  
Heinemann Electric Co.
- "AERONAUT" PRODUCTS**  
Aeronautical Radio Mfg. Co.
- AERO-THREAD**  
Aircraft Screw Products Co., Inc.
- AEROTROL**  
Cook Electric Co.
- AGASTAT**  
American Gas Accumulator Co.
- AGWADAG**  
Acheson Colloids Corp.
- AIR-LOOP ANTENNAS**  
Franklin Mfg. Co., A. W.
- AIR O LINE**  
Brown Instrument Co.
- AIR-RAY**  
Electronic Supply Co.
- AIR-CHAMP**  
E. A. M. Corp., The
- AIRCO**  
Air Reduction Sales Co.
- ALCOA**  
Aluminum Company of America
- ALCROHM**  
Magnetic Metals Co.
- ALECO**  
American Lens Co., Inc.
- ALFERON**  
Driver-Harris Co.
- ALGCO**  
Auburn Manufacturing Co.
- ALL-HYDRAULIC**  
Hydraulic Press Mfg. Co.
- "ALL-RELAY"**  
North Electric Mfg. Co.
- ALL-WEATHER RADIOGUIDE**  
Radio Navigational Instrument Corp.
- ALMET**  
Alloy Metal Wire Co.
- ALNOR**  
Illinois Testing Labs, Inc.
- ALPHATRON**  
National Research Corp.  
Vacuum Engrg. Div.
- ALSCO**  
Automatic Switch Co.
- ALSLOY**  
Doehler-Jarvis Corp.
- ALSIMAG**  
American Lava Corp.
- ALUMAWELD**  
Johnson Co., Lloyd S.
- ALUMINUM OILITE**  
Amplex Div.  
Chrysler Corp.
- ALUNDUM**  
Norton Co.
- AMBERYL**  
Vaco Products Co.
- AMCO**  
American Solder & Flux Co.
- AMCON**  
American Condenser Co.
- AMECO**  
American Electronics
- AMERFLEX**  
Searle Aero Industries, Inc.
- AMERICAN BEAUTY**  
American Electrical Heater Co.
- AMERICAN BRAND**  
Snyder Mfg. Co.
- AMERICAN-PHILLIPS**  
American Screw Co.
- AMERTRON**  
American Transformer Co.
- AMINCO**  
American Instrument Co.
- AMPACET**  
American Molding Powder & Chemical Corp.
- AMPEREX**  
Amperex Electronic Corp.
- AMPHENOL**  
American Phenolic Corp.
- AMPLICALL**  
Rauland Corp.
- AMPLIMUSE**  
Crystal Research Labs, Inc.
- AMPLISET**  
The Bristol Co.
- AMPLIPHONE**  
Eastern Electronics Corp.
- AMPLITUDE**  
Eastern Amplifier Corp.
- AMPITROL**  
Friez Instrument Div.  
Bendix Aviation Corp.
- ANADEL**  
Joseph Dixon Crucible Co.
- "ANCO"**  
Automatic Nut Co., Inc.
- AN-COR-LOL**  
Laminated Shim Co., Inc.
- ANKOSEAL**  
Ansonia Electric Co.
- ANTALIO**  
Ansonia Clock Co., Inc.
- ANTELCO**  
Automatic Electric Co.
- ANTI LINK**  
American Nut & Bolt Fastner Co.
- ANYVOLT**  
Sorensen & Co.
- AQUALITE**  
National Vulcanized Fibre Co.
- AQUIFLUX**  
Special Chemicals Co.
- ARCOZON**  
Arco Co.
- ARISTA**  
Coronet Radio & Television Corp.
- ARLAB**  
Radionic Transformer Co.
- ARLAVOX**  
Radionic Transformer Co.
- ARVIN**  
Noblitt Sparks Industries
- ASBESTOPAK**  
Felt Products Mfg. Co.
- ATOMIER**  
Malco Co., Inc.
- AUBESTON**  
Auburn Manufacturing Co.
- AUDAX**  
Audak Co.
- AUDIODISCS**  
Audio Devices, Inc.
- AUDIGAGE**  
Branson Instruments, Inc.
- AUDOGRAPH ELECTRONIC SOUND-WRITER**  
Gray Mfg. Co.
- AUDIPOINTS**  
Audio Devices, Inc.
- AURICON**  
Berndt Corp., E. M.  
Auricon Div.
- AUROSAL**  
Baker & Co.
- AUTHOTONE CHIMES**  
Auth Elec. Specialty Co.
- AUTOPLATER**  
Tracerlab, Inc.
- AUTOSCALER**  
Tracerlab, Inc.
- AUTOSLET**  
The Bristol Co.
- AUTO-SONIC**  
Vendo Co.
- AVEBCO**  
Anchor Webbing Co.
- "B8"**  
Peck & Harvey
- BABY-LISTENER**  
Lyman Electronic Corp.
- BADGER**  
Reliance Automatic Lighting Co.
- BALAC**  
Conant Electrical Labs.
- BANTAM GT**  
Hytron Radio & Electronics Corp.
- BANTAM JR.**  
Hytron Radio & Electronics Corp.
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- BEN HAR**  
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- BINRACK**  
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- BRAZO**  
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- BRISTOL**  
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**BRONCO**  
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**BRONZCHROM**  
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**BROWN DEVIL**  
Ohmite Mfg. Co.

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Kirkland Co., H. R.

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**CALLINITE**  
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**CALLMASTER**  
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Unit of Union Carbide & Carbon Corp.

**CARBOLITE**  
Linde Air Products Co.  
Unit of Union Carbide & Carbon Corp.

**CARDIETTE**  
Sanborn Co.

**CARDIOTRON**  
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**CARTRIJ-DRY**  
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**CASCADE**  
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**CASTORDAG**  
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**CATAPAK**  
Catalin Corp.

**CATAVAR**  
Catalin Corp.

**CAVALCADE**  
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Aircraft Control Div.

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**CECOTITE**  
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**CELASCREEN**  
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**CELORON**  
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**CENTRALINE**  
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**CHALLENGER**  
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**CHAMPION # 180**  
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**CINEMAPHONE**  
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**COAXWITCH**  
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**COBANIC**  
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**COLORMIKE**  
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**CONTROFLEX**  
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**CONVERS-O-CALL**  
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**CO-X**  
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**COXPROM**  
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**CRYSTALIGNED**  
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**DAVENOIL**  
Daven Co.

**DAVOHM**  
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**DC 801, DC 802, DC 803, DC 804**  
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**DELMAR**  
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**DEONO**  
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**DENSITE**  
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**DESPARD**  
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**DETECTOMETER**  
Dillon & Co., Inc., W. C.

**DETERMOM**  
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**DIACONE**  
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**DIALCO**  
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**DIAMOND**  
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**DICO**  
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**DIEFLEX**  
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**DIEGRAF**  
Grafo Colloids Corp.

**DIELITE**  
Wirt Co.

**DI-FAN**  
Andrew Co.

**DILECTENE**  
Continental Diamond Fibre Co.

**DILECTO**  
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**DIPMASTER**  
Aeroil Products Co.

**DIPWITE**  
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**DIPWRAP**  
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**DIVIDOM**  
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**INTER-VIEWER**  
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**KLIPXIT**  
Vaco Products Co.

**KLIXON**  
Spencer Thermostat Co.

**KNOCKOMETER**  
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**KOHINOOR**  
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**KOOLOHM**  
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**KOVAR**  
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Pierson Electronic Corp.

**KRISTON**  
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**KULGRID**  
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**KURMAN**  
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**KWIKHEAT**  
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**LINDOX**  
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**PHENOCOTE**  
Wirt Co.

**PHENOLITE**  
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**PHONOCORD**  
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**PILOTONE**  
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**PILOTROL**  
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**PINCOR**  
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**PLASTITE**  
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**PLAST-MAGNETITE**  
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**PLAST-NICKEL**  
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**PLAST-SILICON**  
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**POWERSTAT**  
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**PREST-O-WELD**  
Linde Air Products Co.  
Unit of Union Carbide & Carbon Corp.

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**PROKAR**  
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**PROMCO**  
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Shoe Form Co., Inc.

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**PURETUNG**  
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**PUROX**  
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- STANCOR**  
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- STANDATROL**  
Bailey Meter Co.
- STANDO**  
Sticht Co., Herman H.
- STARBIRD**  
Meletron Corp.
- STAR J**  
Haynes Stellite Co.  
Unit of Union Carbide & Carbon Corp.
- STARKLINE**  
Stark Sound Engr. Corp.
- STATISCOPIES**  
Minerallac Electric Co.
- STEELKLAD**  
Sheboygan X-Ray Co.
- STEEL-SET**  
Paisley Products Inc.
- STERILAIRE**  
Ultra-Violet Products, Inc.
- STERILZONE**  
Dallons Labs.
- STETHERTRON**  
Maico Co., Inc.
- STILBEST**  
Linick Chemical Co.
- STONEHART**  
Titeflex, Inc.
- STRATOLLNET**  
Shure Brothers
- STRATOPAX**  
Cook Electric Co.
- STRATOTONE**  
Globe Electronics Inc.
- STRIPSOL**  
Paisley Products Inc.
- STROBOCONN**  
Conn Ltd., C. G.
- STROBODYNE**  
Sperry Gyroscope Co., Inc.
- STROBOFLASH**  
General Radio Co.
- STROBO-LITE**  
Avia Prods. Co.
- STROBOLUX**  
General Radio Co.
- STROBOTAC**  
General Radio Co.
- STROWDER**  
Automatic Electric Co.
- STYRON**  
Dow Chemical Co.
- SUB-CYCLE**  
Lorain Products Corp.
- SUPEREX**  
Solar Mfg. Co.
- SUPERFLAKE**  
Superior Flake Graphite Co.
- SUPER-GLO**  
Cardy-Lundmark Co.
- SUPER-OILITE**  
Amplex Div.  
Chrysler Corp.
- SUPERSONIC REFLECTOSCOPE**  
Sperry Products Inc.
- SUPER X**  
Western Brass Mills  
Div. of Olin Industries
- SUPREME**  
Phonograph Needle Mfg. Co.
- SUPRO**  
Valco Mfg. Co.
- SURCO**  
Suprenant Electrical Insulation Co.
- SVEA**  
Swedish Iron & Steel Corp.
- SWEATLESS**  
Paisley Products Inc.
- SWELTERPROOF**  
Aviometer Corp.
- SWITCH-LITE**  
Littelfuse Inc.
- SYLPLAST**  
Sylvan Plastics, Inc.
- SYLVALOY**  
Driver Co., Wilbur B.
- SYMPHONY**  
Hollywood Radio Cabinet Co.
- SYMPHONY MASTER**  
Monitor Products Co.
- SYNCHRO-LINK**  
Yardeny Laboratories Inc.
- SYNCHRO-METER**  
Bailey Meter Co.
- SYNCHRO-VALVE**  
Bristol Co., The
- SYNKOTE**  
Plastoid Corp.
- SYNTHINOL**  
Rome Cable Corp.
- SYNTHITE**  
Dolph Co., John C.
- SYNTHOLVAR**  
Varflex Corp.
- SYNVAREN**  
Synvar Corp.
- SYNVARITE**  
Synvar Corp.
- SYNVAROL**  
Synvar Corp.
- SYROCO**  
Syracuse Ornamental Co., Inc.
- 20TH CENTURY**  
Electronic Devices Co.
- T<sub>9</sub>**  
Edison Electronic Co.
- TABBY**  
Division Lead Co.
- TACO**  
Technical Appliance Corp.
- TAG**  
Tagliabue Division, C. J.  
Portable Products Corp.
- TAKK-TRON**  
Takk Corp.
- TAPE TACK**  
Paisley Products Inc.
- TATTELITE**  
Littelfuse Inc.
- TECHNICRAFT**  
New England Radiocrafters
- TEFLON**  
du Pont de Nemours Co., Inc., E. I.  
Plastics Dept.
- TELAPPROACH**  
American District Telegraph Co.
- TELEDELTO**  
Western Union Telegraph Co.
- TELEFAX**  
Western Union Telegraph Co.
- TELEMIKE**  
Miles Reproducer Co., Inc.
- TELEPAGE**  
Webster Electric Co.
- TELEPATCH**  
Webster Electric Co.
- TELETALK**  
Webster Electric Co.
- TELEETHERM**  
American District Telegraph Co.
- TELE TONE**  
Teletone Radio Corp.
- TELETORQUE**  
Kollsman Instrument  
Div. of Square D Co.
- TENITE**  
Tennessee Eastman Corp.  
Div. Eastman Kodak
- TENSIOMETER**  
Saxl Instrument Co.
- TENSITE**  
Driver Co., Wilbur B.
- TENS-O-TROL**  
Dillon & Co., Inc., W. C.
- TERMALINE**  
Bird Electronic Corp.
- TESCO**  
Eastern Specialty Co.
- TESTLITE-FUSPUL**  
Dante Electric Mfg. Co.
- TETCO**  
Electric Tachometer Co.
- THERA-RAY**  
Electronic Supply Co.
- THERMALARM**  
Eastern Specialty Co.
- THERMALOAD**  
Monitor Controller Co.
- THERMATRON**  
Radio Receptor Co.
- THERMEX**  
Girdler Corp.  
Thermex Division
- THERMITE**  
Thermionic Engr. Corp.
- THERMO-CONTAX**  
Rahm Instruments, Inc.
- THERMO-HUMIDIGRAPH**  
Bristol Co., The
- THER-MONIC**  
Induction Heating Corp.
- THERMOPLAX**  
Cutler-Hammer, Inc.
- THERMOSEN**  
Sorenson & Co.

**THERMOSWITCH**  
Fenwal Inc.

**THERM-OTROLS**  
Wheelco Instruments Co.

**THERMOVERTER**  
Bristol Co., The

**THER-MU-TROL**  
Mu Switch Co.

**THINEX**  
Dixon Crucible Co., Joseph

**THROTTLTROLS**  
Wheelco Instruments Co.

**THRURAY**  
Sperry Products, Inc.

**TICONDEROGA**  
Dixon Crucible Co., Joseph

**TIMEFAX**  
Times Facsimile Corp.

**TIME-O-GRAF**  
Gibbs Div.  
George W. Borg Corp.

**TIME-O-LITE**  
Industrial Timer Corp.

**TIM-O-LUX**  
Sidward Mfg. Co., Inc.

**TINOL**  
American Solder & Flux Co.

**TINY TIM**  
Shure Brothers

**TIREX**  
Simplex Wire & Cable Co.

**TITAN**  
General Lead Batteries Co.

**TITEGRIP**  
Dante Electric Mfg. Co.,

**TITRIMETER**  
Fisher Scientific Co.

**TITROMETER**  
Precision Scientific Co.

**TOCCO**  
Ohio Crankshaft Co.  
Tocco Div.

**TOCCOTRON**  
Ohio Crankshaft Co.  
Tocco Div.

**TONG TEST**  
Columbia Electric Mfg. Co.

**TOPHET**  
Driver Mfg. Co., Wilbur B.

**TPI**  
Radio Development & Research

**TOUCH-TIMER**  
Kay Electric Co.

**TRACEX**  
H-W Mfg. Co.

**TRAFF-O-MATIC**  
Automatic Signal Div.  
Eastern Industries, Inc.

**TRAIL BLAZER**  
Meck Industries, John

**TRANSAXIL**  
Mettler Co., Lee B.

**TRANSERT**  
Halwig Co.

**TRANSFAX**  
Eastman Kodak Co.  
Industrial Photographic Sales Div.

**TRANSITONE**  
Philco Corp.

**TRANSMIKE**  
Signal Electronics, Inc.

**TRIGNITRON**  
Electronic Power Co., Inc.

**TRIMAIR**  
Cardwell Mfg. Corp., Alan D.

**TRIMTHERM**  
General Controls Co.

**TRIPLOC**  
Pyle-National Co.

**TRUARC**  
Waldes Kohnoor Inc.

**TRI-COPY-PHOTO**  
Photo Reproducing Equip. Co.

**TRU-SONIC**  
Stephens Mfg. Co.

**TRYLON**  
Wind Turbine Co., Tower & Antenna Div.

**TUBE-A-LITE**  
Larrimore Sales Co.

**TUBE-U-LAR**  
Pyramid Electric Co.

**TUFFERNELL**  
Westinghouse Electric & Mfg. Co.  
Micarta Dept.

**TUNACORE**  
Stanwyck-Webb Magnetic Core Corp.

**TURQUOISE**  
Eagle Pencil Co.

**TURRET**  
Paulsen-Webber Cordage Corp.

**TURY**  
International Products Corp.

**TWIST-MOUNT**  
Pyramid Electric Co.

**TYGON**  
U. S. Stoneware Co., The

**TYLOX**  
Hamilton Kent Mfg. Co., Inc.

**TYNE-DRY**  
Pyramid Electric Co.

**TYPHONITE ELDORADO**  
Dixon Crucible Co., Joseph

**U.H.C.A.**  
Commodore Record Co.

**ULTRACOMPACT**  
United Transformer Co.

**ULTRAPHONE**  
Gross Communication Products

**ULTRASON**  
Teleso Products Inc.

**ULTRASONORATOR**  
Crystal Research Labs., Inc.

**UNBRAKO**  
Standard Pressed Steel Co.

**UNDARK**  
U. S. Radium Corp.

**UNIBALLASTS**  
National Union Radio Corp.

**UNICLOSED**  
U. S. Electrical Motors, Inc.

**UNICON**  
United Condenser Corp.

**UNI-CRIMP**  
Sherman Mfg. Co., H. B.

**UNIDYNE**  
Shure Brothers

**UNIONMELT**  
Linde Air Products Co.  
Unit of Union Carbide & Carbon Corp.

**UNIPLEX**  
Shure Brothers

**UNIPOLE**  
Andrew Co.

**UNITACT**  
Bristol Co., The

**UNIVERSAL**  
Davis & Murphy

**UNIVIBES**  
National Union Radio Corp.

**URAC**  
American Cyanamid Co.  
Plastics Div.

**UST**  
U. S. Television Mfg. Corp.

**USALITE**  
U. S. Electric Mfg. Corp.

**USBLUCO BOARDMASTER**  
U. S. Blue Print Paper Co.

**UTC**  
United Transformer Corp.

**UTILASTIC**  
Paisley Products Inc.

**UTILIPHONE**  
Electronic Labs., Inc.

**UTILISCOPE**  
Farnsworth Television & Radio Corp.

**VAGABOND**  
Lincoln Electronics Corp.

**VALVRATORS**  
Fischer & Porter Co.

**VANGTRONIC**  
Vangtronic Corp., The

**VANGTRONIC WELDER**  
Electronic Power Co., Inc.

**VARGLAS**  
Varflex Corp.

**VARIAC**  
General Radio Co.

**VARI-FORMER**  
Gulow Corp.

**VARIWATCH**  
United Transformer Corp.

**VARIPOWER**  
United Transformer Corp.

**VARITRAN**  
United Transformer Corp.

**VARITRONIC**  
Electron Equipment Corp.

**VARI-VOLT**  
Hallderson Co., The

**VEECO**  
Vacuum Electronic Engineering Co.

**VEGIMAL**  
Paisley Products Inc.

**VELOMETER**  
Illinois Testing Labs, Inc.

**VERICON**  
Remington Rand  
Electronic Division

**VERITHIN**  
Eagle Pencil Co.

**VERSATEX**  
Shure Brothers

**VIBRAPACK**  
Mallory & Co., Inc., P. R.

**VIBROMETER**  
Teleso Products, Inc.

**VIBRAPOWER**  
Vibrapower Co., James

**VIBRASHOCK**  
Robinson Aviation Inc.

**VIBROGROUND**  
Associated Research Inc.

**VIBROMIKE**  
Brush Development Co.

**VIBROTEST**  
Associated Research Inc.

**VICTRON**  
Victor Electric Products Inc.

**VIDEOCOUPLER**  
Mallory & Co., Inc., P. R.

**VIMLITE**  
Celanese Plastics Corp.

**VINYSEAL**  
Bakelite Corp.

**VINYL**  
Alpha Wire Corp.

**VINYLITE**  
Bakelite Corp.

**VINYON**  
Bakelite Corp.

**VISIBLE PROOF**  
Electric Heat Control Co., The

**VISCOR**  
Weston Electrical Equip. Co.

**VISI-LIMIT**  
Wilmette Mfg. Co.

**VISITRON**  
Rauland Corp.

**VISTAWAX**  
Cantol Wax Co.

**VITAMIN Q**  
Sprague Electric Co.

**VITAVOX**  
Radionic Transformer Co.

**VIZ**  
Molded Insulation Co.  
Aircraft Control Div.

**V-LINER**  
Swanson Tool & Machine Prods.

**VOCAL-AIRE**  
Dilks, Inc.

**VOICE OF THEATRE**  
Altec Lansing Corp.

**VOICEWRITER**  
Edison Inc., Thomas A.

**VOLSTAT**  
Industrial Transformer Corp.

**VOLTALAC**  
Standard Varnish Works

**VOLTAPE**  
Respro, Inc.

**VOLTBOX A-C**  
Superior Electric Co.

**VOLTIPLIER**  
Techno-Scientific Co.

**VOLTRON**  
Industrial Synthetics Corp.

**VOMAX**  
McMurdo Silver Co., Inc.

**VOYCALL**  
Lake Mfg. Co.

**VULCOID**  
Continental Diamond Fibre Co.

**WABLIQUIST**  
Nilsson Electrical Laboratory, Inc.

**WALCO SAPPHIRE**  
Electrovox Co., Inc.

**WALSCO**  
Schott Co., Walter L.

**WAXMASTER**  
Aerol Products Co.  
W. B. G.  
Foote, Pierson & Co., Inc.

**WEDGE-ON**  
Thomas & Betts Co., Inc.

**WEDGE-GRIP**  
Sherman Mfg. Co., H. B.

**WEDGIE**  
Insulation Mfrs. Corp.

**WEILCO**  
Weil & Co., J. H.

**WEILETE**  
Weil & Co., J. H.

**WEILINE**  
Weil & Co., J. H.

**WELD SEAL**  
Electronic Processes Corp.

**WHEELLOCK**  
Signal Engineering & Mfg. Co.

**WINCO**  
Wincharger Corp.

**WIPERMALLOY**  
United Transformer Corp.

**WIREFHONE**  
Molded Insulation Co.  
Aircraft Control Div.

**WIRETONE**  
Molded Insulation Co.  
Aircraft Control Div.

**WIREWATT**  
Ohmite Mfg. Co.

**WOODITE**  
Syracuse Ornamental Co., Inc.

**WOODWIN**  
Wood Electric Co., Inc., C. D.

**WRIGHTFLOR**  
Taylor Mfg. Co.

**XACTEMP**  
Gordon Co., Claud S.

**XACTLINE**  
Gordon Co., Claud S.

**XENOFASH**  
Triumph Mfg. Co.

**XCELITE**  
Park Metalware Co.

**X-PRESS**  
Cook Electric Co.

**X-THERMOTROL**  
Gasket Engineering Co.

**X-TROL**  
Gasket Engineering Co.

**YES**  
Yates Engineering Services

**Z ANGLE**  
Technology Instrument Corp.

**ZAPON**  
Zapon Div.  
Atlas Powder Co.

**ZIP-IN**  
American Phenolic Corp.

**ZYROX**  
Halowax Products Division  
Union Carbide & Carbon Corp.

# 1947-1948 ELECTRONICS BUYERS' GUIDE

# MANUFACTURERS INDEX

A listing of the companies engaged in the manufacture of all types of electronic components and complete electronic equipment. They are alphabetically arranged for convenient use and quick reference.

- A B C Products, Inc., 2131-35 Stoner Ave., W. Los Angeles 25, Calif.
- A B C Radio Laboratories, 3334 N. New Jersey St., Indianapolis 5, Ind.
- A. R. F. Products, 7113 Lake St., River Forest, Ill.
- Abbott Instrument, Inc., 8 W. 18th St., New York, N. Y.
- Accurate Insulated Wire Corp., 25 Fox St., New Haven 1, Conn.
- Accurate Spring Mfg. Co., 3811 W. Lake St., Chicago, Ill.
- Ace Mfg. Corp., 1255 E. Erie Ave., Philadelphia, Pa.
- Acheson Colloids Corp., Port Huron, Mich.
- Ackerman-Johnson Co., 625 W. Jackson Blvd., Chicago, Ill.
- Acklin Stamping Co., 1923 Nebraska Ave., Toledo 7, Ohio
- Acme Battery Company, 59 Pearl Street, Brooklyn, N. Y.
- Acme Electric Corp., Cuba, N. Y.
- Acme Electric Heating Co., 1217 Washington St., Boston, Mass.
- Acme Fire Alarm Co., Inc., 106 Seventh Ave., New York 11, N. Y.
- Acme Fohling Box Co., Inc., 141 E. 25th St., New York, N. Y.
- Acme Wire Co., New Haven 14, Conn.
- Acro Electric Co., 1316 Superior Ave., Cleveland, Ohio
- Acromark Co., 9-13 Morrell St., Elizabeth 4, N. J.
- Acton Co., H. W., 370 7th Avenue, New York, N. Y.
- Adair & Rhanstine, 301 Beaubien St., Detroit 26, Mich.
- Adams & Westlake Co., Michigan St., Elkhart, Ind.
- Adel Precision Products Corp., 1077 Van Buren St., Burbank, Calif.
- Adhesive Products Co., 3400 13th St., SW, Seattle, Washington
- Admiral Corp., 3800 Cortland St., Chicago 47, Ill.
- Advance Electric & Relay Co., 1260 W. Second St., Los Angeles, Calif.
- Advance Electronics Mfg. Co., 657 Schuyler Ave., Kearny, N. J.
- Advance Recording Products Co., 36-12 34th St., Long Island City, N. Y.
- Aermotive Equipment Corp., 1632-8 Central St., Kansas City 10, Mo.
- Aero Communications, Inc., 231 Main St., Hempstead, N. Y.
- Aero Instrument Co., 3907 San Fernando Road, Glendale 4, Calif.
- Aero Needle Co., 619 N. Michigan Ave., Chicago 11, Ill.
- Aeroil Products Co., 5701 Park Ave., West New York, N. J.
- Aerolite Electronic Hardware Corp., 24 Cliff St., Jersey City, N. J.
- Aerolux Light Corp., 653 11th Ave., New York 19, N. Y.
- Aeronautical Radio Mfg. Co., 155 First St., Mineola, N. Y.
- Aerovox Corp., 740 Belleville Ave., New Bedford, Mass.
- Aetna Felt Co., Centre & Hester Sts., New York, N. Y.
- Agaloy Tubing Co., 75 West St., New York 6, N. Y.
- Agfa Anso, Binghamton, N. Y.
- Air Associates Inc., 5827 W. Century Blvd., Los Angeles 45, Calif.
- Airadio Inc., Melrose Ave., & Battery Pl., Stamford, Conn.
- Aircraft Marine Products, Inc., 1523 N. Fourth St., Harrisburg, Pa.
- Aircraft Radio Corp., Boonton, N. J.
- Aircraft Screw Products Co., Inc., 47-23 35th St., Long Island City 1, N. Y.
- Airdesign, Inc., 241 Fairfield Ave., Upper Darby, Pa.
- Aireon Mfg. Corp., Fairfax and Funston Rd., Kansas City 15, Kansas
- Air-King Products Co., Inc., 1523 63rd St., Brooklyn, N. Y.
- Airpax Products Co., P. O. Box 6766, Baltimore 4, Maryland
- Airplane & Marine Instruments, Inc., Clearfield, Pa.
- Air Reduction Sales Co., 60 E. 42nd St., New York, N. Y.
- Air-Shields, Inc., Hatboro, Pa.
- Air Track Mfg. Corp., 5009 Calvert Rd., College Park, Md.
- Airtronics Mfg. Co., 5145 W. San Fernando Rd., Los Angeles 26, Calif.
- Ajax Electrothermic Corp., Ajax Park, Trenton, N. J.
- Aladdin Radio Industries Inc., 501 W. 35th St., Chicago 16, Ill.
- Alco Valve Co., 865 Kingsland, St. Louis 5, Mo.
- Alden Products Co., 117 No. Main St., Brockton 64, Mass.
- Aldine Paper Co., Inc., 535 5th Ave., New York 17, N. Y.
- All American Tool & Mfg. Co., 1014 W. Fullerton St., Chicago 14, Ill.
- All Weather Springs, 140 Cedar St., New York 6, N. Y.
- Allen Mfg. Co., Hartford, Conn.
- Alliance Mfg. Co., Lake Park Blvd., Alliance, Ohio
- Allied Control Co., Inc., 2 East End Ave., New York 21, N. Y.
- Allied Control Valve Co., Inc., 85 Spring St., South Norwalk, Conn.
- Allied Recording Products Co., 21-09 43rd Ave., Long Island City 1, N. Y.
- Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.
- Allis Co., Louis, 427 E. Stewart St., Milwaukee 7, Wisc.
- Allmetal Screw Products Co., 80 Grand St., New York 13, N. Y.
- Alloy Metal Wire Co., Prospect Park (Moore Sta.), Pa.
- Alni Corp., 10 E. 52nd St., New York 22, N. Y.
- Alpha Metals, Inc., 363 Hudson Ave., Brooklyn 1, N. Y.
- Alpha Wire Corp., 50 Howard St., New York, N. Y.
- Altec Lansing Corp., 1161 N. Vine St., Hollywood 38, Calif.
- Aluminum Co. of America, Gulf Bldg., Pittsburgh, Pa.
- Amalgamated Electronics Associated, 60 East 42nd St., New York 17, N. Y.
- Amalgamated Radio Television Corp., 476 Broadway, New York 13, N. Y.
- Ambroid Co., 305 Franklin St., Boston 10, Mass.
- American Brass Co., American Metal Hose Branch, Waterbury 88, Conn.
- American Bridge Co., Frick Bldg., Pittsburgh, Pa.
- American Coil & Engineering Co., 1271 N. Hermitage Ave., Chicago 22, Ill.
- American Communications Corp., 306 Broadway, New York 7, N. Y.
- American Condenser Co., 4410 Ravenswood Ave., Chicago 40, Ill.
- American Cyanamid Co., Plastics Div., 38 Rockefeller Plaza New York 20, N. Y.
- American Diathermy Productions, 10860 Santa Monica Blvd., Los Angeles 25, Calif.
- American Earphone Co., 10 E. 43rd St., New York 17, N. Y.
- American Electric Cable Co., Holyoke, Mass.
- American Electrical Heater Co., 6110 Cass Ave., Detroit 2, Mich.
- American Electro Metal Corp., 320 Yonkers Ave., Yonkers, N. Y.
- American Electronics, 37 E. 18th St., New York 3, N. Y.
- American Emblem Co., Utica, N. Y.
- American Felt Co., Glenville, Conn.
- American Gas Accumulator Co., 1029 Newark Ave., Elizabeth, N. J.
- American Gem & Pearl Co., 6 West 48th St., New York 19, N. Y.
- American Hard Rubber Co., 11 Mercer St., New York 13, N. Y.
- American Instrument Co., 8030 Georgia Ave., Silver Springs, Md.
- American Lava Corp., Chattanooga 5, Tennessee
- American Lens Co., Inc., 45 Lisperand St., New York 13, N. Y.
- American Microphone Co., 370 So. Fair-oaks Ave., Pasadena 2, Calif.
- American Molding Powder & Chemical Corp., 44 Hewes St., Brooklyn, N. Y.
- American Nut & Bolt Fastener Co., 2045 Doerr St., Pittsburgh, Pa.
- American Optical Co., Scientific Instrument Div., Buffalo 11, N. Y.
- American Phenolic Corp., 1830 S. 54th Ave., Chicago 50, Ill.
- American Photocopy Equipment Co., 2849 N. Clark St., Chicago, Ill.
- American Plastic Products, 2907 South Main St., Los Angeles 7, Calif.
- American Platinum Works, N.J.R.R. Ave. at Oliver St., Newark 5, N. J.
- American Products Mfg. Co., Oleander & Dublin St., New Orleans 18, La.
- American Radio Co., 611 E. Garfield Ave., Glendale, Calif.
- American Resinous Chemical Co., 104 Foster St., Peabody, Mass.
- American Rivet Co., 1301 W. Congress St., Chicago 7, Ill.
- American Screw Co., Providence, R. I.
- American Smelting and Refining Co., Federated Metals Div., 120 Broadway, New York 5, N. Y.
- American Solder & Flux Co., 2152 E. Norris St., Philadelphia 25, Pa.
- American Steel & Wire Co., U. S. Steel Corp., Subsidiary, Rockefeller Bldg., Cleveland 13, Ohio
- American Television & Radio Co., 300 E. 4th St., St. Paul 1, Minn.
- American Thermo Electric Co., 67 E. 8th St., New York 3, N. Y.
- American Time Products, Inc., 580 Fifth Ave., New York 19, N. Y.
- American Transformer Co., 178 Emmett St., Newark, N. J.
- Amerline, 1753 N. Honore St., Chicago 22, Ill.
- Amersil Co., Inc., Chestnut Ave., Hillside, N. J.
- Anglo Corp., 4234 Lincoln Ave., Chicago 18, Ill.
- Amperex Electronic Corp., 25 Washington St., Brooklyn 1, N. Y.
- Amperite Co., 561 Broadway, New York, N. Y.
- Amplex Div., Chrysler Corp., Detroit 31, Mich.
- Amplifier Corp. of America, 396 Broadway, New York 13, N. Y.
- Amy, Aceves & King Inc., 11 W. 42nd St., New York 18, N. Y.
- Anaconda Wire & Cable Co., 25 Broadway, New York 4, N. Y.
- Anchor Plastics Co., Inc., 533-541 Canal St., New York 13, N. Y.
- Anchor Webbing Co., 1005 Main St., Pawtucket, R. I.
- Anco Products Corp., 975 Market Street, Paterson, N. J.
- Andrea Radio Corp., 43-20 34th Street, Long Island City, N. Y.
- Andrew Co., 363 E. 75th St., Chicago 19, Ill.
- Annis Co., R. B., 1101 N. Delaware St., Indianapolis, Ind.
- Ansley Radio Corp., 41 St. Joes Ave., Trenton 9, N. J.
- Ansonia Clock Co., Inc., 103 Lafayette St., New York 13, N. Y.
- Ansonia Electric Co., Ansonia, Conn.
- Applied Physics Corp., 40 South Oak Knoll Ave., Pasadena 1, Calif.
- Applied Research Labs., 4336 San Fernando Rd., Glendale 4, Calif.
- Aray Mfg. and Supply Co., 3107 Pine St., St. Louis 3, Missouri
- Arco Co., 7301 Bessemer Ave., Cleveland 4, Ohio
- Argus, Inc., Ann Arbor, Mich.
- Ark-Les Switch Corp., 51 Water St., Watertown 72, Mass.
- Arkwright Finishing Co., Providence, R. I.
- Armstrong Cork Co., Lancaster, Pa.
- Arnessen Electric Co., Inc., 116 Broad St., New York 4, N. Y.
- Arnold Engineering Co., 147 E. Ontario St., Chicago, Ill.
- Arro Expansion Bolt Co., 740 W. Center St., Marion, Ohio
- Arrow-Hart & Hegeman Electric Co., 103 Hawthorn St., Hartford 6, Conn.
- Art-Lloyd Metal Products Corp., 2973 Cropsey Ave., Brooklyn 14, N. Y.
- Art Specialty Co., 3245 W. Lake St., Chicago, Ill.

Art Wire & Stamping Co., 227 High St., Newark 2, N. J.

Asbury Graphite Mills, Asbury, N. J.

Asheville Mica Co., 5 River Rd., Biltmore, N. C.

Askania Regulator Co., 1603 So. Michigan Ave., Chicago 16, Ill.

Assembly Products, Inc., Chagrin Falls, Ohio

Associated Research Inc., 231 S. Green St., Chicago 7, Ill.

Astatic Corp., The Conneaut, Ohio

Atlas Condenser Products Co., 3120 Third Ave., New York, N. Y.

Atlas Resistor Co., 423 Broome St., New York, N. Y.

Atlas Sound Corp., 1443 39th St., Brooklyn 18, N. Y.

Atlas Tack Corp., Pleasant St., Fairhaven, Mass.

Atomic Instrument Co., 160 Charles Street, Boston, Mass.

Auburn Button Works Inc., 48 Canoga St., Auburn, N. Y.

Auburn Mfg. Co., Middletown, Conn.

Audak Co., 509 Fifth Ave., New York, N. Y.

Audar Inc., Argos, Indiana

Audio Development Co., 2833 13th Ave., S., Minneapolis 7, Minn.

Audio Devices, Inc., 444 Madison Ave., New York 22, N. Y.

Audio Industries, 1404 Franklin St., Michigan City, Ind.

Audio Products Co., 2101 West Olive Ave., Burbank, Calif.

Aurex Corp., 1117 N. Franklin St., Chicago, Ill.

Austin Co., O., 335 Throop Ave., Brooklyn 21, N. Y.

Auth Electric Specialty Co., 122 E. 53rd St., New York 22, N. Y.

Auto Engraver Co., 1776 Broadway, New York, N. Y.

Autocall Co., The Shelby, Ohio

Autocrat Radio Co., 3855 N. Hamilton Ave., Chicago, Ill.

Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.

Automatic Electrical Devices Co., 324 E. 3rd St., Cincinnati 2, Ohio

Automatic Mfg. Co., 900 Passaic Ave., E. Newark, N. J.

Automatic Metal Products Co., 315 Berry St., Brooklyn 1, N. Y.

Automatic Nut Co., Inc., Lehanon, Pa.

Automatic Radio Mfg. Co., Inc., 122 Brookline Ave., Boston, Mass.

Automatic Signal Div., Eastern Industries, Inc., 100 Regent St., East Norwalk, Conn.

Automatic Switch Co., 41 E. 11th St., New York 3, N. Y.

Automatic Temperature Control Co., 18 W. Chelton Ave., Philadelphia 44, Pa.

Autoscrew Co., 216-222 W. 18th Street, New York, N. Y.

Autotron Co., The, Danville, Ill.

Avia Products Co., 7266 Beverly Blvd., Los Angeles 36, Calif.

Aviola Radio Corp., Phoenix, Arizona

Aviometer Corp., 370 W. 35th St., New York 1, N. Y.

B & C Insulation Products, Inc., Lincoln Highway, Iselin, N. J.

B-P Specialties Works, Third National Bldg., Dayton 2, Ohio

Bache & Co., Semon, 636 Greenwich St., New York 14, N. Y.

Baer Co., N. S., 9 Montgomery St., Hillside, N. J.

Bailey Co., Inc., 21 Water Street, Amesbury, Mass.

Bailey Meter Co., 1044 Ivanhoe Road, Cleveland 10, Ohio

Bakelite Corp., 300 Madison Ave., New York 17, N. Y.

Baker & Co., 113 Astor St., Newark 5, N. J.

Baker Chemical Co., J. T., N. Broad St., Phillipsburg, N. J.

Baker Instrument Co., 310 Main St., Orange, N. J.

Baker-Phillips Co., 3057 Lyndale Ave. So., Minneapolis 8, Minn.

Baldor Electric Co., 4353 Duncan Ave., St. Louis, Mo.

Ballantine Laboratories, Inc., Boonton, N. J.

Bamberger Corp., A., 44 Hewes St., Brooklyn, N. Y.

Banks Mfg. Co., 1105 W. Lawrence Ave., Chicago 40, Ill.

Barber Colman Co., River & Loomis Sts., Rockford, Ill.

Barber Labs., Alfred W., 34-04 Francis Lewis Blvd., Flushing, N. Y.

Bardwell & McAllister, 7636 Santa Monica Blvd., Hollywood, California

Barker & Williamson, 235 Fairfield Ave., Upper Darby, Pa.

Barnes-Gibson Raymond Div., Associated Spring Corp., 6400 Miller Ave., Detroit 11, Mich.

Barone Co., S. A., 143 W. 22nd St., New York 11, N. Y.

Barrett Co., Leon J., P. O. Box 378, Worcester 1, Mass.

Barrett Div., Allied Chemical & Dye Corp., 50 Rector St., New York 6, N. Y.

Barry Co., Inc., L. N. 178 Sidney St., Cambridge, Mass.

Bart Labs. Inc., 227 Main St., Belleville 9, N. J.

Barton Co., The, 963 Farmington Ave., West Hartford, Conn.

Bassett Inc., Rex, 500 SE 2nd St., Ft. Lauderdale, Fla.

Baxter and Turner Mfg. Co., 148 E. Larned St., Detroit 26, Mich.

Beach Manufacturing Inc., 322 East Beach Ave., Inglewood, Calif.

Beach-Russ Co., 50 Church St., New York 7, N. Y.

Bead Chain Manufacturing Co., The, 110 Mountain Grove St., Bridgeport 5, Conn.

Beaver Gear Works, Inc., Rockford, Ill.

Becker Bros. Carbon Co., 3450 S. 52nd Ave., Chicago, Ill.

Belden Mfg. Co., 4647 W. Van Buren St., Chicago 44, Ill.

Bell Sound Systems, Inc., 1183 Essex Ave., Columbus, Ohio

Belmont Radio Co., Div. Raytheon Mfg. Co., 5921 W. Dickens Ave., Chicago 39, Ill.

Belmont Smelting & Refining Works, Inc., 330 Belmont Ave., Brooklyn 7, N. Y.

Bendix Aviation Corp., Pacific Div., 11600 Sherman Way, North Hollywood, Calif.

Bendix Aviation Corp., Red Bank Division, Red Bank, N. J.

Bendix Radio Div., Bendix Aviation Corp., Baltimore 4, Md.

Bentley, Harris Mfg. Co., Conshohocken, Pa.

Benwood Linze Co., 1815 Locust St., St. Louis, Mo.

Berndt Corp., E. M., 3515 Sunset Blvd., Hollywood 28, Calif.

Best Manufacturing Co., Inc., 1200 Grove St., Irvington 11, N. J.

Betts & Betts Corp., 551 W. 52nd St., New York, N. Y.

Bibletone, Inc., 354 4th Ave., New York 10, N. Y.

Biddle Co., James G., 1316 Arch St., Philadelphia 7, Pa.

Biltmore Radio Corp., 15 Ave. A, New York 3, N. Y.

Bird Electronic Corp., 1800 E. 38th St., Cleveland 14, Ohio

Birnbach Radio Co. Inc., 145 Hudson St., New York, N. Y.

Birtocher Corp., 5087 Huntington Drive, Los Angeles 32, Calif.

Bitter Construction Co. A., 721 E. 133rd St., New York, N. Y.

Bittermann Electric Co., Saugerties, N. Y.

Biwax Corp., 3445 Howard St., Skokie, Ill.

Black Bear Co., Inc., 620 Fifth Ave., New York 20, N. Y.

Blaw-Knox Co., Farmers Bank Bldg., Pittsburgh, Pa.

Bliley Electric Co., Union Station Bldg., Erie, Pa.

Blum & Co., Julius, 532 W. 22nd St., New York 11, N. Y.

Board Products Co., 2931 S. Wabash St., Chicago 16, Ill.

Bodine Electric Co., Ohio St. & Oakley Blvd., Chicago, Ill.

Boehne Inc., H. O., 915 Broadway, New York, N. Y.

Bogen Co., David, 663 Broadway, New York 12, N. Y.

Bogert & Hopper, 225 Varick St., New York, N. Y.

Bogue Electric Co., 37 Kentucky Ave., Paterson 3, N. J.

Bond Electric Corp., Div. of Olin Industries Inc., New Haven 4, Conn.

Bonney Forge & Tool Works, Allentown, Pa.

Boom Electric & Amplifier Co., 1227 W. Washington Blvd., Chicago 7, Ill.

Boonton Molding Co., Boonton, N. J.

Boonton Radio Corp., Boonton, N. J.

Boots Aircraft Nut Corp., New Canaan, Conn.

Boston Insulated Wire & Cable Co., 63 Bay St., Boston 25, Mass.

Bostonian Process Co., 40 W. 13th St., New York 11, N. Y.

Bound Brook Oil-Less Bearing Co., Bound Brook, N. J.

Brach Mfg. Corp., 55 Dickerson St., Newark, N. J.

Bradley Co., Allen, 136 W. Greenfield Ave., Milwaukee 2, Wisc.

Bradley Labs., 82 Meadow St., New Haven, Conn.

Brainin Co., C. S., 233 Spring St., New York 13, N. Y.

Brand & Co., Wm., 276 Fourth Ave., New York 10, N. Y.

Branson Instruments, Inc., Joe's Hill Rd., Danbury, Conn.

Branston Electric Mfg. Co., 61-65 Gill Pl., Buffalo 13, N. Y.

Breeze Corp., 41 S. 6th St., Newark, N. J.

Breloco Electronics Corp., 55 Vandam St., New York 13, N. Y.

Breon Laboratories, 607 Rose St., Williamsport, Pa.

Bridgeport Hardware Mfg. Corp., Iranistan Ave., Bridgeport, Conn.

Bright Star Battery Co., Clifton, N. J.

Bristol Co., The, Waterbury 91, Conn.

Brook Electronics, Inc., Elizabeth, N. J.

Brown Engineering Co., 4635 S. E. Hawthorne Blvd., Portland 15, Oregon

Brown Instrument Co., 4428 Wayne Ave., Philadelphia 44, Pa.

Browning Laboratories, Inc., 750 Main St., Winchester, Mass.

Bruce Electronics Co., 1478 Coney Island Ave., Brooklyn, N. Y.

Bruning Co., Inc., Charles, 4700 Montrose Ave., Chicago 41, Ill.

Brush Beryllium Co., The, 3714 Chester Ave., Cleveland 14, Ohio

Brush Development Company, The, 3405 Perkins Ave., Cleveland 14, Ohio

Bud Radio, Inc., 2118 E. 55th St., Cleveland 3, Ohio

Buda Co., Harvey, Ill.

Buchmann Spark-Wheel Corp., 4-20 47th Ave., Long Island City 1, N. Y.

Buck Engineering Co., 37-41 Marcy St., Freehold, N. J.

Budd Induction Heating Inc., Detroit, Mich.

Buggie & Co., H. H., 2141 Madison Ave., Toledo 1, Ohio

Buhl Optical Co., 1009 Beech Ave., Pittsburgh 12, Pa.

Bundy Tubing Co., 8109 E. Jefferson Ave., Detroit 14, Mich.

Burke Electric Co., 12 & Cranberry Sts., Erie, Pa.

Burling Instrument Co., 253 Springfield Ave., Newark 3, N. J.

Burlington Instrument Co., 214 N. 4th St., Burlington, Iowa

Burndy Engineering Co., 107 Bruckner Blvd., New York 54, N. Y.

Burnell & Co., 45 Warburton Ave., Yonkers 2, N. Y.

Burniett Radio Lab., Wm. W. L., 1814 Idaho St., San Diego, Calif.

Burnley Battery & Mfg. Co., Clay St., North East, Pa.

Burton-Rogers Co., 857 Boylston St., Boston 16, Mass.

Russmann Mfg. Co., St. Louis 7, Mo.

C. W. Mfg. Co., 1124 Parkway Dr., Elmonte, Calif.

Cadie Chemical Products, Inc., 621 Sixth Ave., New York 11, N. Y.

Callite Tungsten Corp., 540 39th St., Union City, N. J.

Caltron Co., 11916 W. Pico Blvd., Los Angeles 34, Calif.

Calvert Motors Associates, Ltd., 505 Morse Street, N. E., Washington 2, D. C.

Cambridge Thermionic Corp., 445 Concord Ave., Cambridge, Mass.

Camloc Fastener Corp., 420 Lexington Ave., New York 17, N. Y.

Campbell-Reeder, 1027 W. McKinley St., Milwaukee, Wisc.

Cannon Co., C. F., Springwater, N. Y.

Cannon Electric Development Co., 3209 Humboldt St., Los Angeles 31, Calif.

Cantol Wax Co., 211 N. Washington St., Bloomington, Ind.

Capacitron Co., 849 No. Kedzie Ave., Chicago 51, Ill.

Carbide and Carbon Chemicals Corp., Unit of Union Carbide and Carbon Corp., 30 East 42nd St., New York 17, N. Y.

Carborundum Co., Globar Div., Niagara Falls, N. Y.

Cardinell Corp., Montclair, N. J.

Cardox Western, Inc., 151 North Ave. 19, Los Angeles 31, Calif.

Cardwell Mfg. Corp., Allen D., 97 Whiting St., Plainville, Conn.

Cardy-Lundmark Co., 1801 W. Byron St., Chicago 13, Ill.

Carnegie Illinois Steel Corp., Carnegie Building Pittsburgh, Pa.

Carolina Narrow Fabric Co., 1636 N. Chestnut St., Winston-Salem, N. C.

Carpenter Steel Co., Kenilworth, N. J.

Carpenter Steel Co., Reading, Pa.

Carron Mfg. Co., 415 S. Aberdeen St., Chicago, Ill.

Carson Machine & Supply Co., Box 4547, Oklahoma City 9, Okla.

Carson Micrometer Corp., 2 E. Main St., Little Falls, N. J.

Carter Motor Co., 2644 N. Maplewood Ave., Chicago 47, Ill.

Carter Radio Div., Precision Parts Co., 213 Institute Place, Chicago 10, Ill.

Castlewood Mfg. Co., 12th & Burnett Sts., Louisville, Ky.

Catalin Corp., 1 Park Ave., New York 16, N. Y.

Celanese Corp. of America, 180 Madison Ave., New York 16, N. Y.

Celanese Plastics Corp., 180 Madison Ave., New York 16, N. Y.

Cellusuede Products Inc., Rockford, Ill.

Central Paper Co., Inc., 2400 Lakeshore Drive, Muskegon, Michigan

General Scientific Co., 1700 Irving Park Blvd., Chicago 13, Ill.

Central Screw Co., 3511 Shields Ave., Chicago 9, Ill.

Centralab, Div. of Globe Union Inc., 900 Keefe Ave., Milwaukee 1, Wisc.

Century Electric Co., 1806 Pine St., St. Louis 3, Mo.

Chace Co., W. M., 1600 Beard Ave., Detroit, Mich.

Chandler Products Co., 1475 Chardon Rd., Cleveland, Ohio

- Chase Brass & Copper Co., Inc., Waterbury 91, Conn.
- Chase-Shawmut Co., Newburyport, Mass.
- Chaslyn Co., The, 1952 Irving Park Rd., Chicago 13, Ill.
- Chatham Electronics, 475 Washington St., Newark 2, N. J.
- Chatillon & Sons, John, 93 Cliff St., New York 7, N. Y.
- Chemaco Corp., Subs. of Manufacturers Chemical Corp., Berkeley Heights, N. J.
- Cherry Rivet Co., 231 Winston Street, Los Angeles 13, Calif.
- Chicago Condenser Corp., 3255 W. Armitage Ave., Chicago 47, Ill.
- Chicago Die Mold Corp., 4001 Wrightwood Ave., Chicago 39, Ill.
- Chicago Expansion Bolt Co., 1338 W. Concord Pl., Chicago 22, Ill.
- Chicago Metal Hose Corp., 1309 S. Third Ave., Maywood, Ill.
- Chicago Rivet & Machine Co., 9600 W. Jackson Blvd., Chicago, Ill.
- Chicago Telephone Supply Co., 1142 W. Beardsley Ave., Elkhart, Ind.
- Chicago Transformer Div., Essex Wire Corp., 3501 W. Addison St., Chicago 18, Ill.
- Ciba Co., Inc., 627 Greenwich St., New York 14, N. Y.
- Cinaudagraph Speakers Inc., Subs. of Aireon Mfg. Corp., 1401 Fairfax Trafficway, Kansas City, Kansas
- Cinch Mfg. Corp., 2335 W. Van Buren St., Chicago 12, Ill.
- Cincinnati Electric Products Co., Carthage at Hannaford, Cincinnati 12, Ohio
- Cincinnati Molding Co., 2037 Florence Ave., Cincinnati 6, Ohio
- Cinema Engineering Co., 1503 W. Verdugo Ave., Burbank, Calif.
- Clare & Co., C. P., 4719, Sunnyside Ave., Chicago 30, Ill.
- Clark Controller Co., The, 1146 E. 152nd St., Cleveland 10, Ohio
- Clark Radio Equipment Corp., 4313 Lincoln Ave., Chicago 18, Ill.
- Clarke Instrument Corp., 910 King St., Silver Spring, Md.
- Clarkstan Corp., 11927 W. Pico Blvd., Los Angeles 34, Calif.
- Clarostat Mfg. Co., Inc., 285-7 6th St., Brooklyn, N. Y.
- Clendenin Bros., 108 South St., Baltimore, Md.
- Cleveland Container Co., The, 10630 Berea Rd., Cleveland 2, Ohio
- Cleveland Plastics, Inc., 1017 Euclid Ave., Cleveland 14, Ohio
- Cleveland Tungsten, Inc., 10200 Meech Ave., Cleveland, Ohio
- Cleveland Wire Cloth & Mfg. Co., 3573 E. 78th St., Cleveland 5, Ohio
- Climax Industries, Inc., Climax Engineering Div., Clinton, Iowa
- Clippard Instrument Laboratory, 1440 Chase Avenue, Cincinnati 23, Ohio
- Clough Brengle Co., 6014 N. Broadway, Chicago, Illinois
- Coda Record Co., 1291 Sixth Ave., New York 19, N. Y.
- Cohn, Sigmund, 44 Gold St., New York, N. Y.
- Cole Radio Works, 86 Westville Ave., Caldwell, N. J.
- Coleman Electric Co., 318 Madison St., Maywood, Illinois
- Collins Audio Products Co., 126 Park St., Westfield, N. J.
- Collins Radio Co., Cedar Rapids, Iowa
- Collyer Insulated Wire Co., 249 Roosevelt Ave., P. O. Box 61, Pawtucket, R. I.
- Colonial Brass Co., 100 Vine St., Middleboro, Mass.
- Colonial Electric Products Co., North Bergen, N. J.
- Colonial Radio Corp., 254 Rano St., Buffalo 7, N. Y.
- Columbia Chemical Div., Pittsburgh Plate Glass Co., Grant Bldg., Pittsburgh 19, Pa.
- Columbia Electric Mfg. Co., 4519 Hamilton Ave., N. E., Cleveland 14, Ohio
- Columbia Metal Box Co., 260 E. 143rd St., New York, N. Y.
- Columbia Nut & Bolt Co., 945 Main St., Bridgeport, Conn.
- Columbia Wire & Supply Co., 5734 N. Elson Ave., Chicago 30, Ill.
- Columbus Process Co., Inc., State & Maple St., East Columbus, Ind.
- Combustion Control Corp., 77 Broadway, Cambridge 42, Mass.
- Commercial Enclosed Fuse Co. of N. J., 1317 Willow Ave., Hoboken, N. J.
- Commercial Equipment Co., 1416 McGee St., Kansas City, Mo.
- Commercial Radio Sound Corp., 575 Lexington Ave., New York 22, N. Y.
- Commercial Research Labs., Inc., 20 Bartlett Ave., Detroit 3, Michigan
- Comodore Record Co., 415 Lexington Ave., New York, N. Y.
- Communicating Systems Inc., 203 East 18th St., New York 3, N. Y.
- Communication Equipment & Engineering Co., 5646 W. Race St., Chicago 44, Ill.
- Communication Measurements Lab., Inc., 120 Greenwich St., New York, N. Y.
- Communication Products Company, Inc., Broadway & Clark St., Keyport, N. J.
- Communications Co., Inc., 300 Greco Ave., Coral Gables 34, Fla.
- Communications Parts, 1101 N. Paulina St., Chicago 22, Ill.
- Conant Electrical Labs., 6500 "O" St., Lincoln 5, Nebraska
- Concord Radio Corp., 901 W. Jackson Blvd., Chicago 7, Ill.
- Condenser Corp. of America, 1000 Hamilton Blvd., S. Plainfield, N. J.
- Condenser Products Co., 1375 N. Branch St., Chicago, Ill.
- Congress Tool & Die Co., Congress Die Casting Div., 3750 E. Outer Dr., Detroit, Mich.
- Conn Ltd., C. G., Elkhart, Ind.
- Connecticut Specialties Co., Box 501, Stamford, Conn.
- Connecticut Telephone & Electric Div., Great American Industries, 70 Britannia St., Meriden, Conn.
- Consolidated Engineering Corp., 595 E. Colorado St., Pasadena 1, Calif.
- Consolidated Molded Products Corp., Scranton 2, Pa.
- Consolidated Wire & Associated Companies, 1635 S. Clinton St., Chicago 16, Illinois
- Continental Carbon, Inc., 13900 Lorain Ave., Cleveland 11, Ohio
- Continental Diamond Fibre Co., 16 Chapel St., Newark, Del.
- Continental Electric Co., Geneva, Ill.
- Continental Electric Co., Inc., 323-327 Ferry St., Newark 5, N. J.
- Continental Electronics, Ltd., Brooklyn 22, N. Y.
- Continental Screw Co., New Bedford, Mass.
- Control Corp., 718 Central Ave., Minneapolis 14, Minn.
- Controls Laboratories Inc., 98 Union St., Worcester 8, Mass.
- Cook Ceramic Mfg. Co., 501 Prospect St., Trenton 1, N. J.
- Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
- Cook Laboratories, 139 Gordon Blvd., Floral Park, N. Y.
- Corbin Screw Division, American Hardware Corp., High, Myrtle & Grove Sts., New Britain, Conn.
- Cords Ltd., 26 Camp St., Newark 5, N. J.
- Cornell Dubilier Electric Co., 1000 Hamilton Blvd., South Plainfield, N. J.
- Corning Glass Works, Corning, N. Y.
- Cornish Wire Co., 15 Park Row, New York 7, N. Y.
- Coronet Radio & Television Corp., 1033 Bergen St., Brooklyn 16, N. Y.
- Cottrell Paper Co., 88 Purchase St., Fall River, Mass.
- Cover Dual Signal Systems, Inc., Div. of Electra Voice Corp., 5215-25 Ravenswood Ave., Chicago 40, Ill.
- Cramer Co., R. W., Centerbrook, Conn.
- Creative Plastics Corp., 963 Kent Ave., Brooklyn, N. Y.
- Crescent Industries, Inc., 4140 Belmont Ave., Chicago 41, Ill.
- Crocker-Wheeler Electric Mfg. Co., Div. of Joshua Hendy Iron Works, Ampere, N. J.
- Croname, Inc., 3701 Ravenswood Ave., Chicago, Ill.
- Crosley Corp., 1329 Arlington St., Cincinnati 3, Ohio
- Cross, H., 15 Beekman St., New York, N. Y.
- Crowley & Co. Inc., Henry L., 1 Central Ave., West Orange, N. J.
- Crucible Steel Co. of America, 405 Lexington Ave., New York 17, N. Y.
- Cryson, Inc., Subs. of Crystal Research Labs., Inc., Unionville, Conn.
- Crystal Products Co., 1519 McGee Trafficway, Kansas City, Mo.
- Crystal Research Labs. Inc., 29 Allyn St., Hartford, Conn.
- Curtis Development and Mfg. Co., 1 N. Crawford Ave., Chicago 24, Ill.
- Cutler-Hammer, Inc., 315 No. 12th St., Milwaukee 1, Wisc.
- Cuyahoga Spring Co., 10272 Berea Rd., Cleveland, Ohio
- Cyclohm Motor Corp., 5-17 46th Rd., Long Island City 1, N. Y.
- Cyclotron Specialties Co., Morago 8, Calif.
- D. & M. Manufacturing Co., 2 Delford Ave., Bergenfield, N. J.
- DX Radio Products Co. Inc., 1200 N. Claremont Ave., Chicago 22, Ill.
- Dahlstrom Metallic Door Co., Jamestown, N. Y.
- Dallons Labs., 5066 Santa Monica Blvd., Los Angeles, Calif.
- Dalmo Victor Co., San Carlos, Calif.
- Dante Electric Mfg. Co., Bantam, Conn.
- Daven Co., 191 Central Ave., Newark 4, N. J.
- Davis Molding Co., Harry, 1423 N. Welles St., Chicago 10, Ill.
- Davis & Co., Dean W. Kentland, Ind.
- Davis Electric Co., Camp Girardeau, Mo.
- Davis & Murphy, 5252 Broadway, Chicago 40, Ill.
- Davis Plastics Co., Joseph, Schuyler At ft. of Quincy Ave., Arlington, N. J.
- Dayco Radio Corp., 915 Valley St., Dayton 4, Ohio
- Dayton Acme Co., 930 York St., Cincinnati 14, Ohio
- De Coursey Engineering Lab., P. O. Box 235, Los Angeles 25, Calif.
- Decca Records, Inc., 50 W. 57th St., New York 19, N. Y.
- Decimeter, 742 W. Colfax Ave., Denver 4, Colorado
- DeJur-Amsco Corp., Northern Blvd., at 45th St., Long Island City 1, N. Y.
- Delaware Industries Inc., Middletown, Delaware
- Delco Appliance Div., General Motors Corp., 391 Lyell Ave., Rochester, N. Y.
- Delco Radio Div., General Motors Corps., Kokomo, Ind.
- Delmhorst Instrument Co., 115 Cornelia St., Boonton, N. J.
- De Mornay-Budd Inc., 475 Grand Concourse, New York 51, N. Y.
- Despatch Oven Co., 619 S. E. 8th St., Minneapolis 14, Minn.
- Deuschmann Corp., Tobe, Filterette Div., Canton, Mass.
- Development Engineering Co., Inc., The 1818 Ashland St., Houston 8, Texas
- DeWald Radio Mfg. Corp., 35-15 37th Ave., Long Island City, N. Y.
- Dial Light Co. of America, 900 Broadway, New York 3, N. Y.
- Diamond Drill Carbon Co., 53-63 Park Row, New York 7, N. Y.
- Diamond Instrument Co., North Ave., Wakefield, Mass.
- Diamond Straw and Machine Co., 114-116 East 16th St., New York 3, N. Y.
- Diamond Wire & Cable Co., 123 East 16th St., Chicago Heights, Ill.
- Dictaphone Corp., 420 Lexington Ave., New York, N. Y.
- Diebel Die & Mfg. Co., 3658 N. Lincoln Ave., Chicago 13, Ill.
- Diehl Manufacturing Co., 1129 FINDERNE Ave., Somerville, N. J.
- Dielectric Products Co., Inc., 125 Virginia Ave., Jersey City 5, N. J.
- Diemolding Corp., Rasbach St., Canastota, N. Y.
- Dietz Design & Mfg. Co., 5810 Park Ave., Kansas City 4, Mo.
- Dietzgen Co. Eugene, 2425 Sheffield Ave., Chicago, Ill.
- Dilks, Inc., Norwalk, Conn.
- Dillon & Co., Inc., W. C., 5410 W. Harrison St., Chicago 44, Ill.
- Dimco Plastics, Inc., Dayton, Ohio
- Dine and Co. Inc., F. E., 2221 Warwick Ave., Santa Monica, Calif.
- Dinion Coil Co., Inc., Caledonia, N. Y.
- Distillation Products, Inc., 755 Ridge Rd. W., Rochester, N. Y.
- Division Lead Co., 836 W. Kinzie St., Chicago 22, Ill.
- Dixon Crucible Co., Joseph, Jersey City, N. J.
- Do-All Co., 1301 Washington Ave., S., Minneapolis 4, Minn.
- Dobeckmun Co., The, Industrial Products Div., Cleveland 1, Ohio
- Doehler-Jarvis Corp., 386 Fourth Ave., New York 16, N. Y.
- Dolph Co., John C., 168 Emmett St., Newark, N. J.
- Dongan Electric Mfg. Co., 2987 Franklin St., Detroit, Mich.
- Doolittle Radio, Inc., 7421 S. Loomis Blvd., Chicago 36, Ill.
- Dow Chemical Co., Midland, Mich.
- Dow Corning Corp., Midland, Mich.
- Drackett Co., 5020 Spring Grove Ave., Cincinnati 27, Ohio
- Drake Electric Works, 3656 Lincoln Ave., Chicago 13, Ill.
- Drake Mfg. Co., 1713 Hubbard St., Chicago, Ill.
- Driver Co., Wilbur B., 150 Riverside Ave., Newark, N. J.
- Driver-Harris Co., 201 Middlesex St., Harrison, N. J.
- Dual-Heat, Inc., 542 So. Broadway, Los Angeles 13, Calif.
- Dumont Electric Co., 34 Hubert St., New York, N. Y.
- Du Mont Labs., Inc., Allen B., 2 Main Ave., Passaic, N. J.
- Dumore Co., The, 1225 14th St., Racine, Wisc.
- Duotone Co., 799 Broadway, New York, N. Y.
- du Pont de Nemours & Co., Inc., E. I., Patterson Screen Div., Towanda, Pa.
- du Pont de Nemours & Co., Inc., E. I., Wilmington 98, Del.
- du Pont de Nemours & Co., Inc., E. I., Plastics Dept., 626 Schuyler Ave., Arlington, N. J.
- Durakool Inc., 1010 N. Main, Elkhart, Ind.
- Duralac Chemical Corp., 84 Lister Ave., Newark 5, N. J.
- Durite Plastics, Inc., 5010 Summerdale Ave., Philadelphia 24, Pa.
- Dynamic Air Engineering Inc., 1619 S. Alameda St., Los Angeles, Calif.
- Dzest Fasteners Co., Inc., Box 605, Babylon, N. Y.
- E. A. M. Corp., The, 57 Fourth Ave., Brooklyn 17, N. Y.

- Eagle Electric Mfg. Co., Inc., 23-10 Bridge Plaza S., Long Island City, N. Y.
- Eagle Pencil Co., 703 E. 13th St., New York, N. Y.
- Eagle Signal Corp., Moline, Ill.
- Eastern Air Devices Inc., 585 Dean St., Brooklyn 17, N. Y.
- Eastern Amplifier Corp., 794 E. 140th St., New York 54, N. Y.
- Eastern Case Co., 51 Bond St., New York 12, N. Y.
- Eastern Electronics Corp., 41 Chestnut St., New Haven, Conn.
- Eastern Industries Co., 26 Elm St., New Haven, Conn.
- Eastern Specialty Co., Philadelphia 40, Pa.
- Eastman Kodak Co., Industrial Photographic Sales Div., 343 State St., Rochester 4, N. Y.
- Eberhard Faber Pencil Co., 37 Greenpoint Ave., Brooklyn 22, N. Y.
- Eby, Inc., Hugh H., 18 W. Chelton Ave., Philadelphia 13, Pa.
- Ecco High Frequency Corp., 7020 Hudson Blvd., North Bergen, N. J.
- Echophone Radio Div., Hallcrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.
- Eckstein Radio & Television Co., 914 La Salle Ave., Minneapolis 2, Minn.
- Eclipse Manufacturing Company, Inc., 294 East 137th St., New York 54, N. Y.
- Eclipse Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.
- Edin Electronics Co., 207 Main St., Worcester, Mass.
- Edison, Inc., Thomas A., 51 Lakeside Ave., West Orange, N. J.
- Edison, Inc., Thomas A., Instrument Div., West Orange, N. J.
- Edison Storage Battery Div., Thomas A. Edison, Inc., Main St. at Lakeside Ave., W. Orange, N. J.
- Edwards, Inc., T. J., 121 Beach St., Boston 5, Mass.
- Egyptian Lacquer Mfg. Co., 1270 Sixth Ave., New York, N. Y.
- Elcor, Inc., 1501 W. Congress St., Chicago 7, Ill.
- Eidson Electronic Co., 1802 N. Third St., Temple, Texas
- Eisler Engineering Co., Inc., 740 S. 13th St., Newark 3, N. J.
- Eitel-McCullough, Inc., San Bruno, Calif.
- Elastic Stop Nut Corp. of America, 2330 Vauxhall Rd., Union, N. J.
- Elco Resistors Co., 114 W. 18th St., New York, N. Y.
- Eldeen Co., The, 610-616 W. National Ave., Milwaukee 4, Wis.
- Electran Mfg. Co., 4587 Elston Ave., Chicago 30, Ill.
- Electric Auto-Lite Co., The, Toledo 1, Ohio
- Electric Eye Equipment Co., 16 W. Fairchild St., Danville, Ill.
- Electric Furnace Co., Salem, Ohio
- Electric Heat Control Co., The, 9123 Inman Ave., Cleveland 5, Ohio
- Electric Indicator Co., 21 Parker Ave., Stamford, Conn.
- Electric Machinery Manufacturing Co., 1331 NE Tyler St., Minneapolis 13, Minn.
- Electric Motor Corp., Racine, Wis.
- Electric Products Co., 1725 Clarkstone Rd., Cleveland 12, Ohio
- Electric Soldering Iron Co., 1845 W. Elm St., Deep River, Conn.
- Electric Sorting Machine Co., 410 44th St., SW, Grand Rapids, Mich.
- Electric Specialty Co., 211 South St., Stamford, Conn.
- Electric Storage Battery Co., Allegheny Ave. & 19th St., Philadelphia 32, Pa.
- Electric Tachometer Corp., Broad & Spring Garden Sts., Philadelphia, Pa.
- Electrical Coil Winding Co., 2733 Saunders St., Camden, N. J.
- Electrical Industries, Inc., 42 Summer Ave., Newark 4, N. J.
- Electrical Insulation Co., 12 Vestry St., New York, N. Y.
- Electrical Reactance Corp., Franklinville, N. Y.
- Electrical Refractories Co., 50 Clark St., East Palestine, Ohio
- Electrical Specialty Co., 2304 Washington St., Boston, Mass.
- Electrical Windings, Inc., 2015 N. Kolmar Ave., Chicago 39, Ill.
- Electrix Corp., 150 Middle St., Pawtucket, R. I.
- Electrolyne Co., The, 899 Boylston St., Boston 15, Mass.
- Electro-Mechanical Instrument Co., 812 Chestnut St., Perkasie, Pa.
- Electro-Medical Lab., Inc., Holliston, Mass.
- Electro Metallurgical Co., Unit of Union Carbide and Carbon Corp., 30 E. 42nd St., New York 17, N. Y.
- Electro Motiv. Mfg. Co., South Park & John St., Willimantic, Conn.
- Electro-Nite Carbon Co., 1133 E. Columbia Ave., Philadelphia 25, Pa.
- Electro-Physical Labs., Div. of Electronic Corp. of America, 25 W. 18th St., New York 11, N. Y.
- Electro Plastic Processes, 2035 W. Charleston St., Chicago 47, Ill.
- Electro Products Labs., 549 W. Randolph St., Chicago 6, Ill.
- Electro-Tech Equipment Co., 331 Canal St., New York 13, N. Y.
- Electro-Voice, Inc., 1239 South Bend Ave., South Bend, Ind.
- Electrocoil Transformer Co., 421 Canal St., New York 13, N. Y.
- Electromatic Mfg. Co., 88 University Place, New York, N. Y.
- Electron Equipment Corp., 917 Meridian Ave., South Pasadena, Calif.
- Electronic Apparatus, Inc., 347 Madison Ave., New York 17, N. Y.
- Electronic Associates, Inc., 61 Brighton Ave., Long Branch, N. J.
- Electronic Chemical Engineering Co., 1233 E. Olympic Blvd., Los Angeles 21, Calif.
- Electronic Control Corp., 1573 E. Forest St., Detroit, Mich.
- Electronic Controls, Inc., 44 Summer Ave., Newark, N. J.
- Electronic Corp. of America, 170 53rd St., Brooklyn 32, N. Y.
- Electronic Designs, Inc., Irvington, N. Y.
- Electronic Development Co., 4420 N. 23rd St., Omaha 11, Nebraska
- Electronic Development Laboratory, 2655 West 19th St., Chicago 8, Ill.
- Electronic Devices Co., 601 W. 26th St., New York, N. Y.
- Electronic Engineering Co., 616 G. St., San Diego 1, Calif.
- Electronic Engineering Co., Inc., 3223 W. Armitage Ave., Chicago 47, Ill.
- Electronic Engineers, 1039-B Pacific St., Santa Monica, Calif.
- Electronic Enterprises, Inc., 65 7th Ave., Newark 4, N. J.
- Electronic Enterprises, Inc., 1314 Forest Ave., Dallas 15, Texas
- Electronic Instrument Co., Inc., 926 Clarkson Ave., Brooklyn 3, N. Y.
- Electronic Labs., Inc., 24 W. 24th St., Indianapolis 4, Ind.
- Electronic Mfg. Co., 714 Race St., Harrisburgh, Pa.
- Electronic Measurements Co., Red Bank, N. J.
- Electronic Mechanical Products Co., 13-15-17 N. Virginia Ave., Atlantic City, N. J.
- Electronic Mechanics, Inc., 70 Clifton Blvd., Clifton, N. J.
- Electronic Power Co., Inc., 19 W. 44th St., New York, N. Y.
- Electronic Processes Corp., 249 Richards Rd., Ridgewood, N. J.
- Electronic Products Co., 19 No. First St., Geneva, Ill.
- Electronic Products Co., 111 E. 3rd St., Mt. Vernon, N. Y.
- Electronic Products Mfg. Co., 7300 Huron River Drive, Dexter, Michigan
- Electronic Radio Alarm, Inc., 1920 Lincoln-Liberty Bldg., Philadelphia 7, Pa.
- Electronic Sound Engineering Co., 4344-46 W. Armitage Ave., Chicago 39, Ill.
- Electronic Specialties Mfg. Co., 125 N. Main St., Elkhart, Ind.
- Electronic Specialty Co., 3456 Glendale Blvd., Los Angeles, Calif.
- Electronic Supply Co., 207 Main St., Worcester, Mass.
- Electronic Transformer Co., Inc., 207 W. 25th St., New York, N. Y.
- Electronic Tube Corp., 1200 E. Mermaid Ave., Philadelphia 18, Pa.
- Electrons, Inc., 127 Sussex Ave., Newark, N. J.
- Electrovox Co., Inc., 31 Fulton St., Newark 2, N. J.
- Elementary Equipment Corp., 6046 S. Wentworth Ave., Chicago 21, Ill.
- Ellinwood Industries, 150 W. Slauson Ave., Los Angeles 3, Calif.
- Emeloid Co., Inc., The, 291 Laurel Ave., Arlington, N. J.
- Emerson Radio & Phonograph Corp., 111 8th Ave., New York, N. Y.
- Empire Coil Co., 238 Hugenot St., New Rochelle, N. Y.
- Empire Steel Corp., Mansfield, Ohio
- Enfield Art Works, Hazardville, Conn.
- Engineering Co., 27 Wright St., Newark, N. J.
- Englewood Electrical Supply Co., 5801 S. Halsted St., Chicago, Ill.
- Engineering Lab., Inc., 602 E. 4th St., Tulsa 3, Okla.
- Engineers Specialties Div., Universal Engraving & Colorplate Co., 980 Ellicott St., Buffalo 8, N. Y.
- Eppley Lab., Inc., The, Newport, R. I.
- Eraser Co., 231 W. Water St., Syracuse 2, N. Y.
- Erco Radio Labs., Inc., Fenimore Ave., Hempstead, N. Y.
- Eriesson Screw Machine Products Co., 25 Lafayette St., Brooklyn 1, N. Y.
- Erie Resistor Corp., 644 W. 12th St., Erie, Pa.
- Erwood Co., 223 W. Erie St., Chicago, Ill.
- Espey Mfg. Co., Inc., 33 W. 46th St., New York 19, N. Y.
- Espy Radio and Electronic Corp., 1218 Lincoln Ave., Santa Monica, Calif.
- Ess Instrument Co., 96 So. Washington Ave., Bergenfield, N. J.
- Essex Electronics, 1060 Broad St., Newark 2, N. J.
- Essex Wire Corp., 1601 Wall St., Ft. Wayne, Ind.
- Esterline-Angus Co., Inc., P. O. Box 596, Indianapolis, Ind.
- Etched Products Corp., 39-01 Queens Blvd., Long Island City, N. Y.
- Eutetic Welding Alloys Co., 40 Worth St., New York 13, N. Y.
- Ever Ready Label Corp., 141-155 E. 25th Street, New York 10, N. Y.
- Executive, Inc., 415 Lexington Ave., New York 17, N. Y.
- Faber, Inc., A. W., 41 Dickerson St., Newark 4, N. J.
- Fada Radio & Electric Co., Inc., 30-20 Thomson Ave., Long Island City, N. Y.
- Fafnir Bearing Co., Booth St., New Britain, Conn.
- Fairchild Camera & Instrument Corp., 88-06 Van Wyck Blvd., Jamaica 1, N. Y.
- Fairfield Lumber Co., 1700 Post Rd., Fairfield, Conn.
- Fairmont Aluminum Co., Fairmont, W. Va.
- Fansteel Metallurgical Corp., 2200 Sheridan Rd., No. Chicago, Ill.
- Farley & Loetscher Mfg. Co., Duhquue, Iowa
- Farmers' Engineering & Mfg. Co., Union Trust Bldg., Pittsburgh, Pa.
- Farnsworth Television & Radio Corp., Ft. Wayne, Ind.
- Farrand Optical Co., Inc., Bronx Blvd. at 238th St., New York 66, N. Y.
- Farrelloy Co., 1245 N. 26th St., Philadelphia 21, Pa.
- Fast & Co., John E., 3101 N. Pulaski Rd., Chicago 41, Ill.
- Favorite Mfg. Co., 105 E. 12th St., New York 3, N. Y.
- Federal Electric Products Co., Inc., 50 Paris St., Newark, N. J.
- Federal Engineering Co., 37 Murray St., New York 7, N. Y.
- Federal Instrument Corp., 3609 Vernon Blvd., L. I. City 1, N. Y.
- Federal Screw Products Co., 224 W. Huron St., Chicago 10, Ill.
- Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J.
- Feiler Engineering Co., 803 Milwaukee Ave., Chicago 22, Ill.
- Felsenthal & Sons, G., 4100 W. Grand Ave., Chicago 51, Ill.
- Felt Products Mfg. Co., 1504 W. Carroll Ave., Chicago 7, Ill.
- Felters Co., The, 210 South St., Boston, Mass.
- Fenwal, Inc., 43 Pleasant St., Ashland, Mass.
- Ferranti Electric, Inc., 30 Rockefeller Plaza, New York 20, N. Y.
- Ferris Instrument Co., 110-112 Cornelia St., Boonton, N. J.
- Fidelity Amplifier Co., 1632 No. Halsted St., Chicago 14, Ill.
- Fidelity Electric Co., 332 N. Arch St., Lancaster, Pa.
- Field Electrical Instrument Co., 109 E. 184th St., New York 53, N. Y.
- Finch Telecommunications, Inc., Passaic, N. J.
- Firestone Tire & Rubber Co., 1 Firestone Avenue, Fall River, Mass.
- Fisher & Porter Co., Hathboro, Pa.
- Fisher-Smith, Inc., 162 State St., West Englewood, N. J.
- Fish-Schurman Corp., 230 E. 45th St., New York 17, N. Y.
- Fisher-Pierce Co., 70 Ceylon St., Boston 21, Mass.
- Fisher Radio Co., 41 East 47th Street, New York, N. Y.
- Fisher Research Lab., 1961 University Ave., Palo Alto, Calif.
- Fisher Scientific Co., 717 Forbes St., Pittsburgh 16, Pa.
- Fishwick Radio Co., 423 Colorado Bldg., Washington, D. C.
- Five Star Radio Co., 416 Broadway, Cambridge, Mass.
- Fleron & Son, Inc., M.M., 113 N. Broad St., Trenton 8, N. J.
- Flexo Wire Co., 638 Genesee St., W., Syracuse, N. Y.
- Flock Process Co., Velvetone Div., 3 Quincy St., Norwalk Conn.
- Flush Wall Radio Co., 15 Washington St., Newark, N. J.
- Foote Brothers Gear & Machine Corp., 5225 S. Western Blvd., Chicago 9, Ill.
- Foote Mineral Co., 1609 Summer St., Philadelphia, Pa.
- Foote, Pierson & Co., Inc., 75 Hudson St., Newark 4, N. J.
- Ford Radio & Mica Corp., 536 63rd St., Brooklyn, N. Y.
- Fordham Mfg. Co., 2736 Creston Ave., New York 58, N. Y.
- Foredom Electric Co., 27 Park Place, New York 7, N. Y.
- Formacraft Corp., Barberton, Ohio
- Formica Insulation Co., 4662 Spring Grove Ave., Cincinnati, Ohio
- Foster Co., A. P., 719 Wyoming Ave., Lockland 15, Ohio
- Fostoria Pressed Steel Corp., Fostoria, Ohio
- Foxboro Co., Foxboro, Mass.
- Frankel Connector Co., 27 Vestry St., New York, N. Y.
- Franklin Airloop Corp., 43-20 34th St., Long Island City, N. Y.

Franklin Fibre-Lamitex Corp., 12th and French Sts., Wilmington, Delaware

Franklin Mfg. Co., A. W., 43-20 34th St., Long Island City, N. Y.

Franklin Paint & Varnish Co., Benjamin, 4820 Langdon St., Philadelphia 24, Pa.

Franklin Transformer Mfg. Co., 65 22nd Ave., NE, Minneapolis 13, Minn.

Fredricks Co., Geo. E., Bethayres, Pa.

Freed Radio Corp., 200 Hudson St., New York, N. Y.

Freed Transformer Co., 72 Spring St., New York 12, N. Y.

Friez, Instrument Div., Bendix Aviation Corp., Baltimore 4, Md.

Fulton Siphon Co., Knoxville 4, Tenn.

Furst Electronics, 300 W. North Ave., Chicago 22, Ill.

G-M Laboratories, Inc., 4313 N. Knox Ave., Chicago, Ill.

Gaertner Scientific Corp., 1201 Wrightwood Ave., Chicago 14, Ill.

Gamewell Co., Newton Upper Falls 64, Mass.

Gardiner Mfg. Co., 2711 Union St., Oakland 7, Calif.

Gardner Electric Mfg. Co., 4227 Hollis St., Emeryville 8, Calif.

Gardner Lab., Inc., Henry A., 4723 Elm St., Bethesda 14, Md.

Garod Radio Corp., 70 Washington St., Brooklyn 1, N. Y.

Garrard Sales Corp., 401 Broadway, New York 13, N. Y.

Garrett Co., Inc., George K., 1421 Chestnut St., Philadelphia 2, Pa.

Gasket Engineering Co., 2440 Charlotte St., Kansas City 8, Mo.

Gaston Power Tools, 2659 W. 95th St., Chicago 42, Ill.

Gates Radio Co., 123 Hampshire St., Quincy, Ill.

Gatti, Inc., Aurele M., 1909 Liberty St., Trenton, N. J.

Gear Specialties, 2635 W. Medill Ave., Chicago 47, Ill.

Gem Radio & Television Co., 72 Cortlandt St., New York 6, N. Y.

Gemoid Corp., 79-10 Albion Ave., Elmhurst, N. Y.

General Aniline & Film Corp., Special Products Sales Dept., 270 Park Ave., New York 17, N. Y.

General Aviation Equipment Co., Inc., 630 5th Ave., New York 20, N. Y.

General Cable Corp., 420 Lexington Ave., New York, N. Y.

General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.

General Ceramics & Steatite Corp., Keasbey, N. J.

General Communication Co., 530 Commonwealth Ave., Boston 15, Mass.

General Control Co., 1200 Soldiers Field Rd., Boston 34, Mass.

General Controls Co., 801 Allen Ave., Glendale 1, Calif.

General Dry Batteries, Inc., 13000 Athens Ave., Cleveland, Ohio

General Electric Co., Bridgeport 2, Conn.

General Electric Co., Nela Park, Cleveland 12, Ohio

General Electric Co., Chemical Dept., 1 Plastics Ave., Pittsfield, Mass.

General Electric Co., Schenectady 5, N. Y.

General Electric Co., Syracuse, N. Y.

General Electric X-Ray Corp., 2012 Jackson Blvd., Chicago, Ill.

General Electronics, Inc., 101 Hazel St., Paterson, N. J.

General Electronics, Inc., 1819 Broadway, New York 23, N. Y.

General Industries Co., Taylor & Olive Sts., Elyria, Ohio

General Instrument Corp., 829 Newark Ave., Elizabeth 3, N. J.

General Insulated Wire Works, Inc., 69 Gordon Ave., Elizabeth 3, N. J.

General Insulated Wire Works, Inc., 69 Gordon Ave., Providence 5, R. I.

General Lead Batteries Co., 196 W. Railway Ave., Paterson, N. J.

General Magnetic Corp., 10001 Erwin Ave., Detroit 5, Mich.

General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.

General Scientific Corp., 4829 S. Kedzie Ave., Chicago, Ill.

General Television and Radio Corp., 2701 N. Lehmann St., Chicago 14, Ill.

General Tire & Rubber Co., The Silentbloc Division, Wabash, Indiana

General Transformer Corp., 1250 W. Van Buren St., Chicago 7, Ill.

Geophysical Instrument Co., Key Blvd. & Nash St., Arlington, Va.

George Co., P. D., 5200 N. 2nd St., St. Louis, Mo.

Gerett Corp., M. A., 724 W. Winnebago St., Milwaukee 5, Wisc.

Giannini & Co., Inc., G. M., Autoflight Instruments Div., 285 W. Colorado St., Pasadena 1, Calif.

Gibbs Division, George W. Borg Corp., Delavan, Wisc.

Gibson Co., Wm. D., Div. of Associated Spring Corp., 1800 Clybourn Ave., Chicago, Ill.

Gibson-Electric Co., 8350 Frankstown Ave., Pittsburgh 21, Pa.

Gilandun Electronics, 14 Union Ave., Campbell, Calif.

Gilfillan Bros., Inc., 1815 Venice Blvd., Los Angeles 15, Calif.

Gilner Mfg. Co., 21 E. 34th St., Steger, Ill.

Girard-Hopkins, 1000 40th Ave., Oakland 1, Calif.

Girdler Corp., Thermex Div., 224 E. Broadway, Louisville 1, Ky.

Gisholt Machine Co., 1245 E. Washington Ave., Madison 3, Wisc.

Gits Molding Corp., 4600 Huron St., Chicago, Ill.

Glaser Lead Co., Inc., 31 Wycoff Ave., Brooklyn, N. Y.

Globar Div., Carborundum Co., Buffalo Ave., Niagara Falls, N. Y.

Globe Electronics, Inc., 225 W. 17th Street, New York, New York

Globe Phone Mfg. Co., 2 Linden Street, Reading, Mass.

Glyco Products Co., Inc., 26 Court Street, Brooklyn, N. Y.

Goat Co., Inc., Fred, 314 Dean St., Brooklyn, N. Y.

Godfrey Mfg. Co., 171 S. 2nd St., Milwaukee 4, Wisconsin

Gold Shield Products, 25 W. Broadway, New York 7, N. Y.

Goldmark Wire Co., James, 116 West Street, New York 7, N. Y.

Goldsmith Bros. Smelting & Refining Co., 58 E. Washington St., Chicago, Ill.

Goodrich Chemical Co., B. F., Cleveland 15, Ohio

Goodyear Tire & Rubber Co., Plastics and Chemical Div., 1144 E. Market St., Akron 16, Ohio

Gordon Co., Claud S., 3000 S. Wallace St., Chicago 16, Ill.

Gordon Specialties Co., 823 South Wabash Ave., Chicago 5, Ill.

Gorrell & Gorrell, Haworth, N. J.

Goslin Electric and Manufacturing Co., 2921 W. Olive St., Burbank, Calif.

Gothard Mfg. Co., 2110 Clear Lake Ave., Springfield, Ill.

Gould Moody Co., 395 Broadway, New York, N. Y.

Gould Storage Battery Corp., 35 Neoga St., DePew, N. Y.

Grady Instrument Co., 689 Belmont St., Belmont 78, Mass.

Grafo Colloids Corp., Sharon, Pa.

Gramer Company, The, 2734 N. Pulaski Rd., Chicago 39, Ill.

Grammes & Sons, Inc., L. F., 389 Union St., Allentown 2, Pa.

Graphite Metallizing Corp., 1041 Nepperhan Avenue, Yonkers 3, N. Y.

Gray Mfg. Co., 16-30 Arbor St., Hartford, Conn.

Gray Radio Co., 730 Okeshobee Rd., W. Palm Beach, Fla.

Gray Research & Development Co., 50 N. Central Ave., Elmstord, New York

Grayhill Corp., 1 N. Pulaski Rd., Chicago 24, Ill.

Great Lakes Electric Mfg. Co., 17 S. Desplaines St., Chicago 6, Ill.

Green Electric Co., Inc., 130 Cedar St., New York 6, N. Y.

Green Mfg. Corp., G. G., Warren, Pa.

Greenhut Insulation Co., 31 W. 21st St., New York, N. Y.

Greenlee Tool Co., 2136 12th St., Rockford, Ill.

Grigsby-Allison Co., Inc., 407 N. Salem Ave., Arlington Heights, Ill.

Gregory Mfg. Co., 67 Franklin St., New Haven 11, Conn.

Gross Communication Products, 1865-71 Prospect Ave., Cleveland 15, Ohio

Guardian Electric Mfg. Co., 1400 Washington Blvd., Chicago 7, Ill.

Guided Radio Corp., 161 6th Ave., New York 13, N. Y.

Gulow Corp., 99 Park Place, New York 7, N. Y.

Guthman, Inc., Edwin I., 15 S. Throop St., Chicago, Ill.

H-E Instrument Co., 2518 North Broad St., Philadelphia 32, Pa.

H-W Mfg. Co., P. O. Box 1781, Los Angeles 28, Calif.

Haft & Sons, Inc., 79 Third St., Brooklyn, N. Y.

Hague & Co., Inc., Alfred, 227 34th St., Brooklyn, N. Y.

Hall Co., Gordan L., Old Lyme, Conn.

Haldorson Co., The, 4500 Ravenswood, Ave., Chicago 28, Ill.

Hallett Mfg. Co., 603 S. Redondo Blvd., Inglewood, Calif.

Hallcrafters Co., 4401 W. Fifth Ave., Chicago 24, Ill.

Haloid Co., The, 6 Haloid St., Rochester, N. Y.

Halowax Products Div., Union Carbide & Carbon Corp., 30 E. 42nd Street, New York, N. Y.

Hanmarlund Mfg. Co., 460 W. 34th St., New York 1, New York

Hamilton Kent Mfg. Co., Kent, Ohio

Handy & Harman, 82 Fulton St., New York 7, N. Y.

Hanovia Chemical & Mfg. Co., 233 N. J. R.R. Ave., Newark, N. J.

Harco Tower, Inc., 1180 E. Broad St., Elizabeth 4, N. J.

Hardwick, Hindle, Inc., 40 Hermon St., Newark, N. J.

Harmonia Records, 1328 Broadway, New York, N. Y.

Harnett Electric Corp., 138 Haven Ave., Port Washington, N. Y.

Harper Co., The, H. M., 2620 Fletcher Street, Chicago 18, Ill.

Harris Mfg. Co., 2422 W. 7th Street, Los Angeles 5, Calif.

Hart Mfg. Co., 110 Bartholomew Ave., Hartford 1, Conn.

Hartman Electrical Mfg. Co., 175 N. Diamond St., Mansfield, Ohio

Harvey Radio Labs., Inc., 447 Concord Ave., Cambridge, Mass.

Harvey Wells Electronics, Inc., North St., Southbridge, Mass.

Haskins Co., R. G., 615 S. California Ave., Chicago 12, Ill.

Hassall, Inc., John, Clay & Oakland Sts., Brooklyn, N. Y.

Hathaway Instrument Co., 1315 S. Clarkson St., Denver 10, Colo.

Hawley Products Co., St. Charles, Ill.

Haydon Mfg. Co., Inc., Forestville, Conn.

Haydon Co., A. W., The, Waterbury 32, Conn.

Haydu Bros., Plainfield, N. J.

Haynes Labs., Inc., C. W., 61 Chandler St., Springfield, Mass.

Haynes Stellite Co., Unit of Union Carbide, and Carbon Corp., 30 E. 42nd St., New York 17, N. Y.

Hazard Insulated Wire Works, The Okonite Co. Div., Wilkes Barre, Pa.

Hazeltine Electronics Corp., 1775 Broadway, New York, N. Y.

Headen Co., The, 17 Academy St., Newark 2, N. J.

Heath Co., Benton Harbor, Mich.

Heiland Research Corp., 130 E. 5th St., Denver 9, Colo.

Heinemann Electric Co., 97 Plum St., Trenton 2, N. J.

Heintz & Kaufman Ltd., South San Francisco, Calif.

Heliport Corp., 1011 Mission St., So. Pasadena, Calif.

Helwig Co., 2544 N. 30th St., Milwaukee 10, Wisc.

Herbach & Rademan, Inc., 517 Ludlow St., Philadelphia 6, Pa.

Hercules Electric & Mfg. Co., Inc., 2500 Atlantic Avenue, Brooklyn 7, N. Y.

Hercules Powder Co., Inc., 900 Market St., Wilmington 99, Del.

Heresite and Chemical Company, Manitowoc, Wisc.

Herlec Corp., The, 422 N. Fifth St., Milwaukee 3, Wisc.

Hermaseal Co., Riverside Drive, Elkhart, Ind.

Hermetic Seal Products Co., 414 Morris Ave., Newark 3, N. J.

Hertner Electric Co., 12690 Elmwood Ave., Cleveland 11, Ohio

Hetherington & Son, Inc., Robert, Sharon Hill, Pa.

Hewlett-Packard Co., 395 Page Mill Rd., Palo Alto, Calif.

Hexacon Electric Co., 161 W. Clay Ave., Roselle Park, N. J.

Heyman Mfg. Co., Kenilworth, N. J.

Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland, Ohio

High Tension Co., Inc., 36 N. Main St., Phillipsbury, N. J.

Hillburn Electronic Products Co., 1 Worth St., New York 13, N. Y.

Hi-Par Products Co., Fitchburgh, Mass.

Hoffman Engineering Co., Anoka, Minn.

Hoffman Radio Corp., 3430 S. Hill Street, Los Angeles 7, Calif.

Hoffmann Corp., C. L., 347 Fifth Ave., Pittsburgh, Pa.

Hollister Crystal Co., Boulder, Colo.

Hollywood Radio Cabinet Co., 924 N. Formosa Ave., Hollywood, Calif.

Holtzer-Cabot, Div. of First Industrial Corp., 125 Amory St., Boston, Mass.

Hommelite Corp., Port Chester, N. Y.

Hommel Co., O., 209 Fourth Ave., Pittsburgh, Pa.

Hope Webbing Co., Providence, R. I.

Hopp Press Inc., 460 W. 34th St., New York, N. Y.

Horn Co., Inc., A. C., 43-36 Tenth St., Long Island City 1, N. Y.

Horton Machine Products Co., Horton & Rockaway Aves., Valley Stream, N. Y.

Hose-McCann Telephone Co., 177 Pacific St., Brooklyn 2, N. Y.

Hoskins Mfg. Co., 4445 Lawton Ave., Detroit 8, Mich.

Houlihan Company, The, T. J., 2508-14 W. Lawrence Avenue, Chicago 25, Illinois

Hovis Screwlock Co., 8100 E. Nine Mile Rd., Van Dyke, Mich.

Howard Mfg. Co., 15 Fourth St., Council Bluffs, Iowa

Howard Radio Co., 1735 Belmont Ave., Chicago 13, Ill.

Hubbard Sprint Co., M. D., Central Ave., Pontiac, Mich.

Hubbell, Inc., Harvey, Bridgeport 2, Conn.

Huber Radio Co., 260 S. Center St., Casper, Wyo.

Hudson American Corp., 25 W. 43rd St., New York 18, N. Y.

Hudson Wire Co., Winsted, Conn.

Hunt Corp., The, 544 Hanover St., Carlisle, Pa.

Hunter Pressed Steel Co., Lansdale, Pa.

Huse Liberty Mica Co., 171 Camden St., Boston, Mass.

Hydraulic Press Mfg. Co., Mt. Gilead, Ohio

Hytron Radio & Electronics Corp., 76 Lafayette St., Salem, Mass.

I-T-E Circuit Breaker Co., 19th & Hamilton Sts., Philadelphia 30, Pa.

Ideal Industries, Inc., Park & Borden Avenues, Sycamore, Ill.

Ilg Electric Ventilating Co., 2850 N. Crawford Ave., Chicago 41, Ill.

Illinois Condenser Co., 1160 N. Howe St., Chicago, Ill.

Illinois Testing Labs., Inc., 420 N. La Salle Street, Chicago 10, Ill.

Illinois Tool Works, Electronics Div., 2501 N. Keeler Ave., Chicago 39, Ill.

Illinois Wood Products Corp., 2512 S. Damen Ave., Chicago 8, Ill.

Ilco Copper Tube & Products Inc., Mariemont Ave., Mariemont, Cincinnati 27, Ohio

Indiana Steel Products Co., 6 N. Michigan Ave., Chicago 2, Ill.

Indiana Steel Products Co., The Cinaudagraph Div., 2 Selleck St., Stamford, Conn.

Indiana Steel & Wire Co., 700 S. Council St., Muncie, Ind.

Induction Heating Corp., 389 Lafayette St., New York 3, N. Y.

Inductive Equipment Co., Gettysburg, Pa.

Industrial Condenser Corp., 3243 N. Calif. Ave., Chicago 18, Ill.

Industrial Electronics, Inc., 21 Henry St., Detroit 1, Mich.

Industrial Instruments Inc., 17 Pollack Ave., Jersey City 5, N. J.

Industrial Products Co., Danbury, Conn.

Industrial Synthetics Corp., 60 Woolsey St., Irvington, N. J.

Industrial Timer Corp., 115 Edison Pl., Newark 5, N. J.

Industrial Tool & Die Works, Inc., 2824 University Ave., SE, Minneapolis, Minn.

Industrial Transformer Corp., 2540 Belmont Ave., New York 58, N. Y.

Infra-Red Engineers & Designers, E. 73rd & Grand Ave., Cleveland 4, Ohio

Insl-X Co., Inc., 857 Meeker Ave., Brooklyn 22, N. Y.

Instrument Development Labs., 817 E. 55th St., Chicago 15, Ill.

Instrument Electronics, 253-21 Northern Blvd., Little Neck, N. Y.

Instruments Parts Corp., Snowden Avenue & Water Street, Ossining, N. Y.

Instrument Resistors Co., 1036 Commerce Ave., Union, N. J.

Instrument Specialties Co., Inc., 254 Bergen Blvd., Little Falls, N. J.

Insulative Co., 1 Broadway, New York, N. Y.

Insulating Fabricators, Inc., 12 E. 12th St., New York 3, N. Y.

Insulating Fabricators of New England, Inc., 22 Elkins St., S. Boston, Mass.

Insulating Tube Co., 26 Cottage St., P. O. Box 1, Poughkeepsie, N. Y.

Insulation Mfg. Co., 11 New York Ave., Brooklyn, New York

Insulation Mfrs. Corp., 565 W. Washington Blvd., Chicago 6, Ill.

Insuline Corp. of America, 36-02 35th Avenue, Long Island City, N. Y.

Intercall Systems, Inc., 201 Hickory St., Dayton, Ohio

Interlake Chemical Corp., Union Commerce Bldg., Cleveland 14, Ohio

International Derrick & Equipment Co., 875 Michigan Ave., Columbus 8, Ohio

International Detroit Corp., 1501 Beard Ave., Detroit, Mich.

International Machine Works, 2027 46th St., North Bergen, N. J.

International Merit Products Corp., 254 W. 54th St., New York 19, N. Y.

International Nickel Co., Inc., The, 67 Wall St., New York 5, N. Y.

International Products Corp., Baltimore 18, Md.

International Resistance Co., 401 N. Broad St., Philadelphia 8, Pa.

International Telephone & Telegraph Corp., 67 Broad St., New York, N. Y.

International Transformer Co., 396 Broadway, New York, N. Y.

Interstate Mfg. Corp., 125 Sussex Ave., Newark 4, N. J.

Intex Co., 303 W. 42nd St., New York 18, N. Y.

Irvington Varnish & Insulator Co., 10 Argyle Terrace, Irvington 11, N. J.

Islip Radio Mfg. Co., Beech St., Islip, N. Y.

Isotope Section, Research Div., Manhattan Engineer District, P. O. Box E, Oakridge, Tenn.

J-B-I, Instrument Co., 420 E. Providence Rd., Aldan, Pa.

J B T Instruments Inc., 441 Chapel St., New Haven 8, Conn.

J. F. D. Mfg. Co., 4111 Ft. Hamilton Pkway, Brooklyn, N. Y.

Jack & Heintz Precision Industries, Inc., Cleveland 1, Ohio

Jackson Electrical Instruments Co., 16 S. Patterson Blvd., Dayton 1, Ohio

Janette Mfg. Co., 556 W. Monroe St., Chicago 6, Illinois

Jarrell-Ash Co., 165 Newbury St., Boston 16, Mass.

Kenneth W. Jarvis, 1140 Cherry St., Winnetka, Ill.

Jefferson, Inc., Ray, 40 E. Merrick Rd., Freeport, N. Y.

Jefferson Electric Co., Bellwood, Ill.

Jefferson-Travis Inc., 380 Second Ave., New York 10, N. Y.

Jelliff Mfg. Corp., C. O., 200 Pequot Ave., Southport, Conn.

Jennings Radio Mfg. Co., 1098 E. William St., San Jose 12, Calif.

Jensen Industries Inc., 329 S. Wood St., Chicago, Ill.

Jensen Radio Mfg. Co., 6601 S. Laramie Ave., Chicago, Ill.

Jerome Camera & Instrument Corp., Massachusetts, N. Y.

Jersey Plastic Corp., Lodi, N. J.

Jiffy Sales Co., 1820 East 37th St., Cleveland 14, Ohio

Johnson Co., E. F. Waseca, Minn.

Johnson Co., Lloyd S., 2241 Indiana Ave., Chicago, Ill.

Johnson Gas Appliance Co., 520 Ave. E. N.W., Cedar Rapids, Iowa

Johnston Tin Foil & Metal Co., 6100 S. Broadway, St. Louis 11, Mo.

Jones, Howard B., 2460 W. George St., Chicago 18, Ill.

Jones Motrola Corp., 432 Fairfield Ave., Stamford, Conn.

Jones Spring Co., W. B., 124 E. 7th St., Cincinnati, Ohio

Jorgensen Mfg. Co., 1547 West Farms Rd., New York 60, N. Y.

Joyner Corp., The, 462 N. Parkside Ave., Chicago 44, Ill.

K-V Transformer Corp., 1697 1st Ave., New York, N. Y.

Kaar Engineering Co., 619 Emerson St., Palo Alto, Calif.

Kahle Engineering Co., 1307 7th St., North Bergen, N. J.

Kalbfell Labs., 1076 Morena Blvd., San Diego 10, Calif.

Karp Metal Products Co., Inc., 139 30th St., Brooklyn, N. Y.

Kartron, Inc., 821A South 4th St., Alhambra, Calif.

Kato Engineering Co., 530 N. Front St., Mankato, Minn.

Kay Electric Co., 34 Marshal St., Newark, N. J.

Keasby & Mattison, Ambler, Pa.

Kellems Co., Saugatuck, Conn.

Kelley-Koett Mfg. Co. Inc., The, Covington, Ky.

Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38, Ill.

Kelnor Mfg. Corp., 215 Kearny St., San Francisco 8, Calif.

Kemet Labs. Co., Inc., Unit of Union Carbide and Carbon Corp., 30 E. 42nd St., New York 17, N. Y.

Kemlite Labs., 1809 N. Ashland Ave., Chicago, Ill.

Kenyon Transformer Co., 840 Barry Street, New York 59, N. Y.

Kester Solder Co., 4212 Wrightwood Ave., Chicago 33, Ill.

Keuffel & Esser Co., Hoboken, N. J.

Keystone Carbon Co., Inc., Saint Marys, Pa.

Keystone Electronics Co., 50-52 Franklin St., New York 13, N. Y.

Kilburn Glass Co. Inc., J. R., 22 S. Worcester Street, Chartley, Mass.

King Laboratories Inc., 127 Solar St., Syracuse 4, N. Y.

Kings Electronics Co., 372 Classon Ave., Brooklyn 5, N. Y.

Kingston Radio Co., Inc., Kokomo, Ind.

Kinney Mfg. Co., 3529 Washington St., Boston, Mass.

Kirchberger & Co., Inc., M., 1425 Thirty Seventh Street, Brooklyn 18, N. Y.

Kirkland Co., H. R., 8 King St., Morristown, N. J.

Kirkman Engineering Corp., 121 6th Ave., New York 13, N. Y.

Kismet Record Co., 227 E. 14th Street, New York 3, N. Y.

Kling Metal Spinning Co., 174 Centre Street, New York 13, N. Y.

Kluge Electronics Inc., 1913 Montrose St., Los Angeles 26, Calif.

Knights Co., James, 131 S. Wells St., Sandwich, Ill.

Knoedler Chemical Co., Lancaster, Pa.

Koh-I-Noor Pencil Co., Bloomsbury, N. J.

Kohler Co., Kohler, Wisc.

Kollsman Instrument Div. of Square D Co., 80-08 45th Avenue, Elmhurst, New York

Kolton Electric Mfg. Co., 123 New Jersey Railroad Avenue, Newark 5, N. J.

Kopp Glass Inc., 1 East 42nd St., New York 17, N. Y.

Kraft & Kraft, Hicksville, N. Y.

Kremetz & Co., 49 Chestnut St., Newark 5, N. J.

Kuhn & Jacob Molding & Tool Co., 1200 Southard St., Trenton, N. J.

Kulka Electric Mfg. Co., Inc., 30 South St., Mt. Vernon, N. Y.

Kurman Electronics Corp., 35-18 37th St., Long Island City 1, N. Y.

Kurz-Kasch Co., 1415 S. Broadway, Dayton 1, Ohio

Kuthe Laboratories, Inc., 150 Summit Street, Newark 4, N. J.

Kwikheat Div., Sound Equipment Corp., 3903 San Fernando Rd., Glendale 4, Calif.

Kyle Corp., South Milwaukee, Wisc.

L. A. B. Corporation, 31 Union Place, Summit, N. J.

LaPointe-Plascomold Corp., Unionville, Conn.

Lake Mfg. Co., 2323 Chestnut St., Oakland 7, Calif.

La Magna Mfg. Co., Inc., East Rutherford, N. J.

Lamicold Fabricators, 3600 W. Potomac Avenue, Chicago 51, Illinois

Laminated Shim Co., Inc., 56 Union Street, Glenbrook, Conn.

La Motte Chemical Products Co., Towson 4, Baltimore, Md.

Lampkin Laboratories, Bradentown, Fla.

Lamson & Sessions Co., 1971 W. 85th St., Cleveland, Ohio

Landis & Gyr, Inc., 104 Fifth Avenue, New York, N. Y.

Langevin Co. Inc., 37 W. 65th Street, New York 23, N. Y.

Langevin Co. Inc., The, Industrial Control Div., 37 W. 65th St., New York 23, N. Y.

Lansing Stamping Co., 1159 S. Pennsylvania Avenue, Lansing, Michigan

Lansky Die Cutting Co., 192½ Greene St., New York 12, N. Y.

Lapp Insulator Co., 31 Gilbert St., LeRoy, N. Y.

La Rose & Associates, W. T., 646 Second Avenue, Troy, N. Y.

Larrimore Sales Co., P. O. Box 1234, St. Louis 1, Missouri

Laurehk Radio Mfg. Co., 3931 Monroe Avenue, Wayne, Michigan

Lavoie Labs, Morganville, N. J.

Leach Relay Co., 5915 Avalon Blvd., Los Angeles, Calif.

Lead-All Products Co., 24 East 21st Street, New York 10, N. Y.

Lear, Inc., 110 Lonja Avenue, N.W., Grand Rapids 2, Michigan

Lectrohm, Inc., 5125 W. 25th St., Cicero 50, Illinois

Lectronic Research Labs., Howell and Hegerman Street, Philadelphia, Pa.

Lee Spring Co., 30 Main Street, Brooklyn, N. Y.

Leeds & Northrup Co., 4970 Stenton Avenue, Philadelphia, Pa.

Legri-S Co., Inc., 846-850 Amsterdam Ave., New York, N. Y.

Lehigh Structural Steel Co., 17 Battery Pl., New York 4, N. Y.

Leich Electric Co., 565 W. Washington Blvd., Chicago 6, Illinois

Leiman Bros., 203 Christie St., Newark 5, N. J.

Lektra Labs., 30 E. 10th St., New York, N. Y.

Leland, George H., 123 Webster Street, Dayton 2, Ohio

Leland Electric Co., 1501 Webster St., Dayton, Ohio

Lenk Mfg. Co., The, Newton Lower Falls 62, Mass.

Lenkurt Electric Co., 1138 Howard Street, San Francisco 3, Calif.

Lenz Electric Mfg. Co., 1751 N. Western Avenue, Chicago 4, Illinois

Leuck Crystal Lab., 245 S. 11th St., Lincoln, Nebraska

Leupold & Stevens Instruments, 4445 N.E. Glisan Street, Portland 13, Ore.

Lewis Engineering Co., 52 Rubber Ave., Naugatuck, Conn.

Libbey Division, Owens Illinois Glass Co., P. O. Box 1035, Toledo 1, Ohio

Liebel-Flarsheim Co., 303 W. Third St., Cincinnati 2, Ohio

Lincoln Electronics Corp., 653 Eleventh Ave., New York, N. Y.

Lincophone Co., 1661 Howard Ave., Utica, N. Y.

Linde Air Products Co., Unit of Union Carbide and Carbon Corp., 30 E. 42nd St., New York 17, N. Y.

Lindsay Corp., The, 1740 25th Ave., Melrose Park, Ill.

Lingo & Son, Inc., John E., 28th St. & Buren Ave., Camden, N. J.

Link, Fred M., 125 W. 17th St., New York, N. Y.

Linick Chemical Co., 29 E. Madison St., Chicago 2, Ill.

Link Engineering Co., 13581 Elmira St., Detroit 27, Mich.

Linton & Bro. Inc., Horace, 3081 Ruth St., Philadelphia 34, Pa.

- Littelfuse Inc., 4757 Ravenswood Ave., Chicago 40, Ill.
- Little Falls Alloys, Inc., 189 Caldwell Ave., Paterson 1, N. J.
- Litton Engineering Labs., Redwood City, Calif.
- Locke Insulator Corp., P. O. Box 57, Baltimore 3, Md.
- Logan Co., Les. 530 Gough St., San Francisco 2, Calif.
- Loge Sound Engineers, J. M., 986 S. Western Ave., Los Angeles 6, Calif.
- London Gramophone Corp., The, 16 W. 22nd St., New York 10, N. Y.
- Long Co., L. J., 186 Grand Street, New York 13, N. Y.
- Lorain Products Corp., 1122 F. St., Lorain, Ohio
- Lord Mfg. Co., 1635 W. 12th St., Erie, Pa.
- Lorentzen, Inc., H. K., 391 W. Broadway, New York 12, N. Y.
- Lowell Insulated Wire Co., Lowell, Mass.
- Lukens Steel Co., Coatesville, Pa.
- Luma Electric Equipment Co., P. O. Box 132, Toledo 1, Ohio
- Lumenite Electric Co., 407 S. Dearborn St., Chicago, Ill.
- Lyman Electronic Corp., 12 Cass Street, Springfield, Mass.
- McColpin-Christie Corp., 4922 S. Figueroa St., Los Angeles 37, Calif.
- McElroy Mfg. Corp., Littleton, Mass.
- McGrade Manufacturing Co., Inc., E. W., 406 West 34th Street, Kansas City 2, Missouri
- McMurdo Silver Co., Inc., 1249 Main Street, Hartford 3, Conn.
- McQuay-Norris Mfg. Co., Electric Products Div., 6319 Manchester Ave., St. Louis 10, Mo.
- MB Instruments, Inc., 1060 State St., New Haven 11, Conn.
- Maas & Waldstein Co., 438 Riverside Avenue, Newark, N. J.
- Macallen Co., The, 16 Macallen St., Boston 27, Mass.
- Maclett Labs., Springdale, Conn.
- MacLeod & Hanopol, 24 Chelsea St., Charlestown 29, Mass.
- Madison Electrical Products Division, John G. Ruckelshaus Company, 74 Main Street, Madison, N. J.
- Magnavox Co., The, Fort Wayne 4, Indiana
- Magnecord, Inc., 304 W. 63rd Street, Chicago 21, Illinois
- Magnetic Analysis Corp., 42-44 Twelfth Street, Long Island City 1, N. Y.
- Magnetic Devices Corp., 76-14 Woodside Ave., Elmhurst, N. Y.
- Magnetic Devices, Inc., Frederick, Md.
- Magnetic Gauge Co., 60 E. Bartges St., Akron, Ohio
- Magnetic Metals Co., Camden, N. J.
- Magnetic Products Corp., The, Norwalk, Conn.
- Magnetic Windings Div., Essex Wire Corp., 416 S. 16th Street, Easton, Pa.
- Magnograph Corp., 5800 W. 3rd St., Los Angeles, Calif.
- Maguire Industries Inc., Electronics Dept., Bridgeport, Conn.
- Maico Co. Inc., 25 North 3rd St., Minneapolis, Minn.
- Maida Development Co., Box 588, Erie, Pa.
- Majestic Radio & Television Corp., St. Charles, Ill.
- Makan Inc., 79 Thurman Ave., Columbus 6, Ohio
- Makepeace Co., D. E., Attleboro, Mass.
- Mallory & Co., Inc., P. R., 3029 E. Washington St., Indianapolis 6, Ind.
- Manross & Sons, F. N., Div. Associated Spring Corp., Bristol, Conn.
- Manufacturers Chemical Corp., Berkeley Heights, N. J.
- Manufacturers Screw Products, 270 W. Hubbard St., Chicago, Ill.
- Marathon Battery Co., Wausau, Wisc.
- Marathon Electric Mfg. Corp., Randolph & Cherry Sts., Wausau, Wisc.
- Marble-Card Electric Co., Gladstone, Mich.
- Marco Industries, 245 S. Beverly Drive, Beverly Hills, Calif.
- Marcus Transformer Co., 32-34 Montgomery St., Hillside 5, N. J.
- Marion Electrical Instrument Co., Manchester, N. H.
- Markem Machine Co., Keene, N. H.
- Market Forge Co., Everett 49, Mass.
- Marlboro Tool & Mfg. Co., Charles St. New Brunswick Ave., Matawan, N. J.
- Martindale Electric Co., Box 617, Edge-water Branch, Cleveland 7, Ohio
- Massa Labs, Inc., 3868 Carnegie Ave., Cleveland, Ohio
- Master Vibrator Company, 200 Davis Avenue, Dayton 1, Ohio
- Mattern Mfg. Co., F., 4647 N. Cicero Ave., Chicago 30, Ill.
- Mayfair Molded Products Corp., 4440 N. Elston Avenue, Chicago 30, Ill.
- Measurement Engineering Ltd., 61 Duke Street, Toronto, Canada
- Measurements Corp., Boonton, N. J.
- Meck Industries, John, Liberty at Pennsylvania, Plymouth, Ind.
- Meissner Mfg. Div., Maguire Industries, Inc., Mt. Carmel, Ill.
- Melco Products, Inc., 22 E. Hennepin Avenue, Minneapolis 1, Minn.
- Melatron Corp., 950 N. Highland Avenue, Los Angeles 38, Calif.
- Mellaphone Corp., Rochester 2, N. Y.
- Melpar, Inc., 718 Fifth St., N.W., Washington 1, D. C.
- Melrath Supply & Gasket Co., Tioga Street & Aramingo Ave., Philadelphia, Pa.
- Mendelsohn Speedgun Co., Inc., 457 Bloomfield Avenue, Bloomfield, N. J.
- Mephram Corp., G. S., 2001 Lynch Avenue, East St. Louis, Ill.
- Merck & Co., Inc., Rahway, N. J.
- Mercoid Corp., 4201 Belmont Ave., Chicago 41, Ill.
- Merconrol Inc., 278 Pearl St., New York 7, N. Y.
- Merit Coil & Transformer Corp., 4427 N. Clark St., Chicago 40, Ill.
- Metalix Mfg. Co. Inc., 1 Fourth St., East Norwalk, Conn.
- Metaplast Co., 205 W. 19th St., New York 11, N. Y.
- Meters, Inc., 915 Riveria Dr., Indianapolis 5, Ind.
- Metron Instrument Co., 432 Lincoln St., Denver 9, Colorado
- Metropolitan Electronic & Instrument Co., 6 Murray St., New York 7, N. Y.
- Metzger & Son, F. F., 2600 N. 6th St., Philadelphia 33, Pa.
- Mettler Co., Lee B., 406 S. Main Street, Los Angeles 13, Calif.
- Meyercood Co., 5323 W. Lake St., Chicago 44, Ill.
- Mica Insulator Co., Schenectady 1, N. Y.
- Mica Product Mfg. Co., 69 Wooster St., New York, N. Y.
- Micamold Radio Corp., 1087 Flushing Ave., Brooklyn 6, N. Y.
- Micarta Fabricators, Inc., 5324 Ravenswood Avenue, Chicago 40, Illinois
- Micro-Sonic Corp., 44 W. 18th St., New York, N. Y.
- Micro Switch Division, First Industrial Corp., 7 Spring St., Freeport, Ill.
- Midco Mfg. & Distributing Co., S. 13th & Kentucky Avenue, Sheboygan, Wisconsin
- Midland Paint & Varnish Co., 9115 Reno Avenue, Cleveland 5, Ohio
- Midwest Molding & Mfg. Co., 319 N. Whipple Street, Chicago 12, Illinois
- Midwest Radio Corp., 909 Broadway, Cincinnati 2, Ohio
- Mid-West Spring Mfg. Co., 4632 S. Western Avenue, Chicago 9, Illinois
- Miles Reproducer Co., Inc., 812 Broadway, New York 3, N. Y.
- Milford Rivet & Machine Co., Milford, Conn.
- Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.
- Miller, August E., 9226 Hudson Blvd., North Bergen, N. J.
- Miller Co., B. F., Trenton 4, N. J.
- Miller Co., J. W., 5917 S. Main St., Los Angeles, Calif.
- Miller Corp., William, 362 W. Colorado St., Pasadena, Calif.
- Miller Mfg. Co., M. A., 1169 E. 43rd St., Chicago 15, Ill.
- Milwaukee Resistor Co., 748 W. Virginia Street, Milwaukee 4, Wisconsin
- Milwaukee Stamping Co., 824 S. 72nd St., Milwaukee, Wisc.
- Minerallac Electric Co., 25 N. Peoria St., Chicago, Illinois
- Minerva Corp. of America, 238 William St., New York, N. Y.
- Miniature Precision Bearings, Inc., Keene, New Hampshire
- Minneapolis-Honeywell Regulator Co., 2753 Fourth Avenue S., Minneapolis, Minn.
- Minnesota Mining & Mfg. Co., 900 Fauquier Ave., St. Paul, Minn.
- Minute Man Products, Inc., 309 East 22nd Street, New York 10, N. Y.
- Mirror Record Corp., 1133 Broadway, New York 10, N. Y.
- Mitchell Rand Insulation Co., Inc., 51 Murray Street, New York 7, N. Y.
- Mobile Communications Co., 202 East Fourth Street, Long Beach 2, Calif.
- Model Engineering & Mfg., Inc., Huntington, Indiana
- Moisture Register Co., 133 No. Garfield, Alhambra, California
- Molded Insulation Co., Aircraft Control Div., 335 E. Price St., Philadelphia, Pa.
- Monarch Mfg. Co., 2014 N. Major Ave., Chicago 39, Ill.
- Monitor Controller Co., 51 S. Gay St., Baltimore 2, Md.
- Monitor Products Co., 815 Fremont St., So. Pasadena, Calif.
- Monroe Coll Co., 2659 W. 19th St., Chicago, Ill.
- Monsanto Chemical Co., Plastics Div., Springfield 2, Mass.
- Mooradian High Frequency Labs, 137 Park Place, Bogota, N. J.
- Moore Co., Howard J., 108 Park Row, New York 7, N. Y.
- Morse Co., Frank W., 1300 Soldiers Field Rd., Boston 35, Mass.
- Mossman, Donald P., 612 N. Michigan Ave., Chicago 11, Ill.
- Motor City Electric Co., 1456 E. Ferry St., Detroit 11, Mich.
- Motorola Radio, Galvin Mfg. Corp., 4545 Augusta Blvd., Chicago, Ill.
- Moulic Specialties Co., 1005-1007 W. Washington St., Bloomington, Ill.
- Muelhausen Spring Corp., 255 Michigan Ave., Logansport, Ind.
- Mueller Electric Co., 1583 E. 31st St., Cleveland 14, Ohio
- Multi-Products Tool Co., 123 Sussex Ave., Newark 4, N. J.
- Munsell & Co., Eugene, 200 Varick St., New York, N. Y.
- Murdock Mfg. Co., Wm. J., Chelsea, Mass.
- Music Master Radio Corp., 750 Main St., Hartford, Conn.
- Mu Switch Corp., Canton 31, Mass.
- Muter Co., 1255 S. Michigan Ave., Chicago, Ill.
- Mycalex Corp. of America, 60 Clifton Blvd., Clifton, N. J.
- Myers & Sons, E. A., Radioear Bldg., Beverly Rd., Pittsburgh 16, Pa.
- Mykroy Inc., 1917 N. Springfield Ave., Chicago 47, Ill.
- National Carbon Co., Inc., 30 E. 42nd Street, New York, N. Y.
- National Ceramic Co., 400 Southard Street, Trenton 2, N. J.
- National Company, Inc., 61 Sherman Street, Malden 48, Mass.
- National Electric Controller Co., 5307 Ravenswood Avenue, Chicago, Illinois
- National Electronic Mfg. Corp., 22-78 Steinway St., Long Island City 5, N. Y.
- National Gasket & Washer Co., Inc., 122 E. 25th St., New York 10, N. Y.
- National Instrument Co., 246 Walnut Street, Newtonville 60, Mass.
- National Intercommunicating Systems, 1531 Devon Avenue, Chicago 26, Illinois
- National Lead Co., 111 Broadway, New York 6, N. Y.
- National Molding Co., 2141 W. Washington Blvd., Los Angeles 7, Calif.
- National Lock Washer Co., 40 Hermon St., Newark 5, N. J.
- National Moldite Co., 25 Montgomery St., Hillside 5, N. J.
- National Research Corp., Vacuum Engrg. Div., 100 Brookline Ave., Boston 15, Mass.
- National Screw & Mfg. Co., The, Cleveland 4, Ohio
- National-Simplex-Bludworth, Inc., Marine Division, 100 Gold Street, New York 7, N. Y.
- National Technical Lab., 820 Mission St., South Pasadena, Calif.
- National Union Radio Corp., 350 Scotland Rd., Orange, N. J.
- National Varished Products Corp., 211 Randolph Ave., Woodbridge, N. J.
- National Vulcanized Fibre Co., Wilmington, Del.
- Naxon Utilities Corp., 2101-11 W. Walnut St., Chicago 12, Ill.
- Nebel Lab., R. E., 1104 Lincoln Place, Brooklyn 13, N. Y.
- Nelson Vacuum Pump Co., George F., 2133 Fourth Street, Berkeley 2, Calif.
- New England Electrical Works Inc., Lisbon, N. H.
- New England Etching & Plating Co., 25 Spring St., Holyoke, Mass.
- New England Mica Co., Waltham, Mass.
- New England Radiocrafters, 1156 Commonwealth Ave., Boston 34, Mass.
- New England Screw Co., Keene, New Hampshire
- New Hampshire Ball Bearings, 5 Main St., Peterborough, N. H.
- New York Solder Co., 15 Crosby St., New York 13, N. Y.
- New York Transformer Co., Alpha, N. J.
- New York Transformer Co., 62 William St., New York, N. Y.
- Newark Transformer Co., 17 Freylinghuyzen Ave., Newark 5, N. J.
- Newcomb Audio Products Co., 6824 Lexington Ave., Hollywood 38, Calif.
- Newport Rolling Mill Co., Ninth & Lowell Sts., Newport, Ky.
- Ney Co., J. M., Hartford, Conn.
- Nilsson Electrical Laboratory, Inc., 103 Lafayette St., New York 13, N. Y.
- Nixon Nitration Works, Nixon, N. J.
- Noblitt Sparks Industries, Columbus, Ind.
- Nonotuck Mfg. Co., Holyoke, Mass.
- Norrman Labs., Ernst, Williams Bay, Wisc.
- North American Electric Lamp Co., 1014 Tyler St., St. Louis 6, Mo.
- North American Philips Co., Inc., 100 East 42nd St., New York 17, N. Y.
- North Electric Mfg. Co., 501 S. Market St., Galion, Ohio
- Northeastern Engineering Inc., Manchester, N. H.
- Northern Industrial Chemical Co., 7-11 Elkins Street, South Boston 27, Mass.
- Northern Radio Co., 2208 Fourth Ave., Seattle 1, Wash.
- Norton Co., 1 New Bond Street, Worcester 6, Mass.

Norton Electrical Instrument Co., 59 Hilliard St., Manchester, Conn.

Nothelmer Winding Labs., 111 Albemarle Ave., Trenton, N. J.

Nukem Products Corp., 111 Colgate Ave., Buffalo 20, N. Y.

Numberall Stamp & Tool Co., Huguenot Park, Staten Island 12, N. Y.

Nurnberg Thermometer Co., Inc., 112 Broadway, Cambridge 42, Mass.

O. Z. Electrical Mfg. Co., 262 Bond Street, Brooklyn 2, N. Y.

Oak Mfg. Co., 1260 N. Clybourn Ave., Chicago 10, Ill.

Ocrum Corp., Auburn Road, Seneca Falls, N. Y.

O'Donnell and Sons, J. P., 316 Stuart St., Boston 16, Mass.

Offner Electronics, Inc., 5320 N. Kedzie Ave., Chicago 25, Ill.

Ohio Carbon Co., 12508 Berea Rd., Cleveland, Ohio

Ohio Crankshaft Co. Tocco Div., 3800 Harvard Ave., Cleveland 1, Ohio

Ohio Electric Mfg. Co., 5908 Maurice Ave., Cleveland 4, Ohio

Ohmite Mfg. Co., 4835 W. Flournoy St., Chicago 44, Ill.

Olekit Co., Canal Street, Passaic, N. J.

Olek & Son, Inc., A., 4757-59 Melrose Street, Philadelphia 37, Pa.

Olesen Co., Otto K., 1560 Vine Street, Hollywood 28, Calif.

Olympic Tool & Manufacturing Co., 27 Chambers St., New York 7, N. Y.

Omi-ron Electric Co., 718 Columbus Ave., New York 25, N. Y.

Onan & Sons, D. W., 3264 Royalston Ave., Minneapolis 5, Minn.

O'Neil-Irwin Mfg. Co., 316 8th Ave. S., Minneapolis 15, Minn.

Operadio Mfg. Co., 135th & Indiana Sts., St. Charles, Ill.

Oppenheimer Inc., Alan D., 582-586 Exchange St., Buffalo, N. Y.

Oris Mfg. Co., Inc., Thomaston, Conn.

Osborne Transformer Corp., 948 E. Lafayette Avenue, Detroit 7, Mich.

Oster Mfg. Co., John, Racine, Wisconsin

Owens-Corning Fiberglass Corp., 1860 Nicholas Bldg., Toledo 1, Ohio

Owens-Illinois Glass Co., Plastics Div., Toledo, Ohio

Oxford Radio Corp., 3911 S. Michigan Avenue, Chicago 15, Ill.

Packard-Bell Co., Inc., 3443 Wilshire Blvd., Los Angeles 5, Calif.

Pacific Mills, 214 Church St., New York, N. Y.

Pacific Plastic & Mfg. Co., 4865 Exquisition Blvd., Los Angeles, Calif.

Paisley Products Inc., 1770 Canalport Ave., Chicago 16, Ill.

Palnut Co. Inc., 39 Cordier St., Irvington 11, N. J.

Pan American Electric Co., Inc., 2912 Atlantic Ave., Brooklyn 7, N. Y.

Panero Mirrors Inc., 2958 Los Feliz Blvd., Los Angeles, Calif.

Panoramic Radio Corp., 242 W. 55th St., New York 19, N. Y.

Paper Machinery & Research, Inc., 1014 Oak St., Roselle, N. J.

Paragon Electric Co., 37 W. Van Buren St., Chicago 5, Ill.

Paragon-Revolute Corp., 71 South Ave., Rochester 4, N. Y.

Paramount Paper Tube Co., 801 Classgow Ave., Ft. Wayne, Ind.

Paraphone Hearing Aid Inc., 2056 E. 4th St., Cleveland 15, Ohio

Parisian Novelty Co., 3510 South Western Ave., Chicago 9, Ill.

Park Metalware Co., 28 Bank St., Orchard Park, N. Y.

Parker Engineering Products Co., 16 W. 22nd St., New York 10, N. Y.

Parker-Kalon Corp., 200 Varick St., New York 14, N. Y.

Par-Metal Products Corp., 32-62 49th Street, Long Island City 3, N. Y.

Pass & Seymour, Inc., Solvay Station, Syracuse, N. Y.

Patrick's Industries, 397 W. Marshall Avenue, Ferndale 20, Mich.

Patton-MacGuyer Co., 17 Virginia Avenue, Providence 5, R. I.

Paul & Beekman Div., Portable Products Corp., 1801 Cortland St., Philadelphia 40, Pa.

Paulsen-Webber Cordage Corp., 176 John Street, New York 7, N. Y.

Pease Co., C. F., 2601 W. Irving Park Rd., Chicago, Ill.

Peck & Harvey, 5736-38 N. Western Ave., Chicago 45, Ill.

Peerless Electrical Products Co., 6920 McKinley Ave., Los Angeles 1, Calif.

Peerless Labs., 461-467 10th Ave., New York 18, N. Y.

Peerless Roll Leaf Co. Inc., 4511 New York Ave., Union City, N. J.

Peirce Wire Recorder Corp., 1328 Sherman Avenue, Evanston, Illinois

Penn Engineering & Mfg. Corp., Box 311, Doylestown, Pa.

Penn Fibre & Specialty Co., 2030 E. Westmoreland St., Phila. 44, Pa.

Penn-Union Electric Corp., 315 State Street, Erie, Pennsylvania

Pennsylvania Coal Products Co., Petrolia, Pa.

Perfection Electric Co., 829 S. State Street, Chicago, Illinois

Perkin Elmer Corp., Glenbrook, Conn.

Perkins Machine & Gear Co., 130 Circuit Ave., Springfield, Mass.

Perrino Inc., 6415 Ravenswood Ave., Chicago, Ill.

Pernoflux Corp., 4900 W. Grand Ave., Chicago, Ill.

Peters Chemical Mfg. Co., 3623 Lake St., Melrose Park, Illinois

Petersen Radio Co., 2800 W. Broadway, Council Bluffs, Iowa

Pfanstiehl Chemical Co., 104 Lake View Ave., Waukegan, Ill.

Pheoll Mfg. Co., 5700 Roosevelt Rd., Chicago 50, Ill.

Philadelphia Insulated Wire Co., 200 N. 3rd St., Philadelphia, Pa.

Philadelphia Steel & Wire Corp., Penn. St. & Bellfield Ave., Phila., Pa.

Philco Corp., Tioga & C Streets, Philadelphia 34, Pa.

Philharmonic Radio Corp., 528 E. 72nd Street, New York 21, N. Y.

Phillips Control Corp., 612 N. Michigan Ave., Chicago 11, Illinois

Philson Mfg. Co. Inc., 156 Chambers St., New York, N. Y.

Phonograph Needle Mfg. Co., 42 Dudley St., Providence 5, R. I.

Photo Reproducing Equipment Co., Chatham, N. J.

Pho Tron Instrument Co., 5713 Euclid Ave., Cleveland, Ohio

Photoswitch, Inc., 77 Broadway, Cambridge 42, Mass.

Photovolt Corp., 95 Madison Ave., New York 16, N. Y.

Picker X-Ray Corp., 300 Fourth Ave., New York 10, N. Y.

Pickering and Co., Audio Laboratories, Oceanside, New York

Pierce Renewable Fuses Inc., 211 Hertel Ave., Buffalo 7, N. Y.

Pierce Template Corp., 2646 N. Coral Street, Philadelphia 25, Pa.

Pierson Electronic Corp., 533 E. Fifth Street, Los Angeles 13, Calif.

Piezo Mfg. Corp., 110 E. 42nd Street, New York 17, N. Y.

Pilot Electric Co., 29 S. Broadway, Long Branch, N. J.

Pilot Radio Corp., 37-06 36th St., Long Island City, N. Y.

Pioneer Electric Co., 3700 East Olympic Blvd., Los Angeles 23, Calif.

Pioneer Electric & Research Corp., The Forest Park, Illinois

Pioneer Gen-E-Motor Corp., 5841 W. Dickens Ave., Chicago 39, Ill.

Pittsburgh Carbon Brush Co., 811 Fulton Street, Pittsburgh 12, Pa.

Plaskon Division, Libbey-Owens-Ford Glass Co., 2112-14 Sylvan Avenue, Toledo 6, Ohio

Plastex Corp., 402 Mt. Vernon Ave., Columbus 3, Ohio

Plastic Accessories, Inc., 460 Broome St., New York 13, N. Y.

Plastic Enterprises, 129 Bloomfield Avenue, Bloomfield, N. J.

Plastic Fabricators Co., 440 Sansome Street, San Francisco 11, Calif.

Plastic Manufacturers Inc., Stamford, Conn.

Plastic Metals Division, The National Radiator Co., 169 Bridge Street, Johnstown, Pa.

Plastic Wire & Cable Corp., Norwich, Conn.

Plasticides, Inc., 43 Leon Street, Boston 15, Mass.

Plasticraft Products Co., 20 Hudson St., New York 13, N. Y.

Plastoid Corp., 19 W. 44th Street, New York 18, N. Y.

Plax Corp., 133 Walnut St., Hartford 5, Conn.

Plume & Atwood Mfg. Co., 470 Bank St., Waterbury, Conn.

Poinsettia, Inc., 95 Cedar Ave., Pitman, N. J.

Pelan Industries, 220 Eighth St., Huntington, West Virginia

Pelarad Electronics Co., 135 Liberty St., New York 6, N. Y.

Polk Electronics, 119 Bleeker Street, New York 12, N. Y.

Polytron Corp., 401 Broadway, New York 13, N. Y.

Porcelain Products, Inc., Parkersburgh, W. Va.

Ports Mfg. Co., 3265 E. Belmont Ave., Fresno 3, Calif.

Positive Lock Washer Co., 181 Miller St., Newark, N. J.

Potter & Brumfield Mfg. Co., 617 N. Gibson St., Princeton, Ind.

Potter Co., 1850 Sheridan Rd., No. Chicago, Ill.

Potter Instrument Co., 136-56 Roosevelt Ave., Flushing, N. Y.

Powell & Co., Inc., R. C., 57 William Street, New York, N. Y.

Powhatan Mining Co., Baltimore 7, Md.

Precise Electronics, 614 W. 49th St., New York, N. Y.

Precision Apparatus Co., 92-27 Horace Harding Blvd., Elmhurst, N. Y.

Precision Fabricators, Inc., 120 N. Fitzbush St., Rochester, N. Y.

Precision Labs., Inc., Irvington, N. J.

Precision Machine Works, Inc., 730 Lyndale Ave. No., Minneapolis 11, Minn.

Precision Paper Tube Co., 2033 W. Charles-ton St., Chicago 47, Ill.

Precision Piezo Service, 427 Mayflower St., Baton Rouge, La.

Precision Products Co., 26 Bedford St., Wal-tham 54, Mass.

Precision Resistor Co., 334 Badger Avenue, Newark 8, N. J.

Precision Scientific Co., 1750 N. Springfield Avenue, Chicago 47, Ill.

Precision Transformer Co., 733 W. Ohio St., Chicago 10, Ill.

Precision Tube Co., 3828 Terrace St., Phila-delphia 28, Pa.

Preis Engraving Machine Co., 155 Summit St., Newark 4, N. J.

Premax Products Div., Chisholm-Ryder Co., Inc., Niagara Falls 2, N. Y.

Premier Crystal Labs. Inc., 63 Park Row, New York, N. Y.

Premier Metal Etchings Co., 21-03 44th Ave., Long Island City, N. Y.

Press Wireless Mfg. Corp., 1475 Broadway, New York 18, N. Y.

Presto Electric Co., 4511 New York Avenue, Union City, N. J.

Prest-O-Lite Battery Co., Inc., 4500 W. 16th St., Box 1655, Indianapolis, Ind.

Presto Recording Corp., 242 W. 55th St., New York, N. Y.

Prestole Corp., 3150 Bellevue Road, Toledo 6, Ohio

Price Electric Corp., East Church & 2nd Sts., Frederick, Md.

Printfold Inc., 95 Mercer St., New York, N. Y.

Process & Instruments, 60 Greenpoint Ave., Brooklyn 22, N. Y.

Production Engineering Co., 666 Van Hout-en Ave., Clifton, N. J.

Production Equipment Co., 182 South St., Oyster Bay, N. Y.

Progressive Mfg. Co., 52 Norwood St., Tor-nington, Conn.

Publix Metal Products, Inc., 100 Sixth Ave., New York 13, N. Y.

Pure Carbon Co., St. Marys, Pa.

Purves Mfg. Corp., Cambridge City, Ind.

Pyle-National Co., 1334 N. Kostner Ave., Chicago 51, Ill.

Pyramid Electric Co., 155 Oxford St., Pat-erson, N. J.

Pyramid Products Co., 2224 S. State St., Chicago, Ill.

Pyroferic Corp., 175 Varick St., New York, N. Y.

Pyrometer Instrument Co., 103 Lafayette St., New York, N. Y.

Quadriga Mfg. Co., 213 W. Grand Ave., Chicago 11, Ill.

Quaker City Gear Works, 1910-32 N. Front St., Philadelphia, Pa.

Quality Industries, Electronic Dept., 25 E. Jackson Blvd., Chicago 4, Ill.

Quam Nichols Co., 526 E. 33rd Pl., Chi-cago 16, Ill.

R-9 Crystal Co., Inc., 907 Penn Ave., Pitts-burgh, Pa.

R. B. M. Division, Essex Wire Corp., Lo-gansport, Ind.

RMS Electronics, Inc., 73-39 68th Ave., Mid-dle Village, N. Y.

Racon Electric Co., 52 E. 19th St., New York 3, N. Y.

Radell Corp., 215 W. Michigan St., Indian-apolis 2, Ind.

Radar Engineers, 4004 Arcade Bldg., Se-attle 1, Wash.

Radex Corp., 2076 N. Elston Avenue, Chi-cago, Ill.

Radiad Service, 720 W. Schubert Ave., Chi-cago 14, Ill.

Radiart Corp., The, 3571 W. 62nd St., Cleve-land, Ohio

Radio City Products, 127 W. 26th St., New York, N. Y.

Radio Condenser Co., Camden, N. J.

Radio Corp. of America, RCA Victor Div., Camden, N. J.

Radio Corp. of America, Tube Div., Harris-son, N. J.

Radio Craftsmen, 1341 S. Michigan Ave., Chicago 5, Ill.

Radio Design Co., 1353 Sterling Place, Brooklyn, N. Y.

Radio Development and Research Co., 26 Cornellison Ave., Jersey City, N. J.

Radio Electronic Products Co., 230 S. Spring St., Los Angeles, Calif.

Radio Engineering Labs., Inc., 35-54 36th St., Long Island City, N. Y.

Radio Engineering Products, Div. of Ray-mond Rosen & Co., Philadelphia 4, Pa.

Radio Frequency Labs., Inc., Boonton, N. J.

Radio Inventions, Inc., 155 Perry St., New York 14, N. Y.

Radio Labs Co., 2701 California Ave., Seat-tle 6, Wash.

Radio Mfg. Engineers Inc., Peoria 6, Ill.  
Radio Merchandise Sales, 550 Westchester Ave., New York 55, N. Y.  
Radio-Music Corp., East Port Chester, Conn.  
Radio Navigational Instrument Corp., 500 Fifth Avenue, New York 18, N. Y.  
Radio Receptor Co., 251 W. 19th St., New York 11, N. Y.  
Radio Speakers Inc., 221 E. Cullerton St., Chicago, Ill.  
Radio Specialty Mfg. Co., 2023 S. E. Sixth Ave., Portland 14, Ore.  
Radio-Television Institute, Inc., 480 Lexington Ave., New York 17, N. Y.  
Radiomarine Corp. of America, 75 Varick St., New York 13, N. Y.  
Radionic Controls, Inc., 3758 Belmont Ave., Chicago 18, Ill.  
Radionic Transformer Co., 411 S. Sangamon St., Chicago 7, Ill.  
Rahm Instruments, Inc., 12 West Broadway, New York 7, N. Y.  
Rajah Co., Bloomfield, N. J.  
Ranco, Inc., 601 W. Fifth Ave., Columbus, Ohio  
Rapid Specialties Co., 325 W. Huron Street, Chicago 10, Ill.  
Rattan Mfg. Co., The, P. O. Box 1745, New Haven 7, Conn.  
Rauland Corp., 4245 N. Knox Ave., Chicago 41, Ill.  
Rawson Electrical Instrument Co., 110 Potter St., Cambridge 42, Mass.  
Ray-Dyne Mfg. Corp., 141 West 24th St., New York 11, N. Y.  
Raymond Mfg. Co., Div. of Associated Spring Corp., 226 S. Center St., Corry, Pa.  
Ray-O-Vac Co., Madison, Wis.  
Raytheon Manufacturing Co., Commercial Products Div., Waltham 54, Mass.  
Raytheon Mfg. Co., Power Tube Division, Waltham 54, Mass.  
Raytheon Manufacturing Co., Special Tube Section, 55 Chapel St., Newton 58, Mass.  
Raytron, Inc., 407 N. Jackson St., Jackson, Mich.  
Rea Magnet Wire Co., E. Pontiac St., Extended Fort Wayne, Ind.  
Ready Power Co., 11231 Freud Ave., Detroit 14, Mich.  
Recordisc Corp., 395 Broadway, New York, N. Y.  
Recotone Corp., 212 Fifth Ave., New York, N. Y.  
Rectifier Engineering Co., 1803 E. Seventh St., Los Angeles 21, Calif.  
Red Arrow Electric Corp., 100 Coit St., Irvington, N. J.  
Redmond Co., Inc., Owosso, Mich.  
Reeves-Hoffman Corp., 215 East 91st St., New York, N. Y.  
Reeves Instrument Corp., 215 East 91st Street, New York, N. Y.  
Reeves Soundcraft Corp., 10 E. 52nd St., New York 22, N. Y.  
Reichold Chemicals Inc., 601 Woodward Heights Blvd., Ferndale Sta., Detroit 20, Mich.  
Relly Tar and Chemical Corp., Merchants Bank Bldg., Indianapolis, Ind.  
Reiner Electronics Co., 152 W. 25th St., New York, N. Y.  
Rek-O-Kut Co., 146 Grand St., New York 13, N. Y.  
Reliable Spring and Wire Forms Co., Fulton Rd. and Paris Ave., Cleveland 9, Ohio  
Reliance Automatic Lighting Co., 1927 Mead St., Racine, Wis.  
Reliance Instrument Co., 715 N. Kedzie Ave., Chicago, Ill.  
Remington Rand, Electronic Division, Middletown, Conn.  
Remler Co. Ltd., 2101 Bryant St., San Francisco 10, Calif.  
Republic Steel Corp., Republic Bldg., Cleveland 1, Ohio  
Resinous Products & Chemical Co., 222 W. Washington Sq., Philadelphia, Pa.  
Resistance Products Co., 140 South Second St., Harrisburg, Pa.  
Respro, Inc., Wellington Ave., Cranston, R. I.  
Revere Copper and Brass Inc., 230 Park Ave., New York 17, N. Y.  
Rex Rheostat Co., 3 Foxhurst Rd., Baldwin, N. Y.  
Rexon, Inc., 295 Fifth Ave., New York 16, N. Y.  
Reynolds Electric Co., 2560 W. Congress St., Chicago 12, Ill.  
Reynolds Metals Co., 2500 So. Third St., Louisville 1, Ky.  
Rhein Engineering, 120 W. North St., Springfield, Ohio  
Rhode Island Insulated Wire Co., 50 Burnham Ave., Providence, R. I.  
Rhodes Inc., M. H., 30 Bartholomew Ave., Hartford, Conn.  
Rice's Sons Inc., Bernard, 325 Fifth Ave., New York 16, N. Y.  
Richards Co., Inc., Arklay S., 78 Winchester St., Newton Highlands, Mass.  
Richardson Allen Corp., 15 W. 20th St., New York 11, N. Y.  
Richardson Co., The, Melrose Park, Ill.  
Riggs & Jeffreys, Inc., 73 Winthrop St., Newark 4, N. J.  
Ripley Co., Torrington, Conn.  
Ritterhouse Co., A. E., Honeoye Falls, N. Y.  
Riverside Metal Co., Riverside, N. J.  
Robbins & Myers, 1345 Lagonda Ave., Springfield, Ohio  
Robinette, Co., W. C., 802 Fair Oaks Ave., South Pasadena, Calif.  
Robinson Aviation Inc., Teterboro Air Terminal, Teterboro, N. J.  
Robinson Recording Labs., 2022 Sansom St., Philadelphia, Pa.  
Robson-Burgess Co., 5002 N. 30th St., Omaha 11, Nebr.  
Rockbestos Products Corp., 308 Nicoll St., New Haven 4, Conn.  
Roebbling's Sons Co., John A., 640 Broad St., Trenton 2, N. J.  
Rogan Bros., 2001 S. Michigan Ave., Chicago, Ill.  
Rogers Corp., Manchester, Conn.  
Rohm & Haas, 222 W. Washington Sq., Philadelphia, Pa.  
Rola Co., Inc., 2530 Superior Ave., Cleveland 14, Ohio  
Roller-Smith, Bethlehem, Pa.  
Rollin Co., 2070 N. Fair Oaks Ave., Pasadena 3, Calif.  
Rome Cable Corp., 330 Ridge St., Rome, N. Y.  
Ross Mfg. Co., 2241 S. Indiana Ave., Chicago 27, Ill.  
Rowe Industries, 3120 Monroe St., Toledo 6, Ohio  
Rowe Radio Research Lab., 2422 N. Pulaski Rd., Chicago 39, Ill.  
Ruberoid Co., 500 5th Ave., New York, N. Y.  
Rubicon Co., 3751 Ridge Ave., Phila., Pa.  
Ruby Chemical Co., 68 McDowell St., Columbus, Ohio  
Runzel Cord & Wire Co., 4731 W. Montrose Ave., Chicago, Ill.  
Rupp's Assembling & Mfg. Works, 2341 N. Seminary Ave., Chicago 14, Ill.  
Rusgreen Mfg. Co., 14262 Birwood Ave., Detroit, Mich.  
Russell, Burdsall & Ward Bolt & Nut Co., Midland Ave., Port Chester, N. Y.  
Russell Electric Co., Affiliated with Raytheon Mfg. Co., 340 West Huron St., Chicago 10, Ill.  
Russell & Stoll Co., Inc., 125 Barclay St., New York 7, N. Y.  
"S" Corrugated Quenched Gap Co., Scientific Electric Div., 107 Monroe St., Garfield, N. J.  
S. N. C. Mfg. Co., Inc., Box 156, Glenview, Ill.  
SOS Cinema Supply Co., 449 W. 42nd St., New York 18, N. Y.  
S-W Inductor Co., 1056 N. Wood St., Chicago, Ill.  
St. John X-Ray Laboratory, Califon, N. J.  
St. Louis Microphone Co., 2726-28 Brentwood Blvd., St. Louis 17, Mo.  
St. Louis Screw & Bolt Co., 6900 Broadway, St. Louis 15, Mo.  
St. Mary's Carbon Co., St. Marys, Pa.  
Sanborn Co., 39 Osborne St., Cambridge 39, Mass.  
Sanders Bros. Mfg. Co., 409 W. Main St., Ottawa, Ill.  
Sangamo Electric Co., Springfield, Illinois  
Sarco Co., Inc., 475 Fifth Avenue, New York 17, N. Y.  
Sargent Co., E. M., 212 Ninth St., Oakland, Calif.  
Sauerisen Cements Co., Sauerisen Bldg., Pittsburgh 15, Pa.  
Saxl Instrument Co., 6 Linnaean St., Cambridge 38, Mass.  
Saxonberg Potteries, Saxonburg, Pa.  
Schaefer Bros. Co., 1059 W. 11th St., Chicago, Ill.  
Schauer Machine Co., Cincinnati 2, Ohio  
Scherr Co. Inc., George D., 200 Lafayette St., New York 12, N. Y.  
Schott Co., Walter L., 9306 Santa Monica Blvd., Beverly Hills, Calif.  
Schottland, Frederick D., 104-18 Metropolitan Ave., Forest Hills, N. Y.  
Sciaky Bros., 4915 W. 67th St., Chicago 38, Ill.  
Scientific Radio Products Co., 738 W. Broadway, Council Bluffs, Iowa  
Scientific Radio Service, 4301 Sheridan St., University Park, Md.  
Scientific Service Lab., Subsidiary of Electronics, Inc., 915 Meridian Ave., South Pasadena, Calif.  
Schoonmaker Insulation Co., Inc., A. O., 635 Greenwich St., New York 14, N. Y.  
Schuttig & Co., 9th & Kearney Sts., N. E., Washington 17, D. C.  
Schweitzer Paper Co., 132 Cornelison Ave., Jersey City, N. J.  
Scott Radio Labs., Inc., 4450 N. Ravenswood Ave., Chicago 40, Ill.  
Seovill Mfg. Co., Waterville Screw Prods. Div., Waterbury, Conn.  
Screenmakers Co., 64 Fulton St., New York 7, N. Y.  
Scully Machine Co., 62 Walter St., Bridgeport, Conn.  
Seager Carbon Co., 239 Church St., New York 13, N. Y.  
Sealor Corp., 45 Willard Ave., Providence 5, R. I.  
Searle Aero Industries, Inc., Orange, Calif.  
Seeburgh Corp., J. P., 1500 N. Dayton Ave., Chicago 22, Ill.  
Selectograph Mfg. Co., 502 West Colorado Ave., P. O. Box 1458, Colorado Springs, Colorado  
Selenium Corp. of America, 1719 W. Pico Blvd., Los Angeles 15, Calif.  
Self Winding Clock Co., 205 Willoughby Ave., Brooklyn 5, N. Y.  
Sensitive Research Instrument Co., 9 Elm Ave., Mt. Vernon, N. Y.  
Sentinel Radio Corp., 2020 Ridge Ave., Evanston, Ill.  
Sentry Crystal Co., 206 S. W. Washington St., Portland 4, Oregon  
Serdex, Inc., 91 Cambridge St., Boston, Mass.  
Setchell Carlson, 2233 University Ave., St. Paul, Minn.  
Shakeproof Inc., Div. of Ill. Tool Wks., 2501 N. Keeler Ave., Chicago 39, Ill.  
Shakespeare Products Co., 241 E. Kalamazoo Ave., Kalamazoo, Mich.  
Shalleross Mfg. Co., 10 Jackson Ave., Collingdale, Pa.  
Shannon Luminous Materials Co., 7346 Santa Monica Blvd., Hollywood 46, Calif.  
Shaw Insulator Co., 160 Coit St., Irvington 11, N. J.  
Shawinigan Products Corp., 350 Fifth Ave., New York 1, N. Y.  
Sheboygan X-Ray Co., 817 Center St., Sheboygan, Wis.  
Sheffield Corp., The, Dayton 1, Ohio  
Sherman Mfg. Co., H. B., 22 Barney St., Battle Creek, Mich.  
Sherron Electronics Co., 1201 Flushing Ave., Brooklyn 6, N. Y.  
Short Wave Plastic Forming Co., 2921 W. Alameda St., Burbank, Calif.  
Shur-Antenna-Mount Inc., Seacliffe, N. Y.  
Shure Brothers, 225 W. Huron St., Chicago, Ill.  
Sickles Co., F. W., 165 Front St., Chicopee, Mass.  
Sidward Mfg. Co., Inc., 261 Broadway, New York 7, N. Y.  
Sigma Instruments, Inc., 70 Ceylon St., Boston 22, Mass.  
Signal Electronics, Inc., 114 East 16th St., New York, N. Y.  
Signal Engineering & Mfg. Co., 154 W. 14th St., New York, N. Y.  
Sillocks-Miller Co., 10 Parker Ave., West So. Orange, N. J.  
Simmonds Aeroaccessories, Inc., 30 Rockefeller Plaza, New York 20, N. Y.  
Simmonds Saw & Steel Co., Lockport, N. Y.  
Simmons Fastener Corp., North Broadway, Albany 1, N. Y.  
Simonds Machine Co., Inc., 216-48 Worcester St., Southbridge, Mass.  
Simplex Wire & Cable Co., 79 Sidney St., Cambridge 39, Mass.  
Simpson Electric Co., 5218 W. Kinzie St., Chicago 44, Ill.  
Simpson Mfg. Co., Inc., Mark, 188 W. 4th St., New York 14, N. Y.  
Sipp-Eastwood Corp., Keen and Summer Sts., Paterson, N. J.  
Sittler Mfg. Corp., 18 N. Ada St., Chicago 7, Ill.  
Skoning Corp., 319-325 Taunton Ave., E. Providence 14, R. I.  
Skydyne Inc., River Rd., Port Jervis, N. Y.  
Small Motors, Inc., 1322 Elston Ave., Chicago 24, Ill.  
Smith Mfg. Co., F. A., P. O. Box 509, Rochester 2, N. Y.  
Smith Mfg. Co., Nathan R., 105 Pasadena Ave., So. Pasadena, Calif.  
Smith-Meeker Engineering Co., 125 Barclay Street, New York 7, N. Y.  
Snyder Mfg. Co., 22nd & Ontario Sts., Philadelphia 40, Pa.  
Sola Electric Co., 2525 Clybourn Ave., Chicago 14, Ill.  
Solar Corp., 1000 W. Bruce St., Milwaukee 4, Wis.  
Solar Mfg. Corp., 285 Madison Ave., New York 17, N. Y.  
Sonora Radio & Television Corp., 325 N. Hoynes Ave., Chicago, Ill.  
Sonotone Corp., P. O. Box 200, Saw Mill River Road, Elmsford, N. Y.  
Sorensen & Co., 375 Fairfield Ave., Stamford, Conn.  
Sorgel Electric Co., 838 W. National Ave., Milwaukee 4, Wis.  
Sound Apparatus Co., 233 Broadway, New York 7, N. Y.  
Sound Devices Co., 160 E. 116th St., New York 20, N. Y.  
Sound Equipment Corp. of California, 3903 San Fernando Road, Glendale 4, Calif.  
Sound Scriber Corp., 146 Munson St., New Haven 4, Conn.

Southington Hardware Mfg. Co., Southington, Conn.

Sparks Withington Co., 2400 E. Ganson St., Jackson, Mich.

Spaulding Fibre Co., Inc., 310 Wheeler St., Tonawanda, N. Y.

Speak-O-Phone Recording & Equipment Co., 23 W. 60th St., New York, N. Y.

Special Chemicals Co., 30 Irving Place, New York 3, N. Y.

Special Electric Labs., 7224 So. Main St., Los Angeles 3, Calif.

Speedway Mfg. Co., 1834 S. 52nd Ave., Cicero 50, Ill.

Speer Carbon Co., Lincoln Ave., St. Marys, Pa.

Speer Resistor Corp., St. Marys, Pa.

Spencer Thermostat Co., 34 Forest St., Attleboro, Mass.

Sperman Metal Specialties, 2199 E. 21st St., Brooklyn 29, N. Y.

Sperry Gyroscope Co., Inc., Great Neck, L. I., N. Y.

Sperry Products, Inc., 15th & Willow Ave., Hoboken, N. J.

Sperti, Inc., Norwood Station, Cincinnati 12, Ohio

Spirling Products Co., Inc., 60-62-64 Grand St., New York 13, N. Y.

Spitfire Tools, Inc., 2931-35 North Pulaski Road, Chicago 41, Ill.

Sprague Electric Co., North Adams, Mass.

Square D. Co., 6060 Rivard St., Detroit 11, Mich.

Stackpole Carbon Co., St. Marys, Pa.

Stamford Metal Specialty Co., 429 W. Broadway, New York 12, N. Y.

Standard Arcturus Corp., 99 Sussex Ave., Newark, N. J.

Standard Coil Products Co., 2329 N. Pulaski Rd., Chicago 18, Ill.

Standard Crystal Co., 321 East Gregory, Kansas City 5, Mo.

Standard Electric Time Co., 89 Logan St., Springfield, Mass.

Standard Electrical Products Co., Dayton 3, Ohio

Standard Locknut & Lockwasher Inc., 33-35 W. St. Clair St., Indianapolis, Ind.

Standard Molding Corp., Dayton, Ohio

Standard Piezo Co., Woolworth Bldg., Carlisle, Pa.

Standard Pressed Steel Co., Jenkintown, Pa.

Standard Technical Devices, Inc., 129 Livingston St., Brooklyn 2, N. Y.

Standard Transformer Corp., 1500 N. Halstead St., Chicago 22, Ill.

Standard Varnish Works, 2600 Richmond Terr., Staten Island 3, N. Y.

Standard Winding Corp., 44-62 Johnes St., Newburgh, N. Y.

Stanley Works, The, New Britain, Conn.

Stanwyck-Webb Magnetic Core Corp., 142-144 Highland Ave., Ossining, N. Y.

Stanwyck Winding Co., 102 S. Lander St., Newburgh, N. Y.

Star Electric Motor Co., 200 Bloomfield Ave., Bloomfield, N. J.

Star Expansion Products Co., 147-149 Cedar St., New York 6, N. Y.

Star Measurements Co., 412 East 166th St., New York 56, N. Y.

Star Porcelain Co., 61 Muirhead Ave., Trenton 9, N. J.

Stark Sound Engineering Co., P. O. Box 493, Fort Wayne 1, Ind.

Starrett Co., L. S., 165 Crescent St., Athol, Mass.

States Co., 19 New Park Ave., Hartford 6, Conn.

Statham Laboratories, 8222 Beverly Blvd., Los Angeles 36, Calif.

Staver Mfg. Co., 33-21 85th St., Jackson Heights, N. Y.

Sta-Warm Electric Co., Ravenna, Ohio

Steel Co., Herman D., Lafayette Bldg., Philadelphia 6, Pa.

Steger Furniture Mfg. Co., Steger, Ill.

Stephens Mfg. Co., 10416 National Blvd., Los Angeles 34, Calif.

Sterling Bolt Co., 209 W. Jackson Blvd., Chicago 6, Ill.

Sterling Mfg. Co., 9205 Detroit Ave., Cleveland 2, Ohio

Stevens-Arnold Co., 22 Elkins St., S. Boston, Mass.

Stevens Mfg. Co., Inc., Geo., 1850 W. Henderson St., Chicago 13, Ill.

Stevens Paper Mills Inc., Windsor, Conn.

Stevens-Walden Inc., 468 Shrewbury St., Worcester, Mass.

Stevenson Bros. & Co., 110 Race St., Philadelphia 6, Pa.

Steward Mfg. Co., D. M. E., 36th St., Chattanooga, Tenn.

Stewart Mfg. Corp., F. W., 4311 Ravenswood Ave., Chicago 13, Ill.

Stewart-Warner Corp., 1826 Diversey Parkway, Chicago 14, Illinois

Sticht Co., Inc., Herman H., 27 Park Place, New York 7, N. Y.

Stiles & Co., H. A., 174 Portland St., Boston, Mass.

Stimpson Co., Inc., Edwin B., 74 Franklin Ave., Brooklyn 5, N. Y.

Stoddard Aircraft Radio Co., 6644 Santa Monica Blvd., Hollywood 38, Calif.

Stokes Machine Co., F. J., 5850 Tabor Road, Olney Post Office, Philadelphia 20, Pa.

Stokes Molded Products, Taylor St. at Webster, Trenton, N. J.

Stover Lock Nut & Machinery Corp., 101 Park Avenue, New York 17, N. Y.

Stow Manufacturing Co., 445 State St., Binghamton, N. Y.

Stromberg-Carlson Co., Rochester, N. Y.

Stronghold Screw Products, 216 West Hubbard St., Chicago 10, Ill.

Struthers-Dunn, Inc., 150 N. 13th Street, Philadelphia 7, Pa.

Stupakoff Ceramic & Mfg. Co., Latrobe, Pa.

Submarine Signal Co., Affiliated with Raytheon Mfg. Co., 160 State St., Boston, Mass.

Summerill Tubing Co., Bridgeport, Pa.

Sun Dial Corp., Runnymede Road, Essex Falls, N. J.

Sun Mfg. Co., 6323 Avondale Ave., Chicago 31, Ill.

Super Electric Products Corp., 1057 Summit Ave., Jersey City, N. J.

Superior Carbon Products Inc., 9112 George Ave., Cleveland, Ohio

Superior Electric Co., 83 Laurel St., Bristol, Conn.

Superior Flake Graphite Co., 33 S. Clark St., Chicago 3, Ill.

Superior Flux Co., 913 Public Square Bldg., Cleveland 13, Ohio

Superior Instruments Co., 227 Fulton St., New York 7, N. Y.

Superior Tube Co., Norristown, Pa.

Supreme Instruments Corp., Greenwood, Miss.

Suprenant Electrical Insulation Co., 84 Purchase St., Boston 10, Mass.

Swanson Tool & Machine Products, 810-14 E. 8th St., Erie, Pa.

Swedish Iron & Steel Corp., 17 Battery Pl., New York, N. Y.

Swiss Jewel Co., Lafayette Bldg., Philadelphia 6, Pa.

Switchcraft, Inc., 1735 West Diversey Parkway, Chicago 14, Ill.

Sylvania Electric Products, Inc., 500 5th Ave., New York 18, N. Y.

Synchronous Products Inc., 4513 Brooklyn Ave., Cleveland 9, Ohio

Sylvan Plastics, Inc., 122 E. 42nd St., New York, N. Y.

Synchro Start Products, Inc., 1046 W. Fullerton Ave., Chicago 14, Ill.

Synthane Corp., Oaks, Pa.

Synvar Corp., 415 E. Front St., Wilmington, Delaware

Syracuse Ornamental Co., Inc., 581 S. Clinton St., Syracuse, N. Y.

Tablet & Ticket Co., 1021 W. Adams St., Chicago 7, Ill.

Tagliabue Division, C. J., Portable Products Corp., 550 Park Ave., Brooklyn 5, N. Y.

Takk Corp., Newark, Ohio

Talk-A-Phone Co., 1512 S. Pulaski Rd., Chicago 23, Ill.

Tar Heel Mica Co., Plumtree, N. C.

Task Electronics Co., 245 W. 54th Street, New York, N. Y.

Taybern Equipment Co., 120 Greenwich St., New York 6, N. Y.

Taylor Fibre Co., Norristown, Pa.

Taylor Mfg. Co., 3078 W. Meinecke Ave., Milwaukee 10, Wisc.

Taylor Tubes, Inc., 2312 Wabanska Ave., Chicago 47, Ill.

Taylor Western Transmitters Inc., 6127 South Western Avenue, Los Angeles 44, Calif.

Taylor-Wharton Iron & Steel Co., Highbridge, N. J.

Tech Laboratories, 337 Central Ave., Jersey City, N. J.

Tech-Master Products Co., 123 Prince St., New York 12, N. Y.

Technical Apparatus Co., 167 Washington Street, Boston 8, Mass.

Technical Appliance Corp., 41-06 DeLong Street, Flushing, N. Y.

Technical Devices Corp., Beaufort & Eagle Rock Ave., Roseland, N. J.

Techno-Craft Products, 200 Hudson St., New York 13, N. Y.

Technology Instrument Corp., 1058 Main St., Waltham, Mass.

Techno-Scientific Co., 901 Nepperhan Ave., Yonkers 3, N. Y.

Teekna Co., 223-01 Northern Blvd., Bay-side, N. Y.

Tektronix, Inc., 1516 S. E. 7th Ave., Portland 14, Ore.

Tel-Autograph Corp., 16 W. 61st St., New York 23, N. Y.

Telechron Inc., Homer Ave., Ashland, Mass.

Telecon Condenser Co., 3757 W. North Ave., Chicago 47, Ill.

Telephonics Corp., 350 W. 31st St., New York, N. Y.

Telegrip Radio Co., 1901 S. Washtenaw, Chicago, Ill.

Teleradio Engineering Corp., 99 Wall St., New York 5, N. Y.

Teletone Radio Co., 609 W. 51st St., New York 19, N. Y.

Television Projects, Inc., 24 Walnut St., Newark 2, N. J.

Televisto Products Inc., 7466 West Irving Park Rd., Chicago 34, Ill.

Telex Inc., Telex Park, Minneapolis 1, Minn.

Telicon Corp., 851 Madison Ave., New York 21, N. Y.

Templetone Radio Mfg. Corp., New London, Conn.

Tennessee Eastman Corp., Div. Eastman Kodak Co., Kingsport, Tenn.

Tenny Engineering Inc., 26 Avenue B., Newark 5, N. J.

Terma Electric Co., 20 W. 22nd St., New York, N. Y.

Ther Electric & Machine Works, 17 South Jefferson St., Chicago, Ill.

Thermador Electric Mfg. Co., 5119 S. Riverside Drive, Los Angeles 22, Calif.

Thermionic Engineering Corp., Pompton Plains, N. J.

Thomas & Betts Co. Inc., 36 Butler Street, Elizabeth 1, N. J.

Thomas & Skinner Steel Products Co., 1122 E. 23rd St., Indianapolis, Ind.

Thompson-Bremer & Co., 1640 W. Hubbard St., Chicago, Ill.

Thompson Co., John E., 1440 W. 47th Street, Chicago 9, Ill.

Thordarson Electric Mfg. Div., Maguire Industries, Inc., 500 W. Horn St., Chicago 10, Ill.

Thwing-Albert Instrument Co., 5351 Pulaski Avenue, Philadelphia 44, Pa.

Tibbetts Industries, Inc., Camden, Maine

Times Facsimile Corp., 229 W. 43rd St., New York, N. Y.

Tinnerman Products Inc., 2106 Fulton Rd., Cleveland 13, Ohio

Titan Metal Mfg. Co., Bellefonte, Pa.

Titanium Alloy Mfg. Co., Niagara Falls, N. Y.

Titchener & Co., E. H., Binghamton, N. Y.

Titeflex, Inc., 500 Frelinghuysen Ave., Newark 5, N. J.

Tone Products Corp. of America, 351 4th Ave., New York 10, N. Y.

Ton-Tex Corp., Grand Rapids, Mich.

Topflight Tool Co., Huber Bldg., York, Pa.

Torit Mfg. Co., Walnut & Exchange Sts., St. Paul 2, Minn.

Tork Clock Co., 1 Grove St., Mt. Vernon, N. Y.

Tracerlab Inc., 55 Oliver St., Boston 10, Mass.

Transcoil Corp., 114 Worth St., New York 13, N. Y.

Transformer Engineers, 389 South Arroyo Parkway, Pasadena, Calif.

Transelectric Mfg. Co., Oxford, Pa.

Transformer Products Inc., 143 W. 51st St., New York, N. Y.

Transmitter Equipment Co., Inc., 345 Hudson St., New York 14, N. Y.

Transvision Inc., 108 4th St., New Rochelle, N. Y.

Trefz Mfg. Co., 511 E. 164th St., New York 56, N. Y.

Triad Transformer Mfg. Co., 423 N. Western Ave., Los Angeles 4, Calif.

Trico Fuse Mfg. Co., 2948 N. Fifth, Milwaukee 12, Wisc.

Tricon Mfg. Co., 8313 S. Racine Ave., Chicago, Ill.

Trimm Inc., 1770 W. Berteau Ave., Chicago 13, Ill.

Trion Electric Corp., 76 Ellicott St., Buffalo 3, N. Y.

Triplet & Barton Inc., Burbank, Calif.

Triplett Electrical Instrument Co., 286 Harmon Road, Bluffton, Ohio

Triumph Mfg. Co., 913 W. Van Buren St., Chicago 7, Ill.

Tri-United Plastics Corp., 390 Nye Ave., Irvington, N. J.

Trotter & Co., E. T., 594 Johnson Ave., Brooklyn, N. Y.

Trumbull Electric Mfg. Co., Plainville, Conn.

Truscon Steel Co., Youngstown, Ohio

Tubing Seal-Cap, Inc., P. O. Box 6450, Metropolitan Station, Los Angeles 55, Calif.

Tubular Rivet & Stud Co., Wollaston 70, Mass.

Tudor Products Co., 70 Franklin Street, East Orange, N. J.

Tung-Sol Lamp Works Inc., 95 Eighth Ave., Newark, N. J.

Turner Co., 909 17th St., Cedar Rapids, Iowa

Ucinite Co., The, Division United-Carr Fastener Corp., 459 Watertown St., Newtonville, Mass.

Ulanet Co., George, 88 East Kinney St., Newark 5, N. J.

- Ultra-Violet Products, Inc., 5205 Santa Monica Blvd., Los Angeles 27, Calif.
- Ungar Electric Tools Inc., 615 Ducommun St., Los Angeles 54, Calif.
- Uniform Tubes, Shurs Lane & Laruiston St., Roxborough, Phila., Pa.
- Unimax Switch Corp., Subs. of W. L. Maxson Corp., 460 W. 34th St., New York 1, N. Y.
- Union Electrical Porcelain Works, Van St., Trenton 5, N. J.
- United Condenser Corp., 422 E. 138th St., New York 54, N. Y.
- United Electric Controls Co., 71 A. Street, S. Boston 27, Mass.
- United Electronics Co., 42 Spring St., Newark 2, N. J.
- United Radio Electronics Corp., 901 W. Jackson Blvd., Chicago, Ill.
- United Radio Mfg. Co., 191 Greenwich St., New York, N. Y.
- United Screw & Bolt Corp., 2513 W. Culbertson St., Chicago, Ill.
- U. S. Blue Print Paper Co., 207 S. Wabash Ave., Chicago, Ill.
- U. S. Electric Mfg. Corp., 222 W. 14th St., New York 11, N. Y.
- U. S. Electrical Motors, Inc., 200 E. Slauson Ave., Los Angeles, Calif.
- U. S. Gauge Div., American Machine and Metals, Inc., Sellersville, Pa.
- U. S. Graphite Co., 1621 Holland Ave., Saginaw, Mich.
- U. S. Instrument Corp., 19 South Harrison St., East Orange, N. J.
- U. S. Mica Mfg. Co., 1521 Circle Ave., Forest Park, Ill.
- U. S. Plastics Corp., 2835-53 Irving Park Road, Chicago, Ill.
- U. S. Radium Corp., 535 Pearl St., New York 7, N. Y.
- U. S. Rubber Co., 1230 Sixth Avenue, New York 20, N. Y.
- U. S. Steel Corp., 71 Broadway, New York 6, N. Y.
- U. S. Stoneware Co., The, Akron 9, Ohio
- U. S. Television Mfg. Corp., 3 W. 61st St., New York 23, N. Y.
- United Transformer Corp., 150 Varick Street, New York 13, N. Y.
- United Wood Specialty Mfg. Co., Inc., 951 Broadway, Fall River, Mass.
- Universal Clay Products Co., 1505 E. 1st St., Sandusky, Ohio
- Universal Drafting Machine Co., 3110 Payne Ave., Cleveland 14, Ohio
- Universal Electric Co., 400 E. Main St., Owosso, Mich.
- Universal Instrument Co., 306 E. McMullan St., Cincinnati 19, Ohio
- Universal Microphone Co., Inglewood, Calif.
- Universal Motor Co., 186 Harrison St., Oshkosh, Wisc.
- Universal Winding Co., 1655 Elmwood Ave., Cranston 3, R. I.
- University Loudspeakers, Inc., 225 Varick Street, New York 14, N. Y.
- Utah Radio Products Division, International Detrola Corp., Huntington, Ind.
- Utah Radio Products Co., 820 Orleans St., Chicago, Ill.
- V-M Corp., Benton Harbor, Mich.
- Vaco Products Co., 317 E. Ontario St., Chicago 11, Illinois
- Vacolite Co., 3001-3003 N. Henderson Dallas, Texas
- Vacuum Electronic Engineering Co., 316 37th St., Brooklyn 2, N. Y.
- Valco Mfg. Co., 4700 W. Walton St., Chicago 51, Ill.
- Valite Corp., Whitney Bldg., New Orleans 12, La.
- Valpey Crystals, Highland St., Holliston, Mass.
- Van Dyke Instruments, Inc., Tarzana, Calif.
- Vangtronic Corp., The, 87 Washburn St., Bridgeport, Conn.
- Variflex Corp., N. Jay St., Rome, N. Y.
- Vendo Co., 1907 Grand Ave., Kansas City 8, Mo.
- Vibracloc Mfg. Co., 3597 Mission St., San Francisco, Calif.
- Vibrapower Co., James, 3125 N. Oconto Ave., Chicago, Ill.
- Vibroplex Co., Inc., 833 Broadway, New York, N. Y.
- Vibroscope Co., 6 East 39th St., New York 16, N. Y.
- Victor Electric Products Inc., 2950 Robertson Ave., Cincinnati 9, Ohio
- Victoreen Instrument Co., 5806 Hough Ave., Cleveland 3, Ohio
- Victory Mfg. Co., 1722 W. Arcade Pl., Chicago 2, Ill.
- Viewlex Inc., Div. of Andrews & Perillo, 39-30 Crescent St., Long Island City, N. Y.
- Vitamite Co., 227 W. 64th St., New York 23, N. Y.
- Vitroseal Corp., 28 East Electric, Covington, Ky.
- Vokar Corp., 7300 Huron River Dr., Dexter, Mich.
- Vulcan Electric Co., 88 Holten St., Danvers, Mass.
- Waage Electric Co., A. H., 54 Park Place, New York 7, N. Y.
- Wadsworth Electric Mfg. Co., 20 W. 11st St., Covington, Kentucky
- Wagner Electric Corp., 6400 Plymouth Avenue, St. Louis, Missouri
- Walder Kohinoor Inc., Long Island City 1, N. Y.
- Walker Co., George, 118 Amsterdam Ave., Passaic, N. J.
- Walker-Turner Co., Inc., 1463 Berckman St., Plainfield, N. J.
- Wallace Mfg. Co., Inc., Wm. T., Chili & Madison Aves., Peru, Ind.
- Wallace & Tiernan Products, Inc., Belleville 9, N. J.
- Walser Automatic Timer Co., 420 Lexington Ave., New York, N. Y.
- Walsh Engineering Co., 34 De Hart Pl., Elizabeth, N. J.
- Walter Co., S., 144 Centre St., Brooklyn 31, N. Y.
- Waltham Screw Co., 77 Rumford Ave., Waltham, Mass.
- Wappler, Inc., 27 W. 24th St., New York 10, N. Y.
- Ward Leonard Electric Co., 31 South St., Mt. Vernon, N. Y.
- Ward Products Corp., 1523 E. 45th St., Cleveland 3, Ohio
- Warrick Co., Chas. F., 16251 Hamilton Ave., Detroit 3, Mich.
- Waterbury Companies, Inc., Waterbury 90, Conn.
- Waterman Products Co., Inc., 2445-63 Emerald St., Philadelphia 25, Pa.
- Waterproof Electric Co., 72 E. Verdugo Ave., Burbank, Calif.
- Waters Conley Co., 501 First St. NW, Rochester, Minn.
- Watertown Mfg. Co., Watertown, Conn.
- Watterson Radio Mfg. Co., P. O. Box 54, Dallas 1, Tex.
- Weaver Specialty Co., 6344 Aurelia St., Pittsburgh, Pa.
- Weber Co., F., 1220 Buttonwood St., Philadelphia 23, Pa.
- Webster-Chicago Corp., 5622 Bloomingdale Ave., Chicago 39, Ill.
- Webster Electric Co., 1900 Clark St., Racine, Wisc.
- Weil & Co., J. H., 1315 Cherry Street, Philadelphia 7, Pa.
- Weksler Thermometer Corp., 52 W. Houston St., New York, N. Y.
- Welch Scientific Co., 1515 Sedgwick St., Chicago 10, Ill.
- Weller Mfg. Co., 516 Northampton St., Easton, Pa.
- Wells-Gardner & Co., 2701 N. Kildare Ave., Chicago, Ill.
- Weltronic Co., 19500 West 8 Mile Rd., Detroit 19, Mich.
- West Coast Electronics Co., 1601 S. Burlington St., Los Angeles 6, Calif.
- West Virginia Pulp & Paper Co., Pulp Products Dept., 230 Park Ave., New York 17, N. Y.
- Western Brass Mills, Div. of Olin Industries, E. Alton, Ill.
- Western Cable Battery Co., Inc., 395 Sibley St., St. Paul, Minn.
- Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.
- Western Felt Works, 4029 Ogden Ave., Chicago, Ill.
- Western Insulated Wire Co., 1001 E. 62nd St., Los Angeles 1, Calif.
- Western Lithograph Co., E-Z Code Division, 600 East Second St., Los Angeles 54, Calif.
- Western Sound & Electric Labs, Inc., 808 S. Fifth St., Milwaukee 4, Wisc.
- Western Union Telegraph Co., 60 Hudson St., New York 13, N. Y.
- Westfield Metal Products Co., Inc., Westfield, Mass.
- Westinghouse Electric Corp., Bloomfield Lamp Div., Bloomfield, N. J.
- Westinghouse Electric Corp., Electronic Tube Sales Dept., Bloomfield, N. J.
- Westinghouse Electric Corp., Industrial Electronics Div., Baltimore, Md.
- Westinghouse Electric Corp., Meter Division, Newark, N. J.
- Westinghouse Electric Corp., Micarta Dept., Trafford, Pa.
- Westinghouse Electric Corp., Motor Div., Buffalo, N. Y.
- Westinghouse Electric Corp., Receiver Division, Sunbury, Pa.
- Westinghouse Electric Corp., Switchgear & Control Div., East Pittsburgh, Pa.
- Westinghouse Electric Corp., Transformer Div., Sharon, Pa.
- Westline Crystal Co., 10860 Santa Monica Blvd., Los Angeles 25, Calif.
- Weston Electrical Instrument Co., 618 Frelinghuysen Ave., Newark 5, N. J.
- Weymouth Instrument Co., 1440 Commercial St., East Weymouth, Mass.
- Wheaton Co., Industrial Div., Millville, N. J.
- Wheelco Instruments Co., 647 W. Harrison St., Chicago 7, Ill.
- Wheeler Insulated Wire Co. Inc., Bridgeport 4, Conn.
- Wheeler Laboratories, Inc., 259-09 Northern Blvd., Great Neck, N. Y.
- Whe-Gro Co., 315-17-19 N. Cardinal Ave., St. Louis 3, Mo.
- Whistler & Sons, Inc., S. B., 752 Military Rd., Buffalo 17, N. Y.
- Whitaker Cable Corp., Kansas City 16, Mo.
- White Dental Mfg. Co., S. S., Industrial Div., 10 E. 40th St., New York, N. Y.
- White Electric Cable Co., Maple Ave., Haverstraw, N. Y.
- White-Rodgers Electric Co., 1209 Cass Ave., St. Louis 6, Mo.
- White Supply Co., 4347 Duncan Ave., St. Louis, Mo.
- Whitehead Stamping Co., 1691 W. Lafayette Blvd., Detroit 16, Mich.
- Whitney Blake Co., New Haven, Conn.
- Wickwire Spencer Steel Div. Colorado Fuel and Iron Corp., 361 Delaware Ave., Buffalo 2, N. Y.
- Wiedemann Machine Co., 1815 W. Sedgley Ave., Philadelphia 32, Pa.
- Wilcox Electric Co., 1400 Chestnut St., Kansas City, Mo.
- Wilcox-Gay Corp., Charlotte, Mich.
- Wildberg Bros. Smelting & Refining Co., 742 Market St., San Francisco 2, Calif.
- Wilkor Products Inc., 3835 W. 150th St., Cleveland 11, Ohio
- Willard Storage Battery Co., 246 E. 131st St., Cleveland 1, Ohio
- Willard's, Hampden, Mass.
- Willson Plastics Div., Willson Magazine Camera Co., 6022 Media St., Philadelphia, Pa.
- Wilmington Fibre Specialty Co., P. O. Drawer 1023, Wilmington 99, Del.
- Wilmotte Mfg. Co., 1713 Kalamora Rd. N-W, Washington 9, D. C.
- Wilson & Co., G. C., 2 N. Passaic Ave., Chatham, N. J.
- Wilson Co., H. A., 97 Chestnut St., Newark, N. J.
- Wincharger Corp., 7th & Division Sts., Sioux City, Iowa
- Winchester Co., The, 6 East 46th St., New York 17, N. Y.
- Wind Turbine Co., Tower & Antenna Div., E. Market St. & Penna. R. R., West Chester, Pa.
- Winslow Co., The, 9 Liberty St., Newark 5, N. J.
- WIRErecorder Corp., 1807 Stroh Bldg., Detroit 26, Mich.
- Wirt Co., 5221 Greene St., Philadelphia, Pa.
- Wisconsin Porcelain Co., Sun Prairies, Wisc.
- Wood Electric Co., Inc., C. D., 826 Broadway, New York 3, N. Y.
- Woodcraft Corp., 501 Salzburg Ave., Bay City, Mich.
- Worcester Pressed Steel Co., 100 Barber Ave., Worcester, Mass.
- Workshop Associates, 66 Needham St., Newton Highlands 61, Mass.
- Worner Electronic Devices, Rankin, Ill.
- Wright & Sons Co., William E., West Warren, Mass.
- Wrought Washer Mfg. Co., 2100 S. Bay St., Milwaukee 7, Wisc.
- Wynn Mfg. Div., Hudson Supply Co., 401 N. 27th St., Richmond, Va.
- Wyse Laboratories, 211 S. Ludlow St., Dayton 2, Ohio
- Nervac Instrument Co., 101 Vine St., Hartford 5, Conn.
- Yardeny Laboratories Inc., 105 Chambers St., New York 7, N. Y.
- Yates Engineering Services, 2 Hampton Rd., Cranford, N. J.
- York Materials Co., Inc., 150 Nassau St., New York 7, N. Y.
- Zapon Div., Atlas Powder Co., Ludlow St., Stamford, Conn.
- Zenith Electric Co., 152 W. Walton St., Chicago 10, Ill.
- Zenith Optical Co., Div. Polan Industries, Huntington, West Virginia
- Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Ill.
- Zephyr Products Corp., 160 E. 116th St., New York 29, N. Y.
- Zernickow Co., O., 15 Park Row, New York 7, N. Y.
- Zetka Labs, Inc., 198-10-12 32nd Ave., Bay-side, N. Y.
- Zierick Mfg. Corp., 385 Gerard Ave., New York, N. Y.
- Zophar Mills Inc., 112-130 26th St., Brooklyn 23, N. Y.

# RCA QUICK-REFERENCE CHART MINIATURE TUBES

RCA Miniatures make practical, compact, lightweight designs. Often, they provide superior performance at less cost.



| Type No. | Class                               | Performance Equivalent | Applications  |
|----------|-------------------------------------|------------------------|---|
| OA2      | Voltage Regulator                   | OD3/VRI50              | Cold-Cathode Glow-Discharge Type.   |
| IA3      | H-F Diode                           | —                      | Heater-Cathode type. Discriminator for battery-operated FM receivers; portable h-f measuring equipment. Resonant frequency about 1000 Mc.   |
| 1L4      | R-F Amplifier Pentode               | 1U4                    | Filamentary type. Sharp cutoff characteristic. For battery-operated portables.  |
| 1R5      | Pentagrid Converter                 | —                      | Filamentary type. Mixer tube and oscillator in superheterodyne circuits. For portable receivers.  |
| 1S4      | Power Amplifier Pentode             | 3S4                    | Filamentary type. For battery receivers.  |
| 1S5      | Diode-Pentode                       | —                      | Filamentary type. High voltage gain. For broadcast receivers.   |
| 1T4      | Super-Control R-F Amplifier Pentode | —                      | R-F or i-f amplifier in battery-operated receivers.   |
| 1U4      | R-F Amplifier Pentode               | 1N5-GT                 | Sharp cutoff characteristic. For low-drain battery-operated receivers.  |
| 2D21     | Thyratron Tetrode                   | 2050                   | Relay tube and grid-controlled rectifier. Will operate directly from high-vacuum phototube.   |
| 3A4      | Power Amplifier Pentode             | —                      | Filamentary type. A-F output of 700 milliwatts, or r-f output of 1.2 watts at 10 Mc.  |
| 3A5      | H-F Twin Triode                     | —                      | Filamentary type. For use in h-f applications. Class C output about 2 watts at 40 Mc.   |
| 3Q4      | Power Amplifier Pentode             | 3Q5-GT                 | Filamentary type. For 3-way battery portable receivers.   |
| 3S4      | Power Amplifier Pentode             | 1S4                    | Filamentary type. For battery portable equipment.   |
| 3V4      | Power Amplifier Pentode             | 3Q4                    | Filamentary type. Similar to 3Q4, but has preferable biasing arrangement. For 3-way battery portable receivers.                             |
| 6AG5     | R-F Amplifier Pentode               | —                      | Sharp cutoff characteristic. High transconductance and low input and output capacitance. I-F video amplifier or r-f amplifier up to 400 Mc. |
| 6AK5     | R-F Amplifier Pentode               | —                      | Sharp cutoff characteristic. High transconductance, low input and output capacitance, and low input conductance at high frequencies.        |
| 6AK6     | Power Amplifier Pentode             | 6G6-G                  | Singly or in push-pull in output stage. A-F power output 1.1 watts per tube.  |
| 6AL5     | H-F Twin Diode                      | —                      | High permeance makes it particularly useful as an F-M detector.   |
| 6AQ5     | Beam Power Amplifier                | 6V6                    | For automobile and ac-operated receivers.   |
| 6AQ6     | Duplex-Diode High-Mu Triode         | 6S27                   | Combined detector, a-f amplifier, and avc tube.   |
| 6AT6     | Duplex-Diode High-Mu Triode         | 6SQ7                   | Combined detector, amplifier, and avc tube.   |
| 6AU6     | R-F Amplifier Pentode               | 6SH7                   | Sharp cutoff characteristic. High transconductance and low grid-plate capacitance. Limiter for FM receivers.                                |
| 6BA6     | R-F Amplifier Pentode               | 6SG7                   | Remote cutoff characteristic. High transconductance and low grid-plate capacitance. For r-f and i-f stages of FM and AM receivers.          |
| 6BE6     | Pentagrid Converter                 | 6SA7                   | Mixer tube and oscillator in superheterodyne circuits. For FM and AM receivers.   |

| Type No. | Class                       | Performance Equivalent | Applications   |
|----------|-----------------------------|------------------------|--|
| 6BF6     | Duplex-Diode Triode         | 6SR7                   | For use as a combined detector, amplifier, and avc tube. For auto and ac-operated receivers.                                 |
| 6C4      | V-H-F Power Triode          | —                      | Class C amplifier and oscillator. Class C output about 5.5 watts at moderate frequencies, 2.5 watts at 150 Mc.               |
| 6J4      | U-H-F Amplifier Triode      | —                      | Primarily for use as grounded-grid amplifier up to 500 Mc. Transconductance 12000 micromhos, mu 55, low capacitances.        |
| 6J6      | Twin Triode                 | —                      | Particularly useful as mixer or oscillator up to 600 Mc.   |
| 6X4      | Full-Wave Rectifier         | 6X5                    | High-vacuum type. For use in auto and ac-operated receivers.   |
| 12AT6    | Duplex-Diode High-Mu Triode | 12SQ7                  | For use in compact ac/dc receivers.  |
| 12AU6    | R-F Amplifier Pentode       | 12SH7                  | Sharp cutoff characteristic. Limiter tube for ac/dc FM receivers.  |
| 12AU7    | Twin Triode Amplifier       | 12SN7-GT               | Separate terminals for each cathode, and mid-tapped heater for 6.3- or 12.6-volt operation. Mixer oscillator, multivibrator. |
| 12AW6    | R-F Amplifier Pentode       | 6AG5                   | Sharp cutoff characteristic. R-F amplifier for ac/dc FM receivers.   |
| 12BA6    | R-F Amplifier Pentode       | 12SG7                  | Remote cutoff characteristic. For use in compact ac/dc receivers.  |
| 12BE6    | Pentagrid Converter         | 12SA7                  | For use in compact ac/dc receivers.  |
| 26A6     | R-F Amplifier Pentode       | 12BA6                  | Remote cutoff characteristic. Features high transconductance. For 12-cell storage-battery operation.                         |
| 26C6     | Duplex-Diode Triode         | 12AT6                  | Combined detector, amplifier, and avc tube. For 12-cell storage-battery operation.   |
| 26D6     | Pentagrid Converter         | 12BE6                  | Mixer tube and oscillator. For 12-cell storage-battery operation.  |
| 35B5     | Beam Power Amplifier        | 35L6-GT                | High power sensitivity and high efficiency for use in output stages of ac/dc receivers.                                      |
| 35W4     | Half-Wave Rectifier         | 35Z5-GT                | High-vacuum type. Heater tap for panel lamp. For use in compact ac/dc receivers.   |
| 45Z3     | Half-Wave Rectifier         | —                      | High-vacuum type. Heater rating, 0.075 ampere at 45 volts. For 3-way battery portable receivers.                             |
| 50B5     | Beam-Power Amplifier        | 50L6-GT                | For output use in ac/dc receivers. Maximum-signal power output, 1.9 watts.   |
| 117Z3    | Half-Wave Rectifier         | —                      | High-vacuum type. For supplying rectified power to 3-way battery portable equipment.   |
| 1654     | Half-Wave Rectifier         | —                      | High-vacuum, filamentary type. Maximum peak inverse rating 7000 volts, filament current 0.05 ampere.                         |
| 9001     | Sharp Cutoff U-H-F Pentode  | —                      | R-F amplifier or detector in U-H-F service.  |
| 9002     | U-H-F Triode                | —                      | U-H-F detector and amplifier. May be used as oscillator in superheterodyne receivers at frequencies up to 500 Mc.            |
| 9003     | Remote Cutoff U-H-F Pentode | —                      | Useful as a mixer or as an r-f or i-f amplifier in U-H-F service.  |
| 9006     | U-H-F Diode                 | —                      | or U-H-F service as rectifier, detector, or measuring device. Resonant frequency, about 700 Mc.                              |

For additional technical data on these types, refer to the RCA HB-3 Handbook, or write RCA, Commercial Engineering, Section R-41F2, Harrison, N.J.

THE FOUNTAINHEAD OF MODERN TUBE DEVELOPMENT IS RCA



**TUBE DEPARTMENT**

**RADIO CORPORATION of AMERICA**

**HARRISON, N. J.**

# 12

*Reasons Why*

it pays  
equipment  
manufacturers  
to deal with  
**RCA**

RCA LABORATORIES  
PRINCETON, N. J.



THE FOUNTAINHEAD OF MODERN TUBE DEVELOPMENT IS RCA

#### **RCA TUBE APPLICATION ENGINEERING SERVICE —**

Twelve field engineering specialists devote their time *exclusively* to the design problems of equipment manufacturers. They're ready to pitch in and help you at any time.

#### **RCA TUBE APPLICATION ENGINEERING LABORATORIES —**

RCA maintains tube application laboratories at Harrison, Lancaster and Chicago. The services of these laboratories are at the disposal of all RCA tube customers.

#### **RCA CIRCUIT INVESTIGATIONS —**

RCA carries on independent research in circuit design for the exclusive benefit of its customers. Engineering reports are provided as a free service.

#### **RCA TUBE DEVELOPMENT —**

RCA works years ahead in tube design—anticipates future requirements. That's why you get the types of tubes you want *when* you want them.

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RCA tubes are manufactured in ultramodern plants equipped with RCA-designed, high-speed precision machinery—your assurance of uniform, dependable quality tubes of whatever type, in any quantity.

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Quality controls begin with the raw material and are followed through in every successive step of manufacture and assembly to the final tube. That's why RCA tubes are consistently good.

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RCA's Tube Department maintains bulk tube stocks in three warehouses strategically located in Jersey City, Chicago and Los Angeles for quick service.

#### **RCA PRICING —**

Mass-production techniques and the RCA "Preferred-Type Tube Plan" have consistently operated to reduce manufacturing costs—which means lower prices to you.

#### **RCA ENGINEERING LEADERSHIP —**

The vast resources of experience and ability that account for RCA's engineering leadership, are of direct benefit to RCA customers—a final reason why it pays to deal with RCA.



**TUBE DEPARTMENT**

**RADIO CORPORATION of AMERICA**

**HARRISON, N. J.**