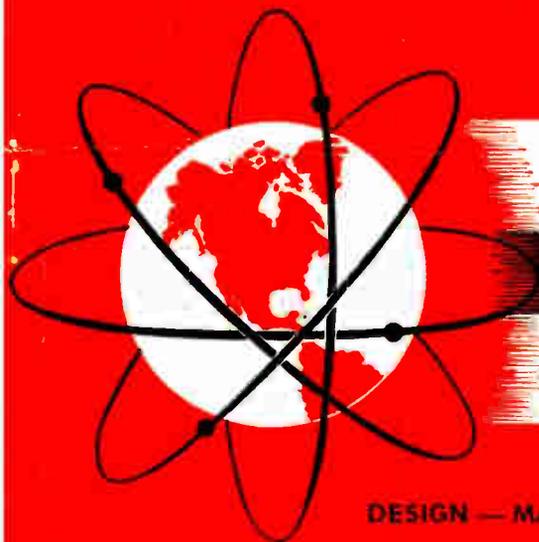


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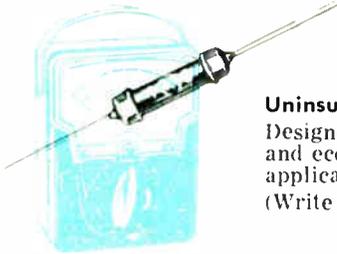
IRC Precision Film Resistors

IRC Precision Film carbon resistors were developed as a result of field requirements beyond the capability of composition types. Extensively used in multi-testers, meter-multipliers, high quality amplifiers, radar, computers and various other types of equipment, these resistors are in the medium price field. They offer long term stability, low noise characteristics, better load life and improved moisture cycling. Tolerances of 1%, 2% and 5% are available in ranges as required. The creation of pure carbon on an organic core, manufactured and handled under critical tolerances and observation insures a quality product for exacting conditions and requirements.

IRC molded deposited and boron carbon resistors offer many advantages over other unmolded precision film resistors and are currently available in production quantities for today's market. Due to the layered construction of moisture impervious material, these resistors offer protection against oxidation of the film and other corrosive gases.

It should be noted the IRC Alkyd used in molding gives off no vapor and exhibits no decomposition. IRC molded deposited carbon and boron carbon resistors offer long term reliability equal to some hermetically sealed versions and at savings of up to 50%.

(IRC also have available resistors with ambient temperature ratings up to 250°C with extremely low temperature co-efficients for defence prototype requirements. Write for information regarding IRC Evaporated Metal Film Hermetically-Sealed Resistors.)



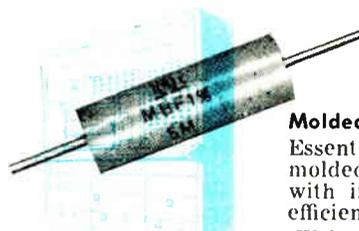
Uninsulated Deposited Carbon
Designed to combine accuracy and economy for close tolerance applications.
(Write for Bulletin B4B).



Molded Deposited Carbon
An economical unit that can take rough handling. Environmental performance is better than unmolded types. Inherent properties such as temperature co-efficient remain the same.
(Write for Bulletin B9A).



Uninsulated Boron Carbon
Essentially the same as the un-insulated Deposited Carbon but possesses a lower temperature co-efficient and usually less range coverage.
(Write for Bulletin B6A).



Molded Boron Carbon
Essentially the same as the molded Deposited Carbon but with improved temperature co-efficient and less range coverage.
(Write for Bulletin B8B).

Bulletins listed above have complete characteristic specifications, charts and illustrations.
ALSO AVAILABLE — A complete 8-page technical article by Nyul and Wellard on Precision Film Resistors.

IRC PRECISION FILM RESISTORS

IRC Type	JAN or MIL Equivalent	Canad. Spec. JCNAAF-R-27	Rated Wattage	Standard Tolerance %	Temp. Rise at Rated Load °C.	Max. Operating Temp. °C.	OHMIC VALUES AVAILABLE			DIMENSION IN INCHES	
							Min.	Max. (JAN or MIL)	Max. (Commercial)	Length	O.D. or Width
BORON CARBON											
BOC	RN-20		1/2	1	75	120	10	.50 meg.	.51 meg.	9/16	5/32
BOF	RN-25		1	1	80	120	20	2 meg.	2.0 meg.	15/16	19/64
BOH	RN-30		2	1	95	120	60	5 meg.	5.0 meg.	2 1/16	19/64
MBA (molded)	RN-60M		1/8	1	18	150	50	.10 meg.	.25 meg.	13/32	.130
MBB (molded)	RN-65M		1/4	1	30	150	20	.10 meg.	.25 meg.	19/32	.203
MBC (molded)	RN-70M		1/2	1	50	150	10	.10 meg.	.51 meg.	23/32	.261
MBF (molded)	RN-75M		1	1	47	150	20	.237 meg.	2 meg.	1 7/64	.395
MBH (molded)	RN-80M		2	1	63	150	30	1.0 meg.	5 meg.	2 15/64	.395
DEPOSITED CARBON											
DCC	RN-20	CRN-02	1/2	1	75	120	50	2 meg.	25. meg.	9/16	5/32
DCF	RN-25	CRN-03	1	1	80	120	100	4.99 meg.	50. meg.	15/16	19/64
DCH	RN-30	CRN-04	2	1	95	120	300	10 meg.	100. meg.	2 1/16	19/64
MDA (molded)	RN-60		1/8	1	18	150	50	1.0 meg.	1.0 meg.	13/32	.130
MDB (molded)	RN-65		1/4	1	30	150	20	2.0 meg.	1.0 meg.	19/32	.203
MDC (molded)	RN-70		1/2	1	50	150	10	5.0 meg.	25. meg.	23/32	.261
MDF (molded)	RN-75		1	1	47	150	10	10.00 meg.	50. meg.	1 7/64	.395
MDH (molded)	RN-80		2	1	63	150	15	20.0 meg.	100. meg.	2 15/64	.395



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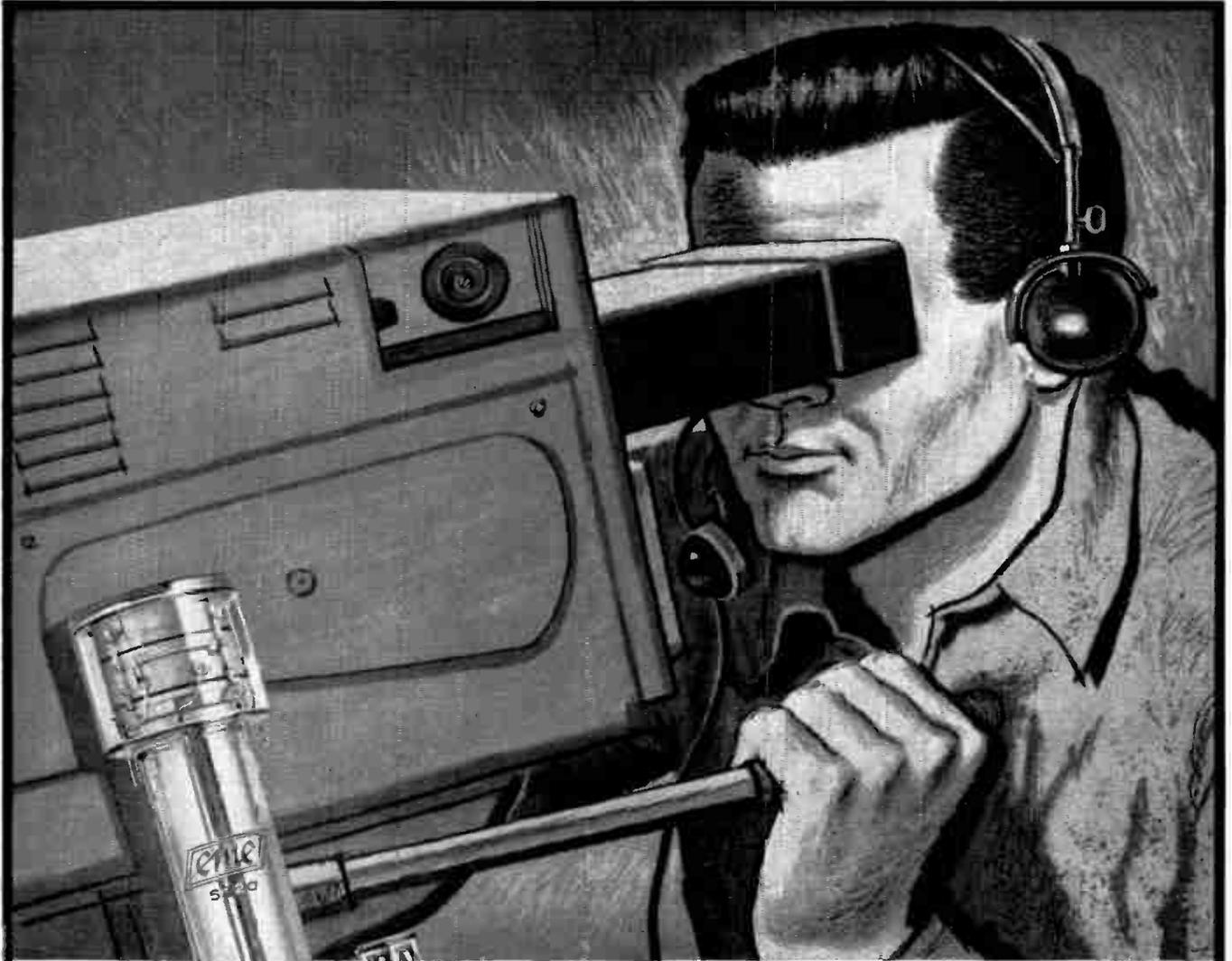
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TYPE NO.	DESCRIPTION
P807	3" Image Orthicon
5820	3" Image Orthicon
P811	4½" Image Orthicon
6198	Vidicon for Industrial use
6326	Vidicon for film pick-up

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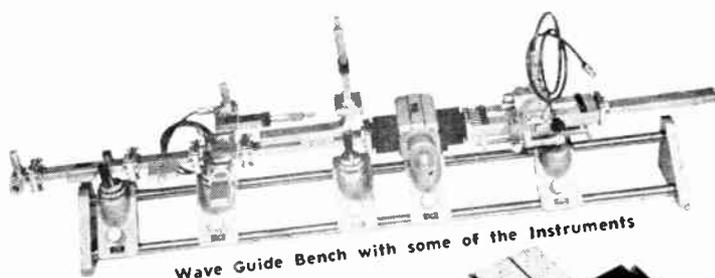
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COSSOR-SANDERS

PRECISION MICROWAVE TEST EQUIPMENT

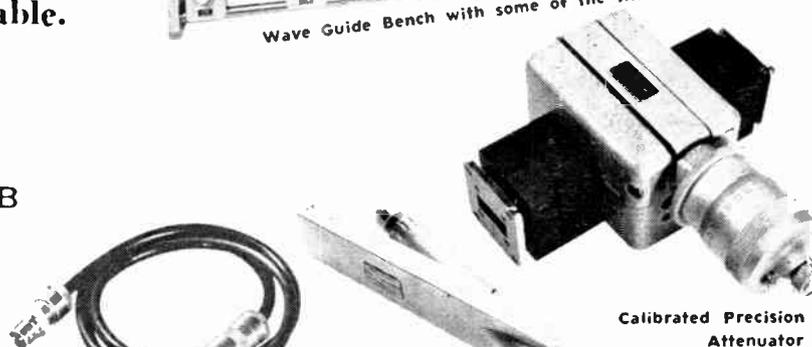
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3-Centimeter Stock List

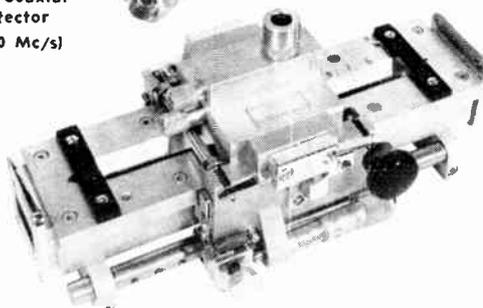
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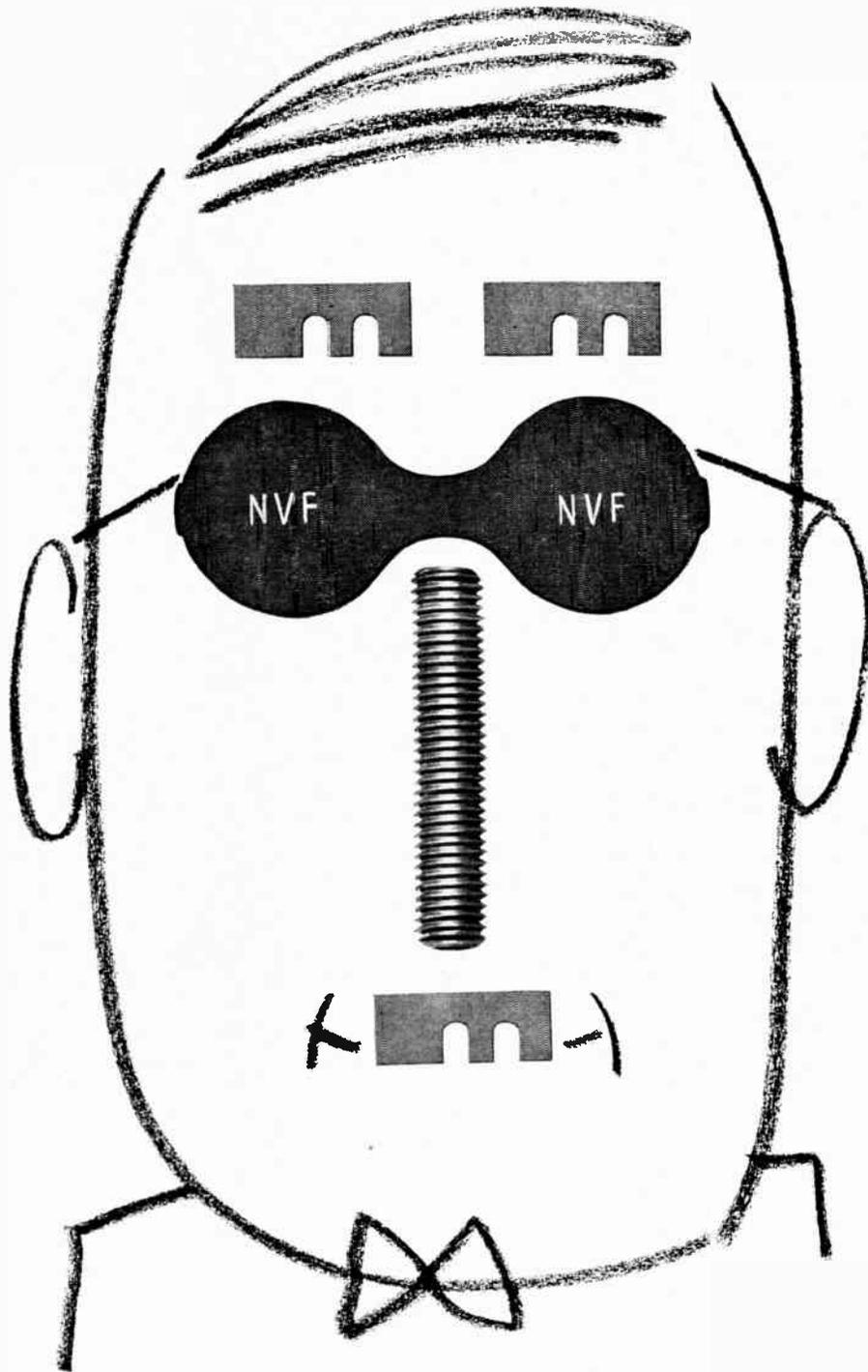
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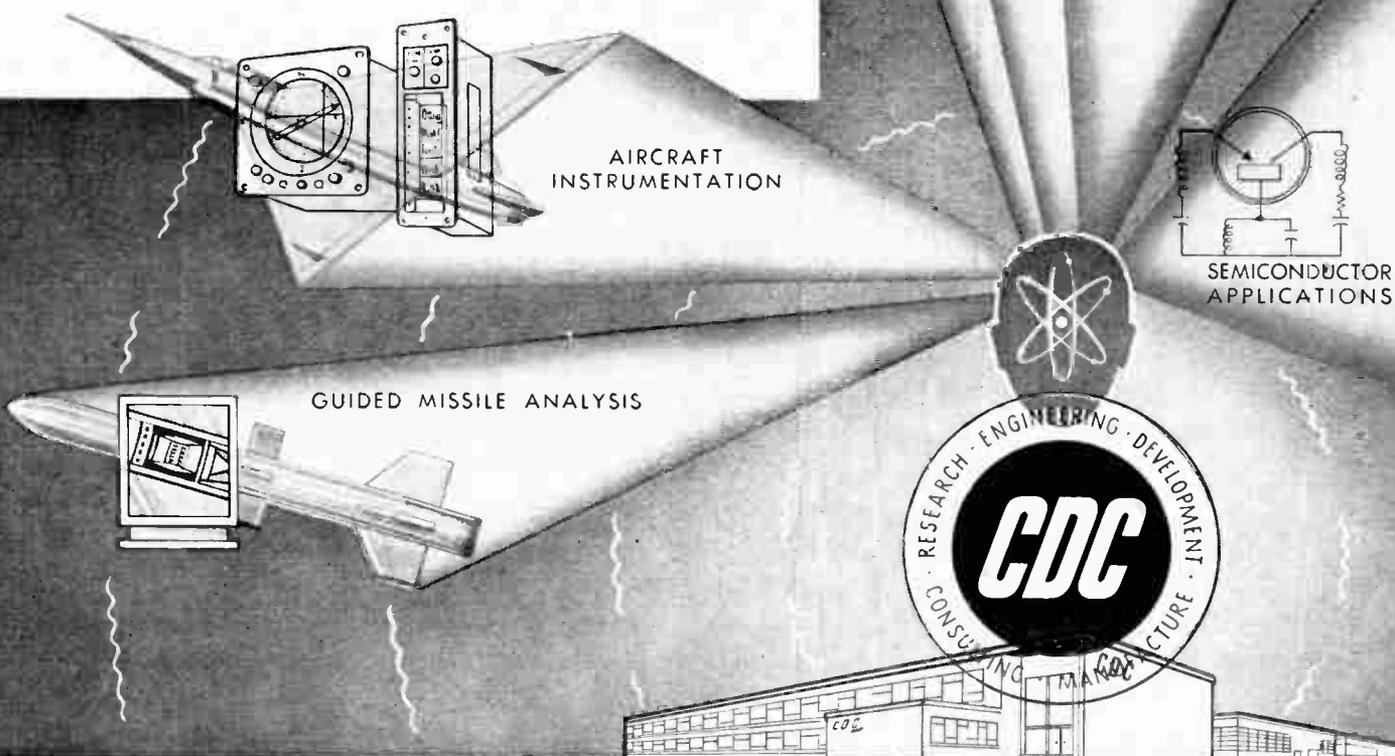
NEW AGREEMENT WIDENS SCOPE of CDC Activities

A minority interest in CDC has been acquired by Bendix Aviation Corporation through its Canadian subsidiary, Bendix-Eclipse of Canada Limited.

The recently concluded agreement includes a sales and licensing arrangement between CDC and Bendix in which CDC will handle a large group of Bendix products in the Electronic and missile component areas. A close working arrangement is already under development between CDC and the 24 divisions of Bendix for a continuous exchange of engineering developments.

Bendix products to be handled in Canada by CDC include electronic computers, missile components of all kinds, telemetering, radio communications and navigation equipment, radio mobile equipment, radar and several new Bendix industrial electronics products such as Lumicon, Electro-Span, supervisory control and telemetering systems, dosimeters and meteorological equipment.

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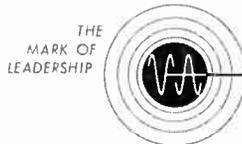
the delicate touch . . . is repeated hundreds
of times in many different ways to build a rugged Varian klystron cathode.

*In airborne use, the cathode must operate with complete reliability . . .
withstand constant shock and vibration without malfunction or failure.*

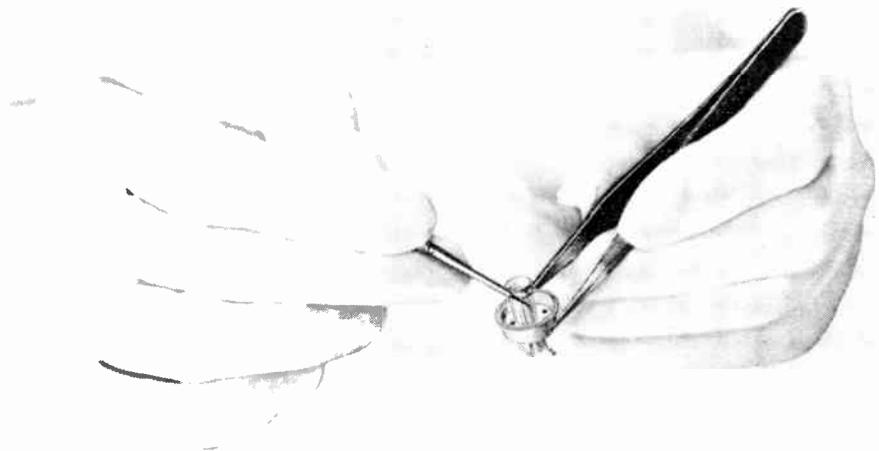
*It takes a delicate touch in the use of intricate fabrication techniques to build
small yet rugged cathodes. For example, the tiny cathode button — often
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*To assure uniform emission of electrons . . . vital factor in reliable performance.
Optimum structural rigidity is achieved by skillful metallic bonding of each
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copper-gold alloy. Pressure-ventilated assembly benches are used to
keep air superclean . . . prevent contamination from microscopic particles
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*Painstaking techniques like these exemplify Varian's manufacture of
more than 60 different klystrons for every application.*



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FOR COMPLETE INFORMATION... write for the Varian Klystron Catalog... address Applications Engineering Department

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Eimac ceramic tubes open up new horizons

The future of many electronic applications depends on the ability of the electron tube to overcome extreme shock and temperature barriers. Anticipating this need, Eitel-McCullough has extended its leadership in transmitting tubes to the development and production of ceramic tubes in the negative grid, klystron, rectifier, and receiving tube field.

Aside from superior immunity to shock damage, ceramic permits new design concepts and optimum production techniques to be employed. The result is smaller, more reliable tubes.

In its new ceramic line, Eimac is enabling the electron tube to overcome old barriers

and establish new goals of performance and dependability.

What is your goal beyond present day horizons? With scientific certainty, you may look where you are going. But only dependable tools will enable you to go where you are looking. Make sure you have such tools. Check carefully the incomparable capabilities of performance-proved Eimac ceramic tubes.

For further information on Eimac's full line of electronic tubes, contact our Application Engineering Department and ask for the new Quick Reference Catalog.



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3KM3000LA	3K20,000LK	3K50,000LK
		3K50,000LQ
		4K50,000LQ

CERAMIC NEGATIVE GRID TUBES AND RECTIFIER

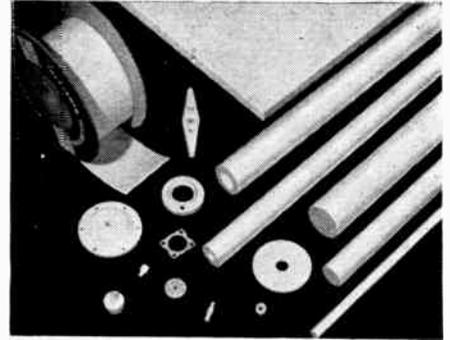
Triode	Tetrode	Rectifier
2C39B	4CX250K	2CL40A
	4CX300A	
	4X5000A	

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Polypenco Teflon has proved its outstanding versatility in electronics. Teflon shapes (rod, tubing, slab) are machined to close tolerances on standard metalworking tools . . . have uniform controlled density and maximum dimensional stability. Also available in spaghetti tubing and tape for direct component application. *DuPont Trademark



Polypenco Teflon Shapes

Outstanding Properties

Dielectric Constant.....2.0	Temperature Range...-110° F. to +500° F.
Power Factor.....0.0005	Water Absorption.....nil
Dielectric Strength, volts/mil.....400-500	Chemical Resistance.....excellent
Surface Resistivity (100% R.H.) megohms.....3.6 x 10 ⁶	

Teflon Stock Sizes

Extruded Rod Diameter (in.)	Molded Rod Diameter (in.)	Beading Diameter (in.)	Extruded Tubing Outside Diameter (in.)	Tape Gauge (in.)	Slab Thickness (in.)	Spaghetti Tubing AWG size	Molded Tubing Outside Diameter (in.)
.125	2.250	.030	.500	.002	.1250	# 26	1.500
.187	2.500	.046	.625	.003	.1875	24	1.750
.250	2.750	.064	.750	.004	.2500	22	1.875
.277	3.000	.075	.875	.005	.5000	20	2.000
.282	3.250	.093	1.000	.010	.7500	19	2.250
.286	3.500	.100	1.125	.015	1.0000	18	2.500
.300	3.750	.125	1.250	.020		17	2.750
.312	4.000	.140	1.375	.025		16	3.000
.375	4.250	.150	1.500	.031		15	3.250
.386	5.000	.187	1.625	.035		14	3.500
.400			1.750	.040		13	3.750
.437			1.875	.050		12	4.000
.450			2.000	.062		11	4.250
.500				.093		10	4.500
.545				.125		9	4.750
.562						8	5.000
.625							5.250
.750							5.500
.875							6.000
1.000							6.250
1.125							6.500
1.250							7.000
1.375							7.250
1.500							7.500
1.625							7.750
1.750							8.000
1.875							
2.000							

Extruded Tubing—Various wall thicknesses available from 1/8" on smaller sizes to 1/2" on larger sizes
 Tape—.002" to .005" thick, 1/2" to 12" wide; .010" to .125" thick, 1" to 12" wide
 Slab—12" x 12", 24" x 24" and 48" x 48"
 Spaghetti Tubing—lengths of 100, 200, 500, 1000 feet on reels
 Molded Tubing—Various wall thicknesses available from 1/4" on smaller sizes to 3/4" on larger sizes

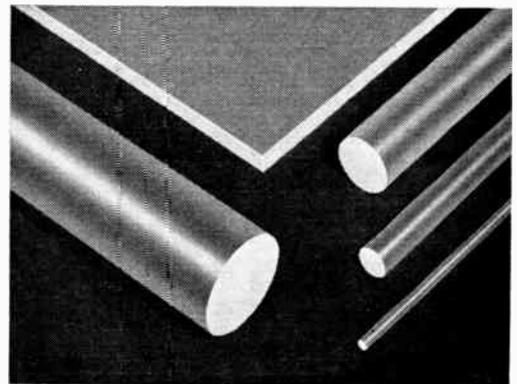
POLYPENCO Q-200.5

Polypenco Q-200.5 (cross-linked polystyrene) is an excellent machinable dielectric for use in RF and UHF installations. Q-200.5 is rigid and form-stable, has low deformation under load combined with low power factor, and a low dissipation factor of 0.0002 over nearly entire frequency range. Use assures maximum performance at minimum cost.

Q-200.5 Stock Sizes

Rod Diameter (in.)				Plate Thickness (in.)	
.093	.304	.750	2.500	.031	.250
.125	.312	.875	3.000	.047	.375
.156	.375	1.000	3.500	.063	.500
.187	.400	1.250	4.000	.098	
.250	.437	1.500		.125	
.279	.500	1.750		.188	
.284	.562	2.000			
.300	.625	2.250			

Plate—Sizes, 12" x 6", 12" x 12", 12" x 24", and 24" x 24"



Polypenco Q-200.5



For additional information . . . price lists . . . write:
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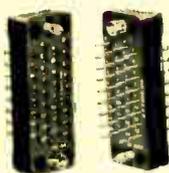
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SERIES MI (miniature)

7, 12 (8-4), 14,
18, 20, 21, 26, 34,
41, 50, 75 contacts



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TWICE THE
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41, 50, 75 contacts.



SERIES SMI-SL
(subminiature screw lock)
7, 11, 14, 20, 26, 34 contacts. Also
available, SMI rack and panel
series.



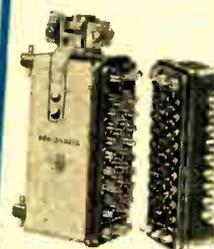
SERIES MH
(miniature hexagonal)
4, 5, 7, 9 contacts.

POWER



SERIES 980 (heavy duty)

12, 18, 24, 34
contacts. Solder
type or solder-
less (SDL)
taper-pin termi-
nals.



SERIES 980-SL (heavy duty double- lead screw-lock)

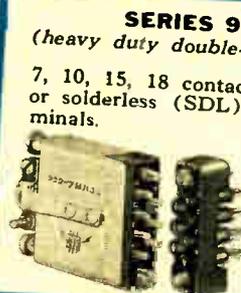
12, 18, 24, 34
contacts

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DOUBLE
LEAD!**



SERIES 990 (heavy duty)

7, 10, 15, 18
long or short
(S) contacts
available.
Solder type or
solderless
(SDL) taper-
pin terminals.



SERIES 990-SL (heavy duty double-lead screwlock)

7, 10, 15, 18 contacts. Solder type
or solderless (SDL) taper pin ter-
minals.

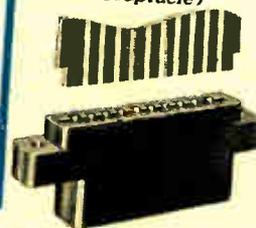
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PRINTED CIRCUIT



SERIES UPCC
(printed card connector)
7, 11, 15, 19, 23 contacts for 1/16,
1/8 and 1/4 cards.

SERIES UPCR (printed card receptacle)



6, 10, 15, 18,
22 contacts.
Single row for
1/16 cards —
wire solder.
Double row for
1/16 & 3/32
cards — wire
solder, wire-
wrap, taper
pin, or taper
tab terminals.

SPECIAL FEATURES: Side or rear cable entrance hoods available. Alkyd or Melamine molding compounds.

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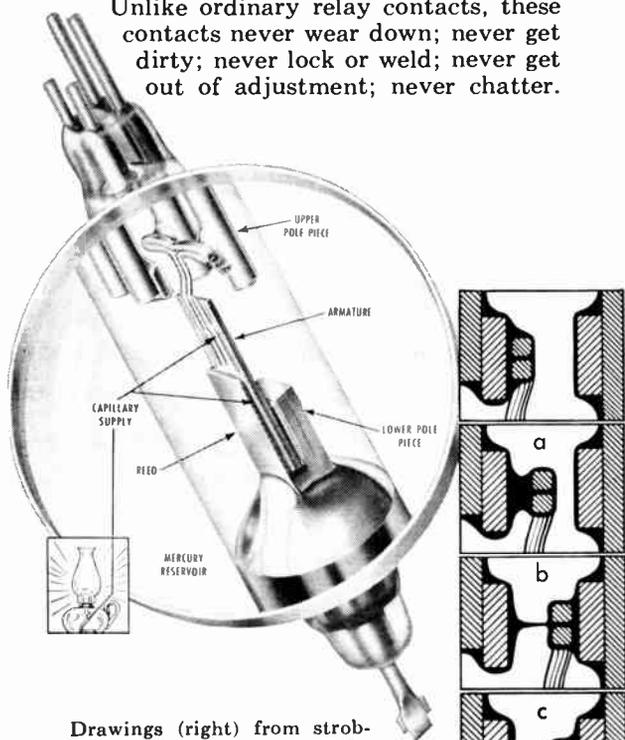
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Contacts of CLARE Mercury-Wetted Contact Relays are constantly renewed. By capillary action, like that of a lamp wick, a new film of mercury coats each contact with every make and break.

The magnetic switch is hermetically sealed in a high-pressure hydrogen atmosphere in a glass capsule. Surrounded by the operating coil, the capsule is enclosed in a vacuum-tube-type steel envelope.

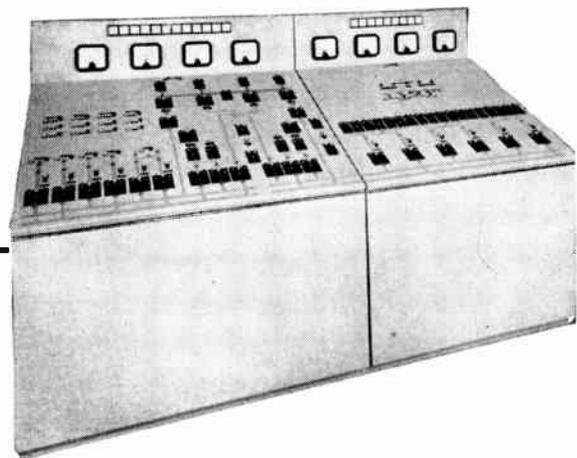
Unlike ordinary relay contacts, these contacts never wear down; never get dirty; never lock or weld; never get out of adjustment; never chatter.



Drawings (right) from stroboscopic photographs, show the cycle: (a) Filament of mercury forms between the contacts as they separate. (b) This becomes narrower in cross section and (c) finally parts at two points, allowing a globule of mercury to fall out. (d) The momentary bridging of the parting contacts—and the extremely fast break which ends it—minimizes the arc and adds greatly to contact load capacity. Contact closure between the two liquid surfaces bridges any mechanical chatter and prevents any chatter from appearing in the electrical circuit.

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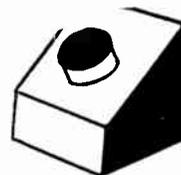
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MEASUREMENT
AND
CONTROL ENGINEERS

For further data on advertised products use page 181.

AUTOMATION IS THE PUSH-BUTTON

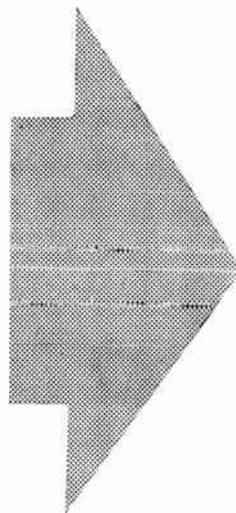


TO REPLACE MANPOWER



Are you one of the
skilled technicians for
which the industry quotes:

*"There is a crying
need for properly
trained technicians"*



or will you
be doing
the crying



The Annual Report about Automation illustrates that the payroll for 25,000 employees can be done in less than one single hour by one machine, dispensing with any labour:

WHERE WILL YOU BE IF YOU DON'T IMPROVE YOUR SKILL?

THE R.E.T.S. COURSE CONSISTS OF RADIO, BASIC ELECTRONICS AND TELEVISION

BLACK AND WHITE TELEVISION COURSE

50 Weeks — one night per week with home study

COLOUR TELEVISION COURSE

12 Weeks — one night per week with home study. Required level: successful completion of Black and White Course or Equivalent.

This is NOT a correspondence course

RADIO ELECTRONIC TELEVISION SCHOOLS

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FROM COAST TO COAST

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CONSTANT RESEARCH AND PRECISION MANUFACTURE FOR BETTER COMMUNICATIONS



Communication Research Engineering
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- Radio Multiplex Systems
- Multi-Channel Tone Systems
- Twinplex Equipment
- Frequency Shift Keyers
- Regenerative Repeaters
- Diversity Receivers
- Frequency Shift Converters
- Master Oscillators
- Tone Keyers
- Line Amplifiers
- Demodulators
- Tone Filters
- Monitors

PACE SETTERS IN QUALITY COMMUNICATION
EQUIPMENT

NORTHERN RADIO
MANUFACTURING COMPANY LIMITED
1950 BANK STREET, OTTAWA, ONT.
In U.S.A. Northern Radio Company Inc.,
147 West 22nd St., New York 11, N.Y.

The Curtiss-Wright "SNAPPER" NEW CONCEPT... ADVANCED DESIGN IN THERMAL TIME DELAY RELAYS



U. S. Pat. No. 2658975

Designed for high performance and long life, the Curtiss-Wright "SNAPPER" Thermal Time Delay Relay is proving itself in countless applications involving time delay in electrical circuits. Such applications include circuits to provide definite on-off time intervals to delay the application of high voltage until after warm-up period and for over and under voltage protection with simultaneous fault indication.

These relays have single-pole double-throw contact action, high ambient temperature range, freedom from chatter and arcing, and are small in size. The "SNAPPER" thermal time delay relays are factory pre-set from 3 to 90 seconds. They are available in metal envelope, miniature (7 and 9 pin) or octal (8 pin) and in a glass envelope in 9 pin only.

Curtiss-Wright manufactures the High-Low "SNAPPER" Differential Thermostat with high precision characteristics. Write to Thermal Devices for complete data.

Canadian Representative:
Consolidated Electronics
Equipment Company, Ltd.
1156 Yonge St., Toronto, Ont.



POTTER & BRUMFIELD RELAYS



KRP or KCP



SM



FR



BS

- ALL TYPES
- ALL SIZES
- FOR ALL APPLICATIONS

Relays are used to meet the needs of Electrical and Electronic applications. CESCO stocks the complete line of Potter & Brumfield Relays to meet the requirements of the Industry. All types and sizes are available.

FREE CATALOGUE: Write for your FREE copy of Potter & Brumfield catalogue. Our Industrial department will give you further information regarding types and quantity prices available.

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WA. 1-5111

**SOLA CONSTANT
VOLTAGE TRANSFORMER**

**HIGH CAPACITANCE
FILTER SECTION**

**GERMANIUM
RECTIFIER**



DC SOLAVOLT, shown partly disassembled here, has major components identified. It is designed for relay-rack mounting on a standard, 19" frame or for bench use. Removable handles, for convenience when portability for bench use is desired, are available as accessory equipment.

Unique combination of components in adjustable "DC Solavolt" regulated power supply reduces conventional size, weight, and cost

Compact size, low weight, high efficiency, and moderate price distinguish the new "DC Solavolt" from conventionally-designed, regulated, adjustable dc power supplies. These outstanding advantages have been secured by using a unique assembly of components (shown above) that occupy only 7" of height and 12¼" of depth on a standard, 19" relay rack frame.

Along with design simplicity, the "DC Solavolt" provides laboratory standards of performance:

OUTPUT VOLTAGE REGULATED WITHIN $\pm 1\%$ at full load with supply voltage variations up to $\pm 15\%$. (Regulation within $\pm 1.5\%$ at 50% load and lowest voltage setting.)

RIPPLE VOLTAGE HELD WITHIN 0.10% (rms) at full load and nominal input voltage.

An important feature of this adjustable dc power supply is its ability to handle transient or "pulse" loads of up to twice the full load rating of the supply. The "DC Solavolt" has no tubes to replace, requires no "compensating" or "zero" adjustments, and needs no maintenance.

Six stock models provide outputs adjustable in voltage ranges between 5 and 400 volts and load currents up to 7 amperes. Your local electronic distributor now has the "DC Solavolt" in stock. He will be happy to give you further, technical information.

SOLA *Constant Voltage*
DC POWER SUPPLIES



Write for Bulletin DC-245
SOLA ELECTRIC CO.
4633 W. 16th Street
Chicago 50, Illinois

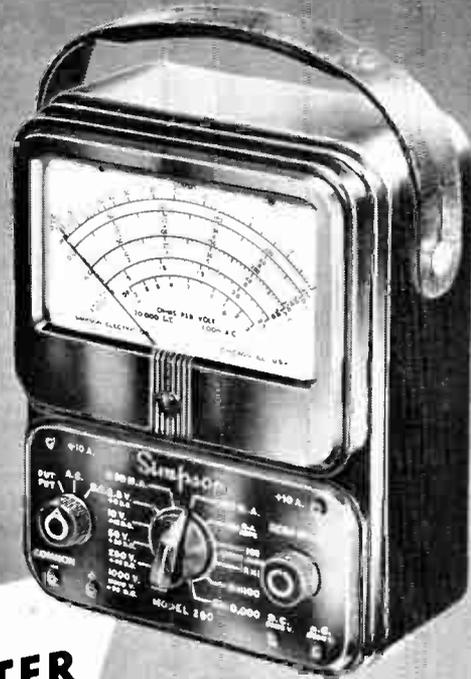
Simpson

Model 260

VOLT-OHM MILLIAMMETER

USE IT FOR:

- TV SETS
- RADIOS
- TRANSMITTERS
- BROADCASTING EQUIPMENT
- HOME APPLIANCES
- TWO-WAY RADIO COMMUNICATIONS SYSTEMS
- PHONE LINES
- AIR CONDITIONING SYSTEMS
- STARTER CONTROLS
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- MOVIE EQUIPMENT
- PANEL INSTRUMENTS
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- CABLES
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**THE BEST MULTI-USE TESTER
ON THE MARKET**

Ranges

20,000 OHMS PER VOLT DC
1,000 OHMS PER VOLT AC
VOLTS, AC AND DC: 2.5, 10, 50, 250, 1,000, 5,000.
OUTPUT: 2.5, 10, 50, 250, 1,000
MILLIAMPERES, DC: 10, 100, 500
MICROAMPERES, DC: 100
AMPERES, DC: 10
DECIBELS (5 RANGES): -12 TO +55 DB
OHMS: 0-2000 (12 OHMS CENTER), 0-200,000 (1,200 OHMS
CENTER), 0-20 MEGOHMS (120,000 OHMS CENTER)

BACH-SIMPSON LIMITED

1255 BRYDGES ST.

LONDON, ONT.

N. U. S. A. SIMPSON ELECTRIC COMPANY, 5200 W. KINZIE ST., CHICAGO 44, ILL.

For further data on advertised products use page 181.

C-R TUBES INSTRUMENTS

electronic tube corporation

1200 E. MERMAID LANE

PHILADELPHIA 18, PA.

CATHODE RAY TUBES



MULTI-GUN TUBES

Pioneered and developed by ETC. 2 to 10 traces. Round or square faces . . . 3" to 12". Electron guns are electrostatic deflection type. Cross talk eliminated by adequate shielding.

SINGLE-GUN TUBES

Built and tested with same care. Standard RETMA and MIL-types as well as "special purpose" tubes. Can be designed to answer your particular radar and instrumentation problems.

DESIGN AND ENGINEERING

Modern, well-equipped plant staffed by highly skilled workers assures dependable manufacture to your special specifications—facilities are open for industry problems as well as military.

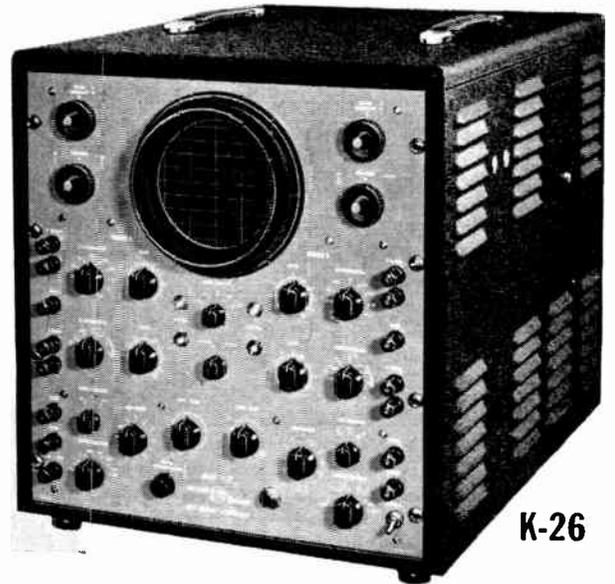


ELECTRONIC TUBE CORPORATION • 1200 E. MERMAID LANE • PHILADELPHIA 18, PA.

MULTI-CHANNEL OSCILLOSCOPES

. . . for which there are no substitutes, are called upon when complete information is required. Convenient for visual observation as well as photographic recording.

AT A
DOWN-TO-EARTH
PRICE



K-26

DUAL CHANNEL

K-26 Handles 90% of applications for 1- or 2-channel scopes. Separate single shaft controls for each channel. Concentric controls for positioning, intensity, focus. Extended sweep range from below 2 sec. to 50,000 cps. Illuminated graticule.

H-21A General purpose, versatile instrument. Sweep circuits 2 cps. to 50 kc/sec. Continuous calibration 0 to 1.5 v. peak to peak. Frequency range, dc to 100 kc, ± 1 db or better.

H-23 For work requiring greater band width and gain. Combines high sensitivity and high gain with h-f response flat within 3 db-dc to 1 mc.

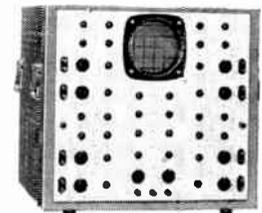
H-25 Applicable to telemetering, radar and associated uses. Direct coupling, wide band width and delayed sweep control. Rise time dc to 0.05 μ sec or better.

SPECIAL INSTRUMENTS—Oscilloscope preamplifiers, custom-built instrumentation and recording cameras a specialty. Write for complete information and quotation on your requirements.

K-215 Dc to 15 mc. High accelerating potential. Spiral band CRT. Sweep 0.1 μ sec/cm to 1 sec./cm.

4-CHANNEL

H-43 For use primarily with continuous film type recording cameras. Each channel individually controlled for focus, intensity, positioning. Frequency range 0 to 200 kc, ± 3 db. Deflection sensitivity better than 0.5 v. dc/in.



H-45 DC amplifiers usable to beyond 300 kc. Available with 1 or more AC amplifiers for higher frequency application. Vertical amplifier 10 mv., rms sensitivity. Individual Z-axis inputs (above).

DO YOU NEED TESTING FACILITIES?



CHARLES MILLS, Section Engineer of The Westinghouse Electronics Environmental and Appraisal Laboratory, shows a scale model of the most complete facility of its kind in Canada . . . now, for the first time, available to every field of Canadian industry both commercial and military.

Westinghouse Opens the Door to New Environmental Test Lab!

WESTINGHOUSE Environmental and Appraisal Laboratory Provides These Facilities:

MECHANICAL

1. *Vibrators*
8 machines
2 to 2,000 cycles per second
50, 250 and 600 lbs. thrust
2. *Shock Machines*
4 units
loads from 0 to 700 lb.
accelerations from 0 to 100 G.
3. *Centrifuges*
2 machines
3 lb. to 180 G.
40 lb. to 60 G.

4. *Hydraulic Tester*
4 outlets @ 3,000 p.s.i.
and 15 G.P.M.

CLIMATIC

1. 160 cu.ft. Tenney Stratosphere Chamber
-100°F. to +200°F.
0 to 95,000 ft. altitude.
2. 7.5 cu.ft. Aminco Humidity Chamber 2'6" x 2'0" x 1'8"
+45°F. to 160°F. with controlled humidity up to 95%

3. 15 cu.ft. Tenney Altitude Chamber for fast climb requirements
0 to 80,000 feet altitude in 7 minutes

Plus Miscellaneous Small Chambers from -65°F. to +550°F.

NOTE:

With Vibration and Hydraulic Equipment, tests can be carried out from -100°F. to +200°F. and 0 to 95,000 feet altitude.

Testing, research, appraisal
— more reasons to

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WESTINGHOUSE
ELECTRONICS**

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CANADIAN WESTINGHOUSE CO. LTD.,
ELECTRONICS DIVISION,
LONGWORTH ROAD, HAMILTON, CANADA

Attention
F. R. Aitken

- Send full information on lab facilities
- Have sales engineer call

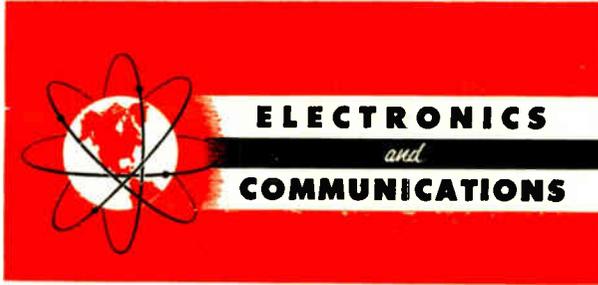
Name

Position

Company

City.....Prov.....

Enjoy television's top Dramatic Show, Westinghouse Studio One, every Monday at 10 o'clock
For further data on advertised products use page 181.



THE ONLY CANADIAN JOURNAL DEVOTED SPECIFICALLY TO THE APPLICATIONS OF COMMUNICATIONS AND ELECTRONICS

DECEMBER • 1956
Vol. 4 No. 11

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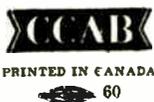
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THE FASTEST GROWING NAME IN TRANSISTORS



TRANSISTORS FOR RADIOS...
THESE FINE MANUFACTURERS RELY ON
GENERAL TRANSISTOR...YOU CAN TOO



Write for
Sample Radio Circuits



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THE NEW AMPEX FR-1100

*The best things
magnetic tape recording can do
combined in a single instrument
of moderate cost*

THIS RECORDER IS YOUR BEST CHOICE

- **IF** you are equipping a laboratory and want facility for everything that comes along.
- **IF** you are an expert improving your methods before a bigger equipment purchase.
- **IF** you are starting from scratch to evaluate magnetic tape as a data or control technique.
- **IF** you have a specific need for an instrumentation recorder with a maximum of two tracks.

Features of the FR-1100 include interchangeable plug-in amplifiers, interchangeable heads and four tape speeds. It can equal (and surpass) five standard two-track recorders in Ampex's familiar 300 Series (303, 306, 307, 309 and 311 — also a 303/306 combination). Photograph shows a two-track FR-1100 equipped with a meter panel and Servo Speed Control.

Both tracks are available for data, even when the Servo Speed Control signal is recorded on one of them.

In addition to its versatility, the FR-1100 has basic improvements in performance over the previous models it supplants. Specifications and a complete description should be in your information files.

Write today to Dept SS-2968

AMPEX
AMERICAN
CORPORATION

FIRST IN MAGNETIC TAPE INSTRUMENTATION

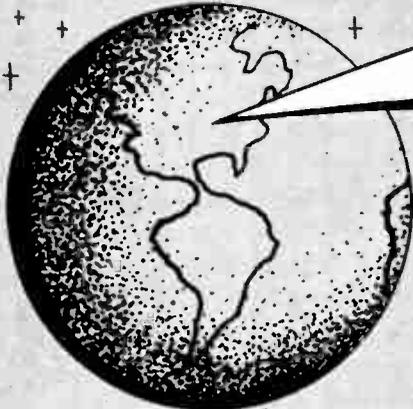
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WorldRadioHistory



ELMENCO

DUR-MICA



The Revolutionary Development In Mica Capacitors

The Dur-Mica Capacitor is a silvered mica capacitor coated with a specially developed material which provides maximum protection at environmental extremes of moisture and temperature. This combination provides a reliability and life expectancy which far surpasses anything heretofore obtained.

OPERATING TEMPERATURE RANGE

-55°C. to +125°C.

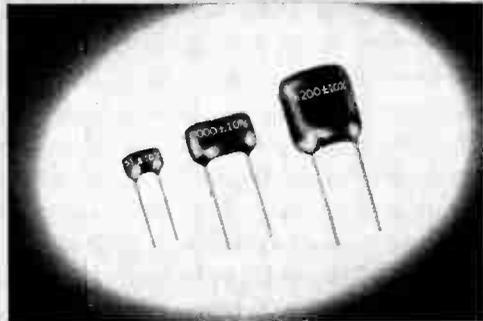
MINIMUM INSULATION RESISTANCE:

25000 megohms at 25°C.
1000 megohms at 125°C.

STABILITY (Capacity Drift):
±0.05% +0.1 mmf. MAX.

COMPONENT RELIABILITY

Life tests presently being performed at 125°C. and 150% rated voltage have passed 10,000 hours without a single failure. This is roughly equivalent to more than 20 years of operation under normal operating conditions.



DUR-MICA NOW AVAILABLE: DM-15, DM-19, DM-20, DM-30

ANNOUNCING
a new addition
to the **DUR-MICA**
family... **DM-42**

CAPACITY VALUES UP TO:

.025 MFD.—500VDCW
.04 MFD.—300VDCW
.07 MFD.—100VDCW

DIMENSIONS:

1 1/2 x 7/8 x 1/4

Write Us For
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Details

Packed in individual transparent plastic snap boxes properly identified for ease of handling.

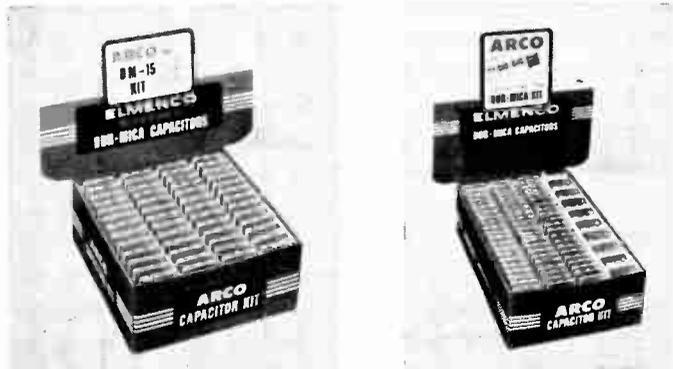


ARCO

64 WHITE ST. NEW YORK 13, N. Y.

NEW

ARCO DUR-MICA KITS



ARCO DM-15 KIT #10

This handy DM-15 kit consists of five each of 51 capacity values from 1 mmf. to 820 mmf. Tolerance ±5%.

SPECIAL KIT LIST PRICE **\$95⁰⁰**

If purchased individually the actual list price is \$103.31.

ARCO DUR-MICA KIT #11

This Dur-Mica kit contains five each of 72 capacity values from 2 mmf. to 10,000 mmf. all 500VDCW and ±5% tolerance.

SPECIAL KIT LIST PRICE **\$250⁰⁰**

If purchased individually the actual list price is \$286.35.

Write for **FREE** Descriptive Catalog

Our Canadian Distributors:

ELECTRO SONIC
SUPPLY CO., LTD.
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Toronto 5

WHOLESALE RADIO
& ELECTRONICS, LTD.
1143 Bay Street
Toronto 5

MANIS RADIO & ELECTRIC
SUPPLY CO., INC.
5220 St. Lawrence Blvd.
Montreal 14

For further data on advertised products use page 181.

Industry Future Bright

★ *With this issue of Electronics and Communications we present our third Annual Directory and Buyers' Guide. A glance through its pages will give some indication of the size of the Canadian electronics and communications manufacturing industries. The pages of the Directory also show the wide variety of equipment and components that are either manufactured in Canada or are available in Canada through Canadian representatives of American and European firms. The most significant aspect, we believe, which is reflected in the Directory is that the Canadian electronics and communications manufacturing industry has assumed proportions whereby it has become an important part of our national economy doing an annual business in excess of \$500 million dollars.*

★ *The future growth of the Canadian electronics industry is limited only by the ability of man to apply its technological possibilities to the whole wide range of processes in the fields of industry, business and science. It is the accepted belief of those in the electronics industry, and the growing belief of business men generally, that the art and science of the electronic revolution will eventually encompass wider fields with the result that existing industries will be afforded tremendous impetus tending to provide a higher standard of living.*

★ *It is not unreasonable to anticipate that within the next two or three decades the Canadian electronics and communications industry will have grown three or four fold. Judged on its past development over the last ten years, this is a conservative estimate, and although it is sincerely hoped that the years ahead will be years of peace, electronics, by its nature is such that if the unfortunate circumstance of war should obtain, it could do no other than act as a catalyst on the industry.*

★ *There is, therefore, no foreseeable reason to doubt that the steady expansion of the Canadian electronics and communication industry will continue its phenomenal growth to become a billion dollar industry within the next twenty-five years.*

As a small contribution to this future we are pleased to present this Third Annual Directory and Buyers' Guide which we trust will be of service during the coming year to those engaged in the electronics and communications industries.

BRUEL & KJAER

MODERN INDUSTRIAL MEASUREMENTS

ELECTRICAL TEST

DEVIATION BRIDGE for testing tolerance and phase angle of components compared to a standard. Resistance 10 ohms 10 Meg. Capacitance 50 μ F to 10 μ F. Inductance 2 mH to 100 H. Interchangeable scales provided, 1 to 25% FSD. 1000 cycle test frequency. Knee operated test jig available.



SOUND AND NOISE

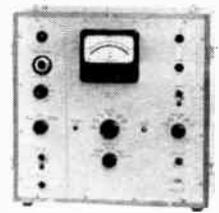
SPECTRUM RECORDER is combined spectrometer and level recorder. Spectrometer has 27 fixed $\frac{1}{3}$ octave filters, 40-16,000 cycles, manual selection or driven by level recorder. Latter has 10 paper speeds, variable writing speed, log scale for wide range. Key instruments for vibration and noise measurements.



MEGOHMMETER range from 100K to 10,000,000 Megohms, test voltage 10 to 100 V. Can be used as D.C. Voltmeter from 10mV to 2000 V with 1000 Megohm input impedance. Illustrated with high tension accessory extending range to 100,000,000 Megohms and voltage from 0-1000.



ACOUSTIC ANALYSIS AMPLIFIER, used with B & K precision mike, measures noise and sound level. Equipped with A.S.A. Standard weighting networks for use as precision noise and sound survey meter. Use B & K Level Recorder to record output.

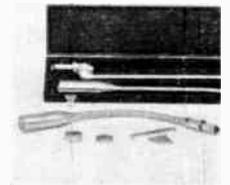


STRESS AND VIBRATION

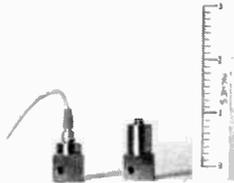
STRAIN INDICATOR with 25 microinches / inch full scale sensitivity (4 active arms). Built-in carrier oscillator used, measuring static and dynamic strains to 300 cycles. D.C. bridge supply accessory permits measurement of dynamic strains up to 50,000 cycles.



PRECISION MICROPHONE, condenser type with built-in cathode follower, low temperature coefficient. Calibrated within 0.5 DB 80-10,000 cycles. Measures noise level from 25 to 140 acoustic DB. Use with acoustic amplifier, spectrometer or frequency analyzer and level recorder.

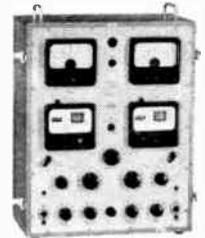


ACCELEROMETERS for displacement, velocity and acceleration measurement of any vibrating structure. Output 20 mV / g, 5-20,000 cycles. Measures 0.25 to 1000 g with B & K direct-reading self-calibrating amplifiers.



RADIOACTIVITY

RADIOACTIVITY COUNTER - Two channel counter, coincidence, anti-coincidence and straight count. Built-in 0-1500 V G-M tube supplies. Variable resolving time. Two timers, 1 minute to 12 hours. Each channel has scale of 10 and 4 digit register, plus multiplier. Single and dual tube sample holders available.



MEASURE • to speed tomorrow's products and profits • MEASURE

Bruel & Kjaer offers a complete range of matched units in the electrical, acoustic and vibration fields. B & K instruments are designed to meet exacting research requirements, yet can be operated by

non-technical personnel with equal ease and accuracy. These instruments are now stocked in Canada. Write for full catalog and price list.



R-O-R field engineers can help with your problems—ask for details.

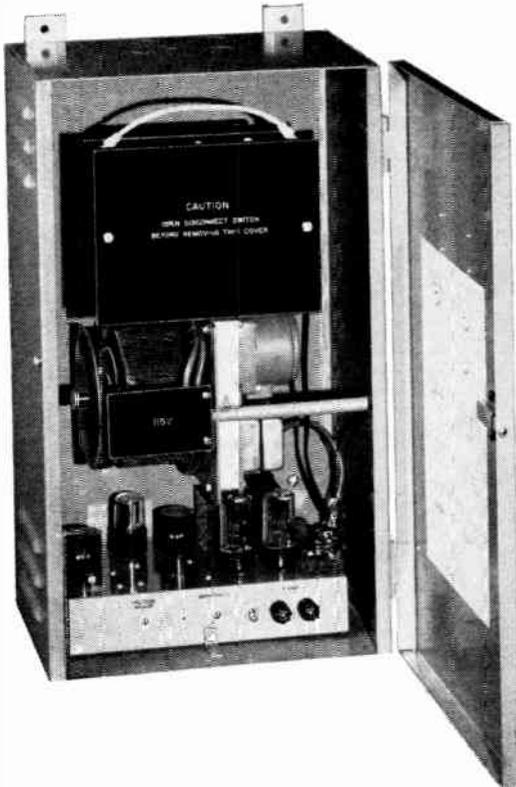
R-O-R ASSOCIATES LIMITED
290 LAWRENCE AVE. W. TORONTO 12

For further data on advertised products use page 181.

World Radio History

STEDIVOLT Output Remains Constant

Regardless of . . . Changes of Load • Line Voltage Changes
• Power Factor • Waveform • Frequency Changes



While many stabilizers compensate for line voltage variations they do not compensate for the effects of changing load. Stedivolt regulators maintain *constant voltage independent of load* from zero to full rated output. Waveform distortion is often important . . . Stedivolts introduce zero distortion.

NO RE-SET—Should power supply drop or rise beyond the wide Stedivolt control range, the unit will still supply maximum correction. Even after a power shutdown the unit will still continue to operate at the selected output voltage without resetting.

EASY TO MAINTAIN—Separate control circuit fusing permits unregulated power to be fed to load without interruption should faults develop. All parts accessible from front. No relays . . . no thyratrons . . . only 3 tubes.

Specifications Model P17 Stedivolt

	For 115V Supply		For 230V Supply	
	Series	Parallel	Series	Parallel
Jumper Connections				
Input voltage range for 115 (or 230) V regulated output.	95-136	105-126	210-251	220-241
Output voltage adjustment range for nominal 115 or 230V input	98-141	107-128	213-256	221-243
Load Rating	30 amp	60 amp	30 amp	60 amp
KVA	3.5	7	7	14
Regulated output accuracy . . .	0.5%	0.5%	0.5%	0.5%

Other Stedivolt regulators now in production include units from 1 KVA up, rack mount styles, 3 phase models and 400 cycle units. Ask for details.

Manufactured in Canada by George Kelk Limited



R-O-R ASSOCIATES LIMITED
290 Lawrence Avenue W., Toronto 12

50 YEARS EXPERIENCE IN SPECIALIZED SERVICES

behind time tested electronic components

FORTIPHONE LIMITED

Sub-miniature Audio-frequency components. Complete range miniature transformers covering microphone input, driver, single ended and push pull coupling and output transformers for transistor amplifiers.

AEMCO INC.

Canadian made relays to Military specifications and commercial requirements. Timers, Interval Timers and Flashers.

MUCON CO. INC.

Sub-miniature capacitors: VSR Voltage sensitive ceramic . . . and UHF Ultra High Frequency ceramic capacitors.

STEVENS ARNOLD INC.

Relays — frequency sensitive, ultra high speed, polarized. D.C., A.C. Choppers 0 to 500 cycles to Military and commercial specifications.

JOHN HERRING and COMPANY LTD.

3460 DUNDAS STREET WEST

TORONTO, ONTARIO

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Ball and Roller Bearings: Sub-miniature bearings from .043" OD Ball Bearings to 1.0236" Roller Bearings.

BARBER-COLMAN

Motors — Miniature types, from .0012 HP to .05 HP in unidirectional, synchronous, reversible, geared head and shaded pole types.

SHALLCROSS MFG. CO.

Miniature type ceramic power resistors, switches, attenuators, resistance, capacitance and magnetic flux measuring instruments.

RIPLEY CO. INC.

Miniature Blowers, and electronics control equipment.

business briefs & trends

★ The Maclean-Hunter Publishing Company of Toronto has announced plans to publish an electronic engineering journal the first issue of which will be published in May 1957. According to a company announcement the new publication will be a truly technical journal to serve the electronic field in Canada.

★ The McGraw-Hill Publishing Company, publishers of Electronics magazine, the first journal to serve the electronics industry in the United States will commence publishing 36 issues annually instead of 12. The new schedule becomes effective January 1, 1957. In an announcement outlining the reasons for the change in publishing schedule W. W. MacDonald, editor of Electronics, stated that company investigations had ascertained a growing demand among electronic engineers for greater coverage of business trends, the application of electronics in other industries and the coverage of topical matters such as industry news, production, sales statistics etcetera. As opposed to this growing need for more topical coverage of the electronics industry Mr. MacDonald pointed out that, "the engineer's ability to absorb more periodically published technical information may be nearing saturation but this is not necessarily true in the area of commercial or business information." As a result 24 issues or two thirds of Electronics annual presentation will be devoted to a topical coverage of the electronics industry with only 12 issues allocated for the presentation of articles of a truly technical nature.

★ Miniature floating radio stations are being used in the Bay of Fundy by scientists of Canada's Fisheries Research Board Biological Station in a study to determine the long range movements of the Atlantic herring.

★ West Coast residents of Penticton, B.C., have been promised "wired" television by the year's end. The firm sponsoring this TV system has already erected an antenna which will pick up impulses from TV-KXLY in Spokane, Washington. The initial hook-up cost per house is estimated at \$125.00 with a \$4.00 per month fee thereafter.

★ It has been reported that immigration officials in Ottawa are planning a concerted drive to obtain technical personnel from the United States and the United Kingdom. Many British firms are reportedly concerned at Canadian rivals hiring their technical experts. Last year between 400 and 500 technical personnel left Britain to take up jobs in Canada.

★ At a recent automation conference in Montreal delegates were told that machines are getting smarter all the time and industry will be hard pressed to find the personnel to keep up with them. Officials at the convention claimed that North America will need one million "programmers" in the next 10 years to handle automated procedures and the growing use of computers.

★ The Department of Scientific and Industrial Research in Britain has stated that Britain spent about £325 million on research and development during the year 1955-56. Of this amount private industry in Britain spent £185 million sterling.

★ A series of air-to-ground TV demonstrations to show the possibilities of airborne television were held in Britain recently using a miniature Pye industrial camera system.

★ Canadian industry has further advanced its versatility and independence with the announcement by the Sperry Gyroscope Company of Canada Ltd. of a Department of Defense Production contract to manufacture in Canada American Bureau of Ordnance Mk. VII, VIII and XIV servo motors. The contract has a value in excess of \$125,000 and marks the first time that servo motors of these types have been made in Canada.

★ The Pepsi-Cola Company of Canada Ltd. have installed electronic inspection equipment in their recently opened Montreal plant said to be capable of detecting foreign particles as small as a grain of sand in the contents of their product.

★ Sylvania's director of marketing research, Frank W. Mansfield, states that the American electronics industry has reached the \$11½ billion mark and will exceed \$22 billion annually within the next 10 years.

★ RCA Canada have received an order for the supplying of mountain-hopping long distance telephone equipment from the South American Republic of Colombia. The system will link five major cities in the South American Republic and will operate at 250 megacycles.

★ In a statement on company construction Gordon Farrell, president of the B.C. Telephone Company, said that during the six months ending June 30 the company had spent \$11,800,000 on additions and improvements to telephone plant and that it was expected that this figure would reach the \$30 million mark by the end of the year.

★ Another Canadian university has reported the proposed purchase of an "electronic brain." The computer, a \$60,000 unit, has been ordered by the University of British Columbia for use in the mathematics department.

★ Department of Defense planners are now studying the possibility of installing anti-aircraft missile batteries in the Canadian Arctic. These weapons are not expected to make their appearance on the Canadian scene until 1960 and it has been reported that plans call for the missiles to have a range of 200 to 300 miles and to be capable of carrying atomic war heads.

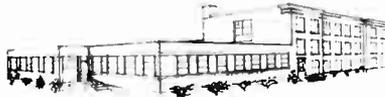
★ The Ontario Hydro Commission have reported the planned purchase of an electronic computation system which is to be installed in the Toronto head office. The equipment which is scheduled for delivery in 1958 will be used for commercial data processing as well as scientific and engineering calculations. Commission officials estimate that it will take six years to complete the change over from present methods of operation to those employed by the electronic computer. Capabilities of the new equipment will permit it to transcribe 20,000 characters a second from magnetic tape and to perform 2,000 additions per second. Nearly 6,000 square feet of floor space will be required to house the installation.

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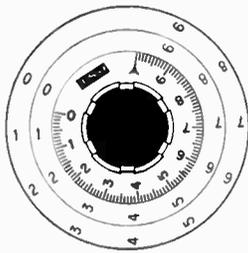
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The **esi** way to measure a Company

eNGINEERING—ESI instruments don't just happen. They are the result of extensive research, experimentation and testing. Those of us who develop ESI instruments are skilled engineers who have specialized in instrumentation. We have the qualifications that come from formal training combined with the skills and knowledge that come from practical experience. Our aim is to design and build instruments which will give you genuine satisfaction under prolonged use.

To achieve this result, we emphasize the human engineering aspects of instrument design. Instruments, to our way of thinking, should enhance your creative abilities and not bog you down with the mere mechanics of measurement problems. Human engineering by ESI means more effective performance from both you and the instrument.



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We enjoy being of service to our customers. Any of your inquiries or requests receive courteous attention and prompt reply. In addition, if we make an improvement in an instrument which you have, we try to let you know about it. And if you wish, we arrange to make a modification kit available to you. Service at ESI means serving you better.

iMAGINATION — Our research staff and production engineers have regular "brain storming" sessions that generate ideas and enthusiasm for new and improved products. We appraise our present instruments critically and analyze the future needs of the industry. We work hard at doing a creative job in electronics and instrumentation. This happy combination of theory, research and practice is your guarantee that you will receive the very best . . . now . . . and in the future . . . from ESI.

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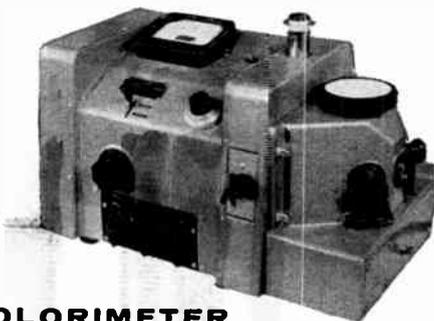
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For further data on advertised products use page 181.

New, low cost **QUALITY**
color **CONTROL**

with



COLOR-EYE
MODEL C

PRECISION COLORIMETER
and **ABRIDGED SPECTROPHOTOMETER**

DELTA E COMPUTER

is a COLOR-EYE accessory which computes deviations from a color standard and provides a single value color tolerance in NBS units.



Write for technical literature.

- ◆ COLOR-EYE is a dual-purpose precision instrument for establishing and maintaining quality color control under laboratory and production conditions.
- ◆ The TRI-STIMULUS SYSTEM measures color differences on the three-color basis established by the C.I.E. It quickly determines the color differences in hue, value and chroma. Enables accurate production inspection and precise checking on color standards.
- ◆ The ABRIDGED SPECTROPHOTOMETER employs ten filters for analyzing color formulations and determining metameric conditions. It permits matching of colors, even with different types of pigment and different materials . . . textiles, plastics, painted surfaces, etc.
- ◆ A built-in COOLING SYSTEM controls sample temperature rise so that rapid analysis of colors in temperature-sensitive materials is possible.
- ◆ A replacement-type FILTER cleans the air to prevent dust from collecting on the optics and enables accurate measurement in dusty atmospheres.

Demonstrations of Color-Eye in operation in your plant can be arranged upon request.

HIGH SPEED ROTARY SWITCHES



IDL Switches combine watchmakers' precision with proven principles of electrical design to give airborne engineers superior performance in high speed multi-circuit commutation. New designs can be generated which are economical in space and power requirements and simultaneously provide high system reliability. Synchronous operation with precise inter-pole timing is provided by hysteresis synchronous motors. In line cylindrical commutating surfaces eliminate the need for phasing adjustments due to brush width variations.



Internally segmented cylindrical construction gives inherent dimensional rigidity and permits true cylinder generation by use of honing techniques.

Cylindrical sections assure that each brush travels at same speed and same wear rate over the same distance.

Multiple finger brush construction gives complete bounce-free operation even at 30 revolutions per second over 60 segments per ring and provides a wide choice of timing combinations and speeds.

Brush rotor assembly is supported by preloaded ball bearings to insure precision location. Dynamic balancing and both electrostatic and electromagnetic shielding have been included between switch poles.

High Speed — up to 1800 shorting contacts per second per pole.

Cylindrical sections (each a commutator ring) provide for in-line building block construction. Each pole or section adds only about 1/8" to length.

Motor Drive System — Precision design permits the use of low driving power, ranging from 7 watt motors for 3 pole 10 rps units to 15 watt motors for 6 pole 10 rps units or 3 pole 30 rps assemblies. The specially designed motors are normally of two-phase 400 cycle 115 volt hysteresis synchronous design with an internal starting capacitor.

Hermetically sealed case provides for high altitude operation, sea level to 70,000 feet or higher and makes an explosion-proof case with the critical members impervious to sand, dust, humidity and salt spray.

Satisfactory performance under vibration testing at 10g under 2000 cps.

Low electrical noise — special metallic alloy contact system shows extremely low electrical noise characteristics. Low dynamic resistance reduces noise generated by surface resistance variations. Mechanical precision eliminates bounce as a source of noise. Electrostatic and magnetic shielding reduce internal or external pickup in high impedance applications. Noise actually decreases during life of unit.

TELEMETERING SWITCH

- 3 Poles
- 30 Positions, BBM*
- 30 RPS
- 2 lbs.
- Overall length 5 1/16"

*or 60 Positions, MBB. All switches 2 1/2" outside diameter excluding special terminal arrangements.

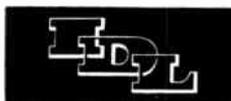
SAMPLING SWITCH

- 3 Poles
- 12 Positions, BBM*
- 10 RPS
- 2 lbs.
- Length 5 3/32"

PROGRAMMING SWITCH

- 6 Poles
- 12-30 Positions, BBM*
- 15 RPS
- 2.8 lbs.
- Length 7"

IN CANADA: Measurement Engineering, Ltd.
Aurpior, Ontario

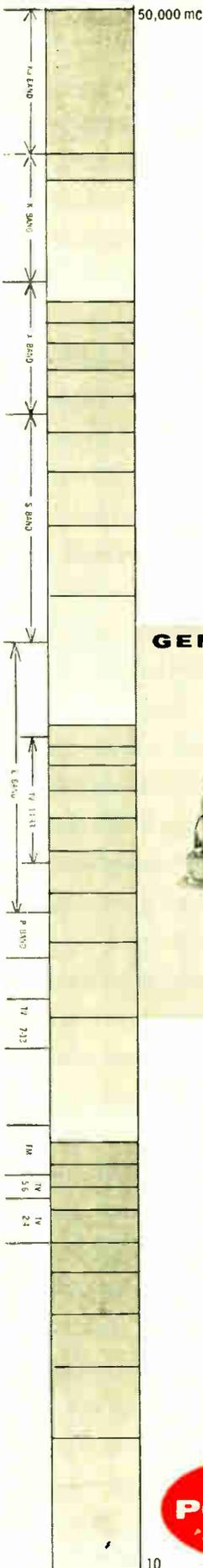


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An Affiliate of the Royal McBee Corporation

67 Mechanic Street, Attleboro, Massachusetts, U. S. A.

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MICROWAVE



SPECTRUM ANALYZER,
Model 13A,
15 to 34,000 mc



FIELD INTENSITY RECEIVER,
Model 9,
500 to 11,300 mc



SIGNAL GENERATOR,
Model 920,
500 to 11,300 mc



MULTIPLE PULSE CODE MODULATED SIGNAL GENERATOR,
Model 6,
500 to 11,300 mc



ELECTRONIC SWEEP GENERATOR,
Model 112,
10 to 11,300 mc

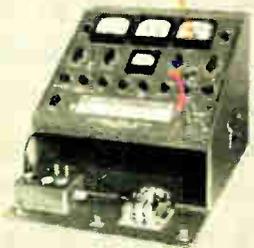


SIGNAL SOURCE
650 to 10,750 mc

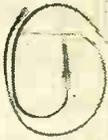


RF SIGNAL SOURCES, GENERATORS & ANALYZERS,
22,400 to 32,200 mc

GENERAL



KLYSTRON TUBE TESTER,
Model K-100



ATTENUATOR,
Model S1J,
4000 to 12,400



SUB-MINIATURE S-BAND CAVITY,
2750-3000 mc



WAVEMETERS,
500 to 4000 mc



BROADBAND-PASS FILTERS,
650 to 13,000 mc



TEST ANTENNAS,
1000 to 26,000 mc

COLOR & B/W TV



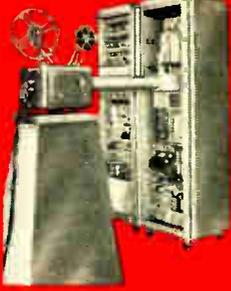
COLOR VIDEO MONITOR,
Model M-220



COLOR BAR GENERATOR,
Model PT-203



SYNCHRONIZING GENERATOR,
Model PT-201



COLOR FILM & SLIDE SCANNER SYSTEM,
Model PT-210



STRIP MONITOR,
Model M-105

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CALIDYNE

keeps pace with VIBRATION TESTING REQUIREMENTS

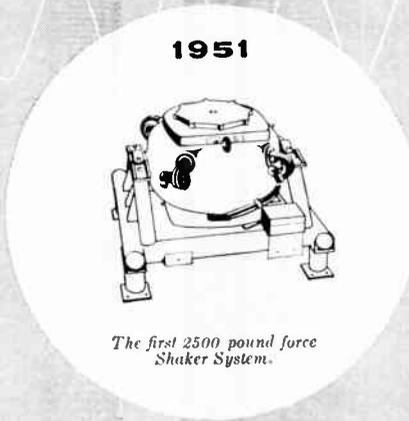
Eight years of vibration testing achievements

Rapid development in the past decade of more complex weapons, instruments, communications gear and new components has placed tremendous importance on reliability. Electrical, mechanical and aeronautical engineers — in seeking to solve their problems — have made increasing use of vibration analysis as a valuable research and development tool. The Calidyne Company was formed eight years ago, to develop and build custom electrodynamic shaker systems which

would permit accurately controlled testing over wide frequency ranges. A few of the many Calidyne accomplishments — each a "first" in the field — are shown here. Together, they have proved extremely useful in three major fields of application: "brute force" environmental shake testing; structural response determination, typical to airframe design analysis; and fatigue testing by application of high stresses at high frequency.



1949
A twenty-four channel multiple Shaker System for aircraft ground vibration studies.



1951
The first 2500 pound force Shaker System.

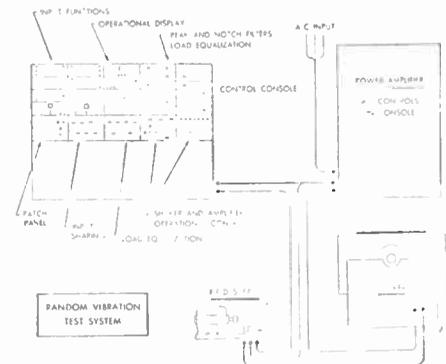


1954
The 12,500 pound force Shaker System with its integrated, automatic control system.

NOW . . . NEW SYSTEMS FOR RANDOM VIBRATION TESTING

Available for the first time are 1500, 5,000 and 15,000 pound force Shaker systems specifically designed for random input operation, and featuring matched Shaker-Amplifier units. Shakers in this new series operate at higher frequencies on lower input requirements for a given armature weight and matched load rating. Shaker and Amplifier units are matched in rating to meet arbitrary specifications of rms random vibration levels, and to deliver instantaneous peak acceleration several times the rms value. Component matching provides optimum over-all system performance, unobtainable when other types of amplifiers are substituted for the specifically designed Calidyne units.

Field supplies for the new random vibration systems are either electronic or rotary motor-generator types. Control consoles comprise basic Shaker-Amplifier operational controls, together with input shaping and compensation circuits, monitoring and control equipment. Applications within the scope of these new Calidyne systems include random vibration testing; random vibration testing plus multiple or swept sinusoidal input; multiple frequency or complex wave input; and programmed or servo-controlled single frequency testing.



Complete performance and application data on the new Random Vibration Testing Systems are available from Calidyne. Since Calidyne develops and builds complete systems to meet individual requirements, your needs are logically and capably served by one competent responsibility. Contact Calidyne now . . . with confidence.

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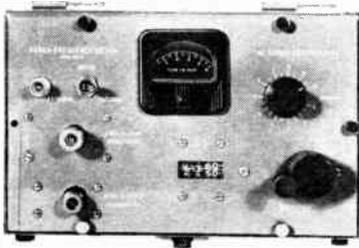
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Araprior, Ont., Phone 400
Toronto, Ont., Mayfair 8860

EXPORT
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THE CALIDYNE COMPANY

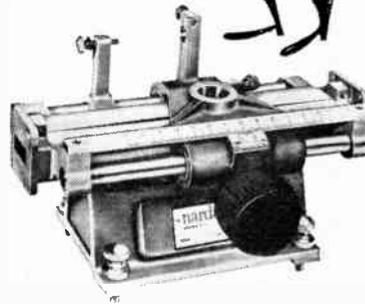
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*Ah
precision!*



FREQUENCY METER MODEL 802B

Range of 2350 to 10,500 megacycles covers the most used frequencies. Veeder-root digital counter provides accurate, legible readings which are referred to calibration charts for frequency in megacycles to rated accuracy of 0.2% without calculation. Completely self-contained with built-in detector and indicating meter.



**SLOTTED LINES
MODELS 319 THROUGH 324**

Six portable models, incorporating carriage drive mechanism integral with wave guide assembly measures VSWRs and impedances from 2600 to 18,000 megacycles per second, covering wave guide sizes from 3 X 1½ inches to .702 X .391 inches. Can be used with all standard military and commercial RF probes and detectors.

COMPLETE LINE OF COAXIAL AND WAVEGUIDE INSTRUMENTS INCLUDES:

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| DIRECTIONAL COUPLERS | SLOTTED LINES |
| TERMINATIONS | BENDS |
| FREQUENCY METERS | ATTENUATORS |
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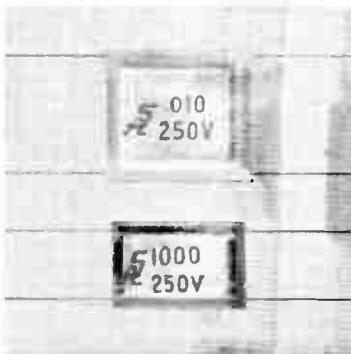
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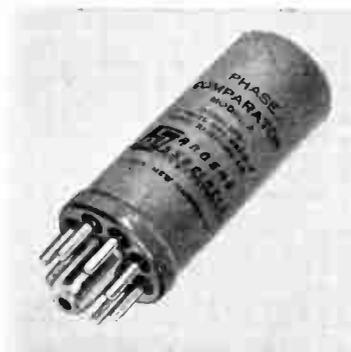
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high quality precision . . . Electronic Components by SANDERS ASSOCIATES, Inc.

"Reliacap" Mylar Fixed Capacitor — A high quality, reliable mylar capacitor designed for standard and subminiature packaging of military or commercial equipment. Two pairs of parallel leads facilitate mounting and securing.



Phase Comparator — A versatile, full-wave bridge comparator for use as a modulator, demodulator, or switch. Frequency Response: 0-5000 cps; Max. Reference Voltage: 120V. rms; Max. Output Voltages = $\pm 50V$. DC; Dynamic Range = 46 db. Hermetically sealed.



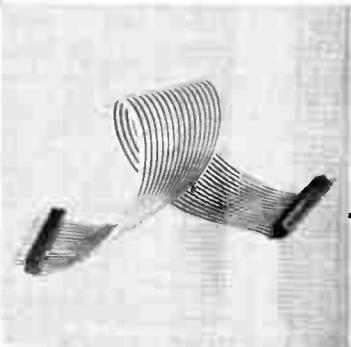
"Minicube" Blower — A compact, rugged, high velocity blower and motor, in a 1" cube. Designed for use in guided missiles, aircraft, etc. Rugged construction assures maintenance of 22,000 RPM through vibration, acceleration and temperature extremes. Wt: 1 oz.; Input: 400 cps, 4 watts; Output: 3 C.F.M.



Tri-Plate Variable Attenuator — Frequency Range: 1000 mc to 6000 mc; Max. Attenuation: linear function of frequency (20 db at 4000 mc); Insertion Loss: less than 1.5 db over entire frequency range; Max. VSWR: less than 1.25 at 4000 mc.



Flexible Printed Circuits — A new concept in cabling, wiring harnesses, and printed circuits. Eliminates wiring errors and simplifies production. Kel-F insulation and printed copper conductors.

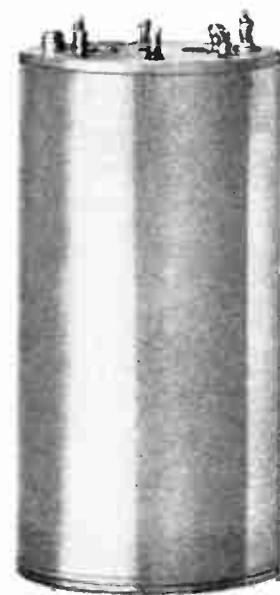


Sanders offers a complete engineering service — including departments for systems engineering, research aerodynamics, modular electronics, microwave engineering, electromechanics and hydraulics, commercial development, special purpose tubes, and complete type test facilities. Extensive manufacturing facilities available.

The products shown here are representative of Sanders' achievements in the creation of electronic components for military and commercial use.

Rate Gyroscope — A precision subminiature device for converting rate into an A.C. signal. Meets requirements of sensitive control and stabilizing systems for aircraft and missiles. Features include:

- Lifetime Hermetic Sealing
- Excellent Resolution
- High Sensitivity
- Small Size: $2\frac{3}{16}$ " long x $1\frac{1}{16}$ " Diameter
- Light Weight: $3\frac{1}{2}$ oz.



Write for detailed specifications to Dept. EBG,



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Sensitive Research



**ANNOUNCES
THE AVAILABILITY
OF THE MOST REVOLUTIONARY
DEVELOPMENT
OF THE PAST DECADE
IN ELECTRICAL INDICATING
INSTRUMENTS**



The Diamond Pivot

**AND "CALIBRATED SPRING" SHOCK
MOUNTED SAPPHIRE JEWEL**

Sensitive Research Diamond Pivots will withstand the tremendous impact of a three foot drop onto a concrete floor without deformation of either pivot or jewel. They assure a virtually "friction free" moving element which will repeat its readings even after abnormal abuse. They are non-magnetic and exhibit no hysteresis effects. Their riding surface can be ground to an ideal .0008". Diamond Pivots are available immediately at a small surcharge in all instruments including ultra sensitive microammeters, millivoltmeters and thermocouple types.

Represented by
MEASUREMENT ENGINEERING LTD.
Auriprior, Ontario

**SENSITIVE RESEARCH
INSTRUMENT CORPORATION**

NEW ROCHELLE, N. Y.



Symbol of Quality ELECTRICAL INSTRUMENTS OF PRECISION SINCE 1927

TRAD

INSTRUMENTS



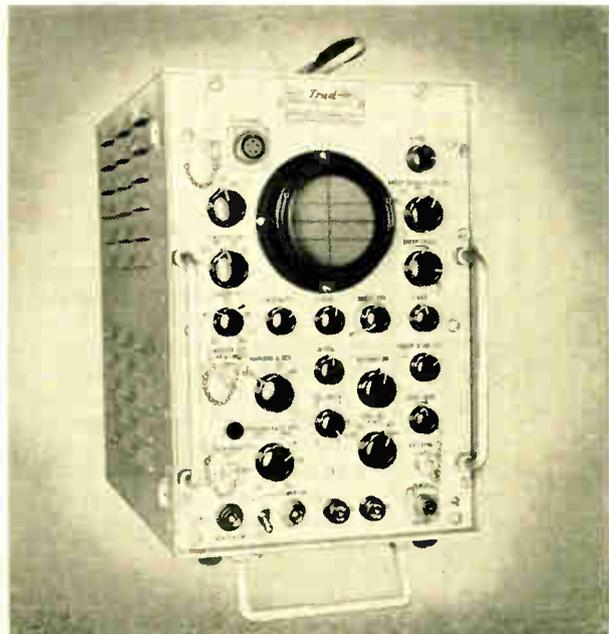
STANDARD SIGNAL GENERATOR

Model SG-25
A small, light, rugged signal generator, ideal for field use, preserving all the standards of accuracy and stability of much bulkier laboratory instruments.

Frequency range: 10 kc-50 mc in 8 bands.
Commercial equivalent of AN URM-25D.

PULSE OSCILLOSCOPE The Trad PO-400

Oscilloscope is a miniature portable precision instrument for analyzing amplitudes and time characteristics of complex electrical wave forms. Transient response, rise time and deflection sensitivity compare with instruments many times its size — 9 1/2" wide by 14 1/2" high and 17 1/2" deep — weight only 41 lbs.
Commercial equivalent of AN USM-38.

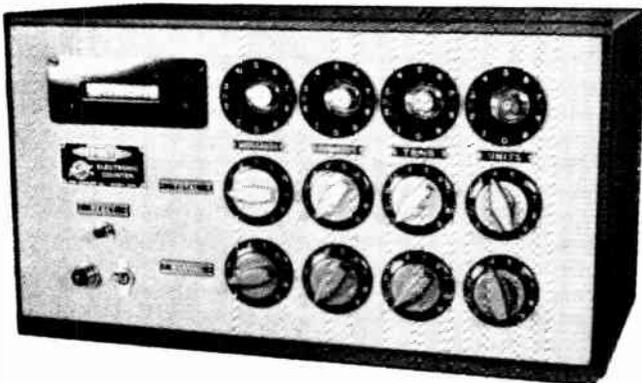


TRAD **ELECTRONICS CORPORATION**
1001 First Ave. - Asbury Park, N.J.

For further data on advertised products use page 181.

POST *Decitron*

PRESET ELECTRONIC COUNTER MODEL PW-4



Features

- Automatically resets.
- Can be set to select a total (batch) count from 1-10,000 and warning count from 1-10,000.
- Performs a control function at any preset quantity from 1-10,000.
- Two selections — preset 1-10,000, warning 1-10,000.
- Photo heads made to customers' specifications.
- Photo head can be placed up to 100' away from counter (without pre-amplification).
- Easy . . . slip out panel for accessibility.
- Light weight — easily portable.
- One plug-in operates both counter and photo head (no external wiring necessary).
- Direct readout (ideal for use by unskilled personnel).
- Totalizer registers every preset count (remaining units are read from face of tube).
- Low maintenance.
- Longer totalizer life.
- Both photo cell and exciter lamp receive power direct from counter.

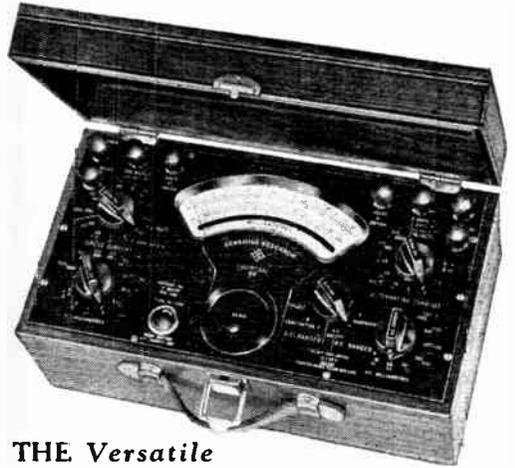
POST

Electronic Products Division
Dept. 551
MACHINERY CO.
Beverly, Mass.

Sensitive Research



Versatile POLYRANGERS



THE Versatile UNIVERSAL 88 POLYRANGER

88 FULL SCALE RANGES. DC — 200 microamps. to 1.5 amps., and 5 M.V. to 750 V. AC — 10 M.A. to 3 amps., and 500 M.V. to 750 V. .5% accuracy. For use up to 5 kc. on voltage and 15 kc. on current. 5.2" hand drawn mirrored scale. Automatic temperature compensation.



THE Versatile MODEL C POLYRANGER

14 FULL SCALE RANGES. DC — 1.5 M.A. to 10 amps., and 1 V. to 1000 V. Two combinations. .25% accuracy. 6.3" hand drawn mirrored scale.

THE Versatile MODEL DYP POLY- RANGER

20 FULL SCALE RANGES. AC — 5 M.A. to 10 amps., and 5 V. to 2000 V. Two combinations. .3% accuracy. 6.3" hand drawn mirrored scale.



Represented by
MEASUREMENT ENGINEERING LTD.
Arnprior, Ont.

SENSITIVE RESEARCH INSTRUMENT CORPORATION

NEW ROCHELLE, N. Y.



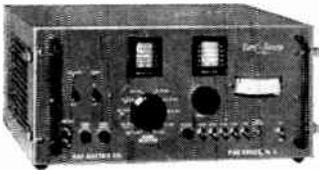
Symbol of Quality

ELECTRICAL INSTRUMENTS OF PRECISION SINCE 1917

KAY Electronic Test & Measuring Instruments

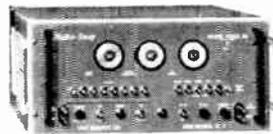
• Sweeping Oscillators • Noise Figure Measurement • Marker Generators • Pulsers • TV Transmitters • Color Generators • Signal Generators • Attenuators • Sound Spectrographs • Gain and Loss Test Sets • Spectrum Analyzers • Vibration Analyzers • Vacuum Tube Voltmeters

SWEEPING OSCILLATORS



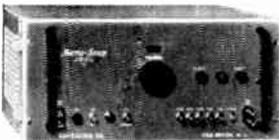
INST.	RANGE	TUNING	WIDTH	OUTPUT	PRICE
MEGA-SWEEP	50kc - 1000mc	continuous	0 - 40	100mv	\$465.
CALIBR. MEGA-SWEEP	50kc - 1000mc	single dial	0 - 50	100mv	495.
MEGA-SWEEP 111A	10mc - 950mc 450mc - 900mc	zero level base line	0 - 40	.15v 70ohms .3v 300ohms	575.
MEGA-SWEEP 112A	800mc - 1200mc	single dial	0 - 40	.3v 70ohms	575.
VARI-SWEEP	2 - 220mc	continuous	Up to 30mc plus	1.0v 70ohms RMS	695.
LIGNA-SWEEP C	TV, FM, Video	continuous	Up to 15mc plus	1.0v RMS 70ohms	350.

VIDEO SWEEPING OSCILLATORS



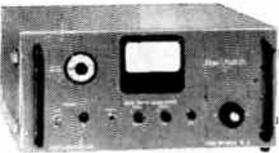
INST.	RANGE	TUNING	WIDTH	MARKERS	OUTPUT	PRICE
KEYDSWEEP	Sync, blank pulse used with following sweepers				0 - 1v RMS 70ohms	\$395.
MARKA-SWEEP MODEL VIDEO	50kc - 20mc	3 ranges 50kc - 20mc	complete range	6 crystals	1.0v PK-PK 70ohms	495.
MARKA-SWEEP MODEL VIDEO TTV	50kc - 8mc	cont. variable CW signal	8mc	5 crystals 1 variable	1.5v RMS 70ohms	695.
MARKA-SWEEP MODEL VIDEO GE	50kc - 8mc	contin.	8mc	6 crystals	1.5v RMS 70ohms	595.
MARKA-SWEEP MODEL VIDEO 50	50kc - 50mc	contin.	4 - 50mc cont. variable	5 crystals	1.0v PK-PK 70ohms	695.
VIDALIGNER	50kc - 8mc	3 ranges 50kc - 8mc	complete range	8 crystals 1 variable	1.5v RMS 70ohms	775.

SWEEPING OSCILLATORS WITH MARKS



INST.	RANGE	TUNING	WIDTH	MARKERS	OUTPUT	PRICE
KILD-SWEEP	50kc - 2mc	contin.	contin. to 100kc	6 crystals	.5v RMS 70ohms	\$700.
SONA-SWEEP	5kc - 200kc	contin.	20kc	6 crystals	.5v RMS 70ohms	525.
RADA-SWEEP	30 & 60mc	centre	20mc or 3mc	9 crystals	.25v RMS 70ohms	395.
RADALIGNER	15 - 169mc	choice of centres	5mc to 20mc	8 crystals	.25v RMS 70ohms	795.
IF MARKA-SWEEP	20 - 50mc	3 ranges	500kc - sound 15mc - picture	9 crystals each sound picture and sound	.25v RMS 70ohms .50v RMS 70ohms	325. 795.
RF-P MARKA-SWEEP	IF + 12 channels	12 ch	15mc		.50v RMS 70ohms	795.
ULTRA-SWEEP	450 - 900mc	contin.	0 - 60mc		3v RMS 70ohms	895.

NOISE FIGURE MEASUREMENT . . . NOISE GENERATORS



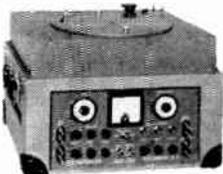
INST.	RANGE	NOISE FIG. RANGE	PRICE
MEGA-NODE	5 - 220mc	0 - 16db @ 50ohms 0 - 23.8db @ 300ohms	\$295.
MEGA-NODE SR.	10 - 300mc	0 - 20db	790.
MICROWAVE	1200 - 40,000mc	Fluorescent Tube 15.8 ± .25db Inert Gas Tubes 15.2 - 18db ± .1db	\$295. - 500. (with power supply)
MEGA-NODES			\$1,395. covering range 5mc to 400mc
RADA-NODE	5 to 26,500mc	0 - 21db ± .25db IF strips @ 30 and 60mc	

TV PICTURE AND SOUND SIGNAL SOURCES



INST.	OUTPUT SIGNAL	VIDEO-AUDIO CARRIER OUTPUT	PICTURE CARRIER MODULATION	SOUND CARRIER DEVIATION	PRICE
MEGA-PIX	RF Picture and Sound Channels 2 - 13	0.03v into 70ohms	0 - 85% adjustable	0 - 25kc adjustable	\$ 990.
MEGA-PIX SINGLE CHANNEL	Specified VHF Channel UHF Picture and Sound. Provides 1 VHF and 3 UHF CHANNELS	0.25v into 70ohms UHF 0.25v into 70ohms UHF 0.03v into 70ohms	0 - 85% adjustable	0 - 25kc adjustable	495.
ULTRA-PIX			0 - 85% adjustable	0 - 25kc adjustable	795.
TRANS-PIX 25	VHF Picture & Sound	25 Watts into 50ohms	0 - 85% adjustable	0 - 25kc adjustable	6950.00
TRANS-PIX 2	VHF Picture & Sound	2 Watts into 50ohms	0 - 85% adjustable	0 - 25kc adjustable	2500.00

SOUND ANALYSIS



INST.	DESCRIPTION	RANGE	FEATURES	PRICE
VIBRALYZER	Vibration Frequency Analyzer	5 - 4400 cps.	Displays amplitude vs. frequency vs. time provides permanent record	\$2500.
SONAGRAPH	Sound spectrograph for frequency analysis of audio energy	85 - 8000 cps.	Records frequency and intensity to time	1995.
SONALATOR	Dynamic translator for visible speech display	100 - 4000 cps.	Displays energy - frequency-time on oscilloscope	1495.
ECHO-VOX, SR.	Provides 3 separate variable periods of time delay at audio frequencies	20 - 1600 millisecond delay range Freq. response 40 - 12,000 cps.		1295.
SONA-STRETCHER	Speech stretcher for slowing speech to 1/2 of normal tempo	100 - 4000 cps.		950.
AUTO-VOX	Variable time delay Dual Channel	Negative to positive passing through zero	Introduces controlled amounts of time delay into audio system	1795.

OTHER INSTRUMENTS



INST.	RANGE	RANGE OF MEASUREMENT	FEATURES	PRICE
KILO-Q	20cps - 1mc	Q, 0 - 12.5, 0 - 25, 0 - 50 0 - 125, 0 - 250, 0 - 500	60mmf - .1mf Cap. Range May Be Used As 50mc Video Amp.	\$695.
MICROLTER 50 VTVM	100cps - 50mc	Full Scale: 1 millivolt - 1v, 7 ranges	High Output - AGC'd 2v RMS into 70ohms	495.
SIGNALATOR	1 - 230mc in 10 bands	Contin. tuning		595.
MEGA-MATCH	10mc - 1000mc	Contin. tuning	Displays Mismatch	895.

KAY ELECTRIC CO.

DESIGNERS & MANUFACTURERS OF PRECISION ELECTRONIC TEST AND MEASURING EQUIPMENT

14 MAPLE AVE., PINE BROOK, NEW JERSEY

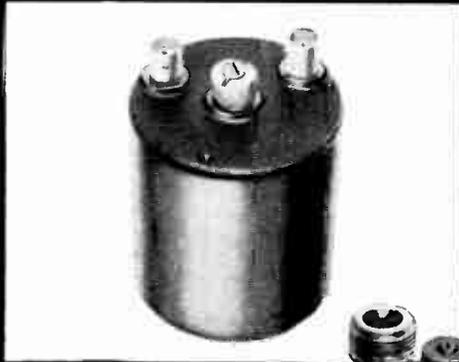
Caldwell 6-4000

Dept. EC-12

For further data on advertised products use page 181.

*The Standard
of Accuracy for*

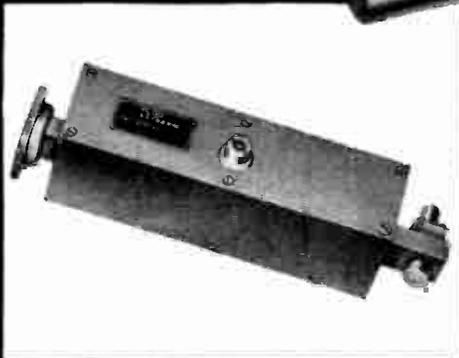
FREQUENCY MEASUREMENT and CONTROL



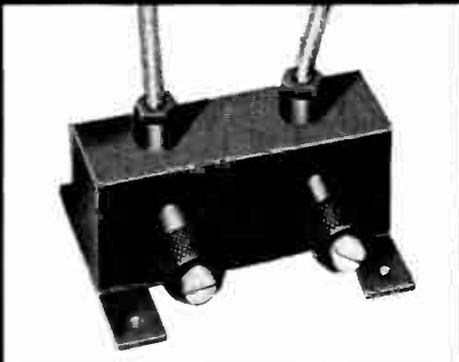
FREQUENCY STANDARDS

Offers a Comprehensive Line of—
**MICROWAVE FILTERS
AND PRESELECTORS**

- SINGLE SHAFT TUNING AVAILABLE
- TSCHEBYCHEFF RESPONSE



- COMPACT DESIGN
- USABLE OVER WIDE TEMPERATURE RANGES
- HERMETIC SEALING AVAILABLE



In order to utilize the crowded microwave spectrum to the greatest possible advantage, Frequency Standards now offers a comprehensive line of filters and preselectors. These units are engineered and constructed with the same exacting care and precision which has made Frequency Standards' wavemeters a standard in the industry.

Frequency Standards is proud of its reputation to undertake development and production work in the fields of preselection, frequency measurement and control which approaches the "state of the art." Our engineering services are available at all times to assist you with your problems.

RESONANT FREQUENCIES AVAILABLE

	L	S	C	X
Bandwidth (Maximum available)	5%	3%	2%	1%
Number of Sections*	2, 3, 4	2, 3, 4	2, 3, 4	2, 3, 4
Insertion Loss (For 1% bandwidth)	≤ 1.5 db	≤ 1. db	≤ 1. db	≤ 1. db
Rejection (F ₀ ± 2x BW) (db)	24 36 48	24 36 48	24 36 48	24 36 48
Input VSWR (Matched Load)	≤ 1.5	≤ 1.5	≤ 1.5	≤ 1.5

*More Sections Available without Gang Tuning.

NEW CATALOG ON REQUEST—Call or write for new Brochure with complete data on precision-built Microwave Filters, Preselectors, Frequency Meters and Field Test Instruments.

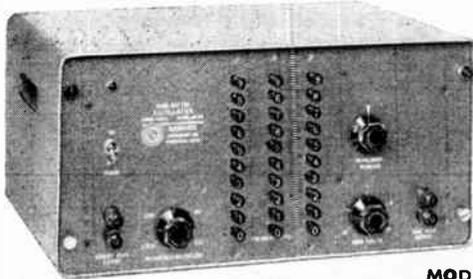
Frequency Standards
ASBURY PARK, NEW JERSEY

Please address
inquiries to BOX 504A



PUSH-BUTTON OSCILLATOR

from 0.001 cps to 100 kc



MODEL 440-A

The Model 440-A PUSH-BUTTON OSCILLATOR is designed for applications requiring very low distortion or extremely good frequency stability and resetability. It provides both sine waves and square waves at any frequency between 0.001 cps and 100 kc. Distortion and Hum is less than 0.1% at any output level. Frequency calibration is $\pm 1\%$. For fine control of frequency, three banks of ten push-button switches are provided. An additional vernier control varies the frequency continuously by an amount equal to the increment between adjacent buttons of the third switch bank. Ideally suited for bridge measurements, tuned filter alignment, rapid spot frequency checks, and distortion measurement. Price, \$550.00 f.o.b. factory.

VARIABLE ELECTRONIC FILTERS

Frequency 0.02 to 20,000 cps



Models 330-A and 330-M

The gain of the Models 330-A and 330-M VARIABLE ELECTRONIC BAND-PASS FILTERS is unity in the pass band and drops outside the pass band at a rate of 24 db/octave. The use of peaking reduces the attenuation at the corner frequencies by 8 db and permits a band width as narrow as one octave without attenuation in the center of the pass band. Both the high and low cut-off frequencies are independently adjustable from 0.02 to 2,000 cps in the 330-A and from 0.2 to 20,000 cps in the 330-M. This provides maximum flexibility of adjustment of both the band center frequency and the band width. By using two electronically regulated supplies the internal hum and noise is reduced to less than 100 microvolts. Calibration accuracy is $\pm 5\%$. Price, \$475.00 f.o.b. factory.

For Further Details Write Dept. EC



Krohn-Hite Instrument Co.

580 Massachusetts Avenue • Cambridge 39, Massachusetts

Principal's Products

**Exclusively Represented
In Canada**

Acton Laboratories Inc.
Browning Laboratories Inc.
Calidyne Company
Communication
Measurements Labs Inc.
Electro-Measurements
Corp.
Frequency Standards Ltd.
Instrument Development
Labs. Inc.
Hastings-Raydist Inc.
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Instrument Co.
Servo Corporation
of America
Trad Electronics Corp.
Technology Instrument
Corp.
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Devices

As exclusive Canadian sales representatives for these manufacturers, we offer complete facilities for their products, and will assist customers with the selection and application of equipment and inquiries for their requirements.

**MEASUREMENT ENGINEERING
LIMITED**

Head Office: Arnprior, Ontario
Branch Sales Office:
Burlington, Ontario

VARIABLE FREQUENCY POWER—Supplied by CML

Designed For Continuous Duty Where Dependability Counts!



3 PHASE POWER CONTINUOUS VARIABLE FROM 360 TO 440 CPS

CML's Model 1450 Electronic Generator has a power output of 750 volt-amperes with output voltage regulation of better than 2% from no load to full load. Harmonic content is below 2% at full load.

Model 1450 is also available as a fixed frequency unit employing a tuning fork oscillator to give a frequency accuracy and stability of 1 part in 50,000. This stability is independent of line voltage or frequency.

360 - 440 CPS BENCH TYPE Variable Frequency Power Supply

Operating from standard 115V 60 CPS power, the Model 1460 provides 400 CPS 100-130 volt supply at any bench position. Utilization of units of this type allows testing at 400 CPS $\pm 10\%$ at any individual position without interference with any other test position. The unit can be easily operated by unskilled personnel.



**OUTPUT 100 V. A.
DISTORTION -2%
STABILITY -1 CPS
REGULATION -2%**

Our design engineering department is at your service to design and custom build a power supply unit for your specific needs. **CANADIAN REPRESENTATIVE: MEASUREMENT ENGINEERING LTD.,**

**5 Harris Crescent, Burlington, Ontario
Arnprior, Ontario**

Write for Catalog M describing Models 1450 and 1460. Yours on request — no obligation.



COMMUNICATION MEASUREMENTS LABORATORY, INC. 350 LELAND AVENUE, PLAINFIELD, NEW JERSEY

Servoscope



The "SERVOSCOPE" manufactured by Servo Corporation of America, New Hyde Park, N.Y. is the only multiple signal generator that accurately measures gain and phase shifts of servomechanisms, and permits complete analysis of low frequency amplifiers and recorders, and other circuits in the subsonic frequency ranges.

SERVOSCOPE

THE FIRST AND STILL THE FINEST
INSTRUMENT OF ITS KIND IN THE WORLD

Saves valuable man-hours • Prevents costly errors • Easy to use

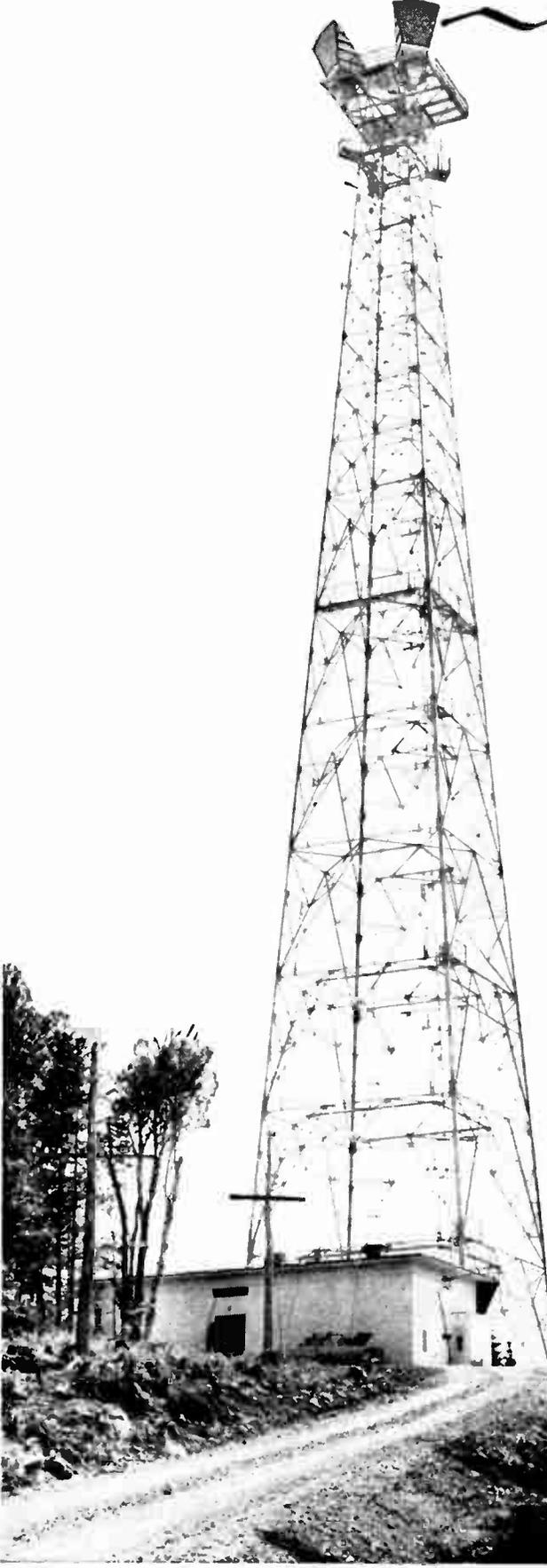
SERVO

CORPORATION OF AMERICA

NEW HYDE PARK, N. Y.

FIELDSTONE 7-2810





PROGRESS

Points An Electronic* Finger

The relay tower is a sign of our progress in communications just as the transmission tower opened the country with electric power over the past 50 years.

Central Bridge already successful in building steel ship bottoms, tanks, bridges and structural work of all kinds, leads again with fabrication and erection of these new electronic fingers in the sky; the television and micro-wave relay tower.

CENTRAL BRIDGE *Company, Limited*
Trenton, Ontario

**Central Bridge Towers
were recently made for:
Bell Telephone Company of Canada
Dept. of National Defense
Canadian General Electric Company Limited
Eastern Telephone and Telegraph
New Brunswick Telephone Company*



The EDITOR'S PAGE

Readers Voice Growing Demand

We note with interest the announcement by the McGraw-Hill Publishing Company, publishers of *Electronics magazine*, the pioneer journal of the American electronics industry, that as of January 1st, 1957, the number of issues published yearly will be increased from twelve to thirty-six. Twenty-four of the issues will be devoted to a topical coverage of the American electronics industry with the remaining twelve issues carrying articles of a truly technical nature.

W. W. MacDonald, editor of *Electronics magazine*, in a statement explaining the planned increase in the coverage of business trends in the American electronics industry, together with a wider coverage of electronic applications in other industries, states:

"... while the engineer's ability to absorb more periodically published technical information may be nearing saturation, this is not necessarily true in the area of commercial or business information. Both technical men and their less technically-bent associates appear to need and want more help here . . ."

We are in wholehearted agreement with the above observation of Mr. MacDonald and have consistently patterned the editorial formula of *Electronics and Communications magazine* on this premise since the first issues of the magazine in April 1953.

The new McGraw-Hill formula of devoting two-thirds of their annual coverage to business news, industry applications, etc. and one-third to the presentation of technical material is the ratio which has been used in the make-up of *Electronics and Communications magazine* for nearly four years. We believe this is a formula which serves best the interests of the engineer and of business management both within the electronics and communications industries proper and throughout the whole broad field of industry and business generally wherein lies the market for the products of the electronic and communication manufacturing industries.

There is no doubt that the electronic engineer is finding it increasingly significant to keep up with the general trends of the electronics industry, not merely the technical advances being made in whatever specialized branch of electronic engineering he may be engaged.

To quote from the publishers of *Electronics magazine*: "In recent years the reader of *Electronics* has voiced a growing demand for more topical information — more information to keep him abreast of business developments in the field . . ."

"... Across-the-board all readers of *Electronics* have been showing a mounting interest in business information.

"Why? Because of an increasing trend throughout industry!

"The functions of the engineer and those of management are becoming more closely integrated. The working engineer who designs equipment on the drawing board and specifies components for it — who, in other words, is a major influence on his firm's purchasing — finds it increasingly necessary to keep himself informed on all phases of his industry's activities.

"That's why he needs more information that is topical — market trends, government contract data, financial operations, product research, industry outlook, executives in the news, production and sales statistics, and tax matters."

As the result of intensive investigation with the objective of producing the most suitable publication for the Canadian electronics industry we feel pleased with ourselves that this trend was known to us four years ago.

* * *

Recognition Of Canadian Skills

We hear from the Sperry Gyroscope Company of Canada, Limited, Montreal that they have received a development engineering contract from an United States company to re-design and repackage an existing air-borne radar indicator.

The requirements of this contract call for Sperry engineers to improve and modify existing circuitry, repackage the entire equipment using subminiature techniques and, most important, provide greatly improved performance under certain common flying conditions.

This is one of the growing number of instances to come to our attention where United States industry has sought the know-how that is available in Canada to improve both in design and performance a piece of equipment which, as yet, has not been used outside the United States. It speaks well for the Sperry engineering staff particularly and Canadian industry generally that our engineering and technical skill has been developed to a point where it is being recognized internationally in areas in which, heretofore, others have been leaders.

* * *

On Getting The Record Straight

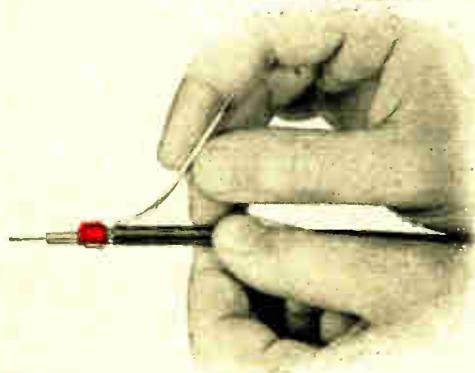
The lead editorial of the November issue of *Electronics and Communications magazine* which dealt with the reported awarding of a contract in the United States for the development and engineering of electronic systems for the CF-105 fighter would seem to have created something of a stir. The editorial, based on an Associated Press despatch datelined from Washington, posed the question why such development contracts should not be awarded to Canadian firms. The editorial took the stand that the Canadian aircraft industry would be in a much stronger position in time of emergency if it were backed up by a strong, vigorous and healthy electronic industry on which it could depend for development know-how in the matter of producing airborne electronic equipment rather than having to depend on outside sources for this information which could, conceivably, be hard to obtain in times of emergency. Reaction to the editorial brought forth the information that the original press report on which the article was based was not entirely correct and that a considerable amount of the development work on the electronics equipment for the CF-105 would, indeed, be carried out in Canada by the affiliate Canadian firms of the American companies to which the contract was awarded. This we're glad to hear. If the editorial did nothing other than get the record straight it at least has served one good purpose.

coaxial and shielded cable grounding completed in 90 seconds with **HYRINGS**

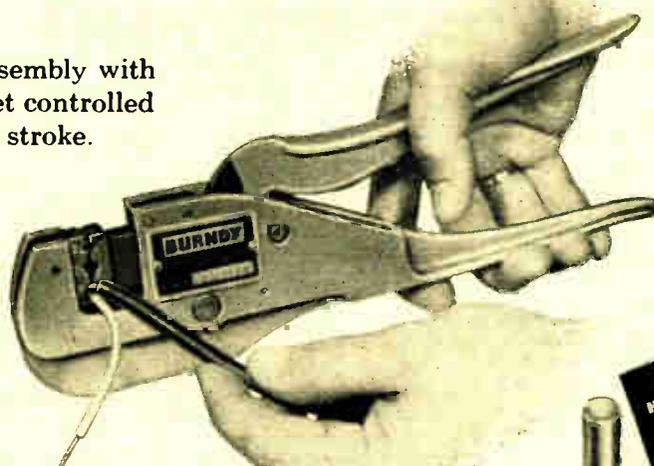
STRIP shield. Slip outer Hyring over insulated conductor. Slide inner Hyring under shield.



INSERT ground lead under outer Hyring and line up over the inner Hyring.



INDENT, assembly with single ratchet controlled compression stroke.



COMPLETED assembly, with Burndy Hylug attached to free end of ground lead.



For details on color-coded BURNDY Hyrings, write for Hyring bulletin.

BURNDY CANADA LTD

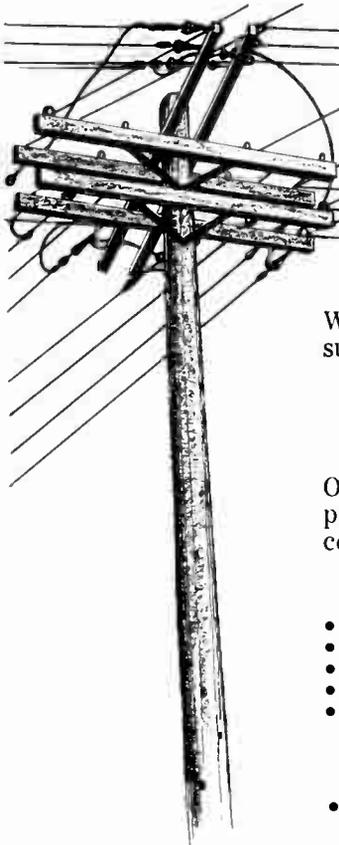
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5520

For further data on advertised products use page 181.



ARE ADJACENT POWER LINES A PROBLEM IN YOUR COMMUNICATION SERVICES?

Wire communications circuits exposed to the influences of power lines are subject to disruption because of:

Electro Magnetic Induction.
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Crosses between power and communication circuits.

Power Station ground potential rise.
Corona and Lighting.

Osborne's 30 years experience in the field of communications and telephone protection make possible the reliable operation of your facilities during such conditions — exactly when you need them the most.

OSBORNE DESIGNS, MANUFACTURES AND SUPPLIES:

- Osborne Telephone and Communications Protectors.
- Isolating Transformers.
- Grounding Relays.
- Gas Filled Arresters.
- Custom Built Specialty Transformers and Magnet Coil Windings.
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- Neutralizing Transformers.
- Horn Gap Arresters.
- Telephone Ringing Generators.

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OSBORNE ELECTRIC COMPANY LIMITED

95 WESLEY STREET

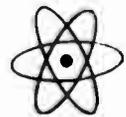
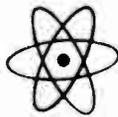
TORONTO 14, ONT.

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ELECTRONICS

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- Loudspeakers
- Electrolytic Condensers
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- ✓ Radio and Television Components
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- ✓ Electronic Products
- ✓ Chemical and Metallurgical Products

- Switches
- Ferrites
- Microwave Materials
- Memory Devices
- Classified Components

Complete information available on request

The PLESSEY COMPANY OF CANADA LTD.

243 DUNBAR AVE.

MONTREAL, QUE.

Buyers' Guide Of: electronic & communication equipment & components

Address listing of Canadian firms on page 173.

Address listing of U.S. and Foreign firms on page 133.

ACCELERATORS (Cascade)

Rogers Majestic Electronics Ltd.

ACCELERATORS (Linear)

Electromechanical Products
Electrodesign
Rogers Majestic Electronics Ltd.
Sanders Associates, Inc.
Varian Associates of Canada Ltd.
BJ Electronics, Borg-Warner Corp.

ACCELEROMETERS

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Instrument Development Lab's Inc.
Gulton Industries, Inc.
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ACTUATORS

The Solartron Electronic Group Ltd.

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B. F. Goodrich Canada Ltd.
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Phaotron Instrument and Electronic Co.

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Superex Electronics Corp.
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MJS Electronic Sales Ltd.
The Hickok Electrical Instrument Co.
Pomona Electronics Co., Inc.
Canadian Marconi Co.
Stark Electronic Instruments Ltd.

ADAPTORS (Tube)

Electro Sonic Supply Co. Ltd.
MJS Electronic Sales Ltd.
Amphenol Canada Ltd.
The Hickok Electrical Instrument Co.
Pomona Electronics Co., Inc.
Stark Electronic Instruments Ltd.

ADHESIVES

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B. F. Goodrich Canada Ltd.
Minnesota Mining & Mfg. of Canada Ltd.
Dow Corning Silicones Ltd.
R. C. Kahnert Sales Ltd.
National Silicones Ltd.
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Workman TV Inc.
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Division of Textron, Inc.
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Automatic Electric Sales (Canada) Ltd.
Bakelite Company, Division Union
Carbide Canada Ltd.
UBS Chemical Corporation
Shamban Engineering Co.
Lord Manufacturing Co.
Houghton Laboratories.
Reichhold Chemicals (Canada) Ltd.
Paisley Products, Inc., Division of
Morningsstar, Nicol, Inc.

AIR CLEANERS (Electronic)

Trion, Inc.

ALIGNMENT TOOLS, TV

Walsco Electronics Corp.

ALLOYS (Beryllium)

The Beryllium Corp.

ALUMINIZERS (TV Tube)

Edwards High Vacuum (Canada) Ltd.
Hermann Fortier Inc.
Consolidated ElectroDynamics Corp.

AMPLIFIERS (Computer)

The Solartron Electronic Group Ltd.
George A. Philbrick Researches, Inc.

AMPLIFIERS (Current)

The Solartron Electronic Group Ltd.

AMPLIFIERS (D.C.)

George A. Philbrick Researches, Inc.

AMPLIFIERS (Decade)

Canadian Research Institute
Pye Canada Ltd.
Computing Devices of Canada Ltd.
R-O-R Associates Ltd.
Detectolab, Inc.
Kay Electric Co.
Dynamic Electronics — New York Inc.
Endevco Corporation
MJS Electronic Sales Ltd.
Atlas Radio Corp. Ltd.
Berkeley Div. of Beckman Instruments, Inc.
Gulton Industries, Inc.
Hermon Hosmer Scott, Inc.
Kay Lab
TMC (Canada) Ltd.
Radio Engineering Products Ltd.
Measurement Engineering Ltd.

AMPLIFIERS (Keying)

Kay Electric Co.
Erco Radio Labs, Inc.
Bruno-New York Industries Corp.
TMC (Canada) Ltd.
Radio Engineering Products Ltd.
The Plessey Co. of Canada Ltd.
Canadian Marconi Co.

AMPLIFIERS (Logarithmic)

Mechron Engineering Products Ltd.
R-O-R Associates Ltd.
Cossor Canada Ltd.
Detectolab, Inc.
Color Television Inc.
Pylon Electronic Development Co. Ltd.
Atlas Radio Corp. Ltd.
Berkeley Div. of Beckman
Instruments, Inc.
Audio Instrument Co. Inc.
Kay Lab.
Radiation Counter Laboratories, Inc.
Lel, Inc.
Engineered Sound Systems Ltd.
Ferranti Electric Ltd.

AMPLIFIERS (Photocell)

Mechron Engineering Products Ltd.
Canadian Research Institute
H. Tinsley & Co. Ltd.
Dominion Sound Equipments Ltd.
Industrial Electronics of Canada Ltd.
Electronic Associates Ltd.
Specialty Engineering & Elec's. Co.

Autotron, Inc.
Electronic Control Corp.
Southern Instruments Ltd. —
Oscillograph Division
Potter Instrument Co., Inc.
Canadian Westinghouse Co. Ltd. —
Electronics Division
Atlas Radio Corp. Ltd.
Berkeley Division of Beckman
Instruments, Inc.
Evershed & Vignoles Ltd.
Instrument Development Lab's., Inc.
Soundmaster Equipments
Bruno-New York Industries Corp.
Vickers Electric Division, Vickers Inc.,
Unit of Sperry Rand Corp.
Tornico Electronics, Inc.
Keystone Products Co.
Electronics Corp. of America (Can.) Ltd.
Perkins Electric Co., Ltd. —
Electronics Division
Avionics Ltd.
Measurement Engineering Ltd.
Electronic Communications Ltd.
Canadian Marconi Co.
Beaconing Optical & Precision
Materials Co. Ltd.
The British Thomson-Houston Co.
(Canada) Ltd.

AMPLIFIERS (Power Voltage)

Automatic Temperature Control Co. Inc.

AMPLIFIERS (Printed Circuit)

R. C. Kahnert Sales Ltd.
Centralab Canada Ltd.
Cossor Canada Ltd.
Computing Devices of Canada Ltd.
Hackbusch Electronics Ltd.
P. J. Heenan Ltd.
Centralab, Division of Globe Union Inc.
Electro Sonic Supply Co. Ltd.
Northern Electric Co. Ltd.
Electronic Tube Corporation
Bruno-New York Industries Corp.
Stancil-Hoffman Corp.
Tenatronics Ltd.
Non-Linear Systems, Inc.
The Plessey Co. of Canada Ltd.
Avionics Ltd.
Industrial Control Co.
Perkins Electric Co., Ltd. —
Electronics Division
Engineered Sound Systems Ltd.
Beaconing Optical & Precision
Materials Co. Ltd.

AMPLIFIERS (Selective)

The Solartron Electronic Group Ltd.

AMPLIFIERS (Servo)

PSC Applied Research Limited
Feedback Controls, Inc.

AMPLIFIERS (Subminiature)

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Lake Engineering Co. Ltd.
Cossor Canada Ltd.
Computing Devices of Canada Ltd.
Industrial Electronics of Canada Ltd.
Ampex Corporation—Instrumentation Div.
Centralab, Division of Globe Union Inc.
Dynamic Electronics — New York Inc.
Electro Sonic Supply Co. Ltd.
Northern Electric Co. Ltd.
Berkeley Division of Beckman
Instruments, Inc.
Gulton Industries, Inc.
Electronic Specialty Co.
Fisher Research Laboratory, Inc.
Librascope Inc.
Instrument Development
Laboratories, Inc.
Instruments for Industry, Inc.
Stancil-Hoffman Corp.
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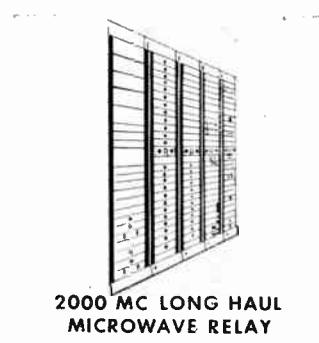
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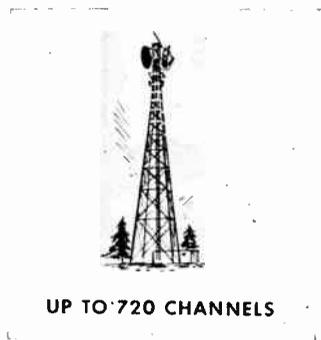
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- AMPLIFIERS (Sub Sonic)**
The Solartron Electronic Group Ltd.
- AMPLIFIERS (Television)**
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McCurdy Radio Industries Ltd.
Pye Canada Ltd.
Cossor Canada Ltd.
Kay Electric Co.
Dynamic Electronics — New York Inc.
Standard Electronics Corp.
Blonder-Tongue Laboratories, Inc.
Research Industries Ltd.
Northern Electric Co. Ltd.
Belling & Lee Ltd.
Ampli-Vision Division of International
Telemeter Corp.
Continental Electronics Mfg. Co.
American Electronic Laboratories, Inc.
Entron Incorporated
Kay Lab
Bruno-New York Industries Corp.
Television Utilities Corp.
Tel-Instrument Electronics Corp.
Spencer-Kennedy Laboratories, Inc.
Sarkes Tarzian, Inc., Rectifier Div.
Tele-Matic Industries Inc.
RCA Victor Company, Ltd.
E. G. Lomas Co.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Measurement Engineering Ltd.
Canadian General Electric Co., Ltd. —
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The Plessey Co. of Canada Ltd.
Sarkes Tarzian, Inc.
Electroline Television Equipment Inc.
Tequipment Mfg. Co., Ltd.
- AMPLIFIERS (Transistor)**
R. C. Kahnert Sales Ltd.
Centralab Canada Ltd.
Jerold Electronics (Canada) Ltd.
Computing Devices of Canada Ltd.
Minneapolis-Honeywell Regulator Co. Ltd.,
Aeronautical Div.
R-O-R Associates Ltd.
P. J. Heenan Ltd.
Kay Electric Co.
Dynamic Electronics — New York Inc.
Centralab, Division of Globe Union Inc.
PSC Applied Research Ltd.
Executone Communication Systems Ltd.
Northern Electric Co. Ltd.
Minneapolis-Honeywell Regulator Co. Ltd.,
Brown Instrument Div.
Hoover Electronics Co.
Electronic Research Associates, Inc.
Magnetic Amplifiers, Inc.
Rogers Majestic Electronics Ltd.
Gulton Industries, Inc.
Soundmaster Equipments
Manning, Maxwell & Moore, Inc.,
Aircraft Products Div.
Stancil-Hoffman Corp.
Millivac Instrument Corp.
Lel, Inc.
Tornico Electronics, Inc.
E. G. Lomas Co.
Fortiphone Ltd.
Industrial Control Co.
Electronic Communications Ltd.
Avionics Ltd.
Engineered Sound Systems Ltd.
John R. Tilton Ltd.
Canadian Marconi Co.
The Wheeler Insulated Wire Co., Inc.,
Div. of Sperry Rand Corp.
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Canadian Research Institute
Cossor Canada Ltd.
Computing Devices of Canada Ltd.
Acustica Associates, Inc.
Atlas Radio Corporation Ltd.
Continental Electronics Mfg. Co.
American Electronics, Inc.
Bludworth Marine Division of Kearfott
Company, Inc.
The Solartron Electronic Group Ltd.
Donner Scientific Co.
Radio Engineering Products Ltd.
Perkins Electric Co. Ltd. —
Electronics Div.
- ANALYZERS (Audio)**
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Electrodesign
Alex L. Clark Ltd.
Canadian Research Institute
R-O-R Associates Ltd.
Magnecoord Inc.
Heath Company
Dynamic Electronics — New York Inc.
MJS Electronic Sales Ltd.
Atlas Radio Corporation Ltd.
American Electronics, Inc.
Audio Instrument Co. Inc.
Electronic Tube Corp.
Dawe Instruments Ltd.
Fisher Research Laboratory, Inc.
- Bruno-New York Industries Corp.
Muirhead & Co. Ltd.
Donner Scientific Co.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Perkins Electric Co., Ltd. —
Electronics Div.
John R. Tilton Ltd.
Dawe Instruments Ltd. (Canadian Div.)
Stark Electronic Instruments Ltd.
General Radio Co.
Canadian Marconi Co.
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Electromechanical Products
Canadian Research Institute
R. H. Nichols Ltd.
Powerlite Devices Ltd.
Kay Electric Co.
Precision Apparatus Co., Inc.
Pyramid Electric Co.
Alpar Manufacturing Corp.
MJS Electronic Sales Ltd.
Atlas Radio Corporation Ltd.
S & T Sales Ltd.
Northern Electric Co. Ltd.
Canoga Corp.
Electronic Tube Corp.
Bruno-New York Industries Corp.
Pomona Electronics Co., Inc.
The Triplett Electrical Instrument Co.
TMC (Canada) Ltd.
Collins Radio Co. of Canada Ltd.
Bach-Simpson Ltd.
Stark Electronic Instruments Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
Associated Electronic Components
General Communications Ltd.
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R-O-R Associates Ltd.
X-Ray & Radium Industries Ltd.
Computing Devices of Canada Ltd.
Sierra Electronic Corp.
Kay Electric Co.
MJS Electronic Sales Ltd.
Muirhead Instruments Ltd.
Atlas Radio Corporation Ltd.
Airmec Ltd.
Berkeley Division of Beckman
Instruments, Inc.
Electronic Tube Corp.
Dawe Instruments Ltd.
Bruno-New York Industries Corp.
Muirhead & Co. Ltd.
Donner Scientific Co.
Bach-Simpson Ltd.
Collins Radio Co. of Canada Ltd.
Standard Telephones & Cables
Mfg. Co. (Canada) Ltd.
Computer-Measurements Corp.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
The Plessey Co. of Canada Ltd.
Dawe Instruments Ltd. (Canadian Div.)
BJ Electronics, Borg-Warner Corp.
General Radio Co.
Canadian Marconi Co.
Radionics Ltd.
Industrial Test Equipment Co.
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Gow-Mac Instrument Co.
- ANALYZERS (Magnetic)**
Electromechanical Products
- ANALYZERS (Phase)**
Magnetic Amplifiers, Inc.
- ANALYZERS (Servo)**
Electromechanical Products
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Electrodesign
R-O-R Associates Ltd.
Computing Devices of Canada Ltd.
Industrial Electronics of Canada Ltd.
Atlas Radio Corporation Ltd.
American Electronics, Inc.
Dalmo Victor Company,
Division of Textron Inc.
Electronic Tube Corp.
Servo Corporation of America
The Solartron Electronic Group Ltd.
Industrial Control Co.
Measurement Engineering Ltd.
Brush Electronics Co., Division of
Clevite Corp.
A. C. Wickman Ltd.
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Mechron Engineering Products Ltd.
R-O-R Associates Ltd.
Computing Devices of Canada Ltd.
Electronic Associates Ltd.
Detectolab, Inc.
Jarrell-Ash Co.
DeMornay-Bonardi Corp.
Traerlab Inc.
Polarad Electronics Corp.
Kay Electric Co.
Pylon Electronic Development Co., Ltd.
Canoga Corp.
Baird Associates—Atomic Instrument Co.
Electronic Tube Corp.
- F-R Machine Works, Inc.,
Electronics & X-Ray Div.
Radiation Counter Laboratories, Inc.
Lavoie Laboratories, Inc.
Donner Scientific Co.
Collins Radio Co. of Canada Ltd.
Measurement Engineering Ltd.
General Radio Co.
Canadian Marconi Co.
- ANALYZERS (Transistor)**
Magnetic Amplifiers, Inc.
- ANALYZERS (Video)**
Sierra Electronics Corp.
Kay Electric Co.
Dynamic Electronics — New York Inc.
The Hickok Electrical Instrument Co.
Tel-Instrument Electronics Corp.
MJS Electronic Sales Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
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Measurement Engineering Ltd.
John R. Tilton Ltd.
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- ANTENNA PEDESTALS**
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Sinclair Radio Labs. Ltd.
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Sinclair Radio Labs. Ltd.
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Andrew Antenna Corp., Ltd.
D. S. Kennedy & Co.
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General Cement Mfg. Co.,
Division of Textron, Inc.
Technical Appliance Corp.
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Prodelin, Inc.
Atlas Radio Corp. Ltd.
Canoga Corporation,
Fretco Incorporated
Dalmo Victor Co., Div. of Textron Inc.
Micro-Tower Ltd.
Sanders Associates, Inc.
Radio Merchandise Sales, Inc.
Raytheon Manufacturing Co.
RCA Victor Co. Ltd.
E. G. Lomas Co.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Adams Engineering Ltd.
Beaconing Optical & Precision
Materials Co. Ltd.
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Alliance Motors.
Hackbusch Electronics Ltd.
Alex L. Clark Ltd.
Eclipse-Pioneer Division, Bendix
Aviation Corp.
E. F. Johnson Co.
The Wind Turbine Co. of Canada Ltd.
Channel Master Corp.
Andrew Antenna Corp., Ltd.
Airtron, Inc.
Electronic Sonic Supply Co. Ltd.

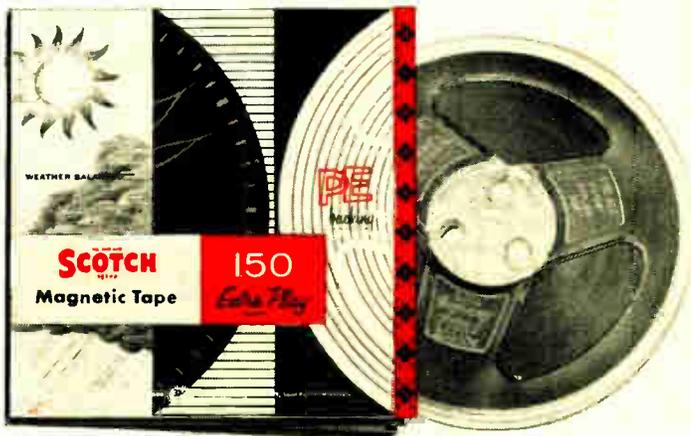
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Here's your chance to buy the magnetic tape everyone's talking about—at a special *new economy price!* It's popular "SCOTCH" Brand "Extra Play" Magnetic Tape 190, first long play tape on the market and *still* the best seller. With 50% more recording time on every reel...higher fidelity...strength to spare...high potency oxide... "SCOTCH" "Extra Play" Magnetic Tape 190 has been making recording history. Buy now and save 28% on every reel!

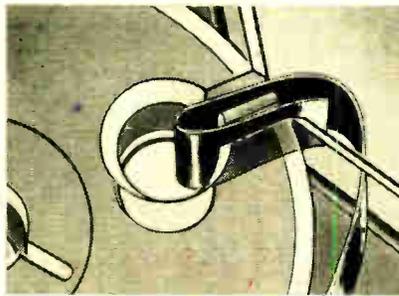


New polyester-backed (Made from DuPont's "Mylar"*) "Extra Play" Tape 150— for extra strength.

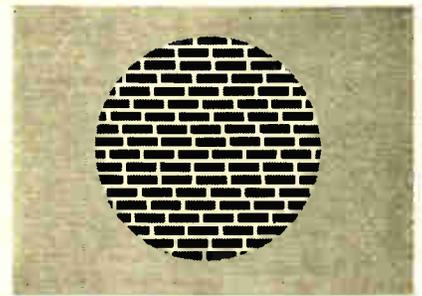
Years ago "SCOTCH" Brand pioneered tough polyester-backed magnetic tape for experimental government orders. Now *you* can enjoy the *same* benefits of "SCOTCH" Brand research and development with new "Extra Play" Magnetic Tape 150. "SCOTCH" Brand's extra-strength polyester backing assures you long-lasting recordings...perfect tape performance in all weather, all climates—(It's "Weather-Balanced"! "SCOTCH" Brand's exclusive high-potency oxide coating guarantees you superior recording quality on any machine.

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Both of these
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EASIER THREADING with new "Loop-Lok" Reel! Saves time... saves tape! It's "SCOTCH" Brand's exclusive "Loop-Lok" reel. Just loop tape around the new-design center pin for instant threading. Tape locks tight without troublesome wrap-around, releases fast at end of reel.



CRISP, BRILLIANT SOUND thanks to newest oxide coating! By laying fine-grain oxide particles in a neat, orderly pattern (as shown here), "SCOTCH" Brand is able to pack in thousands more particles than standard long play tapes—to produce a super-sensitive magnetic recording surface.

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manufacturer — particularly in the area of consulting service — and the growth potential of electronics is one of the greatest within Canadian industry.

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Engineered Sound Systems Ltd.
Adams Engineering Ltd.
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John R. Tilton Ltd.
Tequipment Mfg. Co., Ltd.
BJ Electronics, Borg-Warner Corp.

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Beechey Enterprises
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Electronic Associates Ltd.
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Fretco Incorporated.
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Photo Crystals, Inc.
Sanders Associates, Inc.
Andrew Antenna Corp. Ltd.
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E. G. Lomas Co.
Collins Radio Co. of Canada Ltd.
Standard Telephones & Cables Mfg. Co.
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Canadian Marconi Co.
Beaconing Optical & Precision
Materials Co. Ltd.

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Andrew Antenna Corp., Ltd.
The Wind Turbine Co. of Canada Ltd.
Alpar Manufacturing Corp.
The Ahearn & Soper Co. Ltd.
Bayly Engineering Ltd.
Renfrew Electric & Refrigerator Co. Ltd.
Amphenol Canada Ltd.
Atlas Radio Corp. Ltd.
Belling & Lee Ltd.
Defiance Engineering & Microwave Corp.
Micro-Tower Ltd.
RCA Victor Co. Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Telrex Laboratories.
Adams Engineering Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
John R. Tilton Ltd.
Canadian Marconi Co.
Canadian Marconi Co. —
Electronic Tube & Components Div.

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Dynamic Electronics — New York Inc.
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Electronics Division.
Technical Appliance Corp.
Alpar Manufacturing Corp.
The Ahearn & Soper Co. Ltd.
Amphenol Canada Ltd.
Pylon Electronic Development Co. Ltd.
Electro Sonic Supply Co. Ltd.
Airtron Canada Ltd.
Specialty Engineering & Electronics Co.
Bludworth Marine Div. of Kearfott
Co., Inc.
American Electronic Laboratories, Inc.
Belling & Lee Ltd.
Rogers Majestic Electronics Ltd.
Electronic Specialty Co.
Insuline Corp. America, Subsidiary Van
Norman Industries Inc.
Micro-Tower Ltd.
Winegard Company.
Mosley Electronics Inc.
Scala Radio Co.
Prodelin, Inc.
Radio Merchandise Sales, Inc.
RCA Victor Co., Ltd.
TMC (Canada) Ltd.
Pacific Communications Service Ltd.

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Canoga Corporation.
Dalmo Victor Co., Div. of Textron Inc.
Charles W. Pointon Ltd.
Radio Merchandise Sales, Inc.
Raytheon Manufacturing Co.
RCA Victor Co. Ltd.
E. G. Lomas Co.
Tenatronics Limited.
E. S. Gould Sales Co.
Telrex Laboratories.
John R. Tilton Ltd.

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Cossor Canada Ltd.
Computing Devices of Canada Ltd.
Canadian Aviation Electronics Ltd.
McCarter Radio & Television Ltd.
Aviation Electric Ltd.
Airtron, Inc.
Andrew Antenna Corp., Ltd.
D. S. Kennedy & Co.
The Wind Turbine Co. of Canada Ltd.
Technical Appliance Corp.
American Electronics Co.
E. F. Johnson Co.
Waldom Electronics Inc.
Canadian Westinghouse Co. Ltd. —
Electronics Division.
Blonder-Tongue Laboratories, Inc.
Dynamic Electronics — New York Inc.
The Ahearn & Soper Co. Ltd.
Electro Sonic Supply Co. Ltd.
Pylon Electronic Development Co. Ltd.
Amphenol Canada Ltd.
Airtron Canada Ltd.
Bayly Engineering Ltd.
Atlas Radio Corp. Ltd.
Specialty Engineering & Electronics Co.
Rex Bassett, Inc.
Belling & Lee Ltd.
American Electronic Laboratories, Inc.
Continental Electronics Mfg. Co.
Canoga Corporation.
Dalmo Victor Co., Div. of Textron Inc.
Fretco Incorporated.

Electronic Specialty Entron Inc. Co.
Defiance Engineering & Microwave Corp.
Rogers Majestic Electronics Ltd.
Micro-Tower Ltd.
Radio Merchandise Sales, Inc.
Sanders Associates, Inc.
Prodelin, Inc.
RCA Victor Co. Ltd.
Budd Stanley Co. Inc.
E. G. Lomas Co.
TMC (Canada) Ltd.
Pacific Communications Services Ltd.
Standard Telephones & Cables Mfg.
Co. (Canada) Ltd.
Telrex Laboratories.
Tequipment Mfg. Co., Ltd.
John R. Tilton Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Adams Engineering Ltd.
Measurement Engineering Ltd.
Canadian Marconi Co.
Beaconing Optical & Precision
Materials Co. Ltd.
Electroline Television Equipment Inc.

ANTENNA TOWERS

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R. C. Kahnert Sales Ltd.
J. J. MacQuarrie
Sinclair Radio Labs. Ltd.
Bennett & Collins Ltd., Mfg. Div.
Cossor Canada Ltd.
Aviation Electric Ltd.
Alpar Manufacturing Corp.
Channel Master Corp.
The Wind Turbine Co. of Canada Ltd.
Canadian Westinghouse Co. Ltd. —
Electronics Division.
Specialty Engineering & Electronics Co.
Renfrew Electric & Refrigerator Co. Ltd.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
Belling & Lee Ltd.
Baker Manufacturing Co.
Rogers Majestic Electronics Ltd.
Micro-Tower Ltd.
Radio Merchandise Sales, Inc.
Thomas Mold & Die Co.

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Under the provisions of Section 46 of the Canadian Patent Act, the owner of a patent and his legal representatives have the "exclusive right, privilege and liberty of making, constructing, using and vending to others to be used" the patented invention and Canadian Radio Patents Limited, in accordance with the requirements of Section 67 and 68 of the Patent Act, has licensed the following Canadian companies for the manufacture and sale in Canada of radio and television receivers and other electronic equipment embodying inventions which it administers:

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Benco Television Associates Limited	Hallicrafters (Canada) Limited, (The)
Canadian Admiral Corporation Limited	Manning Radio Limited
Canadian Aviation Electronics Limited (DuMont)	McKinnon Industries Limited, (The)
Canadian General Electric Company Limited	Measurement Engineering Limited
Canadian Marconi Company	Monarch Radio Manufacturing Company
Canadian Radio Manufacturing Corporation Limited	Northern Electric Company Limited
Canadian Westinghouse Company Limited	Philco Corporation of Canada Limited
Chisholm Industries Limited	Philips Industries Limited
Cossor (Canada) Limited	Prichard, J. B.
Crosley Radio and Television Division, Avco of Canada Limited	Pye Canada Limited
Crystal Radio of Canada Limited	RCA Victor Company Limited
Dominion Electrohome Industries Limited	Radio Communications Equipment & Engineering Limited
Dominion Watch Case Limited	Research Industries Limited
Electrical Products Manufacturing Company Limited	Rogers Majestic Radio Corporation Limited
Electronic Enterprises Limited	Seabreeze Manufacturing Limited
Emerson Radio of Canada Limited	Shelbern Industries (Canada) Limited
	Sparton of Canada Limited
	Stark Electronic Instruments Limited
	Stewart-Warner Corporation of Canada Limited
	Sylvania Electric (Canada) Limited

The above companies are working the patented inventions in Canada on a commercial scale and are prepared and willing to meet the public demand for the patented articles in Canada on reasonable terms.

Canadian Radio Patents Limited desires to inform importers, vendors, purchasers or users of radio and television receivers and other electronic devices and equipment incorporating patented inventions owned or administered by Canadian Radio Patents Limited and not manufactured or sold under license from Canadian Radio Patents Limited, that they will be held liable for patent infringement.

Canadian Radio Patents Limited will be glad to furnish, upon application, full particulars and information in respect to the patents that it owns or administers relating to radio and television receivers and other electronic devices and equipment.

CANADIAN RADIO PATENTS LIMITED

200 ST. CLAIR AVENUE WEST

TORONTO 7, CANADA

Use or sale of radio and television receivers not approved under the Canadian Electrical Code is illegal
in most Provinces.



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For further data on advertised products use page 181.

World Radio History

Collins Radio Co. of Canada Ltd.
Telrex Laboratories.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Adams Engineering Ltd.

ANTENNAS (Marine)

M. J. Howard
Mechron Engineering Products Ltd.
Sinclair Radio Labs. Ltd.
Lindsay Antenna & Specialty Prods. Ltd.
A. C. Simmonds & Sons Ltd.
Hackbusch Electronics Ltd.
McCarter Radio & Television Ltd.
Aviation Electric Ltd.
The Wind Turbine Co. of Canada Ltd.
Technical Appliance Corp.
Premax Products Div. Chisholm-Ryder Co.
D. S. Kennedy & Co.
Standard Electronics Corp.
Airtron Canada Ltd.
S & T Sales Ltd.
Rex Bassett, Inc.
Fretco Incorporated.
Insuline Corp. America, Subsidiary Van
Norman Industries Inc.
Scala Radio Co.
RCA Victor Co., Ltd.
Tenatronics Limited.
TMC (Canada) Ltd.
Canadian Marconi Co.

ANTENNAS (Microwave)

Polarad Electronics Corp.

ANTENNAS (Mobile)

Premax Products, Div. Chisholm-Ryder Co.

ANTENNAS (Railroad)

Sinclair Radio Labs. Ltd.
Lindsay Antenna & Specialty Prods. Ltd.
Computing Devices of Canada Ltd.
Aviation Electric Ltd.
Andrew Antenna Corp., Ltd.
Canadian Westinghouse Co. Ltd. —
Electronics Division.
Alpar Manufacturing Corp.
American Electronic Laboratories, Inc.
Insuline Corp. America, Subsidiary Van
Norman Industries Inc.
Fretco Incorporated.
Scala Radio Co.
Pacific Communications Services Ltd.

ANTENNAS (Receiver)

M. J. Howard
Sinclair Radio Labs. Ltd.
Lindsay Antenna & Specialty Prods. Ltd.
Campbell Manufacturing Co. Ltd.
Canadian Aviation Electronics Ltd.
McCarter Radio & Television Ltd.
The Wind Turbine Co. of Canada Ltd.
Technical Appliance Corp.
Superex Electronics Corp.
Premax Products Div. Chisholm-Ryder Co.
Alpar Manufacturing Corp.
Amphenol Canada Ltd.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
Belling & Lee Ltd.
Rex Bassett, Inc.
Canoga Corporation.
Fretco Incorporated.
Insuline Corp. America, Subsidiary Van
Norman Industries Inc.
Electronic Specialty Co.
Scala Radio Co.
Rollan Electric Co.
Mitchell Industries, Inc.
Peerless Products Industries.
Winegard Company.
Radio Merchandise Sales, Inc.
RCA Victor Co., Ltd.
TMC (Canada) Ltd.
Collins Radio Co. of Canada Ltd.
Telrex Laboratories.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.

ATTENUATORS

Jerrold Electronics (Canada) Ltd.
Computing Devices of Canada Ltd.
R-O-R Associates Ltd.
Canadian Research Institute.
Pye Canada Ltd.
J. B. Smyth Electronic Components.
Aerovox Canada Ltd.
John Herring & Co. Ltd.
Centralab Canada Ltd.
Technical Appliance Corp.
Dynamic Electronics — New York Inc.
Airtron, Inc.
Blonder-Tongue Laboratories, Inc.
Technicraft Laboratories, Inc.
Vidaire Electronics Mfg. Corp.
Kay Electric Co.
Sierra Electronic Corp.
Specialty Engineering & Electronics Co.
Whiteley Electrical Radio Co. Ltd.
Boonton Radio Corp.
ClaroStat Mfg. Co., Inc.
The Narda Corp.
Ohmite Manufacturing Co.
Electro Sonic Supply Co. Ltd.
MJS Electronic Sales Ltd.
Muirhead Instruments Ltd.
Pylon Electronic Development Co., Ltd.
Atlas Radio Corp. Ltd.

Belling & Lee Ltd.
Ampl-Vision Division of International
Telemeter Corp.
Entron Incorporated.
F-R Machine Works, Inc., Electronics
and X-Ray Div.
Kay Lab.
Elliott Brothers (London) Ltd.
Aerovox Corporation.
Trad Electronics Corp.
Sanders Associates, Inc.
Photo Crystals, Inc.
Muirhead & Co. Ltd.
Bruno-New York Industries Corp.
Shallcross Manufacturing Co.
University Loudspeakers, Inc.
Spencer-Kennedy Laboratories, Inc.
New London Instrument Co., Inc.
Tele-Matic Industries Inc.
The Solartron Electronic Group Ltd.
Budd Stanley Co. Inc.
E. G. Lomas Co.
E. S. Gould Sales Co.
Radio Engineering Products Ltd.
Bach-Simpson Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Adams Engineering Ltd.
Measurement Engineering Ltd.
Perkins Electric Co., Ltd. —
Electronics Division
Avionics Ltd.
Empire Devices Products Corp.
Dawe Instruments Ltd. (Canadian Div.)
Canadian Marconi Co.
Canadian Marconi Co. —
Electronic Tube & Components Div.
BJ Electronics, Borg-Warner Corp.
General Radio Co.
Associated Electronics Components.
Electroline Television Equipment Inc.

ATTENUATORS (Microwave)

Sinclair Radio Labs. Ltd.

ATTENUATORS (UHF)

Sinclair Radio Labs. Ltd.

Baffles (Speaker)

Bud Radio Inc.
R. C. Kahmert Sales Ltd.
Audio-Vox
Astral Electric Co. Ltd.
Dominion Sound Equipments Ltd.
Alex L. Clark Ltd.
Hackbusch Electronics Ltd.
J. B. Smyth Electronic Components.
Universal Speaker Service.
Canadian Aviation Electronics Ltd.
Chisholm Industries Ltd.
Utah Radio Products Corp.
Hartley Products Co.
Atlas Sound Corp.
Electronic Instrument Co. Inc.
Kellogg Switchboard & Supply Co.
EV of Canada Ltd.
Altec Lansing Corp.
General Cement Mfg. Co.,
Division of Textron, Inc.
Electro Sonic Supply Co. Ltd.
H. Roy Gray Co. Ltd.
Hermann Fortier Inc.
Atlas Radio Corp. Ltd.
Dominion Electrophone Industries Ltd.
Executone Communication Systems Ltd.
B. B. Butler Mfg. Co., Inc.
Charles W. Pointon Ltd.
Electronic Enterprises Ltd.
Goodmans Industries Ltd.
University Loudspeakers, Inc.
Industrial & Institutional
Communications Ltd.
E. S. Gould Sales Co.
Bradford J. Wickert Ltd.
Electro-Vox Intercom. Inc.
Perkins Electric Co., Ltd. —
Electronics Division.
Engineered Sound Systems Ltd.
John R. Tilton Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Tequipment Mfg. Co., Ltd.
Electronic Communications Ltd.
Desser E-E Ltd.

BALLASTS

Acme Electric Corp. Ltd.
Canadian Line Materials Ltd.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
Northern Electric Co. Ltd.
The Universal Wire & Cable Co. Ltd.
Osborne Electric Co., Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
John R. Tilton Ltd.
Canadian Marconi Co. —
Electronic Tube & Components Div.

BATTERIES (Dry)

A. C. Simmonds & Sons Ltd.
Hackbusch Electronics Ltd.
Ray-O-Vac (Canada) Ltd.
Burgess Battery Co.
Electro Sonic Supply Co. Ltd.
Hermann Fortier Inc.
Willard Storage Battery Co. of Can. Ltd.
Automatic Electric Sales (Canada) Ltd.
Northern Electric Co. Ltd.

Ward Leonard of Canada Ltd.
P. R. Mallory & Co. Inc.
United States Rubber Co.
National Carbon Co.
Gould-National Batteries of Canada Ltd.
Perkins Electric Co., Ltd. —
Electronics Division.
Engineered Sound Systems Ltd.

BATTERIES (Mercury)

A. C. Simmonds & Sons Ltd.
Electric Sonic Supply Co. Ltd.
P. R. Mallory & Co. Inc.
National Carbon Co.
Perkins Electric Co., Ltd. —
Electronics Division.

BATTERIES (Radioactive)

United States Radium Corp.

BATTERIES (Storage)

B. F. Goodrich Canada Ltd.
The Electric Storage Battery Co.
(Canada) Ltd.
Canadian Aviation Electronics Ltd.
Electrolabs.
Willard Storage Battery Co. of Can. Ltd.
Automatic Electric Sales (Canada) Ltd.
Ward Leonard of Canada Ltd.
The Standard Electric Time Co.
Gould-National Batteries of Canada Ltd.
Perkins Electric Co., Ltd. —
Electronics Division.
Nickel Cadmium Battery Corp.
Silvercel of Canada Ltd.

BATTERY ELIMINATORS

American Television & Radio Co.
Electromechanical Products
R. C. Kahmert Sales Ltd.
Burlac Sales Ltd.
Bogue Electric of Canada Ltd.
Hackbusch Electronics Ltd.
Canadian Research Institute.
Schauer Manufacturing Corp.
Electronic Products Laboratories.
Electronic Instrument Co. Inc.
The Airpax Products Co.
Heath Company.
Canadian Line Materials Ltd.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
Automatic Electric Sales (Canada) Ltd.
H. Clarke & Co. (Manchester) Ltd.
Gates Electronic Co.
S. H. Couch Co., Inc.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Non-Linear Systems, Inc.
John R. Tilton Ltd.
Perkins Electric Co., Ltd. —
Electronics Division
Osborne Electric Co., Ltd.
Electronic Controls Ltd.
NJE Corporation.
Sorensen & Co., Inc.

BEACONS

Mechron Engineering Products Ltd.
Cossor Canada Ltd.
Computing Devices of Canada Ltd.
Pye Canada Ltd.
Canadian Aviation Electronics Ltd.
Canadian Westinghouse Co. Ltd. —
Electronics Division.
Research Industries Ltd.
S. & T. Sales Ltd.
Northern Electric Co. Ltd.
Frequency Standards Inc.
Erco Radio Labs, Inc.
Bendix Aviation Corp., Pacific Division.
Andrew Antenna Corp. Ltd.
Redifon (Canada) Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Decca Radar (Canada) Ltd.
Measurement Engineering Ltd.
Perkins Electric Co., Ltd. —
Electronics Division.
BJ Electronics, Borg-Warner Corp.
Canadian Marconi Co.
Beaconing Optical & Precision
Materials Co. Ltd.

BEADS (Insulating)

P. J. Heenan Ltd.
Centralab, Div. of Globe Union Inc.
Stupakoff Div. of The Carborundum Co.
Andrew Antenna Corp., Ltd.
Quality Hermetics Ltd.

BEARINGS (Ball)

Miniature Precision Bearings, Inc.
New Hampshire Ball Bearings, Inc.

BEARINGS (Jewel)

Canadian Research Institute.
J. B. Smyth Electronic Components.
John Herring & Co. Ltd.
Avionics Ltd.

BEARINGS (Micro Precision)

Aeromotive Engineering Products.

BINDER (TV Tubes)

National Silicates Ltd.
Hermann Fortier Inc.

BINDING POSTS

Burlac Sales Ltd.
H. Tinsley & Co. Ltd.
Astral Electric Co. Ltd.
A. C. Simmonds & Sons Ltd.
Canadian Research Institute.

Forecast for '57

"... we see even greater growth in the telephone industry in 1957..."



The telephone communications industry in Canada experienced an unprecedented growth in 1956. The introduction of new equipment to the telephone field, such as colored telephone instruments, loud speaking telephones, etc., created new subscriber demands which exceeded the forecasted interest in these new products. More and more people are asking for a second telephone in their home. This, coupled with the steady increase in population, homes and industry, has required the manufacture of more and more communication equipment. Many communities in Canada still require conversion

from manual to dial telephone operation. Telephone operating companies are constantly improving the grade of service to their subscribers, and are now well on the way towards operator toll dialling to be followed by subscriber toll dialling.

Combining these many factors we see even greater growth in the telephone industry in 1957.

C. R. Hughes,
President, Automatic Electric Sales
(Canada) Limited.

United-Carr Fastener Co. of Can. Ltd.
General Cement Mfg. Co., Division of
Textron, Inc.
Waldom Electronics Inc.
E. F. Johnson Co.
Cambridge Thermionic Corp.
James Millen Manufacturing Co., Inc.
Whitso, Inc.
Herman H. Smith, Inc.
H. Roy Gray Co. Ltd.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
The Superior Electric Co.
Insuline Corp. America, Subsidiary Van
Norman Industries Inc.
Grayhill.
Garde Manufacturing Co.
The Standard Electric Time Co.
The States Co.
Raytheon Manufacturing Co.
White Radio Ltd.
Canadian Marconi Co. —
Electronic Tube & Components Div.
Waters Manufacturing Inc.
Associated Electronic Components.
General Radio Co.

BLOWERS

M. J. Howard
Alliance Motors.
Canadian Research Institute.
John Herring & Co. Ltd.
Canadian Armature Works Inc.
Aeromotive Engineering Products.
Wolf Electric Tools Ltd.
R-O-R Associates Ltd.
Stanat Manufacturing Co., Inc.
Electro Sonic Supply Co. Ltd.
Dominion Electrohome Industries Ltd.
Northern Electric Co. Ltd.
American Electronics, Inc.
Rotron Manufacturing Co.
Sanders Associations, Inc.
Ripley Company Inc.
Measurement Engineering Ltd.
Redmond Co., Inc.

BOBBINS (Winding)

Canadian Research Institute.
Centralab, Division of Globe Union Inc.
Precision Paper Tube Co.
Electro Sonic Supply Co. Ltd.
Garde Manufacturing Co.
Rollan Electric Co.
Fortiphone Limited.
Thermovolt Instruments Ltd.
Osborne Electric Co., Ltd.
The Plessey Co. of Canada Ltd.

BOOMS (Microphone)

Dominion Sound Equipments Ltd.

Alex L. Clark Ltd.
Atlas Sound Corp.
Electronics Div., Elgin National Watch Co.
The Ahearn & Soper Co. Ltd.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corporation Ltd.
RCA Victor Co., Ltd.
Perkins Electric Co., Ltd. —
Electronics Division
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.

BOOSTER (TV)

Cossor Canada Ltd.
Hackbusch Electronics Ltd.
Jerrold Electronics (Canada) Ltd.
Canadian Astatic Ltd.
Industrial Development Engineering
Associates Inc.
Superex Electronics Corp.
Blonder-Tongue Laboratories, Inc.
Electro Sonic Supply Co. Ltd.
Ampli-Vision Division of International
Telemeter Corp.
Entron Incorporated.
RCA Victor Co., Ltd.
E. S. Gould Sales Co.
John R. Tilton Ltd.
A. T. R. Armstrong Ltd.
Electroline Television Equipment Inc.

BRACKETS (Television Antenna)

Bud Radio Inc.
Hackbusch Electronics Ltd.
McCarter Radio & Television Ltd.
National Electric Products Corp.
Channel Master Corp.
JFD Manufacturing Co., Inc.
General Cement Mfg. Co.,
Division of Textron, Inc.
Kenwood Engineering Co., Inc.
Electro Sonic Supply Co. Ltd.
Belling & Lee Ltd.
Charles W. Pointon Ltd.
Insuline Corp. American, Subsidiary Van
Norman Industries Inc.
RCA Victor Company, Ltd.
E. S. Gould Sales Co.
John R. Tilton Ltd.
Tequipment Mfg. Co., Ltd.
Canadian Marconi Co. —
Electronic Tube and Components Div.

BREAKERS (Circuit)

Canadian Research Institute.
Canadian Westinghouse Co. Ltd. —
Apparatus Div.
Aeromotive Engineering Products.
The Alrpx Products Co.
General Cement Mfg. Co.,
Division of Textron, Inc.

Canadian Westinghouse Co. Ltd.
Electronics Division.
Northern Electric Co. Ltd.
Metals & Controls Corporation, Spencer
Thermostat Division
The Pyle-National Co.
Ferranti Electric Ltd.
Osborne Electric Co., Ltd.
Adams Engineering Ltd.
The British Thomson-Houston Co.
(Canada) Ltd.

BRIDGES (Capacitance)

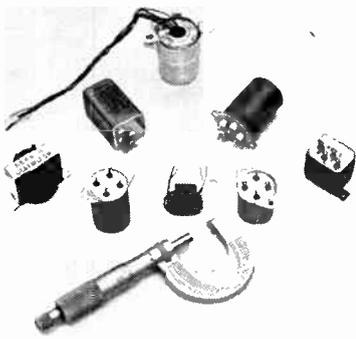
H. Tinsley & Co. Ltd.
R. H. Nichols Ltd.
R-O-R Associates Ltd.
Canadian Research Institute.
Pye Canada Ltd.
J. B. Smyth Electronic Components.
John Herring & Co. Ltd.
The Ahearn & Soper Co. Ltd.
Heath Company.
Industrial Instruments Inc.
Sprague Electric International Ltd.
Electro Sonic Supply Co. Ltd.
Electro-Measurements, Inc.
Electronic Instrument Co. Inc.
Muirhead Instruments Ltd.
Ward Leonard of Canada Ltd.
Gulton Industries, Inc.
Rogers Majestic Electronics Ltd.
The Hickok Electrical Instrument Co.
Southwestern Industrial Electronics
Co. Inc.
Muirhead & Co. Ltd.
Bruno-New York Industries Corp.
Simmonds Aeroaccessories, Inc.
The J. W. Ellis Industries.
Bach-Simpson Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Measurement Engineering Ltd.
Perkins Electric Co., Ltd.
Electronics Division.
Industrial Control Co.
Associated Electronic Components.
General Radio Co.
Canadian Marconi Co.
Industrial Test Equipment Co.

BRIDGES (Electrical)

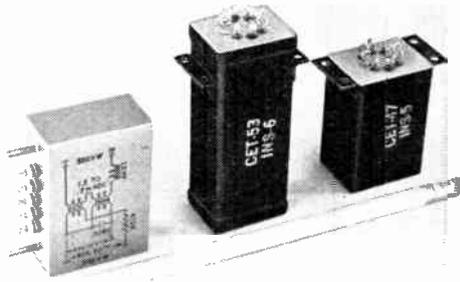
H. Tinsley & Co. Ltd.
Electrodesign.
R. H. Nichols Ltd.
R-O-R Associates Ltd.
Canadian Research Institute.
Pye Canada Ltd.
John Herring & Co. Ltd.
The Ahearn & Soper Co. Ltd.
Industrial Instruments Inc.
Communication Measurements Lab., Inc.
Electro Sonic Supply Co. Ltd.
Muirhead Instruments Ltd.
Electro Measurements Inc.
Northern Electric Co. Ltd.
Fisher Research Laboratory, Inc.
The Hickok Electrical Instrument Co.
Evershed & Vignoles Ltd.
Ward Leonard of Canada Ltd.
Shallcross Manufacturing Co.
Tel-Labs, Inc.
Bruno-New York Industries Corp.
Muirhead & Co. Ltd.
The J. W. Ellis Industries.
Donner Scientific Co.
Bach-Simpson Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Non-Linear Systems, Inc.
Perkins Electric Co., Ltd. —
Electronics Division
Measurement Engineering Ltd.
General Radio Co.
Canadian Marconi Co.

BRIDGES (Impedance)

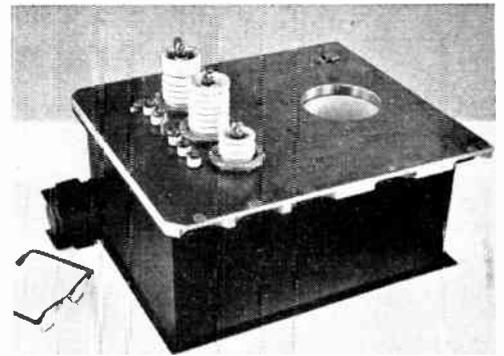
H. Tinsley & Co. Ltd.
Electrodesign.
R. H. Nichols Ltd.
Computing Devices of Canada Ltd.
R-O-R Associates Ltd.
Canadian Research Institute.
Pye Canada Ltd.
J. B. Smyth Electronic Components.
John Herring & Co. Ltd.
The Ahearn & Soper Co. Ltd.
Boonton Radio Corp.
Heath Company.
Industrial Instruments Inc.
Electro-Measurements, Inc.
Sierra Electronic Corp.
Pylon Electronic Development Co., Ltd.
Muirhead Instruments Ltd.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
Berkeley Div. of Beckman Instr., Inc.
Dawe Instruments Ltd.
The Hickok Electrical Instrument Co.
Rogers Majestic Electronics Ltd.
Gulton Industries, Inc.
F-R Machine Works, Inc.,
Electronics & X-Ray Div.
Ward Leonard of Canada Ltd.
Bruno-New York Industries Corp.
Muirhead & Co. Ltd.
Waters Manufacturing, Inc.



MINIATURES



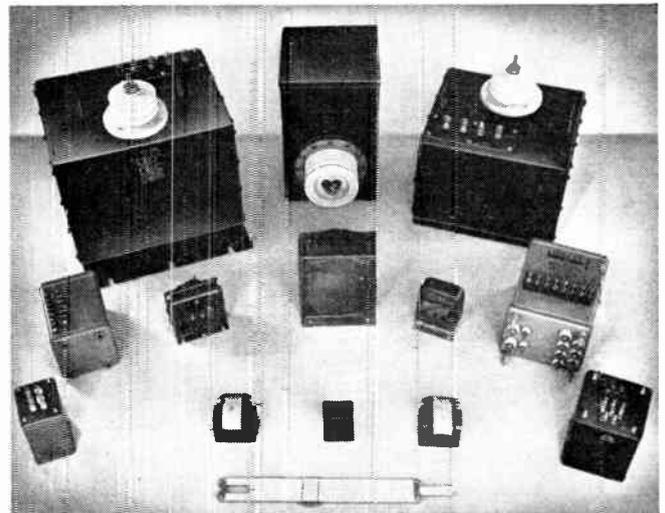
SATURABLE REACTORS



MULTIPLE ASSEMBLIES

Transformers and Inductors...

miniatures
 custom-built filters
 reactors
 electronic assemblies

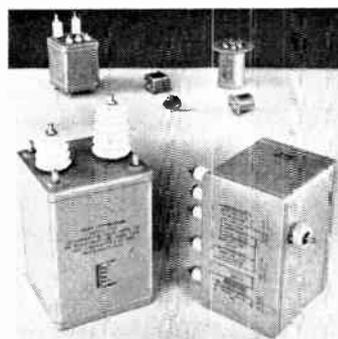


POWER

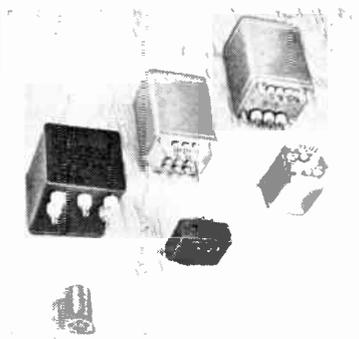
open . . . encased (including oil-filled)
 encapsulated . . . cast

When you need transformers or other electronic assemblies for special purposes, Caledonia offers:

1. Engineers, experienced in communications circuitry and transformer design, who know how to *design* for special problems of weight, size, temperature, high voltage, etc.
2. A streamlined plant, equipped to *produce* your specialty in the quantity you want.
3. Strict standards of quality control, with complete facilities to *test* the product in our plant, including facilities for qualification tests.



PULSE



AUDIO

When you have a transformer problem, call on

CALEDONIA

ELECTRONICS AND TRANSFORMER CORPORATION

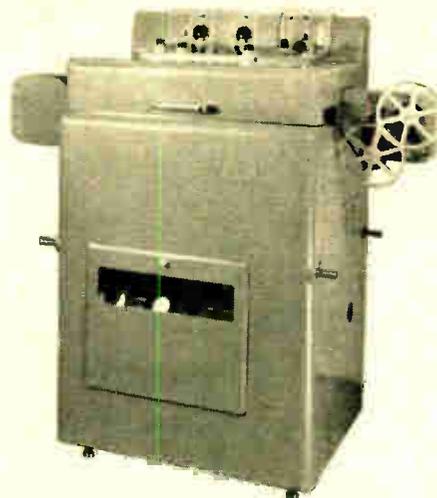
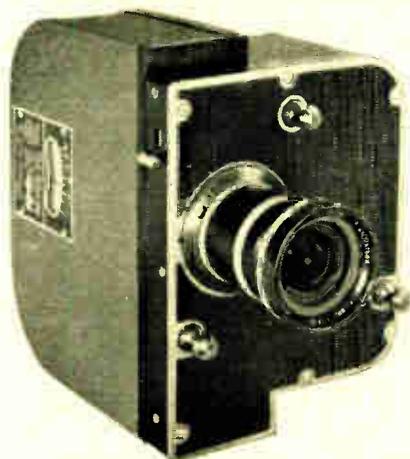
Dept. EC, Caledonia, N.Y.

In Canada: Hackbusch Electronics, Ltd., 23 Primrose Ave., Toronto 4, Ont.

- Southwestern Industrial Electronics Co. Inc.
MJS Electronic Sales Ltd.
The J. W. Ellis Industries.
Bach-Simpson Ltd.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
Measurement Engineering Ltd.
Perkins Electric Co., Ltd. —
Electronics Division
Canadian General Electric Co., Ltd., —
Electronic Equipment & Tube Dept.
Stark Electronic Instruments Ltd.
Dawe Instruments Ltd. (Canadian Div.)
General Radio Co.
Canadian Marconi Co.
Industrial Test Equipment Co.
- BRIDGES (Inductance)**
H. Tinsley & Co. Ltd.
Electrodesign.
R. H. Nichols Ltd.
R-O-R Associates Ltd.
Canadian Research Institute.
Pye Canada Ltd.
J. B. Smyth Electronic Components.
The Ahearn & Soper Co. Ltd.
Heath Company.
Industrial Instruments Inc.
Electro-Measurements, Inc.
Southern Instruments Ltd. —
Oscilloscope Division
Electro Sonic Supply Co. Ltd.
Ward Leonard of Canada Ltd.
The Hickok Electrical Instrument Co.
Southwestern Industrial Electronics Co. Inc.
Waters Manufacturing, Inc.
The J. W. Ellis Industries.
Bach-Simpson Ltd.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Perkins Electric Co., Ltd., —
Electronics Division
Measurement Engineering Ltd.
General Radio Co.
Canadian Marconi Co.
Industrial Test Equipment Co.
- BRIGHTENERS (Picture Tube)**
Workman TV Inc.
- BROADCAST EQUIPMENT**
R. C. Kahnert Sales Ltd.
Ampex American Corp.
Dominion Sound Equipments Ltd.
McCurdy Radio Industries Ltd.
Philco Corp., Government & Ind. Div.
Magnecord Inc.
Standard Electronics Corp.
Electronics Div., Elgin National Watch Co.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
Northern Electric Co. Ltd.
Allen B. DuMont Labs, Inc.
Pickering and Co., Inc.
Television Utilities Corp.
Collins Radio Co. of Canada Ltd.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Sarkes Tarzian, Inc.
Engineered Sound Systems Ltd.
Adams Engineering Ltd.
Canadian Marconi Co.
- BRUSHES (Carbon)**
Stackpole Carbon Co.
Automatic Electric Sales (Canada) Ltd.
Eagle Electric Mfg. Co., Inc.
National Carbon Co.
Canadian Stackpole Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Canadian Marconi Co.
- BUS BAR**
Canadian Westinghouse Co. Ltd. —
Apparatus Div.
Noranda Copper and Brass Ltd.
Alpha Wire Corp.
Electro Sonic Supply Co. Ltd.
Revere Copper and Brass Incorporated.
Spaulding Fibre Co., Inc.
Osborne Electric Co., Ltd.
- CABINETS (Plastic)**
Hackbusch Electronics Ltd.
Hathaway Kraemer Ltd.
Waldom Electronics Inc.
Hermann Fortier Inc.
TMC (Canada) Ltd.
- CABINETS (Racks and Panels)**
M. J. Howard
Hammond Manufacturing Co. Ltd.
Bogue Electric of Canada, Ltd.
Industrial Electronics of Canada Ltd.
Alex L. Clark Ltd.
Cossor Canada Ltd.
Hackbusch Electronics Ltd.
Radio Communications Equipment & Engineering Ltd.
Chisholm Industries Ltd.
Altec Lansing Corp.
U M & F Manufacturing Corp.
J. Langham Thompson Ltd.
Electro Sonic Supply Co. Ltd.
- Renfrew Electric & Refrigerator Co. Ltd.
Atlas Radio Corp. Ltd.
S & T Sales Ltd.
Northern Electric Co. Ltd.
Electronic Tube Corp.
Hallam, Sleigh & Cheston Ltd.
Heldor Manufacturing Corp.
Insuline Corp. America, Subsidiary Van Norman Industries Inc.
The Standard Electric Time Co.
Fischer & Porter (Canada) Ltd.
TMC (Canada) Ltd.
Tenatronics Ltd.
Dominion Aluminum Fabricating Ltd.
Electro-Vox Intercom, Inc.
Perkins Electric Co., Ltd. —
Electronics Division.
Measurement Engineering Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Canadian Marconi Co. —
Electronic Tube & Components Div.
General Communications Ltd.
- CABINETS (Temperature)**
Beechey Enterprises
H. Tinsley & Co. Ltd.
Tenney Engineering Inc.
Labline, Inc.
Thermovolt Instruments Ltd.
Barber-Colman of Canada Ltd. (Wheelco Inst. Div.)
- CABINETS (TV)**
RCA Victor Co., Ltd.
- CABLE**
Audio-Vox
Dominion Sound Equipments Ltd.
- CABLE CLAMPS**
Hackbusch Electronics Ltd.
B. F. Goodrich Canada Ltd.
Cossor Canada Ltd.
Electrovert Ltd.
Burndy Canada Ltd.
Cannon Electric Canada Ltd.
H. B. Etlin Co. Ltd.
General Cement Mfg. Co.,
Division of Textron, Inc.
Holub Industries, Inc.
U.S. Components, Inc.
Herman H. Smith, Inc.
Andrew Antenna Corp. Ltd.
Walsco Electronics Corp.
Amphenol Canada Ltd.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
Automatic Electric Sales (Canada) Ltd.
Northern Electric Co. Ltd.
Musimart of Canada Ltd.
Exacto Industries, Inc.
The Pyle-National Co.
Cinch Manufacturing Corp. and
H. B. Jones Division.
The Plessey Co. of Canada Ltd.
Desser E-E Ltd.
Associated Electronic Components.
- CABLE (Coaxial)**
Boston Insulated Wire & Cable Co. Ltd.
Mechron Engineering Products Ltd.
J. B. Smyth Electronic Components
Cossor Canada Ltd.
Jerrold Electronics (Canada) Ltd.
R-O-R Associates Ltd.
Aeromotive Engineering Products.
Lake Engineering Co. Ltd.
Phillips Electrical Co. Ltd.
Powerlite Devices Ltd.
Specialty Engineering & Electronics Co.
Andrew Antenna Corp., Ltd.
Woodwelding, Inc.
U.S. Components, Inc.
Phalo Plastics Corp.
Ericsson Telephone Sales of Canada Ltd.
Airtron, Inc.
Alpha Wire Corp.
Electrolabs.
Electro Sonic Supply Co. Ltd.
Amphenol Canada Ltd.
S & T Sales Ltd.
William Brand & Co., Inc.
The Glendon Co. Ltd.
Northern Electric Co. Ltd.
Musimart of Canada Ltd.
Saxton Products, Inc.
Federal Wire and Cable Co. Ltd.
United States Rubber Co.
Spencer-Kennedy Laboratories, Inc.
Mitchell Industries, Inc.
Microdot, Inc.
Precision Tube Co. Inc.
RCA Victor Co. Ltd.
Tenatronics Limited.
Electro-Vox Intercom Inc.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
The Rex Corp.
White Radio Ltd.
Perkins Electric Co., Ltd. —
Electronics Division.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
- CABLE (Microphone-Refractile)**
S & T Sales Ltd.
The Glendon Co. Ltd.
Musimart of Canada Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Perkins Electric Co., Ltd. —
Electronics Division.
The Rex Corp.
- CABLE (Retractile-Insulated)**
Phillips Electrical Co. Ltd.
S & T Sales Ltd.
The Glendon Co. Ltd.
Automatic Electric Sales (Canada) Ltd.
Musimart of Canada Ltd.
The Rex Corp.
- CABLE (Shielded)**
Boston Insulated Wire & Cable Co. Ltd.
Mechron Engineering Products Ltd.
Hackbusch Electronics Ltd.
Cossor Canada Ltd.
Pirelli Cables, Conduits Ltd.
Aeromotive Engineering Products.
Dominion Sound Equipments Ltd.
Phillips Electrical Co. Ltd.
J. B. Smyth Electronic Components.
Phalo Plastics Corporation.
Alpha Wire Corp.
Airtron, Inc.
Co-operative Industries, Inc.
Amphenol Canada Ltd.
Electrolabs.
- CABLE (Coaxial Rigid)**
Aeromotive Engineering Products.
Specialty Engineering & Electronics Co.
Andrew Antenna Corp., Ltd.
Electrolabs.
Amphenol Canada Ltd.
Phillips Electrical Co. Ltd.
William Brand & Co., Inc.
Musimart of Canada Ltd.
Prodelin, Inc.
United States Rubber Co.
Saxton Products, Inc.
RCA Victor Co., Ltd.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Desser E-E Ltd.
- CABLE (Insulated)**
Boston Insulated Wire & Cable Co. Ltd.
Mechron Engineering Products Ltd.
J. B. Smyth Electronic Components.
Phillips Electrical Co. Ltd.
Audio-Vox.
Cossor Canada Ltd.
Aeromotive Engineering Products.
Pirelli Cables, Conduits Ltd.
Phalo Plastics Corp.
Alpha Wire Corp.
Amphenol Canada Ltd.
Electrolabs.
Electro Sonic Supply Co. Ltd.
S & T Sales Ltd.
Northern Electric Co. Ltd.
William Brand & Co., Inc.
The Glendon Co. Ltd.
Automatic Electric Sales (Canada) Ltd.
Musimart of Canada Ltd.
Federal Wire and Cable Co. Ltd.
United States Rubber Co.
Saxton Products, Inc.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Perkins Electric Co., Ltd. —
Electronics Division.
White Radio Ltd.
The Rex Corp.
Desser E-E Ltd.
- CABLE (Microphone)**
Boston Insulated Wire & Cable Co. Ltd.
Mechron Engineering Products Ltd.
Hackbusch Electronics Ltd.
Cossor Canada Ltd.
Dominion Sound Equipments Ltd.
Canadian Astatic Ltd.
J. B. Smyth Electronic Components.
Phalo Plastics Corp.
Alpha Wire Corp.
Amphenol Canada Ltd.
Electrolabs.
Electro Sonic Supply Co. Ltd.
Phillips Electrical Co. Ltd.
S & T Sales Ltd.
The Glendon Co. Ltd.
Cornish Wire Co. Inc.
William Brand & Co., Inc.
Musimart of Canada Ltd.
Saxton Products, Inc.
Federal Wire and Cable Co. Ltd.
RCA Victor Co., Ltd.
Electro-Vox Intercom Inc.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
Engineered Sound Systems Ltd.
The Rex Corp.
White Radio Ltd.
Perkins Electric Co., Ltd. —
Electronics Division.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.

INSTRUMENTATION CAMERA
AND AUTOMATIC
TRI-FILM PROCESSOR

PRECISION'S PERFECT PAIR



SPECIFICATIONS

INSTRUMENTATION CAMERA TYPE T232 Mk7

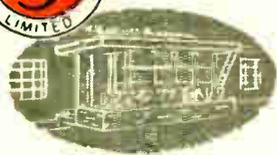
Size: 7½" x 5¾" x 6½"
Weight: 13 lbs.
Power: 28 volts DC; constant demand 4 amperes; intermittent up to 1.8 amperes. The Type T232 DC power supply, which operates from 110v 60 cps, is available to power the camera.
Lens: 28mm Augenieux F3.5, or to customer specification.
Magazine: 100 ft. 35mm standard sprocketed film, No. 10 daylight loading spool. 400 ft. magazine available on special order.
Picture Formats: 18x25, 25x25 or 25x36 mm.
Exposure: 1/100 second, or longer with intervalometer control.
Interval Time: 3 cycles per second maximum.

AUTOMATIC TRI-FILM PROCESSOR TYPE T246 Mk3

Size: 54" long, 22" wide, 51" high
Weight: 400 lbs.
Power Consumption: 5 KVA maximum single-phase; 110 volts, 45 amps, or according to customer requirements.
Process Capacity: 1 to 4 rolls 16 mm length
1 or 2 rolls 35 mm to
1 roll 70 mm | 400 ft.
Rate of Processing: 1½, 3 or 6 ft. per min.
Temperature-controlled solutions and dryer.
Daylight operation except loading of film into magazine.
Processes perforated or plain film.

Here is the perfect answer to the problems of film recording and the obtaining of quick results without loss of quality. The Mark 7 Instrumentation Camera is completely flexible through the entire field of instrumentation and aerial survey positioning photography. The shutter is a focal plane type, the basic exposure speed of which is 1/100 second. The camera may be cycled from 3 frames per second to any desired longer interval. Interchangeable apertures permit photographs of 18x25, 25x25 or 25x36 mm. A high degree of accuracy is achieved in respect to lens alignment, focusing and format positioning. Main components designed on the "module" system make conversion from one camera type to another relatively simple should customer requirements change.

A fitting companion is the transportable Mark 3 Automatic Tri-Film Processor that develops and dries 16, 35 or 70 mm film at 1½, 3 or 6 feet a minute. Four 400-ft. 16 mm films can be handled simultaneously—or two 400-ft. 35 mm films—or one 400-ft. 70 mm length. The various film sizes are accommodated by simple adjustments of film separators. Separate temperature control of the processing solutions is possible on each tank from 60 to 110 degrees F, within ±1 degree. The latest high temperature chemical resistant plastics and Type 316 stainless steel are used in all chemical areas. Write for literature and quotations.



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TORONTO 16, ONTARIO, CANADA

Forecast for '57

"... 1957 should be an extremely good year for the heavy electronic industry. . . ."



The year 1956 will not go down in history as a year of outstanding contribution to the art and industry of electronics by Canadians. This is due to a number of circumstances, some of which are the responsibility of the industry itself, and others national policy.

Somehow in 1956 the industry has managed to educate the public to expect television sets at prices which do not provide the manufacturer, the distributor or dealer with profit and thus much of the potential benefits from a 2 to 3 hundred million dollar business have been lost to the Canadian economy. Here the responsibility must clearly be shouldered by the industry itself.

I do not expect any surprises in the consumer products activity of electronics during 1957. Color television will not be important in 1957 and much as we might like to blame the CBC, it must be admitted that the TV receivers are not yet ready for merchandising on the same basis as black and white today.

Hi-Fi is catching on but any activity in Hi-Fi and radio during the year 1957 will not make up for the reduced TV sales which must be anticipated.

On the commercial and government electronics side of the business an objective review does not call for a great deal of fanfare as there are very few outstanding new Canadian products appearing on the Canadian scene. Probably 95 per cent of the total electronic business in Canada in 1956 comprised designs which were not Canadian proprietary items.

During the past year Canadians failed to secure the U.S. contract to support the DEW Line radar system and the Canadian Government found it necessary to place a contract for the development of a new integrated electronics and radar fire control system for the latest Canadian all-weather fighter aircraft with an American company. The preponderance of non-Canadian designed products and the loss of these two vital contracts (among many others) to foreign manufacturers can, I believe, be charged to both industry and government. Industry, perhaps, for lacking the aggressiveness, courage and foresight to be ready to undertake these and similar contracts, and the government for not insisting and perhaps facilitating — in the long term interest of the Canadian people — that these major electronic challenges be recognized and met by the Canadian electronic industrial complex. A great deal of the skills were here but the courage, coordination and cooperation were lacking.

In the heavy electronic business both government and industry have to recognize that any major contracts such as a new fire control system for Canada's latest fighter, if done in Canada may, in the first instance, cost more and take longer. This inevitability must be faced some time. On the next occasion the Canadian will be more competitive — and in a reasonable period, on the basis of having undertaken several major development programs it is reasonable to expect that the Canadian industry can be competitive with the British and the Americans.

To place major contracts outside of Canada is merely postponing the time when our industry can compete. This postponement carries with it a number of disturbing effects. The Canadian electronics industry is 6 or 7 years behind the Americans in terms of per capita expenditures. The fundamental nature of our industry demands that this interval be reduced and this is best accomplished by strengthening the engineering and technical foundations of the industry in Canada. By placing development work outside of Canada we support the undesirable exodus of Canadian engineers from Canada.

(Continued on page 60)

Electro Sonic Supply Co. Ltd.
S & T Sales Ltd.
The Glendon Co. Ltd.
William Brand & Co., Inc.
Cornish Wire Co. Inc.
Executone Communication Systems Ltd.
Musimart of Canada Ltd.
Gulton Industries, Inc.
United States Rubber Co.
Federal Wire and Cable Co. Ltd.
Saxton Products, Inc.
Electro-Vox Intercom Inc.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
Barber-Colman of Canada Ltd. (Wheelco Inst. Div.)
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Perkins Electric Co., Ltd. —
Electronics Division.
White Radio Ltd.
The Rex Corp.

CABLE (Shielded-Retractile)

Electrolabs.
S & T Sales Ltd.
The Glendon Co. Ltd.
Musimart of Canada Ltd.

CABLE (Transmission Line)

Mechron Engineering Products Ltd.
Hackbusch Electronics Ltd.
Cossor Canada Ltd.
Pirelli Cables, Conduits Ltd.
Phillips Electrical Co. Ltd.
Powerlite Devices Ltd.
Channel Master Corp.
JFD Manufacturing Co., Inc.
Andrew Antenna Corp., Ltd.
Phalo Plastics Corp.
Electro Sonic Supply Co. Ltd.
William Brand & Co., Inc.
Musimart of Canada Ltd.
Fretco Incorporated.
Federal Wire and Cable Co. Ltd.
Saxton Products, Inc.
RCA Victor Co., Ltd.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
White Radio Ltd.
The Rex Corp.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.

CABLE MARKERS

Duramark, Inc.

CALIBRATORS

Hackbusch Electronics Ltd.
H. Tinsley & Co. Ltd.
R-O-R Associates Ltd.
Canadian Research Institute.
Jackson Electrical Instrument Co.
Technicraft Laboratories, Inc.
Electronic Instrument Co. Inc.
Electro Sonic Supply Co. Ltd.
H. Roy Gray Co. Ltd.
MJS Electronic Sales Ltd.
Bayly Engineering Ltd.
Atlas Radio Corp. Ltd.
Gulton Industries, Inc.
Radio Frequency Laboratories, Inc.
Lavoie Laboratories, Inc.
New London Instrument Co., Inc.
The Solartron Electronic Group Ltd.
E. G. Lomas Co.
Bach-Simpson Ltd.
Non-Linear Systems, Inc.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
White Radio Ltd.
Measurement Engineering Ltd.
Perkins Electric Co., Ltd. —
Electronics Division.
General Radio Co.
Canadian Marconi Co.
Radionics Limited.

CALIBRATORS (Sweep)

Jackson Electrical Instrument Co.
Kay Electric Co.
Electronic Instrument Co. Inc.
MJS Electronic Sales Ltd.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
Stark Electronic Instruments Ltd.
Measurement Engineering Ltd.
General Radio Co.
Canadian Marconi Co.

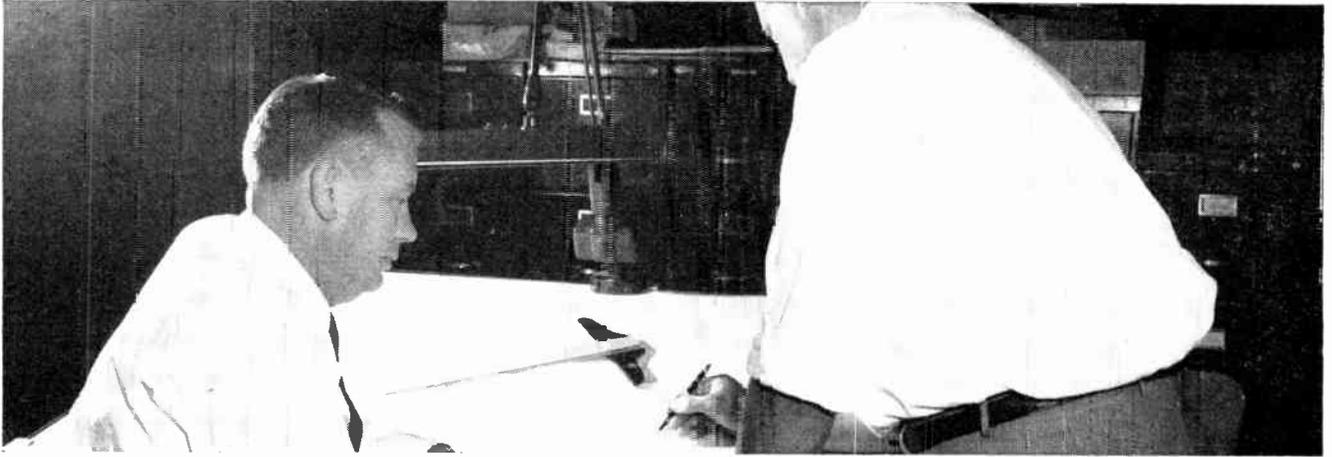
CALIBRATORS (UHF)

Astral Electric Co. Ltd.
Kay Electric Co.
Pylon Electronic Development Co., Ltd.
MJS Electronic Sales Ltd.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
Collins Radio Co. of Canada Ltd.
Stark Electronic Instruments Ltd.
Measurement Engineering Ltd.

CALORIMETERS (Microwave)

Electrodesign.
Chemalloy Electronics Corp.
DeMornay-Bonardi Corp.
Sierra Electronic Corp.
Atlas Radio Corp. Ltd.
Microwave Associates, Inc.
E. G. Lomas Co.
Beaoning Optical & Precision Materials Co. Ltd.

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Design Engineering

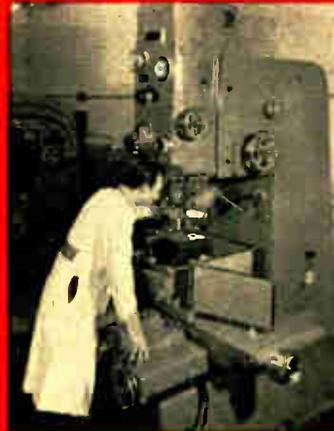


Process Department



Manufacturing

- **P**RECISION-GEAR GENERATING and SHAVING EQUIPMENT
- **S**WISS BUILT AUTOMATIC SCREW MACHINERY
- **P**RECISION GRINDING EQUIPMENT
Centerless, cylindrical, internal and surface.
- **M**ICRO-FINISHING
Finishing to one millionth of an inch.
- **I**NSTRUMENT ENVIRONMENTAL TESTING
Hot, cold, humidity, vibration and acceleration.
- **H**YDRAULIC ENVIRONMENTAL TESTING
Up to 5,000 p.s.i. at 20 gallons per minute.
Static pressures up to 20,000 p.s.i.
- **H**ELIUM LEAK DETECTOR FACILITIES
For pressure tightness, hermetic sealing, etc.
- **L**ABORATORIES
Physical, metallurgical and chemical.
- **H**EAT TREATING FACILITIES
Atmospherically controlled.
- **P**LATING
Plating of ferrous and non-ferrous metal.
- **E**NGINEERING DESIGN and DEVELOPMENT FACILITIES
Including tool design and processing.
- **F**ULLY APPROVED INSPECTION, QUALITY CONTROL and STANDARDS ROOM FACILITIES
- **C**OMPLETE TOOL ROOM FACILITIES
Includes jig boring, precision profile milling and hobbing press (2,000 tons).
- **A**IR CONDITIONED ASSEMBLY FACILITIES



Tool Room

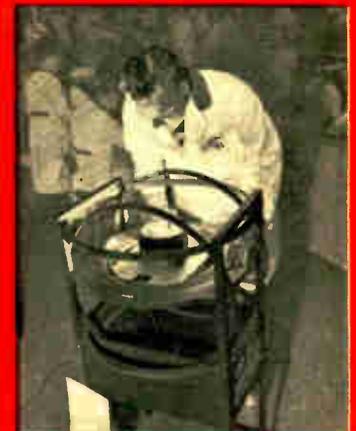


Chemical and Metallurgical Laboratories

Assembly



Testing



Standards Room



Heat Treatment



Plating



Forecast for '57 *Cont'd*

On the positive side, some penetration into new techniques was experienced during 1956. A great deal more activity in the field of electronic computation took place during the year with some notable accomplishments by Canadian companies. Decisions were taken to get a new guided missile program underway, with a modern air-to-air missile. A number of Canadian companies showed ingenuity in the application of transistors to new Canadian products. However, in the aggregate, most of the accomplishments are merely a promise, perhaps, of a better outlook for the next year or so.

1957 should be an extremely good year for the heavy electronic business. The new look at Russian behavior is bound to accelerate defense programs and recent negotiations with the United States may permit Canadian manufacturers to participate in the supply of electronics for the United States Armed Forces. The growing need by the Department of National Defense for electronic devices of wide variety will probably see unprecedented increases in defense electronic spending over the next few years. It is to be hoped that such defense spending will include a substantial budget for research and development in Canada so that the Canadian electronics industry's future prosperity and growth in a highly competitive world might be assured.

Development contracts placed outside of the country during 1956 should provide opportunities for Canadian manufacture in 1957 and 1958. A consolidation of interests and objectives on the part of the Canadian industry might well ensure that the maximum possible amount of this manufacturing will be awarded to Canadian factories.

K. R. Patrick,
President,
Canadian Aviation Electronics Limited.

CAMERAS (Oscilloscope)

Electromechanical Products
 Computing Devices of Canada Ltd.
 Electrodesign.
 Cossor Canada Ltd.
 J. Langham Thompson Ltd.
 Southern Instruments Ltd. —
 Oscillograph Division.
 PSC Applied Research Ltd.
 Bayly Engineering Ltd.
 Airmecc Ltd.
 Rogers Majestic Electronics Ltd.
 Allen B. DuMont Labs., Inc.
 Electronic Tube Corp.
 Bach-Simpson Ltd.
 General Radio Co.

CAMERAS (Radar)

Canadian Aviation Electronics Ltd.
 Cossor Canada Ltd.
 Abrams Instrument Corp.
 PSC Applied Research Ltd.
 Berndt-Bach, Inc. (Auricon Division).
 RCA Victor Co., Ltd.
 Decca Radar (Canada) Ltd.

CAMERAS (Television)

Electromechanical Products
 Canadian Aviation Electronics Ltd.
 Alex L. Clark Ltd.
 Pye Canada Ltd.
 Electronic Associates Ltd.
 Blonder-Tongue Laboratories, Inc.
 The Ahearn & Soper Co. Ltd.
 Standard Electronics Corp.
 Atlas Radio Corp. Ltd.
 Berndt-Bach, Inc. (Auricon Division).
 Bludworth Marine Division of
 Kearfoot Co., Inc.
 Allen B. DuMont Labs., Inc.
 Rogers Majestic Electronics Ltd.
 Sarkes Tarzian, Inc., Rectifier Division.
 Television Utilities Corp.
 RCA Victor Co., Ltd.
 Pacific Communications Services Ltd.
 Sarkes Tarzian, Inc.
 Tequipment Mfg. Co., Ltd.
 Canadian General Electric Co., Ltd. —
 Electronic Equipment & Tube Dept.
 Perkins Electric Co., Ltd. —
 Electronics Division.
 General Communications Ltd.
 Canadian Marconi Co.

CAMERAS (X-Ray)

X-Ray & Radium Industries Ltd.
 Rogers Majestic Electronics Ltd.

North American Philips Co. Inc.
 General Electric Co., X-Ray Dept.
 The Plessey Co. of Canada Ltd.

CAPACITOR COVERS

Saxonburg Ceramics.

CAPACITORS (Carrier Coupling)

M. J. Howard
 R. C. Kahnert Sales Ltd.
 Aerovox Canada Ltd.
 Ericsson Telephone Sales of Canada Ltd.
 Centralab, Division of Globe Union Inc.
 Tobe Deutschmann Corp.
 Sprague Electric International Ltd.
 Canadian Westinghouse Co. Ltd. —
 Electronics Division.
 The Glendon Co. Ltd.
 Dubilier Condenser Co. (1925) Ltd.
 The Telegraph Condenser Co. Ltd.
 Standard Telephones & Cables Mfg. Co.
 (Canada) Ltd.
 Associated Electronic Components.

CAPACITORS (Ceramic)

M. J. Howard
 R. C. Kahnert Sales Ltd.
 Aerovox Canada Ltd.
 J. B. Smyth Electronic Components.
 P. J. Heenan Ltd.
 John Herring & Co. Ltd.
 Lake Engineering Co. Ltd.
 Centralab Canada Ltd.
 Welwyn Canada Ltd.
 Aeromotive Engineering Products.
 J. R. G. McVity & Co.
 Cambridge Thermionic Corp.
 Centralab, Division of Globe Union Inc.
 Erie Resistor Corp.
 Mucon Corporation.
 Sprague Electric International Ltd.
 Hermann Fortier Inc.
 Electrolabs.
 Electro Sonic Supply Co. Ltd.
 The Glendon Co. Ltd.
 Gulton Industries, Inc.
 Good-All Electric Mfg. Co.
 Aerovox Corporation.
 The Telegraph Condenser Co. Ltd.
 Charles W. Pointon Ltd.
 Dubilier Condenser Co. (1925) Ltd.
 Sangamo Electric Co.
 Rogers Electronic Tubes & Components.
 Vitramon, Incorporated.
 Erie Resistor of Canada Ltd.
 Bach-Simpson Ltd.

Dawe Instruments Ltd. (Canadian Division)
 John R. Tilton Ltd.
 The Plessey Co. of Canada Ltd.
 Associated Electronic Components.
 A. T. R. Armstrong Ltd.

CAPACITORS (Ceramic By-Pass)

M. J. Howard
 R. C. Kahnert Sales Ltd.
 Welwyn Canada Ltd.
 Centralab Canada Ltd.
 Lake Engineering Co. Ltd.
 John Herring & Co. Ltd.
 P. J. Heenan Ltd.
 J. B. Smyth Electronic Components
 Aerovox Canada Ltd.
 J. R. G. McVity & Co.
 Centralab, Division of Globe Union Inc.
 Erie Resistor Corp.
 Mucon Corporation
 Sprague Electric International Ltd.
 Electro Sonic Supply Co. Ltd.
 Electrolabs
 Hermann Fortier Inc.
 S & T Sales Ltd.
 The Glendon Company Ltd.
 Dubilier Condenser Company (1925) Ltd.
 Charles W. Pointon Ltd.
 The Telegraph Condenser Co. Ltd.
 Aerovox Corp.
 Good-All Electric Mfg. Co.
 Gulton Industries, Inc.
 Rogers Electronic Tubes & Components
 Erie Resistor of Canada Ltd.
 Bach-Simpson Ltd.
 John R. Tilton Ltd.
 Associated Electronic Components
 A. T. R. Armstrong Ltd.

CAPACITORS

(Ceramic Temperature Compensating)

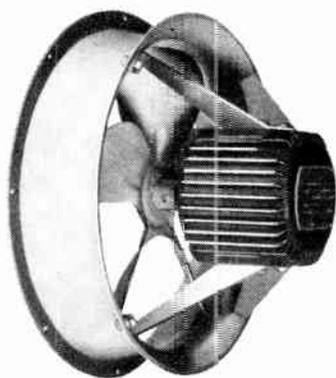
M. J. Howard
 R. C. Kahnert Sales Ltd.
 Aerovox Canada Ltd.
 J. B. Smyth Electronic Components
 P. J. Heenan Ltd.
 John Herring & Co. Ltd.
 Lake Engineering Co. Ltd.
 Centralab Canada Ltd.
 Welwyn Canada Ltd.
 J. R. G. McVity & Co.
 Centralab, Division of Globe Union Inc.
 Erie Resistor Corp.
 Mucon Corp.
 Sprague Electric International Ltd.
 Electro Sonic Supply Co. Ltd.
 The Glendon Company Ltd.
 Gulton Industries, Inc.
 Good-All Electric Mfg. Co.
 Aerovox Corp.
 The Telegraph Condenser Co. Ltd.
 Charles W. Pointon Ltd.
 Erie Resistor of Canada Ltd.
 Rogers Electronic Tubes & Components
 Bach-Simpson Ltd.
 Dawe Instruments Ltd. (Canadian Div.)
 John R. Tilton Ltd.
 Associated Electronic Components
 A. T. R. Armstrong Ltd.

CAPACITORS (Ceramic Trimmers)

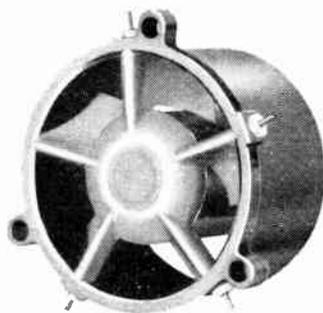
M. J. Howard
 R. C. Kahnert Sales Ltd.
 Welwyn Canada Ltd.
 Centralab Canada Ltd.
 P. J. Heenan Ltd.
 J. B. Smyth Electronic Components
 Aerovox Canada Ltd.
 Centralab, Division of Globe Union Inc.
 Erie Resistor Corp.
 Sprague Electric International Ltd.
 Cambridge Thermionic Corp.
 Electro Sonic Supply Co. Ltd.
 The Glendon Company Ltd.
 The Telegraph Condenser Co. Ltd.
 Aerovox Corp.
 Dubilier Condenser Co. (1925) Ltd.
 Rogers Electronic Tubes & Components
 Tenatronics Ltd.
 Erie Resistor of Canada Ltd.
 Bach-Simpson Ltd.
 The Plessey Co. of Canada Ltd.
 Canadian General Electric Co., Ltd. —
 Electronic Equipment & Tube Dept.
 White Radio Ltd.
 H. McCardle
 Canadian Marconi Company —
 Electronic Tube & Components Div.
 Associated Electronic Components
 Stanwyck Coil Products Ltd.

CAPACITORS (Electrolytic)

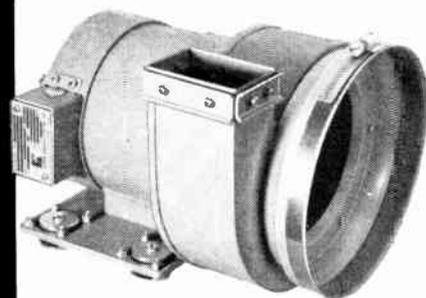
M. J. Howard
 R. C. Kahnert Sales Ltd.
 Daly-Arrow Ltd.
 A. C. Simmonds & Sons Ltd.
 P. J. Heenan Ltd.
 Astral Electric Co. Ltd.
 J. B. Smyth Electronic Components
 Aerovox Canada Ltd.
 J. R. G. McVity & Co.
 Sprague Electric International Ltd.
 Planet Manufacturing Corp.
 Fansteel Metallurgical Corp.
 United Electronic Manufacturing Corp.
 Pyramid Electric Co.
 Electro Sonic Supply Co. Ltd.



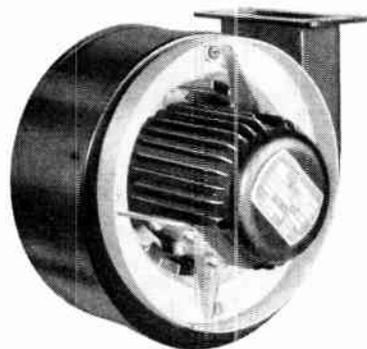
PROPELLER FANS

 $N_s = 150,000$ 

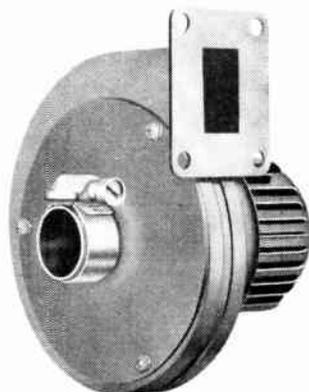
VANEAXIAL FANS

 $N_s = 65,000$ 

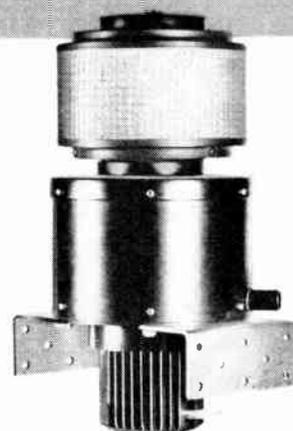
CENTRIF. BLOWERS—LOOSE SCROLL

 $N_s = 40,000$ 

CENTRIF. BLOWERS—TIGHT SCROLL

 $N_s = 15,000$ 

RADIAL WHEEL BLOWERS

 $N_s = 13,500$ 

MULTISTAGE BLOWERS

 $N_s = 2,000$

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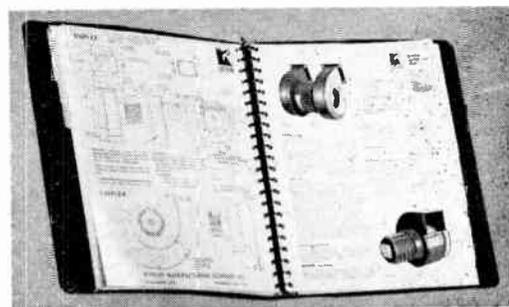
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Ohmite Manufacturing Co.
Dubilier Condenser Co. (1925) Ltd.
Charles W. Pointon Ltd.
P. R. Mallory & Co. Inc.
Micamold Electronics Mfg. Corp.
Sangamo Electric Co.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.

CAPACITORS (Electrolytic)

Illinois Condenser Co.
John R. Tilton Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Perkins Electric Co., Ltd. —
Electronics Div.
The Plessey Co. of Canada Ltd.
Desser E-E Ltd.
Canadian Marconi Company —
Electronic Tube & Components Div.
Associated Electronic Components
M. J. Howard
R. C. Kahnert Sales Ltd.
Aerovox Canada Ltd.
J. B. Smyth Electronic Components
Astral Electric Co. Ltd.
P. J. Heenan Ltd.
A. C. Simmonds & Sons Ltd.
Daly-Arrow Ltd.
J. R. G. McVity & Co.
Sprague Electric International Ltd.
Ohmite Manufacturing Co.
Fansteel Metallurgical Corp.
Standard Condenser Corp.
Pyramid Electric Co.
H. Roy Gray Co. Ltd.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
S & T Sales Ltd.
The Glendon Company Ltd.
Dubilier Condenser Co. (1925) Ltd.
Charles W. Pointon Ltd.
Musimart of Canada Ltd.
The Telegraph Condenser Co. Ltd.
Aerovox Corp.
Sangamo Electric Co.
Micamold Electronics Mfg. Corp.
P. R. Mallory & Co. Inc.
Rogers Electronic Tubes & Components
Standard Telephones & Cable Mfg. Co. (Canada) Ltd.
Illinois Condenser Co.
The Plessey Co. of Canada Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
John R. Tilton Ltd.
Canadian Marconi Company —
Electronic Tube & Components Div.
Associated Electronic Components

CAPACITORS (Energy Storage)

M. J. Howard
R. C. Kahnert Sales Ltd.
Aerovox Canada Ltd.
Sprague Electric International Ltd.
Tobe Deutschmann Corp.
Induction Heating Corp.
Electro Sonic Supply Co. Ltd.
The Glendon Co. Ltd.
Aerovox Corp.
Dubilier Condenser Co. (1925) Ltd.
The Telegraph Condenser Co. Ltd.
Filtron Company, Inc.
Rogers Electronic Tubes & Components
Micamold Electronics Mfg. Corp.
Sangamo Electric Co.
E. G. Lomas Co.
Illinois Condenser Co.
Associated Electronic Components

CAPACITORS (Fixed)

M. J. Howard
R. C. Kahnert Sales Ltd.
Arrow Radio Co.
John Herring & Co. Ltd.
P. J. Heenan Ltd.
Astral Electric Co. Ltd.
J. B. Smyth Electronic Components
Aerovox Canada Ltd.
H. Tinsley & Co. Ltd.
J. R. G. McVity & Co.
Centralab, Division of Globe Union Inc.
Erie Resistor Corp.
Sprague Electric International Ltd.
Planet Mfg. Corp.
Standard Condenser Corp.
Tobe Deutschmann Corp.
Induction Heating Corp.
Pyramid Electric Co.
Stackpole Carbon Co.
Electro Sonic Supply Co. Ltd.
H. Roy Gray Co. Ltd.
Johnson Matthey & Mallory Ltd.
Hermann Fortier Inc.
Electrolabs
Atlas Radio Corp. Ltd.
Electro Measurements Inc.
S & T Sales Ltd.

The Glendon Company Ltd.
Allen D. Cardwell Electronics Prod. Corp.
Good-All Electric Mfg. Co.
Ohmite Mfg. Co.
Film Capacitors Inc.
Electronic Fabricators, Inc.
Filtron Company, Inc.
The Telegraph Condenser Co. Ltd.
Dubilier Condenser Co. (1925) Ltd.
Aerovox Corp.
Sangamo Electric Co.
Micamold Electronics Mfg. Corp.
Vitramon, Incorporated.
Rogers Electronic Tubes & Components
Muirhead & Co. Ltd.
E. G. Lomas Co.
Erie Resistor of Canada Ltd.
Canadian Stackpole Ltd.
Bach-Simpson Ltd.
Aircraft Marine Products Inc.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
John R. Tilton Ltd.
Perkins Electric Co., Ltd. —
Electronics Division
The Plessey Co. of Canada Ltd.
Canadian Marconi Company —
Electronic Tube & Components Div.
A. T. R. Armstrong Ltd.
General Radio Co.
Associated Electronic Components

CAPACITORS (High Voltage A.C.)

M. J. Howard
R. C. Kahnert Sales Ltd.
Aerovox Canada Ltd.
P. J. Heenan Ltd.
A. C. Simmonds & Sons Ltd.
John Herring & Co. Ltd.
Erie Resistor Corp.
Sprague Electric International Ltd.
Aircraft-Marine Products Inc. —
Chemical & Dielectric Division
Tobe Deutschmann Corp.
Induction Heating Corp.
Pyramid Electric Co.
Electro Sonic Supply Co. Ltd.
The Glendon Co. Ltd.
Aerovox Corp.
Dubilier Condenser Co. (1925) Ltd.
The Telegraph Condenser Co. Ltd.
Filtron Company, Inc.
Rogers Electronic Tubes & Components
Micamold Electronics Mfg. Corp.
E. G. Lomas Co.
The J. W. Ellis Industries
Erie Resistor of Canada Ltd.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
John R. Tilton Ltd.
Associated Electronic Components
A. T. R. Armstrong Ltd.

CAPACITORS (High Voltage D.C.)

M. J. Howard
R. C. Kahnert Sales Ltd.
John Herring & Co. Ltd.
A. C. Simmonds & Sons Ltd.
P. J. Heenan Ltd.
Aerovox Canada Ltd.
J. R. G. McVity & Co.
Aircraft-Marine Products Inc. —
Chemical & Dielectric Div.
Sprague Electric International Ltd.
Erie Resistor Corp.
Standard Condenser Corp.
Induction Heating Corp.
Tobe Deutschmann Corp.
Pyramid Electric Co.
Electro Sonic Supply Co. Ltd.
Electrolabs
Hermann Fortier Inc.
S & T Sales Ltd.
The Glendon Company Ltd.
Film Capacitors Inc.
Filtron Company, Inc.
The Telegraph Condenser Co. Ltd.
Dubilier Condenser Company (1925) Ltd.
Aerovox Corp.
Sangamo Electric Co.
Micamold Electronics Mfg. Corp.
Rogers Electronic Tubes & Components
E. G. Lomas Co.
Beta Electric Corp.
The J. W. Ellis Industries
Erie Resistor of Canada Ltd.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
John R. Tilton Ltd.
A. T. R. Armstrong Ltd.
Associated Electronic Components

CAPACITORS (High Voltage Pulse)

M. J. Howard
John Herring & Co. Ltd.
Aerovox Canada Ltd.
Aircraft-Marine Products Inc. —
Chemical & Dielectric Div.
Sprague Electric International Ltd.
Tobe Deutschmann Corp.
Electrolabs
The Glendon Company Ltd.

Dubilier Condenser Co. (1925) Ltd.
The Telegraph Condenser Co. Ltd.
Filtron Company, Inc.
Aerovox Corp.
Rogers Electronic Tubes & Components
Micamold Electronics Mfg. Corp.
E. G. Lomas Co.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
John R. Tilton Ltd.
A. T. R. Armstrong Ltd.
Associated Electronic Components

CAPACITORS (High Temperature)

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Aeromotive Engineering Products
Aerovox Canada Ltd.
John Herring & Co. Ltd.
J. R. G. McVity & Co.
Sprague Electric International Ltd.
Erie Resistor Corp.
Standard Condenser Corp.
Tobe Deutschmann Corp.
Pyramid Electric Co.
Electro Sonic Supply Co. Ltd.
Filtron Company, Inc.
The Telegraph Condenser Co. Ltd.
Dubilier Condenser Co. (1925) Ltd.
Aerovox Corp.
Electronic Fabricators, Inc.
Vitramon, Incorporated
Sangamo Electric Company
Micamold Electronics Mfg. Corp.
E. G. Lomas Co.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
John R. Tilton Ltd.
A. T. R. Armstrong Ltd.
Associated Electronic Components

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R. C. Kahnert Sales Ltd.
Telephone Mfg. Co. Ltd.
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Aerovox Canada Ltd.
J. B. Smyth Electronic Components
Astral Electric Co. Ltd.
P. J. Heenan Ltd.
Sprague Electric International Ltd.
Erie Resistor Corp.
Electro Sonic Supply Co. Ltd.
Hermann Fortier Inc.
H. Roy Gray Co. Ltd.
Muirhead Instruments Ltd.
Electro Measurements Inc.
S & T Sales Ltd.
The Glendon Company Ltd.
H. Clarke & Co. (Manchester) Ltd.
Dubilier Condenser Co. (1925) Ltd.
Aerovox Corp.
The Telegraph Condenser Co. Ltd.
Micamold Electronics Mfg. Corp.
Sangamo Electric Company
Rogers Electronic Tubes & Components
Muirhead & Co. Ltd.
Teleradio Engineering Corp.
The J. W. Ellis Industries
Erie Resistor of Canada Ltd.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
John R. Tilton Ltd.
Dawe Instruments Ltd. (Canadian Div.)
Canadian Marconi Company —
Electronic Tube & Components Div.
General Radio Co.
Associated Electronic Components
National Co., Inc.

CAPACITORS (Mica - Variable)

Teleradio Engineering Corp.

CAPACITORS (Molded)

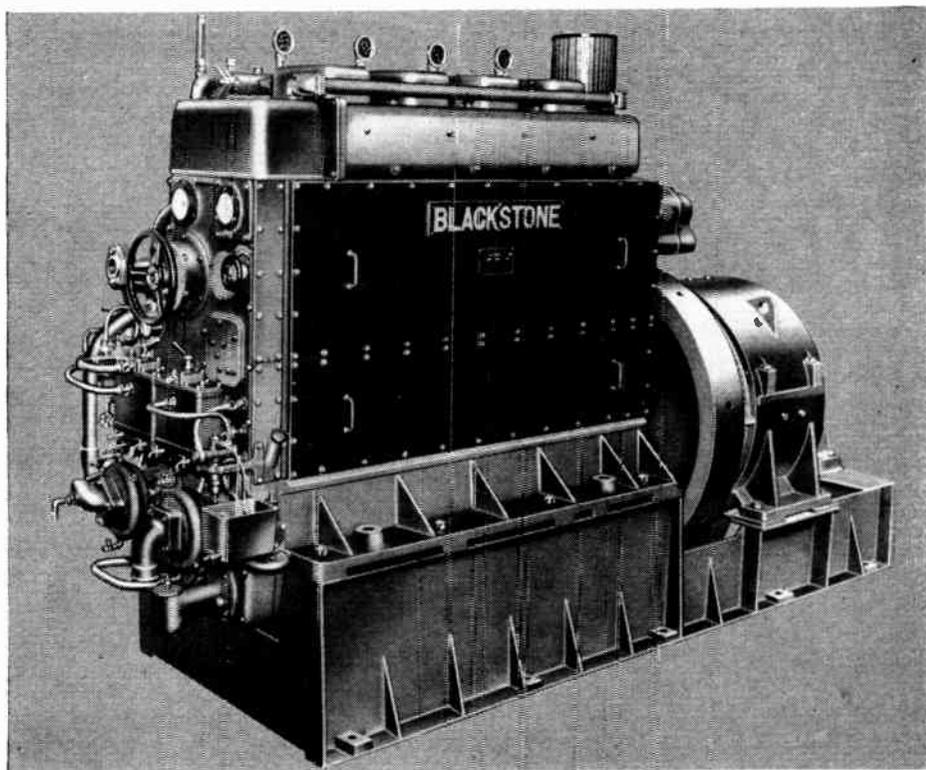
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Pyramid Electric Co.
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Electro Sonic Supply Co. Ltd.
S & T Sales Ltd.
The Glendon Company Ltd.
Dubilier Condenser Co. (1925) Ltd.
The Telegraph Condenser Co. Ltd.
Aerovox Corp.
Good-All Electric Mfg. Co.
Charles W. Pointon Ltd.
Micamold Electronics Mfg. Corp.
Sangamo Electric Company
Rogers Electronic Tubes & Components
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
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Associated Electronic Components
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- All working parts totally enclosed, pressure lubricated and easily accessible for routine maintenance
- Manufactured to Lloyds specification

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Tobe Deutschmann Corp.
Pyramid Electric Co.
Electro Sonic Supply Co. Ltd.
H. Roy Gray Co. Ltd.
Johnson Matthey & Mallory Ltd.
The Glendon Company Ltd.
Aerovox Corp.
The Telegraph Condenser Co. Ltd.
Dubilier Condenser Co. (1925) Ltd.
Filtron Company, Inc.
Charles W. Pointon Ltd.
P. R. Mallory & Co. Inc.
Rogers Electronic Tubes & Components
Sangamo Electric Co.
Micamold Electronics Mfg. Corp.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
Illinois Condenser Co.
The Plessey Co. of Canada Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
John R. Tilton Ltd.
Associated Electronic Components

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Astral Electric Co. Ltd.
J. B. Smyth Electronic Components
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Leonard Electric Ltd.
Sprague Electric International Ltd.
Tobe Deutschmann Corp.
Pyramid Electric Co.
Induction Heating Corp.
Canadian Westinghouse Co. Ltd. —
Electronics Div.
Standard Condenser Corp.
Hermann Fortier Inc.
H. Roy Gray Co. Ltd.
Electro Sonic Supply Co. Ltd.
S & T Sales Ltd.
The Glendon Company Ltd.
Charles W. Pointon Ltd.
Good-All Electric Mfg. Co.
Film Capacitors Inc.
Filtron Company, Inc.
Aerovox Corp.
The Telegraph Condenser Co. Ltd.
Dubilier Condenser Co. (1925) Ltd.
Rogers Electronic Tubes & Components
Sangamo Electric Co.
Micamold Electronics Mfg. Corp.
E. G. Lomas Co.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
Illinois Condenser Co.
John R. Tilton Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
Canadian Marconi Company —
Electronic Tube & Components Div.
Associated Electronic Components

CAPACITORS (Oil-Filled Canned)

M. J. Howard
R. C. Kahnert Sales Ltd.
J. B. Smyth Electronic Components
Astral Electric Co. Ltd.
Arrow Radio Co.
P. J. Heenan Ltd.
John Herring & Co. Ltd.
Aerovox Canada Ltd.
Sprague Electric International Ltd.
Tobe Deutschmann Corp.
Pyramid Electric Co.
Induction Heating Corp.
Standard Condenser Corp.
H. Roy Gray Co. Ltd.
Electro Sonic Supply Co. Ltd.
S & T Sales Ltd.
The Glendon Company Ltd.
Dubilier Condenser Co. (1925) Ltd.
The Telegraph Condenser Co. Ltd.
Aerovox Corp.
Filtron Company, Inc.
Film Capacitors Inc.
Good-All Electric Mfg. Co.
Charles W. Pointon Ltd.
Micamold Electronics Mfg. Corp.
Sangamo Electric Co.
Rogers Electronic Tubes & Components
E. G. Lomas Co.
Aircraft Marine Products Inc.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
John R. Tilton Ltd.
Associated Electronic Components

CAPACITORS (Oil-Filled Tubular)

M. J. Howard
R. C. Kahnert Sales Ltd.
John Herring & Co. Ltd.

P. J. Heenan Ltd.
Arrow Radio Co.
Astral Electric Co. Ltd.
J. B. Smyth Electronic Components
Aerovox Canada Ltd.
Leonard Electric Ltd.
Sprague Electric International Ltd.
Tobe Deutschmann Corp.
Pyramid Electric Co.
Standard Condenser Corp.
H. Roy Gray Co. Ltd.
Electro Sonic Supply Co. Ltd.
The Glendon Company Ltd.
Charles W. Pointon Ltd.
Filtron Company, Inc.
Film Capacitors Inc.
Good-All Electric Mfg. Co.
Aerovox Corp.
The Telegraph Condenser Co. Ltd.
Dubilier Condenser Co. (1925) Ltd.
Rogers Electronic Tubes & Components
Sangamo Electric Co.
P. R. Mallory & Co. Inc.
Micamold Electronics Mfg. Corp.
E. G. Lomas Co.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
Illinois Condenser Co.
Perkins Electric Co., Ltd. —
Electronics Div.
John R. Tilton Ltd.
Canadian Marconi Company —
Electronic Tube & Components Div.
Associated Electronic Components

CAPACITORS (Paper)

M. J. Howard
R. C. Kahnert Sales Ltd.
Hackbusch Electronics Ltd.
Aerovox Canada Ltd.
J. B. Smyth Electronic Components
Astral Electric Co. Ltd.
Arrow Radio Co.
P. J. Heenan Ltd.
John Herring & Co. Ltd.
Leonard Electric Ltd.
Sprague Electric International Ltd.
Tobe Deutschmann Corp.
Pyramid Electric Co.
Standard Condenser Corp.
H. Roy Gray Co. Ltd.
Electro Sonic Supply Co. Ltd.
Hermann Fortier Inc.
Muirhead Instruments Ltd.
S & T Sales Ltd.
The Glendon Company Ltd.
Dubilier Condenser Co. (1925) Ltd.
The Telegraph Condenser Co. Ltd.
Aerovox Corp.
Filtron Company, Inc.
Film Capacitors Inc.
Good-All Electric Mfg. Co.
Charles W. Pointon Ltd.
Micamold Electronics Mfg. Corp.
Sangamo Electric Co.
Muirhead & Co. Ltd.
Rogers Electronic Tubes & Components
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
Illinois Condenser Co.
John R. Tilton Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
The Plessey Co. of Canada Ltd.
Canadian Marconi Company —
Electronic Tube & Components Div.
Associated Electronic Components
A. T. R. Armstrong Ltd.

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R. C. Kahnert Sales Ltd.
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Arrow Radio Co.
J. B. Smyth Electronic Components
Aerovox Canada Ltd.
John Herring & Co. Ltd.
Sprague Electric International Ltd.
Tobe Deutschmann Corp.
Pyramid Electric Co.
Standard Condenser Corp.
Hermann Fortier Inc.
Electro Sonic Supply Co. Ltd.
H. Roy Gray Co. Ltd.
Astral Electric Co. Ltd.
The Glendon Company Ltd.
Automatic Electric Sales (Canada) Ltd.
Charles W. Pointon Ltd.
Filtron Company, Inc.
Good-All Electric Mfg. Co.
Film Capacitors Inc.
Aerovox Corp.
The Telegraph Condenser Co. Ltd.
Dubilier Condenser Co. (1925) Ltd.
Rogers Electronic Tubes & Components
Sangamo Electric Co.
P. R. Mallory & Co. Inc.
Micamold Electronics Mfg. Corp.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
Illinois Condenser Co.
The Plessey Co. of Canada Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
Associated Electronic Components
A. T. R. Armstrong Ltd.

CAPACITORS (Paper Metallized)

M. J. Howard
Aerovox Canada Ltd.
J. B. Smyth Electronic Components
Astral Electric Co. Ltd.
P. J. Heenan Ltd.
John Herring & Co. Ltd.
Sprague Electric International Ltd.
Tobe Deutschmann Corp.
Pyramid Electric Co.
H. Roy Gray Co. Ltd.
Electro Sonic Supply Co. Ltd.
The Telegraph Condenser Co. Ltd.
Aerovox Corp.
Filtron Company, Inc.
Charles W. Pointon Ltd.
Micamold Electronics Mfg. Corp.
Rogers Electronic Tubes & Components
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
John R. Tilton Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
Canadian Marconi Company —
Electronic Tube & Components Div.
Associated Electronic Components
A. T. R. Armstrong Ltd.

CAPACITORS (Paper Tubular)

M. J. Howard
R. C. Kahnert Sales Ltd.
John Herring & Co. Ltd.
P. J. Heenan Ltd.
Arrow Radio Co.
Astral Electric Co. Ltd.
J. B. Smyth Electronic Components
Aerovox Canada Ltd.
Leonard Electric Ltd.
Panelyte Div. St. Regis Paper Co. (Canada) Ltd.
Sprague Electric International Ltd.
Tobe Deutschmann Corp.
Pyramid Electric Co.
Standard Condenser Corp.
Hermann Fortier Inc.
Electro Sonic Supply Co. Ltd.
H. Roy Gray Co. Ltd.
S & T Sales Ltd.
The Glendon Company Ltd.
Arnhold Ceramics, Inc.
Good-All Electric Mfg. Co.
Film Capacitors Inc.
Dubilier Condenser Co. (1925) Ltd.
Charles W. Pointon Ltd.
Filtron Company, Inc.
Aerovox Corp.
The Telegraph Condenser Co. Ltd.
Sangamo Electric Co.
P. R. Mallory & Co. Inc.
Rogers Electronic Tubes & Components
Micamold Electronics Mfg. Corp.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
John R. Tilton Ltd.
Canadian Marconi Company —
Electronic Tube & Components Div.
Associated Electronic Components
A. T. R. Armstrong Ltd.

CAPACITORS (Photoflash)

M. J. Howard
Aerovox Canada Ltd.
J. B. Smyth Electronic Components
John Herring & Co. Ltd.
Daly-Arrow Ltd.
A. C. Simmonds & Sons Ltd.
Sprague Electric International Ltd.
Electro Sonic Supply Co. Ltd.
Electrolabs
The Glendon Company Ltd.
The Telegraph Condenser Co. Ltd.
Aerovox Corp.
Filtron Company, Inc.
Dubilier Condenser Co. (1925) Ltd.
P. R. Mallory & Co. Inc.
Micamold Electronics Mfg. Corp.
Illinois Condenser Co.
John R. Tilton Ltd.
Associated Electronic Components

CAPACITORS (Plastic Film)

Electromechanical Products
M. J. Howard
Telephone Mfg. Co. Ltd.
John Herring & Co. Ltd.
Arrow Radio Co.
J. B. Smyth Electronic Components
Aerovox Canada Ltd.
Sprague Electric International Ltd.
Tobe Deutschmann Corp.
Standard Condenser Corp.
The Glendon Company Ltd.
Electronic Fabricators, Inc.
Good-All Electric Mfg. Co.
Film Capacitors Inc.
Dubilier Condenser Co. (1925) Ltd.
Filtron Company, Inc.
Aerovox Corp.
The Telegraph Condenser Co. Ltd.
Sanders Associates, Inc.
Micamold Electronics Mfg. Corp.
Rogers Electronic Tubes & Components
E. G. Lomas Co.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.

Why are there **TWO SWEEP GENERATORS** in these oscilloscopes ?



The extra sweep generator makes an oscilloscope much more useful. With the Tektronix delaying sweep you can . . .

1 START THE OSCILLOSCOPE SWEEP WITH THE FIRST TRIGGER RECEIVED AFTER A CONTROLLABLE TIME-DELAY PERIOD.

This is an important reason for the extra sweep generator and its associated pickoff circuit in Tektronix Type 535 and Type 545 Oscilloscopes. Triggering the delayed sweep by the observed signal guarantees a jitter-free display . . . ideal for examination of time-modulated pulses and signals with inherent jitter.

2 START THE OSCILLOSCOPE SWEEP AT THE END OF A CONTROLLABLE TIME-DELAY PERIOD . . . convenient for observation of occurrences after an accurately determined time interval.

3 MAKE MORE ACCURATE TIME-INTERVAL MEASUREMENTS.

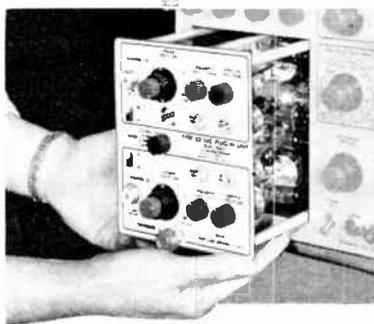
A calibrated ten-turn time-delay control divides each of the twelve delay ranges into a thousand units. Range accuracy is within 1%, incremental accuracy on any range is within 0.2% of full scale.

4 TRANSFER PART OF A DISPLAY TO A FASTER SWEEP.

By initially displaying a signal on the extra, delaying sweep, and then transferring it to the main oscilloscope sweep, a continuously adjustable horizontal expansion can be obtained. Degree of magnification is determined by the time/cm ratio between the two sweeps. The average jitter of 1 part in 25,000 permits practical use of very large magnifications. Further, the exact portion of the display on the delaying sweep that will appear on the faster main sweep is positively identified by trace brightening. Unblanking pulses for both sweeps are applied to the CRT grid, causing the main sweep to show up as a brightened portion of the display on the delaying sweep.

5 ARM THE OSCILLOSCOPE SWEEP FOR TRIGGERED ONE-SHOT OPERATION.

A front-panel pushbutton or an electrical signal from a remote location can be used instead of the internal delayed trigger to arm the sweep. After the button is pressed, or the pulse received, the next trigger causes the main sweep to fire once and revert to the locked-out condition. Photographic recordings of a single transient made in this manner cannot be blurred by spurious signals following its occurrence. Because the single sweep can be triggered any time after the button is pressed or the pulse received, the time of occurrence need not be accurately predictable.



GREATER VERSATILITY PREFERRED

Customer preference for the Tektronix Oscilloscopes with a delaying sweep, Type 535 and Type 545, indicates that the increased utility is valued at much more than the small additional cost. Application possibilities of these versatile instruments make them worthy of your serious consideration.

TYPE 535 and TYPE 545 CHARACTERISTICS

Delay Specifications

A calibrated twelve-step range control and a ten-turn precision control provide for continuously-variable coverage of the full sweep-delay range—1 μ sec to 0.1 sec. Range accuracy is within 1%, incremental accuracy within 0.2% of full scale. Time jitter is less than 1 part in 20,000 in conventional sweep-delay operation. Display is completely jitter-free in triggered operation. The delaying sweep can be used as a rate generator, producing trigger rates from 10 cycles to 40 kc, continuously adjustable. The delayed trigger is available at a front-panel connector for external applications.

Other Specifications

Main-sweep range is 0.02 μ sec/cm to 12 sec/cm continuously variable, with 24 calibrated steps accurate within 3%. Accelerating potential is 10 kv. Vertical-amplifier response with Type 53/54K Fast-Rise Plug-in Unit. . . . Type 535, dc to 11 mc—Type 545, dc to 30 mc. Seven plug-in vertical preamplifiers are available for complete signal-handling versatility.

Type 535 (without plug-in units) \$1300

Type 545 (without plug-in units) \$1450

Prices f.o.b. Portland, Oregon

Your Tektronix Field Engineer or Representative will be happy to furnish complete specifications and arrange a demonstration at your convenience.

ENGINEERS — interested in furthering the advancement of the oscilloscope? We have openings for men with creative design ability. Please write Richard Ropiequet, Vice President, Engineering.

Tektronix, Inc.

P. O. Box 831 • Portland 7, Oregon

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For further data on advertised products use page 181.

Forecast for '57

"... the future of electronics
in Canada is unbounded. . . ."



As the pages of the directory issue of "Electronics and Communications" grow in number year by year, they directly reflect the steady expansion that is taking place in the Canadian electronics industry. The roots of this industry extend back into the early 1920's while today, over \$500 million worth of electronic equipment and services are produced a year and the industry employs many thousands of Canadians in all types of work from research and development to design, production, servicing and maintenance.

The industry looks forward to 1957 with confidence that it will be able to meet every demand made upon it, for industrial and military electronic equipment, consumer home products, and for commercial electronic equipment of many types.

The future of electronics in Canada is unbounded. Today the industry is producing equipment which was unknown ten years ago, and there is no doubt that in ten years' time the equipment and goods which will be available are today merely in the laboratory stages of development in our industry.

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President, Radio-Electronics-Television
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Associated Electronic Components

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H. McCardie

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The Telegraph Condenser Co. Ltd.
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Associated Electronic Components

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CAPACITORS (Variable)

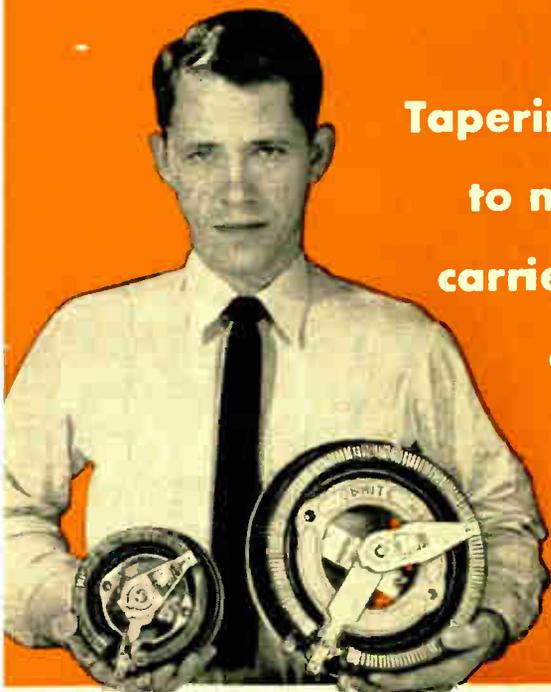
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taper-wound

RHEOSTATS

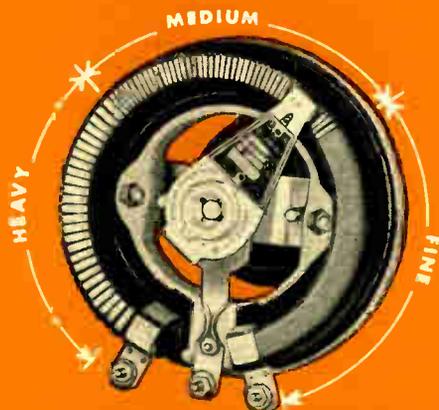
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**Tapering the wire size
to match the current
carried permits greater
capacity in a
smaller unit!**



LINEAR-WOUND



EQUIVALENT TAPER-WOUND

A smaller rheostat may often be used for a given load by having the rheostat windings tapered or wound in two or more sections of diminishing wire sizes. This can be done because only the first turn of the winding carries the maximum current . . . succeeding turns carry reduced amounts. This makes possible great savings in control-panel space, making Ohmite taper-wound rheostats particularly useful in portable equipment. Ohmite taper-wound rheostats are also very durable because they use the largest wire sizes practical for the current to be carried.

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Ohmite has an extensive line of standard tapered rheostats, or will design special tapered windings to suit individual needs.

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Average Reading R. F. POWER METERS

100 kc to 700 mc • 1.5 watts to 6000 watts
50, 75, 600 ohms and other impedances

Dummy Load Crystal Voltmeter Type, Feed Thru Type reading
both incident and reflected power, and Thermistor Bridge Type.

These broad band R.F. power meters are of the absorption type consisting of an oil filled, air cooled, coaxial load resistor and a voltmeter calibrated to read watts. The power meter is suitable for use as a field or laboratory test instrument, is completely shielded and non-radiating, permitting transmitter testing and adjustment without interference. The meter box is easily detached, permitting location of the load resistor at a remote point. In cases where power measurements are not required the load resistor may be used as a dummy load.



Model	Full Scale Power Measuring Ranges in Watts	Max. VSWR	Freq. Range Mcs.	Input Connector	Impedance Ohms	Supply Voltage	Tube or Crystal	Accuracy	Max. Power Dissipation	External Cooling
PM-6	1.5, 6	1.15	.2-700MC	Type N	51.5	None	1N82	±5%	10 W	None
PM-9	2.5, 10	1.15	.2-700MC	Type N	51.5	None	1N82	±5%	10 W	None
PM-10	15, 60	1.15	.2-700MC	Type N	51.5	None	1N82	±5%	90 W	None
PM-7	150, 600	1.15	.2-500MC	Type N	51.5	None	1N82	±5%	600 W	None
PM-19	1.5, 6, 15, 60, 120	1.15	.2-500MC		51.5	None	1N82	±5%	90 W	None
PM-14	1.5, 6, 15, 60, 150, 600, 1000	1.15	.2-500MC		51.5	115 V 60 cps	2B22	±5%	600 W	None
PM-15	150, 600, 2500	1.15	.2-500MC	To be specified	51.5	None	1N82	±5%	2500 W	30 GPH tap water
PM-20	150, 600, 1500, 1800	1.15	.2-500MC		51.5 51.5	115 V 60 cps	2B22	±5%	6000 W	60 GPH tap water

DIRECT READING CALORIMETER BRIDGE

COAXIAL

DC-4000 Mc

WAVEGUIDE

1000-12000 Mc

•

10-150 WATTS

10-500 WATTS

100-5000 WATTS



SPECIFICATIONS

Power range: 10-150 Watts
10-500 Watts
100-5000 Watts

Frequency range:

Coaxial: DC-4000 Mc

Waveguide: 1000-12000 Mc

Accuracy: 5%

Power Supply: 115 V, 60 cps,
single phase,
250 Watts

This calorimeter bridge is continuously self-calibrated by means of an auxiliary AC standard load and an AC Wattmeter. The V.S.W.R. of the R.F. load resistor is less than 1.25, up to 4000 Mc. The total error in power measurement is less than 5%. This includes the error due to the power reflected by the R.F. load resistor, the various heat losses, inaccuracy of the meter, etc. This accuracy can be increased by calibrating the instrument against an accurate laboratory type AC Wattmeter. Thus, an overall accuracy of 2% can be accomplished.

Other Calorimeters using coaxial loads up to 50,000 watts and using waveguide loads up to 15,000 watts are available.

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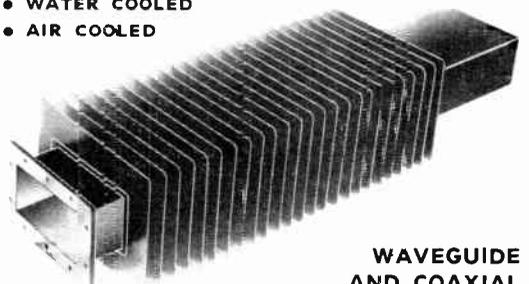
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Caledonia Electronics and Transformer Corp.
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Goodmans Industries Ltd.
Charles W. Pointon Ltd.
Lavole Laboratories, Inc.
Partridge Transformers Ltd.
Tornico Electronics, Inc.
Raytheon Mfg. Co.
Tenatronics Ltd.
Keystone Products Co.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
Canadian Atlas Transformer Co., Ltd.
Adams Engineering Ltd.
Osborne Electric Co., Ltd.
Perkins Electric Co., Ltd. — Electronics Div.
John R. Tilton Ltd.
The Plessey Co. of Canada Ltd.
Associated Electronic Components Electronic Engineering
The Wheeler Insulated Wire Co., Inc. — Div. of Sperry Rand Corp.
Microtran Co., Inc.

CHOKES (Regulating)

R. C. Kahnert Sales Ltd.
Hammond Mfg. Co. Ltd.
Laboratory for Electronics, Inc.
Coil Winders, Inc.
Dynamic Electronics — New York Inc.
Caledonia Electronics and Transformer Corp.
Copper Wire Products Ltd.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corporation Ltd.
Northern Electric Co. Ltd.
Lavole Laboratories, Inc.
Tenatronics Ltd.
The Plessey Co. of Canada Ltd.
Perkins Electric Co., Ltd. — Electronics Div.
Osborne Electric Co., Ltd.
Adams Engineering Ltd.
Canadian Atlas Transformer Co., Ltd.
Associated Electronic Components Electronic Engineering

CHOKES (R.F.)

Bud Radio Inc.
R. C. Kahnert Sales Ltd.
Computing Devices of Canada Ltd.
T. S. Farley Ltd.
Astral Electric Co. Ltd.
Aerovox Canada Ltd.
Hammond Mfg. Co. Ltd.
Lake Engineering Co. Ltd.
E. F. Johnson Co.
James Millen Mfg. Co., Inc.
Cambridge Thermionic Corp.
Ohmite Mfg. Co.
Induction Heating Corp.
Whiteley Electrical Radio Co. Ltd.
Superex Electronics Corp.
Laboratory for Electronics, Inc.
Coil Winders, Inc.
Dynamic Electronics — New York Inc.
Electronic Sonic Supply Co. Ltd.
Copper Wire Products Ltd.
Hermann Fortier Inc.
Radio Components Ltd.
H. Roy Gray Co. Ltd.
Atlas Radio Corporation Ltd.
General Instrument — F. W. Sickles of Canada Ltd.
Northern Electric Co. Ltd.
Charles W. Pointon Ltd.
Aerovox Corp.
Insuline Corp. America, Subsidiary — Van Norman Industries Inc.
Filttron Company, Inc.
Frequency Standards Inc.
Electronic Specialty Co.
Waters Mfg., Inc.
Rollan Electric Co.
Teleradio Engineering Corp.
J. W. Miller Co.
Lavole Laboratories, Inc.
Tenatronics Ltd.
TMC (Canada) Ltd.
International Resistance Co.
Canadian Marconi Company — Electronic Tube & Components Div.
Associated Electronic Components
The Plessey Co. of Canada Ltd.
Perkins Electric Co., Ltd. — Electronic Div.
Electronic Engineering
National Co., Inc.
Stanwyck Coil Products Ltd.

CHOPPERS

Canadian Aviation Electronics Ltd.
John Herring & Co. Ltd.
H. Tinsley & Co. Ltd.
The Airpax Products Co.
Minneapolis-Honeywell Regulator Co. Ltd., Aeronautical Div.
Canadian Marconi Company
Teleguipment Mfg. Co., Ltd.
Desser E-E Ltd.

CIRCUITS (Potted)

M. J. Howard
Cossor Canada Ltd.
Sprague Electric International Ltd.
Superex Electronics Corp.
Electrolabs
Filttron Company, Inc.
Electronic Specialty Co.
Gulton Industries, Inc.
Tornico Electronics, Inc.
The Telegraph Condenser Co. Ltd.
E. G. Lomas Co.
Fortiphone Ltd.
Radio Engineering Products Ltd.
Ferranti Electric Ltd.
Osborne Electric Co., Ltd.
Avionics Ltd.
Engineered Electronics Co.

CIRCUITS (Printed)

M. J. Howard
R. C. Kahnert Sales Ltd.
Beechey Enterprises
Cossor Canada Ltd.
Computing Devices of Canada Ltd.
United-Carr Fastener Co. of Canada Ltd.
Methode Mfg. Canada Ltd.
Lake Engineering Co. Ltd.
John Herring & Co. Ltd.
Centralab Canada Ltd.
Aerovox Canada Ltd.
P. J. Heenan Ltd.
Panelyte Div., St. Regis Paper Co. (Canada) Ltd.
Sprague Electric International Ltd.
Centralab, Div. of Globe Union Inc.
U.S. Engineering Co., Inc.
Circon Component Co.
Superex Electronics Corp.
Laboratory for Electronics, Inc.
Electro Sonic Supply Co. Ltd.
Electrolabs
W. H. Brady Co.
General Cement Mfg. Co., Div. of Textron, Inc.
Revere Copper and Brass Inc.
Aerovox Corp.
Hoover Electronics Co.
The Telegraph Condenser Co. Ltd.
El Mec Laboratories, Inc.
Electronic Tube Corp.
Instrument Development Laboratories, Inc.
Stancil-Hoffman Corp.
Bruno-New York Industries Corp.
Sanders Associates, Inc.
Tenatronics Ltd.
Ferranti Electric Ltd.
Non-Linear Systems, Inc.
Desser E-E Ltd.
The Plessey Co. of Canada Ltd.
Erle Resistor Corp.
Cinch Mfg. Corp. and H. B. Jones Div.
Avionics Ltd.
Measurement Engineering Ltd.
Engineered Electronics Co.

CLAMPS

Trico Fuse Mfg. Co.

CLIPS (Fuse)

John Spotton Co. Ltd.

CLIPS (Test)

Bud Radio Inc.
Canadian Research Institute
Lake Engineering Co. Ltd.
Mueller Electric Co.
Dynamic Electronics — New York Inc.
JFD Mfg. Co., Inc.
Herman H. Smith, Inc.
Electro Sonic Supply Co. Ltd.
General Cement Mfg. Co., Division of Textron, Inc.
Northern Electric Co. Ltd.
Grayhill
Insuline Corp. America, Subsidiary — Van Norman Industries Inc.
Tenatronics Ltd.
Desser E-E Ltd.
Canadian Marconi Company — Electronic Tube & Components Div.

CLIPS (Tube)

United-Carr Fastener Co. of Canada Ltd.
Herman H. Smith, Inc.
James Millen Mfg. Co., Inc.
Dynamic Electronics — New York Inc.
Electro Sonic Supply Co. Ltd.
Musimart of Canada Ltd.
Tenatronics Ltd.
Canadian Marconi Company — Electronic Tube & Components Div.
Desser E-E Ltd.
National Co., Inc.
The Plessey Co. of Canada Ltd.

CLOTHS (Grill)

Walsco Electronics Corp.

General Cement Mfg. Co., Division of Textron, Inc.
JFD Mfg. Co., Inc.
Electro Sonic Supply Co. Ltd.
J. R. Longstaffe Co. Ltd.
Atlas Radio Corp. Ltd.
Engineered Sound Systems Ltd.
Electronic Communications Ltd.

COATINGS (Conductive)

Atlas Radio Corporation Ltd.
General Cement Mfg. Co., Division of Textron, Inc.
Gomar Mfg. Co., Inc.
Instrument Development Laboratories, Inc.

COATINGS (Protective)

Minnesota Mining & Mfg. of Canada Ltd.
Ambroid Co.
Waldom Electronics Inc.
Polypenco, Inc.
General Cement Mfg. Co., Division of Textron, Inc.
Atlas Radio Corp. Ltd.
Sauerisen Cements Co.
United States Rubber Co.
U B S Chemical Corp.
Mosley Electronics, Inc.
Paisley Products, Inc., Division of Morningstar, Nieol, Inc.
Osborne Electric Co., Ltd.
General Communications Ltd.

COATINGS (Vacuum)

Edwards High Vacuum (Canada) Ltd.
Consolidated Electrodynamics Corp.
Gomar Manufacturing Co., Inc.

CODE MARKERS

Astral Electric Co. Ltd.
The Acromark Co.
W. H. Brady Co.
Northern Electric Co. Ltd.
William Brand & Co., Inc.
North Shore Nameplate Inc.
Markem Machine Co.
Westline Products Division of Western Lithograph Co.

COILS (Cans)

S. G. Smallwood Ltd.
T. S. Farley Ltd.
John Herring & Co. Ltd.
Astral Electric Co. Ltd.
Coil Winders, Inc.
James Millen Mfg. Co., Inc.
Dynamic Electronics — New York Inc.
H. Roy Gray Co. Ltd.
Copper Wire Products Ltd.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
Northern Electric Co. Ltd.
Hetherington, Inc.
Rollan Electric Co.
Teleradio Engineering Corp.
J. W. Miller Company
TMC (Canada) Ltd.
Associated Electronic Components
John R. Tilton Ltd.
The Plessey Co. of Canada Ltd.
Stanwyck Coil Products Ltd.

COILS (I.F.)

R. C. Kahnert Sales Ltd.
S. G. Smallwood Ltd.
General Instrument — F. W. Sickles of Canada Ltd.
Computing Devices of Canada Ltd.
Essex Electronics of Canada Ltd.
T. S. Farley Ltd.
Astral Electric Co. Ltd.
Coil Winders, Inc.
Cambridge Thermionic Corp.
James Millen Mfg. Co., Inc.
Dynamic Electronics — New York Inc.
Copper Wire Products Ltd.
H. Roy Gray Co. Ltd.
Electro Sonic Supply Co. Ltd.
J. R. Longstaffe Co. Ltd.
Radio Components Ltd.
Hermann Fortier Inc.
Atlas Radio Corp. Ltd.
S & T Sales Ltd.
Northern Electric Co. Ltd.
Filttron Company, Inc.
Charles W. Pointon Ltd.
Hetherington, Inc.
Rogers Electronic Tubes & Components
Ram Electronics Sales Co.
J. W. Miller Company
Teleradio Engineering Corp.
Rollan Electric Co.
TMC (Canada) Ltd.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
Canadian Marconi Company — Electronic Tube & Components Div.
The Plessey Co. of Canada Ltd.
Desser E-E Ltd.
John R. Tilton Ltd.
Waters Mfg. Inc.
Associated Electronic Components
Electronic Engineering
Stanwyck Coil Products Ltd.

COILS (Power)

M. J. Howard
Coil Winders, Inc.
Induction Heating Corp.

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miniature, long life

ELECTRONIC TUBES

The following long life tubes are available

TUBE TYPE	Heater		Plate		Grid No. 2		Cathode Resistor	Plate Resistance	Trans-Cond. Mhos	Power Output Watts
	Volts	Amps	Volts	Ma	Volts	Ma				
TRIODES										
2C51 2C51L	6.3	0.300	150	8.2			240	6500	5500	
6J6L	6.3	0.330	130	7.7			100	7000	5300	
18C51	18.0	0.105	150	8.2			240	6500	5500	
18J6	18.0	0.115	130	7.7			100	7000	5300	
	20.0	0.100								
407A			150	8.2			240	6500	5500	
	40.0	0.050								
5842/417A*	6.3	0.300	150	26.0			62	1800	24000	
H. F. PENTODES										
18AK5	18.0	0.053	120	7.5	120	2.0	200	300 k	5000	
5590/401A	6.3	0.150	90	3.9	90	1.4	820	300 k	2000	
5591/403B	6.3	0.150	120	7.5	120	2.0	200	300 k	5000	
5847/404A	6.3	0.300	150	13.5	150	4.0	110	200 k	13000	
6028/408A	20.0	0.050	120	7.5	120	2.0	200	300 k	5000	
POWER AMPLIFIER PENTODES										
6AQ5L	6.3	0.360	180	32.5	180	3.0	220	80 k	3900	2.1
18AQ5	18.0	0.125	180	32.5	180	3.0	220	80 k	3900	2.1
6760	18.0	0.350	130	70.0	130	3.5	100	25 k	12000	3.0
6761	6.3	1.000	130	70.0	130	3.5	100	25 k	12000	3.0

- ERICSSON warrants more than 10,000 hours average life for every tube type in the long life series.
- Robust mechanical construction with properties far superior to internationally used standards.
- Cathode activated by very long aging.
- 50-hour run in period.
- 100% microscopic inspection of each tube during assembly and after sealing.
- Special quality tests for stability, life, fatigue, vibration, vibration output and glass strain.

Mail this coupon today for Electronic Tube data sheets.

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Montreal 8, P.Q.

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COMPANY

ADDRESS

Dynamic Electronics — New York Inc.
Caledonia Electronics and
Transformer Corp.
Superex Electronics Corp.
Acme Electric Corp. Ltd.
Moloney Electric Co. of Canada, Ltd.
Electro Sonic Supply Co. Ltd.
Copper Wire Products Ltd.
Atlas Radio Corp. Ltd.
Northern Electric Co. Ltd.
Goodmans Industries Ltd.
Hetherington, Inc.
Filtron Company, Inc.
Musimart of Canada Ltd.
Keystone Products Co.
John R. Tilton Ltd.
The Plessey Co. of Canada Ltd.
Osborne Electric Co., Ltd.
Electronic Engineering
Stanwyck Coil Products Ltd.

COILS (R.F.)

R. C. Kahner Sales Ltd.
S. G. Smallwood Ltd.
Computing Devices of Canada Ltd.
Essex Electronics of Canada Ltd.
T. S. Farley Ltd.
John Herring & Co. Ltd.
Astral Electric Co. Ltd.
Coil Winders, Inc.
Induction Heating Corp.
Cambridge Thermionic Corp.
James Millen Mfg. Co., Inc.
E. F. Johnson Co.
Dynamic Electronics — New York Inc.
Standard Electronics Corp.
Laboratory for Electronics, Inc.
Superex Electronics Corp.
Hermann Fortier Inc.
Radio Components Ltd.
J. R. Longstaffe Co. Ltd.
Electro Sonic Supply Co. Ltd.
H. Roy Gray Co. Ltd.
Copper Wire Products Ltd.
Atlas Radio Corp. Ltd.
General Instrument —
F. W. Sickles of Canada Ltd.
S & T Sales Ltd.
Northern Electric Co. Ltd.
Hetherington, Inc.
Charles W. Pointon Ltd.
Filtron Company, Inc.
Teleradio Engineering Corp.
J. W. Miller Company
Ram Electronics Sales Co.
TMC (Canada) Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Associated Electronic Components
Waters Manufacturing Inc.
John R. Tilton Ltd.
Desser E-E Ltd.
The Plessey Co. of Canada Ltd.
Canadian Marconi Company —
Electronic Tube & Components Div.
Electronic Engineering
Stanwyck Coil Products Ltd.

COILS (R.F. Chokes)

R. C. Kahner Sales Ltd.
S. G. Smallwood Ltd.
Essex Electronics of Canada Ltd.
T. S. Farley Ltd.
John Herring & Co. Ltd.
Lake Engineering Co. Ltd.
Astral Electric Co. Ltd.
Coil Winders, Inc.
Induction Heating Corp.
Cambridge Thermionic Corp.
James Millen Mfg. Co., Inc.
Dynamic Electronics — New York Inc.
Ohmite Manufacturing Co.
E. F. Johnson Co.
Laboratory for Electronics, Inc.
Superex Electronics Corp.
Copper Wire Products Ltd.
H. Roy Gray Co. Ltd.
Electro Sonic Supply Co. Ltd.
Radio Components Ltd.
Hermann Fortier Inc.
Atlas Radio Corp. Ltd.
General Instrument —
F. W. Sickles of Canada Ltd.
S & T Sales Ltd.
Northern Electric Co. Ltd.
Filtron Company, Inc.
Charles W. Pointon Ltd.
Hetherington, Inc.
Ram Electronics Sales Co.
J. W. Miller Company
Waters Manufacturing, Inc.
Teleradio Engineering Corp.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Canadian Marconi Company —
Electronic Tube & Components Div.
The Plessey Co. of Canada Ltd.
John R. Tilton Ltd.
Electronic Engineering
Associated Electronic Components
Stanwyck Coil Products Ltd.

**COMMUNICATION RECEIVERS
(Microwave)**

Polarad Electronics Corp.

COMMUNICATION SYSTEMS (Aircraft)

M. J. Howard

Mechron Engineering Products Ltd.
Computing Devices of Canada Ltd.
Sinclair Radio Labs. Ltd.
Pye Canada Ltd.
Chisholm Industries Ltd.
Aviation Electric Ltd.
National Aeronautical Corp.
Melody Master Mfg. Co.
Electronics Div., Elgin National Watch Co.
Dynamic Electronics — New York Inc.
Specialty Engineering & Electronics Co.
S & T Sales Ltd.
Berkeley Division of Beckman
Instruments, Inc.
Curtiss-Wright Corp., Electronics Div.
Electronic Specialty Co.
Redifon (Canada) Ltd.
Collins Radio Co. of Canada Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
The Plessey Co. of Canada Ltd.
Measurement Engineering Ltd.
Canadian Marconi Company
Beaconing Optical & Precision
Materials Co. Ltd.
The Wheeler Insulated Wire Co., Ltd. —
Div. of Sperry Rand Corp.

**COMMUNICATION SYSTEMS
(Aircraft Traffic Control)**

M. J. Howard
Mehron Engineering Products Ltd.
Cossor Canada Ltd.
Computing Devices of Canada Ltd.
Sinclair Radio Labs. Ltd.
Pye Canada Ltd.
Radio Communications Equipment &
Engineering Ltd.
Aviation Electric Ltd.
Canadian Westinghouse Co. Ltd. —
Electronics Division
National Aeronautical Corp.
Melody Master Mfg. Co.
The Ahearn & Soper Co. Ltd.
Electronics Div. Elgin National Watch Co.
Dynamic Electronics — New York Inc.
Research Industries Ltd.
Communications Company, Inc.
Curtiss-Wright Corp., Electronics Div.
Kaar Engineering Corporation
Kay Lab
Erco Radio Labs, Inc.
Radio Receptor Company, Inc.
Servo Corp. of America
RCA Victor Company, Ltd.
TMC (Canada) Ltd.
Redifon (Canada) Ltd.
Collins Radio Co. of Canada Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Beaconing Optical & Precision
Materials Co. Ltd.
The Plessey Co. of Canada Ltd.

**COMMUNICATION SYSTEMS
(Carrier Current)**

Mehron Engineering Products Ltd.
Northern Radio Mfg. Co. Ltd.
Pye Canada Ltd.
Hackbusch Electronics Ltd.
Telephone Manufacturing Co. Ltd.
Radio Communications Equipment &
Engineering Ltd.
Canadian Westinghouse Co. Ltd. —
Electronics Div.
Lynch Carrier Systems Inc.
The Ahearn & Soper Company Ltd.
Ericsson Telephone Sales of Canada Ltd.
Electronics Div. Elgin National Watch Co.
Talk-A-Phone Co.
Andrew Antenna Corp., Ltd.
Dynamic Electronics — New York Inc.
Amalgamated Electric Corp. Ltd.
Research Industries Ltd.
Automatic Electric Sales (Canada) Ltd.
Erco Radio Labs, Inc.
Rogers Majestic Electronics Ltd.
Motorola Communications &
Electronics, Inc.
Webster Electric Co.
Pacific Communications Services Ltd.
Electro-Vox Intercom Inc.
Redifon (Canada) Ltd.
Collins Radio Co. of Canada Ltd.
Radio Engineering Products Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Ferranti Electric Ltd.
Osborne Electric Co. Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Electronic Communications Ltd.
Crosby Laboratories, Inc.
The British Thomson-Houston Co.
(Canada) Ltd.

**COMMUNICATION SYSTEMS
(Frequency Shift)**

Northern Radio Company, Inc.

**COMMUNICATION SYSTEMS
(Marine Radio-Telephone)**

M. J. Howard
Mehron Engineering Products Ltd.

Sinclair Radio Labs. Ltd.
Pye Canada Ltd.
Radio Communications Equipment &
Engineering Ltd.
Chisholm Industries Ltd.
Aviation Electric Ltd.
Canadian Westinghouse Co. Ltd. —
Electronics Div.
Melody Master Mfg. Co.
The Ahearn & Soper Company Ltd.
Electronics Div., Elgin National Watch Co.
Andrew Antenna Corp., Ltd.
Standard Electronics Corp.
Pylon Electronic Development Co., Ltd.
S & T Sales Ltd.
Bludworth Marine Division of
Kearfott Company, Inc.
Rex Bassett, Inc.
Curtiss-Wright Corp., Electronics Div.
Fisher Research Laboratory, Inc.
Gray Radio Company, Inc.
Kaar Engineering Corp.
Erco Radio Labs, Inc.
Electrical Communications
Humble Mfg. Co. Ltd.
RCA Victor Company, Ltd.
TMC (Canada) Ltd.
Electro-Vox Intercom Inc.
Redifon (Canada) Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Engineered Sound Systems Ltd.
Measurement Engineering Ltd.
Canadian Marconi Company

COMMUNICATION SYSTEMS (Microwave)

Philco Corp. of Canada Ltd.
M. J. Howard
Mehron Engineering Products Ltd.
Computing Devices of Canada Ltd.
Sinclair Radio Labs. Ltd.
Pye Canada Ltd.
Hackbusch Electronics Ltd.
Canadian Aviation Electronics Ltd.
Electrovert Ltd.
Chisholm Industries Ltd.
Canadian Westinghouse Co. Ltd. —
Electronics Div.
The Narda Corp.
Lynch Carrier Systems Inc.
Airtron, Inc.
The Ahearn & Soper Company Ltd.
DeMornay-Bonardi Corp.
Ericsson Telephone Sales of Canada Ltd.
Philco Corporation, Government &
Industrial Div.
Electronics Div., Elgin National Watch Co.
Andrew Antenna Corp., Ltd.
Dynamic Electronics — New York Inc.
Research Industries Ltd.
Pylon Electronic Development Co., Ltd.
Airtron Canada Ltd.
Automatic Electric Sales (Canada) Ltd.
Continental Electronics Mfg. Co.
Bomac Laboratories Inc.
Rogers Majestic Electronics Ltd.
Motorola Communications &
Electronics, Inc.
Raytheon Manufacturing Co.
RCA Victor Company, Ltd.
Pacific Communications Services Ltd.
Radio Engineering Products Ltd.
Collins Radio Co. of Canada Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Canadian Marconi Company
Measurement Engineering Ltd.
The Plessey Co. of Canada Ltd.
Beaconing Optical & Precision
Materials Co. Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Sarkes Tarzian, Inc.

COMMUNICATION SYSTEMS (Railroad)

Mehron Engineering Products Ltd.
Computing Devices of Canada Ltd.
Sinclair Radio Labs. Ltd.
Hackbusch Electronics Ltd.
Chisholm Industries Ltd.
Aviation Electric Ltd.
Canadian Westinghouse Co. Ltd. —
Electronics Div.
Lynch Carrier Systems Inc.
The Ahearn & Soper Company Ltd.
Ericsson Telephone Sales of Canada Ltd.
Electronic Div., Elgin National Watch Co.
Andrew Antenna Corp., Ltd.
Pylon Electronic Development Co., Ltd.
Research Industries Ltd.
Automatic Electric Sales (Canada) Ltd.
Executone Communication Systems Ltd.
Rogers Majestic Electronics Ltd.
Fisher Research Laboratory, Inc.
Motorola Communications &
Electronics, Inc.
Pacific Communications Services Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
The Plessey Co. of Canada Ltd.
Canadian Marconi Company
Crosby Laboratories, Inc.
The British Thomson-Houston Co.
(Canada) Ltd.

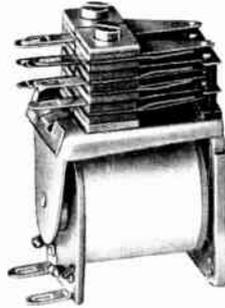


ALOIS ZETTLER RELAYS

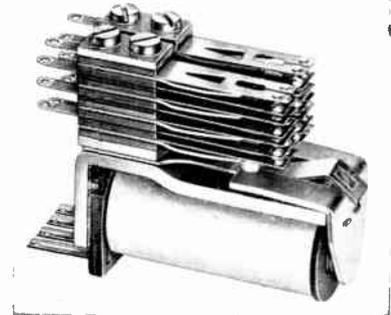
Alois Zettler are pioneers in the telecommunications field in which they have been known since 1877. Today, Zettler's standard line of relays include over 30 basic types, of which a few are shown on this page. Zettler can fill your requirements for standard relays as well as for complicated types where exact pull-in and drop-out voltages are demanded. Relays to meet the requirements of Mil-R-5757B, Class A available, many as standard items for short delivery.



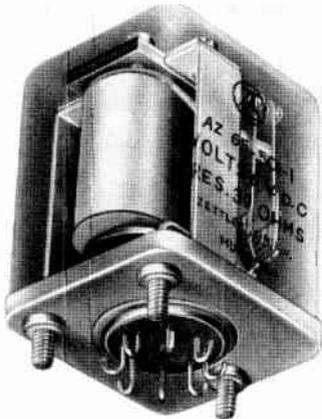
AZ 160
Miniature Relay



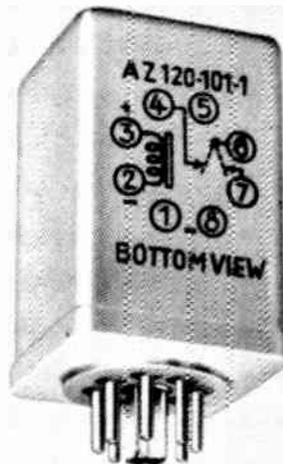
AZ 20



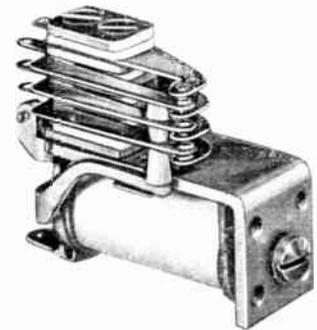
AZ 130



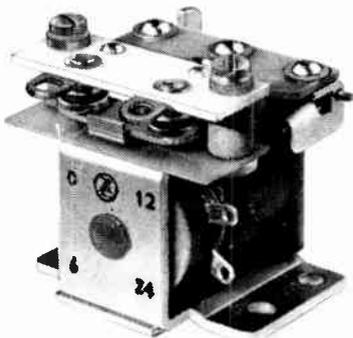
B 20 AZ 65



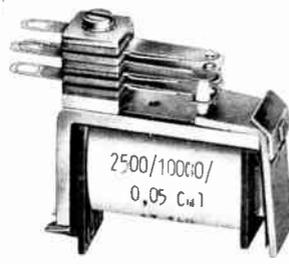
B 30 AZ 120
Polarized Relay



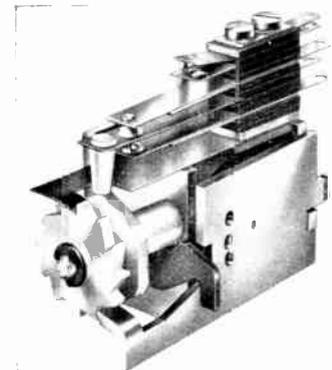
AZ 60



AZ 70
Dynamotor Start Relay



AZ 140
Small Relay with Flat Core



AZ 170
Stepping Relay

A Descriptive 28-Page Catalog with Engineering Data Available Upon Request.

Associated Electronic Components

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Forecast for '57

"... the trend to increased utilization of electronics by science and industry should underwrite another year of expansion. . . ."



Philips Canadian Industrial Development Company Limited is concerned with industrial expansion of quite a broad cross-section of Canadian Industry. With this in mind, we look forward to 1957 with the expectation that a high level of capital spending in Canada will be maintained; in fact, investment in new plant and equipment should continue at a sufficient rate to take up much of the slack developing in the residential construction sector.

Canada is in an expansionist period with rapidly growing population and a maturing economy. Recent international events promise to stimulate even greater interest in Canada as a fertile and safe field for industrial expansion and investment. Our company, which is engaged in offering know-how and in the licensing of Philips' patents in electronics and many other fields in Canada, expects increasing interest from Canadian industrialists who are seeking growth opportunities in competition with the many foreign firms establishing themselves here.

Our associated manufacturing and sales companies — Canadian Radio Manufacturing Corporation Limited, Philips Industries Limited and Rogers Majestic Electronics Limited — expect 1957 to compare favorably with 1956 in terms of sales but with continued pressure on profits due to increased costs, the competitive conditions within the industry, and commercial and technical development requirements of the fast-growing industrial electronic field.

In consumer goods, recent declines in sales of TV sets have brought the industry to a point where it should be able to at least maintain, if not to improve, its present position during 1957. We are, unfortunately, very dependent on the United States to provide the impetus for rapid acceptance of color television but in black-and-white there is still a very substantial market for original equipment and a big merchandising job to be done on replacement set sales; it will be aided by the newer technical developments — wider angle picture tubes, portable sets, tuning refinements, etc. Likewise, the outlook for radio and audio equipment sales is considered to be quite favorable and will be aided by transistor developments, the tremendous growth of hi-fi, and the outlook for a good year in the automobile industry which, of course, affects automobile radio sales. Any return to severe credit restrictions will, however, be a serious impediment in the way of improvement in consumer goods sales.

In the industrial electronics area, the large expansion programs of the electric, transportation, communications and other utilities will place great demands upon the electronics industry to supply communications and other electronic systems. Furthermore, the trend to increased utilization of electronics by science and industry should underwrite another year of expansion for the great variety of electronic apparatus now available from the Canadian industry.

R. M. Brophy,
President, Philips Canadian Industrial
Development Company Limited.

COMMUNICATION SYSTEMS
(Tone Telegraph — AM & FS)
Northern Radio Company, Inc.

COMMUNICATION SYSTEMS (Vehicular)
M. J. Howard
Mechron Engineering Products Ltd.
Computing Devices of Canada Ltd.
Sinclair Radio Labs. Ltd.
Pye Canada Ltd.
Radio Communications Equipment &
Engineering Ltd.

Chisholm Industries Ltd.
Aviation Electric Ltd.
Canadian Westinghouse Co. Ltd. —
Electronics Division
The Ahearn & Soper Co. Ltd.
Elgin National Watch Co., Electronics Div.
Morrow Radio Mfg. Co.
Andrew Antenna Corp., Ltd.
Pylon Electronic Development Co., Ltd.
S & T Sales Ltd.
Communications Co., Inc.
Rogers Majestic Electronics Ltd.

Elliott Brothers (London) Ltd.
Allen B. DuMont Labs, Inc.
Kaar Engineering Corp.
Erco Radio Labs, Inc.
Electrical Communications
Motorola Communications &
Electronics, Inc.
TMC (Canada) Ltd.
Tenatronics Limited
Pacific Communications Services Ltd.
Redifon (Canada) Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Engineered Sound Systems Ltd.
The Bell Telephone Co. of Canada
Canadian Marconi Co.
The Plessey Co. of Canada Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.

COMPARATORS

Canadian Research Institute
R. H. Nichols Ltd.
Electrodesign
H. Tinsley & Co. Ltd.
Sander Associates, Inc.
Mueller Laboratory
Central Scientific Co. of Canada Ltd.
Non-Linear Systems, Inc.
Measurement Engineering Ltd.
Dawe Instruments Ltd. (Can. Div.)
General Radio Co.
Canadian Marconi Co.
Industrial Test Equipment Co.

COMPARATORS (Densitometer)

Baird Associates — Atomic Instrument Co.

COMPARATORS (Dielectric)

Bogue Electric of Canada, Ltd.
General Radio Co.

COMPARATORS (Optical)

PSC Applied Research Ltd.

COMPARATORS (Voltage)

Electromechanical Products
Canadian Research Institute
R-O-R Associates Ltd.
Electrovert Ltd.
Donner Scientific Co.
Non-Linear Systems, Inc.

COMPOUNDS (Potting)

E. G. Lomas Co.

COMPUTER UNITS (Electro-mechanical)

The Solartron Electronic Group Ltd.

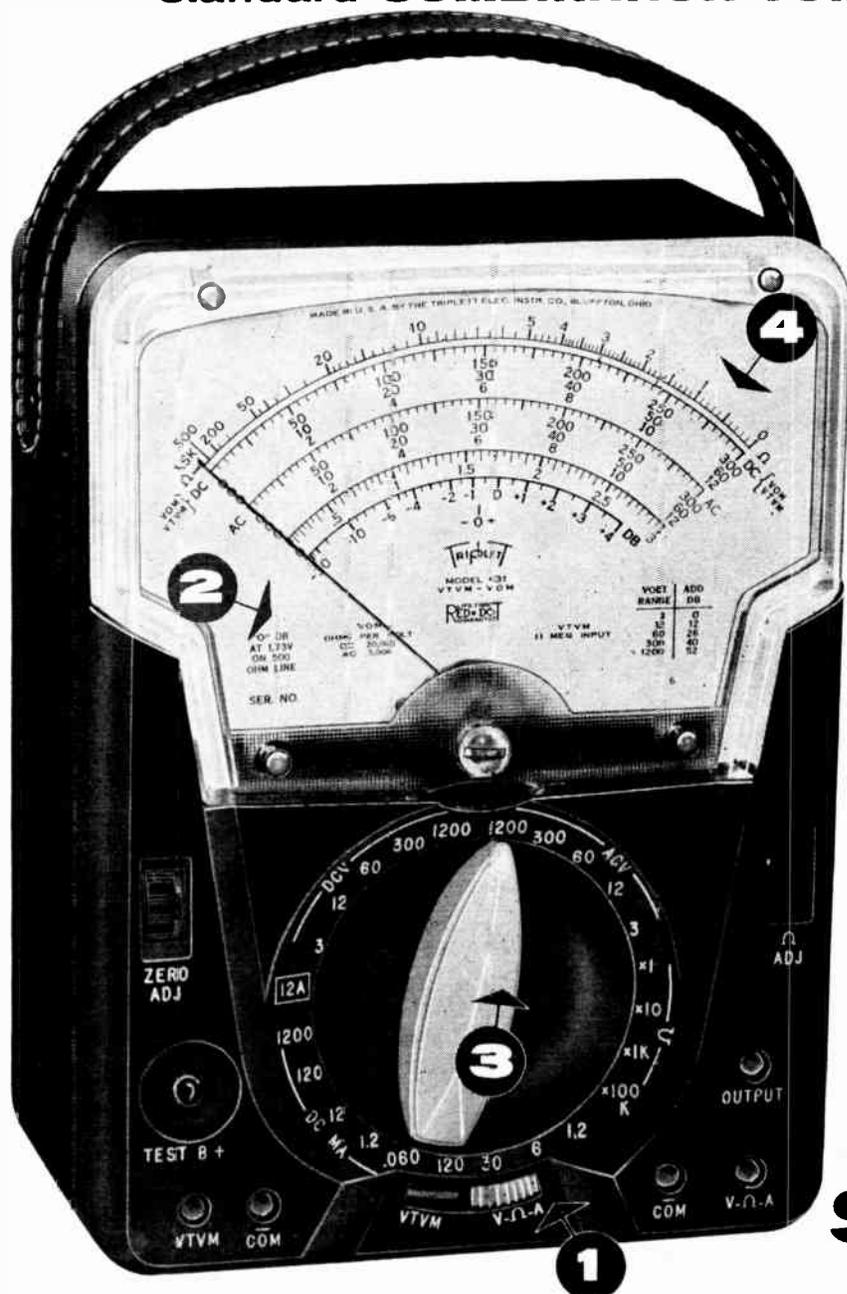
COMPUTERS (Analog)

Electromechanical Products
Mechron Engineering Products Ltd.
Canadian Research Institute
R-O-R Associates Ltd.
Electrodesign
Cossor Canada Ltd.
Canadian Aviation Electronics Ltd.
Computing Devices of Canada Ltd.
The Ahearn & Soper Co. Ltd.
Dynamic Electronics — New York Inc.
Electronics Corp. of America
George A. Philbrick Researches, Inc.
Heath Company
Curtiss-Wright Corp., Electronics Div.
Bendix Computer Division of Bendix
Aviation Corp.
Berkeley Division of Beckman
Instruments, Inc.
Electronic Tube Corp.
Magnetic Amplifiers, Inc.
Evershed & Vignoles Ltd.
Feedback Controls, Inc.
Librascope Inc.
Elliott Brothers (London) Ltd.
The Solartron Electronic Group Ltd.
The Standard Electric Time Co.
Southwestern Industrial Electronics
Co. Inc.
Servo Corp. of America
Donner Scientific Co.
Redifon (Canada) Ltd.
Ferranti Electric Ltd.
Barber-Colman of Canada Ltd.
(Wheelco Inst. Div.)
Canadian Marconi Co.
General Communications Ltd.
The Plessey Co. of Canada Ltd.
Measurement Engineering Ltd.

COMPUTERS (Digital)

Electromechanical Products
Mechron Engineering Products Ltd.
Canadian Research Institute
Computing Devices of Canada Ltd.
Dynamic Electronics — New York Inc.
Philco Corp., Government & Industrial Div.
Electronics Corp. of America
Potter Instrument Co., Inc.
Underwood Corp., Electronic Computer
Division
Southern Instruments Ltd. —
Oscillograph Division
Curtiss-Wright Corp., Electronics Div.
Bendix Computer Division of Bendix
Aviation Corp.
Berkeley Division of Beckman
Instruments, Inc.
Elliott Brothers (London) Ltd.
Fisher Research Laboratory, Inc.
The English Electric Co. Ltd.
Librascope Inc.
Electro Data Division of Burroughs Corp.

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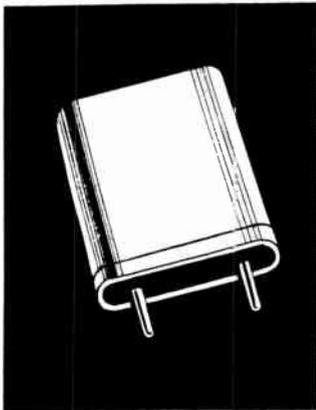
- Instrument Development Labs. Inc.
Electronic Tube Corp.
Hoover Electronics Co.
The Solartron Electronic Group Ltd.
Logistics Research Inc.
RCA Victor Co., Ltd.
Fisher & Porter (Canada) Ltd.
Electrodata — Division of Burroughs
Adding Machine of Canada Ltd.
Redifon (Canada) Ltd.
Ferranti Electric Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Decca Radar (Canada) Ltd.
General Communications Ltd.
Canadian Marconi Co.
The Plessey Co. of Canada Ltd.
- CONNECTORS (Anode)**
R. C. Kahnert Sales Ltd.
United-Carr Fastener Co. of Canada Ltd.
Vidaire Electronics Mfg. Corp.
General Cement Mfg. Co., Division
of Textron, Inc.
Waldom Electronics Inc.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
Herman H. Smith, Inc.
The Glendon Co. Ltd.
Power Controls Ltd.
Cinch Mfg. Corp. and H. B. Jones Div.
Permonite Mfg. Co.
National Tel-Tronics Corp.
- CONNECTORS (Antennae)**
General Cement Mfg. Co.,
Division of Textron, Inc.
Circon Component Co.
Channel Master Corp.
Dynamic Electronics — New York Inc.
Javex
American Electronics Co.
Andrew Antenna Corp., Ltd.
Electro Sonic Supply Co. Ltd.
Amphenol Canada Ltd.
Atlas Radio Corp. Ltd.
Herman H. Smith, Inc.
Belling & Lee Ltd.
Entron Incorporated
Hoffman Semiconductor Division of
Hoffman Electronics Corp.
Grayhill
Mosley Electronics, Inc.
TMC (Canada) Ltd.
Permonite Mfg. Co.
Canadian General Electric Co. Ltd. —
Electronic Equipment & Tube Dept.
Cinch Mfg. Corp. and H. B. Jones Div.
National Tel-Tronics Corp.
- CONNECTORS (Audio)**
Cannon Electric Canada Ltd.
Javex
Dynamic Electronics — New York Inc.
Circon Component Co.
General Cement Mfg. Co.,
Division of Textron, Inc.
Amphenol Canada Ltd.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
Microdot, Inc.
Tenatronics Limited
Perkins Electric Co. Ltd. —
Electronics Division
Cinch Mfg. Corp. and H. B. Jones Div.
National Tel-Tronics Corp.
- CONNECTORS (Cable)**
Burndy Canada Ltd.
H. B. Etlin Company Ltd.
Cannon Electric Canada Ltd.
John Spotton Co. Ltd.
Pye Canada Ltd.
Aviation Electric Ltd.
Circon Component Co.
Dynamic Electronics — New York Inc.
Javex
Scintilla Div., Bendix Aviation Corp.
Andrew Antenna Corp., Ltd.
Electro Sonic Supply Co. Ltd.
Amphenol Canada Ltd.
Atlas Radio Corp. Ltd.
Blonder-Tongue Laboratories, Inc.
General Cement Mfg. Co.,
Division of Textron, Inc.
Belling & Lee Ltd.
Buchanan Electrical Products Corp.
Dage Electric Co. Inc.
Insuline Corp. America, Subsidiary Van
Norman Industries Inc.
The Pyle-National Co.
Pomona Electronics Co., Inc.
Tenatronics Limited
E. G. Lomas Co.
Elco Corporation
Gorn Electric Co.
Permonite Mfg. Co.
Cinch Mfg. Corp. and H. B. Jones Div.
The Plessey Co. of Canada Ltd.
General Radio Co.
- CONNECTORS (Coaxial Cable)**
R. C. Kahnert Sales Ltd.
Burndy Canada Ltd.
Cannon Electric Canada Ltd.
Lake Engineering Co. Ltd.
Astral Electric Co. Ltd.
Pye Canada Ltd.
- R-O-R Associates Ltd.
Jerrold Electronics (Canada) Ltd.
Javex
Dynamic Electronics — New York Inc.
Andrew Antenna Corp., Ltd.
Blonder-Tongue Laboratories, Inc.
Industrial Products Company,
Division of Danbury-Knudsen Inc.
Allied Industries, Inc.
U. S. Components, Inc.
Herman H. Smith, Inc.
Bendix Aviation Corp., Scintilla Div.
Amphenol Canada Ltd.
Electro Sonic Supply Co. Ltd.
H. Roy Gray Co. Ltd.
Atlas Radio Corp. Ltd.
The Glendon Co. Ltd.
Belling & Lee Ltd.
Gulton Industries, Inc.
Defiance Engineering & Microwave Corp.
Dage Electric Co. Inc.
F-R Machine Works, Inc.,
Electronics & X-Ray Div.
Entron Incorporated
Power Controls Ltd.
Prodelin, Inc.
Spencer-Kennedy Laboratories, Inc.
Microdot, Inc.
The Pyle-National Co.
Tenatronics Limited
E. G. Lomas Co.
Elco Corporation
E. S. Gould Sales Co.
Canadian Marconi Co.
Cinch Mfg. Corp. and H. B. Jones Div.
Perkins Electric Co. Ltd. —
Electronics Division
Canadian General Electric Co. Ltd. —
Electronic Equipment & Tube Dept.
Telegquipment Mfg. Co. Ltd.
Avionics Limited
General Radio Co.
The Plessey Co. of Canada Ltd.
Electroline Television Equipment Inc.
- CONNECTORS (Coupling)**
M. J. Howard
R. C. Kahnert Sales Ltd.
Circon Component Co.
Javex
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
General Cement Mfg. Co.,
Division of Textron, Inc.
Herman H. Smith, Inc.
Gulton Industries, Inc.
The Pyle-National Co.
E. G. Lomas Co.
Gorn Electric Co.
The Plessey Co. of Canada Ltd.
National Tel-Tronics Corp.
- CONNECTORS (Diode)**
Circon Component Co.
Cambridge Thermionic Corp.
Atlas Radio Corp. Ltd.
General Cement Mfg. Co.,
Division of Textron, Inc.
- CONNECTORS (Molded Rubber)**
Campbell Manufacturing Co. Ltd.
- CONNECTORS (Printed Circuit)**
Garde Manufacturing Co.
- CONNECTORS (Solderless)**
M. J. Howard
Burndy Canada Ltd.
Cannon Electric Canada Ltd.
Aircraft-Marine Products of Canada, Ltd.
John Spotton Co. Ltd.
Jerrold Electronics (Canada) Ltd.
Hackbusch Electronics Ltd.
Minnesota Mining & Mfg. of Canada Ltd.
Fleck Electrical Mfg. Ltd.
Bendix Aviation Corp., Scintilla Div.
Blonder-Tongue Laboratories, Inc.
U.S. Components, Inc.
E. F. Johnson Co.
Cambridge Thermionic Corp.
Javex
Electro Sonic Supply Co. Ltd.
Amphenol Canada Ltd.
Atlas Radio Corp. Ltd.
General Cement Mfg. Co.,
Division of Textron, Inc.
Herman H. Smith, Inc.
Buchanan Electrical Products Corp.
Northern Electric Co. Ltd.
Continental Connector Corp.
Entron Incorporated
Gulton Industries, Inc.
Mosley Electronics, Inc.
The Pyle-National Co.
E. G. Lomas Co.
Elco Corporation
E. S. Gould Sales Co.
Aircraft Marine Products Inc.
The Plessey Co. of Canada Ltd.
Cinch Mfg. Corp. and H. B. Jones Div.
Electroline Television Equipment Inc.
- CONNECTORS (Waterproof)**
Burndy Canada Ltd.
Cannon Electric Canada Ltd.
Aircraft-Marine Products of Canada, Ltd.
Aviation Electric Ltd.
Javex
U. S. Components, Inc.
Bendix Aviation Corp., Scintilla Div.
- Amphenol Canada Ltd.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
Continental Connector Corp.
Gulton Industries, Inc.
Eagle Electric Mfg. Co., Inc.
Microdot, Inc.
The Pyle-National Co.
E. G. Lomas Co.
Gorn Electric Co.
Fortiphone Limited
Quality Hermetics Ltd.
The Plessey Co. of Canada Ltd.
- CONES (Speaker)**
Astral Electric Co. Ltd.
J. B. Smyth Electronic Components
Dominion Sound Equipments Ltd.
Universal Speaker Service
Waldom Electronics Inc.
Copper Wire Products Ltd.
H. Roy Gray Co. Ltd.
Atlas Radio Corp. Ltd.
Goodmans Industries Ltd.
University Loudspeakers, Inc.
The Plessey Co. of Canada Ltd.
Electronic Communications Ltd.
Perkins Electric Co. Ltd. —
Electronics Division
- CONTACT CLEANER (Liquid)**
Walco Electronics Corp.
Workman TV Inc.
General Cement Mfg. Co.,
Division of Textron, Inc.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
Armet Industries Ltd.
General Communications Ltd.
Telegquipment Mfg. Co. Ltd.
- CONTACTORS (See Relays)**
Vickers Electric Division, Vickers Inc.,
Unit of Sperry Rand Corp.
- CONTACTS (Electrical)**
Cannon Electric Canada Ltd.
United-Carr Fastener Co. of Canada Ltd.
John Herring & Co. Ltd.
Javex
The Ahearn & Soper Co. Ltd.
Stackpole Carbon Co.
Fansteel Metallurgical Corp.
Amphenol Canada Ltd.
Johnson Matthey & Mallory Ltd.
Northern Electric Co. Ltd.
General Control Co.
Ferrara Inc.
Vickers Electric Division, Vickers Inc.,
Unit of Sperry Rand Corp.
Associated Electronic Components
Osborne Electric Co., Ltd.
Permonite Mfg. Co.
- CONTROLS (Aircraft Traffic)**
Computing Devices of Canada Ltd.
Cossor Canada Ltd.
Aviation Electric Ltd.
Canadian Line Materials Ltd.
RCA Victor Co., Ltd.
TMC (Canada) Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Beaconing Optical & Precision
Materials Co. Ltd.
Decca Radar (Canada) Ltd.
- CONTROLS (Attenuators and Pads)**
R. C. Kahnert Sales Ltd.
John Herring & Co. Ltd.
J. B. Smyth Electronic Components
Cossor Canada Ltd.
Kay Electric Co.
Clarostat Mfg. Co., Inc.
Dynamic Electronics — New York Inc.
International Resistance Co. Ltd.
Pylon Electronic Development Co., Ltd.
Electro Sonic Supply Co. Ltd.
Ohmite Manufacturing Co.
Entron Incorporated
The Solartron Electronic Group Ltd.
Photo Crystals, Inc.
P. R. Mallory & Co. Inc.
Measurement Engineering Ltd.
Perkins Electric Co., Ltd. —
Electronics Division
Adams Engineering Ltd.
Canadian Marconi Co. —
Electronic Tube & Components Div.
- CONTROLS (Counting)**
Electromechanical Products
R-O-R Associates Ltd.
Canadian Research Institute
Electrodesign
Electrovert Ltd.
Aeromotive Engineering Products
Industrial Electronics of Canada Ltd.
Martin Engineering Inc.
Electronic Associates Ltd.
Davis Automatic Controls Ltd.
Guardian Electric Mfg. Co.
Canadian Westinghouse Co. Ltd. —
Electronics Division
Electronic Control Corp.
Autotron, Inc.
Electro Products Laboratories
Abrams Instrument Corp.

Cruelty

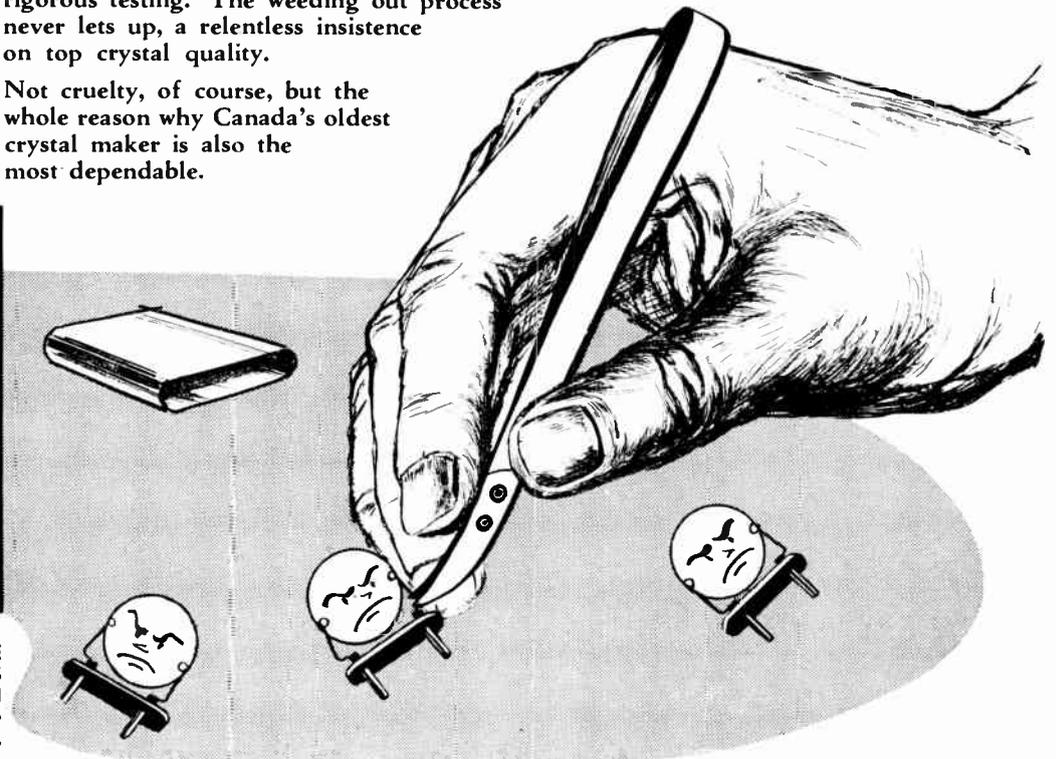
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Airmec Limited
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Berkeley Division of Beckman
Instruments, Inc.
Ferrara Inc.
Photo Crystals, Inc.
Londex Limited
The J. W. Ellis Industries
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Electronics Corp. of America (Can.) Ltd.
Computer-Measurements Corp.
BJ Electronics, Borg-Warner Corp.
Canadian Marconi Co.
Perkins Electric Co., Ltd. —
Electronics Division
Measurement Engineering Ltd.
- CONTROLS (Electronic-Static)**
R-O-R Associates Ltd.
Bogue Electric of Canada, Ltd.
Industrial Electronics of Canada Ltd.
Martin Engineering Inc.
The Takk Corp.
Research Industries Ltd.
Magnetic Amplifiers, Inc.
VecTrol Engineering, Inc.
- CONTROLS (Frequency)**
R-O-R Associates Ltd.
Computing Devices of Canada Ltd.
Electrodesign
Martin Engineering Inc.
Davis Automatic Controls Ltd.
Minneapolis-Honeywell Regulator Co. Ltd.,
Brown Instrument Division
The James Knights Co.
Research Industries Limited
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
Berkeley Div. of Beckman Instruments, Inc.
Frequency Standards Inc.
Electrical Communications
TMC (Canada) Ltd.
Computer-Measurements Corp.
VecTrol Engineering, Inc.
- CONTROLS (Humidity)**
Aeromotive Engineering Products
R. H. Nichols Ltd.
The Bristol Co. of Canada Ltd.
Canadian Research Institute
Industrial Electronics of Canada Ltd.
Minneapolis-Honeywell Regulator Co. Ltd.,
Brown Instrument Division
Cossor Canada Ltd.
United Electric Controls Co.
Hermann Fortier Inc.
Atlas Radio Corp. Ltd.
Barber-Colman Co.
The Foxboro Company
Elliott Brothers (London) Ltd.
Fenwal Incorporated
Photo Crystals, Inc.
The J. W. Ellis Industries
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Peacock Brothers Ltd.
Barber-Colman of Canada Ltd.
(Wheelco Inst. Div.)
- CONTROLS (Level)**
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Aeromotive Engineering Products
Electrovert Ltd.
Process-Instrument Systems Ltd.
The Bristol Co. of Canada Ltd.
John Herring & Co. Ltd.
Electrodesign
Industrial Electronics of Canada Ltd.
Martin Engineering Inc.
Electronic Associates Ltd.
Davis Automatic Controls Ltd.
Computing Devices of Canada Ltd.
Cossor Canada Ltd.
Electronics Corporation of America
United Electric Controls Co.
The Ahearn & Soper Co. Ltd.
Acoustica Associates, Inc.
Tracerlab Inc.
International Resistance Co. Ltd.
Herman Fortier Inc.
Berkeley Div. of Beckman Instruments, Inc.
Airmec Limited
Automatic Temperature Control Co. Inc.
Baldwin Instrument Co. Ltd.
Elliott Brothers (London) Ltd.
Aerovox Corporation
Evershed & Vignoles Ltd.
Electrical Communications
Fielden Electronics Ltd.
Fielden Instrument Division
The Foxboro Co.
Ferrara Inc.
Photo Crystals, Inc.
Bailey Meter Co. Ltd.
Londex Limited
Robertshaw-Fulton Controls Co. —
Fulton Sylphon Division
Manning, Maxwell & Moore, Inc.
Fischer & Porter (Canada) Ltd.
Electronics Corp. of America (Can.) Ltd.
- Perkins Electric Co., Ltd. —
Electronics Division
Canadian Marconi Co.
General Communications Ltd.
Peacock Brothers Ltd.
- CONTROLS (Materials Thickness)**
Pratt & Whitney Co., Inc.
Electrodesign
Minneapolis-Honeywell Regulator Co. Ltd.,
Brown Instrument Division
Computing Devices of Canada Ltd.
Canadian Research Institute
Electronic Associates Ltd.
Curtiss-Wright Corp., Electronics Div.
Baldwin Instrument Co. Ltd.
Automatic Temperature Control Co. Inc.
The Foxboro Co.
Fielden Instrument Division
Fielden Electronics Ltd.
Rogers Majestic Electronics Ltd.
Photo Crystals, Inc.
Fischer & Porter (Canada) Ltd.
Standard Electronic Research Corp.
Measurement Engineering Ltd.
Barber-Colman of Canada Ltd.
(Wheelco Inst. Div.)
- CONTROLS (Photoelectric)**
Electrovert Ltd.
John Herring & Co. Ltd.
Canadian Research Institute
Electrodesign
Industrial Electronics of Canada Ltd.
Martin Engineering Inc.
Electronic Associates Ltd.
Minneapolis-Honeywell Regulator Co. Ltd.,
Brown Instrument Division
Powerlite Devices Ltd.
Electronics Corp. of America
Canadian Westinghouse Co. Ltd. —
Electronics Division
Autotron, Inc.
Electronic Control Corp.
Research Industries Ltd.
Robotron Corporation
Baldwin Instrument Co. Ltd.
Berkeley Div. of Beckman Instruments, Inc.
Airmec Limited
The Fisher-Pierce Co.
Rogers Majestic Electronics Ltd.
Vickers Electric Division, Vickers Inc.,
Unit of Sperry Rand Corp.
Photo Crystals, Inc.
Micro Balancing, Inc.
Londex Limited
Ripley Co. Inc.
The J. W. Ellis Industries
Electronics Corp. of America
(Canada) Ltd.
Avionics Controls Ltd.
Avionics Limited
Electronic Communications Ltd.
Computer-Measurements Corp.
Perkins Electric Co., Ltd. —
Electronics Division
Canadian Marconi Co.
General Communications Ltd.
Barber-Colman of Canada Ltd.
(Wheelco Inst. Div.)
Measurement Engineering Ltd.
Standard Electronic Research Corp.
The British Thomson-Houston Co.
(Canada) Ltd.
- CONTROLS (Power Level)**
R-O-R Associates Ltd.
Canadian Westinghouse Co. Ltd. —
Electronics Division
International Resistance Co. Ltd.
Berkeley Div. of Beckman Instruments, Inc.
Electronic Control Corp.
- CONTROLS (Radio)**
R. C. Kahnert Sales Ltd.
P. J. Heenan Ltd.
Centralab Canada Ltd.
Canadian Westinghouse Co. Ltd. —
Electronics Division
Clarostat Mfg. Co., Inc.
International Resistance Co. Ltd.
Electro Sonic Supply Co. Ltd.
Hermann Fortier Inc.
Continental Carbon Division of Wirt Co.
Electrical Communications
P. R. Mallory & Co. Inc.
TMC (Canada) Ltd.
Collins Radio Co. of Canada Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Perkins Electric Co., Ltd. —
Electronics Division
The Plessey Co. of Canada Ltd.
Canadian Marconi Co. —
Electronic Tube & Components Div.
- CONTROLS (Regulating)**
R-O-R Associates Ltd.
Bogue Electric of Canada, Ltd.
R. H. Nichols Ltd.
Process-Instrument Systems Ltd.
The Bristol Co. of Canada Ltd.
Canadian Research Institute
Electrodesign
Industrial Electronics of Canada Ltd.
Davis Automatic Controls Ltd.
Minneapolis-Honeywell Regulator Co. Ltd.,
Brown Instrument Division
- United Electric Controls Co.
The Ahearn & Soper Co. Ltd.
Canadian Westinghouse Co. Ltd. —
Electronics Division
Research Industries Ltd.
Sola Electric (Canada) Ltd.
Curtiss-Wright Corp., Electronics Div.
Bowmar Instrument Corp.
El Mec Laboratories, Inc.
The Superior Electric Co.
Evershed & Vignoles Ltd.
Magnetic Amplifiers, Inc.
Electrical Communications
Fielden Instrument Division
West Instrument Corp.
Manning, Maxwell & Moore, Inc.
Aircraft Products Division
Robertshaw-Fulton Controls Co.,
Fulton Sylphon Division
Manning, Maxwell & Moore, Inc.
Electronics Corp. of America (Can.) Ltd.
Industrial Control Co.
Associated Electronic Components
Canadian Marconi Co. —
Electronic Tube & Components Div.
General Communications Ltd.
Barber-Colman of Canada Ltd.
(Wheelco Inst. Div.)
VecTrol Engineering, Inc.
The British Thomson-Houston Co.
(Canada) Ltd.
- CONTROLS (Servo)**
Electromechanical Products
Mechron Engineering Products Ltd.
R-O-R Associates Ltd.
Canadian Aviation Electronics Ltd.
Bogue Electric of Canada, Ltd.
Process-Instrument Systems Ltd.
George Kelk Ltd.
Industrial Electronics of Canada Ltd.
Minneapolis-Honeywell Regulator Co. Ltd.,
Aeronautical Division
Computing Devices of Canada Ltd.
Aviation Electric Ltd.
Clarostat Mfg. Co., Inc.
Bendix Aviation Corp. —
Eclipse-Pioneer Division
Hellpot Corporation
Research Industries Ltd.
PSC Applied Research Ltd.
Pylon Electronic Development Co., Ltd.
Bowmar Instrument Corp.
Barber-Colman Company
Automatic Temperature Control Co. Inc.
Berkeley Division of Beckman
Instruments, Inc.
Minneapolis-Honeywell Regulator Co. Ltd.,
Brown Instrument Division
Feedback Controls, Inc.
Librascope Inc.
Dalmo Victor Co., Division of Textron Inc.
Magnetic Amplifiers, Inc.
Elliott Brothers (London) Ltd.
Evershed & Vignoles Ltd.
Manning, Maxwell & Moore, Inc.,
Aircraft Products Division
Servo Corp. of America
Vickers Electric Division, Vickers Inc.,
Unit of Sperry Rand Corp.
Donner Scientific Co.
Measurement Engineering Ltd.
Standard Electronic Research Corp.
Industrial Control Co.
General Communications Ltd.
VecTrol Engineering, Inc.
- CONTROLS (Smoke, Combustion, Electronic)**
The Bristol Co. of Canada Ltd.
John Herring & Co. Ltd.
Canadian Research Institute
Electrodesign
Martin Engineering Inc.
Electronic Associates Ltd.
Minneapolis-Honeywell Regulator Co. Ltd.,
Brown Instrument Division
Electronic Control Corporation
Electronics Corp. of America
Pylon Electronic Development Co., Ltd.
Research Industries Ltd.
Atlas Radio Corp. Ltd.
Barber-Colman Co.
Evershed & Vignoles Ltd.
Fielden Electronics Ltd.
Bailey Meter Co. Ltd.
Londex Limited
Photo Crystals, Inc.
The J. W. Ellis Industries
Ripley Company Inc.
Electronics Corp. of America (Can.) Ltd.
Barber-Colman of Canada Ltd.
(Wheelco Inst. Div.)
Perkins Electric Co., Ltd. —
Electronics Division
Canadian Marconi Co.
The British Thomson-Houston Co.
(Canada) Ltd.
Electronic Communications Ltd.
Measurement Engineering Ltd.
Industrial Control Co.
VecTrol Engineering, Inc.
- CONTROLS (Sound)**
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Military Wire
Motor Lead Cable
Neon Sign Cable
Oil Burner Cable
Office Wire
Portable Cords—Type
SV, SJ, S, SJO, SO
Portable Cables—Type
SW, SWD, G, SH
Radio Wire
Transformer Lead Cable
Welding Cable

BUILDING WIRES AND CABLES

Flameseal—Type TW
Flexible Armoured Cable
—Type AC & ACL
Philex Cable—Type
NMD-1, NMD-3, NMD-10
Rubber & Braid—
Type R, RH, RW
Rubber Neoprene Cables
Service Entrance Cable—
Type SE
Service Cables

COMMUNICATION WIRES & CABLES

Coaxial Cables
Fire Alarm Cables
Interphone Cables
Paper Telephone Cables
Police Signal Cables
Signal Cables
Telegraph Cables
Telephone Cables
Telephone Switchboard
Cables
Telephone Wires
Telephone Cords
Terminating Cables

MAGNET WIRES

Enamel, Formel
Cotton, Silk
Asbestos, Glass
Paper, Nylon
Round, Square,
Rectangular

CONTROL CABLES

Station Control
Traffic Control
Signal Cable
Railway Control
Elevator Control
Thermostat Control Cable

POWER CABLES

Armoured—DSTA, SWA
Neoprene Jacket
Rubber Insulated
Paper Insulated

Varnished Cambric
Insulated
Shipboard Cables
Parkway Cables
Submarine Cables
Mining Cables
Lead Sheathed Cables

RODS, BAR & LINE CONDUCTORS

Bus Bar Copper
Electrolytic Copper Rods
Aluminum and ACSR
Brass & Bronze Wire
CCSR Conductor
Copper Wire & Cable
Copperweld Wire & Cable
Copperweld Copper
Conductors
Trolley Wire
Neoprene Line Wires
Weatherproof Wire &
Cable

ROCKBESTOS WIRES, CABLES & CORDS

Boiler Room Wires
Fixture Wires—Type AF
Flexible Cords
Power Cables
Switchboard Wires
Range Wires
Stove Wires
Appliance Lead Wires
Rheostat Wire
Special High Temperature
Wire
Soil Heating Cable

Phillips

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THE CANADIAN AFFILIATE OF THE B. I. C. C. GROUP

Head Office — Brockville, Ont.

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REGINA • EDMONTON • VANCOUVER

World Radio History

PHILLIPS ELECTRICAL COMPANY LIMITED,
Brockville, Ont.

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Forecast for '57

"... commercial business is expected to show an increase. . ."



In assessing the prospects of the electronics industry for 1957 the most important single factor is television.

During 1956, industry sales of television sets were down about 13 per cent from 1955. Competition was very keen, and some manufacturers withdrew from the market altogether. This was to be expected, however, since nationwide television became a reality in Canada faster than anywhere else in the world and sales were bound to level out as the initial task of providing service in all areas neared completion.

It now appears that the market for television sets in 1957 will be much more stable than it has been recently. There will be fewer manufacturers, and less distress selling. Moreover, there is now a good possibility that the CBC will permit second stations in major centers, a move which, if it occurs, should bolster business. Total industry sales of television sets in 1957 will probably show little change from 1956.

In technical products, the other major segment of the electronics industry, prospects for 1957 are mixed.

It now appears certain that defense business, which has been a very important item, will be considerably lower than in 1956 which, in turn, was below 1955. Commercial business is expected to show an increase — we are very optimistic, for instance, about construction of microwave radio relay systems — and this will partially offset the drop in defense. But not entirely so, and the outlook, therefore, is for some decline, industry-wide, in sales of technical products.

P. J. Casella,
President, RCA Victor Company Limited.

CONTROLS (Temperature - Electronic)

Mechron Engineering Products Ltd.
M. J. Howard
Aeromotive Engineering Products
Electrovert Ltd.
Process-Instrument Systems Ltd.
The Bristol Co. of Canada Ltd.
John Herring & Co. Ltd.
Canadian Research Institute
Electrodesign
Industrial Electronics of Canada Ltd.
Martin Engineering Inc.
Davis Automatic Controls Ltd.
Minneapolis-Honeywell Regulator Co. Ltd.,
Brown Instrument Div.
Cossor Canada Ltd.
Powerlite Devices Ltd.
Electronic Control Corp.
United Electric Controls Co.
Canadian Westinghouse Co. Ltd. —
Electronics Division
Research Industries Ltd.
Airmec Limited
Automatic Temperature Control Co. Inc.
Barber-Colman Co.
Elliott Brothers (London) Ltd.
Magnetic Amplifiers, Inc.
Flelden Instrument Division
The Foxboro Co.
Fenwal Incorporated
Gulton Industries, Inc.
Flelden Electronics Ltd.
Evershed & Vignoles Ltd.
Manning, Maxwell & Moore, Inc.
Robertshaw-Fulton Controls Co.,
Fulton Sylphon Division
West Instrument Corp.
Metals & Controls Corp., Spencer
Thermostat Division
Photo Crystals, Inc.
Bailey Meter Co. Ltd.
Manning, Maxwell & Moore, Inc.,
Aircraft Products Division
Servo Corp. of America
The J. W. Ellis Industries

Thermovolt Instruments Ltd.
Electronics Corp. of America (Can.) Ltd.
Canadian Marconi Co.
Perkins Electric Co., Ltd. —
Electronics Division
Barber-Colman of Canada Ltd.
(Wheelco Inst. Div.)
General Communications Ltd.
Standard Electronic Research Corp.
Peacock Brothers Ltd.
BJ Electronics, Borg-Warner Corp.
VecTrol Engineering, Inc.

CONTROLS (Tuning)

Centralab, Division of Globe Union Inc.
Acme Electric Corp. Ltd.
International Resistance Co. Ltd.
Electro Sonic Supply Co. Ltd.
General Cement Mfg. Co.,
Division of Tectron, Inc.
Collins Radio Co. of Canada Ltd.
The Plessey Co. of Canada Ltd.
Canadian Marconi Co. —
Electronic Tube & Components Div.

CONTROLS (Ultrasonic)

Electrodesign
Computing Devices of Canada Ltd.
Cossor Canada Ltd.
Lake Engineering Co. Ltd.
Acoustica Associates, Inc.
Gulton Industries, Inc.
Perkins Electric Co., Ltd. —
Electronics Division

CONTROLS

(Volume and Tone, Wire Wound)

R. C. Kahnert Sales Ltd.
P. J. Heenan Ltd.
Centralab Canada Ltd.
Canadian Electric Resistors Ltd.
Centralab, Division of Globe Union Inc.
Clarostat Mfg. Co. Inc.
Whiteley Electrical Radio Co. Ltd.

Chicago Telephone Supply Corp.
Hermann Fortier Inc.
Electro Sonic Supply Co. Ltd.
International Resistance Co. Ltd.
Continental Carbon Division of Wirt Co.
P. R. Mallory & Co. Inc.
Fortiphone Limited
International Resistance Co.
Canadian Marconi Co. —
Electronic Tube & Components Div.
The Plessey Co. of Canada Ltd.
Perkins Electric Co., Ltd. —
Electronics Division

CONTROLS (Volume & Tone, Composition)

R. C. Kahnert Sales Ltd.
P. J. Heenan Ltd.
Centralab Canada Ltd.
Centralab, Div. of Globe Union Inc.
Clarostat Mfg. Co., Inc.
Chicago Telephone Supply Corp.
Stackpole Carbon Co.
International Resistance Co. Ltd.
Electro Sonic Supply Co. Ltd.
Hermann Fortier Inc.
Power Controls Ltd.
Fortiphone Limited
International Resistance Co.
Perkins Electric Co., Ltd. —
Electronics Division
The Plessey Co. of Canada Ltd.
Canadian Marconi Co. —
Electronic Tube & Components Div.

CONVERTERS (AC-DC)

American Television & Radio Co.
Electromechanical Products
R. C. Kahnert Sales Ltd.
Canadian Research Institute
Aeromotive Engineering Products
Bogue Electric of Canada, Ltd.
R. H. Nichols Ltd.
Burlec Sales Ltd.
Leonard Electric Ltd.
Aviation Electric Ltd.
Christie Electric Corp.
Bendix Aviation Corp., Red Bank Div.
Electronic Instrument Co. Inc.
The Airpax Products Co.
Morrow Radio Mfg. Co.
Electro Products Laboratories
Canadian Westinghouse Co. Ltd. —
Electronics Division
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
Automatic Electric Sales (Canada) Ltd.
Charles W. Pointon Ltd.
Instrument Development Lab., Inc.
Electronic Specialty Co.
The English Electric Co. Ltd.
Magnetic Amplifiers, Inc.
Sangamo Electric Co.
Syntron (Canada) Ltd.
Non-Linear Systems, Inc.
Electronic Controls Ltd.
Canadian General Electric Co. Ltd. —
Electronic Equipment & Tube Dept.
Radionics Ltd.
Perkins Electric Co., Ltd. —
Electronics Division
VecTrol Engineering, Inc.

CONVERTERS (DC-AC)

American Television & Radio Co.
Electromechanical Products
Minneapolis-Honeywell Regulator Co. Ltd.,
Brown Instrument Division
Canadian Research Institute
Aeromotive Engineering Products
Bogue Electric of Canada, Ltd.
Burlec Sales Ltd.
Aviation Electric Ltd.
Carter Motor Co.
Bendix Aviation Corp., Red Bank Div.
The Airpax Products Co.
Induction Heating Corp.
Canadian Westinghouse Co. Ltd. —
Electronics Division
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
Automatic Electric Sales (Canada) Ltd.
Magnetic Amplifiers, Inc.
The English Electric Co. Ltd.
Electronic Specialty Co.
Instrument Development Lab., Inc.
Charles W. Pointon Ltd.
Soundmaster Equipments
Terado Company
Stancil-Hoffman Corp.
Sangamo Electric Co.
Electronic Controls Ltd.
The Plessey Co. of Canada Ltd.
Perkins Electric Co. Ltd. —
Electronics Division
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
White Radio Ltd.
Engineered Sound Systems Ltd.

CONVERTERS (Facsimile)

Northern Radio Co., Inc.

CONVERTERS (FM)

Electromechanical Products
Hermann Fortier Inc.
RCA Victor Co., Ltd.
A. T. R. Armstrong Ltd.
Beaconing Optical & Precision
Materials Co. Ltd.

YOUR ALPHABETICAL CHECK LIST OF ATLAS PRODUCTS



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- Repair and Recalibration Facilities
- Local Warehouse Stock
- Field Demonstration
- Local Warranty Service

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ITEMS IN THE ADJOINING COLUMN

TEAR OUT THIS PAGE

and MAIL . . .

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A		L	
Amplifiers	<input type="checkbox"/>	Leads (Test)	<input type="checkbox"/>
Analizers	<input type="checkbox"/>	Loads (Water RF)	<input type="checkbox"/>
Antennas	<input type="checkbox"/>	Loudspeakers	<input type="checkbox"/>
Attenuators	<input type="checkbox"/>	Lugs and Terminals	<input type="checkbox"/>
B		M	
Baffles (Speaker)	<input type="checkbox"/>	Magnetic Pickups	<input type="checkbox"/>
Ballasts	<input type="checkbox"/>	Megaphones (Electronic)	<input type="checkbox"/>
Battery Chargers	<input type="checkbox"/>	Metal Grilles	<input type="checkbox"/>
Battery Eliminators	<input type="checkbox"/>	Meters (Deviation)	<input type="checkbox"/>
Binding Posts	<input type="checkbox"/>	Micrometers (Electronic)	<input type="checkbox"/>
Booms (Microphone)	<input type="checkbox"/>	Motors (Instrument)	<input type="checkbox"/>
Bridges (Impedance)	<input type="checkbox"/>	Multipliers (Voltmeter)	<input type="checkbox"/>
Broadcast Equipment	<input type="checkbox"/>	N	
C		Needles (Cutting)	<input type="checkbox"/>
Cabinets (Racks & Panels)	<input type="checkbox"/>	Needles (Playback)	<input type="checkbox"/>
Cable Clamps	<input type="checkbox"/>	O	
Calibrators	<input type="checkbox"/>	Oscillators	<input type="checkbox"/>
Calorimeters	<input type="checkbox"/>	Oscillographs	<input type="checkbox"/>
(Microwave)	<input type="checkbox"/>	(Direct Writing)	<input type="checkbox"/>
Cameras (Television)	<input type="checkbox"/>	Oscilloscopes	<input type="checkbox"/>
Capacitors	<input type="checkbox"/>	(Cathode Ray)	<input type="checkbox"/>
Cells (Photo-electric)	<input type="checkbox"/>	P	
Chokes	<input type="checkbox"/>	Pickups (Phono, Hi-Fi)	<input type="checkbox"/>
Clips	<input type="checkbox"/>	Plugs	<input type="checkbox"/>
Cloths (Grille)	<input type="checkbox"/>	Power Supplies	<input type="checkbox"/>
Coatings (Conductive)	<input type="checkbox"/>	(Regulated)	<input type="checkbox"/>
Coatings (Protective)	<input type="checkbox"/>	Pre-Amplifiers	<input type="checkbox"/>
Coils	<input type="checkbox"/>	(Communication)	<input type="checkbox"/>
Condensers	<input type="checkbox"/>	Printed Circuitry	<input type="checkbox"/>
Connectors	<input type="checkbox"/>	Probes (High Frequency)	<input type="checkbox"/>
Converters	<input type="checkbox"/>	Public Address Systems	<input type="checkbox"/>
Counters (Electronic)	<input type="checkbox"/>	Pilot Lights	<input type="checkbox"/>
Crystal Detectors	<input type="checkbox"/>	Proximity Pickups	<input type="checkbox"/>
D		R	
Decalcomania Transfers	<input type="checkbox"/>	Record Changers	<input type="checkbox"/>
(Tekni Labels)	<input type="checkbox"/>	Recorders (Tape)	<input type="checkbox"/>
Dial Lights, Socket	<input type="checkbox"/>	Recorders (Disc)	<input type="checkbox"/>
Assemblies	<input type="checkbox"/>	Recording Heads	<input type="checkbox"/>
Diodes (Germanium)	<input type="checkbox"/>	Recording Tape	<input type="checkbox"/>
E		Record Players (3-Speed)	<input type="checkbox"/>
Electrical Indicating	<input type="checkbox"/>	Relays	<input type="checkbox"/>
Instruments	<input type="checkbox"/>	Resistors (Composition	<input type="checkbox"/>
F		Variable)	<input type="checkbox"/>
Filters (Low Pass)	<input type="checkbox"/>	Rheostats	<input type="checkbox"/>
G		S	
Galvanometers	<input type="checkbox"/>	Seals (Glass Hermetic)	<input type="checkbox"/>
Generators (Signal)	<input type="checkbox"/>	Shields (Coil)	<input type="checkbox"/>
Geophysical Equipment	<input type="checkbox"/>	Sockets (Battery and	<input type="checkbox"/>
H		Speaker)	<input type="checkbox"/>
Headsets	<input type="checkbox"/>	Soldering Irons	<input type="checkbox"/>
Horns (Speaker)	<input type="checkbox"/>	Solder	<input type="checkbox"/>
Hi-Fi Turntables	<input type="checkbox"/>	Sound Systems	<input type="checkbox"/>
I		Splicers (Recording Tape)	<input type="checkbox"/>
Insulating Compounds	<input type="checkbox"/>	Switches	<input type="checkbox"/>
Insulating Material	<input type="checkbox"/>	Solder Pots	<input type="checkbox"/>
Intercommunication	<input type="checkbox"/>	T	
Systems	<input type="checkbox"/>	Test Equipment	<input type="checkbox"/>
Inverters	<input type="checkbox"/>	(Micro-wave)	<input type="checkbox"/>
J		Tape Recorders	<input type="checkbox"/>
Jacks (Phone)	<input type="checkbox"/>	Tube Testers	<input type="checkbox"/>
K		V	
Knobs	<input type="checkbox"/>	Voltmeters	<input type="checkbox"/>
L		W	
L		Waveguide Equipment	<input type="checkbox"/>
Leads (Test)	<input type="checkbox"/>	Wire Stripper	<input type="checkbox"/>
Loads (Water RF)	<input type="checkbox"/>		
Loudspeakers	<input type="checkbox"/>		
Lugs and Terminals	<input type="checkbox"/>		

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List Below Items You Are Interested In

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Northern Radio Co., Inc.

CONVERTERS (Magnetic)Electronic Specialty Co.
Magnetic Amplifiers, Inc.
Doelcam Div. of Minneapolis-Honeywell**CONVERTERS (Microwave)**Vectron, Inc.
R-O-R Associates Ltd.
Dynamic Electronics — New York Inc.
Atlas Radio Corp. Ltd.
RCA Victor Co., Ltd.
E. G. Lomas Co.
Collins Radio Co. of Canada Ltd.
Beaconing Optical & Precision
Materials Co., Ltd.
Measurement Engineering Ltd.**CONVERTERS (Static Electronic)**Magnetic Amplifiers, Inc.
Electronic Specialty Co.
VecTrol Engineering, Inc.**CONVERTERS (Television)**Pye Canada Ltd.
Jerrold Electronics (Canada) Ltd.
Blonder-Tongue Laboratories, Inc.
Industrial Development Engineering
Associates Inc.
Electro Sonic Supply Co. Ltd.
Ampli-Vision Division of International
Telemeter Corp.
Entron Incorporated
Spencer-Kennedy Laboratories, Inc.
RCA Victor Co., Ltd.
Tele-Matic Industries Inc.
E. S. Gould Sales Co.
The Plessey Co. of Canada Ltd.
Engineered Sound Systems Ltd.
A. T. R. Armstrong Ltd.
Tequipment Mfg. Co. Ltd.
Sarkes Tarzian, Inc.
Electroline Television Equipment Inc.**CONVERTERS (Twinplex)**

Northern Radio Co., Inc.

CORDS (Line)Boston Insulated Wire & Cable Co. Ltd.
P. J. Heenan Ltd.
J. B. Smyth Electronic Components
Phillips Electrical Co. Ltd.
H. B. Etlin Co. Ltd.
Fleck Electrical Mfg. Ltd.
Alpha Wire Corp.
JFD Manufacturing Co., Inc.
General Cement Mfg. Co.,
Division of Textron, Inc.
Waldom Electronics Inc.
Phalo Plastics Corp.
Electro Sonic Supply Co. Ltd.
Automatic Electric Sales (Canada) Ltd.
The Glendon Co. Ltd.
Cornish Wire Co. Inc.
Eagle Electric Mfg. Co., Inc.
Insuline Corp. America, Subsidiary Van
Norman Industries Inc.
Royal Electric Co., Inc.
Prince & Roberts
White Radio Ltd.
Permonite Mfg. Co.**CORDS (Line - Retractable)**Fleck Electrical Mfg. Ltd.
The Glendon Co. Ltd.
Automatic Electric Sales (Canada) Ltd.
Prince & Roberts
The Rex Corp.**CORDS (Resistance)**JFD Manufacturing Co., Inc.
The Glendon Co. Ltd.
Eagle Electric Mfg. Co., Inc.**CORES (Ceramic)**Mechron Engineering Products Ltd.
Lake Engineering Co. Ltd.
P. J. Heenan Ltd.
Aerovox Canada Ltd.
Minnesota Mining & Mfg. of Canada Ltd.
Centralab, Division of Globe Union Inc.
Stupakoff Div. of The Carbonandum Co.
Superex Electronics Corp.
Rogers Electronic Tube & Components
National Moldite Co.
Canadian Stackpole Ltd.
The Plessey Co. of Canada Ltd.**CORES (Iron)**M. J. Howard
Neosid (Canada) Ltd.
El-Met-Parts Ltd.
Aerovox Canada Ltd.
Superex Electronics Corp.
General Cement Mfg. Co.,
Division of Textron, Inc.
Canadian Westinghouse Co. Ltd. —
Electronics Division
Aerovox Corporation
Pyroferic Co., Inc.
Rogers Electronic Tube & Components
National Moldite Co.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
The Plessey Co. of Canada Ltd.
Adams Engineering Ltd.**CORES (Magnetic)**M. J. Howard
Neosid (Canada) Ltd.
Aerovox Canada Ltd.
Canadian Westinghouse Co. Ltd. —
Electronics DivisionFerroxcube Corp. of America
Aerovox Corporation
Vickers Electric Division, Vickers Inc.,
Unit of Sperry Rand Corp.
Rogers Electronic Tubes & Components
Pyroferic Company, Inc.
National Moldite Co.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
The Plessey Co. of Canada Ltd.**CORES (Powdered Iron)**M. J. Howard
Lake Engineering Co. Ltd.
Neosid (Canada) Ltd.
Telephone Manufacturing Co. Ltd.
Aerovox Canada Ltd.
Polypenco, Inc.
Superex Electronics Corp.
General Cement Mfg. Co.,
Division of Textron, Inc.
Workman TV Inc.
Stackpole Carbon Co.
The Glendon Co. Ltd.
National Moldite Co.
Pyroferic Company, Inc.
Canadian Stackpole Ltd.
Standard Telephones & Cables Mfg. Co.
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Associated Electronic Components
The Plessey Co. of Canada Ltd.**COUNTERS (Electro-Mechanical)**

Veeder-Root, Ltd.

COUNTERS (Electronic)Electromechanical Products
Mechron Engineering Products Ltd.
Canadian Research Institute
R-O-R Associates Ltd.
Computing Devices of Canada Ltd.
Electrodesign
Electronic Associates Ltd.
Martin Engineering Inc.
John Herring & Co. Ltd.
Industrial Electronics of Canada Ltd.
Canadian Aviation Electronics Ltd.
X-Ray & Radium Industries Ltd.
Northern Radio Mfg. Co. Ltd.
Sinclair Radio Labs. Ltd.
Abrams Instruments Corp.
Color Television Inc.
Durant Manufacturing Co. Inc.
Boesch Manufacturing Co. Inc.
The Ahearn & Soper Co. Ltd.
Electronics Corp. of America
Electronic Control Corp.
Potter Instrument Co., Inc.
Laboratory for Electronics, Inc.
Research Industries Ltd.
Electrovert Limited
Atlas Radio Corp. Ltd.
Automatic Electric Sales (Canada) Ltd.
Airmec Limited
Rogers Majestic Electronics Ltd.
Ferrara Inc.
North American Philips Co. Inc.
Londex Limited
Nuclear Measurements Corp.
Photocon Research Products
The Standard Electric Time Co.
Rogers Electronic Tubes & Components
Mueller Laboratory
TMC (Canada) Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Non-Linear Systems, Inc.
Electronics Corp. of America (Can.) Ltd.
The Plessey Co. of Canada Ltd.
Perkins Electric Co. Ltd. —
Electronics Division
Electronic Controls Ltd.
General Communications Ltd.
Canadian Marconi Co.
BJ Electronics, Borg-Warner Corp.
Computer-Measurements Corp.
Measurement Engineering Ltd.
Engineered Electronics Co.
The British Thomson-Houston Co.
(Canada) Ltd.**COUNTERS (Frequency)**Electromechanical Products
Mechron Engineering Products Ltd.
Canadian Research Institute
R-O-R Associates Ltd.
Computing Devices of Canada Ltd.
Electrodesign
Electronic Associates Ltd.
Martin Engineering Inc.
X-Ray & Radium Industries Ltd.
The Ahearn & Soper Co. Ltd.
Northern Radio Mfg. Co. Ltd.
Potter Instrument Co., Inc.
MJS Electronic Sales Ltd.
Research Industries Ltd.
Atlas Radio Corp. Ltd.
Airmec Limited
The Standard Electric Time Co.
Laviole Laboratories, Inc.
TMC (Canada) Ltd.
Measurement Engineering Ltd.
Computer-Measurements Corp.
BJ Electronics, Borg-Warner Corp.
Canadian Marconi Co.
Perkins Electric Co. Ltd. —
Electronics Division
The Plessey Co. of Canada Ltd.**COUNTERS (Geiger)**Mechron Engineering Products Ltd.
Lake Engineering Co. Ltd.
Canadian Research Institute
Computing Devices of Canada Ltd.
Electrodesign
Electronic Associates Ltd.
Canadian Aviation Electronics Ltd.
X-Ray & Radium Industries Ltd.
Tracelab Inc.
Electronic Instrument Co. Inc.
The Ahearn & Soper Co. Ltd.
MJS Electronic Sales Ltd.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
American Electronics, Inc.
Baird Associates — Atomic Instrument Co.
Curtiss-Wright Corp., Electronics Div.
Airmec Limited
Fisher Research Laboratory, Inc.
North American Philips Co. Inc.
Nuclear Measurements Corp.
Scientific Radio Prod., Inc.
Rogers Majestic Electronics Ltd.
Technical Associates
Sharpe Instruments Ltd.
NRD Instrument Co.
Ferranti Electric Ltd.
Perkins Electric Co., Ltd.
Electronics Division
Canadian Marconi Co.
Measurement Engineering Ltd.
Radionics Ltd.
Pacific Transducer Corp.**COUNTERS (Magnetic)**

Electrodesign

COUNTERS (Photoelectric)Canadian Research Institute
Electrodesign
Electro Associates Ltd.
Martin Engineering Inc.
John Herring & Co. Ltd.
Industrial Electronics of Canada Ltd.
Electronics Corp. of America
Electronic Control Corp.
Potter Instrument Co., Inc.
Durant Manufacturing Co.
The Ahearn & Soper Co. Ltd.
Autotron, Inc.
Canadian Westinghouse Co. Ltd. —
Electronics Division
Veeder-Root, Ltd.
Research Industries Ltd.
Atlas Radio Corp. Ltd.
Airmec Limited
Electrovert Ltd.
Rogers Majestic Electronics Ltd.
Londex Limited
Ripley Co. Inc.
The J. W. Ellis Industries
Electronics Corp. of America (Can.) Ltd.
Measurement Engineering Ltd.
Canadian Marconi Co.
Perkins Electric Co., Ltd. —
Electronics Division
Computer-Measurements Corp.
Dawe Instruments Ltd. (Canadian Div.)
Electronic Communications Ltd.
General Communications Ltd.
The British Thomson-Houston Co.
(Canada) Ltd.**COUNTERS (Proportional)**

Nuclear Measurements Corp.

COUNTERS (Scintillation)Nuclear Measurements Corp.
NRD Instrument Co.**COUPLERS (TV)**

Javex

COUPLINGS (Coaxial Cable)R-O-R Associates Ltd.
Electrodesign
Jerrold Electronics (Canada) Ltd.
Blonder-Tongue Laboratories, Inc.
Airtron, Inc.
Electro Sonic Supply Co. Ltd.
Gulton Industries, Inc.
Microdot, Inc.
E. G. Lomas Co.
E. S. Gould Sales Co.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Canadian Marconi Co.
The Plessey Co. of Canada Ltd.
Electroline Television Equipment Inc.**CRYSTAL DETECTORS**Sinclair Radio Labs. Ltd.
Hackbusch Electronics Ltd.
Lake Engineering Co. Ltd.
Electro Sonic Supply Co. Ltd.
Bayly Engineering Ltd.
Herman Fortier Inc.
Atlas Radio Corp. Ltd.
F-R Machine Works, Inc., Electronics
& X-Ray Division
Trad Electronics Corp.
Entron Incorporated
Rogers Electronic Tubes & Components
National Radiac Inc.
E. G. Lomas Co.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
The Plessey Co. of Canada Ltd.
Radionics Limited
Electroline Television Equipment Inc.

MUIRHEAD INSTRUMENTS LIMITED

Manufacturers of Precision Electrical Instruments

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Cables: MUIRINST, STRATFORDONT

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- ★ MAGSLIPS
-
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WAVE ANALYSER
-
- ★ DECADE OSCILLATORS
-
- ★ D-729 PHASEMETER
-
- ★ WESTON STANDARD CELLS
- ★ INDUSTRIAL REFERENCE CELLS



★ The above items—a small selection from a wide range of Muirhead precision instruments—are briefly described in the Product Information Section. We will gladly send by return mail, complete details of any or all of our products, upon receipt of your enquiry.

TECHNIQUE

A QUARTERLY JOURNAL
OF INSTRUMENT ENGINEERING

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Technicraft Laboratories, Inc.
Javex
Waldom Electronics Inc.
Electro Sonic Supply Co. Ltd.
Insuline Corp. America, Subsidiary Van
Norman Industries Inc.
Elliott Brothers (London) Ltd.
Electrical Industries, Division of
Amperex Electronic Corp.
Grayhill
F.R. Machine Works, Inc.,
Electronics & X-Ray Div.
E. G. Lomas Co.
Quality Hermetics Ltd.
Measurement Engineering Ltd.
The Plessey Co. of Canada Ltd.
National Tel-Tronics Corp.
The British Thomson-Houston Co.
(Canada) Ltd.

CRYSTAL OVENS

Wright Electronics Inc.

CRYSTAL (Quartz Freq. Control)

R. C. Kahnert Sales Ltd.
Beechey Enterprises
C. R. Snelgrove Co. Ltd.
Lake Engineering Co. Ltd.
Wright Electronics Inc.
The James Knights Co.
Electronic Instrument Co. Inc.
Electro Sonic Supply Co. Ltd.
Rex Bassett, Inc.
Bliley Electric Co.
Northern Engineering Lab., Inc.
Canadian General Electric Co. Ltd. —
Electronic Tube Division
Rogers Electronic Tubes & Components
Scientific Radio Prod., Inc.
Pacific Communications Services Ltd.
MJS Electronic Sales Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
W. Gary Wright Electronics of Can. Ltd.
Barber-Colman of Canada Ltd.
(Wheelco Inst. Div.)
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.

CRYSTAL SOCKETS

R. C. Kahnert Sales Ltd.
P. J. Heenan Ltd.
E. F. Johnson Co.
Circon Component Co.
Waldom Electronics Inc.
Javex
James Millen Mfg. Co., Inc.
Amphenol Canada Ltd.
H. Roy Gray Co. Ltd.
Electro Sonic Supply Co. Ltd.
Mosley Electronics, Inc.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Permonite Mfg. Co.
Cinch Mfg. Corp. and H. B. Jones Div.
The Plessey Co. of Canada Ltd.

CRYSTALS (Precision Ground Quartz)

R. C. Kahnert Sales Ltd.
Beechey Enterprises
Electronic Tube Co.
C. R. Snelgrove Co. Ltd.
Pye Canada Ltd.
Lake Engineering Co. Ltd.
Wright Electronics Inc.
The James Knights Co.
The Ahearn & Soper Co. Ltd.
Electro Sonic Supply Co. Ltd.
Rex Bassett, Inc.
Baird Associates — Atomic Instrument Co.
Bliley Electric Co.
Rogers Electronic Tubes & Components
Scientific Radio Prod., Inc.
MJS Electronic Sales Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
W. Gary Wright Electronics of Can. Ltd.
H. McCordle

CRYSTALS (Scintillation Counter)

Computing Devices of Canada Ltd.
Electrodesign
Electronic Associates Ltd.
Bayly Engineering Ltd.
Baird Associates — Atomic Instrument Co.
North American Philips Co. Inc.
Fretco Incorporated
National Radiac Inc.
NRD Instrument Co.
The Plessey Co. of Canada Ltd.
Measurement Engineering Ltd.
Perkins Electric Co., Ltd. —
Electronics Division
Radionics Limited
Canadian Marconi Co.

CYCLOTRONS

Rogers Majestic Electronics Ltd.
The English Electric Co. Ltd.
Canadian Marconi Co. —
Electronic Tube & Components Div.

DECADE BOXES (Capacitance)

Mechron Engineering Products Ltd.
H. Tinsley & Co. Ltd.
R. H. Nichols Ltd.
Pye Canada Ltd.
John Herring & Co. Ltd.
Canadian Research Institute
R-O-R Associates Ltd.
Electrodesign
Heath Company
Electro-Measurements, Inc.
Industrial Instruments Inc.
Electronic Instrument Co. Inc.
The Ahearn & Soper Co. Ltd.
Electro Sonic Supply Co. Ltd.
MJS Electronic Sales Ltd.
Muirhead Instruments Ltd.
Aerovox Corporation
Dawe Instruments Ltd.
Simmonds Aerocessories, Inc.
Precise Development Corp.
Muirhead & Co. Ltd.
The J. W. Ellis Industries
Shallcross Manufacturing Co.
Thermovolt Instruments Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
General Radio Co.
Associated Electronic Components
Dawe Instruments Ltd. (Canadian Div.)
Canadian Marconi Co.
Perkins Electric Co., Ltd. —
Electronics Division
Measurement Engineering Ltd.

DECADE BOXES (Resistance)

Mechron Engineering Products Ltd.
H. Tinsley & Co. Ltd.
R. H. Nichols Ltd.
Pye Canada Ltd.
John Herring & Co. Ltd.
Canadian Research Institute
R-O-R Associates Ltd.
Electrodesign
The Ahearn & Soper Co. Ltd.
Electronic Instrument Co. Inc.
Industrial Instruments Inc.
Electro-Measurements, Inc.
Heath Company
Ohmite Manufacturing Co.
Clarostat Mfg. Co., Inc.
International Resistance Co. Ltd.
Pylon Electronic Development Co., Ltd.
Muirhead Instruments Ltd.
MJS Electronic Sales Ltd.
Electro Sonic Supply Co. Ltd.
Dawe Instruments Ltd.
Aerovox Corporation
Muirhead & Co. Ltd.
Shallcross Manufacturing Co.
Precise Development Corp.
Tel-Labs, Inc.
Thermovolt Instruments Ltd.
The J. W. Ellis Industries
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Measurement Engineering Ltd.
Perkins Electric Co., Ltd. —
Electronics Division
Canadian Marconi Co.
Canadian Marconi Co. —
Electronic Tube & Components Div.
Dawe Instruments Ltd. (Canadian Div.)
Associated Electronic Components
General Radio Co.
Adams Engineering Ltd.

DECALCOMANIA TRANSFERS

Canada Decalcomania Co. Ltd.
W. H. Brady Co.
Walsco Electronics Corp.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.

DEFLECTION YOKES

R. C. Kahnert Sales Ltd.
J. B. Smyth Electronic Components
Cossor Canada Ltd.
Whiteley Electrical Radio Co. Ltd.
Triad Transformer Corp.
Coil Winders, Inc.
Electro Sonic Supply Co. Ltd.
Muirhead Instruments Ltd.
Hermann Fortier Inc.
J. R. Longstaffe Co. Ltd.
General Instrument — F. W. Sickless
of Canada Ltd.
Charles W. Pointon Ltd.
Ram Electronics Sales Co.
Muirhead & Co. Ltd.
Telrad Engineering Corp.
RCA Victor Co., Ltd.
E. G. Lomas Co.
Tenatronics Limited
E. S. Gould Sales Co.
Associated Electronic Components
Tequipment Mfg. Co. Ltd.

DELAY LINES

Mechron Engineering Products Ltd.
R-O-R Associates Ltd.
John Herring & Co. Ltd.
Computing Devices of Canada Ltd.
Cossor Canada Ltd.
Essex Electronics of Canada Ltd.
Coil Winders, Inc.
Erie Resistor Corp.
Underwood Corporation, Electronic
Computer Division

Helipot Corporation
Dynamic Electronics — New York Inc.
Laboratory for Electronics, Inc.
James Millen Manufacturing Co., Inc.
H. Roy Gray Co. Ltd.
General Instrument —
F. W. Sickless of Canada Ltd.
Burnell & Co., Inc.
Filtron Co., Inc.
The Telegraph Condenser Co. Ltd.
Polyphase Instrument Co.
Gulton Industries, Inc.
Elliott Brothers (London) Ltd.
Bliley Electric Co.
Shallcross Manufacturing Co.
Micamold Electronics Mfg. Corp.
Raytheon Manufacturing Co.
J. W. Miller Co.
E. G. Lomas Co.
International Resistance Co.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Ferranti Electric Ltd.
Keystone Products Co.
The Plessey Co. of Canada Ltd.

DEPTH INDICATORS AND RECORDERS

Bludworth Marine Division of Kearfoot
Company, Inc.

DETECTORS (Burglar)

Canadian Research Institute
John Herring & Co. Ltd.
Electronic Control Corp.
Dynamic Electronics — New York Inc.
Northern Electric Co. Ltd.
Gulton Industries, Inc.
Prince & Roberts
Electronics Corp. of America (Can.) Ltd.
Perkins Electric Co., Ltd. —
Electronics Division
Electronic Controls Ltd.
Engineered Sound Systems Ltd.

DETECTORS (Defect, Electronic)

Canadian Research Institute
Hackbusch Electronics Ltd.
Computing Devices of Canada Ltd.
Electronic Associates Ltd.
Industrial Electronics of Canada Ltd.
The Ahearn & Soper Co. Ltd.
Branson Instruments, Inc.
Photocon Research Products
Vacuum-Electronic Engineering Co.
Standard Electronic Research Corp.
Measurement Engineering Ltd.

DETECTORS (Fire, Electronic)

Canadian Research Institute
John Herring & Co. Ltd.
Canadian Aviation Electronics Ltd.
Martin Engineering Inc.
Aeromotive Engineering Products
Electronics Corp. of America
Northern Electric Co. Ltd.
Fenwal Incorporated
Electronic Control Corp.
Servo Corp. of America
Electronics Corp. of America (Can.) Ltd.
Canadian Marconi Co.
Associated Electronic Components
Barber-Colman of Canada Ltd.
(Wheelco Inst. Div.)

DETECTORS (Gas)

Johnson-Williams, Inc.

DETECTORS (Metal, Electronic)

Electrodesign
Electronic Associates Ltd.
George Kelk Ltd.
Canadian Research Institute
Canadian Westinghouse Co. Ltd. —
Electronics Division
Bludworth Marine Division of
Kearfoot Co., Inc.
Fisher Research Laboratory, Inc.
RCA Victor Co., Ltd.
Perkins Electric Co., Ltd. —
Electronics Division

DETECTORS (Smoke, Electronic)

Canadian Research Institute
John Herring & Co. Ltd.
Electronic Associates Ltd.
Martin Engineering Inc.
Electronic Control Corp.
Electronics Corp. of America
Specialty Engineering & Electronics Co.
Humble Manufacturing Co. Ltd.
Londex Limited
Ripley Company Inc.
Electronics Corp. of America (Can.) Ltd.
Industrial Control Co.
Perkins Electric Co., Ltd. —
Electronics Division
Canadian Marconi Co.

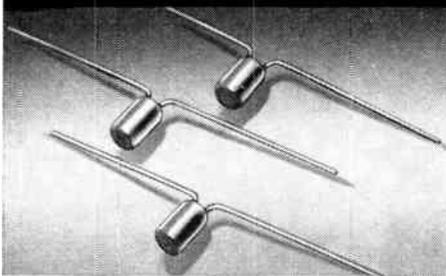
DIAL LIGHTS, SOCKET ASSEMBLIES

A. C. Simmonds & Sons Ltd.
United-Carr Fastener Co. of Canada Ltd.
Leonard Electric Ltd.
E. F. Johnson Co.
Circon Component Co.
Herman H. Smith, Inc.
General Cement Mfg. Co.,
Division of Tectron, Inc.
The H. R. Kirkland Co.
Herman Fortier Inc.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
The Glendon Co. Ltd.

International Rectifiers

SELENIUM · GERMANIUM · SILICON

SUB-MINIATURE SELENIUM DIODES



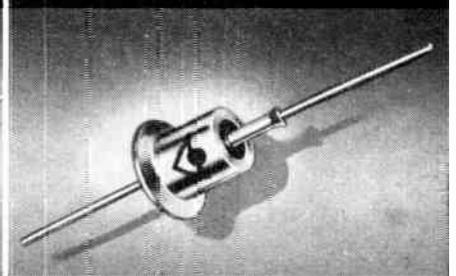
Developed for use in limited space at ambient temperatures ranging from -50°C to $+100^{\circ}\text{C}$. Encapsulated to resist adverse environmental conditions. Output voltages from 20 to 160 volts; output currents of 100 microamperes to 11 MA. **Bulletin SD-1B**

GERMANIUM DIODES



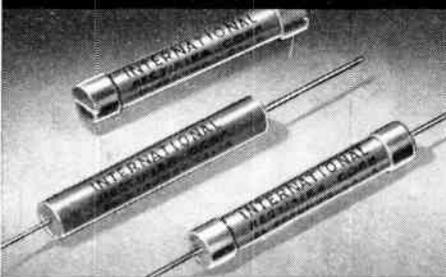
This series of general purpose, high quality point contact diodes provide excellent rectification efficiency for very high frequency applications. Special "RED DOT" series available for ambient temperatures from -55°C to $+100^{\circ}\text{C}$. **Bulletin GD-2**

SILICON POWER DIODES



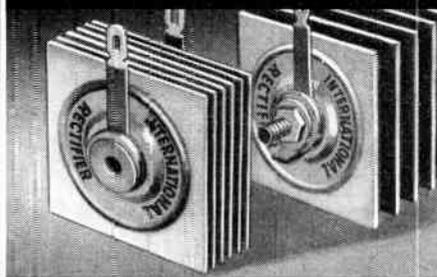
For temperature applications to 150°C , these fused junction diodes withstand exposure from -55°C to $+170^{\circ}\text{C}$. Peak inverse voltage rating from 50 volts to 600 volts. Welded, hermetically sealed construction. Four types. **Bulletin SR-132**

HIGH VOLTAGE CARTRIDGE RECTIFIERS



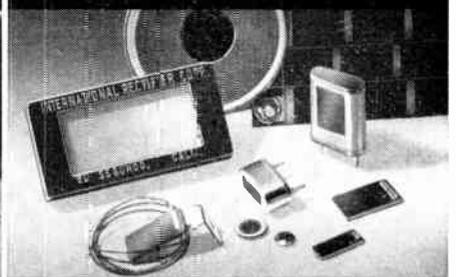
Designed for long life and reliability in Half-Wave, Voltage Doubler, Bridge, Center-Tap Circuits, and 3-Phase Circuit Types. Phenolic Cartridge and Hermetically Sealed types available. Operating temperature range: -65°C to $+100^{\circ}\text{C}$. Specify **Bulletin H-2**

TV AND RADIO RECTIFIERS



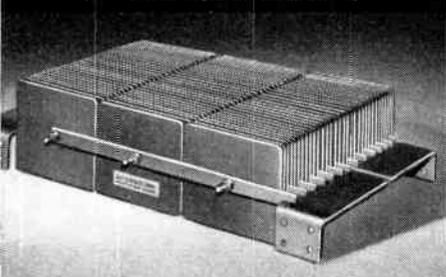
The widest range in the industry! Designed for Radio, Television, TV booster, UHF converter and experimental applications. Input ratings from 25 to 195 volts AC and up. DC output current 10 to 1,200 MA. Write for application information. **Bulletin ER-178-A**

SELENIUM PHOTOCELLS—SUN BATTERIES



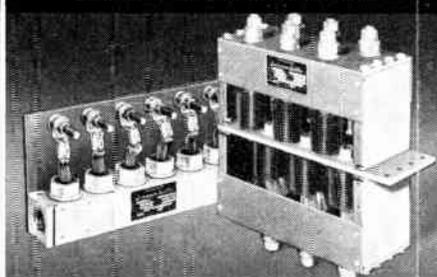
Self-generating photocells available in standard or custom sizes, mounted or unmounted. Optimum load resistance range: 10 to 10,000 ohms. Output from .2 MA to 60 MA in ave. sunlight. Ambient temperature range: -65°C to $+100^{\circ}\text{C}$. **Bulletin PC 649**

SELENIUM POWER RECTIFIERS



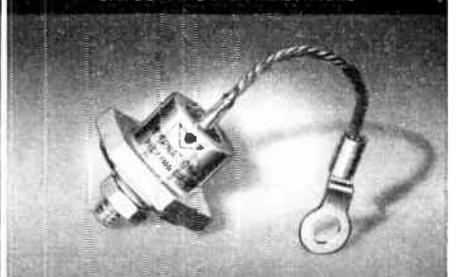
For all DC power needs from microwatts to kilowatts. Features: long life; compact, light weight and low initial cost. Ratings: to 250 KW, 50 ma to 2,300 amperes and up. 6 volts to 30,000 volts and up. Efficiency to 87%. Power factor to 95%. **Bulletin C-349**

GERMANIUM POWER RECTIFIERS



3 Styles featuring efficiency to 97%, low forward drop, high reverse to forward current ratio, unlimited life. Ratings: 26 to 66AC input v. per junction. 150 to 100,000 amps DC output. Operating temperature range: -55°C to $+75^{\circ}\text{C}$. **Bulletin GPR-1**

SILICON POWER RECTIFIERS



High power-5 amp to 100 amp-silicon fused junction type. Input ratings to 200 PIV. Temp. range: up to 150°C case temperature. Available in individual diodes or all usual power rectifier circuits. Data available on models for forced air and liquid cooling.

Bulletin SPR-1

a world of difference
through research!



For bulletins on products described WRITE ON YOUR LETTERHEAD
to our PRODUCT INFORMATION DEPARTMENT

International Rectifier

C O R P O R A T I O N .

EXECUTIVE OFFICES: 1521 E. GRAND AVE., EL SEGUNDO, CALIFORNIA • PHONE OREGON 8-6281

IN CANADA: ATLAS RADIO CORP., LTD., 50 WINGOLD AVE. W., TORONTO, ONTARIO • RU 1-6174

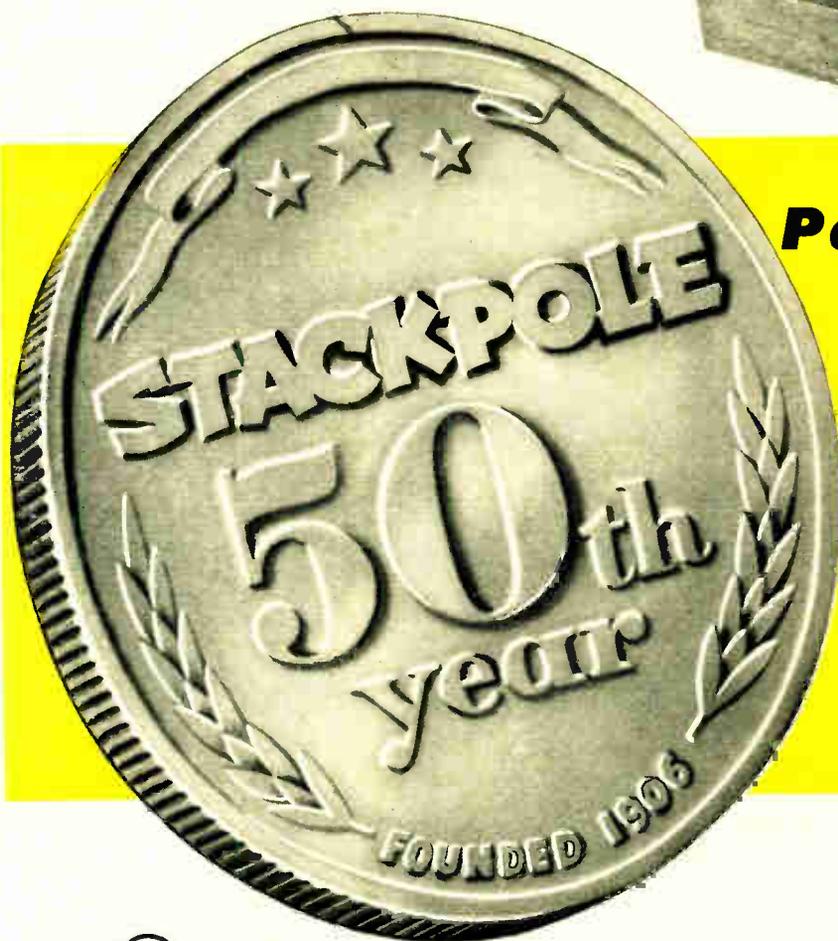
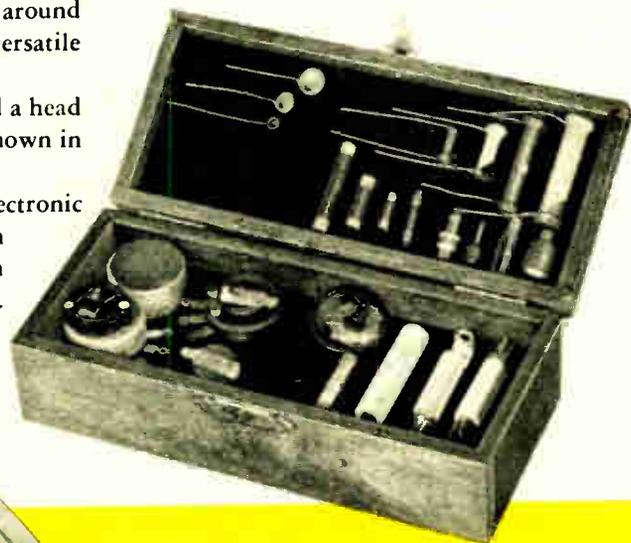
- Polyphase Instrument Co.
Kulka Electric Mfg. Co. Inc.
Hetherington, Inc.
E. G. Lomas Co.
Associated Electronic Components
Permonite Mfg. Co.
- DIALS (Luminous)**
Radelin-Kirk Ltd.
United States Radium Corp.
- DIALS (Precision)**
Bud Radio Inc.
Canadian Research Institute
X-Ray & Radium Industries Ltd.
A. C. Simmonds & Sons Ltd.
James Millen Manufacturing Co., Inc.
The Aeromark Co.
Sierra Electronic Corp.
General Cement Mfg. Co.,
Division of Textron, Inc.
H. Roy Gray Co. Ltd.
Electro Sonic Supply Co. Ltd.
Muirhead Instruments Ltd.
Radelin-Kirk Ltd.
Atlas Radio Corp. Ltd.
Hellipot Corporation
The George W. Borg Corp.
Borg Equipment Division
Muirhead & Co. Ltd.
United States Radium Corp.
Pic Design Corp., Division Benrus
Watch Corp.
Dale Products, Inc.
Canadian Marconi Co.
Canadian Marconi Co. —
Electronic Tube & Components Div.
General Radio Co.
Avionics Limited
- DIELECTRIC MATERIAL**
Crane Packing Co.
Centralab Canada Ltd.
Panelyte Division, St. Regis Paper Co.
(Canada) Ltd.
Erie Resistor Corp.
Insulation Manufacturers Corp.
Dixon Corporation
Polypenco, Inc.
Induction Heating Corp.
Electrovert Ltd.
Gulton Industries, Inc.
Kay Lab
Natvar Corporation
The Plessey Co. of Canada Ltd.
Quality Hermetics Ltd.
Osborne Electric Co., Ltd.
- DIODE (Test Set)**
Computing Devices of Canada Ltd.
Kay Electric Co.
Atlas Radio Corp. Ltd.
Specialty Engineering & Electronics Co.
Fretco Incorporated
Teletronics Laboratory, Inc.
Waters Manufacturing, Inc.
Canadian Marconi Co.
- DIODES (Germanium)**
Philco Corp. of Canada Ltd.
Lake Engineering Co. Ltd.
Hackbusch Electronics Ltd.
Computing Devices of Canada Ltd.
J. B. Smyth Electronic Components
Kemtron Electron Products Inc.
International Rectifier Corp.
Transitron Electronic Corp.
Amperex Electronic Corp.
Philco Corporation, Government &
Industrial Division
Centralab, Division of Globe Union Inc.
The Ahearn & Soper Co. Ltd.
Electro Sonic Supply Co. Ltd.
Hermann Fortier Inc.
Atlas Radio Corp. Ltd.
Fretco Incorporated
Charles W. Pointon Ltd.
Radio Receptor Co., Inc.
Canadian General Electric Co. Ltd. —
Electronic Tube Division
Rogers Electronic Tubes & Components
Raytheon Manufacturing Co.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Canadian Marconi Co. —
Electronic Tube & Components Div.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Adams Engineering Ltd.
Desser E-E Limited
The British Thomson-Houston Co.
(Canada) Ltd.
- DIODES (Selenium)**
International Resistance Co. Ltd.
- DIODES (Silicon)**
Transitron Electronic Corp.
Kemtron Electron Products Inc.
Bomac Laboratories Inc.
Hoffman Semiconductor Division of
Hoffman Electronics Corp.
- DIRECTION FINDERS**
Aviation Electric Ltd.
The Ahearn & Soper Co. Ltd.
Bludworth Marine Division of
Kearfott Co., Inc.
Kaar Engineering Corp.
Fisher Research Laboratory, Inc.
Servo Corp. of America
Collins Radio Co. of Canada Ltd.
- Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Beaconing Optical & Precision Materials
Co. Ltd.
Measurement Engineering Ltd.
The Plessey Co. of Canada Ltd.
Engineered Sound Systems Ltd.
- DRUMS (Digitized Code)**
Instrument Development
Laboratories, Inc.
- DRUMS (Memory, Magnetic Recording)**
Computing Devices of Canada Ltd.
Electrodesign
Potter Instrument Co., Inc.
Ampex Corp. — Instrumentation Div.
Underwood Corp. — Electronic Computer
Division
Bendix Computer Division of
Bendix Aviation Corp.
Elliott Brothers (London) Ltd.
ElectroData Division of Burroughs Corp.
Librascope Inc.
Logistics Research Inc.
Manning, Maxwell & Moore, Inc. —
Aircraft Products Div.
ElectroData — Division of Burroughs
Adding Machine of Canada Ltd.
Ferranti Electric Ltd.
Canadian Marconi Company —
Electronic Tube & Components Div.
The Plessey Co. of Canada Ltd.
- DUPLEXERS**
Bomac Laboratories Inc.
- ELECTRICAL INDICATING INSTRUMENTS**
Electrovert Ltd.
Canadian Westinghouse Co. Ltd. —
Apparatus Div.
Cossor Canada Ltd.
The A. W. Haydon Co.
Dynamic Electronics — New York Inc.
Specialty Engineering & Electronics Co.
Sierra Electronic Corp.
Bayly Engineering Ltd.
Electro Measurements Inc.
Dominion Electrohome Industries Ltd.
Baldwin Instrument Co. Ltd.
Curtiss-Wright Corp. — Electronics Div.
Ward Leonard of Canada Ltd.
Fielden Instrument Div.
Doelcam Div. of Minneapolis-Honeywell
Waveforms, Inc.
West Instrument Corp.
Teletronics Laboratory, Inc.
Ferranti Electric Ltd.
- ELECTRODES (High Frequency)**
Induction Heating Corp.
Woodwelding, Incorporated
- ELEMENTS (Heating)**
Canadian Westinghouse Co. Ltd. —
Apparatus Div.
Aeromotive Engineering Products
Canadian Westinghouse Co. Ltd.
Electronics Div.
Electro Sonic Supply Co. Ltd.
Northern Electric Co. Ltd.
The Canadian Chromalox Co. Ltd.
Wilbur B. Driver Co.
Norton Behr-Manning Overseas Inc.
Syntron (Canada) Ltd.
Hoskins Alloys of Canada, Ltd.
Associated Electronic Components
The British Thomson-Houston Co.
(Canada) Ltd.
- ELIMINATORS**
American Television & Radio Co.
Canadian Research Institute
Electro Products Laboratories
Schauer Mfg. Corp.
Electro Sonic Supply Co. Ltd.
Curtiss-Wright Corp. — Electronics Div.
Charles W. Pointon Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
John R. Tilton Ltd.
- ENGRAVING AND PROFILING**
M. J. Howard
Industrial Electronics of Canada Ltd.
X-Ray & Radium Industries Ltd.
Canadian Research Institute
H. P. Prais Engraving Machine Co.
The Aeromark Company
Gates Electronic Company
Shallcross Mfg. Co.
The Plessey Co. of Canada Ltd.
Thermovolt Instruments Ltd.
Osborne Electric Co., Ltd.
- EYELETS**
United-Carr Fastener Co. of Canada Ltd.
General Cement Mfg. Co. —
Division of Textron, Inc.
Centralab — Division of Globe Union Inc.
Circon Component Company
The Staver Company, Inc.
Revere Copper and Brass Incorporated
E. G. Lomas Co.
United Shoe Machinery Co.
of Canada, Ltd.
- FANS**
Aeromotive Engineering Products
Canadian Westinghouse Co. Ltd. —
Apparatus Div.
- R-O-R Associates Ltd.
John Herring & Co. Ltd.
Alliance Motors
Canadian Armature Works Inc.
Leonard Electric Ltd.
Hermann Fortier Inc.
Electro Sonic Supply Co. Ltd.
Dominion Electrohome Industries Ltd.
The Robbins & Myers Co. of Canada Ltd.
American Electronics, Inc.
Northern Electric Co. Ltd.
Rotron Mfg. Co.
Robbins & Myers, Inc.
- FASTENER DEVICES**
Industrial Retaining Ring Co.
United-Carr Fastener Co. of Canada Ltd.
Aeromotive Engineering Products
Polypenco, Inc.
Waldom Electronics Inc.
General Cement Mfg. Co. —
Division of Textron, Inc.
Electro Sonic Supply Co. Ltd.
Allen Mfg. Co.
Automatic Electric Sales (Canada) Ltd.
Hell-Coil Corp.
Keller Tool Div., Gardner-Denver Co.
Waldes Kohinoor, Inc.
Automatic & Precision Mfg. Co.
Shakeproof — Div. of Illinois Tool Works
Southco Division, South Chester Corp.
Simmonds Aeroaccessories, Inc.
E. G. Lomas Co.
Dzus Fastener Co. Inc.
Rawlplug Products (Canada) Ltd.
A. T. R. Armstrong Ltd.
Cinch Mfg. Corp. and H. B. Jones Div.
- FILTERS (Band Elimination)**
M. J. Howard
Computing Devices of Canada Ltd.
Sinclair Radio Labs. Ltd.
Aerovox Canada Ltd.
Hackbusch Electronics Ltd.
Lake Engineering Co. Ltd.
Dynamic Electronics — New York Inc.
Sierra Electronic Corp.
Tobe Deutschmann Corp.
Superex Electronics Corp.
Gertsch Products, Inc.
Krohn-Hite Instrument Co.
Caledonia Electronics & Transformer
Corporation
Lynch Carrier Systems Inc.
Triad Transformer Corp.
Standard Electronics Corp.
Pylon Electronic Development Co., Ltd.
Bayly Engineering Ltd.
Blonder-Tongue Laboratories, Inc.
Burnell & Co., Inc.
Automatic Electric Sales (Canada) Ltd.
Filtron Company, Inc.
Gulton Industries, Inc.
Aerovox Corp.
Entron Incorporated
Instruments for Industry, Inc.
Rogers Electronic Tubes & Components
J. W. Miller Company
Radio Engineering Products Ltd.
The Plessey Co. of Canada Ltd.
Osborne Electric Co., Ltd.
Measurement Engineering Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
BJ Electronics, Borg-Warner Corp.
Canadian Atlas Transformer Co., Ltd.
Electrolite Television Equipment Inc.
- FILTERS (Crystal)**
M. J. Howard
Beechey Enterprises
Hackbusch Electronics Ltd.
Lake Engineering Co. Ltd.
The James Knights Co.
Dynamic Electronics — New York Inc.
Electro Sonic Supply Co. Ltd.
Burnell & Co., Inc.
Billey Electric Co.
J. W. Miller Co.
Rogers Electronic Tubes & Components
TMC (Canada) Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
The Plessey Co. of Canada Ltd.
- FILTERS (Electronic)**
M. J. Howard
Computing Devices of Canada Ltd.
Cossor Canada Ltd.
Sinclair Radio Labs. Ltd.
Aerovox Canada Ltd.
Hackbusch Electronics Ltd.
Kay Electric Company
Triad Transformer Corp.
Krohn-Hite Instrument Co.
Superex Electronics Corp.
Tobe Deutschmann Corp.
Dynamic Electronics — New York Inc.
Centralab, Div. of Globe Union Inc.
Electro Sonic Supply Co. Ltd.
Bayly Engineering Ltd.
Pylon Electronic Development Co., Ltd.
Burnell & Co., Inc.
Instruments for Industry, Inc.
Entron Incorporated
Gulton Industries, Inc.

STACKPOLE RESISTORS IN 1928

Half a century ago, Stackpole engineering centered around components developed from two of the most basic, versatile elements . . . carbon and graphite.

With the advent of radio, this experience provided a head start for the production of composition resistors as shown in this sample kit of almost 30 years ago.

Since these "knee pants" days, the Stackpole Electronic Components Division has expanded rapidly—both in the United States and Canada—in full keeping with the remarkable growth of the industries it serves.

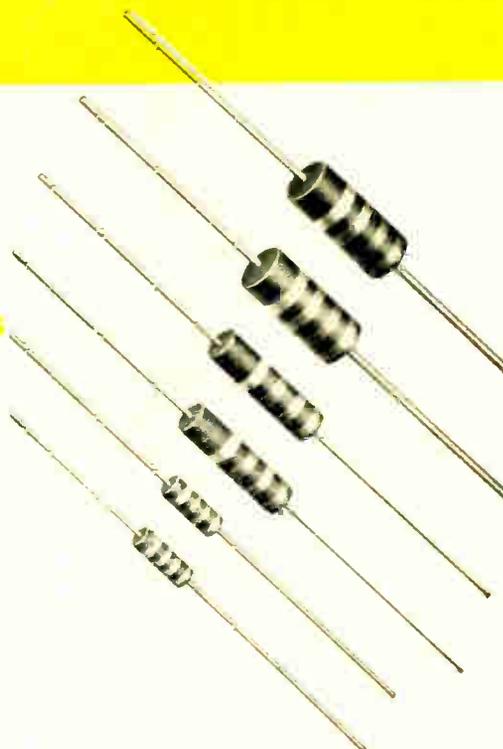


Pacing
ELECTRICAL-
ELECTRONIC
COMPONENT
Progress



STACKPOLE RESISTORS *today*

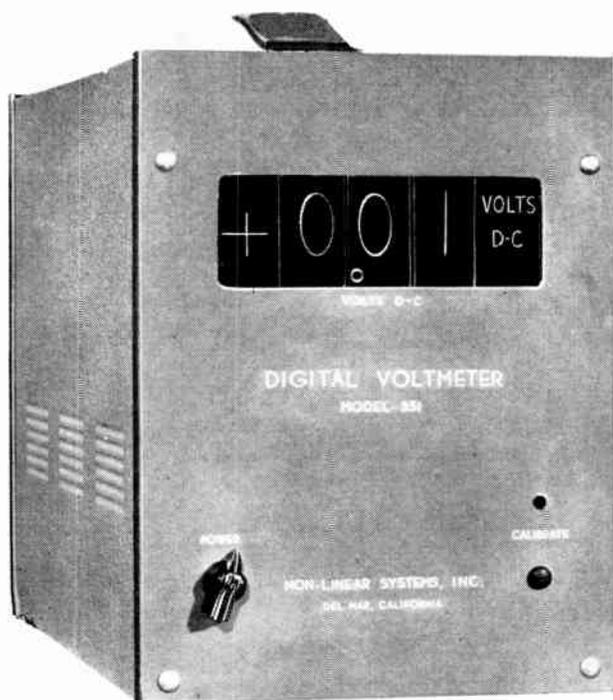
Stackpole's position as one of today's major suppliers of fixed composition resistors is based on two factors: (1) Consistently dependable, quality-controlled resistors; and (2) close personal service in matching resistor requirements and in assuring "on time" deliveries.



CANADIAN STACKPOLE LIMITED
 550 Evans Avenue, Etobicoke, Toronto 14, Ontario

- Filtron Company, Inc.
 Kay Lab
 Frequency Standards Inc.
 Defiance Engineering & Microwave Corp.
 Micamold Electronics Mfg. Corp.
 Racon Electric Co. Inc.
 Spencer-Kennedy Laboratories, Inc.
 Rogers Electronic Tubes & Components
 J. W. Miller Company
 Budd Stanley Co. Inc.
 TMC (Canada) Ltd.
 Keystone Products Co.
 Canadian General Electric Co., Ltd. —
 Electronic Equipment & Tube Dept.
 The Plessey Co. of Canada Ltd.
 Perkins Electric Co., Ltd.
 Canadian Marconi Company
 Measurement Engineering Ltd.
 Electroline Television Equipment Inc.
- FILTERS (Equalizer)**
 M. J. Howard
 Sinclair Radio Labs. Ltd.
 Aerovox Canada Ltd.
 Hackbusch Electronics Ltd.
 Dynamic Electronics — New York Inc.
 Blonder-Tongue Laboratories, Inc.
 Tobe Deutschmann Corp.
 Lynch Carrier Systems Inc.
 Triad Transformer Corp.
 Vidair Electronics Mfg. Corp.
 Electro Sonic Supply Co. Ltd.
 Bayly Engineering Ltd.
 Hermann Fortier Inc.
 Automatic Electric Sales (Canada) Ltd.
 Ampli-Vision Division of International
 Telemeter Corp.
 Burnell & Co., Inc.
 Entron Incorporated
 Rogers Electronic Tubes & Components
 University Loudspeakers, Inc.
 Tele-Matic Industries Inc.
 TMC (Canada) Ltd.
 Radio Engineering Products Ltd.
 The Plessey Co. of Canada Ltd.
 Engineered Sound Systems Ltd.
 Electroline Television Equipment Inc.
- FILTERS (High Pass)**
 Lynch Carrier Systems Inc.
- FILTERS (Low Pass)**
 M. J. Howard
 Computing Devices of Canada Ltd.
 Sinclair Radio Labs. Ltd.
 Aerovox Canada Ltd.
 Hackbusch Electronics Ltd.
 Ericsson Telephone Sales of Canada Ltd.
 Vidair Electronics Mfg. Corp.
 E. F. Johnson Co.
 Standard Electronics Corp.
 Triad Transformer Corp.
 Caledonia Electronics and Transformer
 Corp.
 The Narda Corporation
 Lynch Carrier Systems Inc.
 Superex Electronics Corp.
 The Wind Turbine Co. of Canada Ltd.
 Tobe Deutschmann Corp.
 Sierra Electronic Corp.
 American Electronics Co.
 Dynamic Electronics — New York Inc.
 Electro Sonic Supply Co. Ltd.
 Bayly Engineering Ltd.
 Pylon Electronic Development Co., Ltd.
 Atlas Radio Corp. Ltd.
 Burnell & Co., Inc.
 Automatic Electric Sales (Canada) Ltd.
 Polyphase Instrument Co.
 Aerovox Corp.
 Entron Incorporated
 Kay Lab
 Gulton Industries, Inc.
 Instruments for Industry, Inc.
 University Loudspeakers, Inc.
 Micamold Electronics Mfg. Corp.
 Rogers Electronic Tubes & Components
 TMC (Canada) Ltd.
 Tenatronics Ltd.
 Radio Engineering Products Ltd.
 Keystone Products Co.
 The Plessey Co. of Canada Ltd.
 Measurement Engineering Ltd.
 Canadian General Electric Co., Ltd. —
 Electronic Equipment & Tube Dept.
 General Radio Company
 Osborne Electric Co., Ltd.
 Canadian Atlas Transformer Co., Ltd.
 Electroline Television Equipment Inc.
- FILTERS (Mechanical)**
 Dynamic Electronics — New York Inc.
 Collins Radio Co. of Canada Ltd.
- FILTERS (Microwave)**
 Polarad Electronics Corp.
- FILTERS (Optical)**
 Baird Associates — Atomic Instrument Co.
- FILTERS (Radio Interference)**
 Sinclair Radio Labs. Ltd.
 Aerovox Canada Ltd.
 Arrow Radio Co.
 Canadian Aviation Electronics Ltd.
 Hackbusch Electronics Ltd.
 Sprague Electric International Ltd.
 Vidair Electronics Mfg. Corp.
 Coil Winders, Inc.
 Superex Electronics Corp.
 Pyramid Electric Co.
- JFD Mfg. Co., Inc.
 Tobe Deutschmann Corp.
 Centralab, Div. of Globe Union Inc.
 American Electronics Co.
 Andrew Antenna Corp., Ltd.
 Dynamic Electronics — New York Inc.
 Electro Sonic Supply Co. Ltd.
 Astral Electric Co. Ltd.
 Rex Basset, Inc.
 Belling & Lee Ltd.
 Ampli-Vision Division of International
 Telemeter Corp.
 Aerovox Corp.
 Hoover Electronics Co.
 Dubilier Condenser Co. (1925) Ltd.
 The Telegraph Condenser Co. Ltd.
 Filtron Company, Inc.
 Micamold Electronics Mfg. Corp.
 J. W. Miller Co.
 Mitchell Industries, Inc.
 Tele-Matic Industries Inc.
 Standard Telephones & Cables Mfg. Co.
 (Canada) Ltd.
 The Plessey Co. of Canada Ltd.
 Canadian Marconi Company —
 Electronic Tube & Components Div.
 Associated Electronic Components
 John R. Tilton Ltd.
- FILTERS (Screen Room)**
 Aerovox Canada Ltd.
- FLUX (Brazing & Soldering)**
 Electrovert Ltd.
 Handy & Herman of Canada Ltd.
 Kester Solder Co. of Canada Ltd.
 Federated Metals Canada Ltd.
 Ambroid Co.
 Federated Metals Division —
 American Smelting & Refining Co.
 Johnson Mfg. Co., Inc.
 Electro Sonic Supply Co. Ltd.
 Johnson Matthey & Mallory Ltd.
 Northern Electric Co. Ltd.
 Ellanar Chemical Co.
 The M. W. Dunton Co.
- FOCUSING DEVICES (Permanent Magnet)**
 Quam Nichols Company
- FORMS (Coil)**
 R. C. Kahmert Sales Ltd.
 National Fibre Co. of Canada Ltd.
 Precision Paper Tube Co.
 Cambridge Thermionic Corp.
 Coil Winders, Inc.
 Superex Electronics Corp.
 E. F. Johnson Co.
 James Millen Mfg. Co., Inc.
 Electro Sonic Supply Co. Ltd.
 The Glendon Company Ltd.
 Grayhill
 Molding Corp. of America, Inc.
 J. W. Miller Co.
 The Plessey Co. of Canada Ltd.
 Associated Electronic Components
 Desser E-E Ltd.
 Permonite Mfg. Co.
 Osborne Electric Co., Ltd.
 Stanwyck Coil Products Ltd.
- FUSES**
 Astral Electric Co. Ltd.
 Trico Fuse Mfg. Co.
 Electro Sonic Supply Co. Ltd.
 Hermann Fortier Inc.
 Economy Fuse & Mfg. Co. of Canada Ltd.
 Northern Electric Co. Ltd.
 Belling & Lee Ltd.
 Automatic Electric Sales (Canada) Ltd.
 The English Electric Co. Ltd.
 Eagle Electric Mfg. Co., Inc.
 Royal Electric Co., Inc.
 Littelfuse, Inc.
 Prince & Roberts
 Desser E-E Ltd.
- GAGES (Comparator)**
 Pratt & Whitney Co., Inc.
 Electrodesign
 R-O-R Associates Ltd.
 Bayly Engineering Ltd.
 Dawe Instruments Ltd.
 Canadian Marconi Company
 Standard Electronic Research Corp.
 Brush Electronics Co. —
 Division of Clevite Corp.
 A. C. Wickman Ltd.
- GAGES (Electronic)**
 Pratt & Whitney Co., Inc.
 Electromechanical Products
 R-O-R Associates Ltd.
 Electrodesign
 Electronic Associates Ltd.
 Computing Devices of Canada Ltd.
 Canadian Westinghouse Co. Ltd. —
 Electronics Div.
 Southern Instruments Ltd. —
 Oscillograph Div.
 Electronic Control Corp.
 Branson Instruments, Inc.
 Dawe Instruments Ltd.
 Fielden Electronics Ltd.
 Kay Lab
 Simmonds Aerocessories, Inc.
 Standard Electronic Research Corp.
 Perkins Electric Co., Ltd. —
 Electronics Div.
 BJ Electronics — Borg-Warner Corp.
- Peacock Brothers Ltd.
 Dawe Instruments Ltd. (Canadian Div.)
 Barber-Colman of Canada Ltd.
 (Wheelco Inst. Div.)
 Brush Electronics Co. —
 Division of Clevite Corp.
 A. C. Wickman Ltd.
- GAGES (Strain)**
 Pratt & Whitney Co., Inc.
 Electromechanical Products
 R-O-R Associates Ltd.
 Electrodesign
 Minneapolis-Honeywell Regulator Co. Ltd.
 — Brown Instrument Div.
 John Herring & Co. Ltd.
 Computing Devices of Canada Ltd.
 Electrovert Ltd.
 J. Langham Thompson Ltd.
 John Chatillon & Sons
 Endeavor Corp.
 Research Industries Ltd.
 Kay Lab
 Elliott Brothers (London) Ltd.
 Gulton Industries, Inc.
 Bailey Meter Co. Ltd.
 The J. W. Ellis Industries
 Barber-Colman of Canada Ltd.
 (Wheelco Inst. Div.)
 Peacock Brothers Ltd.
 Perkins Electric Co., Ltd.
 Electronics Div.
 Canadian Marconi Company
 General Communications Ltd.
- GAGES (Tension)**
 Pratt & Whitney Co., Inc.
 Electromechanical Products
 R-O-R Associates Ltd.
 Minneapolis-Honeywell Regulator Co. Ltd.
 — Brown Instrument Div.
 John Chatillon & Sons
 Guardian Electric Mfg. Co.
 Research Industries Ltd.
 Automatic Electric Sales (Canada) Ltd.
 Prince & Roberts
 Barber-Colman of Canada Ltd.
 (Wheelco Inst. Div.)
- GAGES (Vacuum)**
 Electromechanical Products
 Edwards High Vacuum (Canada) Ltd.
 The Bristol Co. of Canada Ltd.
 Minneapolis-Honeywell Regulator Co. Ltd.
 — Brown Instrument Div.
 Consolidated Electrodynamics Corp.
 Hastings-Raydist, Inc.
 Evershed & Vignoles Ltd.
 Bailey Meter Company Ltd.
 Vacuum-Electronic Engineering Co.
 Manning, Maxwell & Moore, Inc. —
 Aircraft Products Div.
 Fischer & Porter (Canada) Ltd.
 Central Scientific Co. of Canada Ltd.
 Thermovolt Instruments Ltd.
 Barber Colman of Canada Ltd. —
 (Wheelco Inst. Div.)
 Measurement Engineering Ltd.
 Radionics Ltd.
 Peacock Brothers Ltd.
- GALVANOMETER PROTECTORS**
 Alex L. Clark Ltd.
- GALVANOMETERS**
 Electromechanical Products
 H. Tinsley & Co. Ltd.
 Canadian Research Institute
 R. H. Nichols Ltd.
 Electrodesign
 Fye Canada Ltd.
 John Herring & Co. Ltd.
 Electrovert Ltd.
 Powerlite Devices Ltd.
 The Ahearn & Soper Co. Ltd.
 Hoyt Electrical Instrument Works, Inc.
 Electro Sonic Supply Co. Ltd.
 Atlas Radio Corporation Ltd.
 Precision Apparatus Co., Inc.
 Baldwin Instrument Co. Ltd.
 Consolidated Electrodynamics Corp.
 Berndt-Bach, Inc. — (Auricon Div.)
 Doelcam Div. of Minneapolis-Honeywell
 Gulton Industries, Inc.
 Shallcross Mfg. Co.
 The J. W. Ellis Industries
 Central Scientific Co. of Canada Ltd.
 Thermovolt Instruments Ltd.
 Associated Electronic Components
 Measurement Engineering Ltd.
 Canadian Marconi Company
 Perkins Electric Co., Ltd.
 Electronics Div.
 Radionics Ltd.
 Barber-Colman of Canada Ltd.
 (Wheelco Inst. Div.)
- GAS CHROMATOGRAPHY CELLS**
 Gow-Mac Instrument Co.
- GASKETS**
 Crane Packing Co.
 National Fibre Co. of Canada, Ltd.
 P. J. Heenan Ltd.
 Canadian Johns-Manville Co. Ltd.
 Polypenco, Inc.
 The Connecticut Hard Rubber Co.
 Shamban Engineering Co.
 Metal Textile Corp.
 Spaulding Fibre Company, Inc.

**RELIABILITY...ACCURACY...
AUTOMATIC MEASUREMENT
AT NEW LOW COST**



*Available in either portable
(shown) or rack mount models*



ALL DESIGN FEATURES of higher priced NLS instruments now are available in the low cost Model 351 Digital Voltmeter for applications requiring 3-digit measurement. This economical model offers the *same range* as the *widely-used* NLS Model 451 (4-digit), recognized standard of the industry. It has the same exclusive NLS *oil-sealed* stepping switch system that guarantees maximum trouble-free life. Its performance offers *automatic measurement* from zero to ± 999 volts d-c with high accuracy and resolution. And it has automatic polarity indication, automatic range selection, automatic readout decimal point location. *Fast readings* are flashed in brilliant in-line luminous numerical display. NLS Model 351 Digital Voltmeters *cost only \$985*. Investigate today.

CHARACTERISTICS

RANGE	RESOLUTION
Zero to ± 999 volts d-c	± 1 millivolt d-c
± 1.00 to ± 9.99 volts d-c	± 10 millivolts d-c
± 10.0 to ± 99.9 volts d-c	± 100 millivolts d-c
± 100 to ± 999 volts d-c	± 1 volt d-c

ACCURACY: *Equal to resolution*

READING TIME: *0.80 seconds average.*

CHOPPER SAMPLING RATE: *60 cycles per second.*

INPUT IMPEDANCE: *1000 megohms on zero to .999 volt scale; 10 megohms on all other ranges.*

CALIBRATION VOLTAGE: *Standard cell provides EMF constant within $\pm 0.01\%$ from 4°C to 50°C , and usable from -16°C to $+60^{\circ}\text{C}$, with accuracy of $\pm .02\%$.*

REFERENCE VOLTAGE SOURCE: *Internally-mounted mercury cell.*

POLARITY INDICATION: *"+" or "-" automatically prefixes the numerical display.*

READOUT DECIMAL POINT: *Positioned automatically depending on range.*

STYLES: *Rack mount - $5\frac{1}{4}$ " high; 19" wide; $15\frac{1}{8}$ " deep. Portable - 11" high; $8\frac{1}{4}$ " wide; $15\frac{1}{8}$ " deep.*

WEIGHT: *Only 29 pounds (new, lightweight aluminum construction).*

POWER: *115 ± 10 volts, 60 cycles, 75 watts.*

OPTIONAL ACCESSORIES:

Remote readouts with cables.

Manual-command recording controls.

Automatic recording controls to record each reading at completion of balance.



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NON-LINEAR SYSTEMS, INC.
Dept. L-126, Del Mar Airport, Del Mar, Calif.
*Send new Technical Bulletin 856 with full
information on NLS Model 351 Digital
Voltmeter.*

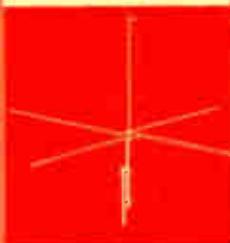
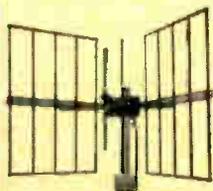
NAME _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____

- The Garlock Packing Co. of Canada Ltd.
The Plessey Co. of Canada Ltd.
- GENERATORS (Harmonic Frequency)**
Electronic Associates Ltd.
Computing Devices of Canada Ltd.
The Ahearn & Soper Co. Ltd.
Electro Sonic Supply Co. Ltd.
MJS Electronic Sales Ltd.
The Hickok Electrical Instrument Co.
F-R Machine Works, Inc. —
Electronics & X-Ray Div.
Lavoie Laboratories, Inc.
New London Instrument Co., Inc.
Teletronics Laboratory, Inc.
TMC (Canada) Ltd.
General Radio Co.
Canadian Marconi Co.
- GENERATORS (Impulse)**
R-R Associates Ltd.
Electro Products Laboratories
Potter Instrument Co., Inc.
Research Industries Ltd.
The Hickok Electrical Instrument Co.
Rogers Majestic Electronics Ltd.
The J. W. Ellis Industries
Canadian Marconi Co.
Empire Devices Products Corp.
- GENERATORS (Microwave)**
Vectron, Inc.
Electromechanical Products
Computing Devices of Canada Ltd.
R-O-R Associates Ltd.
Kay Electric Co.
Polarad Electronics Corp.
Katolight Corp.
Northeast Scientific Corp.
Color Television Inc.
Bayly Engineering Ltd.
Atlas Radio Corp. Ltd.
Canoga Corp.
F-R Machine Works, Inc. —
Electronics & X-Ray Div.
New London Instrument Co., Inc.
RCA Victor Company, Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
General Radio Co.
Beaconing Optical & Precision Materials
Co. Ltd.
Measurement Engineering Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
The British Thomson-Houston Co.
(Canada) Ltd.
- GENERATORS (Noise)**
New London Instrument Co., Inc.
- GENERATORS (Picture Signal)**
Kay Electric Co.
Electro Sonic Supply Co. Ltd.
MJS Electronic Sales Ltd.
Atlas Radio Corp. Ltd.
The Hickok Electrical Instrument Co.
Precise Development Corp.
Tel-Instrument Electronics Corp.
Stark Electronic Instruments Ltd.
The Plessey Co. of Canada Ltd.
Measurement Engineering Ltd.
- GENERATORS (Power Emergency)**
Automatic Electric Sales (Canada) Ltd.
- GENERATORS (Pulse)**
Mechron Engineering Products Ltd.
Canadian Aviation Electronics Ltd.
Minneapolis-Honeywell Regulator Co. Ltd.
— Brown Instrument Div.
Electrodesign
R-O-R Associates Ltd.
Computing Devices of Canada Ltd.
Detectolab, Inc.
Kay Electric Co.
Potter Instrument Co., Inc.
Specialty Engineering & Electronics Co.
MJS Electronic Sales Ltd.
Research Industries Ltd.
H. Roy Gray Co. Ltd.
Atlas Radio Corp. Ltd.
Northeast Scientific Corp.
Canoga Corp.
Berkeley Div. of Beckman
Instruments, Inc.
American Electronic Laboratories, Inc.
F-R Machine Works, Inc. —
Electronics & X-Ray Div.
The Hickok Electrical Instrument Co.
Allen B. DuMont Labs, Inc.
The English Electric Co. Ltd.
Kay Lab
Rogers Majestic Electronics Ltd.
Teletronics Laboratory, Inc.
Precise Development Corp.
Spencer-Kennedy Laboratories, Inc.
The Solartron Electronic Group Ltd.
Radiation Counter Laboratories, Inc.
Bruno-New York Industries Corp.
Lavoie Laboratories, Inc.
Measurement Engineering Ltd.
The Plessey Co. of Canada Ltd.
Stark Electronic Instruments Ltd.
BJ Electronics, Borg-Warner Corp.
Radionics Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Dawe Instruments Ltd. — (Canadian Div.)
- Canadian Marconi Co.
Empire Devices Products Corp.
General Radio Co.
Engineered Electronics Co.
The British Thomson-Houston Co.
(Canada) Ltd.
- GENERATORS (Signal Sweeping)**
Electromechanical Products
Electronic Associates Ltd.
Electrodesign
Jerrold Electronics (Canada) Ltd.
Canadian Aviation Electronics Ltd.
Powerlite Devices Ltd.
Kay Electric Co.
Jackson Electrical Instrument Co.
Helipot Corp.
Specialty Engineering & Electronics Co.
Pace Electrical Instruments Co., Inc.
Heath Co.
Electronic Instrument Co. Inc.
Boonton Radio Corp.
H. Roy Gray Co. Ltd.
Bayly Engineering Ltd.
Electro Sonic Supply Co. Ltd.
MJS Electronic Sales Ltd.
Atlas Radio Corp. Ltd.
Canoga Corp.
American Electronics, Inc.
The Hickok Electrical Instrument Co.
Precise Development Corp.
Tel-Instrument Electronics Corp.
Canadian General Electric Company Ltd.
— Electronic Tube Div.
New London Instrument Co., Inc.
Collins Radio Co. of Canada Ltd.
Canadian Marconi Company
Canadian Marconi Company —
Electronic Tube & Components Div.
John R. Tilton Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
BJ Electronics, Borg-Warner Corp.
Stark Electronic Instruments Ltd.
Measurement Engineering Ltd.
Pacific Transducer Corp.
- GENERATORS**
(Signal, Television Synchronizing)
Electromechanical Products
Pye Canada Ltd.
Jackson Electrical Instrument Co.
Kay Electric Co.
MJS Electronic Sales Ltd.
Electro Sonic Supply Co. Ltd.
H. Roy Gray Co. Ltd.
Atlas Radio Corp. Ltd.
Rogers Majestic Electronics Ltd.
The Hickok Electrical Instrument Co.
Kay Lab
Allen B. DuMont Labs, Inc.
Precise Development Corp.
Tel-Instrument Electronics Corp.
Television Utilities Corp.
Bach-Simpson Ltd.
Measurement Engineering Ltd.
Stark Electronic Instruments Ltd.
John R. Tilton Ltd.
The Plessey Co. of Canada Ltd.
- GENERATORS (Square Wave)**
Mechron Engineering Products Ltd.
R-O-R Associates Ltd.
Computing Devices of Canada Ltd.
Cossor Canada Ltd.
Electrodesign
Astral Electric Co. Ltd.
Northern Radio Mfg. Co. Ltd.
J. B. Smyth Electronic Components
Electronic Instrument Co. Inc.
Heath Co.
Pace Electrical Instruments Co., Inc.
Jackson Electrical Instrument Co.
Potter Instrument Co., Inc.
Electro Sonic Supply Co. Ltd.
MJS Electronic Sales Ltd.
Atlas Radio Corp. Ltd.
Northeast Scientific Corp.
American Electronic Laboratories, Inc.
American Electronics, Inc.
The Hickok Electrical Instrument Co.
Rogers Majestic Electronics Ltd.
Spencer-Kennedy Laboratories, Inc.
Teletronics Laboratory, Inc.
Precise Development Corp.
The Solartron Electronic Group Ltd.
Bruno-New York Industries Corp.
Donner Scientific Co.
John R. Tilton Ltd.
Canadian Marconi Co.
Perkins Electric Co., Ltd. —
Electronics Div.
General Radio Co.
Engineered Sound Systems Ltd.
Stark Electronic Instruments Ltd.
Measurement Engineering Ltd.
- GENERATORS (Ultrasonic)**
Electrodesign
Gulton Industries, Inc.
- GENERATORS (Variable Frequency)**
Vectron, Inc.
Electromechanical Products
R. C. Kahnert Sales Ltd.
J. B. Smyth Electronic Components
Bogue Electric of Canada, Ltd.
Jerrold Electronics (Canada) Ltd.
Canadian Research Institute
- Computing Devices of Canada Ltd.
R-O-R Associates Ltd.
Jackson Electrical Instrument Co.
Pace Electrical Instruments Co., Inc.
Heath Co.
Electronic Instrument Co. Inc.
Kay Electric Co.
Boonton Radio Corp.
Communication Measurements
Laboratory, Inc.
Bayly Engineering Ltd.
Muirhead Instruments Ltd.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
American Electronics, Inc.
Airmec Ltd.
Rogers Majestic Electronics Ltd.
The Hickok Electrical Instrument Co.
Trad Electronics Corp.
The Solartron Electronic Group Ltd.
Tel-Instrument Electronics Corp.
New London Instrument Co., Inc.
Waveforms, Inc.
Muirhead & Co. Ltd.
Bruno-New York Industries Corp.
TMC (Canada) Ltd.
Donner Scientific Co.
MJS Electronic Sales Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Measurement Engineering Ltd.
Stark Electronic Instruments Ltd.
Engineered Sound Systems Ltd.
General Radio Co.
Dawe Instruments Ltd. (Canadian Div.)
Empire Devices Products Corp.
BJ Electronics, Borg-Warner Corp.
John R. Tilton Ltd.
- GENERATORS (Vibration)**
Goodmans Industries Ltd.
- GENERATORS (Waveform)**
Canadian Aviation Electronics Ltd.
Computing Devices of Canada Ltd.
R-O-R Associates Ltd.
Electro Sonic Supply Co. Ltd.
MJS Electronic Sales Ltd.
Atlas Radio Corp. Ltd.
The Hickok Electrical Instrument Co.
Donner Scientific Co.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
John R. Tilton Ltd.
Dawe Instruments Ltd. — (Canadian Div.)
Stark Electronic Instruments Ltd.
- GEO PHYSICAL EQUIPMENT**
Electromechanical Products
R. C. Kahnert Sales Ltd.
Canadian Aviation Electronics Ltd.
Pye Canada Ltd.
X-Ray & Radium Industries Ltd.
R. H. Nichols Ltd.
Canadian Research Institute
Cossor Canada Ltd.
Electrodesign
Electronic Associates Ltd.
Computing Devices of Canada Ltd.
Jarrell-Ash Co.
PSC Applied Research Ltd.
Atlas Radio Corp. Ltd.
Specialty Engineering & Electronics Co.
American Electronic Laboratories, Inc.
Fisher Research Laboratory, Inc.
Southwestern Industrial Electronics
Co. Inc.
Sharpe Instruments Ltd.
McPhar Geophysics Ltd.
Non-Linear Systems, Inc.
Perkins Electric Co., Ltd. —
Electronics Div.
Measurement Engineering Ltd.
- GERMANIUM (Transistor Grade)**
General Transistor Corp.
- GROMMETS**
United-Carr Fastener Co. of Canada Ltd.
Electrovert Ltd.
Hathaway Kraemer Ltd.
Panelite Division, St. Regis Paper Co.
(Canada) Ltd.
Waisco Electronics Corp.
Waldom Electronics Inc.
Herman H. Smith, Inc.
Co-operative Industries, Inc.
Electro Sonic Supply Co. Ltd.
Hermann Fortier Inc.
Amphenol Canada Ltd.
Molding Corp. of America, Inc.
Lord Mfg. Co.
Shamban Engineering Co.
Spaulding Fibre Co., Inc.
United Shoe Machinery Co. of
Canada, Ltd.
Canadian Marconi Company —
Electronic Tube & Components Div.
- GYROSCOPES (Free, Rate & Vertical)**
Electromechanical Products
Canadian Aviation Electronics Ltd.
Aviation Electric Ltd.
Eclipse-Pioneer Division —
Bendix Aviation Corp.
Minneapolis-Honeywell Regulator Co. Ltd.
— Aeronautical Div.
Elliott Brothers (London) Ltd.



BARGAINS in POWER

No single piece of radio equipment can equal the antenna for economically increasing effective power.

One of the less expensive components in a radio communications installation is the antenna. Yet the antenna, which usually represents less than ten per cent of the total equipment cost, can multiply the effective power of every transmitter in the system *several hundred per cent*.

Equally true, a poorly designed or inappropriate antenna can waste the power produced by the costly equipment behind it.

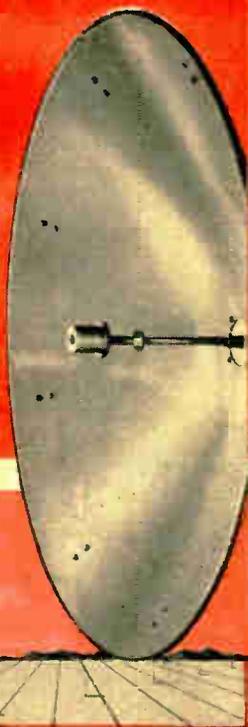
In planning a new system, selection of the proper antenna often will allow a lower power transmitter to achieve desired signal range. For existing systems, the use of a higher gain antenna will reduce "dead spots."

Andrew is a pioneer in designing and developing antennas. We make over 30 standard types for microwave, broadcast and mobile communications. Special models or adaptations of standard models are readily made to order.

Write or phone Andrew for a dollars-and-cents evaluation of the type of antenna that can give your installation the greatest bargain in power.

Manufacturers of
the UNIPOLE,
High Gain,
Corner Reflector,
Parabolic and Yagi
Antennas

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Aeromotive Engineering Products
Cambridge Thermionic Corp.
E. F. Johnson Co.
James Millen Mfg. Co. Inc.
JFD Mfg. Co., Inc.
Dynamic Electronics — New York Inc.
General Cement Mfg. Co. —
Division of Textron, Inc.
Precision Metal Products Co.
National Electric Products Corp.
Javex
Circon Component Co.
Walsco Electronics Corp.
Waldom Electronics Inc.
Herman H. Smith, Inc.
Canadian Line Materials Ltd.
Electro Sonic Supply Co. Ltd.
Specialty Engineering & Electronics Co.
S & T Sales Ltd.
Automatic Electric Sales (Canada) Ltd.
Charles W. Pointon Ltd.
Insuline Corp. America — Subsidiary
Van Norman Industries Inc.
Radio Merchandise Sales, Inc.
Tenatronics Ltd.
E. G. Lomas Co.
Canadian Marconi Company —
Electronic Tube & Components Div.
Cinch Mfg. Corp. and H. B. Jones Div.
Desser E-E Ltd.

HARNESSES, WIRE

Mechron Engineering Products Ltd.
Cannon Electric Canada Ltd.
Fleck Electrical Mfg. Ltd.
H. B. Etlin Co. Ltd.
J. B. Smyth Electronic Components
P. J. Heenan Ltd.
Aeromotive Engineering Products
Co-operative Industries, Inc.
Color Television Inc.
Phalo Plastics Corp.
Airtron, Inc.
Scintilla Division — Bendix Aviation Corp.
Essex Wire Corp.
Vidaire Electronics Mfg. Corp.
Renfrew Electric & Refrigerator Co. Ltd.
Electrolabs
Specialty Engineering & Electronics Co.
Cornish Wire Co. Inc.
William Brand & Co., Inc.
Insuline Corp. America — Subsidiary
Van Norman Industries Inc.
Permonite Mfg. Co.
Tele-Matic Industries Inc.
Beaconing Optical & Precision Materials
Co. Ltd.
The Plessey Co. of Canada Ltd.

HEADPHONES

McCurdy Radio Industries Ltd.
Campbell Mfg. Co. Ltd.
Alex L. Clark Ltd.
J. B. Smyth Electronic Components
Hackbusch Electronics Ltd.
Aviation Electric Ltd.
Roanwell Corp.
Telex, Inc.
Melody Master Mfg. Co.
Altec Lansing Corporation
Ericsson Telephone Sales of Canada Ltd.
Superex Electronics Corp.
Specialty Engineering & Electronics Co.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corporation Ltd.
S & T Sales Ltd.
Califone Corp.
Charles W. Pointon Ltd.
TMC (Canada) Ltd.
Fortiphone Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Associated Electronic Components
Electronic Communications Ltd. —
Canadian General Electric Co. Ltd. —
Electronic Equipment & Tube Dept.
Engineered Sound Systems Ltd.
Perkins Electric Co., Ltd. —
Electronics Division
Dave Instruments Ltd. —
(Canadian Div.)
John R. Tilton Ltd.
Canadian Marconi Company —
Electronic Tube & Components Div.
Brush Electronics Co., —
Division of Clevite Corp.

HEADS (Recording)

Canadian Astatic Ltd.
A. C. Simmonds & Sons Ltd.
Alex L. Clark Ltd.
Specialty Engineering & Electronics Co.
Potter Instrument Co., Inc.
Fairchild Recording Equipment Co.
Peirce Wire Recorder Corp.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
Berndt-Bach, Inc. (Auricon Division)
Shure Brothers, Inc.

Stancil-Hoffman Corp.
Industrial & Institutional
Communications Ltd.
Perkins Electric Co., Ltd. —
Electronics Division
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Ferranti Electric Ltd.
The Plessey Co. of Canada Ltd.
Brush Electronics Co., Div. of
Clevite Corp.

HEADS (Wire & Tape Recording)

A. C. Simmonds & Sons Ltd.
Alex L. Clark Ltd.
Peirce Wire Recorder Corp.
Fairchild Recording Equipment Co.
Potter Instrument Co., Inc.
Electro Sonic Supply Co. Ltd.
Stancil-Hoffman Corp.
The Plessey Co. of Canada Ltd.
Canadian General Electric Co. Ltd. —
Electronic Equipment & Tube Dept.
Perkins Electric Co., Ltd. —
Electronics Division

HEADSETS

J. B. Smyth Electronic Components
Aviation Electric Ltd.
Specialty Engineering & Electronics Co.
Telex, Inc.
C. F. Cannon Co.
Melody Master Mfg. Co.
Roanwell Corp.
Electro Sonic Supply Co. Ltd.
S & T Sales Ltd.
Atlas Radio Corp. Ltd.
Northern Electric Co. Ltd.
Automatic Electric Sales (Canada) Ltd.
TMC (Canada) Ltd.
Fortiphone Limited
Electro-Vox Intercom Inc.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Dawe Instruments Ltd. (Canadian Div.)
Engineered Sound Systems Ltd.
Electronic Communications Ltd.
Associated Electronic Components
Perkins Electric Co., Ltd. —
Electronics Division
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.

HEATING (Electronic Induction)

John Herring & Co. Ltd.
Canadian Research Institute
Pye Canada Ltd.
Electrodesign
Radio Frequency Co.
Induction Heating Corp.
Canadian Westinghouse Co. Ltd. —
Electronics Division
The Ahearn & Soper Co. Ltd.
Woodwelding, Incorporated
Bayly Engineering Ltd.
The English Electric Co. Ltd.
Scientific Electric
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
The British Thomson-Houston Co.
(Canada) Ltd.

HORNS (Speaker)

R. C. Kahnert Sales Ltd.
Dominion Sound Equipments Ltd.
Universal Speaker Service
Burlec Sales Ltd.
Alex L. Clark Ltd.
J. B. Smyth Electronic Components
Hackbusch Electronics Ltd.
Telex, Inc.
The Ahearn & Soper Co. Ltd.
Kellogg Switchboard & Supply Co.
Atlas Sound Corp.
Electro Sonic Supply Co. Ltd.
Hermann Fortier Inc.
H. Roy Gray Co. Ltd.
Copper Wire Products Ltd.
Atlas Radio Corp. Ltd.
Northern Electric Co. Ltd.
Industrial & Institutional
Communications Ltd.
Racon Electric Co. Inc.
University Loudspeakers, Inc.
Electro-Vox Intercom Inc.
Bradford J. Wickett Ltd.
Perkins Electric Co., Ltd. —
Electronics Division
Associated Electronic Components
Electronic Communications Ltd.
Engineered Sound Systems Ltd.
John R. Tilton Ltd.
The Plessey Co. of Canada Ltd.
The British Thomson-Houston Co.
(Canada) Ltd.

HYDROPHONES

Lake Engineering Co. Ltd.
Gulton Industries Inc.
Pacific Div., Bendix Aviation Corp.
The Plessey Co. of Canada Ltd.

IMPREGNATORS (Vacuum)

Edwards High Vacuum (Canada) Ltd.
Consolidated Electro-dynamics Corp.
Vacuum-Electronic Engineering Co.

INDICATOR (Lights)

Cannon Electric Canada Ltd.
Leonard Electric Ltd.

Circon Component Co.
E. F. Johnson Co.
The H. R. Kirkland Co.
Hermann Fortier Inc.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
Northern Electric Co. Ltd.
Hetherington, Inc.
Kulka Electric Mfg. Co. Inc.
E. G. Lomas Co.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Non-Linear Systems, Inc.
The Plessey Co. of Canada Ltd.
Associated Electronic Components
Perkins Electric Co., Ltd.
Electronics Division
Barber-Colman of Canada Ltd.
(Wheelco Inst. Div.)

INDICATORS (Balanced Diaphragm)
Photocon Research Products**INDICATORS (Electronic)**

Canadian Research Institute
Electrodesign
Process-Instrument Systems Ltd.
Minneapolis-Honeywell Regulator Co. Ltd.,
Brown Instrument Division
R-O-R Associates Ltd.
Computing Devices of Canada Ltd.
Electronic Associates Ltd.
Potter Instrument Co., Inc.
Electronics Corp. of America
Kay Electric Co.
Electro Products Laboratories
Dynamic Electronics — New York Inc.
Electro Sonic Supply Co. Ltd.
MJS Electronic Sales Ltd.
Atlas Radio Corp. Ltd.
Berkeley Div. of Beckman Instruments, Inc.
Canoga Corporation
Fielden Instrument Division
Evershed & Vignoles Ltd.
Elliott Brothers (London) Ltd.
Electronic Tube Corp.
The Solar Electronic Group Ltd.
Manning, Maxwell & Moore, Inc.
Simmonds Aerocessories, Inc.
Pacific Communications Services Ltd.
Collins Radio Co. of Canada Ltd.
Electronics Corp. of America (Can.) Ltd.
Desser E-E Limited
Computer-Measurements Corp.
Industrial Control Co.
Barber-Colman of Canada Ltd.
(Wheelco Inst. Div.)
BJ Electronics, Borg-Warner Corp.
Peacock Brothers Ltd.
Standard Electronic Research Corp.
Stark Electronic Instruments Ltd.
Measurement Engineering Ltd.
Perkins Electric Co., Ltd. —
Electronics Division
The Plessey Co. of Canada Ltd.

INDICATORS (Frequency)

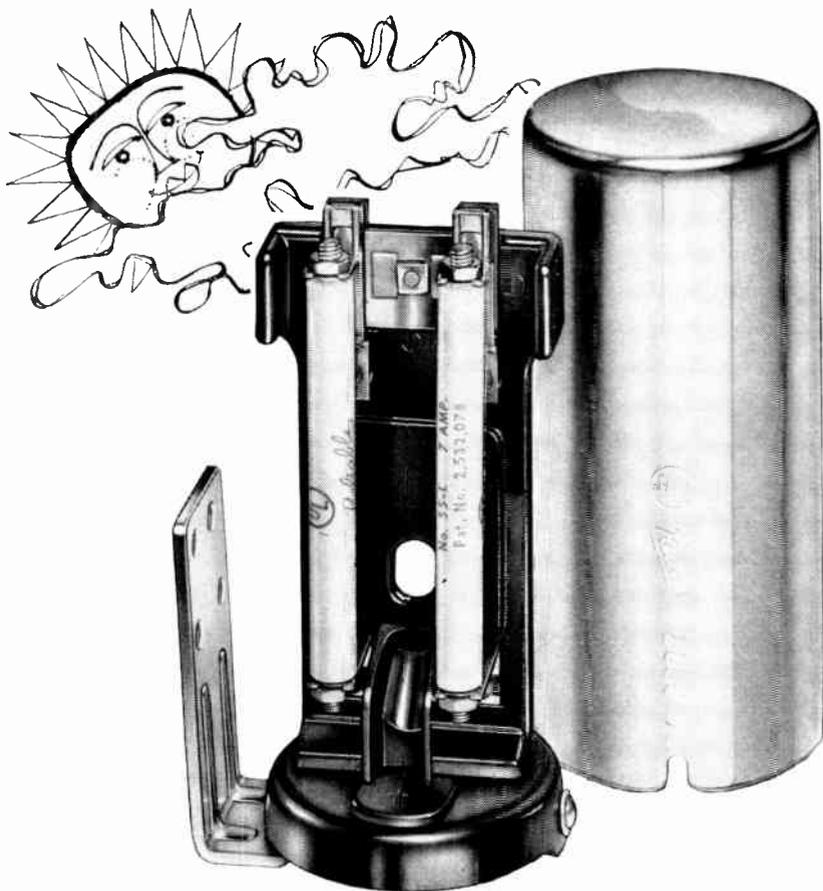
Electromechanical Products
Canadian Research Institute
Electrodesign
R-O-R Associates Ltd.
Jerrold Electronics (Canada) Ltd.
Pye Canada Ltd.
James Millen Manufacturing Co., Inc.
Dynamic Electronics — New York Inc.
Kay Electric Co.
Potter Instrument Co., Inc.
The Airpax Products Co.
The Ahearn & Soper Co. Ltd.
Electro Sonic Supply Co. Ltd.
MJS Electronic Sales Ltd.
Atlas Radio Corp. Ltd.
Helipot Corporation
Berkeley Div. of Beckman Instruments, Inc.
Airmec Limited
Elliott Brothers (London) Ltd.
F-R Machine Works, Inc.,
Electronics & X-Ray Div.
The Hickok Electrical Instrument Co.
Frequency Standards Inc.
The English Electric Co. Ltd.
TMC (Canada) Ltd.
Thermovolt Instruments Ltd.
Barber-Colman of Canada Ltd.
(Wheelco Inst. Div.)
Measurement Engineering Ltd.
Canadian Marconi Co.
BJ Electronics, Borg-Warner Corp.
Computer-Measurements Corp.
The British Thomson-Houston Co.
(Canada) Ltd.

INDICATORS (Leakage)

Canadian Research Institute
Electrodesign
Electronic Associates Ltd.
Electro Sonic Supply Co. Ltd.
Specialty Engineering & Electronics Co.
Consolidated Electro-dynamics Corp.
Fisher Research Laboratory, Inc.
Evershed & Vignoles Ltd.
Radionics Limited
Vacuum-Electronic Engineering Co.
Barber-Colman of Canada Ltd.
(Wheelco Inst. Div.)

INDICATORS (Resolved Components)

The Solartron Electronic Group Ltd.



ECONOMICAL SUBSTATION PROTECTORS

RELIABLE 2000 SERIES OUTDOOR PROTECTOR

Provides simple, neat installations. Can be wired and mounted without removing fuses or brackets. Unbreakable, bakelite fuse mount. Neoprene base with entrance sealing slots combine with rustproof aluminum cover to keep out insects, dust, rain and moisture. Available with either P-495 Sawtooth block - or Type 70 "Dollar-Saver" Discharge block. Please specify when ordering.

Cat. No. S-8290

Type 2000

Dimensions 3 1/2" x 3" x 7"

Fuse 7 amp.

Shipping Wt. 1 1/4 lbs.

FOR OUTDOOR AND INDOOR INSTALLATIONS

**AUTOMATIC ELECTRIC
TYPE 20A INDOOR PROTECTOR**

Equipped with "Dollar-Saver" discharge blocks and protected from dust and moisture by plastic cover. Heavy one piece base with ample spacing between terminals. Heavy walls between discharge blocks and fuses.

Cat. No.	Type	Dimensions
SB-88	20-A	3 1/2" x 2 3/4" x 5 1/4"
	Fuse	Shipping Wt.
	7 amp.	1 1/4 lbs.

Automatic Electric Sales (Canada) Limited, 185 Bartley Drive, Toronto 16. Branches in Montreal, Ottawa, Brockville, Hamilton, Winnipeg, Regina, Edmonton, Vancouver

AUTOMATIC ELECTRIC
SALES (CANADA) LIMITED 5654

INDICATORS (Smoke & Fire, Electronic)

Canadian Research Institute
Electrodesign
Minneapolis-Honeywell Regulator Co. Ltd.,
Brown Instrument Division
Electronic Associates Ltd.
Martin Engineering Inc.
John Herring & Co. Ltd.
Canadian Aviation Electronics Ltd.
Electronic Control Corp.
Electronics Corp. of America
Specialty Engineering & Electronics Co.
Atlas Radio Corp. Ltd.
Dominion Electrohome Industries Ltd.
Bailey Meter Co. Ltd.
Londex Limited
Ripley Company Inc.
The J. W. Ellis Industries
Electronics Corp. of America (Can.) Ltd.
Barber-Colman of Canada Ltd. —
(Wheelco Inst. Div.)
Associated Electronic Components
Canadian Marconi Co.

INDICATORS (Strain)

Mechron Engineering Products Ltd.
Electrodesign
R-O-R Associates Ltd.
Computing Devices of Canada Ltd.
X-Ray & Radium Industries Ltd.
John Herring & Co. Ltd.
George Kelk Ltd.
H. Tinsley & Co. Ltd.
Southern Instruments Ltd. —
Oscillograph Division
Research Industries Ltd.
Consolidated Electrodynamics Corp.
Polyphase Instrument Co.
Rogers Majestic Electronics Ltd.
The J. W. Ellis Industries
Canadian Marconi Co.
Barber-Colman of Canada Ltd.
(Wheelco Inst. Div.)
Industrial Control Co.
Peacock Brothers Ltd.
The Plessey Co. of Canada Ltd.
Perkins Electric Co., Ltd. —
Electronics Division
Computer-Measurements Corp.

INDICATORS (Timing)

Canadian Research Institute
Electrodesign
R-O-R Associates Ltd.
Electronic Associates Ltd.
Electrovert Ltd.
John Herring & Co. Ltd.
Tracerlab Inc.
The A. W. Haydon Co.
Electro Products Laboratories
Research Industries Ltd.
Atlas Radio Corp. Ltd.
Berkeley Div. of Beckman Instruments, Inc.
Londex Limited
The J. W. Ellis Industries
DeJur-Amsco Corporation
Electronics Corp. of America (Can.) Ltd.
Barber-Colman of Canada Ltd.
(Wheelco Inst. Div.)
Perkins Electric Co., Ltd. —
Electronics Division
Measurement Engineering Ltd.
Computer-Measurements Corp.

INDICATORS (Vacuum)

Electronic Associates Ltd.
Edwards High Vacuum (Canada) Ltd.
Consolidated Electrodynamics Corp.
Evershed & Vignoles Ltd.
Hastings-Raydist, Inc.
Bailey Meter Co. Ltd.
Simmonds Aeroaccessories, Inc.
Fischer & Porter (Canada) Ltd.
Manning, Maxwell & Moore, Inc.,
Aircraft Products Division
Vacuum-Electronic Engineering Co.
Thermovolt Instruments Ltd.
Measurement Engineering Ltd.
Radionics Limited
Peacock Brothers Ltd.
Barber-Colman of Canada Ltd.
(Wheelco Inst. Div.)

INDICATORS (Volume)

Canadian Research Institute
R-O-R Associates Ltd.
Electro Sonic Supply Co. Ltd.
Minneapolis-Honeywell Regulator Co. Ltd.,
Aeronautical Division
Fielden Electronics Limited
Fielden Instrument Division
Bailey Meter Co. Ltd.
Thermovolt Instruments Ltd.
Barber-Colman of Canada Ltd.
(Wheelco Inst. Div.)

INDUCTANCE (Windings)

M. J. Howard
John Herring & Co. Ltd.
H. Tinsley & Co. Ltd.
Induction Heating Corp.
Superex Electronics Corp.
Caledonia Electronics and
Transformer Corp.
Cambridge Thermionic Corp.
Electro Sonic Supply Co. Ltd.
Bayly Engineering Ltd.
Copper Wire Products Ltd.

General Instrument —

F. W. Sickles of Canada Ltd.
Burnell & Co., Inc.
Aerovox Corporation
Filtron Co., Inc.
J. W. Miller Co.
Telradio Engineering Corp.
Rollan Electric Co.
Tornico Electronics, Inc.
Fortiphone Limited
Associated Electronic Components
Osborne Electric Co., Ltd.
Dawe Instruments Ltd. (Canadian Div.)
Electronic Engineering
Microtran Co. Inc.
Stanwyck Coil Products Ltd.

INDUCTANCES (Electronics)

Lake Engineering Co. Ltd.
M. J. Howard
E. F. Johnson Co.
Cambridge Thermionic Corp.
Caledonia Electronics and
Transformer Corp.
Superex Electronics Corp.
Woodwelding, Incorporated
Induction Heating Corp.
Bayly Engineering Ltd.
MJS Electronic Sales Ltd.
Electro Sonic Supply Co. Ltd.
Radio Components Ltd.
Copper Wire Products Ltd.
General Instrument —
F. W. Sickles of Canada Ltd.
Burnell & Co., Inc.
Filtron Co., Inc.
Aerovox Corporation
Tornico Electronics, Inc.
Telradio Engineering Corp.
J. W. Miller Co.
Osborne Electric Co., Ltd.
The Plessey Co. of Canada Ltd.
Electronic Engineering
Microtran Co. Inc.
Stanwyck Coil Products Ltd.

INDUCTANCES (Focusing)

J. B. Smyth Electronic Components
Electro Sonic Supply Co. Ltd.
General Instrument —
F. W. Sickles of Canada Ltd.
Glaser-Steers Corp.
Telradio Engineering Corp.
E. G. Lomas Co.
Osborne Electric Co., Ltd.

INDUCTANCES (Power Coil Windings)

The Wind Turbine Co. of Canada Ltd.
Caledonia Electronics and
Transformer Corp.
Electro Sonic Supply Co. Ltd.
General Instrument —
F. W. Sickles of Canada Ltd.
Keystone Products Co.
Osborne Electric Co., Ltd.
Electronic Engineering
Microtran Co. Inc.
Stanwyck Coil Products Ltd.

INDUCTANCES (Receiving or Transmitting)

Bud Radio Inc.
Superex Electronics Corp.
The Wind Turbine Co. of Canada Ltd.
Cambridge Thermionic Corp.
E. F. Johnson Co.
James Millen Mfg. Co., Inc.
Electro Sonic Supply Co. Ltd.
General Instrument —
F. W. Sickles of Canada Ltd.
Filtron Co., Inc.
Telradio Engineering Corp.
The Plessey Co. of Canada Ltd.
Associated Electronic Components
Electronic Engineering
Microtran Co. Inc.
Stanwyck Coil Products Ltd.

INDUCTORS (Electronic)

M. J. Howard
Lake Engineering Co. Ltd.
Superex Electronics Corp.
Caledonia Electronics and
Transformer Corp.
Boonton Radio Corp.
Cambridge Thermionic Corp.
James Millen Mfg. Co., Inc.
E. F. Johnson Co.
Electro Sonic Supply Co. Ltd.
Bayly Engineering Ltd.
Copper Wire Products Ltd.
Burnell & Co., Inc.
Filtron Co., Inc.
J. W. Miller Co.
Tornico Electronics, Inc.
Vari-L Co., Inc.
Fortiphone Limited
The Plessey Co. of Canada Ltd.
Dawe Instruments Ltd. (Canadian Div.)
Osborne Electric Co., Ltd.
Electronic Engineering
Microtran Co. Inc.
Stanwyck Coil Products Ltd.

INDUCTORS (Toroidal)

Aerovox Canada Ltd.

INSTRUMENTS, ELECTRIC

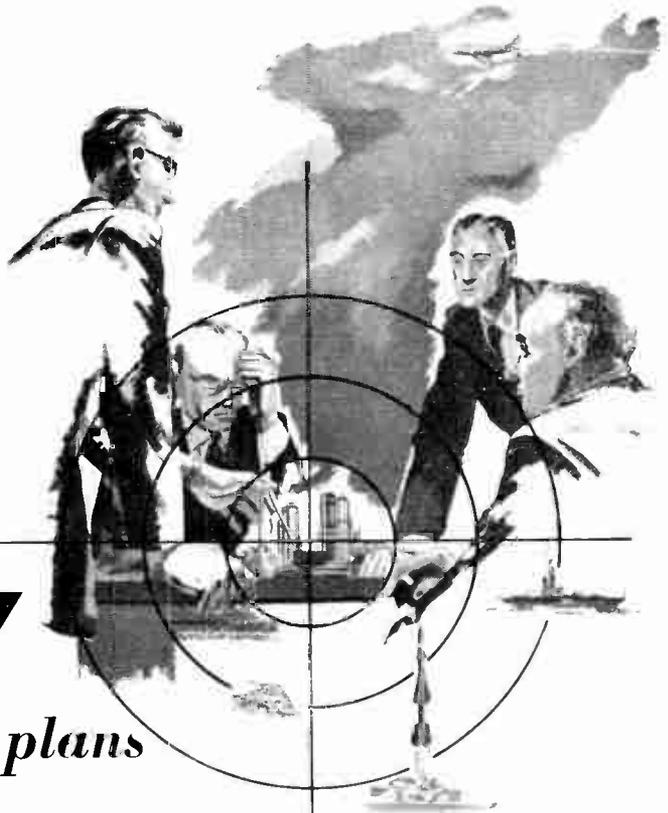
Electromechanical Products
R. C. Kahnert Sales Ltd.
Cossor Canada Ltd.
R. H. Nichols Ltd.
Canadian Westinghouse Co. Ltd. —
Apparatus Division
Alex L. Clark Ltd.
Hackbusch Electronics Ltd.
H. Tinsley & Co. Ltd.
John Herring & Co. Ltd.
Electrovert Ltd.
J. B. Smyth Electronic Components
Lake Engineering Co. Ltd.
Computing Devices of Canada Ltd.
R-O-R Associates Ltd.
Canadian Research Institute
Electrodesign
Minneapolis-Honeywell Regulator Co. Ltd.,
Brown Instrument Division
Powerlite Devices Ltd.
Tracerlab Inc.
The A. W. Haydon Co.
Phaoston Instrument and Electronic Co.
Abrams Instrument Corp.
Canadian Westinghouse Co. Ltd. —
Electronics Division
The Ahearn & Soper Co. Ltd.
Pace Electrical Instruments Co., Inc.
MJS Electronic Sales Ltd.
Bayly Engineering Ltd.
Electro Sonic Supply Co. Ltd.
Muirhead Instruments Ltd.
Atlas Radio Corp. Ltd.
Electro Measurements Inc.
Industrial Instruments, Inc.
Dominion Electrohome Industries Ltd
Consolidated Electrodynamics Corp.
Northern Electric Co. Ltd.
Baldwin Instrument Co. Ltd.
Barber-Colman Co.
The Foxboro Co.
Doelcam Div. of Minneapolis-Honeywell
Dawe Instruments Ltd.
Ward Leonard of Canada Ltd.
Fielden Instrument Division
Elliott Brothers (London) Ltd.
The English Electric Co. Ltd.
Evershed & Vignoles Ltd.
Gulton Industries, Inc.
The Hickok Electrical Instrument Co.
Muirhead & Co. Ltd.
Shallcross Manufacturing Co.
Servo Corp. of America
West Instrument Corp.
Manning, Maxwell & Moore, Inc.
The Solartron Electronic Group Ltd.
Manning, Maxwell & Moore, Inc.,
Aircraft Products Division
Bailey Meter Co. Ltd.
Beta Electric Corp.
Central Scientific Co. of Canada Ltd.
Pacific Communications Services Ltd.
Thermovolt Instruments Ltd.
DeJur-Amsco Corp.
The J. W. Ellis Industries
Non-Linear Systems, Inc.
Barber-Colman of Canada Ltd.
(Wheelco Inst. Div.)
Peacock Brothers Ltd.
Measurement Engineering Ltd.
Stark Electronic Instruments Ltd.
Industrial Control Co.
Perkins Electric Co., Ltd. —
Electronics Division
Associated Electronic Components
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.

INSTRUMENTS (Precision)
Electromechanical Products
R. C. Kahnert Sales Ltd.
Cossor Canada Ltd.
R. H. Nichols Ltd.
Alex L. Clark Ltd.
Hackbusch Electronics Ltd.
H. Tinsley & Co. Ltd.
John Herring & Co. Ltd.
Electrovert Ltd.
Canadian Aviation Electronics Ltd.
J. B. Smyth Electronic Components
Lake Engineering Co. Ltd.
X-Ray & Radium Industries Ltd.
Computing Devices of Canada Ltd.
R-O-R Associates Ltd.
Canadian Research Institute
Electrodesign
Minneapolis-Honeywell Regulator Co. Ltd.,
Brown Instrument Division
Pye Canada Ltd.
Jerrold Electronics (Canada) Ltd.
Boonton Radio Corp.
The Ahearn & Soper Co. Ltd.
Canadian Westinghouse Co. Ltd. —
Electronics Division
Electro-Measurements, Inc.
Abrams Instrument Corp.
The Gaertner Scientific Corp.
John Chatillon & Sons
Heath Company
Tracerlab Inc.
MJS Electronic Sales Ltd.
Muirhead Instruments Ltd.
PSC Applied Research Ltd.
Electro Sonic Supply Co. Ltd.
Bayly Engineering Ltd.
Pylon Electronic Development Co., Ltd.
Atlas Radio Corp. Ltd.

ASSIGNMENT:
adapting electronic principles to industry

TARGET:
your operations

OBJECTIVE:
production improvement



SPERRY

experience fits into your plans

For many years the research and engineering abilities of Sperry of Canada were necessarily channelled towards the designing and building of vital equipment for defence purposes . . . radar, fire control systems, guided missiles, navigational equipment for aircraft and ships, etc.

This experience and ability is now being put to work in Canadian industry for application on such varied problems as nuclear reactor control, textile and paper machine control, machine tool automation and industrial computers.



It will pay engineers to investigate opportunities at Sperry by contacting the Chief Engineer.

Experience is the keynote of Sperry of Canada's ability to solve your problems.



EXPERIENCE TO PLAN



ABILITY TO BUILD

SPERRY GYROSCOPE COMPANY OF CANADA, LTD.
P. O. BOX 710
MONTREAL, QUE.

Potter Instrument Co., Inc.
 Specialty Engineering & Electronics Co.
 Baldwin Instrument Co. Ltd.
 Baird Associates — Atomic Instrument Co.
 Evershed & Vignoles Ltd.
 The English Electric Co. Ltd.
 Fielden Instrument Division
 Ward Leonard of Canada Ltd.
 Dawe Instruments Ltd.
 Kay Lab
 Instrument Development Lab., Inc.
 Librascope Inc.
 Gulton Industries, Inc.
 The Hickok Electrical Instrument Co.
 Manning, Maxwell & Moore, Inc.,
 Aircraft Products Division
 The Solartron Electronic Group Ltd.
 Pic Design Corp., Div. Benrus Watch Corp.
 West Instrument Corp.
 The Standard Electric Time Co.
 Servo Corp. of America
 Teletronics Laboratory, Inc.
 Muirhead & Co. Ltd.
 The J. W. Ellis Industries
 DeJur-Amsco Corp.
 Thermovolt Instruments Ltd.
 Central Scientific Co. of Canada Ltd.
 Sharpe Instruments Ltd.
 Donner Scientific Co.
 Bach-Simpson Ltd.
 Non-Linear Systems, Inc.
 Associated Electronic Components
 Perkins Electric Co., Ltd. —
 Electronics Division
 Industrial Control Co.
 Stark Electronic Instruments Ltd.
 Measurement Engineering Ltd.
 Barber-Colman of Canada Ltd.
 (Wheelco Inst. Div.)
 Computer-Measurements Corp.
 BJ Electronics, Borg-Warner Corp.
 Standard Electronic Research Corp.
 Canadian Marconi Co.
 Dawe Instruments Ltd. (Canadian Div.)
 Engineered Sound Systems Ltd.
 Canadian General Electric Co., Ltd.
 Electronic Equipment & Tube Dept.
 Adams Engineering Ltd.

INSTRUMENTS (Recording and Control)

Serdex Inc.

INSULATING COMPOUNDS

Electrovert Ltd.
 Minnesota Mining & Mfg. of Canada Ltd.
 Canadian Johns-Manville Co. Ltd.
 B. F. Goodrich Canada Ltd.
 Dow Corning Silicones Ltd.
 Linde Air Products Co.
 Hysol (Canada) Ltd.
 Canadian Westinghouse Co. Ltd. —
 Electronics Division
 Induction Heating Corp.
 Sauereisen Cements Co.
 Dixon Corporation
 Insulation Manufacturers Corp.
 General Cement Mfg. Co.,
 Division of Textron, Inc.
 Electro Sonic Supply Co. Ltd.
 Atlas Radio Corp. Ltd.
 George C. Borthig Co. Inc.
 Northern Electric Co. Ltd.
 Ellanar Chemical Co.
 Resin Industries, A Subsidiary of
 The Borden Co.
 Houghton Laboratories
 Standard Telephones & Cables Mfg. Co.
 (Canada) Ltd.
 Osborne Electric Co., Ltd.
 The Insl-X Co., Inc.

INSULATING MATERIAL

Crane Packing Co.
 Canadian Westinghouse Co. Ltd.
 Apparatus Division
 Minnesota Mining & Mfg. of Canada Ltd.
 National Fibre Co. of Canada, Ltd.
 Canadian Johns-Manville Co. Ltd.
 B. F. Goodrich Canada Ltd.
 Dow Corning Silicones Ltd.
 Hysol (Canada) Ltd.
 Canadian Westinghouse Co. Ltd. —
 Electronics Division
 Insulation Manufacturers Corp.
 Dixon Corporation
 Sauereisen Cements Co.
 Precision Paper Tube Co.
 Polypenco, Inc.
 General Cement Mfg. Co.,
 Division of Textron, Inc.
 Centralab, Division of Globe Union Inc.
 Varflex Corporation
 Synthane Corporation
 W. H. Brady Co.
 Saxonburg Ceramics
 Induction Heating Corp.
 Electro Sonic Supply Co. Ltd.
 Electrovert Ltd.
 Atlas Radio Corp. Ltd.
 Northern Electric Co. Ltd.
 George C. Borthig Co. Inc.
 William Brand & Co., Inc.
 H. Clarke & Co. (Manchester) Ltd.
 Glastic Corporation
 Natvar Corporation
 Molding Corp. of America, Inc.
 United States Rubber Co.

Houghton Laboratories
 Spaulding Fibre Co., Inc.
 Osborne Electric Co., Ltd.
 Kerr-Machin Associates
 The Rex Corp.
 The Insl-X Co., Inc.

INSULATION

(Bakelite-Rod, Sheets and Tubes)

Canadian Westinghouse Co. Ltd. —
 Apparatus Division
 Electrovert Ltd.
 Hysol (Canada) Ltd.
 Panelyte Division, St. Regis Paper Co.
 (Canada) Ltd.
 Synthane Corporation
 Varflex Corporation
 Precision Paper Tube Co.
 Insulation Manufacturers Association
 Cleveland Container Co.
 Polypenco, Inc.
 Electro Sonic Supply Co. Ltd.
 National Fibre Co. of Canada Ltd.
 Bakelite Co., Div. Union Carbide Can. Ltd.
 H. Clarke & Co. (Manchester) Ltd.
 Northern Electric Co. Ltd.
 Insuline Corp. America, Subsidiary Van
 Norman Industries Inc.
 Houghton Laboratories
 Spaulding Fibre Co., Inc.
 Canadian Marconi Co. —
 Electronic Tube & Components Div.

INSULATION, CERAMIC

Mechron Engineering Products Ltd.
 Minnesota Mining & Mfg. of Canada Ltd.
 Aeromotive Engineering Products
 P. J. Heenan Ltd.
 Saxonburg Ceramics
 Centralab, Division of Globe Union Inc.
 The Wind Turbine Co. of Canada Ltd.
 Stupakoff Div. of The Carborundum Co.
 E. F. Johnson Co.
 S & T Sales Ltd.
 Mykroy, Inc.
 Kerr-Machin Associated
 Quality Hermetics Ltd.
 Eric Resistor Corp.

INSULATION, FABRIC

Minnesota Mining & Mfg. of Canada Ltd.
 National Fibre Co. of Canada, Ltd.
 Canadian Johns-Manville Co. Ltd.
 Dow Corning Silicones Ltd.
 Insulation Manufacturers Corporation
 Varflex Corporation
 Electro Sonic Supply Co. Ltd.
 S & T Sales Ltd.
 H. Clarke & Co. (Manchester) Ltd.
 William Brand & Co., Inc.
 The Connecticut Hard Rubber Co.
 Natvar Corporation
 United States Rubber Co.

INSULATION (Fiber-Rod, Sheets and Tubes)

Canadian Westinghouse Co. Ltd. —
 Apparatus Division
 Minnesota Mining & Mfg. of Canada Ltd.
 Aeromotive Engineering Products
 National Fibre Co. of Canada, Ltd.
 Dow Corning Silicones Ltd.
 Varflex Corporation
 General Cement Mfg. Co.,
 Division of Textron, Inc.
 Precision Paper Tube Co.
 Insulation Manufacturers Corporation
 Cleveland Container Co.
 Canadian Westinghouse Co. Ltd. —
 Electronics Division
 Electro Sonic Supply Co. Ltd.
 H. Roy Gray Co. Ltd.
 Northern Electric Co. Ltd.
 H. Clarke & Co. (Manchester) Ltd.
 L. Frank Markel & Sons
 Spaulding Fibre Co., Inc.
 Permonite Mfg. Co.
 National Tel-Tronics Corp.

INSULATION, MICA

Minnesota Mining & Mfg. of Canada Ltd.
 National Fibre Co. of Canada, Ltd.
 Dow Corning Silicones Ltd.
 Insulation Manufacturers Corporation
 Electrovert Ltd.
 William Brand & Co., Inc.
 H. Clarke & Co. (Manchester) Ltd.
 Northern Electric Co. Ltd.

INSULATION (Plastic to Metal)

Garde Manufacturing Co.

INSULATION AND SEALS, CERAMIC

Mechron Engineering Products Ltd.
 Minnesota Mining & Mfg. of Canada Ltd.
 Cambridge Thermionic Corp.
 Warren Plastics Corp.
 Stupakoff Div. of The Carborundum Co.
 Centralab, Division of Globe Union Inc.
 Lundey Associates
 S & T Sales Ltd.
 L. L. Constantin & Co.
 Mykroy, Inc.
 Quality Hermetics Ltd.
 Eric Resistor Corp.

INSULATORS (Electronic)

Crane Packing Co.
 Mechron Engineering Products Ltd.
 P. J. Heenan Ltd.
 Insulation Manufacturers Corp.
 Cambridge Thermionic Corp.
 E. F. Johnson Co.

Centralab, Division of Globe Union Inc.
 Saxonburg Ceramics
 Dixon Corporation
 Andrew Antenna Corp., Ltd.
 Polypenco, Inc.
 Induction Heating Corp.
 Lundey Associates
 Saxonburg Ceramics
 Electro Sonic Supply Co. Ltd.
 General Cement Mfg. Co.,
 Division of Textron, Inc.
 Precision Metal Products Co.
 The Connecticut Hard Rubber Co.
 Fretco Incorporated
 Garde Manufacturing Co.
 Mykroy, Inc.
 Kerr-Machin Associates
 Quality Hermetics Ltd.

INSULATORS (Plastic)

Crane Packing Co.
 Minnesota Mining & Mfg. of Canada Ltd.
 National Fibre Co. of Canada, Ltd.
 B. F. Goodrich Canada Ltd.
 Bennett & Collins Ltd. Mfg. Div.
 Panelyte Division, St. Regis Paper Co.
 (Canada) Ltd.
 Cambridge Thermionic Corp.
 Insulation Manufacturers Corp.
 Synthane Corporation
 Induction Heating Corp.
 Polypenco, Inc.
 Varflex Corporation
 Cleveland Container Co.
 Mueller Electric Co.
 Whitso, Inc.
 Dixon Corporation
 Electro Sonic Supply Co. Ltd.
 Buchanan Electrical Products Corp.
 Garde Manufacturing Co.
 Fretco Incorporated
 United States Rubber Co.
 Houghton Laboratories
 Molding Corp. of America, Inc.
 Shamban Engineering Co.
 Resin Industries, A Subsidiary of
 The Borden Co.
 E. G. Lomas Co.
 Permonite Mfg. Co.

INSULATORS (Rubber)

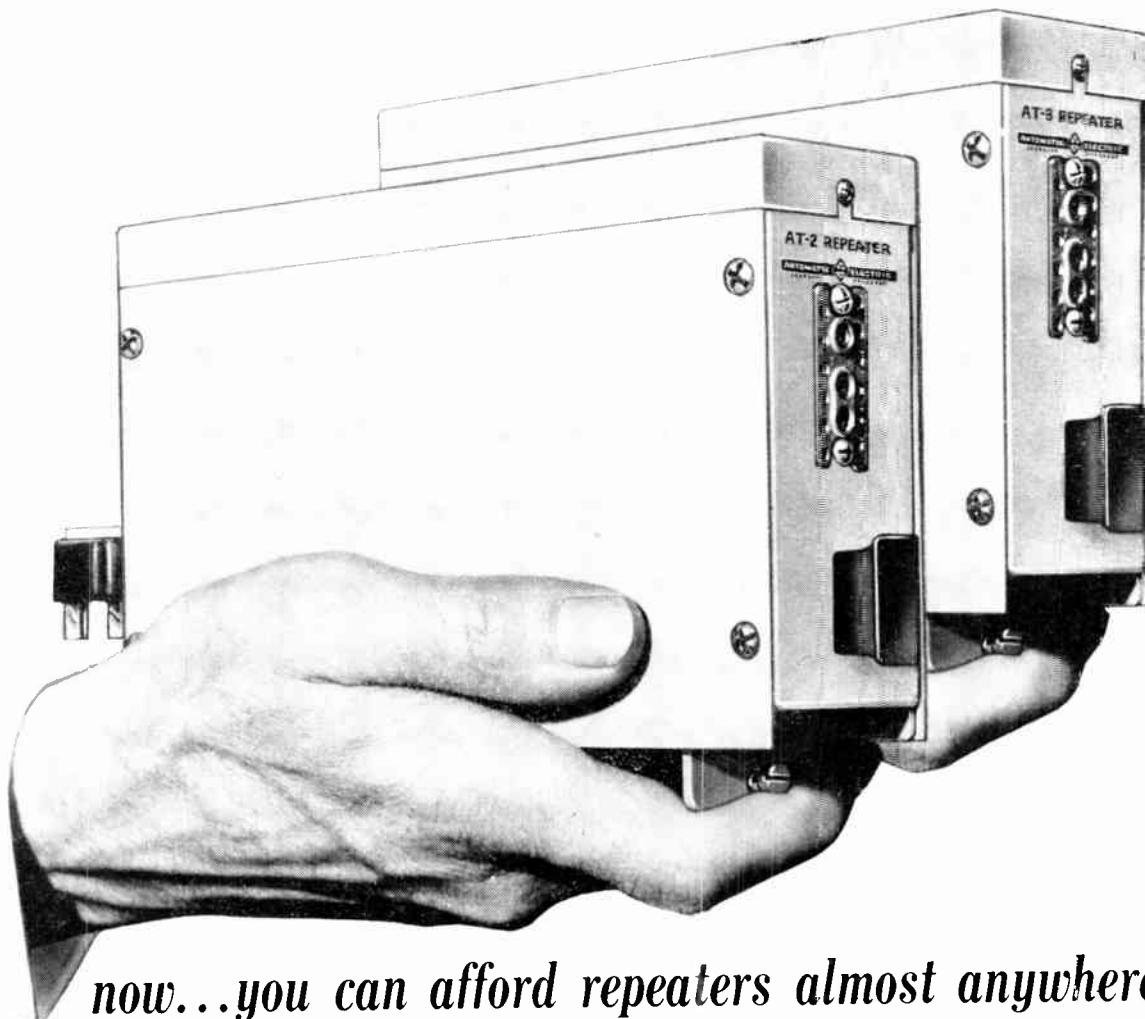
General Cement Mfg. Co.,
 Division of Textron, Inc.
 Insulation Manufacturers Corp.
 Electro Sonic Supply Co. Ltd.
 Mueller Electric Co.
 The Connecticut Hard Rubber Co.
 United States Rubber Co.
 Osborne Electric Co., Ltd.

INSULATORS (Thermocouple)

Aeromotive Engineering Products
 Saxonburg Ceramics

INTERCOMMUNICATION SYSTEMS

Coscor Canada Ltd.
 Hackbusch Electronics Ltd.
 J. B. Smyth Electronic Components
 Pye Canada Ltd.
 Telephone Manufacturing Co. Ltd.
 Audio-Vox
 Dominion Sound Equipments Ltd.
 Chisholm Industries Ltd.
 Ericsson Telephone Sales of Canada Ltd.
 Kellogg Switchboard & Supply Co.
 Talk-A-Phone Co.
 Sperry Gyroscope Ottawa Ltd.
 Southern Instruments Ltd.
 Oscillograph Division
 Dynamic Electronics — New York Inc.
 The Ahern & Soper Co. Ltd.
 Electro Sonic Supply Co. Ltd.
 N. H. Speight Laboratories
 Amalgamated Electric Corp. Ltd.
 Electrolabs
 Atlas Radio Corp. Ltd.
 Specialty Engineering & Electronics Co.
 Northern Electric Co. Ltd.
 Executone Communications Systems Ltd.
 Kay Lab
 Rogers Majestic Electronics Ltd.
 Collins Radio Co. of Canada Ltd.
 The Standard Electric Time Co.
 Humble Manufacturing Co. Ltd.
 Industrial & Institutional
 Communications Ltd.
 RCA Victor Co., Ltd.
 Webster Electric Co.
 Bruno-New York Industries Corp.
 Bell Sound Systems, Inc.
 S. H. Couch Co., Inc.
 TMC (Canada) Ltd.
 Pacific Communications Services Ltd.
 Bradford J. Wickett Ltd.
 Electro-Voc Intercom Inc.
 Standard Telephones & Cables Mfg. Co.
 (Canada) Ltd.
 Prince & Roberts
 Engineered Sound Systems Ltd.
 John R. Tilton Ltd.
 Electronic Communications Ltd.
 Avionics Limited
 Measurement Engineering Ltd.
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 Electronics Division



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Aviation Electric Ltd.
The Airpax Products Co.
Carter Motor Co.
Red Bank Division, Bendix
Aviation Corp.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
Helipot Corporation
American Electronics, Inc.
Bludworth Marine Division of
Kearfott Co., Inc.
Charles W. Pointon Ltd.
The English Electric Co. Ltd.
Sangamo Electric Co.
Terado Company
Perkins Electric Co., Ltd. —
Electronics Division
Sorenson & Co., Inc.
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Teleradio Engineering Corp.
- IRON (Soldering)**
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J. B. Smyth Electronic Components
Wolf Electric Tools Ltd.
Linde Air Products Co.
Astral Electric Co. Ltd.
Electro Sonic Supply Co. Ltd.
Renfrew Electric & Refrigerator Co. Ltd.
H. Roy Gray Co. Ltd.
Atlas Radio Corp. Ltd.
S & T Sales Ltd.
Automatic Electric Sales (Canada) Ltd.
Northern Electric Co. Ltd.
Hexacon Electric Co.
Kwikheat Manufacturing Co.
Leslie J. Lamb
Gulton Industries, Inc.
Insuline Corp. America, Subsidiary Van
Norman Industries Inc.
The Lenk Mfg. Co.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
E. S. Gould Sales Co.
Canadian Marconi Co. —
Electronic Tube & Components Div.
Perkins Electric Co., Ltd. —
Electronics Division
Associated Electronic Components
- ISOLATORS (TV Antenna)**
Javex
- ISOLATORS (Vibration & Shock)**
Aviation Electric Ltd.
T. R. Finn & Co., Inc.
Lord Manufacturing Co.
Vibration Isolation Products
- JACKS (Phone)**
Bud Radio Inc.
R. C. Kahnert Sales Ltd.
A. C. Simmonds & Sons Ltd.
Telephone Manufacturing Co. Ltd.
Burlec Sales Ltd.
Hackbusch Electronics Ltd.
Waldom Electronics Inc.
Herman H. Smith, Inc.
Switchcraft, Inc.
Telex, Inc.
Whitso, Inc.
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Division of Textron, Inc.
Dynamic Electronics — New York Inc.
Bayly Engineering Limited
Amphenol Canada Ltd.
Electro Sonic Supply Co. Ltd.
Astral Electric Co. Ltd.
Atlas Radio Corp. Ltd.
S & T Sales Ltd.
Automatic Electric Sales (Canada) Ltd.
Insuline Corp. America, Subsidiary Van
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Charles W. Pointon Ltd.
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The Standard Electric Time Co.
F. R. Mallory & Co. Inc.
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Radio Engineering Products Ltd.
Prince & Roberts
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(Canada) Ltd.
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Electronic Equipment & Tube Dept.
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White Radio Limited
Canadian Marconi Co. —
Electronic Tube & Components Div.
Perkins Electric Co., Ltd. —
Electronics Division
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- KEYS AND CODING EQUIPMENT**
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Bayly Engineering Ltd.
- Research Industries Ltd.
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- KINESCOPE (Recording Equipment)**
Television Utilities Corp.
- KNOBS & DIALS**
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Lake Engineering Co. Ltd.
Canadian Research Institute
Hathaway Kraemer Ltd.
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Herman H. Smith, Inc.
Waldom Electronics Inc.
Dale Products, Inc.
Whiteley Electrical Radio Co. Ltd.
E. F. Johnson Co.
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H. Roy Gray Co. Ltd.
Electro Sonic Supply Co. Ltd.
Pylon Electronic Development Co., Ltd.
J. R. Longstaffe Co. Ltd.
Hermann Fortier Inc.
Muirhead Instruments Ltd.
Radelin-Kirk Ltd.
Astral Electric Co. Ltd.
Atlas Radio Corp. Ltd.
S & T Sales Ltd.
Insuline Corp. America, Subsidiary Van
Norman Industries Inc.
Fischer & Porter (Canada) Ltd.
Pic Design Corp., Div. Benrus Watch Corp.
Muirhead & Co. Ltd.
Molding Corp. of America, Inc.
Raytheon Manufacturing Co.
Rogers Electronic Tubes & Components
Canadian Marconi Co.
Canadian Marconi Co. —
Electronic Tube & Components Div.
General Radio Co.
Waters Manufacturing Inc.
The Plessey Co. of Canada Ltd.
Erie Resistor Corp.
Kerr-Machin Associates
Pacific Transducer Corp.
- LABELS (Pressure-Sensitive)**
Avery Adhesive Label Corp.
- LAMPS (Indicating)**
Canadian Westinghouse Co. Ltd. —
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Hackbusch Electronics Ltd.
The H. R. Kirkland Co.
Circon Component Co.
Canadian Westinghouse Co. Ltd. —
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Atlas Radio Corp. Ltd.
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Hetherington, Inc.
E. G. Lomas Co.
National Carbon Co.
Prince & Roberts
Perkins Electric Co., Ltd. —
Electronics Division
The Plessey Co. of Canada Ltd.
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Canadian Westinghouse Co. Ltd. —
Apparatus Division
Burgess Battery Co.
Circon Component Co.
Oxford Electric Corp.
Electro Sonic Supply Co. Ltd.
Herman Fortier Inc.
Atlas Radio Corp. Ltd.
Northern Electric Co. Ltd.
Hetherington, Inc.
Rogers Electronic Tubes & Components
E. G. Lomas Co.
National Carbon Co.
The Plessey Co. of Canada Ltd.
Perkins Electric Co., Ltd. —
Electronics Division
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Canadian Research Institute
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Phaotron Instrument and Electronic Co.
Workman TV Inc.
JFD Manufacturing Co., Inc.
Electro Sonic Supply Co. Ltd.
MJS Electronic Sales Ltd.
Atlas Radio Corp. Ltd.
S & T Sales Ltd.
Insuline Corp. America, Subsidiary Van
Norman Industries Inc.
Charles W. Pointon Ltd.
Pomona Electronics Co., Inc.
Tenatronics Ltd.
Bach-Simpson Ltd.
Canadian Marconi Co. —
Electronic Tube & Components Div.
John R. Tilton Ltd.
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United States Radium Corp.
- LINES (Transmission)**
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Andrew Antenna Corp., Ltd.
The Wind Turbine Co. of Canada Ltd.
American Electronics Co.
JFD Manufacturing Co., Inc.
Channel Master Corp.
Electro Sonic Supply Co. Ltd.
Fretco Incorporated
F-R Machine Works, Inc.,
Electronics & X-Ray Div.
Budd Stanley Co. Inc.
E. G. Lomas Co.
TMC (Canada) Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
- LOADS (Water RF)**
Bayly Engineering Ltd.
Atlas Radio Corp. Ltd.
F-R Machine Works, Inc.,
Electronics & X-Ray Div.
E. G. Lomas Co.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
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Thompson-Bremer & Co.
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National Co., Inc.
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RCA Victor Co., Ltd.
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(Canada) Ltd.
Canadian Marconi Co.
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Measurement Engineering Ltd.
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Consolidated Electronic Equipment
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Burdny Canada Ltd.
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Walsco Electronics Corp.
Javex
Precision Metal Products Co.
U. S. Engineering Co., Inc.
Cleveland Container Co.
Cambridge Thermionic Corp.
Waldom Electronics Inc.
Circon Component Co.
JFD Manufacturing Co., Inc.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
S & T Sales Ltd.
Northern Electric Co. Ltd.
Belling & Lee Ltd.
Buchanan Electrical Products Corp.
Kulka Electric Mfg. Co. Inc.
Insuline Corp. America, Subsidiary Van
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The Standard Electric Time Co.
Radio Merchandise Sales, Inc.
Shakeproof, Div. of Illinois Tool Works
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E. G. Lomas Co.
Aircraft Marine Products Inc.
Perkins Electric Co., Ltd. —
Electronics Division
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Measurement Engineering Ltd.
Canadian Marconi Co. —
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Thermovolt Instruments Ltd.
Cosa Corp. of Canada Ltd.
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Ericsson Telephone Sales of Canada Ltd.
Fairchild Recording Equipment Co.
Rek-O-Kut Company
Atlas Radio Corp. Ltd.
Charles W. Pointon Ltd.

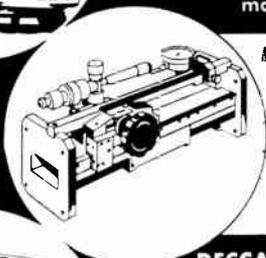
- Industrial & Institutional Communications Ltd.
Perkins Electric Co., Ltd. — Electronics Division
Canadian General Electric Co., Ltd. — Electronic Equipment & Tube Dept.
- MACHINES (Wire Stripping)**
Atlas Radio Corp. Ltd.
Electro Sonic Supply Co. Ltd.
Artos Engineering Co.
Northern Electric Co. Ltd.
Technical Devices Co.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
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Dalmo Victor Co., Div. of Textron Inc.
Sharpe Instruments Ltd.
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Canadian Research Institute
John Herring & Co. Ltd.
Whiteley Electrical Radio Co. Ltd.
Ferroxube Corp. of America
Stackpole Carbon Co.
Rogers Electronic Tubes & Components
Central Scientific Co. of Canada Ltd.
Osborne Electric Co., Ltd.
Associated Electronic Components
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General Electric Co.,
Metallurgical Products Dept.
- MAGNETS (Cast & Sintered)**
General Electric Co.,
Metallurgical Products Dept.
- MAGNETS (Laboratory Electromagnet)**
Canadian Research Institute
Bayly Engineering Ltd.
Central Scientific Co. of Canada Ltd.
Perkins Electric Co., Ltd. — Electronics Division
Varian Associates of Canada Ltd.
Osborne Electric Co., Ltd.
- MAGNETS (Permanent)**
General Electric Co.,
Metallurgical Products Dept.
- MASKS (Plastic)**
Panely Division, St. Regis Paper Co. (Canada) Ltd.
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Electro Sonic Supply Co. Ltd.
Hermann Fortier Inc.
- MEDICAL EQUIPMENT (Electronic)**
Wappler, Inc.
- MEGAPHONES (Electronic)**
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Cossor Canada Ltd.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
Burlac Sales Ltd.
Atlas Sound Corp.
Audio Equipment Co. Inc.
Executone Communication Systems Ltd.
Industrial & Institutional Communications Ltd.
University Loudspeakers, Inc.
RCA Victor Co., Ltd.
Perkins Electric Co., Ltd. — Electronics Division
Electronic Communications Ltd.
John R. Tilton Ltd.
Engineered Sound Systems Ltd.
- MEGOhmmeters**
Canadian Research Institute
R-O-R Associates Ltd.
John Herring & Co. Ltd.
The Ahearn & Soper Co. Ltd.
Phaostrotron Instrument and Electronic Co.
Pace Electrical Instruments Co., Inc.
Industrial Instruments Inc.
Electro Sonic Supply Co. Ltd.
Evershed & Vignoles Ltd.
Gulton Industries, Inc.
Southwestern Industrial Electronics Co. Inc.
Shallcross Manufacturing Co.
Bach-Simpson Ltd.
Perkins Electric Co., Ltd. — Electronics Division
Canadian Marconi Co.
General Radio Co.
Dawe Instruments Ltd. (Canadian Div.)
Measurement Engineering Ltd.
- METAL GRILLES**
Dominion Sound Equipments Ltd.
Croname, Canada, Ltd.
General Cement Mfg. Co.,
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Walsco Electronics Corp.
Vidale Electronics Corp.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
Insuline Corp. America, Subsidiary Van Norman Industries Inc.
Tenatronics Limited
Dominion Aluminum Fabricating Ltd.
Perkins Electric Co., Ltd. — Electronics Division
Engineered Sound Systems Ltd.
Desser E-E Limited
- METAL LOCATORS (Underwater)**
Bludworth Marine Division of
Kearfoot Co., Inc.
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St. Johns Metal Stamping Co. Ltd.
El-Met-Parts Ltd.
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Bennett & Collins Ltd. Mfg. Div.
H. B. Etlin Co. Ltd.
United-Carr Fastener Co. of Canada Ltd.
McCarte Radio & Television Ltd.
Cambridge Thermionic Corp.
The Staver Co., Inc.
U M & F Manufacturing Corp.
Renfrew Electric & Refrigerators Co. Ltd.
Electro Sonic Supply Co. Ltd.
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Insuline Corp. America, Subsidiary Van Norman Industries Inc.
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Fretco Incorporated
The Solartron Electronic Group Ltd.
Humble Manufacturing Co. Ltd.
Tenatronics Limited
Dominion Aluminum Fabricating Ltd.
Thermovolt Instruments Ltd.
Waterloo Metal Stampings Ltd.
Perkins Electric Co., Ltd. — Electronics Division
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Osborne Electric Co., Ltd.
The Plessey Co. of Canada Ltd.
United Shoe Machinery Co. of Can., Ltd.
Beaconing Optical & Precision Materials Co. Ltd.
Permonite Mfg. Co.
National Tel-Tronics Corp.
- METAL PARTS (Tantalum, Tungsten, Molybdenum)**
J. B. Smyth Electronic Components
Fansteel Metallurgical Corporation
The Staver Co., Inc.
The Plessey Co. of Canada Ltd.
- METALS (Alloyed)**
Federated Metals Canada Ltd.
Federated Metals Division,
American Smelting and Refining Co.
Johnson Matthey & Mallory Ltd.
The International Nickel Co. of Canada Ltd.
Hoskins Alloys of Canada, Ltd.
- METALLIC PAINTS**
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Division of Textron, Inc.
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Minneapolis-Honeywell Regulator Co. Ltd.,
Borwn Instrument Division
Electrodesign
Gertsch Products, Inc.
The Ahearn & Soper Co. Ltd.
Phaostrotron Instrument and Electronic Co.
Atlas Radio Corp. Ltd.
New London Instrument Co., Inc.
Bach-Simpson Ltd.
Measurement Engineering Ltd.
Barber-Colman of Canada Ltd.
(Wheelco Inst. Div.)
Adams Engineering Ltd.
Canadian General Electric Co., Ltd. — Electronic Equipment & Tube Dept.
Canadian Marconi Co.
General Radio Co.
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Electrodesign
Phaostrotron Instrument and Electronic Co.
The Ahearn & Soper Co. Ltd.
Morrow Radio Mfg. Co.
Atlas Radio Corp. Ltd.
Electro Sonic Supply Co. Ltd.
H. Roy Gray Co. Ltd.
Blonder-Tongue Laboratories, Inc.
Airmec Limited
The Hickok Electrical Instrument Co.
Rogers Majestic Electronics Ltd.
Bach-Simpson Ltd.
Canadian Marconi Co.
Canadian General Electric Co., Ltd. — Electronic Equipment & Tube Dept.
Measurement Engineering Ltd.
Empire Devices Products Corp.
Teletipmfg. Mfg. Co. Ltd.
- METERS (Frequency)**
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R-O-R Associates Ltd.
Electrodesign
Computing Devices of Canada Ltd.
Northern Radio Mfg. Co. Ltd.
Powerlite Devices Ltd.
DeMornay-Bonardi Corp.
The Narda Corporation
Gertsch Products, Inc.
The Airpax Products Co.
Heath Company
The Ahearn & Soper Co. Ltd.
MJS Electronic Sales Ltd.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
Helipot Corporation
Airmec Limited
Rex Bassett, Inc.
Berkeley Div. of Beckman Instruments, Inc.
- Northern Electric Co. Ltd.
The Hickok Electrical Instrument Co.
Frequency Standards Inc.
Dawe Instruments Ltd.
The English Electric Co. Ltd.
Elliott Brothers (London) Ltd.
F-R Machine Works, Inc.,
Electronics & X-Ray Div.
Stancil-Hoffman Corp.
Lavole Laboratories, Inc.
Radio Frequency Laboratories, Inc.
Millivac Instrument Corp.
Bruno-New York Industries Corp.
TMC (Canada) Ltd.
The J. W. Ellis Industries
Bach-Simpson Ltd.
Perkins Electric Co., Ltd. — Electronics Division
Stark Electronic Instruments Ltd.
BJ Electronics, Borg-Warner Corp.
Computer-Measurements Corp.
Dawe Instruments Ltd. (Canadian Div.)
The Plessey Co. of Canada Ltd.
Measurement Engineering Ltd.
Canadian General Electric Co., Ltd. — Electronic Equipment & Tube Dept.
Canadian Marconi Co.
General Radio Co.
The British Thomson-Houston Co. (Canada) Ltd.
- METERS (Frequency-Electronic)**
Northern Radio Co., Inc.
- METERS (Intermodulation)**
Alex L. Clark Ltd.
Audio Instrument Co. Inc.
- METERS (Panel-Type for Radio Equipment)**
R. C. Kahnert Sales Ltd.
Canadian Research Institute
R-O-R Associates Ltd.
John Herring & Co. Ltd.
R. H. Nichols Ltd.
Powerlite Devices Ltd.
Pace Electrical Instruments Co., Inc.
Phaostrotron Instrument and Electronic Co.
The Ahearn & Soper Co. Ltd.
Canadian Westinghouse Co. Ltd. — Electronics Division
Hoyt Electrical Instrument Works, Inc.
Atlas Radio Corp. Ltd.
Electro Sonic Supply Co. Ltd.
MJS Electronic Sales Ltd.
S & T Sales Ltd.
The Hickok Electrical Instrument Co.
Gulton Industries, Inc.
Millivac Instrument Corp.
Waters Manufacturing, Inc.
The Triplett Electrical Instrument Co.
Sterling Manufacturing Co.
DeJur-Amsco Corp.
The J. W. Ellis Industries
Canadian General Electric Co., Ltd. — Electronic Equipment & Tube Dept.
Bach-Simpson Ltd.
Stark Electronic Instruments Ltd.
Perkins Electric Co., Ltd. — Electronics Division
Associated Electronic Components
- METERS (Phase Monitors)**
Pye Canada Ltd.
Computing Devices of Canada Ltd.
Gertsch Products, Inc.
Andrew Antenna Corp., Ltd.
Atlas Radio Corp. Ltd.
Airmec Limited
The Eastern Specialty Co.
The Solartron Electronic Group Ltd.
Canadian General Electric Co., Ltd. — Electronic Equipment & Tube Dept.
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Industrial Test Equipment Co.
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National Fibre Co. of Canada, Ltd.
Insulation Manufacturers Corp.
Electrovert Ltd.
William Brand & Co., Inc.
H. Clarke & Co. (Manchester) Ltd.
- MICROMETERS (Electronic)**
Electronic Associates Ltd.
Electrodesign
R-O-R Associates Ltd.
Detectolab, Inc.
Electro Products Laboratories
Canadian Westinghouse Co. Ltd. — Electronics Div.
Atlas Radio Corp. Ltd.
Baldwin Instrument Co. Ltd.
Kay Lab
Beta Electric Corp.
Bach-Simpson Ltd.
Standard Electronic Research Corp.
Barber-Colman of Canada Ltd. — (Wheelco Inst. Div.)
- MICROPHONE CARTRIDGES**
R. C. Kahnert Sales Ltd.
Canadian Astatic Ltd.
Hackbusch Electronics Ltd.
A. C. Simmonds & Sons Ltd.
J. B. Smyth Electronic Components
Dominion Sound Equipments Ltd.
Roanwell Corp.
The Ahearn & Soper Co. Ltd.
The Turner Co.
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DECCA RADAR AND DECCA NAVIGATOR UNSURPASSED FOR SAFETY AND ACCURACY *on land, sea and in the air!*



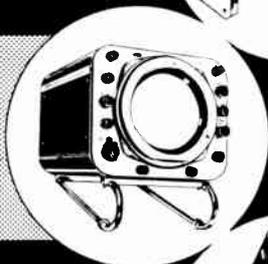
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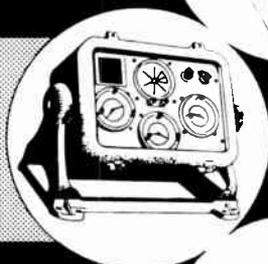
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In the past 6 years Decca Marine Radar has been installed aboard over 5000 vessels of the worlds Navies and Mercantile Fleets. This fact itself testifies to the performance and reliability of Decca Radar which leads the world in advanced design.



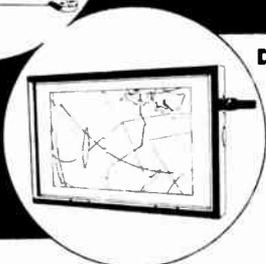
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RCA Victor Company, Ltd.
Industrial & Institutional
Communications Ltd.
Shure Brothers, Inc.
TMC (Canada) Ltd.
Electro-Vox Intercom Inc.
Standard Telephones & Cables Mfg. Co.
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Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Engineered Sound Systems Ltd.
Canadian Marconi Company —
Electronic Tube & Components Div.

MICROPHONE STANDS

R. C. Kahnert Sales Ltd.
McCurdy Radio Industries Ltd.
Canadian Astatic Ltd.
Hackbusch Electronics Ltd.
A. C. Simmonds & Sons Ltd.
Dominion Sound Equipments Ltd.
Alex L. Clark Ltd.
EV of Canada Ltd.
Altec Lansing Corp.
The Ahearn & Soper Co. Ltd.
The Turner Co.
Elgin National Watch Co., Electronics Div.
Electro Sonic Supply Co. Ltd.
H. Roy Gray Co. Ltd.
Atlas Radio Corp. Ltd.
Atlas Sound Corp.
S & T Sales Ltd.
Executone Communication Systems Ltd.
Northern Electric Co. Ltd.
Rogers Majestic Electronics Ltd.
Racon Electric Co. Inc.
Shure Brothers, Inc.
Industrial & Institutional
Communications Ltd.
RCA Victor Company, Ltd.
Electro-Vox Intercom Inc.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Canadian Marconi Company —
Electronic Tube & Components Div.
John R. Tilton Ltd.
Desser E-E Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Perkins Electric Co., Ltd. —
Electronics Div.

MICROPHONES

R. C. Kahnert Sales Ltd.
McCurdy Radio Industries Ltd.
Canadian Astatic Ltd.
Astral Electric Co. Ltd.
Hackbusch Electronics Ltd.
A. C. Simmonds & Sons Ltd.
J. B. Smyth Electronic Components
Dominion Sound Equipments Ltd.
Electrovert Ltd.
Alex L. Clark Ltd.
Telex, Inc.
Roanwell Corp.
Elgin National Watch Co., Electronics Div.
The Turner Co.
Morrow Radio Mfg. Co.
The Ahearn & Soper Co. Ltd.
Kellogg Switchboard & Supply Co.
Altec Lansing Corp.
EV of Canada Ltd.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
H. Roy Gray Co. Ltd.
S & T Sales Ltd.
Audio Instrument Co. Inc.
Northern Electric Co. Ltd.
Executone Communication Systems Ltd.
The Glendon Company Ltd.
Gulton Industries, Inc.
Allen B. DuMont Labs., Inc.
Rogers Majestic Electronics Ltd.
RCA Victor Company, Ltd.
Industrial & Institutional Comm. Ltd.
Shure Brothers, Inc.
TMC (Canada) Ltd.
Electro-Vox Intercom Inc.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Canadian Marconi Company —
Canadian Marconi Company —
Electronic Tube & Components Div.
Perkins Electric Co., Ltd. —
Electronics Div.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Desser E-E Ltd.
Engineered Sound Systems Ltd.
John R. Tilton Ltd.

MICROWAVE TRANSMISSION LINES

Philco Corp. of Canada Ltd.
Computing Devices of Canada Ltd.
Sinclair Radio Labs. Ltd.
Airtron, Inc.
Andrew Antenna Corp., Ltd.
Technicraft Laboratories, Inc.
The Narda Corp.
DeMornay-Bonardi Corp.
Canadian Westinghouse Co. Ltd. —
Electronics Div.
Chemalloy Electronics Corp.

Atlas Radio Corp. Ltd.
Bayly Engineering Ltd.
F-R Machine Works, Inc. —
Electronics & X-Ray Div.
Defiance Engineering & Microwave Corp.
RCA Victor Company, Ltd.
Budd Stanley Co. Inc.
Prodelin, Inc.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
John R. Tilton Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Adams Engineering Ltd.
Beaconing Optical & Precision Materials
Co. Ltd.
Avionics Ltd.

MODULATORS

Mechron Engineering Products Ltd.
Hackbusch Electronics Ltd.
Sierra Electronic Corp.
Atlas Radio Corp. Ltd.
S & T Sales Ltd.
F-R Machine Works, Inc. —
Electronics & X-Ray Div.
Kay Lab
Tornico Electronics, Inc.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
The Plessey Co. of Canada Ltd.
BJ Electronics, Borg-Warner Corp.
Radionics Ltd.

MOULATORS (Analog Multiplier)

George A. Philbrick Researches, Inc.

MODULATORS (Electro-Optic Light)

Baird Associates—Atomic Instrument Co.

MOOULES

Aerovox Canada Ltd.

MONITOR (FS)

Northern Radio Company, Inc.

MONITORS (AM, FM)

New London Instrument Company, Inc.

MOTORS (Fractional H.P.)

M. J. Howard
R-O-R Associates Ltd.
Alliance Motors
Aeromotive Engineering Products
John Herring & Co. Ltd.
Minneapolis-Honeywell Regulator Co. Ltd.
— Brown Instrument Div.
R. H. Nichol Ltd.
Canadian Westinghouse Co. Ltd. —
Apparatus Div.
Canadian Westinghouse Co. Ltd. —
Electronics Div.
Atlas Radio Corp. Ltd.
Electro Sonic Supply Co. Ltd.
Burlec Sales Ltd.
Northern Electric Co. Ltd.
American Electronics, Inc.
Barber-Colman Company
The Robbins & Myers Co. of Canada Ltd.
The George W. Borg Corp.,
— Borg Equipment Div.
The English Electric Co. Ltd.
Evershed & Vignoles Ltd.
Doelcam Div. of Minneapolis-Honeywell
Hoover Electronics Co.
Eastern Air Devices, Inc.
The General Industries Co.
Stancil-Hoffman Corp.
Universal Electric Co.
John Oster Mfg. Co.
Robbins & Myers, Inc.
Rotron Mfg. Co.
Redmond Company, Inc.
The Plessey Co. of Canada Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
The British Thomson-Houston Co.
(Canada) Ltd.

MOTORS (Miniature)

M. J. Howard
R-O-R Associates Ltd.
Industrial Electronics of Canada Ltd.
Davis Automatic Controls Ltd.
Alliance Motors
Burlec Sales Ltd.
Aeromotive Engineering Products
John Herring & Co. Ltd.
Minneapolis-Honeywell Regulator Co. Ltd.
— Brown Instrument Div.
Leonard Electric Ltd.
Helipot Corp.
The A. W. Haydon Co.
Atlas Radio Corp. Ltd.
Electro Sonic Supply Co. Ltd.
Hermann Fortier Inc.
Dominion Electrohome Industries Ltd.
Cramer Controls Corp.
Barber-Colman Company
American Electronics, Inc.
Eastern Air Devices, Inc.
Hoover Electronics Company
Rotron Mfg. Company
John Oster Mfg. Co.
Universal Electric Co.
Measurement Engineering Ltd.
The Plessey Co. of Canada Ltd.

MOUNTINGS

El-Met-Parts Ltd.
Premax Products
Division Chisholm-Ryder Co.
National Electric Products Corp.

Electro Sonic Supply Co. Ltd.
T. R. Flinn & Company, Inc.
Hallam, Sleigh & Cheston Ltd.
Vibration Isolation Products
Lord Mfg. Co.
Robinson Aviation, Inc.
Dominion Aluminum Fabricating Ltd.
National Tel-Tronics Corp.

MOUNTINGS (Telescopic)

Hallam, Sleigh & Cheston Ltd.

MULTIPLEX SYSTEMS

Northern Radio Company, Inc.

MULTIPLIERS (Electronic Analog)

George A. Philbrick Researches, Inc.

MULTIPLIERS (Voltmeter)

R-O-R Associates Ltd.
Canadian Research Institute
John Herring & Co. Ltd.
Powerlite Devices Ltd.
Electronic Instrument Co. Inc.
Phaostroon Instrument and Electronic Co.
Specialty Engineering & Electronics Co.
Kay Electric Co.
Canadian Westinghouse Co. Ltd. —
Electronics Division
Atlas Radio Corp. Ltd.
Electro Sonic Supply Co. Ltd.
Fylon Electronic Development Co., Ltd.
Bayly Engineering Ltd.
The English Electric Co. Ltd.
Shallcross Manufacturing Co.
International Resistance Co.
Bach-Simpson Ltd.
Canadian Marconi Co.
Measurement Engineering Ltd.

NAME PLATES (Plastic, Metal, Transfer)

M. J. Howard
Beechey Enterprises
Consolidated Electronic Equipment
Co. Ltd.
X-Ray & Radium Industries Ltd.
Canada Decalcomania Co. Ltd.
Croname, Canada, Ltd.
National Fibre Co. of Canada, Ltd.
Burlec Sales Ltd.
Canadian Research Institute
Hathaway Kraemer Ltd.
The Acromark Co.
Waldom Electronics Inc.
W. H. Brady Co.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
Radelin-Kirk Limited
Bakelite Co., Div. Union Carbide Can. Ltd.
Insuline Corp. America, Subsidiary Van
Norman Industries Inc.
North Shore Nameplate Inc.
Fischer & Porter (Canada) Ltd.
United States Radium Corp.
Avionics Limited
Erie Resistor Corp.
Desser E-E Limited

NAVIGATION EQUIPMENT

Canadian Aviation Electronics Ltd.
Cossor Canada Ltd.
Pye Canada Ltd.
Burlec Sales Ltd.
Minneapolis-Honeywell Regulator Co. Ltd.,
— Aeronautical Division
Aviation Electric Ltd.
National Aeronautical Corp.
Canadian Westinghouse Co. Ltd. —
Electronics Division
Bendix Aviation Corp.,
— Eclipse-Pioneer Division
PSC Applied Research Ltd.
Kearfott Co., Inc.,
— Bludworth Marine Div.
Minneapolis-Honeywell Regulator Co. Ltd.,
— Brown Instrument Division
Elliott Brothers (London) Ltd.
Erco Radio Labs, Inc.
Fisher Research Laboratory, Inc.
Lavole Laboratories, Inc.
Sanders Associates, Inc.
Radio Receptor Co., Inc.
Redifon (Canada) Ltd.
Collins Radio Co. of Canada Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Decca Navigator (Canada) Ltd.
Decca Radar (Canada) Ltd.
Beaconing Optical & Precision
Materials Co. Ltd.
Measurement Engineering Ltd.
Canadian Marconi Co.
The British Thomson-Houston Co.
(Canada) Ltd.

NETWORKS (Pulse Forming)

Mechron Engineering Products Ltd.
Canadian Aviation Electronics Ltd.
John Herring & Co. Ltd.
Sprague Electric International Ltd.
Tobe Deutschmann Corp.
Chemical & Dielectric Division,
— Aircraft-Marine Products Inc.
Dubilier Condenser Co. (1925) Ltd.
Filtron Company, Inc.
Lavole Laboratories, Inc.
Micamold Electronics Mfg. Corp.
Shallcross Manufacturing Co.
Raytheon Manufacturing Co.

OOPS!

SIGHTS of rockets swooshing heavenward become more and more familiar as we thumb through today's industrial publications. The recalcitrant rocket shown on this page indicates that things *can* go wrong in research, and we don't claim that the absence of a Sanborn oscillographic recording system somewhere along the line was the reason for this disappointing trajectory.

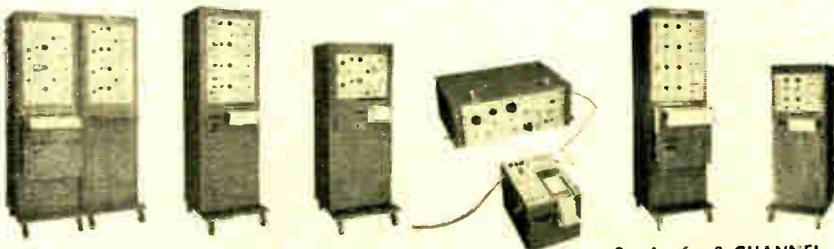
What we do wish to say is that Sanborn equipment is playing an increasingly vital part in rocket development. Used in the laboratory to record flight behavior simulated by analog computers, and in plotting rooms at testing bases to tape down telemetered data, Sanborn "150's" are helping rockets to get and stay where they belong.

You can see Sanborn systems in many other places, too. Oil fields, electronic component production lines, machine tool plants, hydraulic testing laboratories, numerous aircraft manufacturers, computing facilities... are putting single to 8-channel Sanborn systems to work. (Most are housed in vertical mobile cabinets, while those in the "field" are often divided into portable packages for each instrument.) All of them give their users inkless, permanent recordings in true rectangular coordinates, one percent linearity, as many as nine chart speeds, and the efficiency (and economy) inherent in Sanborn unitized design. A dozen different plug-in preamps further extend their value, by making change-over to new recording inputs a quick and easy procedure.



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CAMBRIDGE 39, MASSACHUSETTS



8-, 6-CHANNEL 4-CHANNEL 2-CHANNEL 1-CHANNEL 2-, 4-, 6-, 8-CHANNEL ANALOG COMPUTER SYSTEMS

Canadian Representative: ROR ASSOCIATES, 290 Lawrence Avenue West, Toronto 12, Ontario

Which way rockets are going may not be a primary concern of yours.

But if recording problems are, you're apt to find some interesting and useful answers in Sanborn's 16 page "150 System" catalog.

Write to us for a copy.

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Atlas Radio Corp. Ltd.
H. Roy Gray Co. Ltd.
Shakeproof, Div. of Illinois Tool Works
Standard Pressed Steel Co.
Desser E-E Limited
National Co., Inc.
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Dynamic Electronics — New York Inc.
The Ahearn & Soper Co. Ltd.
MJS Electronic Sales Ltd.
Pylon Electronic Development Co. Ltd.
Rogers Majestic Electronics Ltd.
Southwestern Industrial Electronics
Co., Inc.
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(Canada) Ltd.
Canadian Marconi Co.
- OSCILLATORS (Cavity)**
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R-O-R Associates Ltd.
Sinclair Radio Labs. Ltd.
Canadian Westinghouse Co. Ltd. —
Electronics Division
Woodwelding, Incorporated
The Ahearn & Soper Co. Ltd.
Sierra Electronic Corp.
Specialty Engineering & Electronics Co.
Atlas Radio Corp. Ltd.
Continental Electronics Mfg. Co.
F.R. Machine Works, Inc.,
Electronics & X-Ray Div.
Frequency Standards Inc.
Rogers Majestic Electronics Ltd.
New London Instrument Co., Inc.
Microwave Associates, Inc.
Measurement Engineering Ltd.
The Plessey Co. of Canada Ltd.
BJ Electronics, Borg-Warner Corp.
- OSCILLATORS (Controlled)**
Electromechanical Products
Computing Devices of Canada Ltd.
Electrodesign
Canadian Westinghouse Co. Ltd. —
Electronics Division
The James Knights Co.
Kay Electric Co.
Atlas Radio Corp. Ltd.
Specialty Engineering & Electronics Co.
Continental Electronics Mfg. Co.
The Hickok Electrical Instrument Co.
The Solartron Electronic Group Ltd.
TMC (Canada) Ltd.
Collins Radio Co. of Canada Ltd.
- OSCILLATORS (Decade)**
The Solartron Electronic Group Ltd.
- OSCILLATORS (Microwave)**
Polarad Electronics Corp.
- OSCILLATORS (Multiphase)**
The Solartron Electronic Group Ltd.
- OSCILLATORS (Radio Frequency)**
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Mechron Engineering Products Ltd.
R. C. Kahnert Sales Ltd.
Lake Engineering Co. Ltd.
Computing Devices of Canada Ltd.
Electrodesign
R. H. Nichols Ltd.
Cossor Canada Ltd.
Kay Electric Co.
Electronic Instrument Co. Inc.
Heath Company
Jackson Electrical Instrument Co.
The James Knights Co.
Induction Heating Corp.
Boonton Radio Corp.
E. F. Johnson Co.
Pace Electrical Instruments Co., Inc.
Woodwelding, Incorporated
The Ahearn & Soper Co. Ltd.
Canadian Westinghouse Co. Ltd. —
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MJS Electronic Sales Ltd.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
Continental Electronics Mfg. Co.
Berkeley Div. of Beckman Instruments, Inc.
Airmec Limited
F-R Machine Works, Inc.,
Electronics & X-Ray Inc.
Erco Radio Labs, Inc.
The Hickok Electrical Instrument Co.
Rogers Majestic Electronics Ltd.
New London Instrument Co., Inc.
Bruno-New York Industries Corp.
Rollan Electric Co.
Northern Radio Co., Inc.
Radio Frequency Laboratories, Inc.
Teleradio Engineering Corp.
TMC (Canada) Ltd.
Donner Scientific Co.
Collins Radio Co. of Canada Ltd.
Bach-Simpson Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
- Canadian Marconi Co.
Perkins Electric Co., Ltd. —
Electronics Division
Canadian General Electric Co. Ltd. —
Electronic Equipment & Tube Dept.
General Radio Co.
Measurement Engineering Ltd.
BJ Electronics, Borg-Warner Corp.
Engineered Electronics Co.
- OSCILLATORS (Ultrasonic)**
Electromechanical Products
Lake Engineering Co. Ltd.
Computing Devices of Canada Ltd.
Electrodesign
Canadian Research Institute
Cossor Canada Ltd.
Induction Heating Corp.
Acoustica Associates, Inc.
Krohn-Hite Instrument Co.
Kay Electric Co.
Atlas Radio Corp. Ltd.
Dominion Electrohome Industries Ltd.
Branson Instruments, Inc.
Continental Electronics Mfg. Co.
Allen B. DuMont Labs, Inc.
Rogers Majestic Electronics Ltd.
Waveforms, Inc.
Southwestern Industrial
Electronics Co. Inc.
Donner Scientific Co.
General Radio Co.
Perkins Electric Co., Ltd. —
Electronics Division
Electronic Controls Ltd.
- OSCILLOGRAPHS (Direct Writing)**
Electromechanical Products
Mechron Engineering Products Ltd.
Lake Engineering Co. Ltd.
Electrodesign
R. H. Nichols Ltd.
X-Ray & Radium Industries Ltd.
Cossor Canada Ltd.
R-O-R Associates Ltd.
Southern Instruments Ltd. —
Oscillograph Division
Atlas Radio Corp. Ltd.
Consolidated Electrodynamics Corp.
Rogers Majestic Electronics Ltd.
Brush Electronics Co., Div. of Clevite Corp.
A. C. Wickman Ltd.
Radionics Limited
Measurement Engineering Ltd.
- OSCILLOGRAPHS (Recording)**
Electromechanical Products
Lake Engineering Co. Ltd.
Electrodesign
R. H. Nichols Ltd.
X-Ray & Radium Industries Ltd.
Canadian Research Institute
Cossor Canada Ltd.
R-O-R Associates Ltd.
The Ahearn & Soper Co. Ltd.
Southern Instruments Ltd. —
Oscillograph Division
Atlas Radio Corp. Ltd.
Consolidated Electrodynamics Corp.
Rogers Majestic Electronics Ltd.
Southwestern Industrial
Electronics Co. Inc.
Measurement Engineering Ltd.
Radionics Limited
Brush Electronics Co.,
Division of Clevite Corp.
A. C. Wickman Ltd.
Perkins Electric Co., Ltd. —
Electronics Division
- OSCILLOSCOPES (Cathode Ray)**
Electromechanical Products
Northern Radio Mfg. Co. Ltd.
Computing Devices of Canada Ltd.
Electrodesign
Astral Electric Co. Ltd.
Hackbusch Electronics Ltd.
Cossor Canada Ltd.
Canadian Aviation Electronics Ltd.
Alex L. Clark Ltd.
Powerlite Devices Ltd.
Specialty Engineering & Electronics Co.
Southern Instruments Ltd. —
Oscillograph Division
James Millen Manufacturing Co., Inc.
Laboratory for Electronics, Inc.
Electronic Instrument Co. Inc.
Heath Company
Jackson Electrical Instrument Co.
Pace Electrical Instruments Co., Inc.
The Ahearn & Soper Co. Ltd.
Atlas Radio Corp. Ltd.
Bayly Engineering Ltd.
Electro Sonic Supply Co. Ltd.
MJS Electronic Sales Ltd.
Airmec Limited
American Electronic Laboratories, Inc.
Allen B. DuMont Labs, Inc.
The Hickok Electrical Instrument Co.
Electronic Tube Corp.
Trad Electronics Corp.
Rogers Majestic Electronics Ltd.
Southwestern Industrial
Electronics Co. Inc.
Lavoie Laboratories, Inc.
Canadian General Electric Co. Ltd. —
Electronic Tube Division
Precise Development Corp.
- The Triplett Electrical Instrument Co.
RCA Victor Co., Ltd.
The Solartron Electric Group Ltd.
Central Scientific Co. of Canada Ltd.
Bach-Simpson Ltd.
Perkins Electric Co., Ltd. —
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Measurement Engineering Ltd.
Engineered Sound Systems Ltd.
Canadian Marconi Co. —
Electronic Tube & Components Div.
Stark Electronic Instruments Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Crosby Laboratories, Inc.
- Ovens**
Computing Devices of Canada Ltd.
Canadian Research Institute
Cossor Canada Ltd.
Aeromotive Engineering Products
Canadian Westinghouse Co. Ltd. —
Electronics Division
The James Knights Co.
Fostoria Pressed Steel Corp.
Renfrew Electric & Refrigerator Co. Ltd.
Magnetic Amplifiers, Inc.
Teletronics Laboratory, Inc.
Labline, Inc.
Central Scientific Co. of Canada Ltd.
Thermovolt Instruments Ltd.
W. Gray Wright Electronics of Can. Ltd.
BJ Electronics, Borg-Warner Corp.
- Ovens (Crystal)**
Lake Engineering Co. Ltd.
Lavoie Laboratories, Inc.
- PACKAGING MATERIALS**
Minnesota Mining & Mfg. of Canada Ltd.
General Cement Mfg. Co.,
Division of Textron, Inc.
Pylon Electronic Development Co., Ltd.
Gomar Manufacturing Co., Inc.
Shamban Engineering Co.
Dow Chemical of Canada, Ltd.
- PADDERS**
Dynamic Electronics — New York Inc.
E. F. Johnson Co.
Electro Sonic Supply Co. Ltd.
Pylon Electronic Development Co., Ltd.
Teleradio Engineering Corp.
J. W. Miller Co.
Tenatronics Limited
White Radio Limited
Associated Electronic Components
Measurement Engineering Ltd.
- PANELS**
Bud Radio Inc.
Industrial Electronics of Canada Ltd.
Croname, Canada, Ltd.
Minneapolis-Honeywell Regulator Co. Ltd.,
Brown Instrument Division
Canadian Research Institute
UM & F Manufacturing Corp.
Waldom Electronics Inc.
The Acromark Company
Dynamic Electronics — New York Inc.
Electro Sonic Supply Co. Ltd.
Renfrew Electric & Refrigerator Co. Ltd.
Atlas Radio Corp. Ltd.
Radelin-Kirk Limited
Panelyte Division, St. Regis Paper
Company (Canada) Ltd.
Northern Electric Co. Ltd.
Automatic Switch Co.
Heldor Manufacturing Corp.
The Standard Electric Time Co.
Tenatronics Limited
TMC (Canada) Ltd.
United States Radium Corp.
Dominion Aluminum Fabricating Ltd.
Perkins Electric Co., Ltd. —
Electronics Division
Peacock Brothers Ltd.
Measurement Engineering Ltd.
- PANELS (Fiber, laminated plastic)**
National Fibre Co. of Canada, Ltd.
- PANELS (Patch)**
Andrew Antenna Corp., Ltd.
- PHONO AND RECORDER DRIVES**
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- PHOSPHORS (TV & Cathode Ray Tube)**
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Hackbusch Electronics Ltd.
Elgin National Watch Co., Electronics Div.
Envenco Corporation
Erie Resistor Corp.
EV of Canada Ltd.
Hermann Fortier Inc.
Atlas Radio Corp. Ltd.
Electro Sonic Supply Co. Ltd.
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Telephone 1-Metro 6-6531

December 10, 1956.

To my Friends
The Broadcasting and
Electronics Industry:

I wish to announce my association with
McCurdy Radio Industries Limited where I have taken
a position as Sales Engineer. I now become one of
the members of Mike Stechly's Sales Engineering
Group where I will specialize in the handling of
electro-mechanical products.

I am particularly pleased to announce that
this Company is taking the responsibility of servicing
all Micro-lab products regardless of the type or date
of manufacture. We are also producing a 16" turntable
of the type which is shown in the advertisement accom-
panied with this letter. McCurdy Radio Industries
Limited has supplied this particular turntable to the
broadcast market for the past ten years and they are
now in the process of expanding their facilities to
take care of all phases of the turntable business on
a nation-wide basis.

Yours truly,

MCCURDY RADIO INDUSTRIES LIMITED

Donald G. Kartzmark
Donald G. Kartzmark.

DGK/ph



T-16 TURNTABLE



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REPRODUCER**

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McCurdy radio industries limited

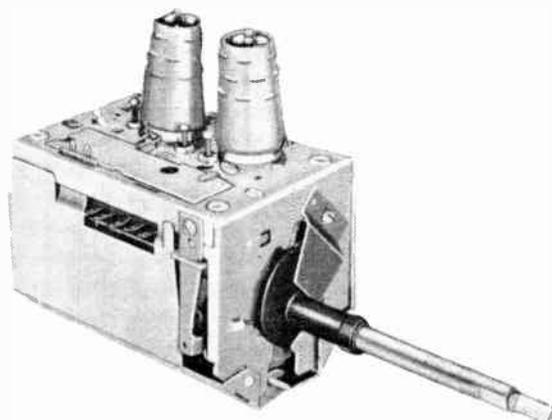
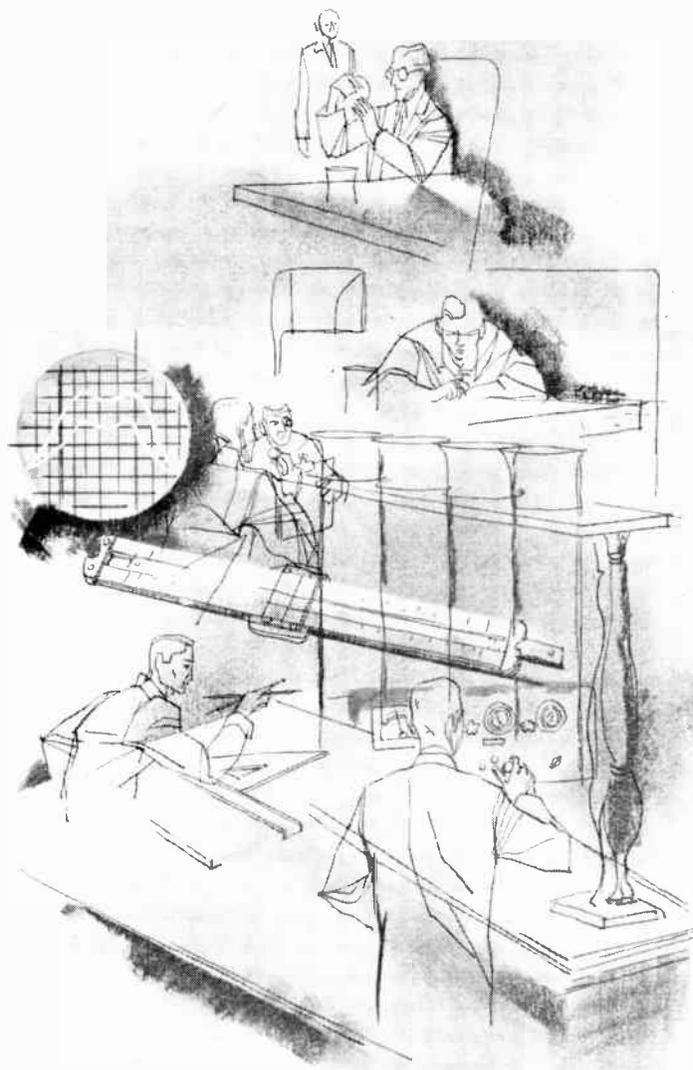
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- The Plessey Co. of Canada Ltd.
Engineered Sound Systems Ltd.
- PICKUPS (Magnetic)**
Dominion Sound Equipments Ltd.
J. B. Smyth Electronic Components
Electrodesign
Hackbusch Electronics Ltd.
Electro Products Laboratories
Potter Instrument Co., Inc.
Ferroxcube Corp. of America
Fairchild Recording Equipment Co.
Southern Instruments Ltd. —
Oscillograph Division
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Hermann Fortier Inc.
Electro Sonic Supply Co. Ltd.
H. Roy Gray Co. Ltd.
Musimart of Canada Ltd.
Charles W. Pointon Ltd.
Canadian General Electric Co. Ltd. —
Electronic Tube Division
RCA Victor Co., Ltd.
Recoton Corp.
Pickering and Co., Inc.
Dawe Instruments Ltd. (Canadian Div.)
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Perkins Electric Co., Ltd. —
Electronics Division
Engineered Sound Systems Ltd.
Canadian Marconi Co. —
Electronic Tube & Components Div.
Desser E-E Limited
Pacific Transducer Corp.
- PICKUPS (Photoelectric)**
Electromechanical Products
Electrodesign
Canadian Research Institute
Potter Instrument Co., Inc.
Electronic Control Corp.
Erle Resistor Corp.
Atlas Radio Corp. Ltd.
Photo Crystals, Inc.
Electronics Corp. of America (Can.) Ltd.
Canadian Marconi Co. —
Electronic Tube & Components Div.
Perkins Electric Co., Ltd. —
Electronics Division
Dawe Instruments Ltd. (Canadian Div.)
Measurement Engineering Ltd.
The British Thomson-Houston Co.
(Canada) Ltd.
- PICKUPS (Pressure)**
Computing Devices of Canada Ltd.
- PICKUPS (Transcription)**
Dominion Sound Equipments Ltd.
Canadian Astatic Ltd.
J. B. Smyth Electronic Components
Alex L. Clark Ltd.
Fairchild Recording Equipment Co.
The Ahearn & Soper Co. Ltd.
Erle Resistor Corp.
Atlas Radio Corp. Ltd.
Electro Sonic Supply Co. Ltd.
H. Roy Gray Co. Ltd.
Charles W. Pointon Ltd.
Pickering and Co., Inc.
Recoton Corp.
Canadian General Electric Co. Ltd. —
Electronic Tube Division
Microlab Devices Ltd.
E. S. Gould Sales Co.
Engineered Sound Systems Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Pacific Transducer Corp.
- PLASTIC EXTRUDERS**
L. Frank Markel & Sons
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Aeromotive Engineering Products
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Hathaway Kraemer Ltd.
Hysol (Canada) Ltd.
Cleveland Container Co.
Polypenco, Inc.
Dixon Corporation
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Bakelite Company, Division Union
Carbide Canada Ltd.
The Connecticut Hard Rubber Co.
H. Clarke & Co. (Manchester) Ltd.
Fretco Incorporated
Reichhold Chemicals (Canada) Ltd.
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Resin Industries —
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Houghton Laboratories
Shamban Engineering Co.
Armet Industries Ltd.
Redifon (Canada) Ltd.
Dow Chemical of Canada, Ltd.
Permonite Mfg. Co.
Osborne Electric Co., Ltd.
The Rex Corp.
Cosa Corp. of Canada Ltd.
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John Herring & Co. Ltd.
National Fibre Co. of Canada, Ltd.
United-Carr Fastener Co. of Canada Ltd.
- Panelyte Division, St. Regis Paper Co.
(Canada) Ltd.
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Hysol (Canada) Ltd.
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Telex, Inc.
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Dixon Corp.
Polypenco, Inc.
Induction Heating Corp.
Whitso, Inc.
Precision Metal Products Co.
Renfrew Electric & Refrigerator Co. Ltd.
Bakelite Company, Div. Union Carbide
Canada Ltd.
H. Clarke & Co. (Manchester) Ltd.
Fretco Incorporated
Garde Mfg. Co.
Dalmo Victor Co. — Div. of Textron Inc.
Peerless Products Industries
United States Rubber Co.
Houghton Laboratories
Mosley Electronics, Inc.
Molding Corp. of America, Inc.
P. R. Mallory & Co. Inc.
Shamban Engineering Co.
E. G. Lomas Co.
Armet Industries Ltd.
Redifon (Canada) Ltd.
Permonite Mfg. Co.
- PLUGS (Line Cord)**
R. C. Kahnert Sales Ltd.
Telephone Mfg. Co. Ltd.
Cannon Electric Canada Ltd.
Dominion Sound Equipments Ltd.
J. B. Smyth Electronic Components
H. B. Etlin Company Ltd.
Fleck Electrical Mfg. Ltd.
JFD Mfg. Co., Inc.
Dynamic Electronics—New York Inc.
Javex
Ericsson Telephone Sales of Canada Ltd.
U.S. Components, Inc.
General Cement Mfg. Co. —
Division of Textron, Inc.
Atlas Radio Corp. Ltd.
Electro Sonic Supply Co. Ltd.
S & T Sales Ltd.
Insuline Corp. America —
Subsidiary Van Norman Industries Inc.
Kulka Electric Mfg. Co. Inc.
Eagle Electric Mfg. Co., Inc.
Automatic & Precision Mfg. Co.
The Standard Electric Time Co.
Permonite Mfg. Co.
National Tel-Tronics Corp.
- PLUGS (Speaker, Battery)**
Cannon Electric Canada Ltd.
Dominion Sound Equipments Ltd.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
Amphenol Canada Ltd.
Tenatronics Ltd.
Cinch Mfg. Corp. and H. B. Jones Div.
White Radio Ltd.
Permonite Mfg. Co.
National Tel-Tronics Corp.
- PLUGS (Telephone)**
Telephone Mfg. Co. Ltd.
Cannon Electric Canada Ltd.
A. C. Simmonds & Sons Ltd.
Hackbusch Electronics Ltd.
General Cement Mfg. Co. —
Division of Textron, Inc.
Switchcraft, Inc.
Herman H. Smith, Inc.
Ericsson Telephone Sales of Canada Ltd.
Atlas Radio Corp. Ltd.
Electro Sonic Supply Co. Ltd.
Automatic Electric Sales (Canada) Ltd.
Charles W. Pointon Ltd.
Insuline Corp. America —
Subsidiary Van Norman Industries Inc.
Molding Corp. of America, Inc.
P. R. Mallory & Co. Inc.
Tenatronics Ltd.
Radio Engineering Products Ltd.
Prince & Roberts
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Canadian Marconi Company —
Electronic Tube & Components Div.
Perkins Electric Co., Ltd. —
Electronics Div.
- PLUGS (Terminal)**
Cannon Electric Canada Ltd.
Hackbusch Electronics Ltd.
U.S. Engineering Co., Inc.
Dynamic Electronics — New York Inc.
Javex
U.S. Components, Inc.
General Cement Mfg. Co. —
Division of Textron, Inc.
Amphenol Canada Ltd.
Electro Sonic Corp. Ltd.
Atlas Radio Corp. Ltd.
Belling & Lee Ltd.
Continental Connector Corp.
Insuline Corp. America —
Subsidiary Van Norman Industries Inc.
- Hoffman Semiconductor —
Division of Hoffman Electronics Corp.
Kulka Electric Mfg. Co. Inc.
The Standard Electric Time Co.
Molding Corp. of America, Inc.
Tenatronics Ltd.
Associated Electronic Components
Permonite Mfg. Co.
White Radio Ltd.
Canadian Marconi Company —
Electronic Tube & Components Div.
National Tel-Tronics Corp.
- POINTERS (Dial)**
X-Ray & Radium Industries Ltd.
A. C. Simmonds & Sons Ltd.
United-Carr Fastener Co. of Canada Ltd.
General Cement Mfg. Co. —
Division of Textron, Inc.
JFD Manufacturing Co., Inc.
Waldom Electronics Inc.
Herman H. Smith, Inc.
Atlas Radio Corp. Ltd.
Electro Sonic Supply Co. Ltd.
Dale Products, Inc.
National Co., Inc.
- POTENTIOMETERS (Induction)**
R. C. Kahnert Sales Ltd.
R-O-R Associates Ltd.
Aeromotive Engineering Products
Hellipot Corp.
Dale Products, Inc.
Atlas Radio Corp. Ltd.
Muirhead & Co. Ltd.
Thermovolt Instruments Ltd.
Canadian Stackpole Ltd.
Peacock Brothers Ltd.
Canadian Marconi Company
- POTENTIOMETERS (Linear & Non-Linear)**
Electromechanical Products
R. C. Kahnert Sales Ltd.
P. J. Heenan Ltd.
H. Tinsley & Co. Ltd.
Electrovert Ltd.
R-O-R Associates Ltd.
Pye Canada Ltd.
Minneapolis-Honeywell Regulator Co. Ltd.
— Brown Instrument Div.
Electrodesign
Aeromotive Engineering Products
John Herring & Co. Ltd.
A. C. Simmonds & Sons Ltd.
Bourns Laboratories Inc.
Clarostat Mfg. Co., Inc.
Chicago Telephone Supply Corp.
Technology Instrument Corp.
Ohmite Mfg. Co.
Dale Products, Inc.
Ace Electronics Associates, Inc.
Circuit Instruments Inc.
Centralab, Div. of Globe Union Inc.
Electro-Measurements, Inc.
Hellipot Corp.
Bayly Engineering Ltd.
Radio Components Ltd.
International Resistance Co. Ltd.
Hermann Fortier Inc.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
Northern Electric Co. Ltd.
Borg Equipment Division —
The George W. Borg Corp.
Fisher Research Laboratory, Inc.
Fielden Instrument Div.
Aerovox Corp.
Electro-Mec Laboratory, Inc.
Waters Mfg., Inc.
Pacific Scientific Co.
P. R. Mallory & Co. Inc.
E. G. Lomas Co.
DeJur-Amsco Corp.
International Resistance Co.
Thermovolt Instruments Ltd.
Barber-Colman of Canada Ltd.
(Wheelco Inst. Div.)
General Radio Company
Canadian Marconi Company
Canadian Marconi Company —
Electronic Tube & Components Div.
Adams Engineering Ltd.
The Plessey Co. of Canada Ltd.
Peacock Brothers Ltd.
Measurement Engineering Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
- POTENTIOMETERS (Low-Torque)**
Electro-Mec Laboratory, Inc.
- POTENTIOMETERS (Portable)**
H. Tinsley & Co. Ltd.
Electrovert Ltd.
R. H. Nichols Ltd.
Minneapolis-Honeywell Regulator Co. Ltd.
— Brown Instrument Div.
Electrodesign
Canadian Research Institute
Ace Electronics Associates, Inc.
Ohmite Mfg. Co.
Atlas Radio Corp. Ltd.
Electro Sonic Supply Co. Ltd.
Barber-Colman Company
The Hickok Electrical Instrument Co.
Ward Leonard of Canada Ltd.
The Foxboro Company
Fisher Research Laboratory, Inc.
Thermovolt Instruments Ltd.

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- The J. W. Ellis Industries
Central Scientific Co. of Canada Ltd.
Donner Scientific Company
Peacock Brothers Ltd.
Canadian Marconi Company
Barber-Colman of Canada Ltd.
(Wheelco Inst. Div.)
- POTENTIOMETERS (Wire Wound)**
Aerovox Canada Ltd.
- POTS (Soldering)**
J. B. Smyth Electronic Components
Hackbusch Electronics Ltd.
Acoustica Associates, Inc.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
Northern Electric Co. Ltd.
Perkins Electric Co., Ltd.
Electronics Div.
Canadian Marconi Company —
Electronic Tube & Components Div
- POWER PACKS (Miniaturized)**
Lake Engineering Co. Ltd.
Cossor Canada Ltd.
Industrial Electronics of Canada Ltd.
John Herring & Co. Ltd.
Leonard Electric Ltd.
Aircraft-Marine Products Inc.
Chemical & Dielectric Div.
Atlas Radio Corp. Ltd.
Magnetic Amplifiers, Inc.
Electronic Research Associates, Inc.
Electronic Specialty Co.
Tornico Electronics, Inc.
Lel, Inc.
Fortiphone Ltd.
Beta Electric Corp.
Ferranti Electric Ltd.
NJE Corp.
Electronic Communications Ltd.
Avionics Ltd.
Beaconing Optical & Precision Materials
Co. Ltd.
Radionics Ltd.
Engineered Sound Systems Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Measurement Engineering Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
Canadian Marconi Company
- PRE-AMPLIFIERS (Communication)**
R. C. Kahnert Sales Ltd.
Hackbusch Electronics Ltd.
Dominion Sound Equipments Ltd.
McCurdy Radio Industries Ltd.
Minneapolis-Honeywell Regulator Co. Ltd.
— Brown Instrument Div.
Pye Canada Ltd.
Chisholm Industries Ltd.
Alex L. Clark Ltd.
Dynamic Electronics — New York Inc.
EV of Canada Ltd.
Fairchild Recording Equipment Co.
Kellogg Switchboard & Supply Co.
Airtron, Inc.
Centralab — Division of Globe Union Inc.
Atlas Radio Corp. Ltd.
N. H. Speight Laboratories
Northern Electric Co. Ltd.
Ampli-Vision Division of International
Telemeter Corp.
Aerovox Corp.
Allen B. DuMont Labs, Inc.
Erco Radio Labs, Inc.
Kay Lab
Bruno-New York Industries Corp.
Servo Corp. of America
Stancil-Hoffman Corp.
RCA Victor Company, Ltd.
Recoton Corp.
Lel, Inc.
Fortiphone Ltd.
Pickering and Company, Inc.
TMC (Canada) Ltd.
Electro-Vox Intercom Inc.
Collins Radio Co. of Canada Ltd.
John R. Tilton Ltd.
Engineered Sound Systems Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
Measurement Engineering Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Beaconing Optical & Precision Materials
Co. Ltd.
Ferranti Electric Ltd.
The Plessey Co. of Canada Ltd.
- PRE-AMPLIFIERS (Oscilloscopes)**
Computing Devices of Canada Ltd.
Cossor Canada Ltd.
R-O-R Associates Ltd.
Lake Engineering Co. Ltd.
Southern Instruments Ltd. —
Oscillograph Div.
Dynamic Electronics — New York Inc.
Bayly Engineering Ltd.
Atlas Radio Corp. Ltd.
American Electronic Laboratories, Inc.
Airmec Ltd.
Electronic Tube Corp.
Allen B. DuMont Labs, Inc.
Rogers Majestic Electronics Ltd.
The Solartron Electronic Group Ltd.
- Spencer-Kennedy Laboratories, Inc.
Millivac Instrument Corp.
Measurement Engineering Ltd.
- PRINTED CIRCUIT SHEET METAL**
National Fibre Co. of Canada, Ltd.
Tenatronics Ltd.
Avionics Ltd.
- PRINTED CIRCUITRY**
M. J. Howard
R. C. Kahnert Sales Ltd.
Beechey Enterprises
J. J. MacQuarrie
J. B. Smyth Electronic Components
John Herring & Co. Ltd.
Computing Devices of Canada Ltd.
Cossor Canada Ltd.
Canadian Aviation Electronics Ltd.
Lake Engineering Co. Ltd.
P. J. Heenan Ltd.
George Kelk Ltd.
United-Carr Fastener Co. of Canada Ltd.
Aerovox Canada Ltd.
Panelyte Div., St. Regis Paper Co.
(Canada) Ltd.
Centralab, Div. of Globe Union Inc.
Canadian Westinghouse Co. Ltd. —
Electronics Div.
General Cement Mfg. Co. —
Division of Textron, Inc.
Circon Component Co.
Erie Resistor Corp.
Methode Mfg. Corp.
W. H. Brady Co.
Morrow Radio Mfg. Co.
Atlas Radio Corp. Ltd.
Electro Sonic Supply Co. Ltd.
Bakelite Company, Div. Union Carbide
Canada Ltd.
Bendix Computer Division of
Bendix Aviation Corp.
The Glendon Company Ltd.
H. Clarke & Co. (Manchester) Ltd.
The Telegraph Condenser Co. Ltd.
El Mec Laboratories, Inc.
Defiance Engineering & Microwave Corp.
Hoover Electronics Co.
Aerovox Corp.
RCA Victor Company, Ltd.
Sanders Associates, Inc.
Bruno-New York Industries Corp.
Tenatronics Ltd.
E. G. Lomas Co.
Erie Resistor of Canada Ltd.
Non-Linear Systems, Inc.
Ferranti Electric Ltd.
Measurement Engineering Ltd.
The Plessey Co. of Canada Ltd.
A. T. R. Armstrong Ltd.
Cinch Mfg. Corp. and H. B. Jones Div.
Avionics Ltd.
Engineered Electronics Co.
- PROBES (High Frequency)**
Hackbusch Electronics Ltd.
Sinclair Radio Labs, Ltd.
Alex L. Clark Ltd.
Astral Electric Co. Ltd.
Phaotron Instrument and Electronic Co.
Electronic Instrument Co. Inc.
Precision Apparatus Co., Inc.
Jackson Electrical Instrument Co.
Heath Company
Atlas Radio Corp. Ltd.
Bayly Engineering Ltd.
Electro Sonic Supply Co. Ltd.
Specialty Engineering & Electronics Co.
The Hickok Electrical Instrument Co.
Rogers Majestic Electronics Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Scala Radio Co.
The Solartron Electronic Group Ltd.
Lavoie Laboratories, Inc.
Donner Scientific Co.
Bach-Simpson Ltd.
BJ Electronics, Borg-Warner Corp.
John R. Tilton Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
The Plessey Co. of Canada Ltd.
Canadian Marconi Company —
Electronic Tube & Components Div.
- PROBES (High Voltage)**
R. C. Kahnert Sales Ltd.
Hackbusch Electronics Ltd.
R-O-R Associates Ltd.
Heath Company
General Cement Mfg. Co.
Division of Textron, Inc.
Javex
Jackson Electrical Instrument Co.
Precision Apparatus Co., Inc.
Electronic Instrument Co. Inc.
Phaotron Instrument and Electronic Co.
Electro Sonic Supply Co. Ltd.
Bayly Engineering Ltd.
Atlas Radio Corp. Ltd.
The Hickok Electrical Instrument Co.
Insuline Corp. America —
Subsidiary Van Norman Industries Inc.
Rogers Majestic Electronics Ltd.
Precise Development Corp.
Scala Radio Co.
The Triplett Electrical Instrument Co.
MJS Electronic Sales Ltd.
- Bach-Simpson Ltd.
Canadian Marconi Company —
Electronic Tube & Components Div.
John R. Tilton Ltd.
Stark Electronic Instruments Ltd.
- PROBES (Microwave)**
Computing Devices of Canada Ltd.
R-O-R Associates Ltd.
Sinclair Radio Labs, Ltd.
DeMornay-Bonardi Corp.
The Narda Corp.
Atlas Radio Corp. Ltd.
Elliott Brothers (London) Ltd.
Defiance Engineering & Microwave Corp.
F-R Machine Works, Inc. —
Electronics & X-Ray Div.
Microwave Associates, Inc.
RCA Victor Company, Ltd.
BJ Electronics, Borg-Warner Corp.
Beaconing Optical & Precision Materials
Co. Ltd.
The British Thomson-Houston Co.
(Canada) Ltd.
- PROTECTORS (Surge)**
Bomac Laboratories Inc.
- PUBLIC ADDRESS SYSTEMS**
M. J. Howard
R. C. Kahnert Sales Ltd.
Hackbusch Electronics Ltd.
Dominion Sound Equipments Ltd.
Cossor Canada Ltd.
Pye Canada Ltd.
Chisholm Industries Ltd.
Universal Speaker Service
Alex L. Clark Ltd.
Kellogg Switchboard & Supply Co.
EV of Canada Ltd.
Specialty Engineering & Electronics Co.
The Ahearn & Soper Company Ltd.
Altec Lansing Corp.
Whiteley Electrical Radio Co. Ltd.
Melody Master Mfg. Co.
Rek-O-Kut Co.
N. H. Speight Laboratories
Electrolabs
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
Northern Electric Co. Ltd.
Aerovox Corp.
Rogers Majestic Electronics Ltd.
RCA Victor Company, Ltd.
Soundmaster Equipments
Rogers Electronic Tubes & Components
University Loudspeakers, Inc.
Industrial & Institutional
Communications Ltd.
The Standard Electric Time Co.
Webster Electric Co.
Mark Simpson Mfg. Co.
TMC (Canada) Ltd.
Electro-Vox Intercom Inc.
Redifon (Canada) Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Prince & Roberts
John R. Tilton Ltd.
Avionics Ltd.
Measurement Engineering Ltd.
Perkins Electric Co., Ltd.
Electronics Div.
Engineered Sound Systems Ltd.
White Radio Ltd.
Electronic Communications Ltd.
Canadian Marconi Company
The British Thomson-Houston Co.
(Canada) Ltd.
- QUARTZ (Fused)**
Thermal American Fused Quartz Co.
- RACKS (Relay)**
Bud Radio Inc.
Chisholm Industries Ltd.
Radio Communications Equipment &
Engineering Ltd.
Hammond Mfg. Co. Ltd.
Northern Radio Mfg. Co. Ltd.
Burlac Sales Ltd.
Industrial Electronics of Canada Ltd.
McCurdy Radio Industries Ltd.
Hackbusch Electronics Ltd.
Dominion Sound Equipments Ltd.
U M & F Mfg. Corp.
Research Industries Ltd.
Electro Sonic Supply Co. Ltd.
Northern Electric Co. Ltd.
Automatic Electric Sales (Canada) Ltd.
Electronic Specialty Co.
Insuline Corp. America —
Subsidiary Van Norman Industries Inc.
Raytheon Mfg. Co.
Tenatronics Ltd.
TMC (Canada) Ltd.
Radio Engineering Products Ltd.
Prince & Roberts
Engineered Sound Systems Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
Measurement Engineering Ltd.
Canadian Marconi Company —
Electronic Tube & Components Div.
Canadian General Electric Co., Ltd.
Electronic Equipment & Tube Dept.
Associated Electronic Components
Sarkes Tarzian, Inc.
General Communications Ltd.

RADAR EQUIPMENT

Mechron Engineering Products Ltd.
Electronic Associates Ltd.
Canadian Aviation Electronics Ltd.
Computing Devices of Canada Ltd.
Cossor Canada Ltd.
Aviation Electric Ltd.
Co-Operative Industries, Inc.
Philco Corporation —
Government & Industrial Div.
Airtron, Inc.
Chemalloy Electronics Corp.
Color Television Inc.
Demornay-Bonardi Corp.
The Narda Corp.
Specialty Engineering & Electronics Co.
Airtron Canada Ltd.
S & T Sales Ltd.
Canoga Corp.
Bludworth Marine Division of
Kearfott Company, Inc.
Continental Electronics Mfg. Co.
American Electronic Laboratories, Inc.
Northern Electric Co. Ltd.
Elliott Brothers (London) Ltd.
Insullne Corp. America —
Subsidiary Van Norman Industries Inc.
Dalmo Victor Company —
Division of Textron Inc.
Frequency Standards Inc.
Rogers Majestic Electronics Ltd.
Bendix Aviation Corporation
Pacific Div.
Bruno-New York Industries Corp.
Sanders Associates, Inc.
Motorola Communications &
Electronics, Inc.
Radio Receptor Company, Inc.
Lavoie Laboratories, Inc.
RCA Victor Company, Ltd.
Collins Radio Co. of Canada Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Decca Radar (Canada) Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Measurement Engineering Ltd.
Canadian Marconi Company
Beaconing Optical & Precision Materials
Co. Ltd.
The British Thomson-Houston Co.
(Canada) Ltd.

RADIOACTIVE SPECIALTIES

Radelin-Kirk Ltd.

RADIO PAGING SYSTEMS

Rogers Majestic Electronics Ltd.

RADIOSONDES

Electromechanical Products
George Kelk Ltd.
John Herring & Co. Ltd.
Canadian Aviation Electronics Ltd.
Pye Canada Ltd.
Whiteley Electrical Radio Co. Ltd.
Dominion Electrohme Industries Ltd.
Measurement Engineering Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
The Plessey Co. of Canada Ltd.

RECEIVERS (Communication)

Electromechanical Products
Mechron Engineering Products Ltd.
M. J. Howard
J. J. MacQuarrie
Astral Electric Co. Ltd.
Hallcrafters Canada Ltd.
Hackbusch Electronics Ltd.
Chisholm Industries Ltd.
Radio Communications Equipment &
Engineering Ltd.
Pye Canada Ltd.
Electrodesign
Aviation Electric Ltd.
Telex, Inc.
National Aeronautical Corp.
Wright Electronics Inc.
Dynamic Electronics — New York Inc.
Canadian Westinghouse Co. Ltd. —
Electronics Div.
Morrow Radio Mfg. Co.
Heath Company
EV of Canada Ltd.
The Ahearn Soper Co. Ltd.
Industrial Development Engineering
Associates Inc.
H. Roy Gray Co. Ltd.
Electro Sonic Supply Co. Ltd.
S & T Sales Ltd.
Airmec Ltd.
Berkeley Div. of Beckman Instruments, Inc.
Communications Company, Inc.
Northern Electric Co. Ltd.
Bludworth Marine Division of
Kearfott Company, Inc.
Kaar Engineering Corp.
Fisher Research Laboratory, Inc.
Allen B. DuMont Labs, Inc.
Electronic Tube Corp.
Erco Radio Labs, Inc.
Rogers Majestic Electronics Ltd.
RCA Victor Company, Ltd.
Servo Corp. of America
Lel, Inc.
Mitchell Industries, Inc.

Motorola Communications &
Electronics, Inc.
Bruno-New York Industries Corp.
TMC (Canada) Ltd.
Pacific Communications Services Ltd.
Electro-Vox Intercom Inc.
Redifon (Canada) Ltd.
Collins Radio Co. of Canada Ltd.
Ferranti Electric Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Beaconing Optical & Precision Materials
Co. Ltd.
Canadian Marconi Company
Canadian Marconi Company —
Electronic Tube & Components Div.
Measurement Engineering Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
The Plessey Co. of Canada Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
Engineered Sound Systems Ltd.
White Radio Ltd.

RECEIVERS (Communication)

Crosby Laboratories, Inc.
National Co., Inc.

RECEIVERS (Dual Diversity)

Northern Radio Co., Inc.

RECEIVERS (Loran)

M. J. Howard
Dynamic Electronics — New York Inc.
Bludworth Marine Division of
Kearfott Co., Inc.
Electronic Tube Corp.
RCA Victor Company, Ltd.
Redifon (Canada) Ltd.
Collins Radio Co. of Canada Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Canadian Marconi Company

RECEIVERS (Microwave Field Intensity)

Polarad Electronics Corp.

RECEIVERS (Railroad)

Mechron Engineering Products Ltd.
Chisholm Industries Ltd.
Computing Devices of Canada Ltd.
Aviation Electric Ltd.
The Ahearn & Soper Company Ltd.
Canadian Westinghouse Co. Ltd. —
Electronics Div.
Rogers Majestic Electronics Ltd.
Motorola Communications &
Electronics, Inc.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Canadian General Electric Co., Ltd.
Electronic Equipment & Tube Dept.
The British Thomson-Houston Co.
(Canada) Ltd.

RECORDERS (Disc)

Fairchild Recording Equipment Co.
Rek-O-Kut Co.
Atlas Radio Corp. Ltd.
Astral Electric Co. Ltd.
Charles W. Pointon Ltd.
Evershed & Vignoles Ltd.
Musimart of Canada Ltd.
RCA Victor Company, Ltd.
The SoundScriber Corp.
Industrial & Institutional
Communications Ltd.
E. S. Gould Sales Co.
Canadian Marconi Company
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Engineered Sound Systems Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.

RECORDERS (High Speed)

PSC Applied Research Ltd.

RECORDERS (Magnetic Dictating)

Alex L. Clark Ltd.
Peirce Wire Recorder Corp.
Atlas Radio Corp. Ltd.
Dalmo Victor Company —
Division of Textron Inc.
Industrial & Institutional
Communications Ltd.
Canadian Marconi Company —
Electronic Tube & Components Div.

RECORDERS (Potentiometer)

Electromechanical Products
Aeromotive Engineering Products
Minneapolis-Honeywell Regulator Co. Ltd.
Brown Instrument Div.
R-O-R Associates Ltd.
The Bristol Co. of Canada Ltd.
Electrodesign
Computing Devices of Canada Ltd.
Curtiss-Wright Corp. — Electronics Div.
Barber-Colman Co.
Fielden Electronics Ltd.
The Foxboro Co.
Fielden Instrument Div.
Elliott Brothers (London) Ltd.
Fischer & Porter (Canada) Ltd.
Manning, Maxwell & Moore, Inc.
West Instrument Corp.
Varian Associates of Canada Ltd.
Barber-Colman of Canada Ltd. —
(Wheelco Inst. Div.)
Peacock Brothers Ltd.

Perkins Electric Co., Ltd.
Electronics Div.

RECORDERS (Tape)

Electromechanical Products
R. C. Kahnert Sales Ltd.
Alex L. Clark Ltd.
Aeromotive Engineering Products
Ampex American Corp.
Magnecord Canada Ltd.
McCurdy Radio Industries Ltd.
Dominion Sound Equipments Ltd.
A. C. Simmonds & Sons Ltd.
Astral Electric Co. Ltd.
J. B. Smyth Electronic Components
Hackbusch Electronics Ltd.
Fairchild Recording Equipment Co.
Magnecord Inc.
Ampex Corp. — Instrumentation Div.
Potter Instrument Co., Inc.
Atlas Radio Corp. Ltd.
H. Roy Gray Co. Ltd.
Hermann Fortier Inc.
Electro Sonic Supply Co. Ltd.
Bendix Computer Division of
Bendix Aviation Corp.
Consolidated Electrodynamics Corp.
American Electronics, Inc.
Audio Instrument Co. Inc.
Electronic Enterprises Ltd.
Musimart of Canada Ltd.
Charles W. Pointon Ltd.
Gulton Industries, Inc.
Rogers Majestic Electronics Ltd.
Webster Electric Co.
RCA Victor Company, Inc.
Stancil-Hoffman Corp.
The SoundScriber Corp.
Mark Simpson Mfg. Co.
DeJur-Ansco Corp.
Bradford J. Wickett Ltd.
Perkins Electric Co., Ltd.
Electronics Div.
The Plessey Co. of Canada Ltd.
Canadian Marconi Company
Canadian Marconi Company
Electronic Tube & Components Div.
A. T. R. Armstrong Ltd.
White Radio Ltd.
Avlonics Ltd.
Electronic Communications Ltd.
General Communications Ltd.
Canadian General Electric Co., Ltd.
Electronic Equipment & Tube Dept.
Engineered Sound Systems Ltd.

RECORDERS (Telemetry)

Electromechanical Products
Alex L. Clark Ltd.
Lake Engineering Co. Ltd.
Ampex American Corp.
The Bristol Co. of Canada Ltd.
Electrodesign
Hackbusch Electronics Ltd.
Fairchild Recording Equipment Co.
Ampex Corp. — Instrumentation Div.
Potter Instrument Co., Inc.
Canadian Westinghouse Co. Ltd.
Electronics Div.
The Ahearn & Soper Co. Ltd.
Research Industries Ltd.
Elliott Brothers (London) Ltd.
The Foxboro Co.
Evershed & Vignoles Ltd.
Gulton Industries, Inc.
Rogers Majestic Electronics Ltd.
Fischer & Porter (Canada) Ltd.
Manning, Maxwell & Moore, Inc.
RCA Victor Company, Ltd.
Stancil-Hoffman Corp.
Bailey Meter Co. Ltd.
General Communications Ltd.
Radionics Ltd.
Peacock Brothers Ltd.
Barber-Colman of Canada Ltd.
(Wheelco Inst. Div.)

RECORDERS (Video)

Ampex American Corp.

RECORDERS (Wire)

Electromechanical Products
Peirce Wire Recorder Corp.
Perkins Electric Co., Ltd. —
Electronics Div.
Canadian Marconi Company
Electronic Tube & Components Div.
Engineered Sound Systems Ltd.

RECORDING HEADS

Alex L. Clark Ltd.
Magnecord Canada Ltd.
Canadian Astatic Ltd.
A. C. Simmonds & Sons Ltd.
Potter Instrument Co., Inc.
Ferroxcube Corp. of America
Peirce Wire Recorder Corp.
Ampex Corp. — Instrumentation Div.
Magnecord Inc.
Fairchild Recording Equipment Co.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
Berndt-Bach, Inc. (Auricon Div.)
American Electronics, Inc.
Bendix Computer Division of
Bendix Aviation Corp.
Aerovox Corp.
Musimart of Canada Ltd.

Stancil-Hoffman Corp.
Shure Brothers, Inc.
Industrial & Institutional
Communications Ltd.
General Communications Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Canadian Marconi Company —
Electronic Tube & Components Div.
Perkins Electric Co., Ltd. —
Electronics Div.
Brush Electronics Co. —
Division of Clevite Corp.

RECTIFIERS (Germanium)

Bogue Electric of Canada, Ltd.
Computing Devices of Canada Ltd.
Hackbusch Electronics Ltd.
J. B. Smyth Electronic Components
Lake Engineering Co. Ltd.
Canadian Westinghouse Co. Ltd. —
Electronics Division
Transitron Electronic Corp.
International Rectifier Corp.
International Resistance Co. Ltd.
Hermann Fortier Inc.
Atlas Radio Corp. Ltd.
Electro Sonic Supply Co. Ltd.
American Electronics, Inc.
Rogers Electronic Tubes & Components
Canadian General Electric Co. Ltd. —
Electronic Tube Division
Richardson-Allen Corp.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Electronic Controls Ltd.
Adams Engineering Ltd.
Perkins Electric Co., Ltd. —
Electronics Division
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
The British Thomson-Houston Co.
(Canada) Ltd.

RECTIFIER (Selenium)

J. J. MacQuarrie
R. H. Nichols Ltd.
J. R. G. McVity & Co.
Bogue Electric of Canada, Ltd.
Canadian Westinghouse Co. Ltd. —
Electronic Tube Div.
Burllec Sales Ltd.
Industrial Electronics of Canada Ltd.
Canadian Westinghouse Co. Ltd. —
Apparatus Division
Hackbusch Electronics Ltd.
Electrodesign
Lake Engineering Co. Ltd.
Fansteel Metallurgical Corp.
International Rectifier Corp.
Pyramid Electric Co.
The Ahearn & Soper Co. Ltd.
Canadian Westinghouse Co. Ltd. —
Electronics Division
Conant Laboratories
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
Hermann Fortier Inc.
International Resistance Co. Ltd.
Canadian Line Materials Ltd.
Bradley Laboratories, Inc.
Northern Electric Co. Ltd.
Charles W. Pointon Ltd.
Gates Electronic Co.
Knopp Inc.
Sarkes Tarzian, Inc., Rectifier Division
Richardson-Allen Corp.
Syntron (Canada) Ltd.
Vickers Electric Div., Vickers Inc.,
Unit of Sperry Rand Corp.
Radio Receptor Co., Inc.
E. S. Gould Sales Co.
International Resistance Co.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Perkins Electric Co., Ltd. —
Electronics Division
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Electronic Controls Ltd.
H. McCardle
Associated Electronic Components
Sarkes Tarzian, Inc.
A. T. R. Armstrong Ltd.
Engineered Sound Systems Ltd.

RECTIFIERS (Silicon)

Bogue Electric of Canada, Ltd.
Canadian Westinghouse Co. Ltd. —
Electronic Tube Div.
R-O-R Associates Ltd.
Computing Devices of Canada Ltd.
Hackbusch Electronics Ltd.
Lake Engineering Co. Ltd.
Canadian Westinghouse Co. Ltd. —
Electronics Div.
Transitron Electronic Corp.
International Rectifier Corp.
Fansteel Metallurgical Corp.
Atlas Radio Corp. Ltd.
Electro Sonic Supply Co. Ltd.
Burllec Sales Ltd.
General Instrument —
F. W. Sickles of Canada Ltd.
Hoffman Semiconductor Division of
Hoffman Electronics Corp.
Richardson-Allen Corp.

Sarkes Tarzian, Inc. — Rectifier Div.
Canadian General Electric Co. Ltd.
Electronic Tube Div.
Microwave Associates, Inc.
Rogers Electronic Tubes & Components
E. G. Lomas Co.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Sarkes Tarzian, Inc.
A. T. R. Armstrong Ltd.
Canadian General Electric Co. Ltd.
Electronic Equipment & Tube Dept.
Electronic Controls Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
Adams Engineering Ltd.
The British Thomson-Houston Co.
(Canada) Ltd.

RECTIFIERS (Tube)

Canadian Westinghouse Co. Ltd. —
Electronic Tube Div.
Burllec Sales Ltd.
Industrial Electronics of Canada Ltd.
Canadian Westinghouse Co. Ltd. —
Apparatus Div.
Hackbusch Electronics Ltd.
Electrodesign
Induction Heating Corp.
Bendix Aviation Corp. — Red Bank Div.
Atlas Radio Corp. Ltd.
Electro Sonic Supply Co. Ltd.
Hermann Fortier Inc.
Northern Electric Co. Ltd.
The English Electric Co. Ltd.
Rogers Electronic Tubes & Components
Canadian General Electric Co. Ltd. —
Electronic Tube Div.
Richardson-Allen Corp.
Lewis and Kaufman Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Canadian General Electric Co. Ltd. —
Electronic Equipment & Tube Dept.
Perkins Electric Co., Ltd. —
Electronics Div.
Electronic Controls Ltd.
Canadian Marconi Company —
Electronic Tube & Components Div.
The British Thomson-Houston Co.
(Canada) Ltd.

REFERENCE CAVITIES

Bomac Laboratories Inc.

REGULATORS (Voltage & Selenium)

Bogue Electric of Canada, Ltd.
Lake Engineering Co. Ltd.
Industrial Electronics of Canada Ltd.
Canadian Westinghouse Co. Ltd. —
Apparatus Div.
Canadian Westinghouse Co. Ltd. —
Electronics Div.
Universal Electronics Co.
Atlas Radio Corp. Ltd.
Electro Sonic Supply Co. Ltd.
Northeast Scientific Corp.
Northern Electric Co. Ltd.
American Electronics, Inc.
Bradley Laboratories, Inc.
Magnetic Amplifiers, Inc.
Gates Electronic Co.
Richardson-Allen Corp.
Rogers Electronic Tubes & Components
Perkins Electric Co., Ltd. —
Electronics Div.
Radionics Ltd.
Electronic Controls Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Vectrol Engineering, Inc.

RELAY (Telephone)

Leonard Electric Ltd.
Canadian Westinghouse Co. Ltd.
Apparatus Div.
Hackbusch Electronics Ltd.
Lake Engineering Co. Ltd.
C. P. Clare & Co.
John Herring & Co. Ltd.
Cossor Canada Ltd.
Pye Canada Ltd.
Aeromotive Engineering Products
The Ahearn & Soper Co. Ltd.
Phaotron Instrument and Electronic Co.
Ericsson Telephone Sales of Canada Ltd.
Ohmite Mfg. Co.
Guardian Electric Mfg. Co.
Essex Wire Corp.
Elgin National Watch Co. —
Electronics Div.
Potter & Brumfield, Inc.
Atlas Radio Corp. Ltd.
Electro Sonic Supply Co. Ltd.
Canadian Line Materials Ltd.
Amalgamated Electric Corp. Ltd.
Automatic Electric Sales (Canada) Ltd.
AEMCO Incorporated
Kaye Electrical Mfg. Co.
Hedin Tele-Technical Corp.
Musimart of Canada Ltd.
U.S. Relay Co.
Essex Wire Corp. — RBM Div.
Price Electric Corp.
TMC (Canada) Ltd.
Radio Engineering Products Ltd.

Prince & Roberts
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
Leach Corp. — Leach Relay Div.
Radio Condenser Co., Ltd.
Osborne Electric Co., Ltd.
Beaconing Optical & Precision Materials
Co. Ltd.
Avionics Ltd.
General Communications Ltd.
A. T. R. Armstrong Ltd.
Engineered Sound Systems Ltd.
Adams Engineering Ltd.

RELAYS (Coaxial)

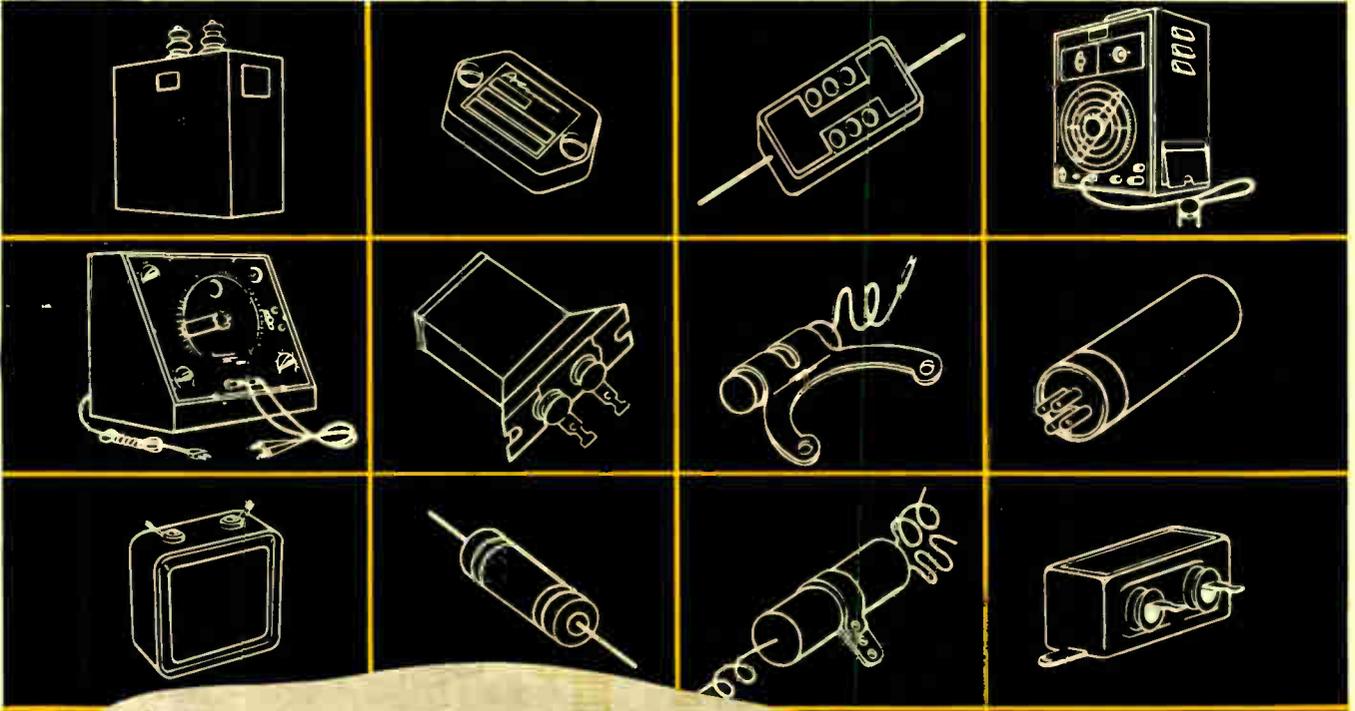
John Herring & Co. Ltd.
Electrovert Ltd.
Elgin National Watch Co. —
Electronics Div.
Andrew Antenna Corp., Ltd.
Potter & Brumfield, Inc.
J. R. Longstaffe Co. Ltd.
Atlas Radio Corp. Ltd.
Electro Sonic Supply Co. Ltd.
Musimart of Canada Ltd.
Defiance Engineering & Microwave Corp.
Londex Ltd.
Price Electric Corp.
Adams Engineering Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Avionics Ltd.
Osborne Electric Co., Ltd.
A. T. R. Armstrong Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.

RELAYS (Differential)

M. J. Howard
John Herring & Co. Ltd.
Davis Automatic Controls Ltd.
Telephone Mfg. Co. Ltd.
Electrovert Ltd.
Elgin National Watch Co. —
Electronics Div.
Potter & Brumfield, Inc.
Muirhead Instruments Ltd.
Atlas Radio Corp. Ltd.
Electro Sonic Supply Co. Ltd.
J. R. Longstaffe Co. Ltd.
Automatic Switch Co.
Kaye Electrical Mfg. Co.
Musimart of Canada Ltd.
Electronic Specialty Co.
The English Electric Co. Ltd.
Muirhead & Co. Ltd.
Price Electric Corp.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Osborne Electric Co., Ltd.
A. T. R. Armstrong Ltd.
Leach Corp. — Leach Relay Div.
Associated Electronic Components

RELAYS (Hermetically Sealed)

Beechey Enterprises
Burllec Sales Ltd.
Canadian Westinghouse Co. Ltd.
Apparatus Div.
Lake Engineering Co. Ltd.
C. P. Clare & Co.
John Herring & Co. Ltd.
Cossor Canada Ltd.
Aeromotive Engineering Products
A. C. Simmonds & Sons Ltd.
The Ahearn & Soper Co. Ltd.
Elgin National Watch Co. —
Electronics Div.
Ericsson Telephone Sales of Canada Ltd.
Guardian Electric Mfg. Co.
Essex Wire Corp.
The Hart Mfg. Co.
Ebert Electronics Corp.
G. H. Leland, Inc.
The A. W. Haydon Co.
Filters, Inc.
Ohmite Mfg. Co.
Phaotron Instrument & Electronic Co.
Potter & Brumfield, Inc.
Atlas Radio Corp. Ltd.
Electro Sonic Supply Co. Ltd.
J. R. Longstaffe Co. Ltd.
Electrovert Ltd.
Curtiss-Wright Corp.
AEMCO Incorporated
Automatic Electric Sales (Canada) Ltd.
Hedin Tele-Technical Corp.
Kaye Electrical Mfg. Co.
Musimart of Canada Ltd.
Electronic Specialty Co.
Elliott Brothers (London) Ltd.
G. V. Controls Inc.
Price Electric Corp.
Essex Wire Corp. — RBM Div.
U.S. Relay Co.
S. H. Couch Co., Inc.
Terado Co.
Keystone Products Co.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
Adams Engineering Ltd.
Radio Condenser Co., Ltd.



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Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Associated Electronic Components
A. T. R. Armstrong Ltd.
Osborne Electric Co., Ltd.
Leach Corporation — Leach Relay Div.

RELAYS (Impulse)

Hackbusch Electronics Ltd.
C. P. Clare & Co.
John Herring & Co. Ltd.
Davis Automatic Controls Ltd.
Leonard Electric Ltd.
Aeromotive Engineering Products
The Ahearn & Soper Co. Ltd.
Elgin National Watch Co. —
Electronics Div.
Guardian Electric Mfg. Co.
Potter & Brumfield, Inc.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
J. R. Longstaffe Co. Ltd.
PSC Applied Research Ltd.
Automatic Electric Sales (Canada) Ltd.
Kaye Electrical Mfg. Co.
Musimart of Canada Ltd.
Electronic Specialty Co.
Londex Ltd.
Prince & Roberts
Osborne Electric Co., Ltd.
Leach Corp. — Leach Relay Div.
Associated Electronic Components
A. T. R. Armstrong Ltd.

RELAYS (Miniature)

Beechey Enterprises
Leonard Electric Ltd.
Lake Engineering Co. Ltd.
John Herring & Co. Ltd.
Electrovert Ltd.
Aeromotive Engineering Products
A. C. Simmonds & Sons Ltd.
Guardian Electric Mfg. Co.
Elgin National Watch Co. —
Electronics Div.
The Ahearn & Soper Co. Ltd.
Ericsson Telephone Sales of Canada Ltd.
The Hart Mfg. Co.
Ebert Electronics Corp.
Filtors, Inc.
Phaotron Instrument and Electronic Co.
Potter & Brumfield, Inc.
C. P. Clare & Co.
MJS Electronic Sales Ltd.
Atlas Radio Corp. Ltd.
Electro Sonic Supply Co. Ltd.
J. R. Longstaffe Co. Ltd.
Automatic Electric Sales (Canada) Ltd.
AEMCO Incorporated
Curtiss-Wright Corp.
Musimart of Canada Ltd.
Electronic Specialty Co.
Rogers Majestic Electronics Ltd.
G. V. Controls Inc.
Terado Co.
U.S. Relay Co.
Price Electric Corp.
Londex Ltd.
Prince & Roberts
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
A. T. R. Armstrong Ltd.
Associated Electronic Components
Leach Corp. — Leach Relay Div.
Osborne Electric Co., Ltd.
Radio Condenser Co., Ltd.
Adams Engineering Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Engineered Sound Systems Ltd.
General Communications Ltd.
Avionics Ltd.

RELAYS (Polarized)

Beechey Enterprises
Hackbusch Electronics Ltd.
C. P. Clare & Co.
John Herring & Co. Ltd.
Davis Automatic Controls Ltd.
Telephone Manufacturing Co. Ltd.
The Hart Mfg. Co.
Essex Wire Corp.
The Ahearn & Soper Co. Ltd.
Electronics Div., Elgin National Watch Co.
Potter & Brumfield, Inc.
J. R. Longstaffe Co. Ltd.
Atlas Radio Corp. Ltd.
Electro Sonic Supply Co. Ltd.
Automatic Electric Sales (Canada) Ltd.
Barber-Colman Company
Kaye Electrical Manufacturing Co.
Essex Wire Corp., RBM Division
Musimart of Canada Ltd.
U.S. Relay Co.
Radio Engineering Products Ltd.
Prince & Roberts
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Adams Engineering Ltd.
Osborne Electric Co., Ltd.
Leach Corp. — Leach Relay Division
Associated Electronic Components
Beaconing Optical & Precision
Materials Co. Ltd.

RELAYS (Power and Contacts)

Canadian Westinghouse Co. Ltd. —
Apparatus Division
John Herring & Co. Ltd.
Davis Automatic Controls Ltd.
Electrovert Ltd.
A. C. Simmonds & Sons Ltd.
Leonard Electric Ltd.
Phaotron Instrument and Electronic Co.
Ebert Electronics Corp.
Essex Wire Corp.
Elgin National Watch Co., Electronics Div.
Guardian Electric Mfg. Co.
Ohmite Manufacturing Co.
Canadian Westinghouse Co. Ltd. —
Electronics Division
Potter & Brumfield, Inc.
C. P. Clare & Co.
J. R. Longstaffe Co. Ltd.
Atlas Radio Corp. Ltd.
Electro Sonic Supply Co. Ltd.
Dominion Electrohome Industries Ltd.
Automatic Electric Sales (Canada) Ltd.
Automatic Switch Co.
AEMCO Incorporated
Musimart of Canada Ltd.
Kaye Electrical Manufacturing Co.
Electronic Specialty Co.
The English Electric Co. Ltd.
Ward Leonard of Canada Ltd.
Price Electric Corp.
Londex Limited
U. S. Relay Co.
Osborne Electric Co., Ltd.
Associated Electronic Components
Leach Corp. — Leach Relay Division
Adams Engineering Ltd.
A. T. R. Armstrong Ltd.
The British Thomson-Houston Co.
(Canada) Ltd.

RELAYS (Rotary)

Hackbusch Electronics Ltd.
Leonard Electric Ltd.
Marsland Engineering Ltd.
C. P. Clare & Co.
Elgin National Watch Co., Electronics Div.
Filtors, Inc.
G. H. Leland, Inc.
Potter & Brumfield, Inc.
Amalgamated Electric Corp. Ltd.
Atlas Radio Corp. Ltd.
Electro Sonic Supply Co. Ltd.
J. R. Longstaffe Co. Ltd.
Automatic Electric Sales (Canada) Ltd.
Musimart of Canada Ltd.
Price Electric Corp.
S. H. Couch Co., Inc.
Prince & Roberts
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Leach Corp. — Leach Relay Division
Associated Electronic Components
Radio Condenser Co., Ltd.

RELAYS (Sequence)

Burlec Sales Ltd.
Hackbusch Electronics Ltd.
John Herring & Co. Ltd.
Davis Automatic Controls Ltd.
Guardian Electric Mfg. Co.
Essex Wire Corp.
Elgin National Watch Co., Electronics Div.
Potter & Brumfield, Inc.
PSC Applied Research Ltd.
J. R. Longstaffe Co. Ltd.
Atlas Radio Corp. Ltd.
Electro Sonic Supply Co. Ltd.
Electrovert Ltd.
Automatic Electric Sales (Canada) Ltd.
Musimart of Canada Ltd.
Kaye Electrical Manufacturing Co.
Electronic Specialty Co.
Electrical Communications
Londex Limited
Electronics Corp. of America (Can.) Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Osborne Electric Co., Ltd.
General Communications Ltd.
Associated Electronic Components
Leach Corp. — Leach Relay Division

RELAYS (Subminiature)

Beechey Enterprises
John Herring & Co. Ltd.
Electrovert Ltd.
Aeromotive Engineering Products
Elgin National Watch Co., Electronics Div.
Guardian Electric Mfg. Co.
Ericsson Telephone Sales of Canada Ltd.
Filtors, Inc.
Phaotron Instrument and Electronic Co.
Potter & Brumfield, Inc.
C. P. Clare & Co.
Atlas Radio Corp. Ltd.
Electro Sonic Supply Co. Ltd.
J. R. Longstaffe Co. Ltd.
AEMCO Incorporated
Electronic Specialty Co.
Musimart of Canada Ltd.
Rogers Majestic Electronics Ltd.
Terado Company
U. S. Relay Co.
Price Electric Corporation
MJS Electronic Sales Ltd.

Leach Corp. — Leach Relay Division
Associated Electronic Components
Osborne Electric Co., Ltd.
Radio Condenser Co., Ltd.
A. T. R. Armstrong Ltd.
Adams Engineering Ltd.
Canadian General Electric Co., Ltd.
Electronic Equipment & Tube Dept.
Engineered Sound Systems Ltd.

RESISTANCE SOLDERING EQUIPMENT

The Luma Electric Equipment Co.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.

RESISTOR RODS (Deposited Carbon)

Saxonburg Ceramics

RESISTOR TUBES

Saxonburg Ceramics

RESISTORS (Composition Variable)

A. C. Simmonds & Sons Ltd.
Centralab Canada Ltd.
C. C. Meredith & Co. Ltd.
P. J. Heenan Ltd.
Ohmite Manufacturing Co.
Stackpole Carbon Co.
Clarostat Mfg. Co., Inc.
Centralab, Div. of Globe Union Inc.
Hermann Fortier Inc.
International Resistance Co. Ltd.
Precision Electronic Components
(1956) Ltd.
Electro Sonic Supply Co. Ltd.
Atlas Radio Corp. Ltd.
P. R. Mallory & Co. Inc.
Rollan Electric Co.
International Resistance Co.
Perkins Electric Co., Ltd. —
Electronics Division
Erie Resistor Corp.
Measurement Engineering Ltd.
Canadian Marconi Co. —
Electronic Tube & Components Div.
The Plessey Co. of Canada Ltd.

RESISTORS (Deposited Carbon)

R. C. Kahmert Sales Ltd.
Welwyn Canada Ltd.
Aerovox Canada Ltd.
Electrodesign
Lake Engineering Co. Ltd.
Campbell Industries Inc.
Allies' Products Corp.
Sprague Electric International Ltd.
Dale Products, Inc.
General Cement Mfg. Co.,
Division of Textron, Inc.
Centralab, Division of Globe Union Inc.
Clarostat Mfg. Co., Inc.
Phaotron Instrument and Electronic Co.
N. H. Speight Laboratories
Electro Sonic Supply Co. Ltd.
Precision Electronic Components
(1956) Ltd.
International Resistance Co. Ltd.
Hermann Fortier Inc.
Atlas Radio Corp. Ltd.
Continental Carbon Div. of Wirt Co.
The Glendon Co. Ltd.
Arnold Ceramics, Inc.
Aerovox Corporation
Dubilier Condenser Co. (1925) Ltd.
Charles W. Pointon Ltd.
Rogers Electronic Tubes & Components
P. R. Mallory & Co. Inc.
Erie Resistor of Canada Ltd.
International Resistance Co.
Bach-Simpson Ltd.
The Constanta Co. of Canada Ltd.
Kerr-Machin Associates
Canadian Marconi Co. —
Electronic Tube & Components Div.
Erie Resistor Corp.
Perkins Electric Co., Ltd. —
Electronics Division

RESISTORS (Fixed)

R. C. Kahmert Sales Ltd.
Canadian Electric Resistors Ltd.
R-O-R Associates Ltd.
A. C. Simmonds & Sons Ltd.
John Herring & Co. Ltd.
Electrodesign
Ohmite Manufacturing Co.
Stackpole Carbon Co.
Clarostat Mfg. Co., Inc.
General Cement Mfg. Co.,
Division of Textron, Inc.
Erie Resistor Corp.
Electro-Measurements, Inc.
Dale Products, Inc.
Sprague Electric International Ltd.
Allies' Products Corp.
Campbell Industries Inc.
Atlas Radio Corp. Ltd.
Electro Sonic Supply Co. Ltd.
Hermann Fortier Inc.
International Resistance Co. Ltd.
N. H. Speight Laboratories
Continental Carbon Div. of Wirt Co.
Arnold Ceramics, Inc.
Charles W. Pointon Ltd.
Electro-Flex Heat, Inc.
Ward Leonard of Canada Ltd.
P. R. Mallory & Co. Inc.
Rogers Electronic Tubes & Components

E. G. Lomas Co.
 Canadian Stackpole Ltd.
 Reon Resistor Corp.
 International Resistance Co.
 Erie Resistor of Canada Ltd.
 Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
 Perkins Electric Co., Ltd. —
 Electronics Division
 The Plessey Co. of Canada Ltd.
 Canadian Marconi Co.
 Electronic Tube & Components Div.
 General Radio Co.
 Adams Engineering Ltd.
 Electronic Engineering
 John R. Tilton Ltd.

RESISTORS (Fused)
 Workman TV Inc.

RESISTORS (High Frequency)
 R-O-R Associates Ltd.
 Workman TV Inc.
 Clarostat Mfg. Co., Inc.
 Dale Products, Inc.
 Sprague Electric International Ltd.
 Allies' Products Corp.
 The Wind Turbine Co. of Canada Ltd.
 Campbell Industries Inc.
 Atlas Radio Corp. Ltd.
 Electro Sonic Supply Co. Ltd.
 International Resistance Co. Ltd.
 Continental Carbon Div. of Wirt Co.
 Charles W. Pointon Ltd.
 E. G. Lomas Co.
 International Resistance Co.
 The Constanta Co. of Canada Ltd.

RESISTORS (High Stability)
 Welwyn Canada Ltd.
 H. Tinsley & Co. Ltd.
 R-O-R Associates Ltd.
 John Herring & Co. Ltd.
 Lake Engineering Co. Ltd.
 Sprague Electric International Ltd.
 Dale Products, Inc.
 Clarostat Mfg. Co., Inc.
 Reon Resistor Corp.
 Ohmite Manufacturing Co.
 Electro-Measurements, Inc.
 Campbell Industries Inc.
 Centralab, Div. of Globe Union Inc.
 Allies' Products Corp.
 Bayly Engineering Ltd.
 International Resistance Co. Ltd.
 Electro Sonic Supply Co. Ltd.
 Atlas Radio Corp. Ltd.
 Continental Carbon Div. of Wirt Co.
 The Glendon Co. Ltd.
 Aerovox Corporation
 Dubilier Condenser Co. (1925) Ltd.
 Charles W. Pointon Ltd.
 Rogers Electronic Tubes & Components
 Tel-Labs, Inc.
 Shallcross Manufacturing Co.
 E. G. Lomas Co.
 International Resistance Co.
 Erie Resistor of Canada Ltd.
 Bach-Simpson Ltd.
 The Constanta Co. of Canada Ltd.
 Erie Resistor Corp.
 Kerr-Machin Associates
 Canadian Marconi Co. —
 Electronic Tube & Components Div.
 Adams Engineering Ltd.
 General Radio Co.
 Associated Electronic Components
 The Plessey Co. of Canada Ltd.

RESISTORS (High Temp. Deposited Carbon)
 R-O-R Associated Ltd.
 Aerovox Canada Ltd.
 Clarostat Mfg. Co., Inc.
 Dale Products, Inc.
 Sprague Electric International Ltd.
 Allies' Products Corp.
 Centralab, Div. of Globe Union Inc.
 Campbell Industries Inc.
 Atlas Radio Corp. Ltd.
 Electro Sonic Supply Co. Ltd.
 International Resistance Co. Ltd.
 Arnold Ceramics, Inc.
 Charles W. Pointon, Inc.
 P. R. Mallory & Co. Inc.
 Rogers Electronic Tubes & Components
 International Resistance Co.
 Bach-Simpson Ltd.
 The Constant Co. of Canada Ltd.
 Kerr-Machin Associates
 Canadian Marconi Co. —
 Electronic Tube & Components Div.

RESISTORS (Multipliers and Precision)
 John Herring & Co. Ltd.
 Welwyn Canada Ltd.
 H. Tinsley & Co. Ltd.
 R-O-R Associates Ltd.
 Canadian Research Institute
 Allies' Products Corp.
 Sprague Electric International Ltd.
 Dale Products, Inc.
 Clarostat Mfg. Co., Inc.
 Campbell Industries Inc.
 Ohmite Manufacturing Co.
 Reon Resistor Corp.
 International Resistance Co. Ltd.
 Atlas Radio Corp. Ltd.
 Electro Sonic Supply Co. Ltd.

Hermann Fortier Inc.
 Bayly Engineering Ltd.
 Electro Measurements Inc.
 Continental Carbon Div. of Wirt Co.
 Aerovox Corporation
 Tel-Labs, Inc.
 Shallcross Manufacturing Co.
 E. G. Lomas Co.
 International Resistance Co.
 Bach-Simpson Ltd.
 Adams Engineering Ltd.
 Associated Electronic Components
 Measurement Engineering Ltd.

RESISTORS (Non-Linear)
 General Electric Co.
 Metallurgical Products Dept.

RESISTORS (Precision, Wire-Wound)
 R. C. Kahnert Sales Ltd.
 A. C. Simmonds & Sons Ltd.
 John Herring & Co. Ltd.
 H. Tinsley & Co. Ltd.
 Pye Canada Ltd.
 R-O-R Associates Ltd.
 Canadian Research Institute
 Reon Resistor Corp.
 Ohmite Manufacturing Co.
 Clarostat Mfg. Co., Inc.
 Dale Products, Inc.
 Sprague Electric International Ltd.
 Centralab, Div. of Globe Union Inc.
 Electro-Measurements, Inc.
 Ace Electronics Associates, Inc.
 Technology Instrument Corp.
 Coll Winders, Inc.
 Maurey Instrument Corp.
 Bayly Engineering Ltd.
 Multhead Instruments Ltd.
 Atlas Radio Corp. Ltd.
 Electro Sonic Supply Co. Ltd.
 International Resistance Co. Ltd.
 Ward Leonard of Canada Ltd.
 Charles W. Pointon Ltd.
 P. R. Mallory & Co. Inc.
 Shallcross Manufacturing Co.
 Multhead & Co. Ltd.
 Rollan Electric Co.
 Tel-Labs, Inc.
 E. G. Lomas Co.
 International Resistance Co.
 The J. W. Ellis Industries
 Non-Linear Systems, Inc.
 Associated Electronic Components
 Adams Engineering Ltd.
 Canadian Marconi Co.
 Canadian Marconi Co. —
 Electronic Tube & Components Div.
 General Radio Co.
 Electronic Engineering
 Kerr-Machin Associates
 Perkins Electric Co., Ltd. —
 Electronics Division

RESISTORS (Temperature-Sensitive)
 Workman TV Inc.

RESISTORS (Variable Composition)
 A. C. Simmonds & Sons Ltd.
 P. J. Heenan Ltd.
 C. C. Meredith & Co. Ltd.
 Centralab Canada Ltd.
 Chicago Telephone Supply Corp.
 Stackpole Carbon Co.
 Centralab, Div. of Globe Union Inc.
 Clarostat Mfg. Co., Inc.
 Ohmite Manufacturing Co.
 International Resistance Co. Ltd.
 Atlas Radio Corp. Ltd.
 Electro Sonic Supply Co. Ltd.
 P. R. Mallory & Co. Inc.
 International Resistance Co.
 Canadian Stackpole Ltd.
 Adams Engineering Ltd.
 Canadian Marconi Div. —
 Electronic Tube & Components Div.
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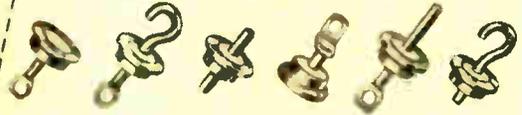
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 P. J. Heenan Ltd.
 Centralab Canada Ltd.
 A. C. Simmonds & Sons Ltd.
 Centralab, Div. of Globe Union Inc.
 Ohmite Mfg. Co.
 Javex
 J. R. Longstaffe Co. Ltd.
 Radio Components Ltd.
 Electro Sonic Supply Co. Ltd.
 Grayhill
 Hetherington, Inc.
 J. W. Miller Co.
 Shallcross Mfg. Co.
 Collins Radio Co. of Canada Ltd.
 Associated Electronic Components
 The Plessey Co. of Canada Ltd.

SWITCHES (Coaxial Cable)

R. C. Kahnert Sales Ltd.
 John Herring & Co. Ltd.
 J. B. Smyth Electronic Components
 The Wind Turbine Co. of Canada Ltd.
 Industrial Products Co. —
 Div. of Danbury-Knudsen Inc.
 Airtron, Inc.
 Andrew Antenna Corp., Ltd.
 Javex
 Electro Sonic Supply Co. Ltd.
 The Glendon Co. Ltd.

Defiance Engineering & Microwave Corp.
 Trad Electronics Corp.
 Prodelin, Inc.
 Perkins Electric Co., Ltd. —
 Electronics Div.
 Canadian General Electric Co., Ltd. —
 Electronic Equipment & Tube Dept.

SWITCHES (Key)

John Herring & Co. Ltd.
 A. C. Simmonds & Sons Ltd.
 C. P. Clare & Co.
 Burlec Sales Ltd.
 Hackbusch Electronics Ltd.
 Leonard Electric Ltd.
 Minneapolis-Honeywell Regulator Co. Ltd.
 — Brown Instrument Div.
 Switchcraft, Inc.
 JFD Mfg. Co., Inc.
 Electro Sonic Supply Co. Ltd.
 Muirhead Instruments Ltd.
 Automatic Electric Sales (Canada) Ltd.
 Northern Electric Co. Ltd.
 General Control Co.
 Donald P. Mossman, Inc.
 Muirhead & Co. Ltd.
 Standard Telephones & Cables Mfg. Co.
 (Canada) Ltd.
 Prince & Roberts
 The Plessey Co. of Canada Ltd.
 Engineered Sound Systems Ltd.

SWITCHES (Limit)

M. J. Howard
 Minneapolis-Honeywell Regulator Co. Ltd.
 — Brown Instrument Div.
 Aeromotive Engineering Products
 Davis Automatic Controls Ltd.
 United Electric Controls Co.
 The W. L. Maxson Corp. —
 Unimax Switch Div.
 Janco Corp.
 Cherry Electrical Products Corp.
 Electro Sonic Supply Co. Ltd.
 J. R. Longstaffe Co. Ltd.
 Minneapolis-Honeywell Regulator Co. Ltd.
 — Microswitch Div.
 Northern Electric Co. Ltd.
 Control Products, Inc.
 General Control Co.
 Hetherington, Inc.
 P. R. Mallory & Co. Inc.
 Prince & Roberts
 The Plessey Co. of Canada Ltd.

SWITCHES (Rotary)

R. C. Kahnert Sales Ltd.
 Minneapolis-Honeywell Regulator Co. Ltd.
 — Brown Instrument Div.
 Leonard Electric Ltd.
 H. Tinsley & Co. Ltd.
 A. C. Simmonds & Sons Ltd.
 P. J. Heenan Ltd.
 Centralab Canada Ltd.
 C. C. Meredith & Co. Ltd.
 Burlec Sales Ltd.
 John Herring & Co. Ltd.
 Aeromotive Engineering Products
 General Cement Mfg. Co. —
 Division of Textron, Inc.
 The Hart Mfg. Co.
 Farmer Electric Products Co. Inc.
 Clarostat Mfg. Co., Inc.
 Ericsson Telephone Sales of Canada Ltd.
 Ohmite Mfg. Co.
 Centralab — Div. of Globe Union Inc.
 JFD Mfg. Co., Inc.
 Janco Corp.
 Cherry Electrical Products Corp.
 Switchcraft, Inc.
 Walsco Electronics Corp.
 Canadian Westinghouse Co. Ltd. —
 Electronics Div.
 Airtron, Inc.
 Javex
 Electro Sonic Supply Co. Ltd.
 Radio Components Ltd.
 J. R. Longstaffe Co. Ltd.
 Renfrew Electric & Refrigerator Co. Ltd.
 Muirhead Instruments Ltd.
 Industrial Instruments, Inc.
 Herman H. Smith, Inc.
 Minneapolis-Honeywell Regulator Co. Ltd.
 — Microswitch Div.
 Northern Electric Co. Ltd.
 Arnhold Ceramics, Inc.
 General Control Co.
 Hetherington, Inc.
 Grayhill
 Insuline Corp. America —
 Subsidiary Van Norman Industries Inc.
 Ward Leonard of Canada Ltd.
 Electro Switch Corp.
 Aerovox Corp.
 Instrument Development Laboratories, Inc.
 Muirhead & Co. Ltd.
 P. R. Mallory & Co. Inc.
 Shallcross Mfg. Co.
 S. H. Crouch Co., Inc.
 Tenatronics Ltd.
 Prince & Roberts
 General Devices, Inc.
 The Plessey Co. of Canada Ltd.
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P. J. Heenan Ltd.
Centralab — Div. of Globe Union Inc.
Herman H. Smith, Inc.
Stackpole Carbon Co.
Walsco Electronics Corp.
Radio Components Ltd.
Renfrew Electric & Refrigerator Co. Ltd.
Electro Sonic Supply Co. Ltd.
J. R. Longstaffe Co. Ltd.
General Cement Mfg. Co. —
Division of Tectron, Inc.
Continental Carbon Division of Wirt Co.
Charles W. Pointon Ltd.
Insuline Corp. America —
Subsidiary Van Norman Industries Inc.
Hetherington, Inc.
Shallcross Mfg. Co.
P. R. Mallory & Co. Inc.
Fortiphone Ltd.
Tenatronics Ltd.
Canadian Stackpole Ltd.
The Plessey Co. of Canada Ltd.

SWITCHES (Thermal)

Automatic Electric Sales (Canada) Ltd.

SWITCHES (Time)

M. J. Howard
Consolidated Electronic Equip. Co. Ltd.
Burlec Sales Ltd.
John Herring & Co. Ltd.
Canadian Research Institute
Minneapolis-Honeywell Regulator Co. Ltd.
— Brown Instrument Div.
Davis Automatic Controls Ltd.
The Tork Clock Co., Inc.
The A. W. Haydon Co.
Sperry Gyroscope Ottawa Ltd.
Electro Sonic Supply Co. Ltd.
J. R. Longstaffe Co. Ltd.
Northern Electric Co. Ltd.
Automatic Temperature Control Co. Inc.
AEMCO Incorporated
P. R. Mallory & Co. Inc.
Montgomery Mfg. Co.
M. H. Rhodes, Incorporated
Lektra Laboratories, Inc.
Electronics Corp. of America
(Canada) Ltd.
General Devices, Inc.
A. T. R. Armstrong Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
Barber-Colman of Canada Ltd. —
(Wheelco Inst. Div.)

SWITCHES (Vacuum)

Edwards High Vacuum (Canada) Ltd.
Minneapolis-Honeywell Regulator Co. Ltd.
— Brown Instrument Div.
Davis Automatic Controls Ltd.
United Electric Controls Co.
Electro Sonic Supply Co. Ltd.
Manning, Maxwell & Moore, Inc. —
Aircraft Products Div.
Londex Ltd.
Penta Laboratories, Inc.
Gorn Electric Co.
E. G. Lomas Co.
Perkins Electric Co., Ltd. —
Electronics Div.

TAPE

Minnesota Mining & Mfg. of Canada Ltd.
B. F. Goodrich Canada Ltd.
Canadian Johns-Manville Co. Ltd.
Dow Corning Silicones Ltd.
Astral Electric Co. Ltd.
Dixon Corp.
W. H. Brady Co.
Insulation Manufacturers Corp.
Electro Sonic Supply Co. Ltd.
Duotone Company Inc.
The Connecticut Hard Rubber Co.
Northern Electric Co. Ltd.
Musimart of Canada Ltd.
The M. W. Dunton Co.
Labelon Tape Co. Ltd.
Recoton Corp.
Shamban Engineering Co.
Johnson & Johnson Ltd. —
Industrial Tape Div.
Electrodata — Div. of Burroughs Adding
Machine of Canada Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Engineered Sound Systems Ltd.
A. T. R. Armstrong Ltd.
Reeves Soundcraft Corp.

TAPE LEADER (Recording)

Minnesota Mining & Mfg. of Canada Ltd.
Dominion Sound Equipments Ltd.
Alex L. Clark Ltd.
McCurdy Radio Industries Ltd.
Electro Sonic Supply Co. Ltd.
ORRadio Industries Inc.
Industrial & Institutional
Communications Ltd.
Reeves Soundcraft Corp.

A. T. R. Armstrong Ltd.
Engineered Sound Systems Ltd.
Canadian General Electric Co., Ltd.
Electronic Equipment & Tube Dept.

TAPE (Recording)

Hackbusch Electronics Ltd.
Minnesota Mining & Mfg. of Canada Ltd.
Dominion Sound Equipments Ltd.
Alex L. Clark Ltd.
McCurdy Radio Industries Ltd.
Potter Instrument Co., Inc.
Electro Sonic Supply Co. Ltd.
ORRadio Industries Inc.
Musimart of Canada Ltd.
Reeves Soundcraft Corp.
Recoton Corp.
RCA Victor Company, Ltd.
Industrial & Institutional
Communications Ltd.
Electrodata — Div. of Burroughs Adding
Machine of Canada Ltd.
Canadian Marconi Company —
Electronic Tube & Components Div.
Perkins Electric Co., Ltd. —
Electronics Div.
Electronic Communications Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Engineered Sound Systems Ltd.
A. T. R. Armstrong Ltd.

TAPE SPLICING (Recording)

Minnesota Mining & Mfg. of Canada Ltd.
Dominion Sound Equipments Ltd.
Alex L. Clark Ltd.
W. H. Brady Co.
Robins Industries Corp.
Electro Sonic Supply Co. Ltd.
ORRadio Industries Inc.
Reeves Soundcraft Corp.
A. T. R. Armstrong Ltd.
Engineered Sound Systems Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.

TELEMETERING COMMUTATORS

Instrument Development Laboratories, Inc.

TELEMETERING SYSTEMS

Electromechanical Products
Alex L. Clark Ltd.
Lake Engineering Co. Ltd.
Minneapolis-Honeywell Regulator Co. Ltd.
— Brown Instrument Div.
The Bristol Co. of Canada Ltd.
George Kelk Ltd.
Aviation Electric Ltd.
Electrodesign
R. H. Nichols Ltd.
Computing Devices of Canada Ltd.
Industrial Electronics of Canada Ltd.
Hackbusch Electronics Ltd.
Ampex American Corp.
The Ahearn & Soper Co.
Canadian Westinghouse Co. Ltd. —
Electronics Div.
Lynch Carrier Systems Inc.
J. Langham Thompson Ltd.
Amalgamated Electric Corp. Ltd.
Research Industries Ltd.
Allen B. DuMont Labs., Inc.
Rogers Majestic Electronics Ltd.
Elliott Brothers (London) Ltd.
Evershed & Vignoles Ltd.
Gulton Industries, Inc.
Hoover Electronics Co.
The Foxboro Co.
RCA Victor Company, Ltd.
Radio Frequency Laboratories, Inc.
Servo Corp. of America
Photocon Research Products
Lel, Inc.
Bendix Aviation Corp. — Pacific Div.
Collins Radio Co. of Canada Ltd.
Radio Engineering Products Ltd.
The J. W. Ellis Industries
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
BJ Electronics, Borg-Warner Corp.
The Bell Telephone Co.
Beaconing Optical & Precision Materials
Co. Ltd.
Avionics Ltd.
Radionics Ltd.
General Communications Ltd.
General Devices, Inc.
Barber-Colman of Canada Ltd. —
(Wheelco Inst. Div.)
VecTrol Engineering, Inc.
The British Thomson-Houston Co.
(Canada) Ltd.

TELEPHONE (Equipment)

John Herring & Co. Ltd.
Telephone Mfg. Co. Ltd.
Dominion Sound Equipments Ltd.
Hackbusch Electronics Ltd.
Pye Canada Ltd.
Audio-Vox
Schauer Mfg. Corp.
Kellogg Switchboard & Supply Co.
Ericsson Telephone Sales of Canada Ltd.
The Ahearn & Soper Co. Ltd.
Amalgamated Electric Corp. Ltd.
Electrolabs
Specialty Engineering & Electronics Co.
S & T Sales Ltd.

Automatic Electric Sales (Canada) Ltd.
Humble Mfg. Co. Ltd.
Shure Brothers, Inc.
S. H. Couch Co., Inc.
Industrial & Institutional
Communications Ltd.
Electro-Vox Intercom Inc.
Radio Engineering Products Ltd.
Collins Radio Co. of Canada Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Prince & Roberts
Osborne Electric Co., Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
Electronic Communications Ltd.
Engineered Sound Systems Ltd.
The Bell Telephone Co. of Canada
The Wheeler Insulated Wire Co., Inc. —
Div. of Sperry Rand Corp.

TERMINAL BLOCKS

M. J. Howard
Consolidated Electronic Equip. Co. Ltd.
A. C. Simmonds & Sons Ltd.
Burlec Sales Ltd.
H. B. Etlin Co. Ltd.
X-Ray & Radium Industries Ltd.
John Spotton Co. Ltd.
Hackbusch Electronics Ltd.
National Fibre Co. of Canada, Ltd.
Panelyte Div., St. Regis Paper Co.
(Canada) Ltd.
Astral Electric Co. Ltd.
The Hart Mfg. Co.
James Millen Mfg. Co., Inc.
U.S. Components, Inc.
Cambridge Thermionic Corp.
H. Roy Gray Co. Ltd.
Electro Sonic Supply Co. Ltd.
Herman H. Smith, Inc.
Specialty Engineering & Electronics Co.
Automatic Electric Sales (Canada) Ltd.
Continental Connector Corp.
Curtis Development & Mfg. Co.
Buchanan Electrical Products Corp.
Kulka Electric Mfg. Co. Inc.
Garde Mfg. Co.
Hoffman Semiconductor Division of
Hoffman Electronics Corp.
Molding Corp. of America, Inc.
The States Company
Spaulding Fibre Co., Inc.
Prince & Roberts
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
Osborne Electric Co., Ltd.
Associated Electronic Components
The Plessey Co. of Canada Ltd.
White Radio Ltd.
Cinch Mfg. Corp. and H. B. Jones Div.
Permonite Mfg. Co.
Desser E-E Ltd.
A. T. R. Armstrong Ltd.
General Communications Ltd.

TERMINAL BOARDS

M. J. Howard
Consolidated Electronic Equip. Co. Ltd.
Lake Engineering Co. Ltd.
United-Carr Fastener Co. of Canada Ltd.
National Fibre Co. of Canada, Ltd.
Panelyte Div., St. Regis Paper Co.
(Canada) Ltd.
Warren Plastics Corp.
Cambridge Thermionic Corp.
Precision Metal Products Co.
U.S. Engineering Co., Inc.
U.S. Components, Inc.
General Cement Mfg. Co. —
Div. of Tectron, Inc.
Electro Sonic Supply Co. Ltd.
Herman H. Smith, Inc.
Specialty Engineering & Electronics Co.
Buchanan Electrical Products Corp.
Curtis Development & Mfg. Co.
H. Clarke & Co. (Manchester) Ltd.
Continental Connector Corp.
Automatic Electric Sales (Canada) Ltd.
The Glendon Co. Ltd.
Garde Mfg. Co.
Insuline Corp. America —
Subsidiary Van Norman Industries Inc.
Kulka Electric Mfg. Co. Inc.
The States Company
Molding Corp. of America, Inc.
Power Controls Ltd.
J. W. Millee Co.
Prince & Roberts
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Desser E-E Ltd.
Permonite Mfg. Co.
Cinch Mfg. Corp. and H. B. Jones Div.
White Radio Ltd.
Associated Electronic Components
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Beaconing Optical & Precision Materials
Co. Ltd.

TERMINALS

Consolidated Electronic Equip. Co. Ltd.
H. Tinsley & Co. Ltd.
Lake Engineering Co. Ltd.

John Spotton Co. Ltd.
 Aircraft-Marine Products of Canada, Ltd.
 Hackbusch Electronics Ltd.
 United-Carr Fastener Co. of Canada Ltd.
 Electrovert Ltd.
 JFD Mfg. Co., Inc.
 James Millen Mfg. Co., Inc.
 Vaco Products Co.
 Lundy Associates
 U.S. Engineering Co., Inc.
 Precision Metal Products Co.
 Whitso, Inc.
 Cambridge Thermionic Corp.
 Thompson-Bremer & Co.
 Fusite Corp.
 Stupakoff Div. of The Carborundum Co.
 Warren Plastics Corp.
 Circon Component Co.
 Waldom Electronics Inc.
 Electro Sonic Supply Co. Ltd.
 General Cement Mfg. Co. —
 Div. of Textron, Inc.
 Herman H. Smlth, Inc.
 Continental Connector Corp.
 L. L. Constantin & Co.
 Buchanan Electrical Products Corp.
 The Glendon Co. Ltd.
 Helder Mfg. Corp.
 Eagle Electric Mfg. Co., Inc.
 Hoffman Semiconductor Division of
 Hoffman Electronics Corp.
 Kulka Electric Mfg. Co. Inc.
 Garde Manufacturing Co.
 Molding Corp. of America, Inc.
 Shakeproof — Div. of Illinois Tool Works
 Shamban Engineering Co.
 Tornico Electronics, Inc.
 E. G. Lomas Co.
 Tenatronics Ltd.
 International Resistance Co.
 Quality Hermetics Ltd.
 Waters Mfg. Inc.
 Perkins Electric Co., Ltd. —
 Electronics Div.
 Osborne Electric Co., Ltd.
 Associated Electronic Components
 The Plessey Co. of Canada Ltd.
 White Radio Ltd.
 Cinch Mfg. Corp. and H. B. Jones Div.
 Permonite Mfg. Co.

TEST EQUIPMENT (Microwave)

Vectron, Inc.
 Electromechanical Products
 R-O-R Associates Ltd.
 Cossor Canada Ltd.
 Canadian Aviation Electronics Ltd.
 Computing Devices of Canada Ltd.
 Electrodesign
 Dynamic Electronics — New York Inc.
 Philco Corporation —
 Government & Industrial Div.
 Laboratory for Electronics, Inc.
 Chemalloy Electronics Corp.
 Canadian Westinghouse Co. Ltd. —
 Electronics Div.
 Polarad Electronics Corp.
 The Narda Corp.
 DeMornay-Bonardi Corp.
 Color Television Inc.
 Technicraft Laboratories, Inc.
 Kay Electric Co.
 Sierra Electronic Corp.
 Atlas Radio Corp. Ltd.
 Bayly Engineering Ltd.
 Berkeley Div. of Beckman
 Instruments, Inc.
 Baird Associates — Atomic Instrument Co.
 Rogers Majestic Electronics Ltd.
 Elliott Brothers (London) Ltd.
 Hoover Electronics Co.
 F-R Machine Works, Inc. —
 Electronics & X-Ray Div.
 Frequency Standards Inc.
 Raytheon Mfg. Co.
 Lavoie Laboratories, Inc.
 Photo Crystals, Inc.
 The Solartron Electronic Group Ltd.
 RCA Victor Company, Ltd.
 E. G. Lomas Co.
 Collins Radio Co. of Canada Ltd.
 Standard Telephones & Cables Mfg. Co.
 (Canada) Ltd.
 Beaconsing Optical & Precision Materials
 Co. Ltd.
 Empire Devices Products Corp.
 Decca Radar (Canada) Ltd.
 Adams Engineering Ltd.
 Measurement Engineering Ltd.
 BJ Electronics, Borg-Warner Corp.
 The British Thomson-Houston Co.
 (Canada) Ltd.

TEST EQUIPMENT (Tone Telegraph)

Northern Radio Co., Inc.

TESTERS (Battery)

Alex L. Clark Ltd.
 Canadian Research Institute
 Hackbusch Electronics Ltd.
 A. C. Simmonds & Sons Ltd.
 Heath Company
 Electronic Instrument Co. Inc.
 Christie Electric Corp.
 Electro Sonic Supply Co. Ltd.
 Burgess Battery Co.

Automatic Electric Sales (Canada) Ltd.
 Fox Products Co.
 The Hickok Electrical Instrument Co.
 Gates Electronic Co.
 The Triplett Electrical Instrument Co.
 Bruno-New York Industries Corp.
 MJS Electronic Sales Ltd.
 Bach-Simpson Ltd.
 Industrial Control Co.
 Stark Electronic Instruments Ltd.
 John R. Tilton Ltd.
 Perkins Electric Co., Ltd. —
 Electronics Div.

TESTERS (Capacitors)

Alex L. Clark Ltd.
 Canadian Research Institute
 John Herring & Co. Ltd.
 Jackson Electrical Instrument Co.
 Kay Electric Co.
 Industrial Instruments Inc.
 Electronic Instrument Co. Inc.
 Heath Company
 Electro Sonic Supply Co. Ltd.
 Gulton Industries, Inc.
 Aerovox Corp.
 The Hickok Electrical Instrument Co.
 Gates Electronic Co.
 Simmonds Aeroaccessories, Inc.
 Bruno-New York Industries Corp.
 Shallcross Mfg. Co.
 Bach-Simpson Ltd.
 The J. W. Ellis Industries
 Associated Electronic Components
 Perkins Electric Co., Ltd. —
 Electronics Div.
 John R. Tilton Ltd.
 Stark Electronic Instruments Ltd.
 Industrial Control Co.
 Industrial Test Equipment Co.

TESTERS (Circuit)

Alex L. Clark Ltd.
 Canadian Research Institute
 R. H. Nichols Ltd.
 Powerlite Devices Ltd.
 General Cement Mfg. Co. —
 Div. of Textron, Inc.
 Color Television Inc.
 Jackson Electrical Instrument Co.
 Phaostron Instrument and Electronic Co.
 Precision Apparatus Co., Inc.
 Electro Sonic Supply Co. Ltd.
 Automatic Electric Sales (Canada) Ltd.
 Eagle Electric Mfg. Co., Inc.
 Evershed & Vignoles Ltd.
 The Hickok Electrical Instrument Co.
 Bruno-New York Industries Corp.
 Pomona Electronics Co., Inc.
 The Triplett Electrical Instrument Co.
 The Solartron Electronic Group Ltd.
 Lavoie Laboratories, Inc.
 TMC (Canada) Ltd.
 Bach-Simpson Ltd.
 The J. W. Ellis Industries
 MJS Electronic Sales Ltd.
 Non-Linear Systems, Inc.
 Measurement Engineering Ltd.
 Adams Engineering Ltd.
 General Communications Ltd.
 The Plessey Co. of Canada Ltd.
 Industrial Control Co.
 Stark Electronic Instruments Ltd.
 John R. Tilton Ltd.
 Perkins Electric Co., Ltd. —
 Electronics Div.
 Associated Electronic Components
 Industrial Test Equipment Co.

TESTERS (Continuity)

Alex L. Clark Ltd.
 R-O-R Associates Ltd.
 Canadian Research Institute
 R. H. Nichols Ltd.
 Phaostron Instrument and Electronic Co.
 Jackson Electrical Instrument Co.
 Color Television Inc.
 Electronic Instrument Co. Inc.
 Electro Sonic Supply Co. Ltd.
 Automatic Electric Sales (Canada) Ltd.
 The Hickok Electrical Instrument Co.
 Evershed & Vignoles Ltd.
 Bruno-New York Industries Corp.
 The J. W. Ellis Industries
 Bach-Simpson Ltd.
 MJS Electronic Sales Ltd.
 Associated Electronic Components
 Perkins Electric Co., Ltd. —
 Electronics Div.
 John R. Tilton Ltd.
 Stark Electronic Instruments Ltd.
 General Communications Ltd.
 Industrial Test Equipment Co.

TESTERS (Distortion)

Alex L. Clark Ltd.
 R-O-R Associates Ltd.
 Electronic Associates Ltd.
 Canadian Research Institute
 Computing Devices of Canada Ltd.
 Heath Company
 Electro Sonic Supply Co. Ltd.
 Atlas Radio Corp. Ltd.
 Audio Instrument Co. Inc.
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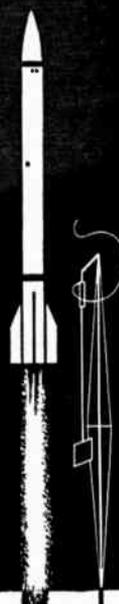
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Canadian Research Institute
R. H. Nichols Ltd.
Electrodesign
H. Tinsley & Co. Ltd.
Powerlite Devices Ltd.
Industrial Instruments Inc.
The TACK Corp.
Electro Sonic Supply Co. Ltd.
Airmec Ltd.
The English Electric Co. Ltd.
The Eastern Specialty Co.
Knopp Inc.
Evershed & Vignoles Ltd.
Shallcross Mfg. Co.
Simmonds Aerocessories, Inc.
Beta Electric Corp.
The J. W. Ellis Industries
Bach-Simpson Ltd.
Perkins Electric Co. Ltd. —
Electronics Div.
Associated Electronic Components
General Radio Co.
General Communications Ltd.
Dawe Instruments Ltd. — Canadian Div.
Industrial Test Equipment Co.
- TESTERS (Meter)**
Alex L. Clark Ltd.
R-O-R Associates Ltd.
Canadian Research Institute
R. H. Nichols Ltd.
Electrodesign
John Herring & Co. Ltd.
H. Tinsley & Co. Ltd.
Phaoston Instrument and Electronic Co.
The Hickok Electrical Instrument Co.
Knopp Inc.
The Eastern Specialty Co.
Kay Lab
Radio Frequency Laboratories, Inc.
Bruno-New York Industries Corp.
Bach-Simpson Ltd.
The J. W. Ellis Industries
MJS Electronic Sales Ltd.
Thermovolt Instruments Ltd.
Non-Linear Systems, Inc.
General Communications Ltd.
Associated Electronic Components
John R. Tilton Ltd.
Adams Engineering Ltd.
Stark Electronic Instruments Ltd.
- TESTERS (Torque)**
P. A. Sturtevant Co.
- TESTERS (Transistor)**
Canadian Research Institute
Lake Engineering Co. Ltd.
Kay Electric Co.
Electronic Instrument Co. Inc.
Baird Associates — Atomic Instrument Co.
American Electronic Laboratories, Inc.
Polyphase Instrument Co.
Fretco Incorporated
Fisher Research Laboratory, Inc.
Electronic Research Associates, Inc.
General Transistor Corp.
Gulton Industries, Inc.
Bruno-New York Industries Corp.
Precise Development Corp.
Canadian General Electric Co. Ltd. —
Electronic Tube Div.
Avionics Ltd.
Measurement Engineering Ltd.
John R. Tilton Ltd.
- TESTERS (Tube)**
Alex L. Clark Ltd.
Canadian Research Institute
R. H. Nichols Ltd.
Hackbusch Electronics Ltd.
Powerlite Devices Ltd.
Heath Company
Electronic Instrument Co. Inc.
Jackson Electrical Instrument Co.
General Cement Mfg. Co. —
Div. of Textron, Inc.
Precision Apparatus Co., Inc.
Electro Sonic Supply Co. Ltd.
The Hickok Electrical Instrument Co.
Bruno-New York Industries Corp.
Precise Development Corp.
New London Instrument Co., Inc.
The Triplett Electrical Instrument Co.
MJS Electronic Sales Ltd.
Bach-Simpson Ltd.
John R. Tilton Ltd.
Measurement Engineering Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Canadian Marconi Company —
Electronic Tube & Components Div.
Electronic Controls Ltd.
Perkins Electric Co. Ltd. —
Electronics Div.
Stark Electronic Instruments Ltd.
- TESTERS (Tube, Klystron)**
The Narda Corp.
Hoover Electronics Co.
Measurement Engineering Ltd.
- THERMISTORS**
Lake Engineering Co. Ltd.
General Electric Co. —
Metallurgical Products Dept.
Fenwal Incorporated
- THERMISTORS (Thermally Sensitive)**
General Electric Co. —
Metallurgical Products Dept.
- THERMOCOUPLES**
Mechron Engineering Products Ltd.
R. C. Kahnert Sales Ltd.
Electrodesign
R. H. Nichols Ltd.
Canadian Research Institute
John Herring & Co. Ltd.
Cossor Canada Ltd.
Aeromotive Engineering Products
Minneapolis-Honeywell Regulator Co. Ltd.
— Brown Instrument Div.
The Bristol Co. of Canada Ltd.
Aviation Electric Ltd.
Electrovert Ltd.
Canadian Westinghouse Co. Ltd. —
Electronics Div.
Airtron Canada Ltd.
Renfrew Electric & Refrigerator Co. Ltd.
Barber-Colman Co.
Fenwal Incorporated
The Foxboro Co.
Elliott Brothers (London) Ltd.
Bruno-New York Industries Corp.
West Instrument Corp.
Thermovolt Instrument Ltd.
The J. W. Ellis Industries
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Hoskins Alloys of Canada, Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
Measurement Engineering Ltd.
General Communications Ltd.
Barber-Colman of Canada Ltd. —
(Wheelco Inst. Div.)
Peacock Brothers Ltd.
Pacific Transducer Corp.
- THERMOSTATS (Electronic)**
M. J. Howard
Electrodesign
Canadian Research Institute
Aeromotive Engineering Products
Minneapolis-Honeywell Regulator Co. Ltd.
— Brown Instrument Div.
Curtiss-Wright Corp.
Barber-Colman Co.
Kay Lab
Fielden Electronics Ltd.
Fielden Instrument Div.
Fenwal Incorporated
G. V. Controls Inc.
Robertshaw-Fulton Controls Co. —
Fulton Syphon Div.
West Instrument Corp.
Metals & Controls Corp. —
Spencer Thermostat Div.
Perkins Electric Co., Ltd. —
Electronics Div.
Barber-Colman of Canada Ltd. —
(Wheelco Inst. Div.)
VecTrol Engineering, Inc.
- THERMOSTATS (Electronic Bimetal)**
M. J. Howard
Canadian Research Institute
Davis Automatic Controls Ltd.
Minneapolis-Honeywell Regulator Co. Ltd.
— Brown Instrument Div.
Consolidated Electronic Equip. Co. Ltd.
Stevens Mfg. Co., Inc.
Control Products, Inc.
Curtiss-Wright Corp.
Fenwal Incorporated
Kulka Electric Mfg. Co. Inc.
Metals & Controls Corp. —
Spencer Thermostat Div.
Perkins Electric Co., Ltd. —
Electronics Div.
Barber-Colman of Canada Ltd. —
(Wheelco Inst. Div.)
- TIMERS (Cycle)**
Pratt & Whitney Co., Inc.
Electrodesign
Canadian Research Institute
John Herring & Co. Ltd.
A. C. Simmonds & Sons Ltd.
Martin Engineering Inc.
Davis Automatic Controls Ltd.
Leonard Electric Ltd.
Minneapolis-Honeywell Regulator Co. Ltd.
— Brown Instrument Div.
The Bristol Co. of Canada Ltd.
Burlac Sales Ltd.
Electrovert Ltd.
Powerlite Devices Ltd.
Potter Instrument Co., Inc.
The A. W. Haydon Co.
Abrams Instrument Corp.
Atlas Radio Corp. Ltd.
American Electronics, Inc.
Cramer Controls Corp.
AEMCO Incorporated
Automatic Temperature Control Co. Inc.
Automatic Electric Sales (Canada) Ltd.
El Mec Laboratories, Inc.
Industrial Timer Corp.
The Standard Electric Time Co.
- Londex Ltd.
P. R. Mallory & Co. Inc.
Lektra Laboratories, Inc.
The J. W. Ellis Industries
Electronics Corp. of America (Canada) Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
Electronic Controls Ltd.
Computer-Measurements Corp.
Canadian Marconi Co.
A. T. R. Armstrong Ltd.
VecTrol Engineering, Inc.
The British Thomson-Houston Co.
(Canada) Ltd.
- TIMERS (Electronic)**
Electrodesign
Canadian Research Institute
John Herring & Co. Ltd.
Electronic Associates Ltd.
Cossor Canada Ltd.
Martin Engineering Inc.
Aeromotive Engineering Products
Minneapolis-Honeywell Regulator Co. Ltd.
— Brown Instrument Div.
Industrial Electronics of Canada Ltd.
Electrovert Ltd.
Powerlite Devices Ltd.
Potter Instrument Co., Inc.
Canadian Westinghouse Co. Ltd. —
Electronics Div.
Electronics Corp. of America
Electronic Control Corp.
Robotron Corp.
Farmer Electric Products Co. Inc.
Heath Company
Atlas Radio Corp. Ltd.
Research Industries Ltd.
Dominion Electrohome Industries Ltd.
Baird Associates — Atomic Instrument Co.
Automatic Temperature Control Co. Inc.
American Electronics, Inc.
Northern Electric Co. Ltd.
Ferrara Inc.
General Control Co.
Rogers Majestic Electronics Ltd.
Lektra Laboratories, Inc.
P. R. Mallory & Co. Inc.
Ripley Co. Inc.
Electronics Corp. of America (Canada) Ltd.
Barber-Colman of Canada Ltd. —
(Wheelco Inst. Div.)
Peacock Brothers Ltd.
Computer-Measurements Corp.
Canadian Marconi Co.
Electronic Controls Ltd.
Measurement Engineering Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
VecTrol Engineering, Inc.
The British Thomson-Houston Co.
(Canada) Ltd.
- TIMERS (Impulse)**
Electrodesign
John Herring & Co. Ltd.
Martin Engineering Inc.
Leonard Electric Ltd.
Minneapolis-Honeywell Regulator Co. Ltd.
— Brown Instrument Div.
Potter Instrument Co., Inc.
The A. W. Haydon Co.
PSC Applied Research Ltd.
Automatic Temperature Control Co. Inc.
Cramer Controls Corp.
Automatic Electric Sales (Canada) Ltd.
General Control Co.
Ferrara Inc.
The J. W. Ellis Industries
Central Scientific Co. of Canada Ltd.
Electronics Corp. of America (Canada) Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
Computer-Measurements Corp.
Canadian Marconi Co.
- TIMERS (Interval)**
Pratt & Whitney Co., Inc.
Electrodesign
Canadian Research Institute
John Herring & Co. Ltd.
Computing Devices of Canada Ltd.
A. C. Simmonds & Sons Ltd.
Martin Engineering Inc.
Davis Automatic Controls Ltd.
Leonard Electric Ltd.
Minneapolis-Honeywell Regulator Co. Ltd.
— Brown Instrument Div.
Burlac Sales Ltd.
X-Ray & Radium Industries Ltd.
Powerlite Devices Ltd.
Abrams Instrument Corp.
The A. W. Haydon Co.
Sperry Gyroscope Ottawa Ltd.
Farmer Electric Products Co. Inc.
Potter Instrument Co., Inc.
Robotron Corp.
Atlas Radio Corp. Ltd.
PSC Applied Research Ltd.
Dominion Electrohome Industries Ltd.
Baird Associates — Atomic Instrument Co.
AEMCO Incorporated
Automatic Electric Sales (Canada) Ltd.
Cramer Controls Corp.
Automatic Temperature Control Co. Inc.
Industrial Timer Corp.

El Mec Laboratories, Inc.
Ferrara Inc.
General Control Co.
Lektra Laboratories, Inc.
P. R. Mallory & Co. Inc.
The Standard Electric Time Co.
Londex Ltd.
Labline, Inc.
M. H. Rhodes, Incorporated
Montgomery Mfg. Co.
Central Scientific Co. of Canada Ltd.
Electronics Corp. of America (Canada) Ltd.
Engineered Sound Systems Ltd.
A. T. R. Armstrong Ltd.
Electronic Controls Ltd.
Canadian Marconi Co.
Computer-Measurements Corp.
VecTrol Engineering, Inc.

TIMERS (Photoelectric)
Autotron, Inc.

TIMERS (Reset)
Electrodesign
John Herring & Co. Ltd.
Computing Devices of Canada Ltd.
A. C. Simmonds & Sons Ltd.
Cossor Canada Ltd.
Martin Engineering Inc.
Davis Automatic Controls Ltd.
Aeromotive Engineering Products
Minneapolis-Honeywell Regulator Co. Ltd.
Brown Instrument Div.
Burllec Sales Ltd.
Electrovert Ltd.
Powerlite Devices Ltd.
Potter Instrument Co., Inc.
Farmer Electric Products Co. Inc.
The A. W. Haydon Co.
Automatic Temperature Control Co. Inc.
Cramer Controls Corp.
Automatic Electric Sales (Canada) Ltd.
AEMCO Incorporated
General Control Co.
Ferrara Inc.
El Mec Laboratories, Inc.
Industrial Timer Corp.
Londex Ltd.
The Standard Electric Time Co.
P. R. Mallory & Co. Inc.
Lektra Laboratories, Inc.
The J. W. Ellis Industries
General Electric Co., X-Ray Dept.
Electronics Corp. of America (Canada) Ltd.
Computer-Measurements Corp.
Canadian Marconi Co.
Electronic Controls Ltd.
Peacock Brothers Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.

TIMERS (Sequence)
John Herring & Co. Ltd.
A. C. Simmonds & Sons Ltd.
Martin Engineering Inc.
Davis Automatic Controls Ltd.
Minneapolis-Honeywell Regulator Co. Ltd.
Brown Instrument Div.
The Bristol Co. of Canada Ltd.
Burllec Sales Ltd.
Electrovert Ltd.
The A. W. Haydon Co.
Farmer Electric Products Co. Inc.
Potter Instrument Co., Inc.
Robotron Corp.
Sperry Gyroscope Ottawa Ltd.
Abrams Instrument Corp.
Canadian Westinghouse Co. Ltd. —
Electronics Div.
Baird Associates — Atomic Instrument Co.
American Electronics, Inc.
AEMCO Incorporated
Cramer Controls Corp.
Automatic Temperature Control Co. Inc.
Industrial Timer Corp.
El Mec Laboratories, Inc.
Ferrara Inc.
General Control Co.
Montgomery Mfg. Co.
Lektra Laboratories, Inc.
P. R. Mallory & Co. Inc.
The Standard Electric Time Co.
Londex Ltd.
The J. W. Ellis Industries
Electronics Corp. of America (Canada) Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
Measurement Engineering Ltd.
Peacock Brothers Ltd.
Canadian Marconi Co.

TOOLS (Wire-Wrapping)
Gardner-Denver Company —
Keller Tool Div.

TRACERS (Oscilloscopes)
Electrodesign
Computing Devices of Canada Ltd.
Electronic Instrument Co. Inc.
Atlas Radio Corp. Ltd.
Electronic Tube Corp.
Allen B. DuMont Labs., Inc.
The Hickok Electrical Instrument Co.
Bach-Simpson Ltd.
Waters Mfg. Inc.

TRACERS (Signal)
Canadian Research Institute
Electronic Instrument Co. Inc.
Heath Company

Electro Sonic Supply Co. Ltd.
Rogers Majestic Electronics Ltd.
Stark Electronic Instruments Ltd.
John R. Tilton Ltd.

TRACERS (Transistor Curve)
Magnetic Amplifiers, Inc.

TRANSCIEVERS

M. J. Howard
Mechron Engineering Products Ltd.
Aviation Electric Ltd.
Pye Canada Ltd.
Chisholm Industries Ltd.
Computing Devices of Canada Ltd.
The Ahearn & Soper Co. Ltd.
Allen B. DuMont Labs., Inc.
RCA Victor Co., Ltd.
Lel, Inc.
TMC (Canada) Ltd.
Redifon (Canada) Ltd.
Collins Radio Co. of Canada Ltd.
Standard Telephone & Cables Mfg. Co.
(Canada) Ltd.
Measurement Engineering Ltd.
The Plessey Co. of Canada Ltd.
The British Thomson-Houston Co.
(Canada) Ltd.

TRANSUCERS

Electromechanical Products
R. C. Kahnert Sales Ltd.
Computing Devices of Canada Ltd.
Minneapolis-Honeywell Regulator Co. Ltd.
— Brown Instrument Div.
X-Ray & Radium Industries Ltd.
C. R. Snelgrove Co. Ltd.
Bogue Electric of Canada, Ltd.
Process-Instrument Systems Ltd.
R-O-R Associates Ltd.
Canadian Aviation Electronics Ltd.
Lake Engineering Co. Ltd.
Alex L. Clark Ltd.
J. B. Smyth Electronics Components
Powerlite Devices Ltd.
Acoustica Associates, Inc.
Technicraft Laboratories, Inc.
Southern Instruments Ltd. —
Oscillograph Div.
Endevco Corp.
Woodwelding, Incorporated
Electro Products Laboratories
J. Langham Thompson Ltd.
Bourns Laboratories Inc.
Erie Resistor Corp.
Telex, Inc.
Stackpole Carbon Co.
Bludworth Marine Division of
Kearfott Co., Inc.
Berkeley Division of
Beckman Instruments, Inc.
Consolidated Electrodynamics Corp.
Automatic Temperature Control Co. Inc.
Goodmans Industries Ltd.
Ultradiv Engineering Labs., Inc.
Doelcam Div. of Minneapolis-Honeywell
Gulton Industries, Inc.
Elliott Brothers (London) Ltd.
Bendix Aviation Corp. — Pacific Div.
Photocon Research Products
Pickering and Co., Inc.
Radionics Ltd.
Avionics Ltd.
BJ Electronics, Borg-Warner Corp.
The Plessey Co. of Canada Ltd.
VecTrol Engineering, Inc.

TRANSFORMER LAMINATIONS

El-Met-Parts Ltd.
Telex, Inc.
Insulation Manufacturers Corp.
Hermann Fortier Inc.
Moloney Electric Co. of Canada, Ltd.
Panelyte Division, St. Regis Paper Co.
(Canada) Ltd.
Spaulding Fibre Co., Inc.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Canadian Marconi Co. —
Electronic Tube & Components Div.

TRANSFORMERS (Audio)

M. J. Howard
R. C. Kahnert Sales Ltd.
Computing Devices of Canada Ltd.
Hammond Manufacturing Co. Ltd.
Hackbusch Electronics Ltd.
John Herring & Co. Ltd.
Telex, Inc.
Standard Electronics Corp.
Caledonia Electronics and
Transformer Corp.
Whiteley Electrical Radio Co. Ltd.
Altec Lansing Corp.
Oxford Electric Corp.
The Airpax Products Co.
Laboratory for Electronics, Inc.
Fairchild Recording Equipment Co.
Triad Transformer Corp.
The Ahearn & Soper Co. Ltd.
Electro Sonic Supply Co. Ltd.
Muirhead Instruments Ltd.
Acme Electric Corp. Ltd.
Copper Wire Products Ltd.
Hermann Fortier Inc.
S & T Sales Ltd.
Acro Products Co.
Northern Electric Co. Ltd.

**CHICAGO
MAGNETIC**

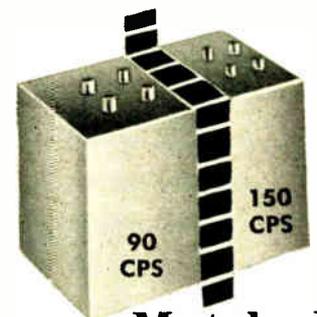
solves
problems
in

TRANSFORMERS
TUNED FILTERS

creative
engineering

such as this*

Paired Filters



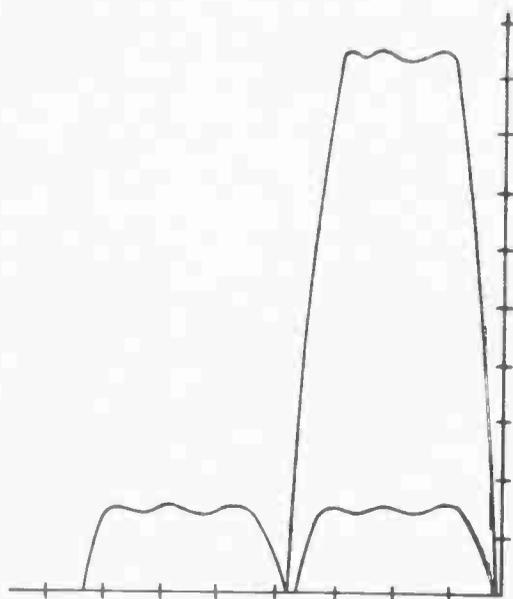
Matched

to tolerances of 0.1% through a temperature cycle of -67°F . to $+190^{\circ}\text{F}$.

*designed and manufactured for a specific application in aircraft glidepath equipment.

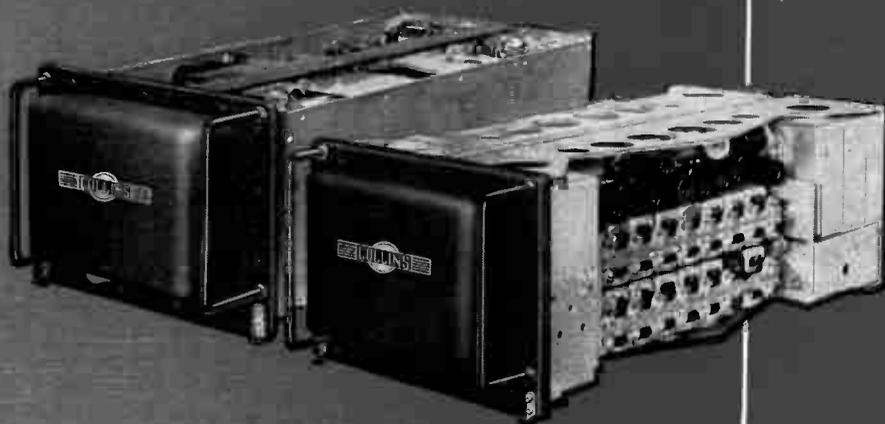
**CHICAGO MAGNETIC
CONTROL**

1616 NORTH DAMEN AVENUE
CHICAGO 47, ILLINOIS



COLLINS LEADS IN SSB DEVELOPMENT

An entire new line with **20** variations of kilowatt and up Airborne and



AIRBORNE KILOWATT

An SSB airborne communication system utilizing transceiver techniques delivers 1 kilowatt PEP. Automatic tuning by servos enables accurate selection by remote control of any of the 28,000 available channels in 1 kc increments.



From an integrated design concept, Collins has developed a line of 2-30 mc single sideband systems with a flexibility to fill the requirements of any installation. Fully compatible with AM, the systems were designed expressly to take advantage of SSB's narrower bandwidth, greater effective talking power and relative immunity from degradation through selective fading. The equipment includes ground 1-kilowatt transmitters and transceivers, 5-, 20- and 45-kilowatt transmitters, receivers, exciters and airborne 1-kilowatt transceivers. Back of these systems is over a decade of foresighted research which produced distortion reducing features, extreme frequency stability, the Mechanical Filter, improved low spurious circuitry, non-critical neutralization and amplifier stability, and easily operated servo tuning. Use of common module "building blocks" enhances the system flexibility and simplifies maintenance and stocking.



CREATIVE LEADER IN COMMUNICATION



COLLINS RADIO COMPANY OF CANADA, LTD.
11 BERMONDSEY ROAD, TORONTO 16, ONTARIO

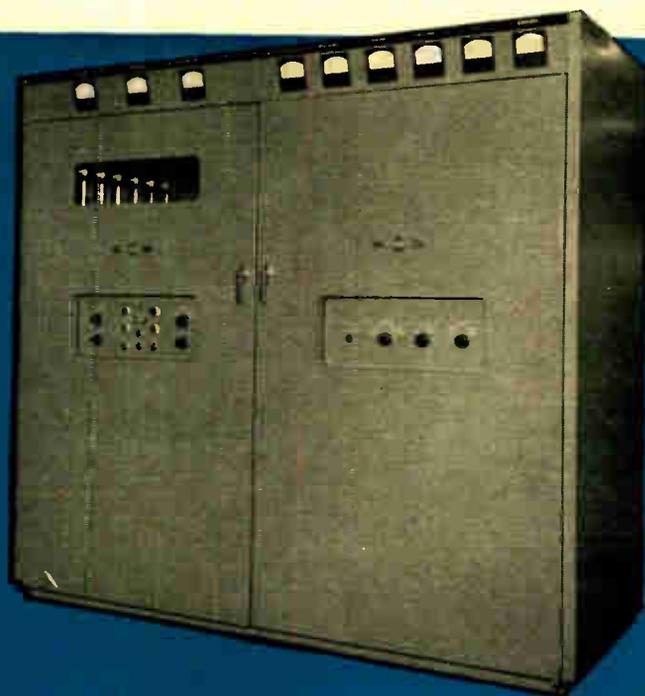
Ground High-Frequency, Point-to-Point Communication Systems

GROUND KILOWATT

This HF SSB series includes 1 kw transceivers and transmitters; receivers, and exciters for higher power amplifiers. Incorporated are such advances as multiplex voice and teletype operation and independent, absolute frequency control techniques. Channels 1 kc spaced are obtained from a stabilized master oscillator referenced to a frequency standard with stability of one part in 10^8 per day.

GROUND 5-, 20-, 45-KW

High power linear amplifiers in this series have been designed for power outputs of 5, 20, or 45 kilowatts PEP with input from exciters of the other series. Improved linear operation results from such distortion reducing means as RF feedback and envelope modulation. A non-critical neutralization scheme is employed.



Goodmans Industries Ltd.
Charles W. Pointon Ltd.
Rogers Majestic Electronics Ltd.
RCA Victor Co., Ltd.
Lavoie Laboratories, Inc.
Tornico Electronics, Inc.
Industrial & Institutional
Communications Ltd.
Shure Brothers, Inc.
Partridge Transformers Ltd.
Ram Electronics Sales Co.
University Loudspeakers, Inc.
Muirhead & Co. Ltd.
Tenatronics Limited
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Keystone Products Co.
The Plessey Co. of Canada Ltd.
Electronic Engineering
Canadian Atlas Transformer Co., Ltd.
Telequipment Mfg. Co. Ltd.
Associated Electronic Components
Adams Engineering Ltd.
General Radio Co.
Engineered Sound Systems Ltd.
John R. Tilton Ltd.
Microtran Co., Inc.
The Wheeler Insulated Wire Co., Inc.
Div. of Sperry Rand Corp.
Pacific Transducer Corp.

TRANSFORMERS (Broad Band)

R. C. Kahnert Sales Ltd.
Hackbusch Electronics Ltd.
Jerrold Electronics (Canada) Ltd.
Triad Transformer Corp.
Laboratory for Electronics, Inc.
Copper Wire Products Ltd.
Research Industries Ltd.
Bayly Engineering Ltd.
Automatic Electric Sales (Canada) Ltd.
Acro Products Co.
Instruments for Industry, Inc.
Entron Incorporated
Charles W. Pointon Ltd.
Rogers Electronic Tubes & Components
TMC (Canada) Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Associated Electronic Components
Canadian Atlas Transformer Co., Ltd.
Osborne Electric Co., Ltd.
Electroline Television Equipment Inc.

TRANSFORMERS (Current Limiting)

M. J. Howard
R. C. Kahnert Sales Ltd.
Hackbusch Electronics Ltd.
Hammond Manufacturing Co. Ltd.
Leonard Electric Ltd.
Laboratory for Electronics, Inc.
Standard Electronics Corp.
Moloney Electric Co. of Canada, Ltd.
Acme Electric Corp. Ltd.
Copper Wire Products Ltd.
Charles W. Pointon Ltd.
Tenatronics Limited
Raytheon Manufacturing Co.
Keystone Products Co.
Osborne Electric Co., Ltd.
Canadian Atlas Transformer Co., Ltd.
Barber-Colman of Canada Ltd.
(Wheelco Inst. Div.)

TRANSFORMERS (Isolation)

M. J. Howard
R. C. Kahnert Sales Ltd.
Hackbusch Electronics Ltd.
Hammond Manufacturing Co. Ltd.
Leonard Electric Ltd.
Triad Transformer Corp.
Oxford Electric Corp.
Heath Company
Caledonia Electronics and
Transformer Corp.
Gertsch Products, Inc.
Laboratory for Electronics, Inc.
Standard Electronics Corp.
Moloney Electric Co. of Canada, Ltd.
Acme Electric Corp. Ltd.
Copper Wire Products Ltd.
Electro Sonic Supply Co. Ltd.
Goodmans Industries Ltd.
Charles W. Pointon Ltd.
Knopp Inc.
Beta Electric Corp.
Lavoie Laboratories, Inc.
Tornico Electronics, Inc.
Partridge Transformers Ltd.
Tenatronics Limited
Keystone Products Co.
Canadian Atlas Transformer Co., Ltd.
Associated Electronic Components
Electronic Engineering
Osborne Electric Co., Ltd.
Perkins Electric Co., Ltd. —
Electronics Division
Microtran Co., Inc.
The Wheeler Insulated Wire Co., Inc.,
Div. of Sperry Rand Corp.

TRANSFORMERS (Microwave)

Hackbusch Electronics Ltd.
Computing Devices of Canada Ltd.
Airtron, Inc.
Cambridge Thermionic Corp.
Acme Electric Corp. Ltd.
Moloney Electric Co. of Canada, Ltd.

Defiance Engineering & Microwave Corp.
Charles W. Pointon Ltd.
Lavoie Laboratories, Inc.
Budd Stanley Co. Inc.
E. G. Lomas Co.
Measurement Engineering Ltd.
Canadian Atlas Transformer Co., Ltd.
The British Thomson-Houston Co.
(Canada) Ltd.

TRANSFORMERS (Miniature)

M. J. Howard
R. C. Kahnert Sales Ltd.
Hackbusch Electronics Ltd.
Hammond Manufacturing Co. Ltd.
John Herring & Co. Ltd.
Computing Devices of Canada Ltd.
Leonard Electric Ltd.
T. S. Farley Ltd.
Laboratory for Electronics, Inc.
Caledonia Electronics and
Transformer Corp.
Oxford Electric Corp.
Triad Transformer Corp.
Aitec Lansing Corp.
Whiteley Electrical Radio Co. Ltd.
Coil Winders, Inc.
Acme Electric Corp. Ltd.
Electro Sonic Supply Co. Ltd.
Copper Wire Products Ltd.
Bayly Engineering Ltd.
S & T Sales Ltd.
Acro Products Co.
Charles W. Pointon Ltd.
Goodmans Industries Ltd.
J. W. Miller Co.
Fortiphone Limited
Southwestern Industrial
Electronics Co. Inc.
Tornico Electronics, Inc.
Partridge Transformers Ltd.
Tenatronics Limited
Keystone Products Co.
Canadian Atlas Transformer Co., Ltd.
The Plessey Co. of Canada Ltd.
Adams Engineering Limited
Engineered Sound Systems Ltd.
Associated Electronic Components
Electronic Engineering
Microtran Co., Inc.
The Wheeler Insulated Wire Co., Inc.,
Div. of Sperry Rand Corp.

TRANSFORMERS (Modulator)

M. J. Howard
R. C. Kahnert Sales Ltd.
Hackbusch Electronics Ltd.
Hammond Manufacturing Co. Ltd.
Aircraft-Marine Products Inc.
Chemical & Dielectric Division
Caledonia Electronics and
Transformer Corp.
Laboratory for Electronics, Inc.
Standard Electronics Corp.
Electro Sonic Supply Co. Ltd.
Moloney Electric Co. of Canada, Ltd.
Acme Electric Corp. Ltd.
S & T Sales Ltd.
Charles W. Pointon Ltd.
Polyphase Instrument Co.
Lavoie Laboratories, Inc.
Tenatronics Limited
Partridge Transformers Ltd.
Tornico Electronics, Inc.
Keystone Products Co.
Associated Electronic Components
Adams Engineering Ltd.
The Plessey Co. of Canada Ltd.
Canadian Atlas Transformer Co., Ltd.
Microtran Co., Inc.

TRANSFORMERS (Pulse)

M. J. Howard
R. C. Kahnert Sales Ltd.
Hackbusch Electronics Ltd.
Hammond Manufacturing Co. Ltd.
John Herring & Co. Ltd.
Canadian Aviation Electronics Ltd.
Cossor Canada Ltd.
Essex Electronics of Canada Ltd.
Triad Transformer Corp.
Telex, Inc.
Whiteley Electrical Radio Co. Ltd.
Canadian Westinghouse Co. Ltd. —
Electronics Division
Sprague Electric International Ltd.
Aircraft-Marine Products Inc. —
Chemical & Dielectric Division
Caledonia Electronics and
Transformer Corp.
Laboratory for Electronics, Inc.
Standard Electronics Corp.
Hermann Fortier Inc.
Copper Wire Products Ltd.
Bayly Engineering Ltd.
Moloney Electric Co. of Canada, Ltd.
Acme Electric Corp. Ltd.
General Instrument — F. W. Sickles of
Canada Ltd.
S & T Sales Ltd.
Northern Electric Co. Ltd.
Acro Products Co.
Polyphase Instrument Co.
Charles W. Pointon Ltd.
Allen B. DuMont Labs, Inc.
J. W. Miller Co.

Raytheon Manufacturing Co.
Ram Electronics Sales Co.
Lavoie Laboratories, Inc.
Keystone Products Co.
Associated Electronic Components
Adams Engineering Ltd.
Canadian Atlas Transformer Co., Ltd.
Microtran Co., Inc.
The Wheeler Insulated Wire Co., Inc.,
Div. of Sperry Rand Corp.

TRANSFORMERS (Saturable)

M. J. Howard
R. C. Kahnert Sales Ltd.
Hackbusch Electronics Ltd.
Hammond Manufacturing Co. Ltd.
Electrodesign
Standard Electronics Corp.
Laboratory for Electronics, Inc.
Caledonia Electronics and
Transformer Corp.
Acme Electric Corp. Ltd.
Magnetic Amplifiers, Inc.
Elliott Brothers (London) Ltd.
Charles W. Pointon Ltd.
Aerovox Corporation
Lavoie Laboratories, Inc.
Raytheon Manufacturing Co.
Tornico Electronics, Inc.
Keystone Products Co.
Canadian Atlas Transformer Co., Ltd.
Associated Electronic Components
Barber-Colman of Canada Ltd.
(Wheelco Inst. Div.)
Vectrol Engineering, Inc.
The British Thomson-Houston Co.
(Canada) Ltd.

TRANSFORMERS (TV Deflection)

R. C. Kahnert Sales Ltd.
S. G. Smallwood Ltd.
T. S. Farley Ltd.
Laboratory for Electronics, Inc.
Triad Transformer Corp.
Whiteley Electrical Radio Co. Ltd.
Electro Sonic Supply Co. Ltd.
Hermann Fortier Inc.
Copper Wire Products Ltd.
General Instrument —
F. W. Sickles of Canada Ltd.
S & T Sales Ltd.
Charles W. Pointon Ltd.
Goodmans Industries Ltd.
Tenatronics Limited
RCA Victor Co., Ltd.
Ram Electronics Sales Co.
E. S. Gould Sales Co.
Telequipment Mfg. Co., Ltd.
Associated Electronic Components
John R. Tilton Ltd.

TRANSFORMERS (Toroidal)

R. C. Kahnert Sales Ltd.
Hackbusch Electronics Ltd.
Hammond Manufacturing Co. Ltd.
John Herring & Co. Ltd.
Bogue Electric of Canada, Ltd.
Laboratory for Electronics, Inc.
Caledonia Electronics and
Transformer Corp.
Standard Electronics Corp.
Triad Transformer Corp.
Coil Winders, Inc.
Electro Sonic Supply Co. Ltd.
Bayly Engineering Ltd.
General Instrument —
F. W. Sickles of Canada Ltd.
Northern Electric Co. Ltd.
Allen B. DuMont Labs, Inc.
Polyphase Instrument Co.
Aerovox Corporation
Filtron Co., Inc.
Magnetic Amplifiers, Inc.
Charles W. Pointon Ltd.
Vari-L Co., Inc.
Southwestern Industrial
Electronics Co. Ltd.
Lavoie Laboratories, Inc.
Raytheon Manufacturing Co.
Tornico Electronics, Inc.
Radio Engineering Products Ltd.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Canadian Marconi Co.
General Radio Co.
Canadian Atlas Transformer Co., Ltd.
The Wheeler Insulated Wire Co., Inc.,
Div. of Sperry Rand Corp.

TRANSFORMERS (Variable)

M. J. Howard
Burlec Sales Ltd.
Canadian Electric Resistors Ltd.
Coil Winders, Inc.
Standard Electronics Corp.
Laboratory for Electronics, Inc.
Whiteley Electrical Radio Co. Ltd.
Moloney Electric Co. of Canada, Ltd.
Electro Sonic Supply Co. Ltd.
Acme Electric Corp. Ltd.
The Superior Electric Co.
Charles W. Pointon Ltd.
J. W. Miller Co.
Lavoie Laboratories, Inc.
Vari-L Co., Inc.
General Radio Co.
Canadian Marconi Co.
Microtran Co., Inc.

TRANSFORMERS (Very Low Frequency)

R. C. Kahnert Sales Ltd.
 Hackbusch Electronics Ltd.
 Cossor Canada Ltd.
 The Wind Turbine Co. of Canada Ltd.
 Triad Transformer Corp.
 Whiteley Electrical Radio Co. Ltd.
 Laboratory for Electronics, Inc.
 Electro Sonic Supply Co. Ltd.
 Moloney Electric Co. of Canada, Ltd.
 Bayly Engineering Ltd.
 Acro Products Co.
 Charles W. Pointon Ltd.
 Lavoie Laboratories, Inc.
 Tenatronics Limited
 Southwestern Industrial Electronics Co. Inc.
 Osborne Electric Co., Ltd.
 Associated Electronic Components
 Canadian Atlas Transformer Co., Ltd.
 Microtran Co., Inc.

TRANSFORMERS (Voltage Regulating)

R. C. Kahnert Sales Ltd.
 Hackbusch Electronics Ltd.
 Hammond Manufacturing Co. Ltd.
 Canadian Westinghouse Co. Ltd. — Apparatus Division
 Canadian Electric Resistors Ltd.
 Laboratory for Electronics, Inc.
 Whiteley Electrical Radio Co. Ltd.
 Sola Electric Co.
 Standard Electronics Corp.
 Electro Sonic Supply Co. Ltd.
 Acme Electric Corp. Ltd.
 Sola Electric (Canada) Ltd.
 Northern Electric Co. Ltd.
 Airmec Limited
 Charles W. Pointon Ltd.
 The Superior Electric Co.
 North American Phillips Co. Inc.
 Raytheon Manufacturing Co.
 RCA Victor Co., Ltd.
 Perkin Engineering Corp.
 Tenatronics Limited
 John R. Tilton Ltd.
 Sorensen & Co., Inc.
 Barber-Colman of Canada Ltd. (Wheelco Inst. Div.)
 Perkins Electric Co., Ltd. — Electronics Division
 Canadian Atlas Transformer Co., Ltd.
 Microtran Co., Inc.

TRANSFORMERS (X-Ray)

X-Ray & Radium Industries Ltd.
 Triplett & Barton, Inc.
 Rogers Majestic Electronics Ltd.
 North American Phillips Co. Inc.
 Charles W. Pointon Ltd.
 Partridge Transformers Ltd.
 Tenatronics Limited
 General Electric Co., X-Ray Dept.
 Keystone Products Co.
 Ferranti Electric Ltd.
 Perkins Electric Co., Ltd. — Electronics Division
 Canadian Atlas Transformer Co., Ltd.

TRANSISTORS

Philco Corp. of Canada Ltd.
 R. C. Kahnert Sales Ltd.
 J. B. Smyth Electronic Components
 Minneapolis-Honeywell Regulator Co. Ltd. — Brown Instrument Division
 Aviation Electric Ltd.
 P. J. Heenan Ltd.
 Computing Devices of Canada Ltd.
 Bogue Electric of Canada, Ltd.
 Hackbusch Electronics Ltd.
 Canadian Westinghouse Co. Ltd. — Electronics Division
 Sprague Electric International Ltd.
 Amperex Electronic Corp.
 Transatron Electronic Corp.
 Philco Corporation, Government & Industrial Division
 The Ahearn & Soper Co. Ltd.
 Electro Sonic Supply Co. Ltd.
 Hermann Fortier Inc.
 Minneapolis-Honeywell Regulator Co. Ltd. — Microswitch Division
 Fretco Incorporated
 General Transistor Corp.
 Canadian General Electric Co. Ltd. — Electronic Tube Division
 Rogers Electronic Tubes & Components
 RCA Victor Co., Ltd.
 Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
 Adams Engineering Ltd.
 The Plessey Co. of Canada Ltd.
 Canadian Marconi Co. — Electronic Tube & Components Div.
 Canadian General Electric Co. Ltd. — Electronic Equipment & Tube Dept.
 Desser E-E Limited
 The British Thomson-Houston Co. (Canada) Ltd.

TRANSMITTERS (Broadcast)

Philco Corp. of Canada Ltd.
 M. J. Howard
 J. J. MacQuarrie
 Chisholm Industries Ltd.
 The Ahearn & Soper Co. Ltd.
 Standard Electronics Corp.
 Continental Electronics Mfg. Co.

Erco Radio Labs, Inc.
 Allen B. DuMont Labs, Inc.
 RCA Victor Co., Ltd.
 Sarkes Tarzian, Inc., Rectifier Div.
 Collins Radio Co. of Canada Ltd.
 Redifon (Canada) Ltd.
 Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
 Canadian General Electric Co., Ltd. — Electronic Equipment & Tube Dept.
 Canadian Marconi Co.

TRANSMITTERS (Color Television)

Pye Canada Ltd.
 Kay Electric Co.
 Standard Electronics Corp.
 Philco Corporation, Government & Industrial Division
 Continental Electronics Mfg. Co.
 Allen B. DuMont Labs, Inc.
 RCA Victor Co., Ltd.
 Sarkes Tarzian, Inc., Rectifier Division
 Canadian Marconi Co.
 Measurement Engineering Ltd.
 Canadian General Electric Co., Ltd. — Electronic Equipment & Tube Dept.
 Beacons Optical & Precision Materials Co. Ltd.
 Sarkes Tarzian, Inc.

TRANSMITTERS (Direction Finding)

Fisher Research Laboratory, Inc.
 Erco Radio Labs, Inc.
 RCA Victor Co., Ltd.
 Lavoie Laboratories, Inc.
 Collins Radio Co. of Canada Ltd.
 Redifon (Canada) Ltd.
 Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
 Canadian Marconi Co.

TRANSMITTERS (Fixed Station)

M. J. Howard
 Mechron Engineering Products Ltd.
 Computing Devices of Canada Ltd.
 Sinclair Radio Labs. Ltd.
 Radio Communications Equipment & Engineering Ltd.
 Aviation Electric Ltd.
 Pye Canada Ltd.
 Chisholm Industries Ltd.
 The Ahearn & Soper Co. Ltd.
 Canadian Westinghouse Co. Ltd. — Electronics Division
 Morrow Radio Mfg. Co.
 Continental Electronics Mfg. Co.
 Rex Bassett, Inc.
 Communications Co., Inc.
 Erco Radio Labs, Inc.
 Kaar Engineering Corp.
 Allen B. DuMont Labs, Inc.
 RCA Victor Co., Ltd.
 Motorola Communications & Electronics, Inc.
 TMC (Canada) Ltd.
 Collins Radio Co. of Canada Ltd.
 Redifon (Canada) Ltd.
 Pacific Communications Services Ltd.
 Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
 Canadian Marconi Co.
 The Plessey Co. of Canada Ltd.
 Canadian General Electric Co., Ltd. — Electronic Equipment & Tube Dept.
 Measurement Engineering Ltd.

TRANSMITTERS (Loran)

RCA Victor Co., Ltd.
 Redifon (Canada) Ltd.
 Collins Radio Co. of Canada Ltd.
 Standard Telephones & Cables Mfg. Co. (Canada) Ltd.

TRANSMITTERS (Marine)

M. J. Howard
 Radio Communications Equipment & Engineering Ltd.
 Aviation Electric Ltd.
 Pye Canada Ltd.
 Chisholm Industries Ltd.
 The Ahearn & Soper Co. Ltd.
 Canadian Westinghouse Co. Ltd. — Electronics Div.
 Standard Electronics Corp.
 Pylon Electronic Development Co., Ltd.
 S & T Sales Ltd.
 Bludworth Marine Division of Kearfott Co., Inc.
 Rex Bassett, Inc.
 Gray Radio Co., Inc.
 Allen B. DuMont Labs, Inc.
 Kaar Engineering Corp.
 Fisher Research Laboratory, Inc.
 Erco Radio Labs, Inc.
 TMC (Canada) Ltd.
 Raytheon Mfg. Co.
 RCA Victor Co., Ltd.
 Redifon (Canada) Ltd.
 Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
 Canadian General Electric Co., Ltd. — Electronic Equipment & Tube Dept.
 Engineered Sound Systems Ltd.
 Canadian Marconi Co.
 Measurement Engineering Ltd.

TRANSMITTERS (Portable)

M. J. Howard
 Mechron Engineering Products Ltd.
 Chisholm Industries Ltd.

TELEVISION TUNERS

Switch Type
 Licencee of Sarkes-Tarzian Inc.

LOUDSPEAKERS

Domestic and Military Types

WIRE WOUND RESISTORS

Cement and Vitreous Enamelled
 Coatings - MIL Approved

VARIABLE TUNING CAPACITORS

Radio Tuning Types - Special
 Units For Military Application

TRIMMER CAPACITORS

Conventional Air Dielectric
 Glass and Ceramic
LEDEX ROTARY SOLENOIDS AND SELECTOR SWITCHES

**PERMEABILITY TUNERS
PRECISION GEARS AND
GEAR TRAIN ASSEMBLIES**

**SERVO-LOOP SYSTEMS
MICROWAVE COMPONENTS**
 Filters, Antennas

ALL SYSTEMS
AND
COMPONENTS
ENGINEERED

TOOLED AND
MANUFACTURED IN
OUR KITCHENER
PLANT



- Computing Devices of Canada Ltd.
Radio Communications Equipment & Engineering Ltd.
Aviation Electric Ltd.
Pye Canada Ltd.
Morrow Radio Mfg. Co.
The Ahearn & Soper Co. Ltd.
Electro Sonic Supply Co. Ltd.
S & T Sales Ltd.
Rogers Majestic Electronics Ltd.
Erco Radio Labs., Inc.
Motorola Communications & Electronics, Inc.
Humble Mfg. Co. Ltd.
RCA Victor Co., Ltd.
Collins Radio Co. of Canada Ltd.
Redifon (Canada) Ltd.
Canadian Marconi Co.
Engineered Sound Systems Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
The Plessey Co. of Canada Ltd.
Measurement Engineering Ltd.
VecTrol Engineering Inc.
- TRANSMITTERS (Radio Range)**
M. J. Howard
Chisholm Industries Ltd.
Radio Communications Equipment & Engineering Ltd.
Canadian Westinghouse Co. Ltd. —
Electronics Div.
The Ahearn & Soper Co. Ltd.
Research Industries Ltd.
RCA Victor Co., Ltd.
Lavoie Laboratories, Inc.
Collins Radio Co. of Canada Ltd.
Redifon (Canada) Ltd.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
Canadian Marconi Co.
- TRANSMITTERS (UHF)**
M. J. Howard
Mechron Engineering Products Ltd.
Electrodesign
Sinclair Radio Labs. Ltd.
Chisholm Industries Ltd.
Pye Canada Ltd.
The Ahearn & Soper Co. Ltd.
Canadian Westinghouse Co. Ltd. —
Electronics Div.
Sierra Electronic Corp.
Woodwelding, Incorporated
Philco Corp. — Government & Industrial Div.
Standard Electronics Corp.
Kay Electric Co.
S & T Sales Ltd.
Northern Electric Co. Ltd.
Continental Electronics Mfg. Co.
Canoga Corp.
Kaar Engineering Corp.
Erco Radio Labs., Inc.
Allen B. DuMont Labs., Inc.
Lavoie Laboratories, Inc.
Sarkes Tarzian, Inc. — Rectifier Div.
Bruno-New York Industries Corp.
Motorola Communications & Electronics, Inc.
RCA Victor Co., Ltd.
Collins Radio Co. of Canada Ltd.
Redifon (Canada) Ltd.
Pacific Communications Services Ltd.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
Canadian Marconi Co.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
The Plessey Co. of Canada Ltd.
Measurement Engineering Ltd.
Sarkes Tarzian, Inc.
VecTrol Engineering Inc.
- TRANSMITTERS (VHF)**
M. J. Howard
Mechron Engineering Products Ltd.
Cossor Canada Ltd.
Aviation Electric Ltd.
Electrodesign
Sinclair Radio Labs. Ltd.
Chisholm Industries Ltd.
Pye Canada Ltd.
Kay Electric Co.
Philco Corporation —
Government & Industrial Div.
Sierra Electronic Corp.
National Aeronautical Corp.
Wright Electronics Inc.
Canadian Westinghouse Co. Ltd. —
Electronics Div.
The Ahearn & Soper Co. Ltd.
Standard Electronics Corp.
Morrow Radio Mfg. Co.
S & T Sales Ltd.
Continental Electronics Mfg. Co.
Canoga Corp.
Communications Co., Inc.
Kaar Engineering Corp.
Erco Radio Labs., Inc.
Allen B. DuMont Labs., Inc.
RCA Victor Co., Ltd.
Motorola Communications & Electronics, Inc.
Bruno-New York Industries Corp.
Lavoie Laboratories, Inc.
Mitchell Industries, Inc.
- Pacific Communications Services Ltd.
Collins Radio Co. of Canada Ltd.
Redifon (Canada) Ltd.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
Sarkes Tarzian, Inc.
Measurement Engineering Ltd.
The Plessey Co. of Canada Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Canadian Marconi Co.
VecTrol Engineering Inc.
- TRIMMERS**
R. C. Kahnert Sales Ltd.
J. B. Smyth Electronic Components
Cossor Canada Ltd.
P. J. Heenan Ltd.
Marsland Engineering Ltd.
James Millen Mfg. Co., Inc.
E. F. Johnson Co.
Electro Sonic Supply Co. Ltd.
Dale Products, Inc.
Teleradio Engineering Corp.
Tenatronics Ltd.
Erie Resistor of Canada Ltd.
The Plessey Co. of Canada Ltd.
Measurement Engineering Ltd.
Associated Electronic Components
Sarkes Tarzian, Inc.
- TUBES (Amplifier)**
Dominion Sound Equipments Ltd.
Electronic Tube Co.
Canadian Westinghouse Co. Ltd. —
Electronic Tube Div.
Hackbusch Electronics Ltd.
Aviation Electric Ltd.
Bendix Aviation Corp. —
Red Bank Div.
Amperex Electronic Corp.
Canadian Westinghouse Co. Ltd. —
Electronics Div.
The Ahearn & Soper Co. Ltd.
Hermann Fortier Inc.
Electro Sonic Supply Co. Ltd.
Machlett Laboratories, Inc.
Rogers Electronic Tubes & Components
Canadian General Electric Co. Ltd. —
Electronic Tube Div.
Electro-Vox Intercom Inc.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
Barber-Colman of Canada Ltd. —
(Wheelco Inst. Div.)
Canadian Marconi Company —
Electronic Tube & Components Div.
Engineered Sound Systems Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
- TUBES (Battery Charger)**
Dominion Sound Equipments Ltd.
Electronic Tube Co.
Burlac Sales Ltd.
Amperex Electronic Corp.
Schauer Mfg. Corp.
Christie Electric Corp.
Electro Sonic Supply Co. Ltd.
Canadian General Electric Co. Ltd. —
Electronic Tube Div.
Rogers Electronic Tubes & Components
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Perkins Electric Co., Ltd. —
Electronics Div.
- TUBES (Camera Pickup)**
Canadian Westinghouse Co. Ltd. —
Electronic Tube Div.
Pye Canada Ltd.
Electronic Tube Co.
Electrolabs
Machlett Laboratories, Inc.
Canadian General Electric Co. Ltd. —
Electronic Tube Div.
Rogers Electronic Tubes & Components
Canadian Marconi Company —
Electronic Tube & Components Div.
Perkins Electric Co., Ltd. —
Electronics Div.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
- TUBES (Cathode Ray)**
Canadian Westinghouse Co. Ltd. —
Electronic Tube Div.
Canadian Westinghouse Co. Ltd. —
Apparatus Div.
Cossor Canada Ltd.
Electronic Tube Co.
The Ahearn & Soper Co. Ltd.
Canadian Westinghouse Co. Ltd. —
Electronics Div.
Ericsson Telephone Sales of Canada Ltd.
Electro Sonic Supply Co. Ltd.
Hermann Fortier Inc.
Bayly Engineering Ltd.
Allen B. DuMont Labs., Inc.
Electronic Tube Corp.
Canadian General Electric Co. Ltd. —
Electronic Tube Div.
Rogers Electronic Tubes & Components
RCA Victor Co., Ltd.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
- Perkins Electric Co., Ltd. —
Electronics Div.
Canadian Marconi Company —
Electronic Tube & Components Div.
- TUBES (Cathode Ray, Multiple)**
Canadian Westinghouse Co. Ltd. —
Electronic Tube Div.
Electronic Tube Co.
Cossor Canada Ltd.
Philco Corporation —
Government & Industrial Div.
The Ahearn & Soper Co. Ltd.
Bayly Engineering Ltd.
Electronic Tube Corp.
RCA Victor Co., Ltd.
Canadian General Electric Co. Ltd. —
Electronic Tube Div.
Perkins Electric Co., Ltd. —
Electronic Div.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
- TUBES (Cathode Ray, Studio)**
Canadian Westinghouse Co. Ltd. —
Electronic Tube Div.
Electronic Tube Co.
The Ahearn & Soper Co. Ltd.
Machlett Laboratories, Inc.
Canadian General Electric Co. Ltd. —
Electronic Tube Div.
Rogers Electronic Tubes & Components
RCA Victor Co., Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Perkins Electric Co., Ltd. —
Electronics Div.
Canadian Marconi Company —
Electronic Tube & Components Div.
- TUBES (Electrometer)**
Canadian Westinghouse Co. Ltd. —
Electronic Tube Div.
Electronic Tube Co.
Electronic Associates Ltd.
Electrodesign
Amperex Electronic Corp.
Rogers Electronic Tubes & Components
Canadian General Electric Co. Ltd. —
Electronic Tube Div.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Radionics Ltd.
- TUBES (Geiger)**
Mechron Engineering Products Ltd.
Canadian Westinghouse Co. Ltd. —
Electronic Tube Div.
Electronic Tube Co.
Electronic Associates Ltd.
Hackbusch Electronics Ltd.
Electrodesign
Computing Devices of Canada Ltd.
Amperex Electronic Corp.
Tracerlab Inc.
Electro Sonic Supply Co. Ltd.
Bayly Engineering Ltd.
North American Philips Co. Inc.
Rogers Majestic Electronics Ltd.
Radiation Counter Laboratories, Inc.
Canadian General Electric Co. Ltd. —
Electronic Tube Div.
Rogers Electronic Tubes & Components
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Perkins Electric Co., Ltd. —
Electronics Div.
Measurement Engineering Ltd.
Radionics Ltd.
- TUBES (Geiger-Mueller)**
Canadian Westinghouse Co. Ltd. —
Electronic Tube Div.
Electronic Tube Co.
Electronic Associates Ltd.
Hackbusch Electronics Ltd.
Electrodesign
Computing Devices of Canada Ltd.
Tracerlab Inc.
Amperex Electronic Corp.
Electro Sonic Supply Co. Ltd.
North American Philips Co. Inc.
Rogers Electronic Tubes & Components
Canadian General Electric Co. Ltd. —
Electronic Tube Div.
Radiation Counter Laboratories, Inc.
Radionics Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
- TUBES (Hearing Aid)**
Canadian Westinghouse Co. Ltd. —
Electronic Tube Div.
Electronic Tube Co.
Amperex Electronic Corp.
Electro Sonic Supply Co. Ltd.
Canadian General Electric Co. Ltd. —
Electronic Tube Div.
Rogers Electronic Tubes & Components
Engineered Sound Systems Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
- TUBES (Ignitron)**
Canadian Westinghouse Co. Ltd. —
Electronic Tube Div.

Electronic Tube Co.
 Hackbusch Electronics Ltd.
 Canadian Westinghouse Co. Ltd. —
 Apparatus Div.
 Amperex Electronic Corp.
 Canadian Westinghouse Co. Ltd. —
 Electronics Div.
 Electro Sonic Supply Co. Ltd.
 The English Electric Co. Ltd.
 Canadian General Electric Co. Ltd. —
 Electronic Tube Div.
 Rogers Electronic Tubes & Components
 Canadian General Electric Co., Ltd. —
 Electronic Equipment & Tube Dept.
 Perkins Electric Co., Ltd. —
 Electronics Div.
 Canadian Marconi Company —
 Electronic Tube & Components Div.
 Electronic Controls Ltd.
 The British Thomson-Houston Co.
 (Canada) Ltd.

TUBES (Industrial)

Canadian Westinghouse Co. Ltd.
 Electronic Tube Div.
 Electronic Tube Co.
 Hackbusch Electronics Ltd.
 Canadian Westinghouse Co. Ltd. —
 Apparatus Div.
 Dominion Sound Equipments Ltd.
 Panelyte Division, St. Regis Paper Co.
 (Canada) Ltd.
 The Ahearn & Soper Co. Ltd.
 Canadian Westinghouse Co. Ltd.
 Electronics Div.
 Amperex Electronic Corp.
 Electro Sonic Supply Co. Ltd.
 J. Bishop & Co. Platinum Works
 Machlett Laboratories, Inc.
 Thermosen, Inc.
 RCA Victor Co., Ltd.
 Lewis and Kaufman Ltd.
 Canadian General Electric Co. Ltd. —
 Electronic Tube Div.
 Rogers Electronic Tubes & Components
 Standard Telephones & Cables Mfg. Co.
 (Canada) Ltd.
 Canadian General Electric Co., Ltd. —
 Electronic Equipment & Tube Dept.
 Perkins Electric Co., Ltd. —
 Electronics Div.
 Electronic Controls Ltd.
 Canadian Marconi Company —
 Electronic Tube & Components Div.
 Barber-Colman of Canada Ltd. —
 (Wheelco Inst. Div.)
 The British Thomson-Houston Co.
 (Canada) Ltd.

TUBES (Ionization)

Canadian Westinghouse Co. Ltd. —
 Electronic Tube Div.
 Electronic Tube Co.
 Hackbusch Electronics Ltd.
 Computing Devices of Canada Ltd.
 R-O-R Associates Ltd.
 Sierra Electronic Corp.
 Electro Sonic Supply Co. Ltd.
 Radiation Counter Laboratories, Inc.
 Rogers Electronic Tubes & Components
 Canadian General Electric Co. Ltd. —
 Electronic Tube Div.
 Lewis and Kaufman Ltd.
 Standard Telephones & Cables Mfg. Co.
 (Canada) Ltd.
 Perkins Electric Co., Ltd. —
 Electronics Div.
 Canadian General Electric Co., Ltd. —
 Electronic Equipment & Tube Dept.
 Measurement Engineering Ltd.
 Radionics Ltd.

TUBES (Klystron)

Canadian Westinghouse Co. Ltd. —
 Electronic Tube Div.
 Electronic Tube Co.
 Hackbusch Electronics Ltd.
 Aviation Electric Ltd.
 Electrodesign
 R-O-R Associates Ltd.
 Amperex Electronic Corp.
 The Ahearn & Soper Co. Ltd.
 Ericsson Telephone Sales of Canada Ltd.
 Polarad Electronics Corp.
 Bendix Aviation Corp. —
 Red Bank Div.
 Electro Sonic Supply Co. Ltd.
 Bomac Laboratories Inc.
 Canadian General Electric Co. Ltd. —
 Electronic Tube Div.
 Rogers Electronic Tubes & Components
 Standard Telephones & Cables Mfg. Co.
 (Canada) Ltd.
 Canadian General Electric Co., Ltd. —
 Electronic Equipment & Tube Dept.
 Perkins Electric Co., Ltd. —
 Electronics Div.
 Varian Associates of Canada Ltd.
 Canadian Marconi Company —
 Electronic Tube & Components Div.

TUBES (Magnetron)

Canadian Westinghouse Co. Ltd. —
 Electronic Tube Div.
 Electronic Tube Co.
 Hackbusch Electronics Ltd.
 R-O-R Associates Ltd.
 Dominion Sound Equipments Ltd.

The Ahearn & Soper Co. Ltd.
 Amperex Electronic Corp.
 Electro Sonic Supply Co. Ltd.
 Bomac Laboratories Inc.
 Microwave Associates, Inc.
 E. G. Lomas Co.
 Rogers Electronic Tubes & Components
 Canadian General Electric Co. Ltd. —
 Electronic Tube Div.
 Canadian Marconi Company —
 Electronic Tube & Components Div.
 Perkins Electric Co., Ltd. —
 Electronics Div.
 Canadian General Electric Co., Ltd. —
 Electronic Equipment & Tube Dept.
 The British Thomson-Houston Co.
 (Canada) Ltd.

TUBES (Miniature)

Canadian Westinghouse Co. Ltd. —
 Electronic Tube Div.
 Electronic Tube Co.
 Hackbusch Electronics Ltd.
 Canadian Westinghouse Co. Ltd. —
 Apparatus Div.
 Aviation Electric Ltd.
 Dominion Sound Equipments Ltd.
 Amperex Electronic Corp.
 The Ahearn & Soper Co. Ltd.
 Ericsson Telephone Sales of Canada Ltd.
 Bendix Aviation Corp. —
 Red Bank Div.
 Philco Corporation —
 Government & Industrial Div.
 Canadian Westinghouse Co. Ltd. —
 Electronics Div.
 Electro Sonic Supply Co. Ltd.
 Thermosen, Inc.
 RCA Victor Co., Ltd.
 Canadian General Electric Co. Ltd. —
 Electronic Tube Div.
 Rogers Electronic Tubes & Components
 Standard Telephones & Cables Mfg. Co.
 (Canada) Ltd.
 Canadian General Electric Co., Ltd. —
 Electronic Equipment & Tube Dept.
 Perkins Electric Co., Ltd. —
 Electronics Div.
 Canadian Marconi Company —
 Electronic Tube & Components Div.

TUBES (Receiving)

Canadian Westinghouse Co. Ltd. —
 Electronic Tube Div.
 Electronic Tube Co.
 Hackbusch Electronics Ltd.
 Canadian Westinghouse Co. Ltd. —
 Apparatus Div.
 Aviation Electric Ltd.
 Dominion Sound Equipments Ltd.
 Canadian Westinghouse Co. Ltd. —
 Electronics Div.
 Philco Corporation —
 Government & Industrial Div.
 Bendix Aviation Corp. —
 Red Bank Div.
 Ericsson Telephone Sales of Canada Ltd.
 The Ahearn & Soper Co. Ltd.
 Electro Sonic Supply Co. Ltd.
 Hermann Fortier Inc.
 Thermosen, Inc.
 Rogers Electronic Tubes & Components
 Canadian General Electric Co. Ltd. —
 Electronic Tube Div.
 RCA Victor Co., Ltd.
 Standard Telephones & Cables Mfg. Co.
 (Canada) Ltd.
 Perkins Electric Co., Ltd. —
 Electronics Div.
 Canadian General Electric Co., Ltd. —
 Electronic Equipment & Tube Dept.
 Canadian Marconi Company —
 Electronic Tube & Components Div.

TUBES (Rectifying)

Canadian Westinghouse Co. Ltd. —
 Electronic Tube Div.
 Electronic Tube Co.
 Hackbusch Electronics Ltd.
 Aviation Electric Ltd.
 Dominion Sound Equipments Ltd.
 Burlec Sales Ltd.
 The Ahearn & Soper Co. Ltd.
 Bendix Aviation Corp. —
 Red Bank Div.
 Canadian Westinghouse Co. Ltd. —
 Electronics Div.
 Amperex Electronic Corp.
 Electro Sonic Supply Co. Ltd.
 Hermann Fortier Inc.
 North American Philips Co. Inc.
 Machlett Laboratories, Inc.
 Thermosen, Inc.
 Canadian General Electric Co. Ltd. —
 Electronic Tube Div.
 Rogers Electronic Tubes & Components
 Lewis and Kaufman Ltd.
 Standard Telephones & Cables Mfg. Co.
 (Canada) Ltd.
 Electronic Controls Ltd.
 Canadian Marconi Company —
 Electronic Tube & Components Div.
 Perkins Electric Co., Ltd. —
 Electronics Div.
 Canadian General Electric Co., Ltd. —
 Electronic Equipment & Tube Dept.
 The British Thomson-Houston Co.
 (Canada) Ltd.

FOR YOUR CIRCUIT NEEDS

VARIABLE INDUCTORS

- inductance values up to 1,000 henrys
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- high Q; small size
- for low-frequency tuning applications



SUBMINIATURE ADJUSTORIDS

- precise continuous adjustment of inductance over a 10% range
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- hermetically sealed
- low cost



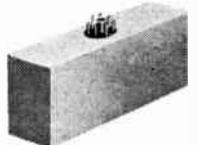
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- hermetically sealed
- high Q
- center-mounting permits stacking
- complete range of sizes and types



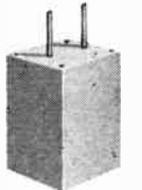
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- nominal cost
- excellent delivery
- frequency range: 50 kc to 5,000 kc
- high stability



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- miniaturized for guided missiles
- high temperature stability
- designed to withstand shock and vibration
- hermetically sealed



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- for audio and supersonic frequency applications
- excellent linearity
- flat frequency response
- low insertion loss



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TUBES (Special Electronic)

Canadian Westinghouse Co. Ltd. —
Electronic Tube Div.
Electronic Tube Co.
Hackbusch Electronics Ltd.
Aviation Electric Ltd.
Computing Devices of Canada Ltd.
R-O-R Associates Ltd.
Canadian Westinghouse Co. Ltd. —
Electronics Div.
Bendix Aviation Corp. —
Red Bank Div.
The Ahearn & Soper Co. Ltd.
Ericsson Telephone Sales of Canada Ltd.
Amperex Electronic Corp.
Workman TV Inc.
Electro Sonic Supply Co. Ltd.
Baird Associates—Atomic Instrument Co.
Elliott Brothers (London) Ltd.
Electronic Tube Corp.
Machlett Laboratories, Inc.
Thermosen, Inc.
RCA Victor Co., Ltd.
Lewis and Kaufman Ltd.
Rogers Electronic Tubes & Components
Canadian General Electric Co. Ltd. —
Electronic Tube Div.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Measurement Engineering Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
Barber-Colman of Canada Ltd. —
(Wheelco Inst. Div.)

TUBES (Subminiature)

Canadian Westinghouse Co. Ltd. —
Electronic Tube Div.
Electronic Tube Co.
Hackbusch Electronics Ltd.
Canadian Westinghouse Co. Ltd. —
Apparatus Div.
The Ahearn & Soper Co. Ltd.
Bendix Aviation Corp. —
Red Bank Div.
Canadian Westinghouse Co. Ltd. —
Electronics Div.
Amperex Electronic Corp.
Electro Sonic Supply Co. Ltd.
Canadian General Electric Co. Ltd. —
Electronic Tube Div.
Rogers Electronic Tubes & Components
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Canadian Marconi Company —
Electronic Tube & Components Div.

TUBES (Television Picture)

Canadian Westinghouse Co. Ltd. —
Electronic Tube Div.
Electronic Tube Co.
Hackbusch Electronics Ltd.
Canadian Westinghouse Co. Ltd. —
Apparatus Div.
The Ahearn & Soper Co. Ltd.
Canadian Westinghouse Co. Ltd. —
Electronics Div.
Hermann Fortier Inc.
Electro Sonic Supply Co. Ltd.
Allen B. DuMont Labs., Inc.
RCA Victor Co., Ltd.
Rogers Electronic Tubes & Components
Canadian General Electric Co. Ltd. —
Electronic Tube Div.
Canadian Marconi Company —
Electronic Tube & Components Div.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Perkins Electric Co., Ltd. —
Electronics Div.

TUBES (Thyratron)

Amperex Electronic Corp.

TUBES (Transmitting)

Canadian Westinghouse Co. Ltd. —
Electronic Tube Div.
Electronic Tube Co.
Hackbusch Electronics Ltd.
Canadian Westinghouse Co. Ltd. —
Apparatus Div.
R-O-R Associates Ltd.
Dominion Sound Equipments Ltd.
Amperex Electronic Corp.
Canadian Westinghouse Co. Ltd. —
Electronics Div.
The Ahearn & Soper Co. Ltd.
Ericsson Telephone Sales of Canada Ltd.
Electro Sonic Supply Co. Ltd.
Machlett Laboratories, Inc.
Canadian General Electric Co. Ltd. —
Electronic Tube Div.
Rogers Electronic Tubes & Components
Lewis and Kaufman Ltd.
Penta Laboratories, Inc.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.

Canadian Marconi Company —
Electronic Tube & Components Div.
Engineered Sound Systems Ltd.

TUBES (Travelling Wave)

Canadian Westinghouse Co. Ltd. —
Electronic Tube Div.
Electronic Tube Co.
Hackbusch Electronics Ltd.
R-O-R Associates Ltd.
The Ahearn & Soper Co. Ltd.
Atlas Radio Corp. Ltd.
Bomac Laboratories Inc.
Huggins Laboratories, Inc.
Electronic Tube Corp.
Rogers Electronic Tubes & Components
Canadian General Electric Co. Ltd. —
Electronic Tube Div.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
Measurement Engineering Ltd.
Varian Associates of Canada Ltd.
Radionics Ltd.
Canadian Marconi Company —
Electronic Tube & Components Div.

TUBES (Travelling Wave and Thyatron)

Canadian Westinghouse Co. Ltd. —
Electronic Tube Div.
Electronic Tube Co.
Hackbusch Electronics Ltd.
R-O-R Associates Ltd.
Bullec Sales Ltd.
Bendix Aviation Corp. —
Red Bank Div.
The Ahearn & Soper Co. Ltd.
Bomac Laboratories Inc.
Penta Laboratories, Inc.
Canadian General Electric Co. Ltd. —
Electronic Tube Div.
Rogers Electronic Tubes & Components
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
Measurement Engineering Ltd.
Canadian Marconi Company —
Electronic Tube & Components Div.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.

TUBES (X-Ray)

Electronic Tube Co.
Canadian Westinghouse Co. Ltd. —
Apparatus Div.
X-Ray & Radium Industries Ltd.
Amperex Electronic Corp.
Canadian Westinghouse Co. Ltd. —
Electronics Div.
Machlett Laboratories, Inc.
North American Philips Co. Inc.
Rogers Majestic Electronics Ltd.
Rogers Electronic Tubes & Components
General Electric Co. — X-Ray Dept.
Standard Telephones & Cables Mfg. Co. (Canada) Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
Canadian Marconi Company —
Electronic Tube & Components Div.

TUBING (Aluminum)

John Herring & Co. Ltd.
Channel Master Corp.
J. R. Longstaffe Co. Ltd.
Revere Copper and Brass Inc.
Tenatronics Ltd.
Precision Tube Co. Inc.

TUBING (Glass to Metal Sealing)

J. Bishop & Co. Platinum Works

TUBING (Insulation)

Crane Packing Co.
M. J. Howard
Aeromotive Engineering Products
National Fibre Co. of Canada, Ltd.
Minnesota Mining & Mfg. of Canada Ltd.
P. J. Heenan Ltd.
Panelyte Division, St. Regis Paper Co. (Canada) Ltd.
Varflex Corp.
Saxonburg Ceramics
Walsco Electronics Corp.
Stupakoff Div. of The Corborundum Co.
Cleveland Container Co.
Insulation Manufacturers Corp.
General Cement Mfg. Co. —
Division of Textron, Inc.
Dixon Corp.
Precision Paper Tube Co.
Polypenco, Inc.
Electro Sonic Supply Co. Ltd.
Northern Electric Co. Ltd.
William Brand & Co., Inc.
H. Clarke & Co. (Manchester) Ltd.
The Glendon Co. Ltd.
Shamban Engineering Co.
Stone Paper Tube Co.
Natvar Corp.
L. Frank Markel & Sons
Armet Industries Ltd.
Spaulding Fibre Co., Inc.
The Rex Corp.
Desser E-E Ltd.

TUBING (Waveguide)

DeMornay-Bonardi Corp.
Technicraft Laboratories, Inc.
Airtron, Inc.
Airtron Canada Ltd.
Johnson Matthey & Mallory Ltd.
Atlas Radio Corp. Ltd.

Bayly Engineering Ltd.
Rogers Majestic Electronics Ltd.
Revere Copper and Brass Inc.
Budd Stanley Co. Inc.
E. G. Lomas Co.

Adams Engineering Ltd.
Measurement Engineering Ltd.

TUNERS (FM, AM Short Wave)

J. B. Smyth Electronic Components
Dominion Sound Equipments Ltd.
Heath Co.
Electro Sonic Supply Co. Ltd.
Hermann Fortier Inc.
H. Roy Gray Co. Ltd.
Hermon Hosmer Scott, Inc.
RCA Victor Co., Ltd.
J. W. Miller Co.
Tele-Matic Industries Inc.
Electro-Vox Intercom Inc.
Bradford J. Wickett Ltd.
MJS Electronic Sales Ltd.
E. S. Gould Sales Co.
Tequipment Mfg. Co. Ltd.
John R. Tilton Ltd.
Associated Electronic Components
Engineered Sound Systems Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.

TUNERS (Hi-Fi, AM-FM)

R. C. Kahnert Sales Ltd.
J. B. Smyth Electronic Components
Pye Canada Ltd.
Hackbusch Electronics Ltd.
Dominion Sound Equipments Ltd.
Altec Lansing Corp.
Whiteley Electrical Radio Co. Ltd.
Heath Co.
H. Roy Gray Co. Ltd.
Hermann Fortier Inc.
Electro Sonic Supply Co. Ltd.
S & T Sales Ltd.
Dominion Electrohome Industries Ltd.
Northern Electric Co. Ltd.
Hermon Hosmer Scott, Inc.
Electronic Enterprises Ltd.
Tele-Matic Industries Inc.
RCA Victor Co., Ltd.
Mark Simpson Mfg. Co.
Bell Sound Systems, Inc.
McIntosh Laboratory, Inc.
Industrial & Institutional
Communications Ltd.
MJS Electronic Sales Ltd.
Bradford J. Wickett Ltd.
Electro-Vox Intercom Inc.
Perkins Electric Co., Ltd. —
Electronics Div.
Engineered Sound Systems Ltd.
John R. Tilton Ltd.
Tequipment Mfg. Co. Ltd.
Canadian Marconi Company —
Electronic Tube & Components Div.
Electronic Communications Ltd.

TUNERS (Television)

Castle Television Services Ltd.
Marsland Engineering Ltd.
Canadian Aviation Electronics Ltd.
Hackbusch Electronics Ltd.
Philco Corporation —
Government & Industrial Div.
Radio Components Ltd.
Electro Sonic Supply Co. Ltd.
Hermann Fortier Inc.
H. Roy Gray Co. Ltd.
Sarkes Tarzian, Inc. — Rectifier Div.
P. R. Mallory & Co. Inc.
Sarkes Tarzian, Inc.
The Plessey Co. of Canada Ltd.
Radio Condenser Co., Ltd.
Associated Electronic Components

TUNING UNITS (Automatic)

Andrew Antenna Corp., Ltd.
Erco Radio Labs., Inc.
Dalmo Victor Company —
Division of Textron Inc.
Collins Radio Co. of Canada Ltd.
Radio Condenser Co., Ltd.

TUNING UNITS (Mechanical)

Vectron, Inc.
Andrew Antenna Corp., Ltd.
Radio Components Ltd.
Dalmo Victor Company —
Division of Textron Inc.
Erco Radio Labs., Inc.
Radio Condenser Co., Ltd.

TURNABLES (Playback & Transcription)

Alex L. Clark Ltd.
A. C. Simmonds & Sons Ltd.
Astral Electric Co. Ltd.
McCurdy Radio Industries Ltd.
Cossor Canada Ltd.
J. B. Smyth Electronics Components
Dominion Sound Equipments Ltd.
Rek-O-Kut Co.
Fairchild Recording Equipment Co.
The Ahearn & Soper Co. Ltd.
H. Roy Gray Co. Ltd.
Electro Sonic Supply Co. Ltd.
S & T Sales Ltd.
Callifone Corp.
Hermon Hosmer Scott, Inc.
Charles W. Pointon Ltd.
Bell Sound Systems, Inc.
RCA Victor Co., Ltd.

Microlab Devices Ltd.
 E. S. Gould Sales Co.
 MJS Electronic Sales Ltd.
 Bradford J. Wickett Ltd.
 John R. Tilton Ltd.
 Engineered Sound Systems Ltd.
 Perkins Electric Co., Ltd. —
 Electronics Div.
 Canadian General Electric Co., Ltd. —
 Electronic Equipment & Tube Dept.

TURNTABLES (Recording)

Alex L. Clark Ltd.
 Astral Electric Co. Ltd.
 The Ahearn & Soper Co. Ltd.
 Fairchild Recording Equipment Co.
 Rek-O-Kut Co.
 Electro Sonic Supply Co. Ltd.
 H. Roy Gray Co. Ltd.
 Charles W. Pointon Ltd.
 RCA Victor Co., Ltd.
 Industrial & Institutional
 Communications Ltd.
 E. S. Gould Sales Co.
 Microlab Devices Ltd.
 Canadian General Electric Co., Ltd. —
 Electronic Equipment & Tube Dept.
 Perkins Electric Co., Ltd. —
 Electronics Div.
 Engineered Sound Systems Ltd.
 A. T. R. Armstrong Ltd.

ULTRASONIC EQUIPMENT

Branson Instruments, Inc.

VARISTORS

General Electric Co. —
 Metallurgical Products Dept.

VIBRATION MOUNTS

Aviation Electric Ltd.
 Dynamic Electronics — New York Inc.
 Barry Controls Incorporated
 T. R. Finn & Co., Inc.
 United States Rubber Co.
 Lord Mfg. Co.
 Robinson Aviation, Inc.
 Vibration Isolation Products
 Racon Electric Co. Inc.
 Armet Industries Ltd.
 Barber-Colman of Canada Ltd. —
 (Wheelco Inst. Div.)

VIBRATORS

American Television & Radio Co.
 R. C. Kahnert Sales Ltd.
 Leonard Electric Ltd.
 A. C. Simmonds & Sons Ltd.
 J. Langham Thompson Ltd.
 The Airpax Products Co.
 Radio Components Ltd.
 Electro Sonic Supply Co. Ltd.
 Hermann Fortier Inc.
 Charles W. Pointon Ltd.
 Rogers Majestic Electronics Ltd.
 P. R. Mallory & Co. Inc.
 E. S. Gould Sales Co.
 Telequipment Mfg. Co. Ltd.
 The Plessey Co. of Canada Ltd.
 Desser E-E Ltd.
 Perkins Electric Co., Ltd. —
 Electronics Div.

VIBRATORS (Power Supplies)

American Television & Radio Co.
 R. C. Kahnert Sales Ltd.
 Computing Devices of Canada Ltd.
 Leonard Electric Ltd.
 Canadian Research Institute
 A. C. Simmonds & Sons Ltd.
 The Airpax Products Co.
 Electro Sonic Supply Co. Ltd.
 Pylon Electronic Development Co., Ltd.
 Automatic Electric Sales (Canada) Ltd.
 Rogers Majestic Electronics Ltd.
 Charles W. Pointon Ltd.
 P. R. Mallory & Co. Inc.
 Soundmaster Equipments
 E. S. Gould Sales Co.
 Perkins Electric Co., Ltd. —
 Electronics Div.
 The Plessey Co. of Canada Ltd.
 Telequipment Mfg. Co. Ltd.

VIDEO MONITORS (High Definition)

Television Utilities Corp.

VIDEO MONITORS (Pulse Cross)

Television Utilities Corp.

VOLTMETERS (Crystal)

Kay Electric Co.

VOLTMETERS (Electronic)

Electromechanical Products
 R-O-R Associates Ltd.
 Electrodesign
 Minneapolis-Honeywell Regulator Co. Ltd.
 — Brown Instrument Div.
 R. H. Nichols Ltd.
 Hackbusch Electronics Ltd.
 Alex L. Clark Ltd.
 Computing Devices of Canada Ltd.
 Canadian Research Institute
 Kay Electric Co.
 Sierra Electronic Corp.
 Communications Measurements
 Laboratory, Inc.
 Specialty Engineering & Electronics Co.
 Jackson Electrical Instrument Co.
 Electronic Instrument Co. Inc.
 Heath Co.
 The Ahearn & Soper Co. Ltd.

Pace Electrical Instruments Co., Inc.
 Electro Sonic Supply Co. Ltd.
 Bayly Engineering Ltd.
 Atlas Radio Corp. Ltd.
 Dominion Electrohome Industries Ltd.
 Alrmec Ltd.
 Baldwin Instrument Co. Ltd.
 Barber-Colman Co.
 Kay Lab.
 Instrument Electronics Corp.
 Fisher Research Laboratory, Inc.
 Dawe Instruments Ltd.
 The Hickok Electrical Instrument Co.
 Rogers Majestic Electronics Ltd.
 Fielden Electronics Ltd.
 Millivac Instrument Corp.
 The Triplett Electrical Instrument Co.
 Bruno-New York Industries Corp.
 Southwestern Industrial Electronics
 Co. Inc.

John Fluke Mfg. Co., Inc.
 The Solartron Electronic Group Ltd.
 New London Instrument Co., Inc.
 Waveforms, Inc.
 Donner Scientific Co.
 MJS Electronic Sales Ltd.
 Bach-Simpson Ltd.
 Non-Linear Systems, Inc.
 Canadian Marconi Company
 Canadian Marconi Company —
 Electronic Tube & Components Div.
 General Radio Co.
 Industrial Control Co.
 Dawe Instruments Ltd. —
 (Canadian Div.)
 Varian Associates of Canada Ltd.
 Barber-Colman of Canada Ltd. —
 (Wheelco Inst. Div.)
 Perkins Electric Co., Ltd. —
 Electronics Div.
 Measurement Engineering Ltd.
 Stark Electronic Instruments Ltd.
 Canadian General Electric Co., Ltd. —
 Electronic Equipment & Tube Dept.

VOLUME CONTROLS

R. C. Kahnert Sales Ltd.
 A. C. Simmonds & Sons Ltd.
 P. J. Heenan Ltd.
 Centralab Canada Ltd.
 C. C. Meredith & Co. Ltd.
 Whiteley Electrical Radio Co. Ltd.
 Centralab — Div. of Globe Union Inc.
 Clarostat Mfg. Co., Inc.
 Chicago Telephone Supply Corp.
 Electro Sonic Supply Co. Ltd.
 Hermann Fortier Inc.
 P. R. Mallory & Co. Inc.
 Power Controls Ltd.
 Fortiphone Ltd.
 International Resistance Co.
 Perkins Electric Co., Ltd. —
 Electronics Div.
 Canadian Marconi Company —
 Electronic Tube & Components Div.
 The Plessey Co. of Canada Ltd.

WASHERS

P. J. Heenan Ltd.
 United-Carr Fastener Co. of Canada Ltd.
 National Fibre Co. of Canada Ltd.
 Panelyte Div., St. Regis Paper Co.
 (Canada) Ltd.
 General Cement Mfg. Co. —
 Division of Textron, Inc.
 Polypenco, Inc.
 Walsco Electronics Corp.
 Circon Component Co.
 Waldom Electronics Inc.
 Herman H. Smith, Inc.
 Thompson-Bremer & Co.
 Insulation Manufacturers Corp.
 Electro Sonic Supply Co. Ltd.
 Specialty Engineering & Electronics Co.
 Grayhill
 Shamban Engineering Co.
 Tenatronics Ltd.
 E. G. Lomas Co.
 Shakeproof — Div. of Illinois Tool Works
 Pfc Design Corp. —
 Division Bensus Watch Corp.
 Spaulding Fibre Co., Inc.
 Permonite Mfg. Co.
 United Shoe Machinery Co. of
 Canada, Ltd.
 National Tel-Tronics Corp.

WASHERS (Rubber)

P. J. Heenan Ltd.
 General Cement Mfg. Co. —
 Division of Textron, Inc.
 The Connecticut Hard Rubber Co.
 Insuline Corp. America —
 Subsidiary Van Norman Industries Inc.
 United States Rubber Co.
 Armet Industries Ltd.
 Permonite Mfg. Co.

WAVEGUIDE EQUIPMENT

Mechron Engineering Products Ltd.
 Beechey Enterprises
 Computing Devices of Canada Ltd.
 Electrodesign
 R-O-R Associates Ltd.
 Neosid (Canada) Ltd.
 Andrew Antenna Corp., Ltd.
 Airtron, Inc.
 DeMornay-Bonardi Corp.

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 #NS-1 ... \$3.00 NET.

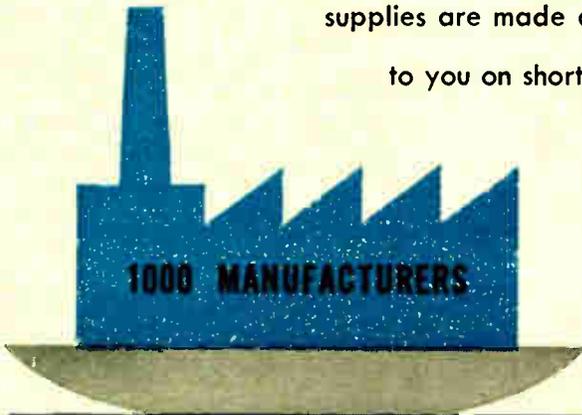
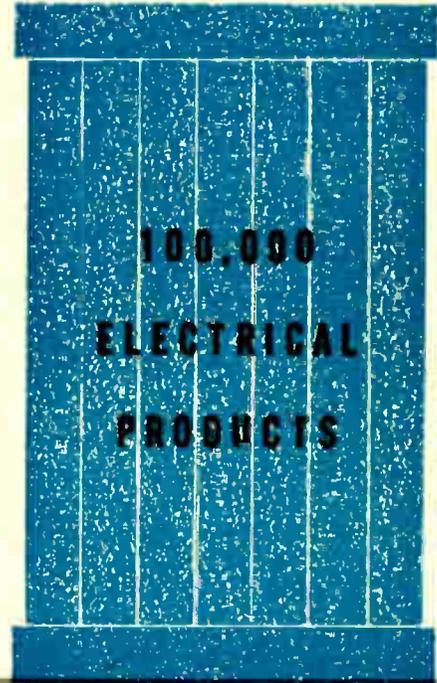


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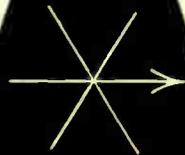
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WINNIPEG FORT WILLIAM REGINA SASKATOON EDMONTON CALGARY LETHBRIDGE VANCOUVER VICTORIA VERNON NEW WESTMINSTER

- Technicraft Laboratories, Inc.
Color Television Inc.
The Narda Corp.
Co-Operative Industries, Inc.
D. S. Kennedy & Co.
Industrial Products Company —
Division of Danbury-Knudsen Inc.
Sierra Electronic Corp.
Kay Electric Co.
Atlas Radio Corp. Ltd.
Bayly Engineering Ltd.
Airtron Canada Ltd.
Northern Electric Co. Ltd.
Rogers Majestic Electronics Ltd.
Frequency Standards Inc.
F-R Machine Works, Inc. —
Electronics & X-Ray Div.
Defiance Engineering & Microwave Corp.
Microwave Associates, Inc.
Premier Instrument Corp.
Rogers Electronic Tubes & Components
Budd Stanley Co. Inc.
E. G. Lomas Co.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Adams Engineering Ltd.
Measurement Engineering Ltd.
Beaconing Optical — Precision Materials
Co. Ltd.
Avionics Ltd.
The Plessey Co. of Canada Ltd.
The British Thomson-Houston Co.
(Canada) Ltd.
- WAVEGUIDES**
Mechron Engineering Products Ltd.
Aeromotive Engineering Products
Kay Electric Co.
D. S. Kennedy & Co.
Co-Operative Industries, Inc.
Chemalloy Electronics Corp.
The Narda Corp.
Color Television Inc.
Technicraft Laboratories, Inc.
DeMornay-Bonardi Corp.
Airtron, Inc.
Andrew Antenna Corp., Ltd.
Atlas Radio Corp. Ltd.
Bayly Engineering Ltd.
Airtron Canada Ltd.
Northern Electric Co. Ltd.
Defiance Engineering & Microwave Corp.
Dalmo Victor Company —
Division of Textron Inc.
Rogers Majestic Electronics Ltd.
E. G. Lomas Co.
Budd Stanley Co. Inc.
Rogers Electronic Tubes & Components
Premier Instrument Corp.
Prodelin, Inc.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Avionics Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Measurement Engineering Ltd.
Adams Engineering Ltd.
- WAVEGUIDES (Fabrication)**
PSC Applied Research Ltd.
- WINDOWS (Pressurizing)**
Bomac Laboratories Inc.
- WIRE (Aluminum)**
Pirelli Cables, Conduits Ltd.
Cossor Canada Ltd.
JFD Mfg. Co., Inc.
Essex Wire Corp.
Electro Sonic Supply Co. Ltd.
Phillips Electrical Co. Ltd.
General Cement Mfg. Co. —
Division of Textron, Inc.
Northern Electric Co. Ltd.
Insuline Corp. America —
Subsidiary Van Norman Industries Inc.
Musimart of Canada Ltd.
Saxton Products, Inc.
Tenatronics Ltd.
The B. Greening Wire Co., Ltd.
- WIRE (Antenna)**
Hackbusch Electronics Ltd.
Pirelli Cables, Conduits Ltd.
Phillips Electrical Co. Ltd.
Bennett & Collins Ltd — Mfg. Div.
Andrew Antenna Corp., Ltd.
Walsco Electronics Corp.
General Cement Mfg. Co. —
Division of Textron, Inc.
The Wind Turbine Co. of Canada Ltd.
Alpha Wire Corp.
JFD Mfg. Co., Inc.
Channel Master Corp.
Electro Sonic Supply Co. Ltd.
Electrolabs
Amphenol Canada Ltd.
S & T Sales Ltd.
Northern Electric Co. Ltd.
Musimart of Canada Ltd.
Fretco Incorporated
Insuline Corp. America —
Subsidiary Van Norman Industries Inc.
Tenatronics Ltd.
Federal Wire and Cable Co. Ltd.
Saxton Products, Inc.
White Radio Ltd.
The B. Greening Wire Co., Ltd.
- WIRE (Bare, Copper, Bronze, and Copper covered Steel)**
Pirelli Cables, Conduits Ltd.
Phillips Electrical Co. Ltd.
Essex Wire Corp.
Alpha Wire Corp.
Electro Sonic Supply Co. Ltd.
Electrolabs
Northern Electric Co., Ltd.
Automatic Electric Sales (Canada) Ltd.
Revere Copper and Brass Inc.
Musimart of Canada Ltd.
Saxton Products, Inc.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
The B. Greening Wire Co., Ltd.
- WIRE (Copper)**
Boston Insulated Wire & Cable Co. Ltd.
Pirelli Cables, Conduits Ltd.
Phillips Electrical Co. Ltd.
J. B. Smyth Electronic Components
Aeromotive Engineering Products
General Cement Mfg. Co. —
Division of Textron, Inc.
The Wind Turbine Co. of Canada Ltd.
Alpha Wire Corp.
Essex Wire Corp.
Electro Sonic Supply Co. Ltd.
Electrolabs
Automatic Electric Sales (Canada) Ltd.
Northern Electric Co. Ltd.
S & T Sales Ltd.
The Asco Wire & Cable Co.
Musimart of Canada Ltd.
Revere Copper and Brass Inc.
Federal Wire and Cable Co. Ltd.
Saxton Products, Inc.
Rogers Electronic Tubes & Components
Electro-Vox Intercom Inc.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
The B. Greening Wire Co., Ltd.
White Radio Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
- WIRE (Enamelled)**
Phillips Electrical Co. Ltd.
Lake Engineering Co. Ltd.
Essex Wire Corp.
Alpha Wire Corp.
Electro Sonic Supply Co. Ltd.
Electrolabs
S & T Sales Ltd.
Northern Electric Co. Ltd.
Automatic Electric Sales (Canada) Ltd.
The Asco Wire & Cable Co.
Wilbur B. Driver Co.
Tenatronics Ltd.
Rogers Electronic Tubes & Components
Saxton Products, Inc.
Federal Wire and Cable Co. Ltd.
The Universal Wire & Cable Co. Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
White Radio Ltd.
The Wheeler Insulated Wire Co., Inc. —
Division of Sperry Rand Corp.
- WIRE (Grounding, also Ground Rods)**
Hackbusch Electronics Ltd.
General Cement Mfg. Co. —
Division of Textron, Inc.
Channel Master Corp.
JFD Mfg. Co., Inc.
Electro Sonic Supply Co. Ltd.
Canadian Line Materials Ltd.
Automatic Electric Sales (Canada) Ltd.
Northern Electric Co. Ltd.
Musimart of Canada Ltd.
Saxton Products, Inc.
Tenatronics Ltd.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Tequipment Mfg. Co., Ltd.
- WIRE (Guy)**
R. C. Kahnert Sales Ltd.
Hackbusch Electronics Ltd.
Canadian Westinghouse Co. Ltd. —
Apparatus Div.
Bennett & Collins Ltd. — Mfg. Div.
The Wind Turbine Co. of Canada Ltd.
JFD Mfg. Co., Inc.
Channel Master Corp.
Walsco Electronics Corp.
Electro Sonic Supply Co. Ltd.
General Cement Mfg. Co. —
Division of Textron, Inc.
Northern Electric Co. Ltd.
Automatic Electric Sales (Canada) Ltd.
Insuline Corp. America —
Subsidiary Van Norman Industries Inc.
Musimart of Canada Ltd.
Tenatronics Ltd.
Saxton Products, Inc.
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Desser E-E Ltd.
The B. Greening Wire Co., Ltd.
- WIRE (High Voltage)**
Canadian Westinghouse Co. Ltd. —
Apparatus Div.
Phillips Electrical Co. Ltd.
Pirelli Cables, Conduits Ltd.
Alpha Wire Corp.
- Phalo Plastics Corp.
Electro Sonic Supply Co. Ltd.
Amphenol Canada Ltd.
Northern Electric Co. Ltd.
S & T Sales Ltd.
William Brand & Co., Inc.
Musimart of Canada Ltd.
United States Rubber Co.
Saxton Products, Inc.
White Radio Ltd.
- WIRE (Insulated)**
Boston Insulated Wire & Cable Co. Ltd.
Canadian Westinghouse Co. Ltd. —
Apparatus Div.
Phillips Electrical Co. Ltd.
Aeromotive Engineering Products
J. B. Smyth Electronic Components
Pirelli Cables, Conduit Ltd.
P. J. Heenan Ltd.
Cossor Canada Ltd.
Down Corning Silicones Ltd.
Lake Engineering Co. Ltd.
Phalo Plastics Corp.
Insulation Manufacturers Corp.
Alpha Wire Corp.
Essex Wire Corp.
Channel Master Corp.
Electro Sonic Supply Co. Ltd.
Electrolabs
Amphenol Canada Ltd.
General Cement Mfg. Co. —
Division of Textron, Inc.
S & T Sales Ltd.
Northern Electric Co. Ltd.
The Glendon Co. Ltd.
William Brand & Co., Inc.
Cornish Wire Co. Inc.
Musimart of Canada Ltd.
Wilbur B. Driver Co.
Saxton Products, Inc.
United States Rubber Co.
Federal Wire and Cable Co. Ltd.
Royal Electric Co., Inc.
Electro-Vox Intercom Inc.
Standard Telephones & Cables Mfg. Co.
(Canada) Ltd.
Perkins Electric Co., Ltd. —
Electronics Div.
The Rex Corp.
Barber-Colman of Canada Ltd. —
(Wheeler Inst. Div.)
Canadian General Electric Co., Ltd. —
Electronic Equipment & Tube Dept.
Desser E-E Ltd.
White Radio Ltd.
The Wheeler Insulated Wire Co., Inc. —
Division of Sperry Rand Corp.
- WIRE (Magnet)**
Sprague Electric International Ltd.
- WIRE (Stripped)**
Aeromotive Engineering Products
P. J. Heenan Ltd.
Fleck Electrical Mfg. Ltd.
Alpha Wire Corp.
Electro Sonic Supply Co. Ltd.
Electrolabs
Radio Components Ltd.
S & T Sales Ltd.
William Brand & Co., Inc.
- WIRE (Tantalum, Tungsten, Molybdenum)**
J. B. Smyth Electronic Components
Fansteel Metallurgical Corp.
Johnson Matthey & Mallory Ltd.
- WIRE AND CABLE (Hookup, Magnet, Power Cords)**
Boston Insulated Wire & Cable Co. Ltd.
Mechron Engineering Products Ltd.
J. J. MacQuarrie
J. B. Smyth Electronic Components
Fleck Electrical Mfg. Ltd.
Canadian Westinghouse Co. Ltd. —
Apparatus Div.
Phillips Electrical Co. Ltd.
Pirelli Cables, Conduits Ltd.
Aeromotive Engineering Products
P. J. Heenan Ltd.
Essex Wire Corp.
Alpha Wire Corp.
Phalo Plastics Corp.
Electro Sonic Supply Co. Ltd.
Electrolabs
Northern Electric Co. Ltd.
The Glendon Co. Ltd.
William Brand & Co., Inc.
The Asco Wire & Cable Co.
Cornish Wire Co. Inc.
Musimart of Canada Ltd.
Royal Electric Co., Inc.
Federal Wire and Cable Co. Ltd.
United States Rubber Co.
Saxton Products, Inc.
Electro-Vox Intercom Inc.
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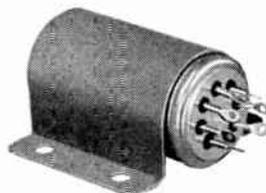
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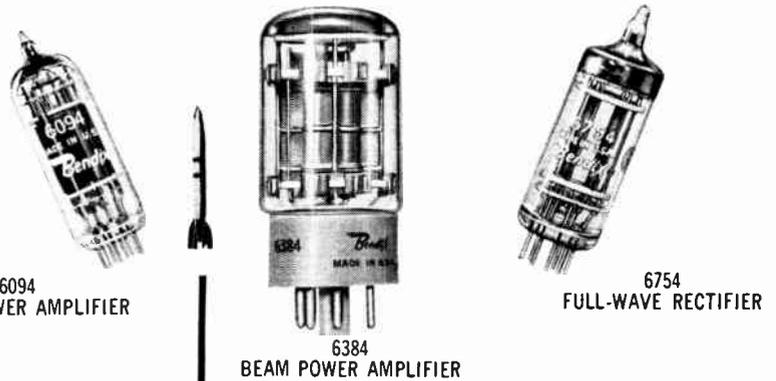
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Heater Voltage (AC or DC)**	6.3 volts	6.3 volts	6.3 volts
Heater Current	0.6 amp.	1.2 amp.	1.0 amp.
Plate Voltage (Maximum DC)	300 volts	750 volts	350 volts
Screen Voltage (Maximum DC)	275 volts	325 volts	—
Peak Plate Voltage (Max. Instantaneous)	550 volts	750 volts	—
Plate Dissipation (Absolute Max.)	14.0 watts	30 watts	—
Screen Dissipation (Absolute Max.)	2.0 watts	3.5 watts	—
Heater-Cathode Voltage (Max.)	≈ 450 volts	≈ 450 volts	≈ 500 volts
Grid Resistance (Maximum)	0.1 Megohm	.1 Megohm	—
Grid Voltage (Maximum)	5.0 volts	0 volts	—
(Minimum)	-200 volts	-200 volts	—
Cathode Warm-up Time	45 sec.	45 sec.	45 sec.

*For greatest life expectancy, avoid designs which apply all maximums simultaneously.

**Voltage should not fluctuate more than ±5%.

MECHANICAL DATA	6094	6384	6754
Base	Miniature 9-Pin	Octal	Miniature 9-Pin
Bulb	T-6½	T-11	T-6½
Maximum Over-all Length	2½"	3½"	2½"
Maximum Seated Height	2¾"	2½"	2¾"
Maximum Diameter	¾"	1½"	¾"
Mounting Position	Any	Any	Any
Maximum Altitude	80,000 ft.	80,000 ft.	80,000 ft.
Maximum Bulb Temperature	300°C	300°C	300°C
Maximum Impact Shock	500G	500G	500G
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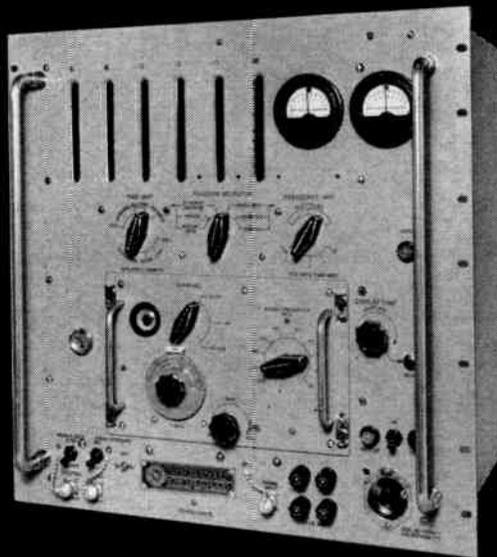
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- New Hampshire Ball Bearings, Inc.,**
Peterborough, N.H. Represented by:
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P.O. Box 760, Brampton, Ont.
- New London Instrument Co., Inc.,**
82 Union St., New London, Conn.
Represented by:
Electromechanical Products,
Warden Ave., Agincourt, Ont.
- Nickel Cadmium Battery Corp.,**
Pleasant St., Easthampton, Mass.
Represented by:
The Standard Electric Time Co. of
Canada Ltd., 726 St. Felix St.,
Montreal 3, Que.
- NJE Corp.,** 345 Carnegie Ave.,
Kenilworth, N.J. Represented by:
Radionics Ltd., 8230 Mayrand St.,
Montreal 9, Que.
- Non-Linear Systems, Inc.,**
Del Mar Airport, Del Mar, Cal.
Represented by:
Bayly Engineering Ltd., First St.,
Ajax, Ont. (All of Canada except B.C.)
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- North American Philips Co. Inc.,**
750 South Fulton Ave.,
Mount Vernon, N.Y. Represented by:
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- Northeast Scientific Corp.,**
617 Concord Ave., Cambridge 38, Mass.
Represented by:
Electromechanical Products,
Warden Ave., Agincourt, Ont.
- Northern Engineering Laboratories, Inc.,**
434 Wilmot Ave., Burlington, Wis.
Represented by:
C. R. Snelgrove Co. Ltd.,
Box 10, Postal Station "R",
Toronto 17, Ont.
- Northern Radio Co., Inc.,**
143-147 West 22nd St.,
New York 11, N.Y. Represented by:
Northern Radio Mfg. Co. Ltd.,
1950 Bank St., Ottawa, Ont.
- North Shore Nameplate Inc.,**
214 - 27 Northern Blvd.,
Bayside 61, N.Y. Represented by:
Everlast Nameplate Co.,
73 Adelaide St. W., Toronto, Ont.
Beaver Decalcomania Co.,
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- Norton Behr-Manning Overseas Inc.,**
New Bond St., Worcester, Mass.
Represented by:
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A. P. Green Fire Brick Co. Ltd.,
234 Rosemount Ave., Toronto 15, Ont.
Norton Co. of Canada, Ltd.,
P.O. Box 107, Station B, Hamilton, Ont.
Behr-Manning (Canada) Ltd.,
P.O. Box 268, Brantford, Ont.
- NRD Instrument Co.,** 6425 Etzel Ave.,
St. Louis 14, Mo. Represented by:
X-Ray & Radium Industries, Ltd.,
261 Davenport Rd., Toronto, Ont.
- Nuclear Measurements Corp.,**
2460 N. Arlington Ave., Indianapolis, Ind.
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- Ohmite Manufacturing Co.,**
3601 Howard St., Skokie, Ill.
Represented by:
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A. C. Simmonds & Sons, Ltd.,
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Shamrock Circle, Opelika, Ala.
Represented by:
Atlas Radio Corp. Ltd.,
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- Oster Manufacturing Co., John,**
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Represented by:
S. M. Murray, 27 Broadpath Rd.,
Don Mills, Ont.
- Oxford Electric Corp.,**
3911 S. Michigan Ave., Chicago 15, Ill.
Represented by:
Atlas Radio Corp. Ltd.,
50 Wingold Ave., Toronto 10, Ont.

For further data on advertised products use page 181.

Pace Electrical Instruments Co., Inc.,
(Meter Division), 70 - 31 84th St.,
Glendale 27, L.I., N.Y. Represented by:
Atlas Radio Corp. Ltd.,
50 Wingold Ave., Toronto 10, Ont.

Pacific Scientific Co., P.O. Box 22019,
Los Angeles, Cal. Represented by:
The Garrett Mfg. Corp. of Canada, Ltd.,
4 Racine Rd., Rexdale, Ont.
Pacific Scientific Co.,
421 Michigan St., Seattle 8, Wash.

Pacific Transducer Corp.,
11836 W. Pico Boulevard,
Los Angeles 64, Cal. Represented by:
Canadian Laboratory Supplies,
3701 Dundas St. W., Toronto 9, Ont.
Fisher Scientific Co.,
245 Carlaw Ave., Toronto 8, Ont.
Fisher Scientific Co.,
910 St. James St. W., Montreal, Que.

Paisley Products, Inc.,
Division of Morningside, Nicol, Inc.,
630 W. 51st St., New York 19, N.Y.
Represented by:
Paper Makers' Materials Co.,
866 W. 61st Ave., Vancouver 14, B.C.

Palnut Co., The, Glen Rd.,
Mountainside, N.J. Represented by:
P. L. Robertson Mfg. Co. Ltd.,
Milton, Ont.

Partridge Transformers Ltd.,
Tolworth, Surrey, England
Represented by:
Atlas Radio Corp. Ltd.,
50 Wingold Ave., Toronto 10, Ont.

Peerless Products Industries,
812-816 N. Pulaski Rd., Chicago 51, Ill.
Represented by:
M. K. Widdekind Co., 216 1st Ave. North,
Seattle 9, Wash. (For S.W. B.C.)

Peirce Wire Recorder Corp.,
5900 N. Northwest Highway,
Chicago 31, Ill. Represented by:
Arden Dictation Systems, Ltd.,
716 Cambie St., Vancouver, B.C.
Mitchell Houghton, Ltd.,
76-78 Richmond St. E., Toronto, Ont.

1 Duke St., Hamilton, Ont.
1021 Beaver Hall Hill, Montreal, Que.
W. H. Caverly, Electronic Office Supplies,
33 Brock St., Kingston, Ont.
Dyson Business Electronics,
422 Wellington St. W., London, Ont.

Office Machines Ltd.,
172 Hamilton Ave., St. Johns, Nfld.
Carter's Office Equipment,
P.O. Box 105, Abbotsford, B.C.
Alberta Office & Dictation Equip. Ltd.,
10439 - 82nd Ave., Edmonton, Alta.
Okanagan Stationers Ltd.,
1447 Ellis St., Kelowna, B.C.
Business Specialties, Ltd.,
1325 Albert St., Regina, Sask.
G. H. & R. W. Matthews,
1024 Blanshard St., Victoria, B.C.
Winnipeg Dictation Services,
761 Osborne St., Winnipeg, Man.

Penta Laboratories, Inc.,
312 N. Nopal St., Santa Barbara, Cal.
Represented by:
Frathom Co., 33 W. 42nd St.,
New York 36, N.Y.

Perkin Engineering Corp.,
345 Kansas St., El Segundo, Cal.
Represented by:
Electromechanical Products,
Warden Ave., Agincourt, Ont.

Permo, Inc., 6415 N. Ravenswood Ave.,
Chicago 26, Ill. Represented by:
RCA Victor Co., Ltd.,
1001 Lenoir St., Montreal 30, Que.
20 Bloor St. W., Toronto, Ont.
Ruiterford Agencies,
8355 Labarre St., Montreal 9, Que.

Permonite Mfg. Co.,
444 Lake Shore Drive,
Chicago, Ill. Represented by:
Glendon Co., 44 Wellington St. E.,
Toronto, Ont.

Phalo Plastics Corp., 25 Foster St.,
Worcester 8, Mass. Represented by:
J. B. Smyth, 380 Craig St. W.,
Montreal 1, Que.

Phostron Instrument and Electronic Co.,
151 Pasadena Ave., South Pasadena, Cal.
Represented by:
Burt C. Porter Co.,
4310 Roosevelt Way, Seattle 5,
Wash. (B.C.)

Philbrick Researches, Inc., George A.,
230 Congress St., Boston 10, Mass.
Represented by:
The Ahearn & Soper Co. Ltd.,
P.O. Box 715, Ottawa, Ont.

Philco Corp., Government & Industrial Div.,
4700 Wissahickon Ave., Philadelphia, Pa.
Represented by:
Philco Corp. of Canada, Ltd.,
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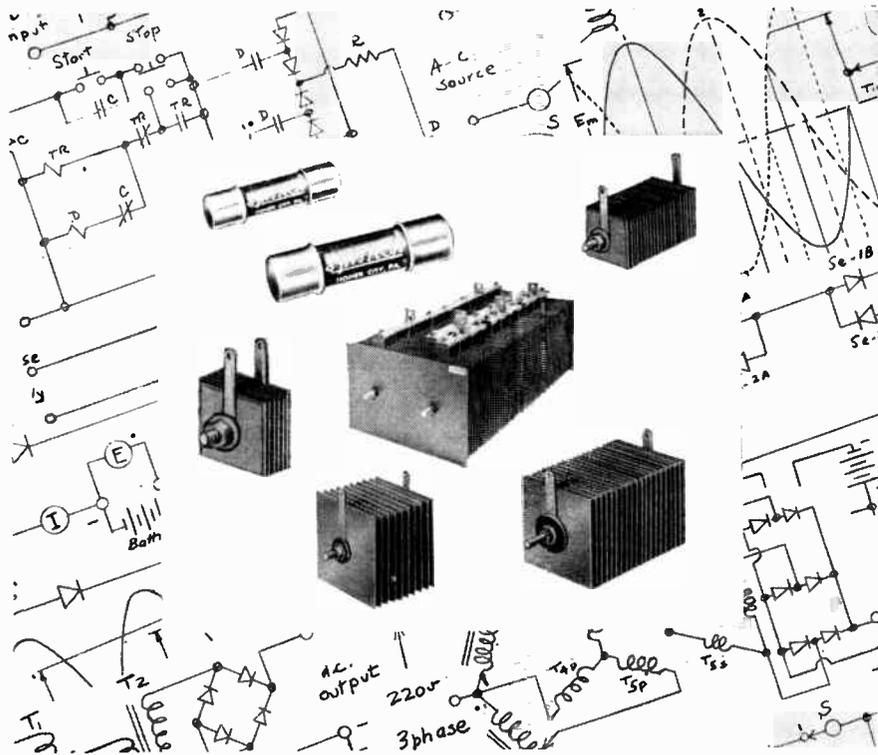
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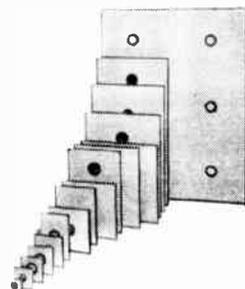
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- Pickering and Co., Inc., 309 Woods Ave., Oceanside, L.I., N.Y. Represented by: Charles W. Pointon Ltd., 6 Alcina Ave., Toronto, Ont.
- Planet Mfg. Corp., 225 Belleville Ave., Bloomfield, N.J. Represented by: Dave M. Lee, 2517 Second Ave., Seattle, Wash. (Vancouver)
- Roburn Agencies, Inc., 431 Greenwich St., New York 13, N.Y. (Eastern Canada)
- Polarad Electronics Corp., 43 - 20 34th St., Long Island City, N.Y. Represented by: Measurements Engineering Ltd., Arnprior, Ont.
- Polypenco, Inc., 2150 Fairmont Ave., Reading 1, Pa. Represented by: Peckover's Ltd., 115 McCormack St., Toronto, Ont. 2052 St. Catherine W., Montreal, Que. C. M. Lovsted & Co. (Canada) Ltd., Vancouver, B.C. C. M. Lovsted & Co. (Canada) Ltd., Edmonton, Alta. C. M. Lovsted & Co. (Canada) Ltd., Calgary, Alta.
- Polypulse Instrument Co., 701 Haverford Rd., Bryn Mawr, Pa. Represented by: Electromechanical Products, Warden Ave., Agincourt, Ont.
- Pomona Electronics Co., Inc., 1126 West Fifth Ave., Pomona, Cal. Represented by: Fred H. Haight Co., 3212 Eastlake Ave., Seattle, Wash. (Covering Vancouver and Victoria, B.C. only)
- Potter Instrument Co. Inc., 115 Cutter Mill Rd., Great Neck, N.Y. Represented by: Intronics Ltd., 11 Spruce St., P.O. Box 51, Stittsville, Ont.
- Potter & Brumfield, Inc., Princeton, Ind. Represented by: Aeromotive Engineering Products, 5257 Queen Mary Rd., Montreal, Que. A. T. R. Armstrong Ltd., 700 Weston Rd., Toronto 9, Ont. Charles L. Thompson, Ltd., 3093 Woodbine Drive, North Vancouver, B.C.
- Power Controls Ltd., Exning Rd., Newmarket, Suffolk, England Represented by: Pye Canada Ltd., 82 Northline Rd., Toronto 16, Ont.
- Pratt & Whitney Co., Inc., Charter Oak Blvd., West Hartford 1, Conn. Represented by: John Bertram & Sons Co. Ltd., 17 Davenport Rd., Toronto, Ont.
- Precise Development Corp., 2 Neil Court, Oceanside, N.Y. Represented by: D. Eldon McLennan, 2191 W. 1st Ave., Vancouver, B.C.
- Precision Apparatus Co., Inc., 70 - 31 84th St., Glendale 27, L.I., N.Y. Represented by: Atlas Radio Corp. Ltd., 50 Wingold Ave., Toronto 10, Ont.
- Precision Metal Products Co., 41 Elm St., Stoneham, Mass. Represented by: Norman J. Rolph, 18 Toronto St., Toronto, Ont.
- Precision Tube Co. Inc., Church Rd., & Wissahickon Ave., North Wales, Pa. Represented by: J. R. Longstaffe Co. Ltd., 300 Campbell Ave., Toronto 9, Ont.
- Preis Engraving Machine Co., H. P., 651 U.S. Highway 22, Hillside, N.J. Represented by: H. J. G. McLean Ltd., P.O. Box 231, Brantford, Ont. Empire Engineering Co., 738 Dundas St. E., Toronto, Ont. Moore Bros. Machinery Co., 953 St. James St. W., Montreal, Que. Canadian Fairbanks-Morse Co., 980 St. Antoine, Montreal, Que.
- Premax Products, Division Chisholm-Ryder Co., Highland & College Aves., Niagara Falls, N.Y. Represented by: A. C. Simmonds & Sons, Ltd., 100 Merton St., Toronto 12, Ont.
- Premier Instrument Corp., 52 West Houston St., New York 12, N.Y. Represented by: Revco Ltd., 23 Collier St., Toronto 16, Ont.
- Price Electric Corp., E. Church and 2nd Sts., Frederick, Md. Represented by: Radio Condenser Co., Ltd., 6 Bermondsey Rd., Toronto, Ont.

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J. Bruce Elder, P. O. Box 38,
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Microwave Systems,
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Ben Manis, 5137 Montclair, Montreal, Que.

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Redmond Motors of Canada, Ltd.,
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Reeves Soundcraft Corp.,
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Represented by:
A. T. R. Armstrong Ltd.,
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Rek-O-Kut Co., 38 - 01 Queens Boulevard,
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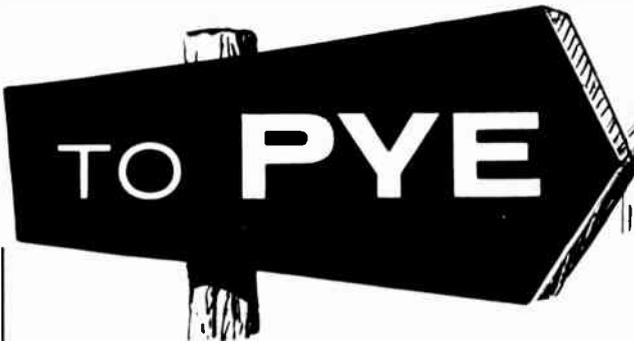
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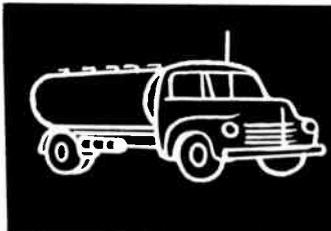
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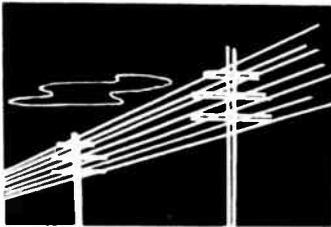
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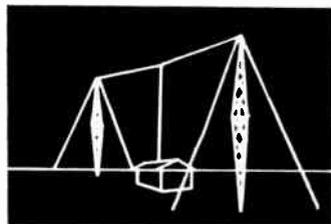
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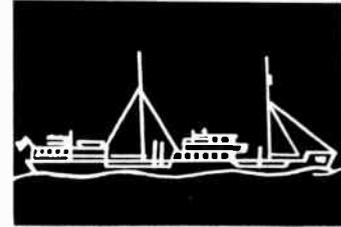
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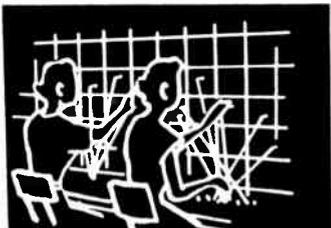
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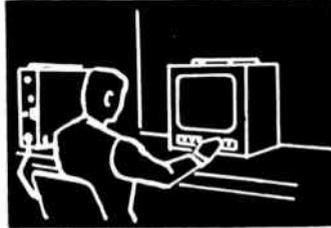
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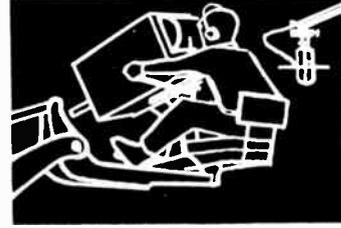
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- . . . Outdoor pole-mounted cabinets.
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3 DUKE ST., HALIFAX

Product Information Section

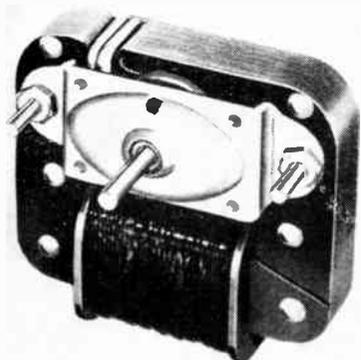
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Unidirectional Motors

Item 1308

Barber-Colman unidirectional motors are designed for long life and dependable service in TV antenna rotators and tuners, fans, hair dryers, electric heaters, draftboosters, pumps, vaporizers, and stirrers. Standard motors are designed for 115 volt, 60



cycle power supply and clockwise rotation. Motors can be wound for intermittent duty and other voltages and frequencies. Other special features such as extended shafts, variations in mounting details and counter-clockwise rotation are also available. **Barber-Colman Company, Rockford, Ill., U.S.A.**

Synchronous Motors

Item 1309

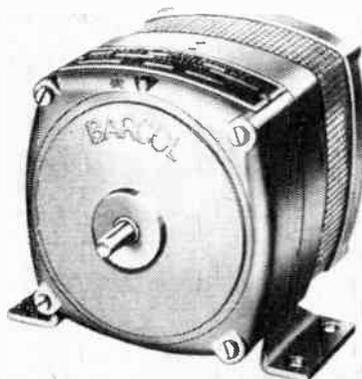
Combining accurate timing and high torque with small dimensions and light weight, Barber-Colman shaded pole synchronous motors develop thirty times the power of ordinary clock and timing motors. Incorporated in X-ray timers, microfilm cameras, scoreboard timers, oscillographs, viscometers, facsimile recorders, and many other industrial and scientific instruments, these synchronous motors provide the long life and dependable operation vital to successful instrumentation.

Barber-Colman Company, Rockford, Ill., U.S.A.

Reversible Motors

Item 1310

Barber-Colman reversible motors are designed for follow-up and positioning mechanisms such as remote control tuning of TV receivers, operation of chart pens in automatic re-

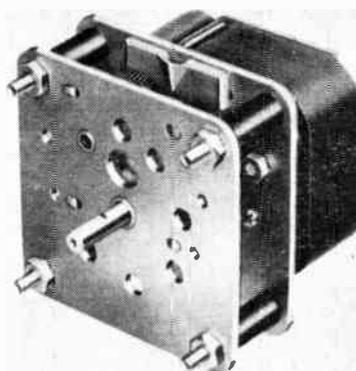


corders, and servomechanisms. These applications, and many others, require a gear reduction to provide reduced speed and higher torque. These reversible motors can be adapted to control by electronic circuits, in which case they are usually supplied with special high impedance shading coils. **Barber-Colman Company, Rockford, Ill., U.S.A.**

Geared Motors

Item 1311

Barber-Colman geared motors bridge the gap between miniature clock motors and fractional horsepower motors. The many enclosed and open type gear reductions make possible the adaptation of these motors to a wide range of applications. Typical are barbecue machines, photo-copying and print machines, vending and ice machines, animated displays, ice



cream freezers, and industrial controls. The new DYAZ geared motor

is designed for radial thrust and overhanging loads and combines long life lubrication with rugged gearing.

Barber-Colman Company, Rockford, Ill., U.S.A.

Canadian Representatives: The Barber-Colman Company Small Motors Division is represented in Canada by John Herring and Company, Ltd., 3468 Dundas Street West, Toronto, Ontario, and Rousseau Controls Ltd., 640 De-Courcelle Street, Montreal 30, Que.

Norco Magnetic Recording Components

Item 1312

Multi Channel and Single Channel Devices for Sound and Instrumentation

**MODEL TLD
High Quality Low Cost In-Line Stereophonic Sound Record-Reproduce Head.**

- Compact Construction
- Precision Ground and Lapped Gap
- Balanced Electric and Magnetic Structure
- Optical Colinear Alignment
- Single Laminar Construction
- High Output



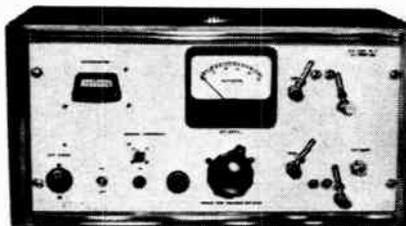
This head can be compensated for flat response between 30 and 10,000 c.p.s. at 7.5 inches per second. It will provide long wear, negligible oxide accumulation, excellent rejection of surrounding fields, and uniformity of frequency and amplitude response. This head is suitable for use in new equipment design, replacement, and for conversion of existing tape recorders to stereophonic tape "phonograph" equipment. The audiophile net price is \$23.50 each. Detailed dimension drawings, specifications and prices to manufacturers, distributors and dealers will be furnished upon request.

The Nortronics Company, Inc., 1015 South Sixth Street, Minneapolis, Minnesota, U.S.A.

Calorimeter Bridge

Item 1313

A new direct reading calorimeter bridge with frequency range of DC-4000 Mc (coaxial) and 1000-12000 Mc (waveguide). Calorimeter bridge is continuously self-calibrated by means of an auxiliary AC standard load and an AC wattmeter. The V.S.W.R. of the R.F. load resistor is less than 1.15, up to 4000 Mc. The total error in power



measurement is less than 5%. Accuracy can be increased by calibrating the instrument against an accurate laboratory type AC wattmeter. Power range: 10-150 watts, 10-500 watts, 100-5000 watts. Power supply: 115 V., 60 c.p.s., single phase, 250 watts.

Descriptive literature from:
Electro Impulse Laboratory, 208 River Street, Red Bank, New Jersey, U.S.A.

To obtain further information on the product write-ups in this section use the post card coupon on page 181

Frequency Meter, Counter And Timer

Item 1314

Few instruments perform as many jobs as Berkeley's Model 5571 Frequency Meter. As a frequency meter, it measures frequencies from 0 to 42 megacycles with an accuracy of 1 c.p.s. or greater. By simply rotating the function switch, the Model 5571 serves as an events-per-unit-time meter, time interval meter, period meter, frequency ratio meter, and high speed electronic counter. With plug-in units, frequency range can be extended to 1005 megacycles. Applications: telemetering, tachometry, relay and switch timing, secondary frequency standard, timing generator, phase, ballistics, viscosity, elasticity, and frequency ratio. For descriptive literature, write to:

Berkeley Division, Beckman Instruments, 2200 Wright Ave., Richmond, California.

Systems Department For Special Jobs

Item 1315

Berkeley Division, Beckman Instruments maintains a Systems Engineering Department that builds simple and complex systems, modifies standard instruments, and develops new instruments for special or unusual applications. Systems built by this department now operating in these fields: paper and pulp mills; steel

mills, aircraft and automotive factories; chemical plants, testing laboratories, wind tunnel operators, and many others. Systems group includes specialists in logical circuitry, pulse handling techniques, digital data handling, analog and digital computers, and physical measurements. For further information, write to:
Systems Department, Berkeley Div., Beckman Instruments, 2200 Wright Ave., Richmond, California.

New Analog Computer

Item 1316

Berkeley's new EASE 1100 Series unique design features, including a digital input-output system, make possible analog computer installations of any size. The entire computer problem can be pre-programmed with punched tape. A built-in checking system, dynamic and static, saves hours of time in locating wiring errors and component malfunctions. Control consoles, incorporating a newly-designed patch bay system, allow complete computer control during any phase of operation. "Building Block" components permit custom installations that do exactly the job required, yet provide room for expansion. Write for descriptive literature to:
Berkeley Division, Beckman Instruments, 2200 Wright Ave., Richmond, California.

Magnetic Events-Per-Unit-Time Meters

Item 1317

Series 7600 magnetic events-per-unit-time meters contain no vacuum tubes except in power supply. Decade counting units use Berkeley Ferristors*, tiny magnetic amplifiers. Other basic units consist of input amplifier and gate opened and closed by a tuning-fork controlled time base. Both models feature external reset circuit, extremely useful for many industrial applications. Applications: aircraft, engine testing, process control systems, tachometry systems, measurement of linear or centrifugal speeds, forces, and strains; measurement of any mechanical or physical event during precise time interval. Write for descriptive literature to:

Berkeley Division, Beckman Instruments, 2200 Wright Ave., Richmond, California.

*Registered Trademark. Berkeley Division, Beckman Instruments.

Time Interval Meters

Item 1318

Two new time interval meters now available from Berkeley give direct reading of elapsed time between any two events of any optical, mechanical or electrical nature that can be represented by a changing voltage. Model 7250 measures intervals from 10 microseconds to 1 second; Model 7260 one microsecond to 1 second. Exclusive feature: "period" measurement of an applied frequency with results displayed in decimal form, especially useful for rapidly measur-

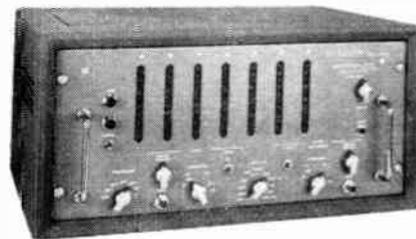
ing very low frequencies with great precision. Write for descriptive literature to:

Berkeley Division, Beckman Instruments, 2200 Wright Ave., Richmond, California.

Universal EPUT* And Timer

Item 1319

Berkeley's newest electronic counter and timer offers the maximum in accuracy, flexibility and ease of operation for both industrial and laboratory uses. Model 7350 covers the frequency range from dc to 100 kilocycles; Model 7360 from dc to one megacycle. Elapsed time over a range from 1 microsecond to 10,000,000 seconds



(116 days) can be measured directly with a maximum accuracy of ± 1 microsecond. Applications: measure time intervals, period intervals, frequencies, phase shift, electronic stopwatch, straight forward electronic counter. Write for descriptive literature to:

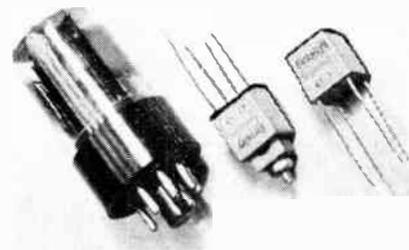
Berkeley Division, Beckman Instruments, 2200 Wright Ave., Richmond, California.

*Registered Trademark. Berkeley Division, Beckman Instruments.

Magnetic Vacuum Tube Replacement

Item 1320

Consisting of simple wirewound coils on ferro-magnetic cores, Ferristors* are low-power replacements for vacuum tubes. Immune to heat, humidity, shock damage and accidental overload, Ferristors perform all functions of vacuum tubes: input amplifier, gate, time base, decimal counting unit,



coincidence amplifier, and control circuitry. Two general classes of Ferristors are manufactured by Berkeley Division, Beckman Instruments; (1) Stock No. 41-8 through 13 for high speed magnetic amplifier application and (2) Stock No. 41-1 and 2 for counting circuit use. Write for descriptive literature to:

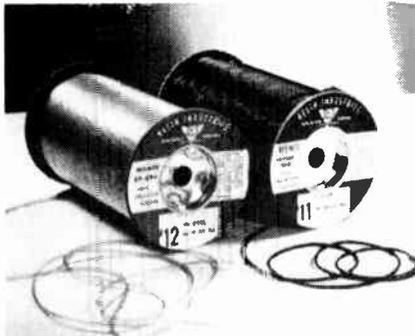
Berkeley Division, Beckman Instruments, 2200 Wright Ave., Richmond, California.

*Registered Trademark. Berkeley Division, Beckman Instruments.

Resinite Meets All U.S. Specs. Available From Stock In Canada

Item 1321

Resinite vinyl sleeveings meet the particular insulation requirements of the electronic and aircraft industries, and conform to every U.S. Military Specification of Type F, Form U.



Resinite Super-Heat 125 offers outstanding cut-through and abrasion resistance, and high dielectric strength after prolonged immersion in oil, varnish or asphaltic pitch, at temperatures even higher than 105°C or as low as -40°C. It is approved by Underwriters' Laboratories for continuous operation at 105°C.

Resinite EP-69A conforms to the requirements of U.S. Specification MIL-I-631C, Type F, Form U, Grades a and b, Class I and II, Category 1 and 2. A multipurpose material, it has excellent dielectric strength, corrosion, fungus and flame resistance and may be used over a wide temperature range.

Resinite Hi-Heat 105 is approved by Underwriters' Laboratories for continuous operation at 105°C, and conforms to U.S. Specification MIL-I-631C, Type F, Form U, Grade c, Class II, Category 1 and 2.

Resinite EP-93 is a U.S. Specification grade sleeving with outstanding low temperature flexibility, excellent flame resistance and complete fungus resistance. It conforms to the requirements of MIL-I-7444A(1) in all three size ranges.

In Canada, Resinite vinyl insulation materials are stocked and sold by: **Aeromotive Engineering Products, Post Office Box 760, Brampton, Ont.; 5257 Queen Mary Road, Montreal 29, Quebec.**

New 750 Watt DC To AC Converters

Item 1322

In answer to a demand for larger capacity DC to AC Rotary Converters, Carter Motor Co., 2711 W. George St., Chicago, has announced the addition of a 750 Watt model to its famous "Custom" line.

Like Carter 300, 400 and 500 watt Converters, this new 750 watt job incorporates the latest technological advances in converter engineering. Pole shoes and field ring are cast in a single unit, to eliminate electrical loss

and simplify construction. Dimensions are 13 $\frac{7}{8}$ " long x 6 $\frac{3}{4}$ " wide x 7 $\frac{1}{4}$ " high. Weight approx. 58 pounds.

Specialty Engineered For Marine And Industrial Service

Hundreds of Carter DC to AC Converters are in Marine service, and the new "Seven-Fifty" are already finding wide use in Marine Radar installations and operating Depth Sounders, Direction finders, ship-to-shore radio, etc. Armatures are doubly protected with high humidity red Marine Insulator that is oil, water and alkali resistant. All electrical and mechanical parts are engineered to the most exacting marine standards. Drip proof construction.

Cross stacked transformer grade armature laminations reduce eddy current and hysteresis losses. Special insulated wire used in windings, assures long life. Armatures are dynamically balanced by the latest scientific methods.



Commutators are constructed with hard drawn Silver alloy copper segments and carefully inspected with precision testing equipment. Line-O-Life brushes grades are specially engineered for maximum brush and commutator life.

Carter "Seven-Fifty" Converters are available for input voltages of 24, 28, 32, 48, 64, 72, 115 and 230 volt AC and deliver clean 115 v. 60 cycle AC from handy plug-in receptacle.

"Seven-Fifty" Carter Custom Converters deliver full 115 volts AC under full load conditions while operating at their greatest efficiency. To overcome heavy starting load on major appliances, these converters actually deliver a surge of nearly 1000 watts at 110 volts, 1200 watts at 120 v. AC output. Here is considerable overload capacity available without sacrifice of efficiency, without overheating or damage.

750 watt Dynamotors are also available for DC to DC conversion, part of a complete line of Rotary Power Supplies, Genmotors, magmotors and inductor alternators made by the Carter firm.

A new Bulletin 1156A and complete information and performance charts are available on request to **Carter Motor Co., 2711 W. George St., Chicago 18, Illinois. Canadian Representative, Charles W. Pointon, 6 Alcina Avenue, Toronto, Ont.**

Frequency Meters

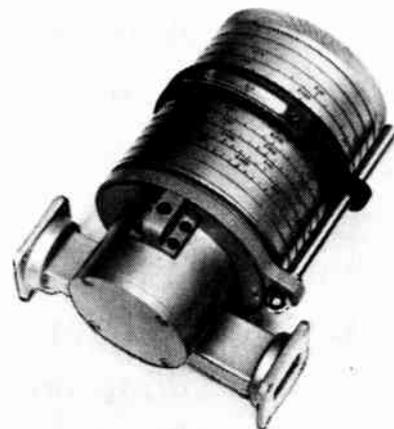
Item 1323

Frequency Standards, Asbury Park, New Jersey, U.S.A., manufacturers of electronic measuring instruments, are now offering four new Direct Reading Frequency Meters. Complete specifications are available from the manufacturer or from their Canadian representatives, Measurements Engineering Ltd., Arnprior, Ontario, with sales offices at 5 Harris Crescent, Burlington, Ontario.

The four new meters are Direct Reading Cavity Type Wavemeters, operating in the TE₀₁₁ mode. The length of the resonant cavity is controlled by a plunger coupled to a precision ground spindle. The spindle thread runs in a radially loaded nut. The spindle is locked to a spiral drum dial on which the calibration is engraved directly. A nut made of graphited nylon, with an indicator window, runs in the external thread of the drum and the differential action of the spindle thread and drum thread translates the lateral movement of the tuning plunger to the indicator window by factors of 10 and 4 on the respective models.

The cavity is mounted on the broad-face of a section of waveguide and is iris coupled to the guide. In two of the new meters the axis of the cavity parallels the H field of the guide; other models have the axis of the cavity parallel to the E field of the guide.

The indicator window of the new wavemeters has a hairline adjustable to 10° on each side of center position. The window locks in position during final calibration. A tabulation of scale error every 50 mc. is optional on all models.



Frequency Standards' Direct Reading Cavity type Wavemeters vary in frequency range from 5850 to 11750 MC in the four models. They may be had with sealed cavities (maximum pressure differential 5 p.s.i.).

Frequency Standards, Asbury Park, New Jersey, U.S.A. Canadian Representative, Measurements Engineering Limited, Arnprior, Ontario with sales office at 5 Harris Crescent, Burlington, Ontario.

22.5 VDC D.C. Airborne Power Supply

Item 1324

A new line transient-free, short circuit-proof airborne power supply is announced by the Magnetic Research Corporation of El Segundo, California. Designated the MRP 22-1, the unit provides 22.5 volts d.c. for various telemetering and instrumentation applications.

While the MRP 22-1 may be used for various purposes requiring 22.5 VDC, it was designed specifically to power MRC's new MMO-522 low-level magnetic d.c. signal amplifiers, which eliminate gain variations by operating directly from a d.c. source. The power supply itself operates from a standard 400-cycle aircraft main, feeding d.c. input to the MMO-522 signal amplifiers, each of which incorporates a transistor oscillator. Since they are d.c. — powered, the amplifiers are free from the variations normally encountered when excitation is provided by a 400-cycle line supply which is subject to a $\pm 10\%$ tolerance. The MRP 22-1 power supply drives from 10 to 12 of the MMO-522 amplifiers.



The amplifiers themselves are used principally in the amplification of the thermocouple and strain gage output in industrial, military and medical installations. They serve equally well as very stable d.c. voltage amplifiers for radio telemeter systems or as high-gain d.c. power amplifiers for relay-type temperature and servo control systems.

The line transient-free performance of the new power supply is provided by MRC's exclusive dual magnetic regulation — a greatly improved regulating circuit that provides exceptionally smooth output and speed of response.

This superior regulation is achieved by magnetic regulators. One regulator, a high-performance flux oscillator, permits ultra-high speed control of line transients and line voltage change; the other, a high-gain magnetic amplifier, regulates against load change. The result is unusually smooth, filtered d.c. output with excellent static and dynamic regulation. The equipment also features low impedance and maintenance-free performance.

If output terminals are accidentally short circuited, a reactor automati-

cally limits line current, protecting the power supply completely. Normal operation resumes automatically without resetting of switches or fusing.

The new power supply is immediately available from stock. For further information on the MRP 22-1 power supply or the MMO-522 low-level signal amplifier, write:

**Mr. Al Hunter, general sales manager,
Magnetic Research Corporation, 202
Center Street, El Segundo, California.**

To obtain further information on the product write-ups in this section use the post card coupon on page 181

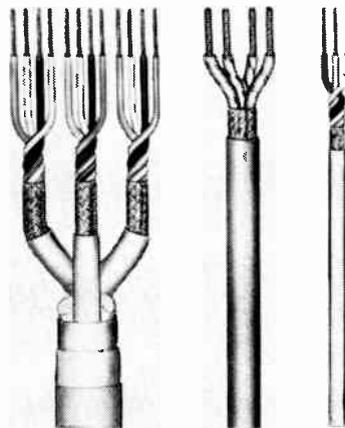
New Multi-Conductor Cable Teflon Insulated

Item 1325

Teflon insulated cables, designed in constructions from single through thirty-seven conductor assemblies, are available.

The primary insulation suggested for these constructions, is parallel wrapped Teflon, featuring high cut-through resistance and ease of stripping combined with maximum flexibility. The insulated conductors conform to the requirements of MIL-W-16878B, Types E and EE.

Any of the insulated wires may be individually shielded, but usually an overall silver-plated copper shield is supplied with various outer jackets. For high temperature applications a Teflon outer jacket is recommended, or a glass braid can be provided lacquered with silicone or Teflon. For lower temperatures, extruded vinyl or nylon jackets and lacquered nylon braids are supplied.



Teflon insulation offers a broad working temperature range of -90 to $+250^{\circ}\text{C}$, high dielectric strength, low capacitance, and complete resistance to all chemicals.

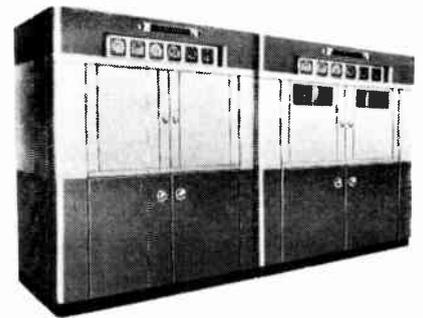
**Tensolite Insulated Wire Co., Dept. EC, 198 Main St., Tarrytown, N.Y.
In Canada: Aeromotive Engineering Products, 5257 Queen Mary Road, Montreal, Quebec.**

Type HJ 2Kw Microwave Radio

Item 1326

Westinghouse type HJ-1 fixed and type HJ-2 transportable equipments employ the forward scatter mode of propagation to provide beyond-the-horizon communication services for voice, teletype, facsimile, television and data type transmission.

The types HJ-1 and HJ-2 equipments are used as terminals to provide a single transmission path or as back-to-back repeaters for multiple transmission paths.



Equipment, installation, maintenance and operating costs are minimized by design simplicity, common housing of working and standby equipment, small inexpensive antennas, maximum maintenance accessibility, conservatively rated components and low power consumption.

This equipment has high channel capacity, up to 120 voice channels plus a high quality service channel and fault alarm supervisory tone channel below the multiplex base band as standard equipment.

**Canadian Westinghouse Co. Limited,
Commercial Sales, Electronics Division,
P.O. Box 510, Hamilton, Ont.**

Engineered Electrical Wiring Devices For Electric And Electronic Equipment

Item 1327

Kulka Electric Manufacturing Co. Inc. have been designers and manufacturers of electrical wiring devices for electronic and electrical equipment for over a quarter century. Kulka Electric Manufacturing Co. Inc. are also makers of molded, barrier-type, terminal blocks in several materials and various styles, ranging in size from sub-miniature to jumbo (90 Amps.); also U.S. Navy and Maritime terminal boards, lamp sockets, and other devices; single and double pole, toggle handle switches (aircraft type); miniature power outlets for standard plugs; fluorescent and incandescent lamp holders, plugs, sockets, starter switches cord sets, cable assemblies, and harness units.

Kulka Electric Mfg. Co. Inc., President — Eugene R. Kulka, EE Secy.-Treas., William Kulka, CPA. Factory and main offices: 633-643 South Fulton Avenue, Mt. Vernon, N.Y., U.S.A.

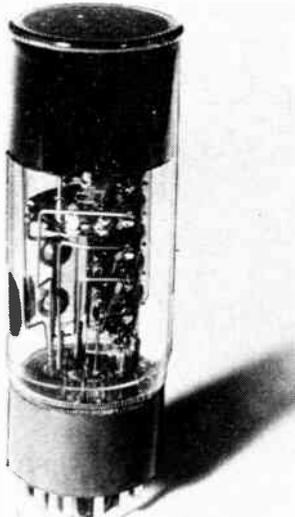
Philips Photomultiplier Tube Type 50 AVP

Item 1328

A new photomultiplier tube type 50 AVP which has a sensitivity of $50\mu\text{A/lumen}$ has been produced by Philips following prolonged research and development. Figures as high as $80\mu\text{A/lumen}$ have been obtained. Brief characteristic data is given as follows:

The Photocathodes

- The semi-transparent photocathodes of cesium-antimony is deposited on the flat top end of the tube.
- Response coverage is up to 6500 Angstroms and having its maximum at 4800 A.
- The inner and outer surfaces of the end window are optically plane parallel thus giving excellent optical coupling.
- Great uniformity over cathode area permits high accuracy when determining energy resolution.



The Multiplier System

- Eleven dynodes are employed.
- Very low thermionic emission from dynodes thus resulting in low dark currents.

Random Light

The random light caused by fluorescence in the tube itself is countered by an optical screen, thus preventing parasitic light reaching the photocathode.

Further information is available on request from Rogers Electronic Tubes and Components, 11-19 Brentcliffe Rd., Leaside (Toronto 17), Ont.

New Super Automatic Record Changer — Dual 1003

Item 1329

Direct from the Black Forest in Germany, which is noted the world over for its precision products, comes the new Dual Model 1003 super automatic record changer, which, at a reasonable price, incorporates out-

standing operational features and true high-fidelity reproduction.

Simple one-finger operation. By simply depressing one of two push-buttons, for either 78 r.p.m. or micro-groove operation, the changer automatically releases the proper stylus and the operating cycle begins.

Intermixing of any record size from 7" to 12" is possible.



A unique "elevator action" spindle prevents damage to center holes of records by gently lowering the remaining stack of records when changing, thus increasing record life.

A self adjusting clutch arrangement makes manual interference with the tone-arm during the change cycle harmless. The mechanism automatically re-adjusts itself when the starting button is depressed again.

A pause mechanism allows a delay of up to 4 minutes between records, thus providing a suitable intermission for dancing parties, etc.

A repeat switch, with automatic cancellation, replays a selected record only once, then resumes the change cycle, unless set again.

An important feature of the Dual 1003 is the locking device which keeps the tone-arm securely on its rest when not in operation. (A must for portable applications.)

A rugged four-pole, vibration free, induction motor on self lubricating bearings combined with a heavy, precision turntable reduces wow and rumble to a negligible minimum. Large, precision hand-lapped bearings provide operation of a standard found only in professional equipment.

The chassis plate is constructed of strong, torsion proof material in a compact modern design.

Pick-up: Tone-arm and pick-up head made of ivory colored Plexigum; lowest possible vertical and horizontal friction with high precision ball-bearings; DUAL High-Fidelity cartridge CDS 3, offers distortionless rectilinear transmission range from 18 cps to 22,000 cps; pick-up head, cartridge and needles easily replaced. Diamond needles available. Needle weight on record, 8 grams. Compliance: Maximum $1.2\text{ g}/\mu$. Automatic quieting device to avoid run-out noises of the neutral grooves. Instantly responding recoil-free automatic shut-off by silent mercury switch.

Dual 1003 is the first to introduce a built-in 3 position equalizer. This adjusts to operation through a radio (equalizer shorted), and any standard amplifier with high impedance phono-

input (100 Milli-Volt), or the magnetic input of a high-fidelity amplifier. Compact design permits space-saving installation. Dimensions 13" wide x 11" deep, $5\frac{3}{4}$ " above, 3" below chassis plate.

CSA approved and complete with power and phono cord, automatic spindle, single play spindle (single play is also fully automatic). 45 r.p.m. automatic spindle available.

Distributed in Eastern Canada by: John R. Tilton Limited, 51 McCormack St., Toronto 9, Ontario.

Western Canada by: Norbert Holm, 1847 Tendlill Street, Vancouver, B.C.

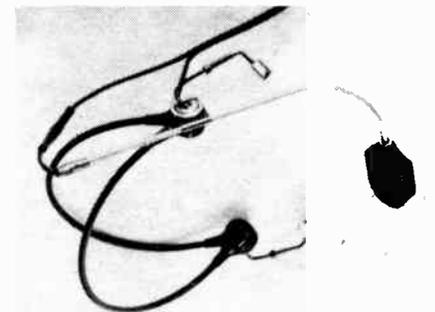
Headsets

Item 1330

Headsets are being worn today by more people in more occupations than ever before: pilots and secretaries, switchboard operators and hi-fi fans, trainyard control towers and convalescents. Wherever private listening is required, the specific need can be met by one of several Telex headset models.

Pilots of nearly every major airline know the Telex Twinset, 1.6 oz., twin-receiver set. Adjustable tone arms pipe the sound directly into the ear, or "float" a fraction of an inch away from the head so nothing whatever touches the ear. CAA approved CAATC-3R2-1.

Secretaries choose from several Telex headsets which let them transcribe for hours at a time without listening fatigue, at one time the transcriber's occupational disease. Not the least of its appeals to the secretary is the under-chin design which



leaves her hair unruffled. They like the sparkling white removable ear-tips, too. The Telex Monoset and Dynaset have been office favorites for years, while the ear-cushioned Tele-Fi, which gives a feeling of less-than-air weight, is fast becoming popular.

For switchboard operators, TV monitors and others in sending-receiving occupations, the Telex combination boomtype two-way headset is recommended. Weighing only $3\frac{1}{2}$ oz. complete, the unit has Twinset-style adjustable tone arms and is available with single or double receivers.

For more details on all Telex headsets, or electronic components, write: Dept. EA, Telex Inc., Telex Park, St. Paul 1, Minnesota.

Handie-Micro-Talkie

Item 1331

The Motorola Handie-Micro-Talkie portable F.M. Radio Transmitter operates in the 152-174 Mcs. band with a power output of 30 milliwatts. It is a lightweight, compact unit that is ideal for all industrial, railroad, public safety, civil defense and construction activities where prompt and accurate reporting of information is required.

Completely self-contained, this unit includes batteries, microphone and antenna and is available with a 1¾ turn rigid loop or single turn flexible loop antenna which serves as a carrying handle. The entire unit can be carried in a pocket.



The Handie-Micro-Talkie transmitter may be used with any standard F.M. mobile set or base station operating on the same frequency. Subminiature dry battery power supply uses standard 30 and 1.5 volt cells, providing up to 30,000 ten second transmissions on a set of "B" batteries; up to 15,000 ten second transmissions on a set of "A" batteries. There is no stand-by current drain, power is consumed only while transmitting.

Distributed in Canada by Rogers Majestic Electronics Limited, 11-19 Brentcliffe Road, Leaside, Toronto 17, Ontario.

Waveguide And Coaxial Test Equipment Booklet

Item 1332

Stock waveguide test equipment designed by ADMITTANCE-NAMCO CORP. laboratories and produced in its plants is featured in this 12-page catalog. Among the precision-built items are hybrid, series and shunt tees; slide screw and E/H tuners; adjustable shorts; low power terminations; couplers; fixed, calibrated and uncalibrated variable attenuators; microwave meters; crystal mixers; coaxial attenuators; detector crystal mounts; r-f untuned probes; broad band probes; directional couplers; fixed and sliding loads; flanges; power dividers; and tuners. The firm will also design and build other special electronic components and test units.

Admittance-Namco Corp., Farmingdale, L.I., N.Y.

Motorola Multi-Channel Radio Relay Systems

Item 1333

Motorola Multi-Channel Radio Relay Systems operating in the 890-960 Mcs frequency band are now available to Canadian users through Rogers Majestic Electronics Limited.

This new high quality radio equipment has been especially adapted for short length extensions to communications plants in the telephone, telegraph, power and petroleum industries.

Up to eight message channels can be derived through suitable multiplex equipment, each of which can provide additional channels for transmission of teletype, telemetering and control information by means of sub-multiplex equipment. Several radio links can be operated in tandem to extend circuit lengths with drop and insert facilities available at each relay station.

Options include dual terminal assemblies complete with alarm and control facilities, engineering order wire, indoor and outdoor housings and built-in metering.

Additional information is available from:

Rogers Majestic Electronics Limited, 11-19 Brentcliffe Road, Leaside, Toronto 17, Ontario.

Carter DC To AC 750 Watt Rotary Converters

Item 1334

A new 750 watt DC to AC Converter is a new addition to the line of Carter Rotary Power Supplies. It operates from DC line or battery voltage of 24, 28, 32, 64, 115 or 230 volts as specified and supplies 115v. AC from a plug-in receptacle conveniently mounted on the Converter housing. The 750 watt capacity supplies enough power for heavy industrial applications, such as marine radar systems



and industrial 2-way radio communications. Also available in 300, 400 and 500 watt capacity . . . or as a DC to DC Dynamotor. Other dynamotors, genmotors, magmotors, converters and inductor alternators are available in a wide range of stock models, or may be specially engineered to specification.

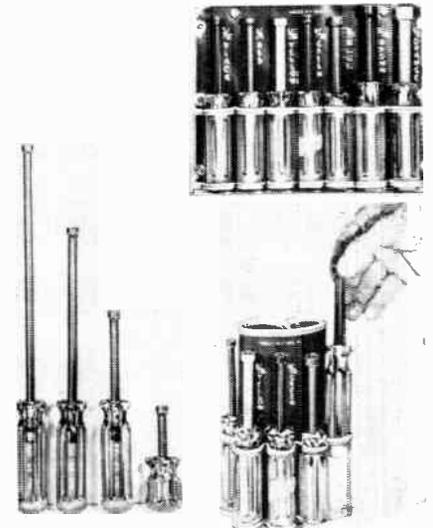
Carter Motor Company, c/o Charles W. Pointon Ltd., 6 Alcina Avenue, Toronto 10, Ont.

Color-Keyed Nut Drivers

Item 1335

Vaco Products Company recently introduced a completely new line of all hollow shaft, insulated and color-keyed nut drivers for the electronics trade.

In addition to the fact that these nut drivers have extra hard hex sockets that will not round out, additional features include color-coding on the shafts in seven different colors for the seven different hex sizes: insulation protection for the entire shaft length clear to the tip and a range of four shaft lengths — stubby, regular, long and extra long.



The seven most popular numbers are contained in a special kit (No. K7). This kit is the only kind on the market that will fold up, hang up or . . . stand up.

All Vaco Products are distributed by Atlas Radio Corp., Toronto.

"Nultrax"

Item 1336

Transducer Unit for High Precision Measurement of Linear Displacements

The Nultrax is a recently developed linear position transducer which makes possible the measurement of linear displacements to accuracies of one hundred thousandth of its full range of travel, which may extend



over distances of several feet. This is accomplished through the conversion of dimensional data to precise electrical equivalents. Repeatability is in the order of 50 micro inches.

Canadian Westinghouse Co. Limited, Commercial Sales, Electronics Division, P.O. Box 510, Hamilton, Ont.

Precision Electrical Instruments By Muirhead D-489 Muirhead-Pametrada Wave Analyser

Item 1337

A versatile precision instrument of the "Wien bridge" tunable filter type intended primarily for vibration analysis, electrical waveform analysis and noise measurements in the frequency range 19c/s to 21kc/s. It may also be used as a sensitive frequency-selective amplifier detector for a.c. bridge measurements and as a level recorder. Four constant-percentage bandwidths are provided, one of which has $\frac{1}{3}$ rd octave filter characteristics which make it particularly suitable for noise measurements. Ancillary equipment for use with the analyser comprises the D-652 Low Frequency Modulator for extending the frequency range down to 2c/s; D-651 Battery Operated Pre-Amplifier enabling very low levels to be measured; D-746 Impedance Converter for matching a low-impedance recorder to the output or a high-impedance pick-up to the input. Relevant literature: Publication 9663.

Muirhead-Wigan Decade Oscillators

Item 1338

These oscillators are of the R-C "phase-shift" type in which the frequency is selected by means of decade switches. Decade frequency selection eliminates parallax errors and enables a given frequency to be selected any number of times to the same order of accuracy, a feature of prime importance in routine measurements. Three models are available:

D-650-B Muirhead-Wigan Decade Oscillator, frequency range 1c/s to 111 100c/s on two ranges.

D-695-A Muirhead-Wigan Decade Oscillator, frequency range 10c/s to 31 200c/s (continuously variable).

D-638-B Muirhead-Wigan L.F. Decade Oscillator, frequency range 0.1c/s to 2120c/s.

All models are characterized by high frequency accuracy and stability, low harmonic content and good output stability.

Relevant literature: Publications 4684 (D-638-B), 4718 (D-695-A), 4683 (D-650-B).

Weston Standard Cells

Item 1339

These standard cells will meet most of the needs of research and industry where a stable and accurately known e.m.f. is required. Both saturated and unsaturated acid types are available, the former being recommended as laboratory standards and the latter, because of their inherently low hysteresis effect, for industrial applications. Relevant literature: Publication 5716 Weston Standard Cells; Publication 5739 D-845 Industrial Weston Reference Cell.

D-729 Phasemeter

Item 1340

The D-729 Phasemeter gives direct indication of the phase angle (0-360°) and difference in level (0-70dB) between two substantially sinusoidal voltages in the frequency range 2c/s to 100kc/s. By the use of an external selective amplifier, measurements with distorted waveforms may be made. Additional uses of the instrument are a.c. voltage measurement



(1mV to 20V), Q-measurements using simple external equipment, expansion of the degree scale in the region of 0° and 180° and the measurement of the in-phase and quadrature components of an input signal. Relevant literature: Publication 9720. A low-frequency version (0.5c/s to 10kc/s) is also available.

Magslips, Synchros And Synchro Test Equipment

Item 1341

Muirhead and Company have been manufacturing Magslip remote indicating and control elements since their original development during the years prior to World War II, and a wide range of these elements is available for all indicating, servo and computing applications. More recently, the wide experience gained with Magslips has been turned to the manufacture of Synchros. The present range, which is being steadily expanded, includes size 11, 15 and 18 control transformers, size 15 and 18 control transmitters and size 15 and 18 servomotors, the supply for all types being 115V, 400c/s.

Muirhead Synchro test equipment provides facilities for performing all the tests contained in the U.S. Specification MIL-S-16892. It has been designed for use by relatively unskilled personnel and all controls have been arranged for the convenience of the operator. The basic equipment comprises the following units:
D-725-C Synchro Test Fixture
D-767-A Synchro Electrical Test Set
D-760-B Synchro Selective Phase-Sensitive Detector

D-799-A Synchro Minimum Voltage Test Set

D-776-A Synchro Energizing Transmitter

D-780-A 400c/s Synchro Fork Oscillator

D-779-A 400c/s Synchro Power Supply

D-778-A Synchro Stiction Torque Tester

Relevant literature: Publications 7580 Muirhead Magslips, 7741 Synchro Test Equipment, Magslip and Synchro Data Sheets.

To obtain further information on the product write-ups in this section use the post card coupon on page 181

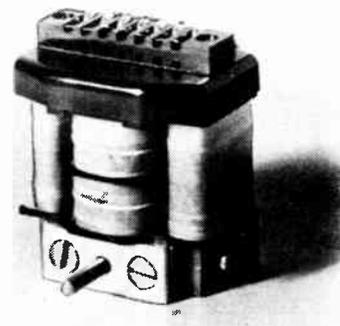
D-459-A Differential Electromechanical Relay

Item 1342

This relay comprises a suitably polarized magnet system in the field of which is mounted a movable armature.

Surrounding the armature are two or more control coils which carry d.c. control currents. The armature responds to the difference between the m.m.f.'s generated by these coils, hence the name "differential relay". Features of the device are linearity of displacement (or torque) with control current, small armature hysteresis, small size and weight.

Operating conditions:
Polarizing current: 100mA d.c.
Resistance of polarizing windings (in series): 200 ohms



Maximum torque: 10 oz. in.
Current difference in control coils for maximum torque: 15mA
Resistance of control coils (2 coils): 3 300 ohms each
Armature hysteresis: not more than 0°-2.5'

Relevant literature: publication 7612.

Other Muirhead instruments include Resistors and Resistance Boxes, Capacitors and Inductors, A.C. and D.C. Bridges, Picture Telegraph Equipment, Ship Stabiliser Control Gear.

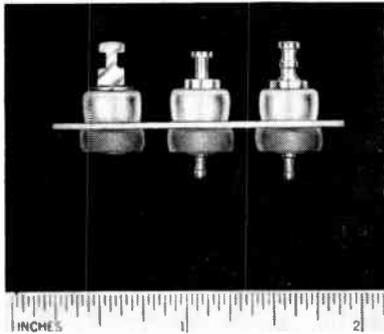
Muirhead Instruments Ltd., Stratford, Ontario.

New Teflon & Silicone Hermetic Terminal . . . For 1500 V Operating Range

Item 1343

Lundey Associates, 694 Main Street, Waltham, Massachusetts, announces the design and production of their new Series 399 Hermetic Terminals for electronic components such as transformers, capacitors, etc., in the intermediate voltage range, 1500 V operating.

These are rugged, simply constructed terminals utilizing the superior properties of Teflon and Silicone rubber for improved performance. Designed to meet MIL-T-27A specifications, the Series 399 Terminals have an operating voltage of 1500, test voltage of 4000 and current rating of 10 amperes.



Assembly of the terminal needs only simple tooling. Depending upon the electrode, the assembly is accomplished by clinching in a press with rudimentary jiggling, or by a drive fit of the electrode with a press. As an added service, Lundey Associates will install the terminals in the customer's covers. The hermetic seal is completed at the time internal leads are attached.

The Series 399 Terminal is available in three electrode styles: hollow electrode with lug for minimum clearance; solid electrode with single turret; solid electrode with double turret. Lundey Associates Bulletin No. 399 gives detailed information. Write:

Lundey Associates, 694 Main Street, Waltham 54, Massachusetts or Canadian Representative: Glendon Company, Ltd., 44 Wellington Street, East, Toronto 1, EMpire 6-5673.

Supramica Ceramoplastics

Item 1344

SUPRAMICA[®] ceramoplastics are high-temperature, high frequency insulating materials of superior quality, formulated to fill specialized requirements of the electronic and electrical industries. While comparable in some respects to plastics, ceramics and a few of the inorganic compounds, ceramoplastics are not alternatives for any materials. Where their use is justified by unusual electrical, thermal or mechanical requirements, ceramoplastics or glass-bonded mica will be specified because of the

combination of desirable properties inherent in the materials.

SUPRAMICA 500 — a compression-molded ceramoplastic in the form of sheets and rods; readily machinable but not moldable. Inserts must be cemented.

SUPRAMICA 555 — a precision-molded type of ceramoplastic; moldable with or without inserts.

SUPRAMICA ceramoplastics, in both precision-molding and machining grades are formulated of high-temperature glass and SYNTHAMICA synthetic mica, manufactured by Synthetic Mica Corporation, a subsidiary of Mycalex Corporation of America. Because of the presence and chemical purity of the synthetic mica, which has greater heat resistance than the natural product, SUPRAMICA has greater thermal endurance — up to 1000°F. under no load conditions for the machining grade — and is not subject to the bloating and outgassing at elevated temperatures common to products containing natural mica.

For additional information, write: **Mycalex Corporation of America, General Offices & Plant, Clifton, New Jersey.**

*SUPRAMICA is a registered trade-mark of Mycalex Corporation of America. "500" and "555" are trade-marks of Mycalex Corporation of America. SYNTHAMICA is a trade-mark of Synthetic Mica Corporation, a subsidiary of Mycalex Corporation of America.

Radio Cores, Inc. Has Everything In Iron Cores

Item 1345

Regardless of your requirement, we can supply a full line of custom iron cores in a variety of sizes and shapes.

We originated the ways and means of providing ENGINEERED ECONOMY* IRON CORES at money saving prices and from stock. Over 14 types are available.



The world's largest producers of iron cores, employing the largest, most experienced and most efficient engineering department to design, produce and suggest iron cores which will do the best job for you.

Write today . . . tell us your problems . . . you'll be glad you did.

*Trademark.

Radio Cores, Inc., 9540 Tulley Avenue, Oak Lawn, Illinois, U.S.A.

New Dage 320A Vidicon Camera

Item 1346

The new Dage model 320A Vidicon camera, for studio, remote, film pickup and kinescoping is available from Rogers Majestic Electronics Limited, 11-19 Brentcliffe Road, Leaside, Toronto 17, Ontario. Easy to handle, the 320A gives top picture quality with 600 line resolution.

Features of the equipment are as follows:

- Sweep failure protection for Vidicon pickup tube.
- Removable Electronic Viewfinder. 5" tube. White phosphor.
- 10 Mc bandwidth with adjustable phase and aperture correction and adjustable peaking coils.
- Overscan switch.
- Switch-selected control of electrical focus at either camera or control unit.
- Four-lens turret operated from rear of camera.
- Relay operated tally lights in hood and end panels.
- Camera control consoles include 10" aluminized picture tube and 5" wave-form monitor. Built-in target calibration, regulated kinescope high voltage supply.



Dage produces a complete line of television cameras — industrial, professional, black and white and color. Units range in size from small industrial models to complete television stations. Additional information supplied on request.

Rogers Majestic Electronics Limited, 11 - 19 Brentcliffe Road, Leaside, Toronto 17, Ontario.

To obtain further information on the product write-ups in this section use the post card coupon on page 181

Linatrol — A Line Tracing Device For Gas Cutting

Item 1347

The Linatrol is a device which has been developed by Canadian Westinghouse Company for attachment to gas cutting machines. This equipment eliminates the tedious work of a human tracer by making the tracing head follow automatically. Furthermore, the Linatrol does not require expensive templates, and is extremely accurate.

The linetracer head is an integral component of a closed loop servo system which will allow the cutting of intricate patterns from a simple line drawing. This drawing may be any combination of a dark and light color between which the photo-cell can discriminate.

Canadian Westinghouse Co. Limited, Commercial Sales, Electronics Division, P.O. Box 510, Hamilton, Ont.

Universal Bridge TF 868/1

Item 1348

Universal Bridge TF 868/1 measures values of inductance from 1 microhenry to 100 henrys, capacitance from 1 micro-microfarad to 100 microfarads, and resistance from 0.1 ohm to 10 megohms. Inductance or capacitance is measured at either 1 kc/s or 10 kc/s. Resistance is mea-



sured at DC. The instrument is entirely self-contained having its own dual-frequency oscillator and detector. All measurements are made directly in the units concerned and no multiplying factor has to be taken into account. Bridge balance is meter-indicated in all cases.

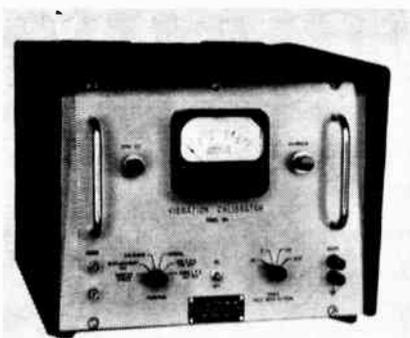
Canadian Marconi Company, P. O. Box 1480, Station "O", St. Laurent, Que.

Tel-Instrument Electronics Corporation

Item 1349

Two new lines of instruments have been announced by Tel-Instrument Electronics Corporation, 728 Garden Street, Carlstadt, New Jersey:

Model 501 Vibration Calibrator is a new instrument capable of measuring vibration amplitudes of non-magnetic, metallic surfaces at frequencies from 10 to 20,000 c.p.s. with an accuracy of $\pm 5\%$ of full scale. Cementing aluminum foil to the surface of magnetic objects will facilitate their measurement. The same accuracy is attainable even when measuring vibrations



of a non-sinusoidal nature. Vibration ranges are 0.02, 0.06, 0.2, 0.6, 2, 6, 20 mils peak-to-peak amplitude, full scale. Model 501 utilizes a novel method of comparing p-p displacement of a vibrating surface with a standard displacement, allowing direct

meter reading of vibration displacement in thousandths of an inch. It is capable of measuring vibrating surfaces having a minimum diameter of $\frac{3}{8}$ inch. No surface contact is required, consequently there is no loading of the vibrating surface. Binding posts are provided to permit observation of vibration waveforms on a conventional oscilloscope.

Also available from Tel-Instrument Electronics is a new and improved line of low-cost frequency converters delivering 100 v.a., 250 v.a., 500 v.a. or 1000 v.a. of 400 cycle power. Available in single or three-phase models, the frequency converters are designed with no moving parts, using standard components, and only $\frac{1}{2}$ the number of tubes normally used. Voltage regulation, no load to full load, is better than $\pm \frac{1}{4}\%$; frequency regulation, no load to full load, is better than ± 1 c.p.s., and both are independent of power factor. Total harmonic distortion is better than 2%.

Frequency of the 100 v.a. unit is continuously variable by means of panel control from 380 to 420 c.p.s.



and from 200 to 1700 c.p.s. by means of an external capacitor. The frequency of the 250, 500 and 1000 v.a. units is continuously variable from 330 to 3700 c.p.s. in five ranges. Output amplitude is continuously variable from 90 to 130 volts.

For complete technical information on both Model 501 Vibration Calibrator and the series of TIC Frequency Converters write to:

Tel-Instrument Electronics Corporation, Dept. EC, 728 Garden Street, Carlstadt, New Jersey.

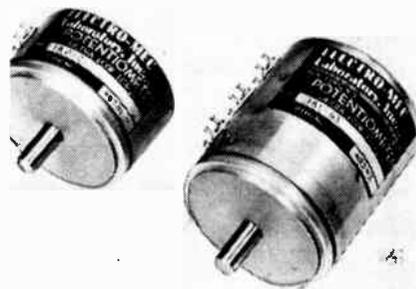
Electro-Mec Type 18 Ultra-Low Torque Potentiometer For Computer Application

Item 1350

The new type 18 Electro-Mec Ultra-Low-Torque Potentiometer is 1.750 inches in diameter. The instrument features a servo type mounting, a vital detail to computer designers. The single and three gang potentiometers illustrated are .97 and 1.97 inches long, respectively. Individual potentiometer cups are 0.500 inches long. Ganged assemblies up to 15 cups are available.

Individual sections are held together by internal clamps thus avoiding projections beyond the outside diameter of the case. Each section may be separately phased by merely loosening the clamp screws accessible from the outside.

The metal case provides a high degree of mechanical precision and stability, essential to the realization of the inherent electrical accuracy of the toroidal resistor element. Ball



bearings, ABEC Class 5, and 18 karat gold slip rings facilitate operation of the potentiometer with extremely small mechanical forces, .20 ounce inches per cup normally, and as low as .050 ounce inches in special cases.

The type 18 Potentiometer is available with resistance values up to 200,000 ohms, is rated at 2.2 watts at 40°C, and the toroidally wound resistor element provides electrical rotation up to and including 360°. The standard independent linearity tolerance for this model is 0.3 per cent, but 0.1 per cent can be supplied. Non-linear, functional output, types are also available to meet the requirement of varying applications. A multiplicity of taps on the resistor element can be made, each positioned with an angular accuracy of $\pm .5^\circ$, and each electrically welded to a single turn of the winding, thus avoiding dead spots.

The dimensions of this new potentiometer conform to those prescribed by the Aircraft Industries Association Committee on Standardization, Specification NAS-710.

For additional information write:

Engineering Department, Electro-Mec Laboratory, Inc., 47-51 33rd St., Long Island City 1, N.Y., or telephone Stillwell 6-3402.

Hardware For Electronic Equipment

Item 1351

Quick and sure delivery is assured for thousands of standard or special items used in the electronic industry, such as Screws, Nuts, Washers, Terminals, Grommets, Rivets, Eyelets and Accessories from Federal Screw Products, Inc. This company also is equipped to supply special cold headed products, Stampings, Screw Machine Parts, made to order in all metals.

Write for catalog to:

Federal Screw Products, Inc., 3917 N. Kedzie Ave., Chicago 18, Illinois.

Vacuum Tube Voltmeter TF 1041

Item 1352

Vacuum Tube Voltmeter TF 1041 measures DC voltage, AC voltage and resistance. Ranges are: DC - 0 to 1000 volts (30 kV with multiplier probe available as an accessory); AC - 0 to 300 volts (2 kV with multiplier probe) and a sensibly flat frequency characteristic from 20 c/s to 700 Mc/s; resistance 0.2 ohms to 500 megohms. A



large (5½" x 4") mirror-scale meter provides parallax-free accurate measurements and a DC polarity-reversing switch obviates the necessity for changing over connecting leads when measuring positive and negative potentials with respect to a reference point. Canadian Marconi Company, P. O. Box 1480, Station "O", St. Laurent, Que.

Item 1353



Magnetic & Proximity Pickups Magnetic Pickups:—

Without contact, convert mechanical motion of ferrous objects into a variable and measurable AC voltage proportionate to the rate of motion. Use to count, actuate, synchronize, control. High-sensitivity, standard, miniature and high ambient temperature models. Also accessories and amplifiers.

Proximity Pickups:—

Detect and count ferrous and non-ferrous metals at rates from 0 to 60,000 per minute. Use for counting, production control operations, control sequence and timing devices. Extended detection, standard and hollow-core models. Also complete systems and accessories. For complete details, contact:

Atlas Radio Corp. Ltd., 50 Wingold Ave., Toronto, Ont., Canada.

New Special Lamination Shapes Available For Quick Delivery

Item 1354

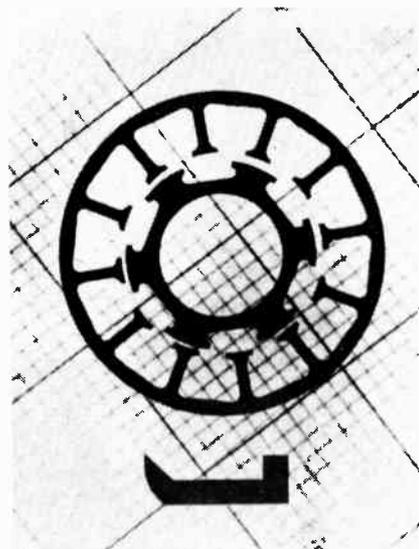
Magnetics, Inc. now offers special lamination shapes on a comparatively short delivery schedule.

Nickel-iron laminations for use in stators, rotors, recording heads, and other special applications are manufactured to order on sectional tungsten-carbide or high carbon-high chrome dies. Dies are carefully ground to eliminate burrs and to insure good stacking characteristics.

Concentricity of stator and rotor laminations can be held to total indicator readings of 0.001 inch and 0.0005 inch respectively.

Stator or rotor lamination dies to special design can be made ready for production eight weeks after receipt of the order. Head laminations can be set up for production in two weeks after receipt of the order.

All Magnetics, Inc. high permeability laminations are heat treated by dry hydrogen anneal process, removing carbon, oxygen, and sulphur, which would take away from the magnetic properties of the alloy used in their manufacture. Hydrogen is dried to a dew point of -60°C in order to remove water vapor produced by the reduction of the oxygen. In the anneal, carbon is reduced to methane, and sulphur is reduced to sulphur



dioxide . . . all of which are removed by the continuous flow of hydrogen through a 24 hour cycle.

This superior annealing procedure develops more satisfactory permeability properties and cleaner surfaces, thus enabling Magnetics, Inc. to offer a Performance-Guarantee on their laminations. Write for Catalog MIL-201 — code address: Magnetics, Inc., Butler, Pa.

Conant Instrument Rectifiers

Item 1355

Copper oxide and selenium. Conant — standard since 1933.

Conant Laboratories, 6500 "O" Street, Lincoln, Nebraska.

To obtain further information on the product write-ups in this section use the post card coupon on page 181

Item 1356



DC Power Supplies For Every Need

0-125 Volts, -1% AC ripple.,

MODEL "GF":—

Test and service, industrial DC equipment from AC lines. Voltage output continuously variable. Up to 10 amps continuous, 20 amps intermittent. Forced air cooling.

0-32 Volts, $-3/4\%$ AC ripple,

MODEL "NFA":—

Test and service transistor and standard circuits; radios and electronic equipment in autos, tanks, marine and aircraft; relays, solenoids, phone circuits; lab and research instruments; plating equipment. Voltage output continuously variable. to 15 amps at 0-32 V., 5 amps at 0-40 V., continuous, 25 amps intermittent. Pat. EPL conduction cooling.

0-14/0-28 Volts, -1% AC ripple,

MODEL "EF":—

Test and service auto, tank, marine and aircraft radio and electronic gear. Also, relays, solenoids, etc. Voltages continuously variable. Up to 5 amps continuous both ranges, 10 amps intermittent. Pat. EPL conduction cooling.

0-8/0-16 Volts, -2% AC ripple,

MODEL D-612T:—

Operate, test, service all auto radios including TRANSISTOR sets. Also mobile communications and electronic equipment, plus electroplating, lab work and battery charging. Both ranges continuously variable. 10 amps continuous to 12 volts, 20 amps intermittent. Pat. EPL conduction cooling.

All Models Ruggedly Built . . . Designed For Long Life—Dependability.

For complete details, contact: Atlas Radio Corp. Ltd., 50 Wingold Ave., Toronto, Ont., Canada.

Philco Transistors

Item 1357

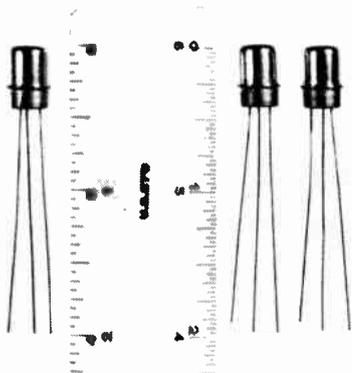
Proven performance of Philco Hermetically Sealed Transistors has made them the basis for design of commercial and military applications where reliability is the major consideration. Philco transistors range from the world's smallest germanium transistor now in production to silicon transistors with excellent performance at temperatures from -60°C to $+140^{\circ}\text{C}$. The following are some of the available Philco transistor types:

Low Level Audio — 2N207, 2N207A and 2N207B — Germanium PNP Alloy Junction Transistor. World's smallest transistor in production and design



for hearing aid applications and useful in any low level audio application where size is an important consideration.

Medium Power Audio — 2N223, 2N224-2N225, 2N226-2N227 — Germanium PNP Alloy Junction Transistor for portable radio output stages, medium power switching, servo-amplifiers and other applications where medium power must be handled at low frequencies.



Power Audio — T1040, T1041 with thermal drop ($1\frac{1}{2}^{\circ}\text{C}$ per watt typical) designed for audio output stages, power switching, servo-amplifier output stages and other applications where large amounts of power must be handled.

High Frequency — Surface Barrier Types 2N128 and 2N129 — Surface Barrier transistors for critical military



applications, produced to meet MIL-T-12679A (SigC) military requirements.

Fast Rise Switching — 2N240 — Germanium PNP Surface Barrier type. High Speed switching transistor with response time in millimicrosecond range. Made the basis for design of both military and commercial computers where speed and reliability are the major considerations.

Silicon T1055, T1159 — PNP High Speed Transistors for computers and amplifiers operating at high ambient temperatures.



All Philco transistors are hermetically sealed to insure long life. In addition to the above listed types Philco produces a wide range of transistors designed for special customer applications.

Complete information and application assistance for all transistor types, available upon request from:

Philco Corporation of Canada Limited, Don Mills, Ontario; main plant — Lansdale Tube Company, Division of Philco Corporation, Lansdale, Penna.

To obtain further information on the product write-ups in this section use the post card coupon on page 181

Commutation Switch

Item 1358

With Precision-Molded SUPRAMICA 555 Ceramoplastic Commutator Plates

The SUPRAMICA® Model TM-55 Series Type CP-299 commutator assembly consists of a motor-driven switch with two rings of contacts of the "make-before-break" type. In a typical application the function of the information ring is to sample intelligence from instrumentation transducers in pre-arranged sequence, and the function of the calibration ring is to sample calibration voltages. These SUPRAMICA switches are manufactured by the Mycalex Electronics Corporation under exclusive license of Mycalex Corporation of America.

The switch is a precision assembly, designed and built to exacting standards to assure long operating life and trouble-free service, with low noise level and total reliability.



The SUPRAMICA 555 ceramoplastic commutator plates are masterpieces of precision-molding, combining dimensional accuracy with functional efficiency which cannot be duplicated in any other insulating material. The plates operate with unparalleled efficiency because of their accurate and stable construction, complete freedom from contact looseness, ability to withstand shock and vibration, and thermal endurance as high as 950 degrees F. Under normal circumstances, it is impossible for contacts to loosen and cause signal noise or loss of control.

Some modification of the contact arrangement is possible, but is limited by the capacity of the standard AN connector. If other circuitry is required, special adaptations will be considered at additional cost.

SUPRAMICA Model TM-55 Series commutation switches with SUPRAMICA 555 ceramoplastic commutator plates may be designed for many applications.

For details write:

Mycalex Electronics Corporation, Box 311, Clifton, New Jersey.

*SUPRAMICA is a registered trade-mark of Mycalex Corporation of America. "555" is a trade-mark of the Mycalex Corporation of America.

X-Y Dial Drive For Automatic Plotting

Item 1359

Inexpensive, synchronous drive that adapts manually operated instruments to automatic recording on an X-Y plotter. Built-in potentiometer provides voltage for X-axis. Manual operation also possible, for pre-recording adjustments and printing of co-ordinate lines.

Fits General Radio oscillators from 20 cycles to 2000 megacycles.

Response-vs.-frequency plots can now be quickly and easily made over this entire range.



The extensive General Radio line of instruments for the modern electronics laboratory includes:

Adjustable autotransformers; admittance meters; amplifiers; attenuators. Beat-frequency oscillators; binding-posts; bridges (resistance, inductance, capacitance, comparison, limit, megohm, vacuum-tube, etc.). Capacitors; coaxial connectors and elements.

Decade attenuators, capacitors, inductors, and resistors; delay lines.

Electrometers.

Filters; frequency standards; frequency meters; frequency monitors. Generators (sine-wave, pulse, random-noise, standard-signal, audio, radio, u-h-f, v-h-f).

Heterodyne frequency meters.

Impedance comparators; impedance-matching transformers; impact-noise analyzers; inductors.

Jacks and plugs.

Klystron oscillators.

Light Meters; limit bridges.

Megohmmeters; modulation monitors; motor speed controls.

Null Detectors.

Oscillators; output meters; output transformers.

Potentiometers; pulsers; pulse amplifiers; polystyrene capacitors; power supplies.

Q-measuring instruments.

R-C oscillators; resistors; radio station monitors.

Sound-level meters; sound-analyzers; stroboscopes; slotted lines; sweep generators.

Time-delay generators; time frequency calibrators; tuning-fork oscillators; television station monitors.

U-H-F oscillators; unit instruments.

Variacs R*; vacuum-tube voltmeters; vibration meters; vibration analyzers; voltage regulators.

Wheatstone bridges; wave analyzers. X-Y Dial drives.

Z-Y bridges.

*Registered.

General Radio Company, 275 Massachusetts Avenue, Cambridge 39, Massachusetts. Canadian representatives: Canadian Marconi Company, Montreal and Toronto.

Transistorized Mobile Dynamic Microphone

Item 1360

Motorola's new transistorized dynamic microphone provides mobile transmission quality comparable to that of the base station.

Dynamic type microphones have long been associated with the finest in radio transmission, but until now this true-moving-coil "broadcast type" was feasible only for fixed stations.

Features of the new unit are as follows:

- Moving-coil dynamic element provides clearer crisper voice reproduction. The built-in transistorized amplifier provides transmitter input levels considerably higher than conventional dynamic or controlled-reluctance microphones.
- Transistorized preamplifier in microphone case, coupled with the inherent immunity of the dynamic element, overcomes electromagnetic noise pick-up problem in mobile installations.
- The preamplifier is mounted on a tiny "PLA-cir" printed chassis inside the microphone case.
- Rugged construction — splash-proof, dust-proof, all-metal case, printed preamplifier chassis. Familiar palm-size form factor.



- Draws its power from the standard transmitter "talking current" supply, making it interchangeable with carbon microphones used with Motorola equipment.

The new microphone can be furnished as a dual-purpose "Speaker-Mike" which functions as a communications-type loudspeaker, as well as a transistorized dynamic microphone.

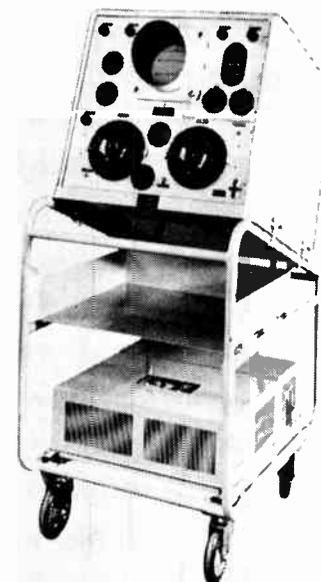
Further information is available direct from:

Rogers Majestic Electronics Limited, 11-19 Brentcliffe Road, Leaside, Toronto 17, Ontario.

HF Spectrum Analyzer OA 1094

Item 1361

HF Spectrum Analyzer OA 1094 gives an immediate visual presentation of the frequency spectra of amplitude-modulated transmissions in the 3-30 Mc/s band. Width of frequency spectrum displayed is continuously variable up to 30 kc/s and sweep duration is variable in steps from 0.1 to 30 seconds. A high order



of selectivity, 3 db at 6 c/s, ensures adequate discrimination between signals of widely-differing amplitudes as little as 50 c/s apart. Relative levels of signal amplitude can be measured over a range of 60 db. The instrument, together with its power unit, is mounted on a wheeled trolley.

Canadian Marconi Company, P. O. Box 1480, Station "O", St. Laurent, Que.

Microwave And Ultramicrowave Equipment

Item 1362

The newest in microwave and ultramicrowave equipment from 2.60 to 90.0 KMC. Line includes Standing Wave Detectors, Precision Attenuators, Phase Shifters, Tuners, Crystal Mounts, Precision Cavity Wavemeters,



Horns, Terminations, Directional Couplers and Crystal Multipliers to produce required frequencies above range of currently available tubes.

De Mornay - Bonardi Corp., 780 S. Arroyo Parkway, Pasadena, California, U.S.A.

"Power Voice" Transistorized Speaker

Item 1363

A new Motorola "POWER VOICE" speaker incorporating a built-in transistorized audio amplifier which provides ten times the output of a standard passive speaker is announced by Rogers Majestic Electronics Limited.

The "POWER VOICE" speaker consists of a standard mobile speaker housing which incorporates a special heavy duty speaker and built-in transistor amplifier that provides up to 15 watts of audio output at 12 volts D.C. (5 watts at 6 volts D.C.) when fed by the usual communications type



receiver. The unit is compatible with any standard trunk mount mobile two-way radio installation having a 3 ohm audio output impedance. The "POWER VOICE" speaker can be operated in 6 or 12 volt vehicles with positive or negative ground.

The speaker is styled in two tone grey with gold colored grill, measures 5 1/4" x 5 1/4" x 3 1/4", and weighs approximately six pounds. It may be easily removed from its mounting bracket and hung on the car window to enable monitoring from hundreds of feet away. Supplied complete with installation hardware.

Distributed in Canada by Rogers Majestic Electronics Limited, 11-19 Brentcliffe Road, Leaside, Toronto 17, Ontario.

New Ceramic Encased Carbon Film Resistors

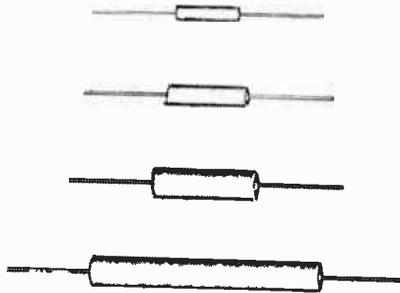
Item 1364

A new precision resistor is highly recommended for use in test equipment, meters and high frequency circuits.

New type construction features a layer of pure carbon deposited on a ceramic rod. Silver plated end-caps are expansion fitted for positive contact and the unit is encased in a non-hydroscopic ceramic tube and hermetically sealed with high temperature solder for greatly improved

stability characteristics. They are fully insulated and suited for snap-in component clips.

The resistors conform to MIL-R-10509B specifications and are fur-



nished in standard tolerance of $\pm 1\%$. Tolerances of $\pm 2\%$ and $\pm 5\%$ are available on special order.

These resistors are furnished in 1/4, 1/2, 1 and 2 watt sizes and each unit is marked with resistance, tolerance and manufacturing information.

For technical specifications please write:

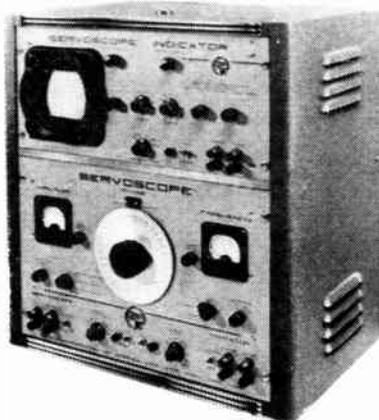
Continental Carbon, Division of Wirt Company, 13900 Lorain Avenue, Cleveland 11, Ohio or 5225 Green Street, Philadelphia 44, Penna. Canadian Representative, Bayly Engineering Ltd., 5 First Street, Ajax, Ontario.

Servo Corporation Introduces Human-Engineering Into Servo System Analyzer Design

Item 1365

A new Servoscope designed on principles of human-engineering was introduced recently by Servo Corporation of America, New Hyde Park, Long Island, N.Y.

This instrument is a sweep generator, a multiple signal generator and phase angle indicator. Its face was redesigned as a result of a nationwide survey of engineers and technicians. Based on these findings, dials,



switches and information display were human-engineered to reduce fatigue and increase accuracy.

Servoscope provides a direct method for measuring gain and phase shifts

of any component or system in the subsonic frequency ranges. By turning the big phase dial, phase lead or lag is shown within an accuracy of 1°. Its various signal outputs include sinusoidal modulation in a suppressed carrier envelope, sinusoidal and square waves.

Applications of Servoscope as a test instrument are many and varied, ranging from automatic flight control design to testing computer response, checking vibration, testing frequency response of electro-hydraulic servo-systems, simulating rate gyro, training, etc.

A matched Cathode Ray Indicator, available with the Servoscope, offers low drift and high stability throughout the carrier frequency range. Incorporated are a five-inch, long-persistence cathode ray tube (for very sharp photographs), associated power supply and directly coupled deflection amplifiers.

Servo Corporation of America, New Hyde Park, Long Island, N.Y.

Hoyt Meters

Item 1366

Another model in their new line of instruments with clear plastic cases is announced by HOYT: the 649. The polystyrene cases give "Big Meter" visibility at low cost, longer scales and greater dial area. They are anti-static treated and have popular mounting dimensions.



Write for full information on HOYT moving coil, repulsion, and rectifier type meters to the:

Hoyt Electrical Instrument Works, 42 Carleton St., Cambridge 42, Mass., U.S.A.

Stabilization Networks

Item 1367

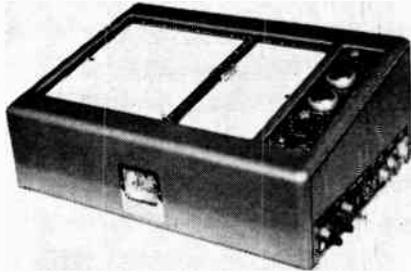
Two-page catalog sheet FSR-700 Issue A, describes the Series FSR-700 line impedance networks for 50-100-200-500 amp circuits. Data supplied includes maximum voltage ratings available, complete ratings for all units in the line, termination and connector types, dimensions and part numbers. Networks are illustrated by means of line drawings and photographs.

Filtron Co., Inc., Flushing, N.Y. Represented in Canada by Aircraft Appliances & Equipment, Ltd., 585 Dixon Side Road, Toronto 15.

Automatically Draws Graphs ... Plots Points

Item 1368

The Moseley Model 2A X-Y Recorder eliminates the need for reading meters, collecting columns of data and hand plotting. Uses standard 11 x 16½ graph paper. Data is plotted simultaneously with phenomenon being studied. Without any additional steps, the user has a complete, accurate pen-and-ink graph.



Unit has completely independent inputs and controls for each axis, including zero offset.

Exclusive features include:

- Built-in vacuum pump for paper hold-down
- Sensitivity variable continuously from 0.5 millivolts to 10 volts per inch
- Input filters to eliminate hum and pickup
- Accuracy better than 0.25%
- Speed 1 second full scale.

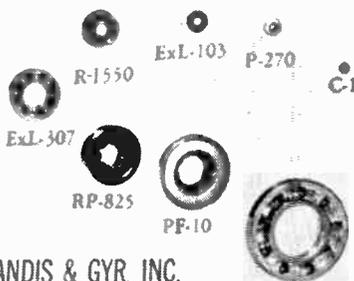
Plug-in units convert recorder to point plotter from keyboard, tape or I.B.M. cards, or to a curve-following function generator. Rack mount version available.

R-O-R Associates Ltd., 290 Lawrence Avenue W., Toronto 12.

Famous Miniature Bearings

Item 1369

Today's trend miniaturization has resulted in the many RMB "first" such as the smallest pivot ball bearing .0434" O.D. as illustrated below (C-1). Others, the smallest sealed retainer-type radial ball bearing — shielded cylindrical roller bearing self stabilizing gyroscope rotor ball bearing and sealed low torque gyroscope gimbal ball bearing all are



LANDIS & GYR, INC.

available to design and production engineers. In addition radial bearings both filmoseal and open type may now be supplied in inch sizes.

For further information and illustrated brochure on request.

John Herring and Company Limited,
3468 Dundas Street, West, Toronto 9,
Ontario.

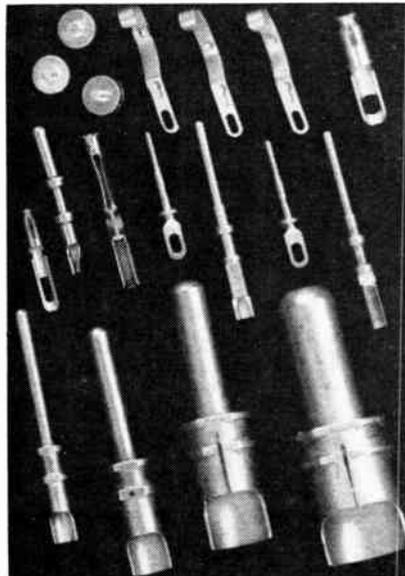
Electronics Parts Precision Plated With SEL-REX Bright Gold Process

Item 1370

The Electric Chain Company of Canada Limited offers a specialized precision plating service for electronics parts, using SEL-REX Bright Gold Process.

Round pure silver contacts are plated in thicknesses of from .0002" to .0006" with SEL-REX hard gold. Other parts in thicknesses of from .0002" to .0003".

SEL-REX bright gold plating process has replaced silver plating in the electronics field, where tarnish resistance is a "must".



Illustrated parts supplied courtesy:
Amphenol Canada Limited, Toronto, Ont.

Another important advantage is found in the fact that SEL-REX bright gold plated parts do not develop "whiskers" under operating conditions.

SEL-REX Bright Gold Process is specified by leading manufacturers in the electronics field, both in Canada and the United States. For further information write or phone:

The Electric Chain Company of Canada Limited, 86 Bathurst Street, Toronto, Ont., EM. 8-8881.

Versatile Lead Arrangements In Mucon Capacitors

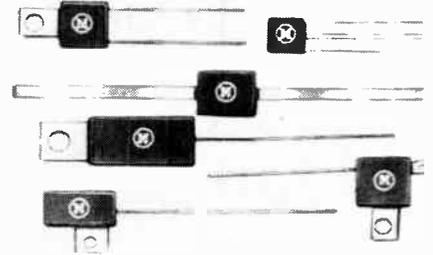
Item 1371

Mucon's SUBminiature Ceramic Capacitors are constantly being designed and produced with a great variety of lead arrangements of wire, ribbon or tab leads to fit a wide range of terminal requirements.

For extremely tight space applications where high capacitance is required, connecting leads may be ordered of any desired number or

thickness, radially or axially arranged, or in any other configuration to provide the most efficient assembly operation. Lower inductance for ultra-high frequency is obtained with ribbon leads.

The shapes of the ceramic elements vary from square to rectangular with capacitor thickness as little as .065" if needed. Where larger values of capacitance are required in the same area, two or more plates are stacked and connected in parallel.



Wide application of MUCON SUBminiature Ceramic Capacitors are in the fields of transistor circuitry, guided missiles, hearing aids, computers, radio & TV, filters, radar and uhf. Ask for bulletin F2.

Contact MUCON CORP., 9 St. Francis St., Newark 5, N.J.

Versatile Microvolt- Ammeter-Amplifier

Item 1372

The Model 203 will measure as little as 10µv or 10µA with accuracy. It may also be used as a DC amplifier with up to 80db gain and only 10µv drift. A zero-center mirrored scale gives instant polarity indication. Kay Lab's chopper stabilized circuit provides accuracy, versatility, and stability unobtainable with conventional



VTVM's. The 203 is the ideal general purpose laboratory meter, production test set, or null meter.

Specifications: 100µv to 1000V FS; 100µA to 100mA FS; 25 ranges; 100 megohms input Z; 1 volt amplifier output; \$550.00.

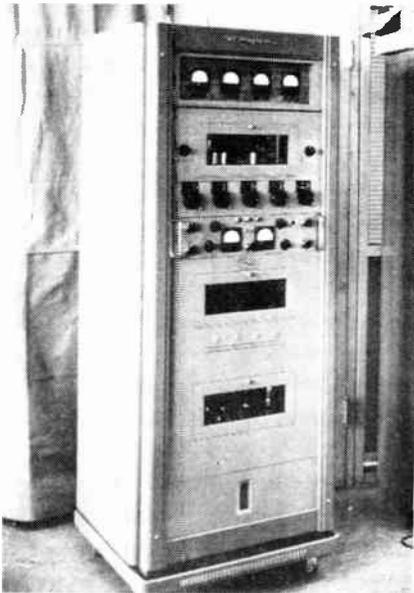
Kay Lab, Inc., 5725 Kearney Villa Rd., San Diego, Calif. Canadian Rep.: Atlas Radio Corp., Ltd.

Type HA HF Transmitter

Item 1373

The Westinghouse HA Transmitter is designed and built in Canada to meet the requirements for a high quality equipment suitable for continuous commercial applications.

Tuning is accomplished by means of five front mounting controls. The range of 2 to 27.5 mc is covered without bandswitching, and up to 10 crystal frequencies can be provided. TV frequency harmonics are suppressed to a considerable degree so that the equipment may be operated near relatively built up areas.



Unit construction is employed so that various channel combinations are obtainable. A modern keying circuit permits keying speeds of up to 600 w.p.m., while the equipment is also suitable for operation on F.S.K. and radiotelephony.

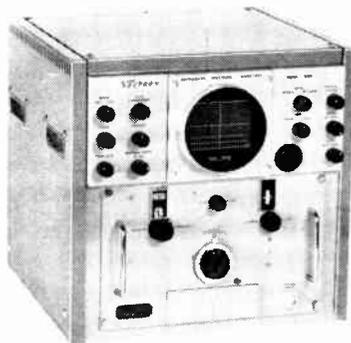
A remote control system is available and provides full remote control of the transmitter including frequency changing.

Canadian Westinghouse Co. Limited, Commercial Sales, Electronics Division, P.O. Box 510, Hamilton, Ont.

New Vectron Microwave Spectrum Analyzer

Item 1374

Model SA30X5, with a frequency range of 8500 mc/s to 9660 mc/s, is a highly sensitive precision instrument specifically engineered for use in the design, manufacture, test, installation and maintenance of microwave generating equipment and components. It features a simplified control panel, direct frequency calibration, separate controls of brightness and intensity, independent regulated power, extreme stability and high signal to noise ratio. It is available as an all aluminum, dual unit for



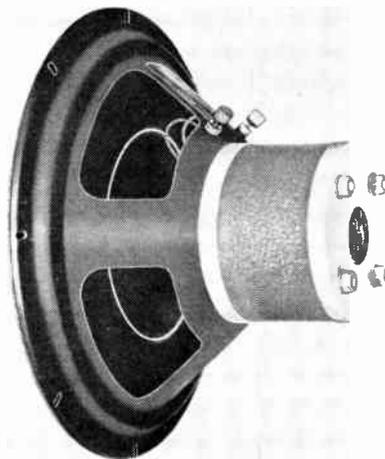
standard rack mounting or as a portable 80 lb. bench top package. Vectron also offers the Models SA25, SA27 and SA30 Microwave Spectrum Analyzers with interchangeable RF heads to cover specific ranges from 800 mc/s to 40,000 mc/s with frequency indication to $\pm .05\%$, and the Model SA-30WR1, covering 2000 mc/s to 12,000 mc/s for wide range analysis.

Vectron, Inc., Waltham 54, Mass. In Eastern Canada, R-O-R Associates, Ltd., 290 Lawrence Avenue, West, Toronto 12, Ontario. In Western Canada, ARVA, 470 Granville St., Vancouver 2, B.C.

Hartley 215 Loudspeaker

Item 1375

This new Hartley 215 speaker, available only from the U.S., has a range response from 1 to 18,000 c.p.s., achieved by several unusual features. The free suspension of the cone allows an excursion of $\frac{1}{2}$ inch, moving more air than most larger types. A method of sectioning the cone, and a further compliance in the voice coil, ensures a smooth performance, devoid of



“tone color” over the whole range. The speaker is free from resonance and other distortions, and works best in an infinite baffle, or a non-resonant enclosure. Peak power 20 watts, magnet 5 pounds, impedance 4 ohms.

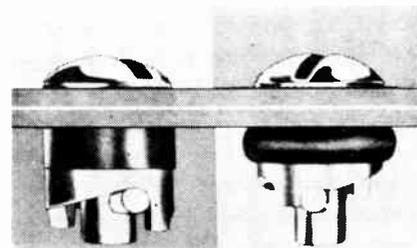
Hartley Products Company, Dept. A, 521 East 162nd Street, New York 51, N.Y.

To obtain further information on the product write-ups in this section use the post card coupon on page 181

Vibrex Fasteners — Locks, Seals And Cushions

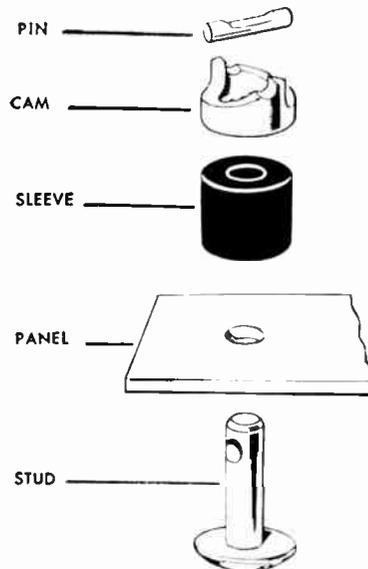
Item 1376

Here is a sturdy half-turn fastener that is also an elastic joint. A rattle proof unit that is also a shock absorber. It is also a water and dust-proof seal — because Vibrex units cushion the entire assembly base in live



resilient rubber. Produced in a range of sizes and types. When installed and assembled — they are one single unit. Illustrations show how simply they can be installed.

The Vibrex Fastener is mounted in a hole in the removable panel. The stud is inserted through the hole in the panel, rubber sleeve, and cam, as in the diagram. To insert the pin in the stud, the cam is pressed down, slightly compressing the sleeve. This can be done by hand but special tools are available.



Vibrex Fasteners lock in $\frac{1}{2}$ " holes in the base panel. Simply join panel and base and twist. A half turn locks it . . . with a distinctive click. A reverse half turn disengages.

Send for catalog covering Vibrex's many applications. You will find it interesting.

Audio Tool and Engineering Limited, 32 River St., Toronto.

Product Information Section
Continued on Page 198.

RETMA REPORT

*A Monthly Bulletin Of Association Activities
Prepared For Electronics And Communications*

By BASIL JACKSON, A.R.Ae.S., Tech. M.C.A.I.



RETMA's Year Of Achievement

At this time of the year it is customary to take stock of an organization's activities and achievements over the past twelve months, evaluate them, and make sound resolutions for further increasing the efficiency and effectiveness of the organization. With this in mind, the Radio-Electronics-Television Manufacturers Association of Canada, with an eye to the future, looks over its shoulder at some of its achievements and accomplishments of 1956.

Voluntary Action To Reduce Television Interference

As a result of work accomplished by the Receiver Engineering Committee, RETMA officially adopted a resolution in which television manufacturers were to endeavor to reduce power line contamination from horizontal oscillator radiation of television receivers, beginning on January 1, 1956. This voluntary action in the public interest was acknowledged by the Department of Transport, and surveys have indicated that most manufacturers are meeting these requirements.

Premiere Of RETMA's Film

In February the RETMA sound color film entitled "Electronics In Canada" was shown for the first time. The film was made to give Canadians an idea of the large independent electronics industry which has been built up in Canada since the early 1920's and to show high school students the career opportunities available in the industry. To date, over 3,500 people have seen the film. The audiences have varied from school children to cabinet ministers, and the location of the showings has ranged from Vancouver, B.C. to Halifax, N.S.

RETMA's Presentation To Royal Commission On Canada's Economic Prospects

On March 1, RETMA presented the Canadian electronics industry's views to the Royal Commission investigating Canada's economic future. The opportunity was taken to show the Royal Commissioners the RETMA film "Electronics In Canada", and it was well received. RETMA advocated eight main points of action as follows: (1) since fundamental and applied research is so vitally necessary for the advancement of the electronics industry, the Government should encourage research activities by granting larger tax rebates on research work, (2) more effective liaison should be instituted between Government departments and the electronics industry, particularly in the early stages of drawing up design requirements, (3) the issuing of more development contracts to offset the ever-increasing costs of research, (4) the technical educational facilities should be expanded and Canadian National Engineering Certificates should be awarded, (5) more effective implementation of the Government's purchasing policy of buying in Canada, (6) recognition of the Canadian electronics industry as a separate entity by the various Government departments, (7) complete review of the present tariff structure applicable to the electronics industry and (8) a start should be made on color telecasting immediately, and the 15% excise tax on radio and television receivers should be abolished.

RETMA's Participation In Dealers' Convention

In April RETMA provided a panel of authoritative speakers for the annual convention of the Canadian Association of Radio, Television and Appliance Dealers. The addresses covered a wide field of the industry's products, dealing with transistors, color television, high-fidelity equipment and service for color television receivers. The luncheon address, by the RETMA General Manager, was entitled "Over The Horizon - In Electronics", and gave a detailed forecast of the electronic products of the

Continued Overpage.

RETMA REPORT

future. The address touched on automation, guided missiles, radar, microwave radio relay systems, electronic data processing machines, magnetic tape recording of television programs, flat screen television and other electronic products and equipment which will be in widespread use in the future.

RETMA's 27th Annual Meeting

The 27th annual meeting, at Ste. Adele in Quebec, was highlighted by the official approval, by RETMA, of the color television standards proposed by the Canadian Radio Technical Planning Board. By adopting these standards, a large stride forward in making color television a Canadian reality was achieved as both the television receiver manufacturers and the transmitter producers established technical agreement on the engineering standards for color television transmission and reception.

The guest speaker at the annual dinner was W. J. Bennett, O.B.E., B.A., LL.D., D.Sc., president of Atomic Energy of Canada Limited, who outlined Canada's nuclear development program and detailed the many links that atomic energy control had in the electronics field.

An industrial relations panel was also held at the annual meeting on the subject of profit sharing plans in industry. Also, a panel on research and development was arranged by the Electronics Division of RETMA. This dealt with the need for research and development, the projected scope of research programs in Canada, and the integration of this country's research and development programs with the programs of other countries, to avoid duplication.

RETMA's Presentation To The Royal Commission On Broadcasting

In September RETMA presented a brief to the Royal Commission On Broadcasting. RETMA advocated the formation of an independent regulatory body for broadcasting, immediate action to introduce color telecasts in Canada, and financing the Canadian Broadcasting Corporation on a basis other than the imposition of excise taxes on radio and television receivers.

Government Speakers Address RETMA Components Division

After the business meeting that took place on the morning of the annual joint RETMA-IRE Golf Tournament in the autumn, three high-ranking Government officials addressed members of the Components Division. The speakers, all from the Electronics Branch of the Department of Defense Production, were D. B. Mundy, Director of the Electronics Branch, J. F. Murphy, Contracts Officer in the electrical and components section, and G. C. Rowe, chief of production development.

Joint Directors' Meeting

The 12th joint conference between the directors of RETMA of Canada and of RETMA of the United States was held in Hot Springs, Virginia, U.S.A. at the end of September. (The two RETMA organizations are entirely separate associations and have no connection with each other except for the interchange of information.)

A symposium was held at which distinguished speakers from both countries presented views on automation and industry, the present state and future prospects of electronics business, military and industrial electronics, components, and present problems and plans for the industry.

RETMA'S Basic Activities

Throughout the year the day-to-day meeting activity of the association has proceeded as the board, divisions, executive, committees and sub-committees have advanced the cause of the Canadian electronics industry by the democratic means of sitting around a table in open debate. The formation of engineering standards, the dissemination of technical data, discussions on sales and merchandising methods, advice on tariffs, industrial relations, the advancement of education for technical personnel, and many other activities have all helped in the advancement of the art and science of electronics, and have contributed to another page of electronic history in Canada. RETMA, as other institutions, looks forward to a year of peace for all, contentment, and goodwill.

Revere Copper and Brass Inc.,
230 Park Ave., New York, N.Y.
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A. C. Leslie & Co.,
Montreal, Toronto, Winnipeg, Vancouver

Rex Corp., The, Hayward Rd.,
West Acton, Mass. Represented by:
L. A. Varah Ltd.,
252 W. Broadway, Vancouver 10, B.C.

Rhodes, Inc., M. H.,
30 Bartholomew Ave., Hartford 6, Conn.
Represented by:
Sperry Gyroscope Ottawa Ltd.,
P.O. Box 90, 3 Hamilton Ave.,
Ottawa, Ont.

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Richardson-Allen of Canada Ltd.,
1236 Birchmont Rd., Scarborough, Ont.

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Robbins & Myers Co. of Canada, Ltd.,
Brantford, Toronto, Montreal

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Fulton Sylphon Division, P.O. Box 400,
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100 Prince St., Montreal, Que.

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Atlas Radio Corp. Ltd.,
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Robinson Aviation, Inc.,
Teterboro Air Terminal, Teterboro, N.J.
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200 Laurentien Blvd., Montreal, Que.

Robotron Corp., 21300 W. Eight Mile Rd.,
Detroit 19, Mich. Represented by:
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106 Adelaide St. W., Toronto, Ont.

Rollan Electric Co.,
8233 S. Princeton Ave., Chicago 20, Ill.
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Kerr-Machin Associates, P.O. Box 34,
Station "K", Toronto 12, Ont.

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Schoonmaker Lane, Woodstock, N.Y.
Represented by:
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Gage and Barton Sts., Hamilton, Ont.

Royal Electric Co., Inc.,
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Represented by:
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875 Wall St., Winnipeg 10, Man.
George L. Luck Assoc.,
5715 Darlington Ave., Montreal, Que.
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Room 313, 207 Queens Quay,
Toronto 1, Ont.

Sanders Associates, Inc.,
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Arnprior, Ont.
Measurement Engineering Ltd.,
5 Harris Crescent, Burlington, Ont.

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804 Mt. Pleasant Rd., Toronto 12, Ont.

R. C. Kahnert Sales Co.,
1908 Avenue Rd., Toronto, Ont.

Sarkes Tarzian, Inc.,
E. Hillside Drive, Bloomington, Ind.
Represented by:
McCurdy Radio Industries Ltd.,
22 Front St. W., Toronto, Ont.
A. T. R. Armstrong Ltd.,
700 Weston Rd., Toronto, Ont.

Sarkes Tarzian, Inc., — Rectifier Div.,
415 North College Ave.,
Bloomington, Ind. Represented by:
A. T. R. Armstrong Co. Ltd.,
700 Weston Rd., Toronto 9, Ont.

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Ward Leonard of Canada Ltd.,
1070 Birchmount Rd., Box 70,
O'Connor Postal Station, Toronto 16, Ont.

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80 George St., Toronto 2, Ont.

Scientific Electric, 105-119 Monroe St.,
Garfield, N.J. Represented by:
Salem Engineering Co.,
1525 Bloor St. W., Toronto, Ont.

Scientific Radio Prod., Inc.,
215 South 11th, Omaha, Neb.
Represented by:
B. Freudenberg,
240 W. 98th St., New York, N.Y.

Scott, Inc., Hermon Hosmer,
385 Putnam Ave., Cambridge 39, Mass.
Represented by:
Telesco International Corp.,
270 Park Ave., New York, N.Y.
(All of Canada except B.C.)
Frank Wedel Co., 3215 Western Ave.,
Seattle 1, Wash. (Covers B.C.)

Serdex Inc., 91 Cambridge St.,
Boston 14, Mass. Represented by:
Fisher Scientific Co.
Central Scientific Co.
Frederick C. Baker and Co.
Cave and Co.
Hoskin Scientific Co.

Servo Corp. of America,
20-20 Jericho Turnpike,
New Hyde Park, N.Y.
Represented by:
Measurement Engineering, Ltd.,
Arnprior, Ont.
Measurement Engineering, Ltd.,
5 Harris Crescent, Burlington, Ont.

Shakeproof, Div. of Illinois Tool Works,
St. Charles Rd., Elgin, Ill.
Represented by:
Canada Illinois Tools, Ltd.,
177 Front St. E., Toronto, Ont.

Shallcross Manufacturing Co.,
Jackson and Pusey Ave.,
Collingdale, Pa. Represented by:
John Herring and Co. Ltd.,
3468 Dundas St. W., Toronto 9, Ont.
Instrument Service Labs., Ltd.,
21 West Broadway, Vancouver, B.C.

Shamban Engineering Co.,
11617 West Jefferson Blvd.,
Culver City, Cal. Represented by:
Abercorn Aero Ltd.,
7435 Chester Ave., N.D.G., Montreal, Que.

Shielding, Inc., 8 Reserve St.,
Riverside, N.J. Represented by:
MJS Electronic Sales Ltd.,
P.O. Box 240, Ajax, Ont.

Shure Brothers, Inc., 222 Hartrey Ave.,
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(Eastern Canada)
C. M. Robinson Co., 189 Market Ave. E.,
Winnipeg 2, Man. (Western Canada)
Northwestern Agencies, Inc.,
4130 First Ave. S., Seattle 4, Wash.
(British Columbia)

Sierra Electronic Corp.,
1050 Brittan Ave., San Carlos, Cal.
Represented by:
Atlas Radio Corp. Ltd.,
50 Wingold Ave., Toronto 10, Ont.
505 McIntyre Block, 416 Main St.,
Winnipeg, Man.

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Charles L. Thompson Ltd.,
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North Vancouver, B.C.
- Smith, Inc., Herman H.**,
2326 Nostrand Ave., Brooklyn 10, N.Y.
Represented by:
Atlas Radio Corp. Ltd.,
50 Wingold Ave., Toronto 10, Ont.
- Sola Electric Co.**, 4633 W. 16th St.,
Chicago 50, Ill. **Represented by:**
Sola Electric (Canada) Ltd.,
102 Laird Drive, Toronto 17, Ont.
- Solarton Electronic Group Ltd., The**,
Queens Rd., Thames Ditton, Surrey, Eng.
Represented by:
Computing Devices of Canada, Ltd.,
P.O. Box 508, Ottawa 4, Ont.
- Sorensen and Co., Inc.**, 375 Fairfield Ave.,
Stamford, Conn. **Represented by:**
Charles W. Pointon, Ltd.,
6 Alcina Ave., Toronto 10, Ont.
Frederick Goertz, Ltd.,
1170 Hobson St., Vancouver 5, B.C.
- SoundScriber Corp.**, The, New Haven, Conn.
Represented by:
O. H. Pierce Ltd., 26 Duncan St.,
Toronto, Ont.; and dealers in principal
cities across Canada
- Southco Division, South Chester Corp.**,
Lester, Pa. **Represented by:**
Black Bros. Ltd.,
1200 Hornby St., Vancouver, B.C.
A. T. R. Armstrong Co.,
700 Weston Rd., Toronto 9, Ont.
Metal and Wood Fastening Devices Co.,
60 Lakeshore Rd., Valois,
Montreal 33, Que.
- Southern Instruments Ltd.**,
Oscillograph Division, Frimley Rd.,
Camberley, Surrey, England
Represented by:
Electrodesign, 736 Notre Dame St. W.,
Montreal, Que.
- Southwestern Industrial Electronics Co. Inc.**,
2831 Post Oak Rd., Houston 19, Texas
Represented by:
Electrodesign, 736 Notre Dame St. W.,
Montreal, Que.
Hawthorne Electronics,
107 Administration Bldg., Seattle, Wash.
- Southwestern Industrial Electronics Canada**,
434 7th Ave. E., Calgary, Alberta
- Spaulding Fibre Co., Inc.**,
310 Wheeler St., Tonawanda, N.Y.
Represented by:
A. A. Andersen and Co. Ltd.,
20 Algie Ave., Toronto 14, Ont.
- Specialty Engineering and Electronics Co.**,
79 Clifton Place, Brooklyn 38, N.Y.
Represented by:
Ahearn and Soper Co. Ltd.,
P.O. Box 715, Ottawa, Ont.
- Spencer-Kennedy Laboratories, Inc.**,
1320 Soldiers Field Rd., Boston 35, Mass.
Represented by:
Cossor (Canada) Ltd.,
301-303 Windsor St., Halifax, N.S.
8230 Mayrand St., Montreal, Que.
648A Yonge St., Toronto, Ont.
Research Industries Ltd.,
1777 W. 3rd St., Vancouver, B.C.
- Sprague Electric International Ltd.**,
Marshall St., North Adams, Mass.
Represented by:
Micarta Fabricators, Ltd.,
18 Toronto St., Toronto, Ont.
C. M. Robinson Co.,
207 Scott Bldg., Winnipeg, Man.
John R. Tilton Ltd.,
51 McCormack St., Toronto 9, Ont.
- Stackpole Carbon Co., Tannery St.**,
St. Marys, Pa. **Represented by:**
W. T. Barron, P.O. Box 74,
Toronto 14, Ont.
- Stanat Manufacturing Co., Inc.**,
47 - 33 37th St., Long Island City, N.Y.
Represented by:
Tjibodeau Machinery Co., Ltd.,
143 Main St. E., Hamilton, Ont.
- Stancil-Hoffman Corp.**,
921 North Highland Ave.,
Hollywood 38, Cal. **Represented by:**
S. W. Caldwell, Ltd.,
447 Jarvis St., Toronto 5, Ont.
- Standard Condenser Corp.**,
3749 North Clark St., Chicago 13, Ill.
Represented by:
Leonard May, 346 Bering Ave.,
Toronto 18, Ont.
- Standard Electric Time Co.**,
89 Logan St., Springfield 2, Mass.
Represented by:
The Standard Electric Time Co. of
Canada Ltd., 736 St. Felix St.,
Montreal, Que.
- Standard Electronic Research Corp.**,
2 East End Ave., New York 21, N.Y.
Represented by:
Williams and Wilson Ltd., P.O. Box 6117,
Montreal, Que.
- Standard Electronics Corp.**,
285 Emmet St., Newark, N.J.
Represented by:
Canadian Westinghouse Co. Ltd.,
Hamilton, Ont.
- Standard Pressed Steel Co.**,
Jenkintown, Pa. **Represented by:**
Standco Canada, Ltd.,
193 Bartley Drive, Toronto 16, Ont.
- States Company, The**, 19 New Park Ave.,
Hartford 6, Conn. **Represented by:**
Irving Smith Ltd., 2095 Madison Ave.,
Montreal 28, Que.
- Filer Smith Mch. Co. Ltd.**,
503 Confederation Life Bldg.,
Winnipeg, Man.
N. D. Schell, 9934 Jasper Ave.,
Edmonton, Alberta
- Staver Company, Inc., The**,
41-51 N. Saxon Ave., Bay Shore, N.Y.
Represented by:
Atlas Radio Corp. Ltd.,
50 Wingold Ave., Toronto 10, Ont.
- Sterling Manufacturing Co.**,
7201 Wentworth Ave., Cleveland 2, Ohio
Represented by:
A. C. Simmonds and Sons,
100 Merton St., Toronto 7, Ont.
- Stevens Manufacturing Co., Inc.**,
P.O. Box 1007, Mansfield, Ohio
Represented by:
R. W. Stark, P.O. Box 514,
44 Renfrew St. W., Renfrew, Ont.
- Stone Paper Tube Co.**,
900 Franklin St., N.E., Washington 17, D.C.
Represented by:
Electric Insulation and Fibre Co. Ltd.,
Mendota Rd., Toronto 14, Ont.
- Stupakoff Division of The Carborundum Co.**,
Latrobe, Pa. **Represented by:**
John D. Harper, 141 Bates Rd.,
Montreal, Que.
John Lazor, 46 St. Clair Ave. E.,
Toronto, Ont.
- Sturtevant Co., P. A., Addison, Ill.**
Represented by:
Monahan Supply Corp. Ltd.,
189-191 Queen St. E., Toronto 2, Ont.
- Superex Electronics Corp.**,
4-6 Radford Pl., Yonkers, N.Y.
Represented by:
A. T. R. Armstrong Ltd.,
700 Weston Rd., Toronto 9, Ont.
C. M. Robinson Co., 189 Market Ave. E.,
Winnipeg 2, Man.
- Superior Electric Co., The**,
83 Laurel St., Bristol, Conn.
Represented by:
J. J. Munk, 482B Eglinton Ave. W.,
Toronto 12, Ont.
- Switchcraft, Inc.**, 1328-30 N. Halsted St.,
Chicago, Ill. **Represented by:**
Atlas Radio Corp. Ltd.,
50 Wingold Ave., Toronto 10, Ont.
- Synthane Corp., Oaks, Pa.**
Represented by:
Plastic Supply Co., 6078 Sherbrooke St. W.,
Montreal, Que.
- Takk Corp., The**,
P.O. Box 346, Newark, Ohio
Represented by:
Powerlite Devices Ltd.,
233 Dunbar Ave., Montreal 16, Que.
1870 Davenport Rd., Toronto 9, Ont.
148 East Third Ave., Vancouver 10, B.C.
Permafex Industries, Ltd.,
2710 St. Clair Ave. W., Toronto, Ont.
- Talk-A-Phone Co.**, 1512 So. Pulaski Rd.,
Chicago 23, Ill. **Represented by:**
Industrial and Institutional
Communications, Ltd., 206 Wellington St.,
Wallaceburg, Ont.
- Technical Appliance Corp.**, 1 Taco St.,
Sherburne, N.Y. **Represented by:**
Hackbusch Electronics Ltd.,
23 Primrose Ave., Toronto, Ont.
- Technical Associates**,
140 West Providencia Ave., Burbank, Cal.
Represented by:
Sharpe Instruments, Ltd.,
6080 Yonge St., Willowdale, Ont.
- Technical Devices Co.**,
2340 Centinela Ave., Los Angeles 64, Cal.
Represented by:
Atlas Radio Corp. Ltd.,
50 Wingold Ave., Toronto 10, Ont.
- Technicraft Laboratories, Inc.**,
Thomaston-Waterbury Rd.,
Thomaston, Conn. **Represented by:**
J. W. Lawrence Radiators Ltd.,
607 Chatham St., Montreal, Que.
- Technology Instrument Corp.**,
531 Main St., Acton, Mass.
Represented by:
Measurement Engineering Ltd.,
Amprior, Ont.
- Telegraph Condenser Co. Ltd., The**,
North Acton, London, W. 3, England
Represented by:
The Glendon Co. Ltd.,
44 Wellington St. East, Toronto 1, Ont.
The Northern Electric Co.,
P.O. Box 6124, Montreal, Que.
- Tele-Matic Industries Inc.**,
16 Howard Ave., Brooklyn 21, N.Y.
Represented by:
Active Radio and TV Dist.,
58 Spadina Ave., Toronto 2b, Ont.
(All Canada except British Columbia)
Fred H. Haight Co., 3212 Eastlake Ave.,
Seattle 2, Wash. (British Columbia)
- Teleradio Engineering Corp.**,
99 Wall St., New York 5, N.Y.
Represented by:
J. R. Longstaffe Co. Ltd.,
300 Campbell Ave., Toronto 9, Ont.
5890 Monkland Ave., Montreal 28, Que.
- Teletronics Laboratory, Inc.**,
54 Kinkel St., Westbury, L.I., N.Y.
Represented by:
Computing Devices of Canada Ltd.,
P.O. Box 508, Ottawa 4, Ont.
- Television Utilities Corp.**,
112-33 Colonial Ave., Corona, N.Y.
Represented by:
Canadian General Electric Co.,
830 Lansdowne Ave., Toronto, Ont.
Canadian Marconi Co.,
2442 Trenton Ave., Montreal 16, Que.
- Telex, Inc.**, Telex Park, St. Paul 1, Minn.
Represented by:
Atlas Radio Corp. Ltd.,
50 Wingold Ave., Toronto 10, Ont.
- Tel-Instrument Electronics Corp.**,
728 Garden St., Carlstadt, N.J.
Represented by:
Atlas Radio Corp. Ltd.,
50 Wingold Ave., Toronto 10, Ont.
- Tel-Labs., Inc.**, 1050 Second St.,
Manchester, N.H. **Represented by:**
Electrodesign, 736 Notre Dame St. W.,
Montreal, Que.
Electrodesign, 109 Eglinton Ave. E.,
Toronto, Ont.
- Telrex Labs., Asbury Park, N.J.**
Represented by:
Delhi Metal Products, Delhi, Ont.
- Tenney Engineering Inc.**,
1090 Springfield Rd., Union, N.J.
Represented by:
J. H. Lock and Sons, Ltd.,
150 Perth Ave., Toronto, Ont.
874 Clyde Ave., Ottawa, Ont.
- Terado Co., Box C, 1068 Raymond Ave.**,
St. Paul 14, Minn. **Represented by:**
Atlas Radio Corp. Ltd.,
50 Wingold Ave., Toronto 10, Ont.
- Thermal American Fused Quartz Co.**,
18-20 Salem St., Dover, N.J.
Represented by:
Fisher Scientific Co., Ltd.,
910 St. James St. W., Montreal, Que.
245 Carlaw Ave., Toronto 8, Ont.
- Thermosen, Inc.**, 361 West Main St.,
Stamford, Conn. **Represented by:**
Charles W. Pointon Ltd.,
6 Alcina Ave., Toronto, Ont.
- Thomas Mold and Die Co., Box 126**,
Wooster, Ohio. **Represented by:**
Andrew Antenna Corp.,
606 Beech St., Whitby, Ont.
- Thompson-Bremer and Co.**,
520 N. Dearborn St., Chicago, Ill.
Represented by:
P. L. Robertson Co., Ltd., Milton, Ont.
- Thompson Ltd., J. Langham**,
88 High Rd., Bushey Heath, Herts., Eng.
Represented by:
Electromechanical Products,
Warden Ave., Agincourt, Ont.
- Tobe Deutschmann Corp.**,
Providence Highway, Norwood, Mass.
Represented by:
Adams Engineering Ltd.,
1500 St. Catherine St. W.,
Montreal 25, Que.
65 Bloor St. W., Toronto, Ont.
- Tork Clock Company, Inc., The**,
1 Grove St., Mount Vernon, N.Y.
Represented by:
J. Willie Lefebvre, P.O. Box 7,
Mount Royal P.O., Montreal, Que.
- Tornico Electronics, Inc.**,
1090 Morris Ave., Union, N.J.
- Tracerlab Inc.**, 130 High St., Boston, Mass.
Represented by:
Richard Wood, 428 Rideau St., Ottawa, Ont.
X-Ray and Radium Industries Ltd.,
261 Davenport Rd., Toronto 5, Ont.
- Trad Electronics Corp.**, 1001 First Ave.,
Asbury Park, N.J. **Represented by:**
Measurement Engineering Ltd.,
Amprior, Ont.
- Transitron Electronic Corp.**,
168-182 Albion St., Wakefield 1, Mass.
Represented by:
Adams Engineering Ltd.,
1500 St. Catherine St. W., Montreal, Que.
65 Bloor St. W., Toronto, Ont.

(Continued on page 172)

world's finest
electronic equipment
in kit form...

HEATHKIT®

High Quality
Advanced Design
Reliable Performance
Real Economy

Heathkit AMATEUR CW TRANSMITTER KIT



MODEL AT-1
\$29.50
Shpg. Wt. 15 lbs.

Outstanding dollar-per-watt value! 30-35 watts plate power input, bandswitching for 80, 40, 20, 15, 11, and 10 meters. Crystal or external VFO excitation. 52 ohm output—key click filter—copper-plated chassis—pre-wound coils. Uses 6AG7 oscillator, 6L6 final.

Heathkit PHONE & CW TRANSMITTER KITS

Both the DX-100 and the DX-35 are designed especially for you—with the features most important to efficient and practical amateur operation!



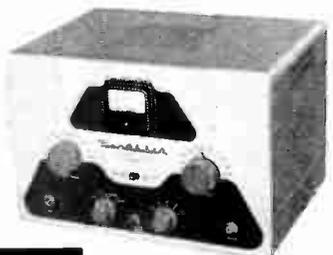
MODEL DX-100

\$189.50

Shpg. Wt. 120 lbs.
Shipped motor freight unless otherwise specified.
\$50.00 deposit required on c.o.d. orders.

This transmitter is rapidly becoming the accepted standard in its price class. An outstanding dollar value!

100 watts RF output—built in power supplies—built in VFO and modulator—bandswitching on 160, 80, 40, 20, 15, 11, and 10 meters—phone or CW operation. 100 watts output on phone, and 120 watts on CW. TVI suppressed—pi network output coupling—extensive shielding—matches 50 to 600 ohms—VFO dial and meter face illuminated—high quality components used throughout. Uses 1625 tubes in push-pull to modulate 6146 tubes in parallel. Complete schematic diagram and technical specifications available on request.



MODEL DX-35

\$56.95

Shpg. Wt. 24 lbs.

This exciting new kit features phone and CW operation on 80, 40, 20, 15, 11, and 10 meters. Completely bandswitching. Plate power input up to 65 watts on CW, with controlled carrier modulation peaks to 50 watts on phone. Features built-in modulator, power supplies, pi network output circuit. Separate 12BY7 buffer stage assures plenty of drive to the 6146 final. Switch selection of three crystals, or may be excited from external VFO. Panel meter reads final grid or plate current. Complete schematic and specifications on request.

Heathkit VFO KIT



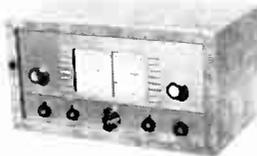
MODEL VF-1
\$19.50

Shpg. Wt. 7 lbs.

Go VFO for added convenience and flexibility. Functions with Heathkit AT-1 or DX-35, or with most modern transmitters. Covers 160-80-40-20-15-11 and 10 meters. Three basic oscillator frequencies provide better than 10 volt average RF output. Plug provided for crystal socket of transmitter. VR tube for stability. Requires only 250 VDC at 15 to 20 ma, and 6.3 VAC at 0.45A.

Heathkit ALL BAND COMMUNICATIONS TYPE RECEIVER KIT

Unusual sensitivity and selectivity for price. Covers 550 kc to 30 mc in 4 bands. AC power supply—electrical bandspread—antenna trimmer—separate RF and AF gain controls—noise limiter—head-phone jacks—AGC—BFO. Cabinet available separately as shown.



MODEL AR-3
\$27.95
(less cabinet)
Shpg. Wt. 12 lbs.

Heathkit GRID DIP METER KIT



MODEL GD-1B
\$19.50

Shpg. Wt. 4 lbs.

Use as a signal source, for determining unknown frequency, for checking resonance of tuned circuits, or for adjusting wave traps. Equally valuable in ham shack, service shop, or laboratory. Features 500 ua meter with sensitivity control, for indication. Covers 2 mc to 250 mc with five coils, supplied with kit. Coils pre-wound, dial scale pre-calibrated. Easy to build, and extremely valuable for literally hundreds of jobs.

Heathkit "Q" MULTIPLIER KIT



MODEL QF-1
\$9.95 Shpg. Wt. 3 lbs.

Adds selectivity and flexibility to your receiver, and rejects undesired signal or heterodyne. Tunes any signal within 1F of receiver with effective Q of approximately 4,000. Provides sharp "Peak" or "null." Surpasses crystal filter in flexibility of operation. Use with receiver having 450-460 kc IF. Will not function with AC-DC receivers. Requires 6.3 VAC at 300 ma, and 150-250 VDC at 2 ma. Cable and plugs supplied for connection.

Heathkit ANTENNA COUPLER KIT



MODEL AC-1
\$14.50
Shpg. Wt. 4 lbs.

This coupler matches between the transmitter, and a long-wire end-fed antenna, and incorporates an L-type filter: to attenuate signals above 36 mc and reduce TVI. 52 ohm coaxial input. Tapped inductor and variable capacitor for matching antenna. Neon RF indicator—copper-plated chassis—simple to build. Handles power up to 75 watts, 10 through 80 meters. Use with Heathkit AT-1 or DX-35.

Heathkit ANTENNA IMPEDANCE METER KIT

Use this instrument, with a source of RF signal, to determine antenna impedance, line impedance, and to solve impedance matching problems with fixed or mobile antennas or transmission lines. Also, will double as field strength indicator, or phone monitor. Uses 100 ua meter and features calibrated impedance scale on control knob. Covers 0 to 600 ohms. A valuable device in any ham shack.



\$14.50 MODEL AM-1
Shpg. Wt. 2 lbs.

HEATH COMPANY A Subsidiary of Daystrom, Inc. **BENTON HARBOR 3, MICH.**

Heathkit HARMONIC DISTORTION METER KIT



MODEL HD-1

\$49⁵⁰

Shpg. Wt. 13 Lbs.

Use with low-distortion audio generator to measure harmonic distortion of audio amplifiers. Reads distortion on meter as percentage of input signal. Operates between 20 and 20,000 cps. High impedance VTVM built in for initial reference settings and final distortion readings. VTVM ranges are 0-1, 3, 10, and 30 volts full scale. 1% precision resistors employed. Distortion scales are 0-1, 3, 10, 30, and 100% full scale.

Heathkit 6-12 VOLT BATTERY ELIMINATOR KIT

MODEL BE-4

\$31⁵⁰

Shpg. Wt. 17 Lbs.



Will supply either 6 or 12 volt output to take care of auto radios on even the most modern cars. Output voltage is variable from zero to 8 volts DC or 0 to 16 volts DC. Will deliver up to 15 amperes at 6 volts or up to 7 amperes at 12 volts. Two 10,000 microfarad output filter capacitors insure smooth DC output. Panel meters monitor output current and voltage. Will double as a battery charger.

HEATHKIT AUDIO TEST EQUIPMENT

You can equip your shop for complete analysis and test of high fidelity audio equipment by employing Heathkit instruments. Professional equipment you can afford!

AUDIO OSCILLATOR KIT (SINE-WAVE - SQUARE WAVE)



MODEL AO-1

\$24⁵⁰

Shpg. Wt. 10 Lbs.

Produces sine wave or square wave signals from 20 to 20,000 cps in three ranges. Designed for use in service shop, or home workshop. Employs thermister for output regulation. Features high level output, low distortion, and low impedance output. Produces sine waves for audio testing, or will produce good, clean square waves with a rise time of only 2 micro-seconds. Very simple to build from complete instructions supplied.

Heathkit HANDITESTER KIT

This compact model easily slips into tool box, glove compartment, or coat pocket. Valuable as "extra" instrument in service shop, and ideal for the home experimenter. Very popular with appliance repairmen and electricians. Measures AC or DC voltage at 0-10, 30, 300, 1000, 5000 volts full scale. Direct current ranges are 0-10 ma and 0-100 ma. Attractive black bakelite case. Ohmmeter ranges are 0-300Ω and 0-300,000 ohms.



MODEL M-1

\$14⁵⁰

Shpg. Wt. 3 Lbs.

Heathkit VARIABLE VOLTAGE REGULATED POWER SUPPLY KIT

MODEL PS-3

\$35⁵⁰

Shpg. Wt. 17 Lbs.



Supplies regulated DC output that can be manually controlled from 0 to 500 volts. It will supply up to 130 ma at 200 VDC, and up to 10 ma at 450 VDC. Large panel meter monitors output voltage or current. Also provides filament voltage at 6.3 volts AC, up to 4 amperes. Filament and B+ circuits are isolated from ground. Ideal lab power supply.

AUDIO GENERATOR

MODEL AG-9

\$34⁵⁰

Shpg. Wt. 8 Lbs.



This generator features low distortion (less than .1%). Ideal for use with Model HD-1, or in other applications requiring low signal distortion. Frequency accuracy within $\pm 5\%$. Features step-type tuning from 10 cps to 100 kc, with three rotary switches to provide two significant figures and a multiplier. Output monitored on a large $4\frac{1}{2}''$ meter. Meter calibrated for output voltage or db. Output ranges are—.003, .01, .03, .1, .3, 1, 3, and 10 volts.

Heathkit "Q" METER KIT

The Model QM-1 measures the Q of inductances and RF resistance and distributed capacity of coils. Employs a $4\frac{1}{2}''$ 50 microampere meter for direct indication. Features built-in signal source for tests at frequencies of 150 kc to 18 mc in 4 ranges. Measures capacity from 40 mmf to 450 mmf within ± 3 mmf. Indispensable for coil winding, and for determining unknown capacitor values.



MODEL QM-1

\$44⁵⁰

Shpg. Wt. 14 Lbs.

Heathkit IMPEDANCE BRIDGE KIT

MODEL IB-2

\$59⁵⁰

Shpg. Wt. 12 Lbs.



Features a built-in oscillator and amplifier. Measures resistance, capacitance, inductance, dissipation factors of condensers, and storage factor of inductance. D, Q, and DQ functions combined in one control. Employs $\frac{1}{2}\%$ resistors and $\frac{1}{2}\%$ silver-nica capacitors. 100-0-100 ua. meter indicates null. Two section CRL dial provides ten separate units with accuracy of .5%. Fractions of units read on variable control.

AUDIO ANALYZER KIT



MODEL AA-1

\$59⁵⁰

Shpg. Wt. 13 Lbs.

This combination instrument provides the functions of an AC VTVM, audio wattmeter, and intermodulation analyzer. Includes built-in high and low frequency oscillators for intermodulation distortion tests. VTVM ranges are .01, .03, .1, .3, 1, 3, 10, 30, 100, and 300 volts rms. Wattmeter ranges are .15 mw, 1.5 mw, 15 mw, 150 mw, 1.5 w, 15 w, and 150 w. IM scales are 1%, 3%, 10%, 30%, and 100%. Provides internal loads of 4, 8, 16, or 600 ohms. An extremely valuable instrument for the audio engineer, or serious audiophile.

Heathkit CRYSTAL RECEIVER KIT



MODEL CR-1

\$7⁹⁵

Shpg. Wt. 3 Lbs.

This crystal radio covers the standard broadcast band from 540 to 1600 kc. It employs two high Q tank circuits that are tuned separately for the desired station. A sealed germanium diode is featured for detection. No critical "cat's whisker" to adjust. Kit includes a pair of high impedance head sets, and is easy to build, even for a beginner. Construction manual takes "educational" approach and explains theory of signal reception. Requires no external power for operation. Ideal standby unit for emergency reception of civil defense signals in case of power failure.

Heathkit BROADCAST BAND RECEIVER KIT

You can build your own radio receiver with confidence, even if you are a beginner. Complete step-by-step instructions insure success. Features transformer-type power supply, high gain miniature tubes, built-in antenna. $5\frac{1}{2}''$ speaker, and planetary tuning from 550 kc to 1600 kc.

CABINET: Fabric covered plywood cabinet with aluminum panel as shown. Part #91-9A, shipping weight 5 lbs. \$4.50.

MODEL BR-2

\$17⁵⁰

(less cabinet)

Shpg. Wt. 10 Lbs.



HEATHKIT HIGH FIDELITY AMPLIFIER KITS

Proven circuit designs and step-by-step instructions insure successful construction, even if you have never built a kit before.



Heathkit 25-WATT ADVANCED-DESIGN

This 25 watt amplifier incorporates the "extra" features required for really outstanding performance. Employs KT66 output tubes in push-pull, and features a Peerless output transformer. Response is within ± 1 db from 5 cps to 160 kc at 1 watt. Harmonic distortion only 1% at 25 watts, 20 to 20,000 cps. IM distortion only 1% at 20 watts. Output impedance is 4, 8, or 16 ohms. Hum and noise are 99 db below rated output.

KIT COMBINATIONS:
W-5M Amplifier Kit: Consists of main amplifier and power supply, all on one chassis. Complete with all necessary parts, tubes, and comprehensive manual. Shpg. Wt. 31 lbs. **\$59⁷⁵** Express only.
W-5 Combination Amplifier Kit: Consists of W-5M amplifier kit listed above plus Heathkit Model WA-P2 Pre-amplifier kit. Complete with all necessary parts, tubes, and construction manuals. Shpg. Wt. **\$79⁵⁰** 38 lbs. Express only.

Heathkit 7-WATT

Using a tapped-screen output transformer of new design, frequency response of this unit is $\pm 1\frac{1}{2}$ db from 20 to 20,000 cps. It provides good sensitivity, with surprisingly low distortion. Transformer tapped at 4, 8, and 16 ohms. Push-pull output. Separate bass and treble tone controls. Shpg. Wt. 10 lbs.
MODEL A-7E: Same as Model A-7D, but with stage of preamplification. Extra **\$18⁵⁰** Shipping weight 10 lbs.



\$16⁹⁵ MODEL A-7D
\$18⁵⁰ Extra

Heathkit 20-WATT DUAL-CHASSIS WILLIAMSON TYPE

Features the famous Acrosound TO-300 "ultra linear" output transformer. Uses 5881 tubes and has a frequency response within ± 1 db from 6 cps to 150 kc at 1 watt. Harmonic distortion only 1% at 21 watts. IM distortion at 20 watts only 1.3%. Output impedance is 4, 8, or 16 ohms. Hum and noise is 88 db below 20 watts.



KIT COMBINATIONS
W-3M: Consists of main amplifier and power supply for separate chassis construction. Includes all tubes and components necessary for assembly. Shpg. Wt. 29 lbs. **\$49⁷⁵** Express only.
W-3: Consists of W-3M kit listed above plus Heathkit Model WA-P2 Pre-amplifier described on this page. Shpg. Wt. 37 lbs. **\$69⁵⁰** Express only.



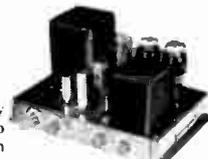
Heathkit 20-WATT SINGLE-CHASSIS WILLIAMSON TYPE

The original low-priced Williamson Amplifier kit. A Chicago output transformer and 5881 output tubes are featured. Frequency response is ± 1 db from 10 cps to 100 kc at 1 watt. Harmonic distortion only 1.5% at 20 watts. IM distortion only 2.7%. Output at 4, 8, or 16 ohms. Hum and noise 95 db below 20 watts.

KIT COMBINATIONS
W-4AM: Consists of main amplifier and power supply for single chassis construction. Includes all tubes and components necessary for assembly. Shpg. Wt. 28 lbs. **\$39⁷⁵** Express only.
W-4A: Consists of W-4AM Kit listed above plus Heathkit Model WA-P2 Pre-amplifier described on this page. Shpg. Wt. 35 lbs. **\$59⁵⁰** Express only.

Heathkit 20-WATT

This amplifier can provide you with high fidelity at a surprisingly low price. Pre-amplifier built into same chassis as main amplifier. Four switch selected, compensated inputs are available, as are bass and treble controls. Features full 20-watt output using push-pull 6L6 tubes. Frequency response is ± 1 db from 20 to 20,000 cps. Harmonic distortion only 1% at full output.



MODEL A-9B \$35⁵⁰
 Shpg. Wt. 23 lbs.

Heathkit HIGH FIDELITY PREAMPLIFIER KIT

MODEL WA-P2

\$19⁷⁵

(with cabinet)
 Shpg. Wt. 7 lbs.



Designed for use with Heathkit main amplifiers. Features five separate switch-selected input channels, each with its own input level control. Four-position turnover and roll-off controls for record equalization. Separate bass and treble tone controls. Special hum control to insure minimum hum level. Will do justice to finest program sources. Beautiful satin-gold finish.

Heathkit ELECTRONIC CROSS-OVER KIT

The XO-1 separates high and low frequencies at selectable crossover points, to feed two separate power amplifiers, one for high frequencies and one for low frequencies. Speakers are then connected to the amplifiers directly, without the usual LC crossover. Separate level controls provided for both outputs. The XO-1 consumes no audio power. Crossover frequencies are 100, 200, 400, 700, 1200, 2000, and 3500 cps. Attenuation is 12 db per octave.



MODEL XO-1 \$18⁹⁵
 Shpg. Wt. 6 lbs.

Heathkit TUNER KITS

These tuners measure only 12 9/16" long x 3 5/8" high x 5 7/8" deep, and are finished in beautiful satin-gold enamel. Easily stack one over another to form compact control unit.

FM HIGH FIDELITY

MODEL FM-3

\$24⁵⁰

(With cabinet)
 Shpg. Wt. 7 lbs.



This FM tuner offers sensitivity, selectivity, and stability, not expected at this price level. Efficient 7-tube circuit is entirely new, and incorporates AGC, cascade front end, temperature-compensated oscillator, built-in power supply, and other outstanding design features. Pre-aligned IF and ratio transformers. Sensitivity is better than 10 microvolts for 20 db of quieting. Covers 88 to 108 mc.

AM BROAD BANDWIDTH

MODEL BC-1

\$24⁵⁰

(With cabinet)
 Shpg. Wt. 8 lbs.



Designed for use with high fidelity systems. Low distortion voltage-doubler detector. Covers 550 to 1600 kc. 20 kc IF bandwidth. Audio response ± 1 db from 20 cps to 2 kc. 6 db signal-to-noise ratio at 2.5 microvolts. RF and IF coils pre-aligned. Power supply built-in. Efficient, modern circuit. Matches WA-P2 and FM-3 in color and style.

Heathkit SPEAKER SYSTEM KITS

The models SS-1 and SS-1B are matched so that when the smaller unit is placed on top of the larger unit, the appearance of a single piece of furniture is achieved.

SS-1 HIGH FIDELITY

MODEL SS-1 **\$39⁹⁵**

Shpg. Wt. 30 lbs.



Employs two Jensen speakers to cover from 50 to 12,000 cps. Response is within ± 5 db. Built-in crossover functions at 1600 cps. System rated at 25 watts, with nominal impedance of 16 ohms. Enclosure is ducted-port bass reflex type. Merely assemble the cabinet, wire the speakers and crossover network, and finish to your taste.

SS-1B HIGH FIDELITY RANGE EXTENDING

Employs woofer and super tweeter to cover 35 to 600 cps, and 4000 to 16,000 cps. Extends frequency range of SS-1 at both ends of the spectrum, for total of ± 5 db from 35 to 16,000 cps. The kit includes necessary crossover circuits and balance control. Power rating is 35 watts for speech and music. Impedance is 16 ohms.



MODEL SS-1B \$99⁹⁵
 Shpg. Wt. 80 lbs.

HEATH COMPANY A Subsidiary of Daystrom, Inc. BENTON HARBOR 3, MICH.

NEW *Heathkit* PROFESSIONAL RADIATION COUNTER KIT



MODEL RC-1

\$79⁹⁵

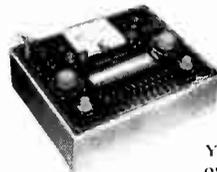
Shpg. Wt. 8 Lbs.

- ▶ Completely modern design for maximum sensitivity and reliability.
- ▶ Both visual (4½" meter) and aural (panel-mounted speaker) indicators for radiation level.
- ▶ Meter calibrated in CPM and mR/hr. Four measuring ranges.
- ▶ Employs 900-volt Bismuth tube in beta/gamma sensitive probe.

This radiation counter provides design advantages found only in units costing several times its low kit price. It incorporates features essential to the serious prospector. High sensitivity is provided, with ranges of 0-100, 600, 6,000, and 60,000 counts per minute, and 0.02, .1, 1, and 10 milliroentgens per hour. A type 6306 Bismuth tube is employed in the probe, and the probe and a radiation sample are included in the kit price. The circuit employs 5 tubes (plus a transistor) to assure stable and reliable operation. High quality, 4½" 200 micro-ampere meter eliminates "guess work" and indicates radiation level directly in cpm, or mR/hr. In addition, transistor oscillator provides aural signal from panel-mounted speaker. High voltage power supply is "packaged" pre-built unit with reserve capacity above 900 volt level at which it is regulated. Merely changing regulator tube would allow use of scintillation probe if desired.

Fulfills requirements of those who want a prospecting instrument that can be relied upon. Has selectable time constant, to allow for different rates of travel over the area being investigated. Measures only 9½" high x 6½" wide x 5¼" deep, and weighs only 6½ lbs. Not to be confused with novelty radiation detection devices on the market. A top-quality instrument, yet simple to build.

Heathkit TUBE CHECKER KIT



MODEL TC-2

\$29⁵⁰

Shpg. Wt. 12 Lbs.

You can afford your own tube tester, even if you only do part-time service work. Uses a 4½" meter with 3-color meter face for simple "good-bad" indications of tube quality, on the basis of emission. Tests all tubes commonly encountered in radio and TV service work. 14 different filament voltages—built-in roll chart—ten 3-position lever switches for open or short tests on each tube element.

Heathkit CATHODE RAY TUBE CHECKER KIT



MODEL CC-1

\$22⁵⁰

Shpg. Wt. 10 Lbs.

Indicates condition of CRT on large "good-bad" scale. Spring-loaded switches protect operator. Checks all electromagnetic deflection picture tubes normally encountered in TV servicing. Supplies all operating potentials and tests for shorts, leakage, and emission on the work bench, in the carton, or in the set. Features shadowgraph test to indicate tube condition.

Heathkit VISUAL-AURAL SIGNAL TRACER KIT



MODEL T-3 **\$23⁵⁰**

Shpg. Wt. 9 Lbs.

Features a high-gain RF input channel for signal tracing and troubleshooting from the receiver antenna input clear through all RF and

IF stages. Separate low-gain channel for audio circuit exploration. Built-in loudspeaker provides audio response, while electron beam "eye" tube gives visual indication. Ideal for signal tracing in AM, FM, and TV receivers.

Heathkit TV ALIGNMENT SWEEP GENERATOR KIT

All-electronic sweep eliminates mechanical hum or vibration. Features improved linearity—effective AGC—flat output—0 to 40 mc sweep. Covers all frequencies in FM, monochrome TV and color TV. Plenty of RF output for alignment of tuners, IF strips, boosters, etc. Fundamental output from 4 to 220 mc in four bands. Incorporates crystal oscillator (4.5 mc and multiples thereof), and variable marker covering 19 to 60 mc on fundamentals—up to 180 mc on harmonics. Effective two-way blanking.

MODEL TS-4

\$49⁵⁰

Shpg. Wt. 16 Lbs.



Heathkit SIGNAL GENERATOR KIT



MODEL SG-8

\$19⁵⁰

Shpg. Wt. 8 Lbs.

This tried and proven generator covers 160 kc to 110 mc on fundamentals in five bands, and calibrated harmonics extend to 220 mc. Very popular in service shops, laboratories, and home workshops. RF output is in excess of 100,000 microvolts, controlled by a variable and a fixed-step attenuator. Output is pure RF, RF modulated at 400 cps, or 400 cps audio for amplifier testing.

Heathkit CONDENSER CHECKER KIT

Measures paper, mica, ceramic, and electrolytic capacitors in 4 ranges from .00001 to 1,000 microfarads. It indicates condenser value and quality. Also measures resistance from 100 ohms to 5 megohms. All values indicated directly on panel scale, after adjusting for null on electron beam "eye" tube. No calculations necessary. A valuable instrument in service or laboratory applications.



MODEL C-3

\$19⁵⁰

Shpg. Wt. 7 Lbs.

Heathkit LINEARITY PATTERN GENERATOR KIT



MODEL LP-2

\$22⁵⁰

Shpg. Wt. 7 Lbs.

of TV set. Panel provision for external sync if desired. Covers channels 2 to 13. 5 to 6 vert. bars and 4 to 5 hor. bars.

Supplies information for white dots, cross-hatch pattern, horizontal bar pattern, or vertical bar pattern. Use for adjustment of vertical and horizontal linearity, picture size, aspect ratio and focus. Dot pattern is a must for color convergence adjustments. Clip merely connects to antenna terminals

Heathkit LABORATORY GENERATOR KIT

MODEL LG-1

\$39⁵⁰

Shpg. Wt. 16 Lbs.



This signal generator covers from 100 kc to 30 mc on fundamentals in 5 bands. 400 cycle modulation variable from 0 to 50% RF output up to 100,000 microvolts. Meter reads RF output or percentage of modulation. Fixed step and variable output attenuation. Voltage regulation, double copper-plated shielding for stability, and other "extras." Provision for external modulation. Output impedance 50 ohms.

HEATH COMPANY A Subsidiary of Daystrom, Inc. **BENTON HARBOR 3, MICH.**

HEATHKIT ETCHED CIRCUIT OSCILLOSCOPE KITS

You may choose from three different oscilloscope models when you purchase a Heathkit scope. All three units employ printed circuit boards for increased circuit efficiency and simplified assembly. Construction time cut almost in half. Outstanding dollar values for you!

5" COLOR TV



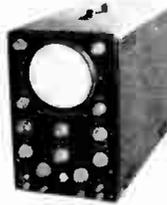
MODEL O-10
\$69.50

Shpg. Wt. 21 Lbs.

Amplifier response essentially flat from plus 2 db -5 db from 5 mc down to 2 cps without extra switching. Extended sweep oscillator range allows single-cycle observation of signals up to 500,000 cps, and will sync signals even higher. Uses etched metal circuit boards. Push-pull vertical and horizontal amplifiers—built in peak-to-peak calibrating source—step attenuated input—preformed and cabled wiring harness. A professional oscilloscope, ideal for color TV work in the lab or service shop. The 11-tube circuit features 5UPI CRT.

FULL SIZE 5"

The Model OM-1 with a 5", 5BPI cathode ray tube has many big scope features—yet it is priced reasonably. Features etched-metal circuit boards. Incorporates 3-step input attenuator—phasing control—built-in peak-to-peak voltage calibrator—and push-pull vertical and horizontal amplifiers. Vertical amplifier flat within ± 3 db from 2 cps to 200 kc. Sweep circuit functions from 20 cps to 100,000 cps.



MODEL OM-1
\$49.50

Shpg. Wt. 21 Lbs.

3" PORTABLE



Has many of the features of the Model OM-1, yet is smaller in physical size. Employs etched-metal circuit boards. Features vertical frequency response within ± 3 db from 2 cps to 200 kc. Sweep generator operates from 20 to 100,000 cps. The 8-tube circuit features a type 3GPI CRT.

MODEL OL-1
\$29.50

Shpg. Wt. 14 Lbs.

Heathkit AC VACUUM TUBE VOLTMETER KIT



MODEL AV-2
\$29.50

Shpg. Wt. 5 Lbs.

This VTVM combines high impedance, wide frequency range, and high sensitivity. It is designed especially for audio work. Frequency response is substantially flat from 10 cps to 50 kc. Sensitivity allows measurements as low as 1 mv at high impedance. Ranges are .01, .03, .1, .3, 1, 3, 10, 30, 100, and 300 volts rms. Total db range is -52 to +52 db. 1 megohm input impedance at 1 kc. An outstanding instrument for your laboratory, service shop, or home workshop.

Heathkit ETCHED CIRCUIT VACUUM TUBE VOLTMETER KIT



MODEL V-7A
\$24.50

Shpg. Wt. 7 Lbs.

The Heathkit Model V-7A features a 200 ua meter, 1% precision resistors, and an etched metal circuit board. Very simple to build. Measures DC voltage, ACV (rms) ACV (peak-to-peak), and resistance. AC (rms) and DC voltage ranges are 0-1.5, 5, 15, 50, 150, 500, and 1500 volts. Peak-to-peak ranges are 4, 14, 40, 140, 400, 1400, 4000 volts. Ohmmeter ranges provide multipliers of X1, X10, X100, X100K, X10K, X100K, and X1 megohm. DB scale also provided. 11-megohm input impedance.

Heathkit 20,000 OHMS/VOLT VOM KIT



MODEL MM-1
\$29.50

Shpg. Wt. 6 Lbs.

This instrument is especially valuable for portable applications where AC power is not available. Sensitivity is 20,000 ohms-per-volt DC and 5,000 ohms-per-volt AC. Black bakelite case -4 1/2" 50 ua. meter-1% precision resistors. AC and DC ranges are 0-1.5, 5, 50, 150, 500, 1500, and 5000 volts. Direct current ranges are 0-150 ua., 15 ma., 150 ma, 500 ma, and 15 a. Resistance multipliers are X1, X100, and X10,000. DB range from -10 db to +65 db.

Heathkit DIRECT-READING CAPACITY METER KIT



MODEL CM-1
\$29.50

Shpg. Wt. 7 Lbs.

This unique measuring instrument indicates capacitor values in mmf, or mfd, directly on a large 4 1/2" 50 ua meter. It provides ranges of 0-100 mmf, 0-1,000 mmf, 0-0.01 mfd, and 0-1 mfd. Residual capacity less than 1 mmf. Scales are linear. Merely connect the capacitor to the instrument and read its value directly on the scale. Instrument not susceptible to hand capacity effects. Will measure even small value trimmers or variable air capacitors.

Heathkit ELECTRONIC SWITCH KIT



MODEL S-8
\$21.95

Shpg. Wt. 8 Lbs.

This new instrument design allows simultaneous oscilloscope observation of two input signals by producing both signals, alternately, at its output. The all-electronic circuit provides 4 switching rates, selected by a panel switch. Provides actual gain for input signals, and features frequency response of ± 1 db from 0 to 100 kc. Employs 7 miniature tubes, Sync output provided to control scope sweep. Functions at signal levels as low as 0.1 volt. Ideal for observing amplifier input and output simultaneously for comparison purposes.

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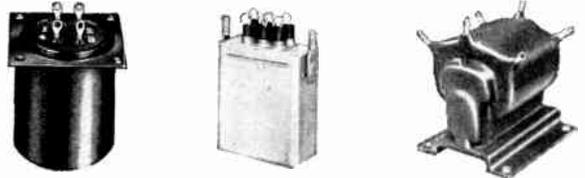
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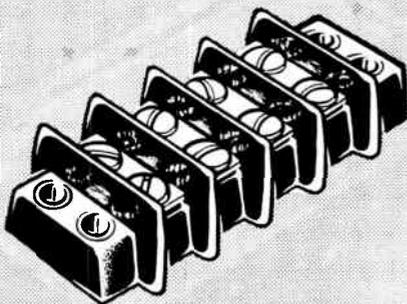
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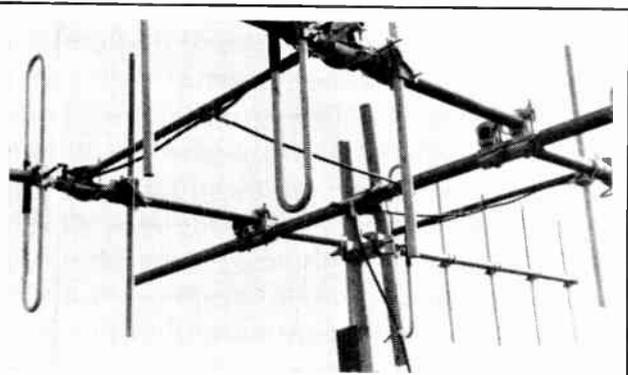


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Racon Electric Co., New York, N.Y.
Cousineau Inc., Toledo, Ohio
Klipsch & Associates, Hope, Arkansas
Altec Lansing Corporation, New York, N.Y.
Sound Craft Systems, Pittsburgh, Pa.
- Dow Chemical of Canada Ltd.,
600 University Ave., Toronto 2, Ont.
- Dow Corning Silicones Ltd., Tippet Rd.,
Downsview, Toronto, Ont. Representing:
Dow Corning Corp., Midland, Mich.
- Economy Fuse and Mfg. Co. of Canada Ltd.,
1030 St. Alexander St., Montreal, Que.
Representing:
Economy Fuse and Manufacturing Co.,
2717 Greenview Ave., Chicago, Ill.
- Edwards High Vacuum (Canada) Ltd.,
17 Jutland Rd., Toronto 14, Ont.
Representing:
Edwards High Vacuum Ltd.,
Crawley, Sussex, England
- Electric Storage Battery Co. (Canada) Ltd.,
The, Exide Industrial Div., 153 Dufferin St.,
Toronto 3, Ont.
- Electrodata — Division of Burroughs
Adding Machine of Canada Ltd.,
1313 Wellington St., Ottawa, Ont.
- Electrodesign, 736 Notre Dame St. West,
Montreal, Que. Representing:
Branson Instrument Inc., Stamford, Conn.
Berkeley Division of Beckman Instruments,
Richmond, Cal.
Shasta Division of Beckman Instruments,
Richmond, Cal.
Metrawatt AG, Nurnberg, Germany
Southern Instruments, Camberley, England
Fielden Electronics, Manchester, England
Cubic Corp., San Diego, Cal.
Ultradyn, Albuquerque, New Mexico
Southwestern Industrial Electronics,
Houston, Texas
- Electrolabs, 7385 St. Lawrence Blvd.,
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Onondaga Pottery Company, Syracuse, N.Y.
Enthoven Solders Ltd., London, England
American Speedlight Corp., Middle
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Kellogg Switchboard & Telephone Co.,
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J. G. Saltzman Inc., New York, N.Y.
- Electroline Television Equipment Inc.,
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 Electro Instruments Inc., 3794 Rosecrans St., San Diego 10, Cal.
 Electronic Tube Corp., 1200 East Mermaid Lane, Philadelphia 18, Pa.
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 New London Instrument Co. Inc., 82 Union St., New London, Conn.
 Nems Clarke Inc., 919 Jesup-Blair Drive, Silver Springs, Md.
 Northeast Scientific Corp., 617 Concord Ave., Cambridge 38, Mass.
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 Sage Electronics Corp., 302 North Goodman St., Rochester 7, N.Y.
 Universal Electronics Co., 1720 - 22nd St., Santa Monica, Cal.

Electronic Associates Limited,
 1616 Yonge St., Willowdale, Ont.
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 Curtiss-Wright Corp., Carlstadt, N.J.
 Ultra Violet Products, Inc., South Pasadena, Cal.

Electronic Communications Ltd.,
 1514 College St., Montreal, Que.
Representing:
 Bliss Electronic Corp., Sussex, N.J.

Electronic Controls Ltd., 50 Wellington St. E., Toronto 1, Ontario

Electronic Engineering, 62 Bruce St., Galt, Ontario

Electronic Enterprises Ltd., 930 St. George St., Montreal, Que. **Representing:**
 Harman-Kardon Inc., Westbury, Long Island, N.Y.
 Electro-Acoustic Industries, Tottenham, England

Electronic Products Co. Ltd.,
 1569 West 6th St., Vancouver 9, B.C.

Electronic Tube Co., 464 McGill St., Montreal, Que. **Representing:**
 Eitel-McCullough, Inc., San Bruno, Cal.
 Penta Laboratories, Inc., 312 N. Nopal St., Santa Barbara, Cal.

Electronics Corp. of America (Canada) Ltd.,
 98 Advance Rd., Toronto 18, Ont.
Representing:
 Combustion Control Division:
 Martin Engineering, Inc., 1846 Dorchester St. W., Montreal 25, Que.
 MacKay-Morton Ltd., 183 James Ave. E., Winnipeg, Man.
 Pacific Controls Ltd., 1042 Davie St., Vancouver, B.C.
 Photoswitch Division:
 Canadian Marconi Co., 6035 Cote de Liesse Rd., Montreal, Que.

Electro Sonic Supply Co. Ltd., 543 Yonge St., Toronto 5, Ontario

Electrovert Ltd., 265 Craig St. West, Montreal, Que. **Representing:**
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 Londex Limited, London, England
 Akustische u-Kino-Gerate G.m.b.H., Vienna, Austria
 Critchley Brothers Ltd., Stroud, England
 Fry's Metal Foundries Ltd., London, England
 Insuloid Manufacturing Co. Ltd., Manchester, England
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 Bostwick & Company Ltd., Moncton, N.B.

Electro-Vox Intercom Inc.,
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Ellis Industries, The J. W., 42 Lombard St., Toronto 1, Ontario. **Representing:**
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 Hartmann & Braun A.G., Frankfurt/Main, West Germany
 Elina G.m.b.H., Frankfurt/Main, West Germany
 Gebr. Ruhstrat, Goettingen, West Germany
 Unifact Ltd., Copenhagen, Denmark
 Dr. B. Lange, Berlin, West Germany
 Sodeco, Societe des Compteurs de Geneve, Geneva, Switzerland

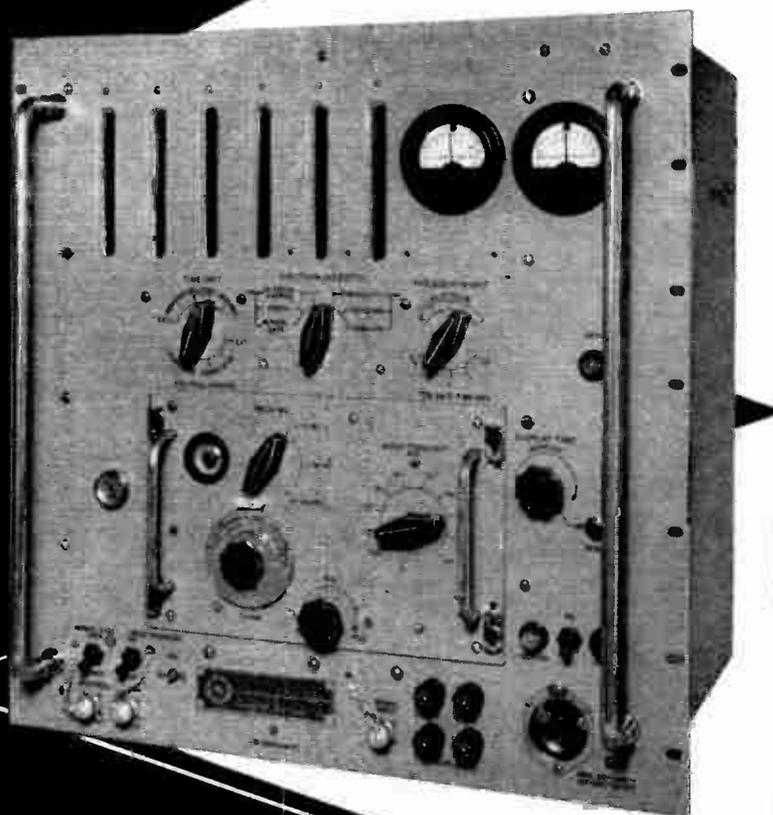
El-Met-Parts Ltd., Head St., Dundas, Ontario

Engineered Sound Systems Ltd.,
 169 Kipling Ave. S., Toronto 18, Ont.

Ericsson Telephone Sales of Canada Ltd.,
 130 Bates Road, Town of Mount Royal, Montreal 8, Que. **Representing:**
 Telefonaktiebolaget L.M. Ericsson, Stockholm, Sweden
 North Electric Company, Galion, Ohio
 The Ericsson Corporation, New York, N.Y.

Eric Resistor of Canada Ltd., 7 Fraser Ave., Trenton, Ontario. **Representing:**
 Erie Resistor Limited, Great Yarmouth, England
 Erie Resistor Corporation, Erie, Pa.

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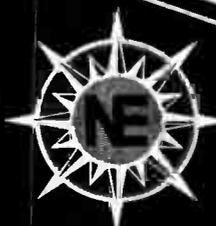
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Federated Metals Canada Ltd.,
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Ferranti Electric Ltd., Industry St.,
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Fischer & Porter (Canada) Ltd.,
2700 Jane St., Toronto, Ontario

Fleck Electrical Manufacturing Ltd.,
80 Harvey St., Tillsonburg, Ontario
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Fortier Inc., Hermann, 2115 Workman,
Montreal, Que. Representing:
Dominion Electrohome Industries Ltd.,
Kitchener, Ont.

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General Communications Ltd.,
980 O'Connor Drive, Toronto 16, Ont.
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Bedford St., East Bridgewater, Mass.

Eastern Specialty Co., 3617 North 8th St.,
Philadelphia 40, Pa.

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St. Louis 13, Mo.

Excel Electric Service Co., 2119 South
Western Ave., Chicago 8, Ill.

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Chicago 16, Ill.

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Birmingham 4, England

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Place, Chicago 10, Ill.

Kaye Electric Mfg. Co., Harrow,
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Microtan Co., 84-16 Rockaway Beach Blvd.,
Rockaway Beach 93, N.Y.

Standard Instrument Corp., 657 Broadway,
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Taller & Cooper, Inc., 75 Front St.,
Brooklyn 1, N.Y.

Techniflex Mfg. Co., Inc., 55 Jersey Ave.,
Port Jervis, N.Y.

General Instrument-F.W. Sickles
of Canada Ltd., 151 Weber St., South,
(P.O. Box 408), Waterloo, Ontario.
Representing:
Watt Electronic Products Ltd.,
Kitchener, Ont.

T. S. Farley Ltd., Hamilton, Ont.

General Instrument Corp., Newark, N.J.

F. W. Sickles Division, General Instrument
Corp., Chicopee, Mass.

Automatic Manufacturing Corp.,
Newark, N.J.

General Precision Industries Ltd.,
455 Craig St. W., Montreal, Que.

General Tire & Rubber Co. of Canada Ltd.,
Stokes Division, Kennedy St., Welland,
Ontario.

Glendon Company Ltd., The,
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Representing:
The Telegraph Condenser Co. Ltd.,
Export Div., North Acton, London,
England

Danbury-Knudsen Inc., Danbury, Conn.

Industrial Products Co., Danbury, Conn.

Neosid (Canada) Ltd., Etobicoke,
Toronto, Ont.

Reliance Electrical Wire Co. Ltd.,
Leyton, London, England

Permonite Manufacturing Co., Chicago, Ill.

The Constanta Co. of Canada Ltd., Verdun,
Montreal, Que.

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London, England

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Hamilton Hall Mfg. Co., Milwaukee, Wis.

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England

The Fusite Corp., Cincinnati, Ohio

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Goodrich Canada Ltd., B. F., 251 King St. W.,
Kitchener, Ontario

Gould-National Batteries of Canada Ltd.,
185 Eileen Ave., Toronto, Ontario

Gould Sales Company, E. S.,
3500 Atwater Ave., Montreal 25, Que.
Representing:
Acro Products Co., Philadelphia, Pa.

Crown Controls Company Inc.,
New Bremen, Ohio

Lake Engineering Co. Ltd.,
Scarborough, Ont.

Microlab Devices Ltd., Toronto, Ont.

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Montreal, Que.

Tequipment Manufacturing Co.,
London, Ont.

Workman TV Inc., Teaneck, N.J.

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Blonder-Tongue Laboratories Inc.,
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James Vibrapower Co., Chicago, Ill.

Karlson Associates Inc., Brooklyn, N.Y.

Ram Electronic Sales Co., Irvington, N.Y.

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Precise Development Corp., Oceanside, N.Y.

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Conrac Inc., Glendora, Cal.

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Whitestone, N.Y.

Greening Wire Co. Ltd., The B.,
55 Queen St. N., Hamilton, Ontario

Hackbusch Electronics Ltd., 23 Primrose Ave.,
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Stromberg-Carlson Co., Rochester 3, N.Y.

Sylvania Electric Products, Inc.,
New York, N.Y.

Technical Appliance Corp., Sherburne, N.Y.

Caledonia Electronics & Transformer Corp.,
Caledonia, N.Y.

Hallcrafters Canada Ltd., Don Mills,
Ontario

Hammond Manufacturing Co. Ltd.,
Wellington St. W., Guelph, Ontario

Handy & Harman of Canada Ltd.,
141 John St., Toronto 2-B, Ontario

Hathaway Kraemer Ltd., 125 Whitney Place,
Kitchener, Ontario

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Toronto 12, Ontario. Representing:
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Holyoke, Mass.

Centralab Canada Ltd., Ajax, Ont.

Centralab of Milwaukee, Wis.

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With its high sensitivity, the Carpenter Polarized Relay can replace complex amplifying equipment — its almost perfect contact performances enables it to convert minute d.c. signals into a.c. and so simplify electronic amplification — it will operate direct from valves — it will repeat signal impulses with great accuracy as is required in telegraphy, tele-metering, protection and tele-control schemes.

Four generic types are available, each in several versions, with a wide range of standard windings. Illustrated is the Type S; dimensions, Height 2.5 in., Width 1.6 in., Depth 0.8 in., Approx. Weight 4.8 oz.



For further data on advertised products use page 181.

Sangamo Electric Co., (Capacitor Division),
Marion, Ill.

**Herring & Co. Ltd., John, 3468 Dundas St. W.,
Toronto, Ontario. Representing:**
Automatic Electric Mfg. Co.,
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Barber-Colman Co., Rockford, Ill.
Electro-Mechanical Instrument Co.,
Philadelphia, Pa.
H-B Instrument Co., Philadelphia, Pa.
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Mucon Corp., Inc., Newark, N.J.
National Capacitor Co., Brookline, Mass.
George Ratray, Inc., Richmond Hill, N.Y.
Ripley Co. Inc., Middletown, Conn.
Shallcross Mfg. Co., Collingdale, Pa.
Statham Laboratories, Inc.,
Los Angeles, Cal.
Stevens-Arnold Inc., South Boston, Mass.
Thwing-Albert Instrument Co.,
Philadelphia, Pa.
Fortiphone Ltd., London, England

**Hoskins Alloys of Canada, Ltd.,
45 Racine Rd., Rexdale P.O., Toronto, Ont.
Representing:**
Hoskins Manufacturing Co., Detroit, Mich

**M. J. Howard, 132 Crocus Ave.,
Ottawa, Ontario. Representing:**
Aerovox Canada Ltd., 1551 Barton St. E.,
Hamilton, Ont.
Burnell & Co., Inc., 45 Warburton Ave.,
Yonkers, N.Y.
Canadian Atlas Transformer Co. Ltd.,
17 Carlaw Ave., Toronto, Ont.
Chisholm Industries Ltd., Port Moody, B.C.
Consolidated Electronic Equipment
Co. Ltd., 94 Sheppard Ave. W.,
Willowdale, Ont.
Induction Motors Corp., 570 Main St.,
Westbury, Long Island, N.Y.
Specialties Mfg. Co., 12830 Linwood Ave.,
Detroit, Mich.

**Humble Manufacturing Co. Ltd.,
1695 West 2nd Ave., Vancouver 9, B.C.**

**Hysol (Canada) Limited, 184 Laird Drive,
Toronto 17, Ontario**

**Industrial Electronics of Canada Ltd.,
Rexdale Blvd. & Kipling Ave.,
Toronto 15, Ontario. Representing:**
Servomechanisms Inc., Westbury,
Long Island, N.Y.

Superior Electric Inc., Bristol, Conn.
Leland Electric, Guelph, Ont.
Atlas Polar Co. Ltd., Oshkosh, Wis.

**Industrial & Institutional Communications
Limited, 29 McNaughton Ave., Wallaceburg,
Ontario. Representing:**
Talk-A-Phone Co., Chicago, Ill.
Trix Electrical Co., London, England
Lustraphone Ltd., London, England
M.S.S. Recording Co., Colnbrook, England
English Telephone Co. Ltd., Wembley,
London, England

**International Nickel Co. of Canada Ltd., The,
25 King St. West, Toronto, Ont.**

**International Resistance Co. Ltd.,
349 Carlaw Ave., Toronto 8, Ont.**

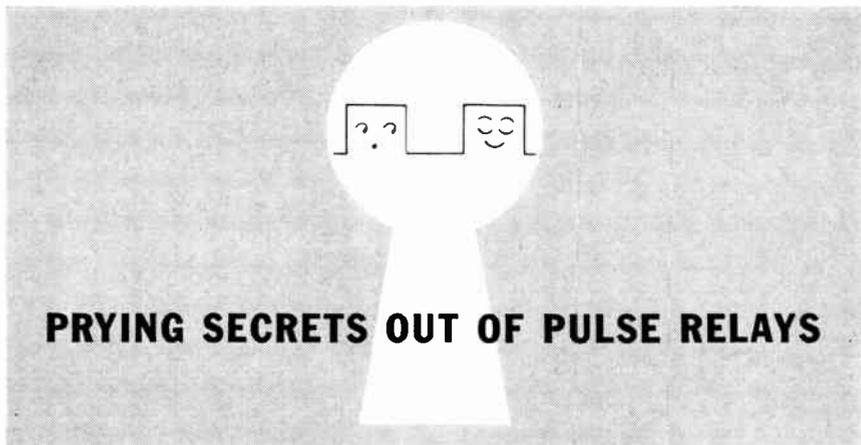
**Jerrold Electronics (Canada) Ltd.,
50 Wingold Ave., Toronto, Ont.
Representing:**
Jerrold Electronics Corp., Philadelphia, Pa.
Times Wire & Cable Co. Inc.,
Wallingford, Conn.

**Johnson Matthey & Mallory Ltd.,
110 Industry St., Toronto 15, Ontario
Representing:**
Johnson Matthey & Co. Ltd., London,
England
P. R. Mallory & Co. Inc., Indianapolis, Ind.
Sealtron Corp., Cincinnati, Ohio
J. Bishop & Co., Malvern, Pa.

**Johnson & Johnson Ltd., Industrial Tape
Division, 2155 Pie Neuf Blvd.,
Montreal 4, Que. Representing:**
Permacel Tape Corp., New Brunswick, N.J.

**R. C. Kahnert Sales Limited (formerly EV
of Canada Ltd.), 1908 Avenue Road,
Toronto, Ont. Representing:**
Alproco Inc., Mineral Wells, Texas
American Television and Radio Co.,
300 East Fourth St., St. Paul, Minn.
Barker & Williamson Inc., Bristol, Pa.
Centralab Division, Globe Union Inc.,
900 East Keefe Ave., Milwaukee, Wis.
Continental Carbon Inc., 13900 Lorain Ave.,
Cleveland, Ohio
Daystrom Electric Corp., 733 Main St.,
Poughkeepsie, N.Y.
Electro-Voice Inc., Buchanan, Mich.
Eagle Electric Mfg. Co. Inc., 23-10 Bridge
Plaza S., Long Island City, N.Y.
JBT Instruments, 441 Chapel St.,
New Haven, Conn.
Peterson Radio Co. Inc.,
2800 W. Broadway, Council Bluffs, Iowa
Sangamo Electric Co., Capacitor Division,
Springfield, Ill.
Richards Electrocraft Inc.,
3739 N. Kedzie, Chicago, Ill.

(Continued on page 183)



High speed polar relays for telegraph use and other data handling applications have their work all cut out for them, in the form of little pulses who confidently expect to go in and come out of the relay looking like better little pulses



— or come out taller than they went in.



Sometimes as many as 500 of them show up at the relay in the space of one second, all wanting efficient accommodation. This of course requires that (1) the relay be pretty good in the first place, and (2) as time goes on and even the best relay begins doing strange things to the pulses,



that it be possible to do something about it. We seem to have gotten the first part* pretty well in hand, and now have something to say about rummaging around inside a pulse relay to find out why an unpleasant case of distortion has already developed, or to forestall it by "preventive maintenance." To get technical, the logical course is to investigate some or all of the following: operating values (by manual and automatic means), bias, percent-break, and insulation of the relay, and then proceed with the necessary adjustments or repairs.

Since by now the unmistakable impression has been given that we know what the relay user should do, it follows that we should also say how. Without expecting to surprise anyone, then, we hereby announce the development and availability (soon) of the Model 4501 Telegraph Relay Test Set. On a standard relay rack panel 5-1/4" high, it looks like this



and will

Measure the five characteristics previously mentioned, making use of any or all of the operating coils of Sigma Series 72 and 7, WE 255A and 215, and similar relays.

Permit connection of an external drive directly on relay coils, and an external scope for observation of contact performance during bias and percent-break tests.

It may be mounted in either a standard relay rack or in its own case.

The Test Set is by no means the only one on the market, nor do you have to have one simply because you own some of our 72's (development of the Test Set resulted from customer request). It will, however, make the most of the 72's built-in adjustability, and probably prove useful for other relays for which there is no suitable test equipment. With the 4501, besides a case and octal socket adapter, you also get a comprehensive instruction manual, which describes in detail the theory and operation of the Test Set. Other socket adapters are available.



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NEWS



Measurement Engineering Executives Visit Atomic Plant

Two engineers from Measurement Engineering Limited recently inspected the plant and facilities of Atomic Energy of Canada Limited at Chalk River, Ontario.

P. C. Boire, chief engineer, and D. A. Bamford, general manager of the company, were among the group of representatives of the electronic industry who were conducted through the two huge nuclear reactors and other research buildings and had the opportunity of attending lectures covering various aspects of the work at the project.

The two visitors had a special pride and interest in being there due to the fact that Measurement Engineering Limited has supplied many of the highly specialized electronic instruments used for research purposes in conjunction with all three reactors.

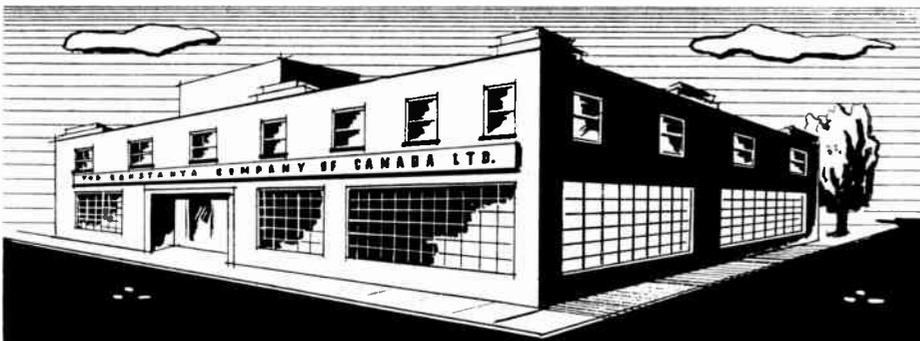
(Turn to page 193)



● Purchasing agents representing associated companies of International Telephone & Telegraph Corporation, New York, N.Y., in Canada and the U.S., discuss problems of supply for expanding industrial efforts and defense projects in the electronics and telecommunications fields on the North American Continent. The conference was held recently at the manufacturing plant of Standard Telephones & Cables Mfg. Co. (Canada) Ltd., Montreal, the Canadian operation of I. T. & T. Delegates and companies represented were L. to R.: (seated) Pierre Nantel, S. T. & C. Co.; H. P. Sommerer, apparatus division, Federal Telephone & Radio Company, Clifton, N.J.; L. C. Mercier, Federal Telecommunication Laboratories, Clifton, N.J.; Howard Molatch, International Standard Electric Corporation, New York; (standing) Gordon Knox, S. T. & C. Co.; A. A. Marsh, Mackay Radio & Telegraph Company, New York; G. L. Rust, American Cable & Radio Corporation, New York; H. W. Wittschiebe, components division, F. T. R. Co.; L. Edwards, S. T. & C. Co.



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In response to the growing demand for CONSTANTA products, we are pleased to announce the opening of a new plant housing expanded production facilities.

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MINIATURES AND SUBMINIATURES

Constanta manufactures the smallest deposited (Capless) resistors ever made — down to L. 7/64" x D. 3/64".

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CONSTANTA DEPOSITED CARBON RESISTORS meet every requirement.

HIGH STABILITY
assured under extreme conditions by exacting tests, rigid quality control.

PRECISION
— through extensive development, rigorous precision specifications.

RUGGED CONSTRUCTION

Conductive film of finest carbon bonded to ceramic core. Lacquer seal checks moisture, corrosion.

LONG LOAD LIFE
Surpasses test requirements laid down in Military specifications.



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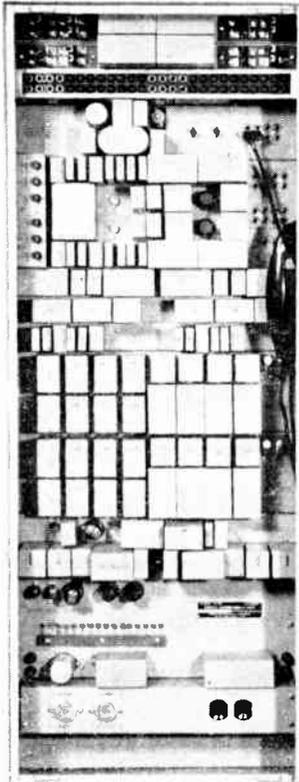
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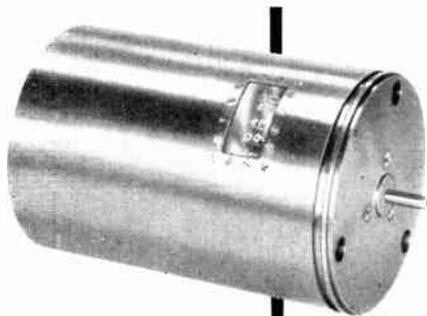
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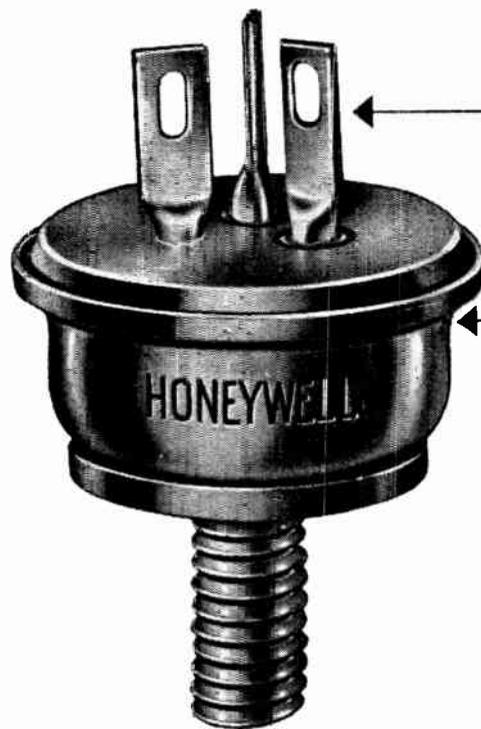
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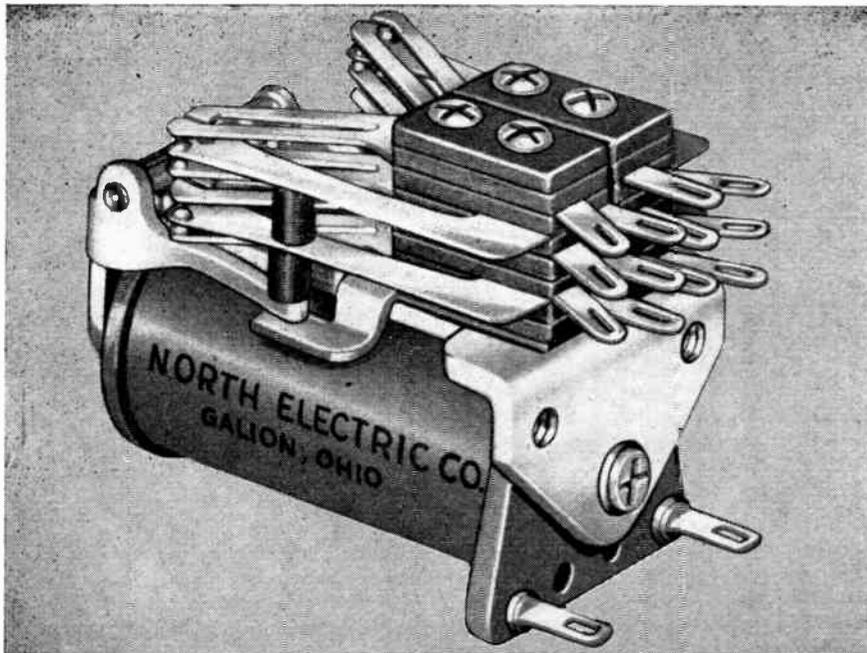
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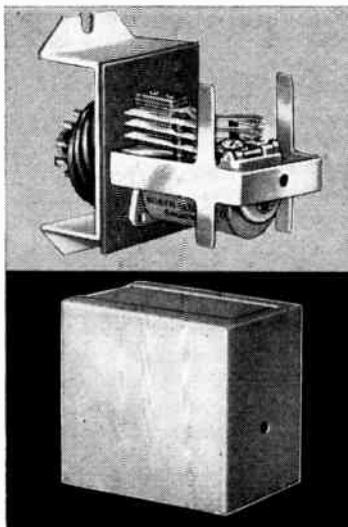


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Powerlite Devices Ltd., 1870 Davenport Rd.,
Toronto 8, Ontario. Representing:
Weston Electrical Instrument Corp.,
Newark, N.J.

For further data on advertised products use page 181.

Automatic Temperature Control Co. Inc.,
Philadelphia, Pa.
Felten & Guillaume Carlswerk,
Köln-Mulheim, Germany.
C. B. Hunt & Son Inc., Salem, Ohio.
Albert & J. M. Anderson Mfg. Co.,
Boston, Mass.
The Takk Corp., Newark, N.J.

Precision Electronic Components (1956) Ltd.,
50 Wingold Ave., Toronto 10, Ontario.

Prince & Roberts, 61 Charles St. W.,
Toronto, Ontario. Representing:
Auth Electric Co., Inc.,
Long Island City, N.Y.
Amalgamated Electric Corp. Ltd.,
384 Pape Ave., Toronto, Ont.
Tranelectric Mfg. Co., Oxford, Pa.
Intercommunication Systems (Toronto-
Hamilton Region).

Process-Instrument Systems Ltd.,
1918 Avenue Rd., Toronto, Ontario.
Representing:
The Swartwout Co., 18511 Euclid Ave.,
P.O. Box 2468, Cleveland, Ohio.

PSC Applied Research Ltd.,
1500 O'Connor Drive, Toronto 16, Ontario.
Representing:
Norden-Ketay Corp., New York, N.Y.
N.R.K. Mfg. & Engineering Co.,
Chicago, Ill.

Pye Canada Ltd., 82 Northline Rd.,
Toronto 16, Ontario. Representing:
Pye Telecommunications Ltd.,
Ditton Works, Newmarket Rd.,
Cambridge, England.
Labgear (Cambridge) Ltd., Willow Place,
Cambridge, England.
Cathodeon Crystals Ltd., Linton,
Cambridgeshire, England.
Pye Industrial Electronics Ltd., Linton,
Cambridgeshire, England.
Pye Marine Ltd., Oulton Broad, Lowestoft,
Suffolk, England.
W. G. Pye & Co. Ltd., "Granta" Works,
Newmarket Rd., Cambridge, England.
Unicam Instruments Ltd., Arbury Rd.,
Cambridge, England.
Cathodeon Ltd., Church St.,
Cambridge, England.
Etelco Ltd., 22 Lincolns Inn Fields,
London, W. 1, England.
Budelman Radio Corp., 375 Fairfield Ave.,
Stamford, Conn.
Kaar Engineering Corp.,
2995 Middlefield Rd., Palo Alto, Cal.

Pylon Electronic Development Co. Ltd.,
161 Clement St., Ville LaSalle,
Montreal 32, Que. Representing:
Tech Laboratories, Inc.,
Palisades Park, N.J.
Gray Radio Co. Ltd.,
West Palm Beach, Fla.

Quality Hermetics Ltd.,
45 Hollinger Rd., Toronto 16, Ontario.

Radelin-Kirk Ltd., 1168 Bay St.,
Toronto 5, Ontario. Representing:
United States Radium Corp.,
Morristown, N.J.

Radio College of Canada,
86 Bathurst St., Toronto 2-B, Ontario.

Radio Communications Equipment &
Engineering Ltd., 850 Fifth Ave., Lachine,
Montreal 32, Que. Representing:
Airmec Ltd., High Wycombe,
Bucks., England.
Hasler S. A., Berne, Switzerland.

Radio Components Ltd., 50 Wingold Ave.,
Toronto 10, Ontario. Representing:
Oak Manufacturing Co., Chicago, Ill.

Radio Condenser Co. Ltd., 6 Bermondsey Rd.,
Toronto 16, Ontario. Representing:
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Frederick, Maryland.

Radio Engineering Products Ltd.,
1080 University St., Montreal, Que.

Radionics Ltd., 8230 Mayrand St.,
Montreal, Que. Representing:
NJE Corporation, 345 Carnegie Ave.,
Kenilworth, N.J.

National Radiac, Inc., 475 Washington St.,
Newark, N.J.

Edin Co., Inc., 207 Main St.,
Worcester, Mass.

Radiation, Inc., P.O. Drawer 37,
Melbourne, Fla.

Huggins Laboratories, Inc.,
711 Hamilton Ave., Menlo Park, Cal.

Vacuum-Electronic Engineering Co.,
86 Denton Ave., New Hyde Park,
L.I., N.Y.

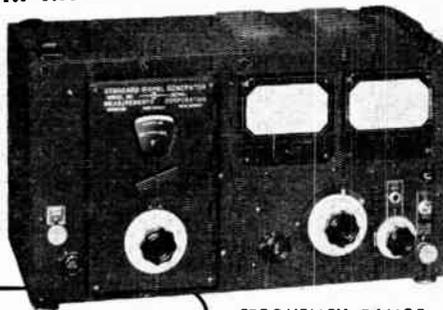
Reed-Curtis Nuclear Industries, Inc.,
9459 W. Jefferson Blvd.,
Culver City, Cal.

North American Instruments, Inc.,
2420 North Lake Ave., Altadena, Cal.
The Victoreen Instrument Co.,
5806 Hough Ave., Cleveland, Ohio.

Rawplug Products (Canada) Ltd.,
Rawplug Building, 7320 Upper Lachine Rd.,

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with these STANDARD SIGNAL GENERATORS



MODEL 80
2 Mc to 400 Mc

MODEL 80-R
5 Mc to 475 Mc

SPECIFICATIONS

FREQUENCY RANGE: (Model 80) 2 to 400 Mc in 6 bands.
(Model 80-R) 5 to 475 Mc in 6 bands.

FREQUENCY ACCURACY: $\pm 0.5\%$

FREQUENCY DRIFT: Less than .1% after warm-up.

OUTPUT VOLTAGE: Continuously variable from 0.1 to 100,000
microvolts (-7 to -127 DBM).

OUTPUT ACCURACY: $\pm 10\%$ at 0.1 volt from 5 to 200 Mc.
 $\pm 15\%$ at 0.1 volt from 200 to 475 Mc.

MODULATION: AM is continuously variable from 0 to 30% .
Internal modulation, 400 and 1000 cycles.
External modulation, 50 to 10,000 cycles.

RESIDUAL FM: Less than 500 cps at 450 Mc for Model 80-R,
and correspondingly lower for both models at lower
frequencies.

POWER SUPPLY: 117v, 50-60 cycles, 70 watts.

FEATURES

- Direct-Reading scales and dials; individually calibrated.
- Convenient microvolt and DBM output scales.
- Accurate indication of output voltages at all levels.
- Low residual FM due to hum and noise.
- Provision for external pulse modulation.

Laboratory Standards

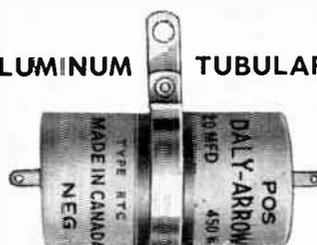


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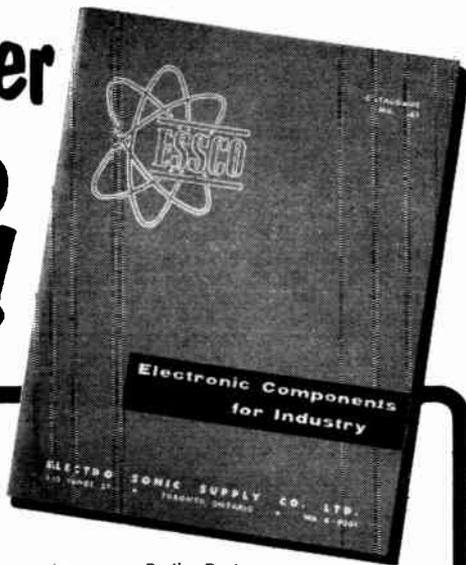
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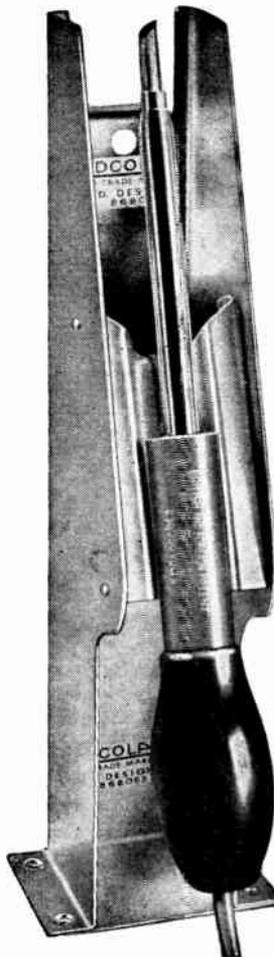


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Measures the "Q" factor of coils directly and the inductance of coils, distributed capacity, impedance and dielectric losses. The "Q" Indicator can be used to study the magnetic properties of iron, such as stability of iron cores in function of applied voltages, and, iron losses as a function of the frequency.

FEATURES

- Direct reading
- Unaffected by line voltage variations
- Self contained — A.C. operated

SPECIFICATIONS

Range of "Q" Measurements: The range of "Q" factors is from 0.1 to 1000 over the frequency range from 20 to 200,000 cycles with an accuracy of 5%.

Oscillator Frequency Range: Continuously variable from 20 to 200,000 cycles in four ranges.

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Redifon (Canada) Ltd., 6301 Park Ave.,
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Reichhold Chemicals (Canada) Ltd.,
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Renfrew Electric & Refrigerator Co. Ltd.,
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Research Industries Ltd., 1777 W. 3rd Ave.,
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Robbins & Myers Co. of Canada Ltd., The,
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Eindhoven, Holland.

Mullard Ltd., London, England.
Amperex Electronic Corp., Hicksville,
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Ferroxcube Corp. of America,
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North American Philips Co. Inc.,
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R-O-R Associates Ltd., 290 Lawrence
Ave. W., Toronto 12, Ontario. Representing:
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Bomac Laboratories Inc., Beverly, Mass.
Eastern Air Devices, Inc., Dover, N.H.
Electro-Pulse Inc., Culver City, Cal.
Helipot Corp., Toronto, Ont.
International Electronic Research Corp.,
Burbank, Cal.

George Kelk Ltd., Willowdale, Ont.
Mepco, Inc., Morristown, N.J.

Microdot Inc., South Pasadena, Cal.
F. L. Moseley Co., Pasadena, Cal.

Sanborn Co., Cambridge, Mass.

Vectron, Inc., Waltham, Mass.

Waveline, Inc., Caldwell, N.J.

S & T Sales Ltd., 44 Water St.,
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Raytheon Manufacturing Co.,
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Milwaukee, Wis.

Goodmans Industries Ltd., Wembley,
England.

Guardian Electric Mfg. Co.,
Chicago, Ill.

Holub Industries Inc., Sycamore, Ill.

Industrial Timer Corp., Newark, N.J.

E. F. Johnson Co., Waseca, Minn.

P. R. Mallory & Co. Inc.,
Indianapolis, Ind.

Ohmite Mfg. Co., Skokie, Ill.

Premax Products, Niagara Falls, N.Y.

Howard W. Sams & Co. Inc.,
Indianapolis, Ind.

Shure Brothers & Co. Inc., Evanston, Ill.

Sterling Manufacturing Co.,
Cleveland, Ohio.

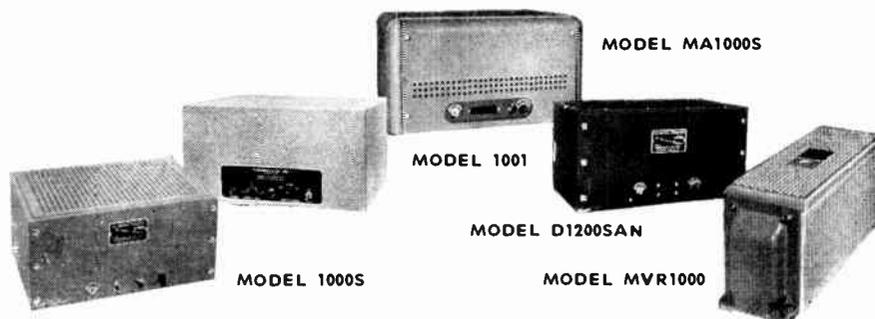
Weller Manufacturing Co., Easton, Pa.

Sinclair Radio Laboratories Ltd.,
70 Sheffield St., Toronto 17, Ontario.

Smallwood Ltd., S. G., 397 King St. E.,
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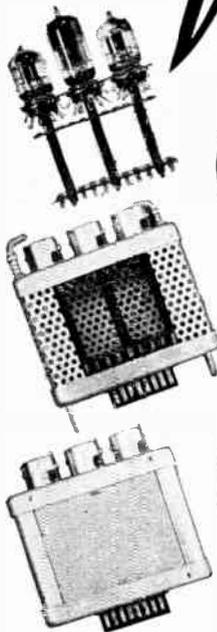
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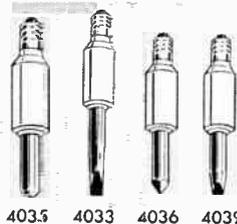
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Advance Components Ltd.,
Hainault, England.
S. G. Brown Ltd., Watford, England.
D. & R. Ltd., Santa Barbara, Cal.
ElectroSonic Laboratories, Long Island
City, N.Y.
International Scientific Industries Corp.,
Colorado Springs, Col.
Lumalampan AB, Stockholm, Sweden.
Luxor Radio Aktiebolag, Motala, Sweden.
Phalo Plastics Corp., Worcester, Mass.
Reslosound Ltd., Romford, England.
Stability Radio Components Ltd.,
London, England.
Suflex Ltd., London, England.
Tokyo Tele-Tech Ltd., Tokyo, Japan.
Wharfedale Wireless Works Ltd.,
Bradford, England.
Zeva Elektricitats-Ges., Arolsen,
Germany.

Snelgrove Co. Ltd., C. R., P.O. Box 10,
Postal Station "R", Toronto 17, Ontario.

Sola Electric (Canada) Ltd.,
102 Laird Drive, Toronto 17, Ontario.
Representing:
Sola Electric Co., Chicago, Ill.

Soundmaster Equipments, 256 Kent St.,
Ottawa, Ontario.

Speight Laboratories, N. H.,
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Representing:
Winegard Co., Burlington, Iowa.
Resistor Wholesalers Corp., New York, N.Y.

Sperry Gyroscope Ottawa Ltd.,
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Representing:
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Wheeler Insulated Wire Co. Inc.,
Waterbury, Conn.

Spotton Co. Ltd., John, 21 Carson St.,
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Montreal 12, Que. Representing:
All associated companies of International
Telephone & Telegraph Corp.,
New York, N.Y.

Stanwyck Coil Products Ltd., 17 Laurier St.,
Box 1049, Hawkesbury, Ont. Representing:
Stanwyck Winding Co., Newburgh, N.Y.

Star Expansion Products Co.,
1061 The Queensway, Toronto 14, Ont.

Stark Electronic Instruments Ltd.,
P.O. Box 240, Ajax, Ont. Representing:
Hickok Electrical Instrument Co.,
10514 Dupont Ave., Cleveland 8, Ohio.

Syntron (Canada) Ltd., Dept. "K",
12 Main St. E., P.O. Box 910,
Stoney Creek, Ontario. Representing:
Syntron Co., Homer City, Pa.

Taylor Electric Co. Ltd., 625 Princess Ave.,
London, Ontario.

Telecables & Wires Ltd., Fort Garry, Man.

Telephone Manufacturing Co. Ltd.,
26 Duncan St., Toronto, Ontario.
Representing:
Telephone Manufacturing Co. Ltd.,
London, England.

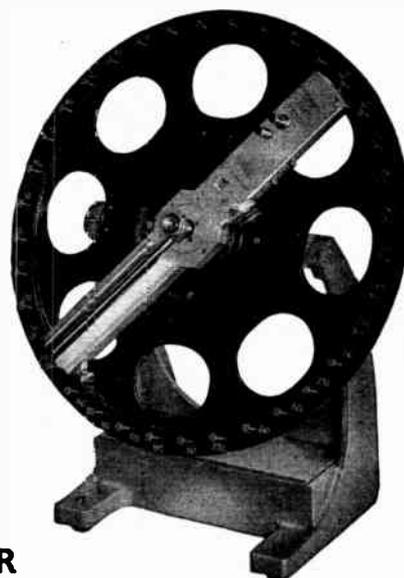
Tequipment Mfg. Co. Ltd.,
729 Dundas St., Box 844, London, Ontario.
Representing:
Blonder-Tongue Labs. Inc., Westfield, N.J.
Ram Electronics Sales Co.,
Irvington-on-Hudson, N.Y.
James Vibrapower Co., Chicago, Ill.
Radio Kits Inc., New York, N.Y.
Acro Products Co., Philadelphia, Pa.
Beaver Labs. Inc., Hollis, N.Y.
Electronic Test Instrument Corp.,
Detroit, Mich.
Karson Associates Inc., Brooklyn, N.Y.

Tenatronics Ltd., Davis Drive East,
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Gramer-Halldorson Transformer Corp.,
Chicago, Ill.
Mastra Co., Cleveland, Ohio.
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VOLUME ELEVEN NUMBER ONE

JANUARY 1957

234-3

The January 1957 issue of **TECHNIQUE** commences volume eleven of our Journal of instrument engineering, and includes the following articles:—

“The New Portable Picture Transmitter (D-770).”

“The Use of Magclips in the Recording of Infra-red Absorption Spectra.”

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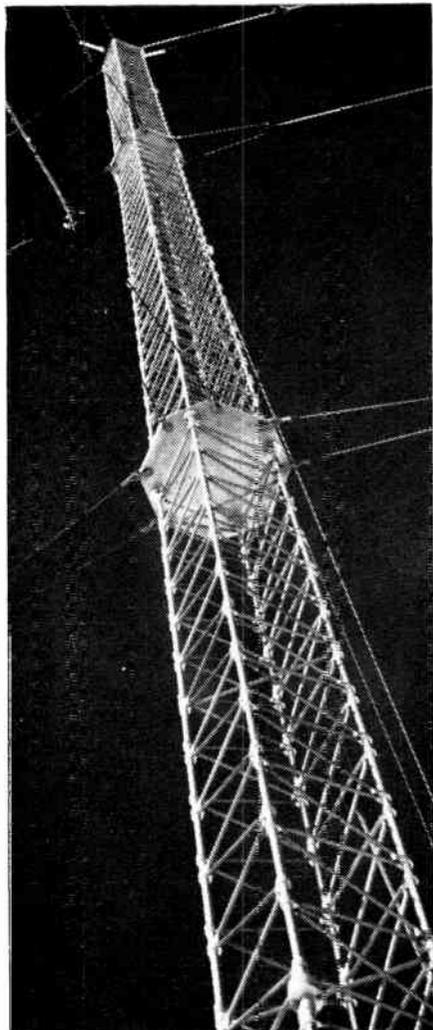
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Canadian Westinghouse Co. Ltd., Electronics Division, Hamilton, Ont.	1326	Pointon Ltd., Charles W., Toronto, Ont.	1334
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Electric Chain Co. of Canada, Ltd., The, Toronto, Ont.	1370	Sonotone, Elmsford, N.Y.	1392
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		Electrovox Co. Inc., 60 Franklin St., East Orange, N.J.	
		Geerz Gebr., Deichstrasse 29, Hamburg 11, Germany.	
		Johnson Electronics Inc., P.O. Box 6637, Orlando, Fla.	
		JFD Manufacturing Co. Inc., 6101-16th Ave., Ave., Brooklyn 4, N.Y.	
		Mosley Electronics Inc., 8622 St. Charles Rock Rd., St. Louis 14, Mo.	
		Sprague Electric Int. Ltd., P.O. Box 73, North Adams, Mass.	
		Standard Television Products, 108 Sydney St., Kitchener, Ont.	
		University Loudspeakers Inc., 80 South Kensico Ave., White Plains, N.Y.	
		York Woodcraft Ltd., New Hamburg, Ont.	
		Tinsley & Co. Ltd., II., 234 Ste. Paule Ave., St. Jerome, Que.	
		Titania Electric Corp. of Canada Ltd., 234 Dundas St., Trenton, Ontario.	
		TMC (Canada) Ltd., P.O. Box 1006, Billings Bridge, Ottawa, Ontario.	
		Representing: The Technical Material Corp., Mamaroneck, N.Y.	
		Tudhope Specialties Ltd., Orillia, Ontario.	
		United-Carr Fastener Co. of Canada Ltd., Gage Ave. North, Hamilton, Ontario.	
		Representing: Cinch Mfg. Co., Chicago, Ill.	
		Ucinite Co., Newtonville, Mass.	
		United Shoe Machinery Co. of Canada Ltd., 2610 Bennett St., Montreal, Que.	
		Universal Speaker Service, 668 Amette St., Toronto, Ontario.	
		Universal Wire & Cable Co. Ltd., The, 2155 Moreau St., Montreal 4, Que.	
		Varian Associates of Canada Ltd., 45 River Drive, Georgetown, Ontario.	
		Representing: Varian Associates, 611 Hansen Way, Palo Alto, Cal.	
		John Fluke Mfg. Co. Inc., 1111 W. Nickerson St., Seattle 99, Wash.	
		Veeder-Root, Ltd., 955 St. James St., Montreal 3, Que.	
		Ward Leonard of Canada Ltd., 1070 Birchmount Rd., Box 70, O'Connor Postal Station, Toronto 16, Ontario.	
		Representing: Barkeley Electric Mfg. Co., Middletown, Ohio.	
		Electro Switch Corp., Weymouth, Mass.	
		Esterline-Angus Co. Inc., Indianapolis, Ind.	
		Kenco Pump Div. of American Crucible Products Co., Lorain, Ohio.	
		S.A.F.T. Accumulateurs, Romainville (Seine), France.	
		J. G. Statter Co. Ltd., London, England	
		Sensitive Research Instrument Corp., New Rochelle, N.Y.	
		Waterloo Metal Stampings Ltd., 3 Regina St. N., Waterloo, Ontario.	
		Welwyn Canada Ltd., 1255 Brydges St., London, Ontario.	
		White Radio Ltd., P.O. Box 463, Hamilton, Ont.	
		Representing: Hammarlund Mfg. Co., New York, N.Y.	
		Belden Mfg Co., Chicago, Ill.	
		Hugh H. Eby Co., Philadelphia, Pa.	
		Mark Simpson Co., Long Island City, N.Y.	
		Rutherford Agencies, Montreal, Que. (For Ontario only).	
		Wicket Ltd., Bradford J., 2792 Yonge St., Toronto 12, Ontario.	
		Wickman Ltd., A. C., P.O. Box 9, Station "N", Toronto 14, Ontario.	
		Representing: Brush Electronics Co., 3405 Perkins Ave., Cleveland 14, Ohio.	
		Willard Storage Battery Co. of Canada Ltd., 269 Campbell Ave., Toronto, Ontario.	
		Wind Turbine Co. of Canada Ltd., The, 51 McCormack St., Toronto 9, Ontario.	
		Wolf Electric Tools Ltd., 2271 Bloor St. W., Toronto, Ontario.	
		Representing: Canadian Trade Corp. Ltd., Montreal, Que.	
		Swann & Millar of Canada Ltd., Vancouver, B.C.	
		E. A. Tipping, Winnipeg, Man.	
		Wright Electronics of Canada Ltd., W. Gary, 628 Kent St., Whitby, Ont.	
		X-Ray & Radium Industries Ltd., 261 Davenport Rd., Toronto, Ontario.	
		Representing: Westinghouse Electric International Co. Sanborn Co., Cambridge, Mass.	
		Siemens-Reiniger Werke A. G., Erlangen, Germany.	
		Offner Electronics Inc., Chicago, Ill.	
		Potter Aeronautical Co., Union, N.J.	
		Mitchell Radiation Corp., Norristown, Pa.	
		N.R.D. Instrument Co., St. Louis, Mo.	
		Machlett Laboratories, Springdale, Conn.	
		Liebel-Flarsheim Co., Cincinnati, Ohio.	
		York Woodcraft Ltd., New Hamburg, Ontario.	

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- LOW ERECTION COSTS
- FREEDOM FROM MAINTENANCE
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FOR COMMUNICATIONS**

Send Specifications for Quotations to:

**MILLARD
ELECTRIC LIMITED**

DUFFERIN STREET
PERTH, ONTARIO
CANADA

NEWS

(Continued from page 180)

S. D. Brownlee Urges Removal Of Color TV Roadblock

Speaking recently at the Ottawa district sales meeting of the Ontario Association of Radio, Television and Appliance Dealers, Stuart D. Brownlee, executive vice-president of Canadian Admiral Corporation, Ltd., urged that every dealer do his utmost to remove the roadblock that is holding up the telecasting of U.S. network color shows in Canada.

"Obviously there must be color pro-

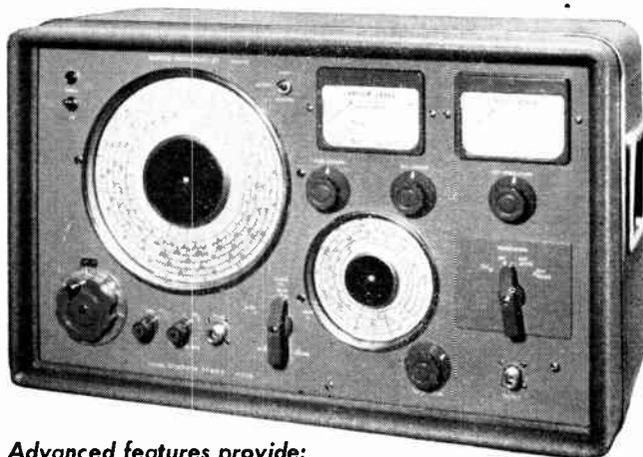
gramming before you can sell color television to your customers," said Mr. Brownlee. He continued: "It is fundamental that when you are selling a product that requires some outside service to enable it to render the usefulness for which it was designed, that outside service must be there before you can get volume sales for the product at any price."

Mr. Brownlee told his audience that color television is ready for the Canadian public and that at least one of the independent TV stations in Canada has its color telecasting equipment, but has to await clarification of its TV license by those in control of Canadian broadcasting policy.

(Turn to page 194)

Marconi

offers a **NEW**
SIGNAL GENERATOR



Advanced features provide:

- greatly increased oscillator tube life
- freedom from variable r.f. contact resistance.

The Marconi TF-801B Signal Generator covers the frequency range 10 to 500 Mc s with a source impedance of 50 ohms and output continuously variable from 0.1 μ V to 2V.

The hand calibrated main tuning dial and auxiliary vernier dial allow fast and accurate reading, precise and easy interpolation for bandwidth measurements.

To give freedom from the variable properties of r.f. contact resistance *contactless* wave band selection is employed.

A NORMAL/HIGH output switch on the front panel enables oscillator tube life to be considerably prolonged since the tube is under-run in the NORMAL position and the HIGH position is used only when maximum or near-maximum output is needed.

The above are just a few of the many features of the Marconi TF-801B Signal Generator — write or wire today for the complete specification.

Marconi



Canada's
Largest
Electronic
Specialists

CANADIAN MARCONI COMPANY
MONTREAL 16

NEWS

(Continued from page 193)

Burroughs Appoints Regional Rep. In Ottawa

Wilfred Z. Charbonneau has been appointed regional dealer sales representative for Burroughs Adding Machine of Canada, Ltd., J. L. Rapmund, general manager, announced recently.

He will serve Burroughs dealers in Eastern Canada.

Charbonneau joined Burroughs in 1945 at the Ottawa branch and became a sales representative in 1947.

Aviation Electric Appoints Advertising Manager

A. Bandi, president of Aviation Electric Limited, recently announced the appointment of Jack H. Crisp as advertising manager of the company.

Mr. Crisp was educated in Britain, served with the Royal Air Force and, since his release in 1946, has directed his efforts to technical and industrial advertising.

In Canada, Mr. Crisp has served as advertising manager of Becpo Canada Limited, Montreal, and for Cables, Conduits and Fittings Ltd. in St. Johns, Que.

C.E.W.A. Announces New Appointments

John Dunn, president of Canadian Electronic Wholesalers' Association, recently announced the appointment of John T. Rochford to the office of national secretary-treasurer with headquarters in Toronto at 25 Taylor Drive, Toronto 6.

Mr. Rochford is well and favorably known to the radio-electronic industry throughout Canada. For over 25 years he was associated with the radio trade press, latterly as business manager of Radio TV Appliance Trade Builder, from which position he resigned to take up his new duties.



J. T. ROCHFORD

A further announcement from the association is to the effect that O. L. Bell, of the Big "A" Company Limited, Belleville, Ontario, has been elected to the directorate of the organization.

Toronto Section, IRE Hold December Meeting

A meeting of the Toronto section of the Institute of Radio Engineers was held on December 10, 1956, at the Electrical Building, University of Toronto.

Dr. A. G. McNamara of the National Research Council was the guest speaker and he took as his subject "V.H.F. Propagation Via the Aurora and Sporadic E."

Dr. McNamara discussed the method of measuring upper atmospheric processes by the use of V.H.F. propagation, as well as the study of V.H.F. propagation in itself. Characteristics of both modes were discussed and continuous auroral radar measurements made in Ottawa since 1955 were illustrated, especially in their relation to solar activity.

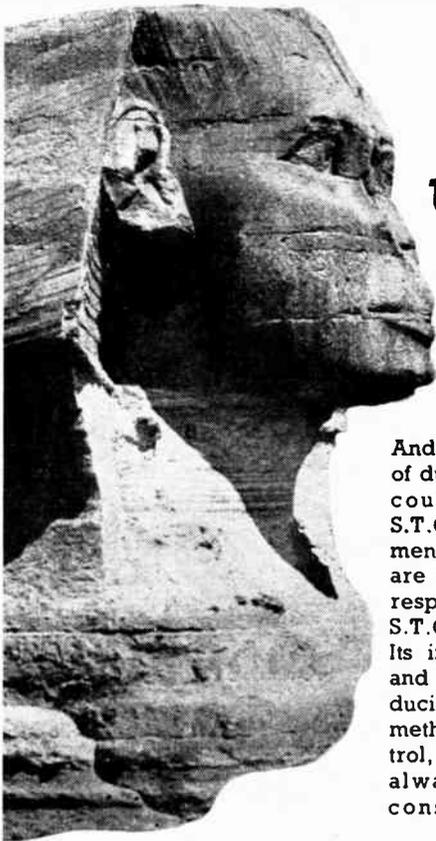
Acro Mfg. Co. Appoints Canadian Rep.

The Acro Manufacturing Company, Columbus 16, Ohio, recently announced the appointment of Eric Denman as its Canadian representative for Acro precision switches and crane controls. Mr. Denman, a native of Toronto, was formerly a sales engineer for the Barber-Colman Company.



ERIC DENMAN

His office will be located at 1290 Eglinton Ave. West, Toronto, Ontario.



The Great Sphinx

Largest of all the Sphinxes, The Great Sphinx at Giza, near Cairo, is undoubtedly the most famous. Its origin is shrouded in mystery, although it is known to be so old that in these modern times it has become a symbol of durability.

And in this matter of durability the Sphinx could almost symbolize S.T.C., whose systems and equipments for communications and control are a by-word amongst those whose responsibility it is to plan for the future. S.T.C. is a world wide organisation. Its immense resources for research and manufacture are constantly producing new and yet more efficient methods of communication and control, and its engineers are always available for consultation.

Standard communication and control systems

- Telephone
- Telegraph
- Teletypewriter
- Radio Broadcasting
- Radio Communication
- Radio Navigation
- Sound Reproduction
- Remote Control
- Remote Indication
- Telemetering
- Railway Communication..
- Railway Control
- Power Cable
- Communication Cable
- Airfield Lighting Control
- Street Lighting Control
- Fire Alarm
- Totalisator
- Public Indicator
- Signalling (Office & Factory)



Standard Telephones & Cables Mfg. Co. (Canada) Ltd.

9600 ST. LAWRENCE BLVD., MONTREAL

For further data on advertised products use page 181.

2,000
electronic wire items
IN STOCK!

Send for **FREE**
Complete Catalog
ECBG

ELECTRONIC WIRE

- High Temperature Wire
- Sub-Miniature Wire
- MIL-W-5086 Aircraft Wire
- MIL-C-7078 Aircraft Wire
- MIL-W-16878B Hook-up Wire

- Type B
- Type C
- Type D
- Type E Teflon Insulation

MIL-W-76A Hook-up Wire

- Type LW
- Type MW
- Type HW
- Type MW Glass Braid
- Type MW Nylon Jacket
- Type MW Shielded

Antenna Wire

- RG-Coaxial Cable
- Rubber Sheathed Service Cord
- Tinned Copper Shielding & Bonding Bus-Bar
- Tinned Copper Wire
- Test Lead Wire
- Hi-Voltage Wire
- Shielded Microphone
- Shielded Multi-Conductor Cable
- Shielded Speaker Cable
- Multi-Conductor Flexible

INSULATING TUBING AND SLEEVING

- PVC-105 Plastic Tubing per Spec. MIL-I-631B, ASTM-D876, ASTM-D922
- PVC-744 Plastic Tubing per Spec. MIL-I-7444A
- PIF-130 Plastic Impregnated Fiberglass Tubing per Spec. MIL-I-3190, NEMA-VS1, ASTM-D372
- TFN-250 Teflon Tubing
- SRF-200 Silicone Rubber Coated Fiberglass Tubing
- SFS-400 Silicone Impregnated Fiberglass Sleeveing
- HTF-1200 High Temperature Fiberglass Sleeveing
- PVC-60 Low Temperature Plastic Tubing
- PLE-70 Polyethylene Tubing
- VTS-135 Varnish Impregnated Tubing & Sleeveing

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 for over 35 years

ALPHA WIRE

CORPORATION

200 varick street,
 new york 14, n. y.

**Resources Experts To Head
 Technical And Exploration
 Services**

An impressive array of executive and engineering talent has been announced to head the various specialized divisions of the newly-formed Hunting Technical and Exploration Services Limited, of Toronto.

The President is Douglas N. Kendall, founder and operating head of the



D. N. KENDALL

various Hunting companies in Canada. The General Manager is W. Harry Godfrey, who has been with the associate company, The Photographic Survey Corporation, since it started in Canada 10 years ago, and

who is now General Manager of PSC as well.

Directors of the new company in addition to Messrs. Kendall and Godfrey are as follows:

John Henderson, a zoologist, to be Projects Administrator; H. S. Scott, to be Technical Director; Dr. D. A. Macdonald, until recently Director of the Forestry Branch, Department of Northern Affairs and National Resources, Ottawa.

J. B. McClusky, geologist, will be Special Projects Engineer.

Under Project Administrator Henderson and his Assistant, George Higgins, are the following divisional chiefs: Donald S. Lueder, General Engineering; Victor Merritt, Forestry; Dr. Norman Paterson, Geophysics; Robert Parkinson, Geology; Richard Hodges, Agriculture and Land Use; John Jenkins, Planning and Economic Studies.

**Bendix Products And
 Service Facilities
 Through CDC**

The Bendix Aviation Corporation (Pacific Division) has announced that, through its recently consummated association with Computing Devices of Canada, in Ottawa, Ontario, complete sales, engineering and service for Bendix-Pacific Electro-Span Digital Remote Control and telemetering equipment are now available in Canada.

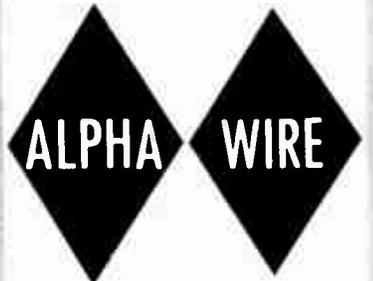
Complete systems, components and sub-assemblies have been produced to increase to a greater extent the efficiency of various segments of Canada's industries through remote control, telemetering and data logging and handling systems.

F. Wallis White, assistant sales manager, Computing Devices of Canada Limited, will be in charge of technical assistance and customer information.

(Turn to page 196)

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CANADIE

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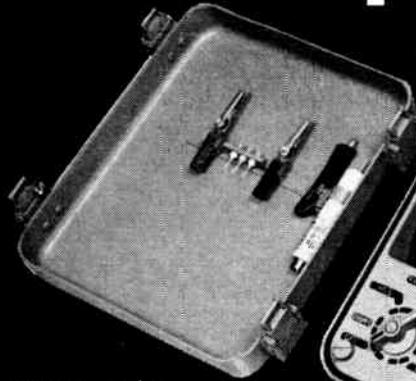
electronic wire items
IN STOCK!
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**ALPHA
 ARACON
 RADIO**

29 Adelaide St. W.
 Toronto 1, Ontario

Write for **FREE** catalog **ECBG**

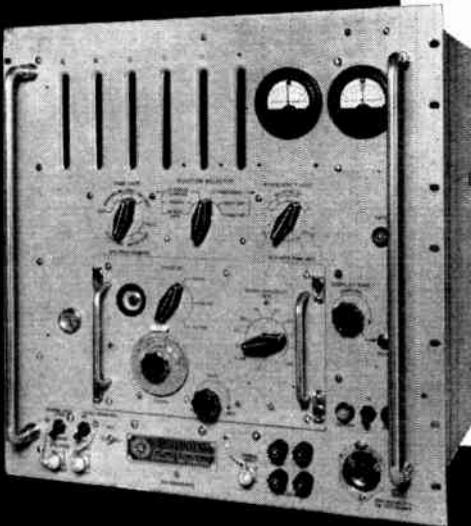
military test equipment



**TS-505 B/U
MULTIMETER**



**AC volts 0-150
DC volts 0-1000
DC res. 0-1000 megs
RF up to 500 mc**



**AN/UPM-33
SPECTRUM
ANALYZER
8470 to 9630 mc**

**AN/USM-26
FREQUENCY
COUNTER
10 cps to 220 mc**



northeastern engineering

Manchester

New Hampshire



NEWS

(Continued from page 195)

Centralab Gives Promotion To Walter E. Peek

Walter E. Peek was appointed November 1st as general sales manager of Centralab, a division of Globe Union Inc. The announcement was made recently by W. S. Parsons, president.

Mr. Peek has been with Centralab since January, 1953 as sales manager



W. E. PEEK

of electronic mechanical products. His new assignment covers all products: variable resistors, wave switches, packaged electronic circuits, semi conductors, piezo ceramics, special ceramics, ceramic capacitors, distributor and export sales.

Prior to his employment with Centralab, Mr. Peek had a background of 20 years in the electronics industry.

Dawe Instruments Ltd. Extends Lines

Dawe Instruments Ltd. of Ottawa, Ontario, has recently announced its appointment as Canadian representative for a British line of silvered mica and ceramic capacitors.

Norman J. Valin Joins Minnesota Mining

Norman J. Valin has been appointed sales representative for "Scotch"



N. J. VALIN

Brand Magnetic Products by Minnesota Mining and Manufacturing of Canada Limited. The announcement was made by R. T. Todd, general sales manager, electrical products.

As sales representative, Mr. Valin will be serving the dealer, distributor, and professional users of Magnetic Products in Central Ontario. He will be headquartered in Toronto.

Norman Valin has been actively associated with Magnetic Products in Canada and the United States for seven years. He brings to 3M a background of experience gained from his association with these products in a number of capacities in Canada and the United States.

For further data on advertised products use page 181.

J. Bruce Elder Represents General Ultrasonics Co.

The General Ultrasonics Company of Hartford, Connecticut, recently announced the appointment of J. Bruce Elder as engineering and sales representative in the Provinces of Ontario and Quebec.



J. BRUCE ELDER

Mr. Elder, a graduate in electrical engineering from The University of Toronto, was formerly associated with The Canadian Westinghouse Company. He will cover the Ontario and Quebec area for the application of his new connection's ultrasonic processing equipment in the fields of metals cleaning and degreasing, pickling, electroplating, and for research development purposes.

Mr. Elder has established offices at 2 Robert Street, Burlington, Ontario.

Canadian Westinghouse Appoints Chief Engineer

The appointment of H. N. Muller as chief engineer for the Canadian Westinghouse Company is announced by George L. Wilcox, president.

Mr. Wilcox said that Mr. Muller, former engineering executive for the Westinghouse Electric Corporation, Pittsburgh, will take charge of all headquarters engineering activity at Hamilton and coordinate engineering operations among the firm's numerous plants and divisions elsewhere.

Peder W. Larsen To Manage PSC Ottawa Office

Peder W. Larsen, well known in the aircraft and electronics industry, has been appointed manager of government projects of PSC Applied Research Ltd. He will be in charge of the Toronto company's new Ottawa office in the Roxborough Building.



P. W. LARSEN

All of PSC Applied Research Limited's Ottawa business will be conducted through Mr. Larsen. One of the largest items is the Toronto company's multi-million dollar contract with the Department of Defense Production to produce R-Theta Navigation and Interception Computers for the RCAF CF-100 fighters. The new Ottawa office will be in direct contact with the Toronto headquarters by teletype.

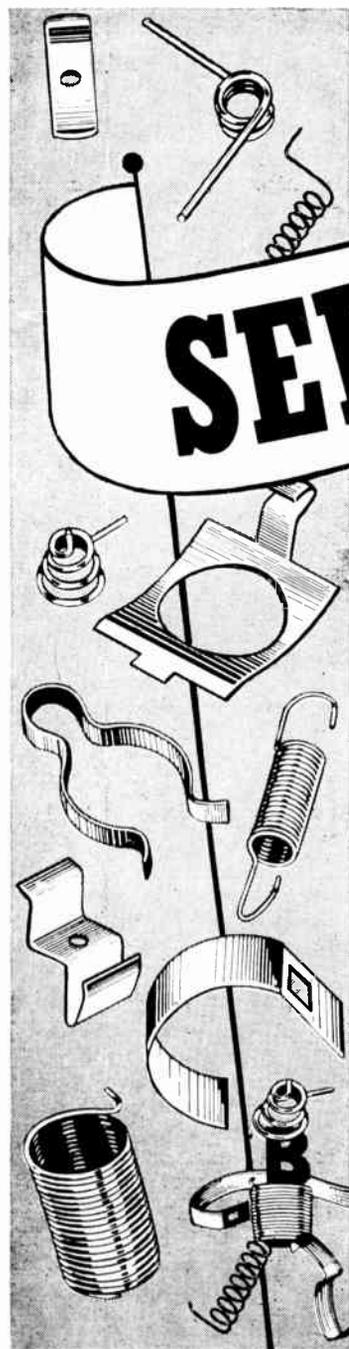
Atlas Radio Manufactures For Ward Products

Ward Products Corporation, well known manufacturers of automotive, television and communication antennas, have concluded arrangements with Atlas Radio Corporation of 50 Wingold Avenue, Toronto, Ontario, whereby Atlas will manufacture in their Toronto plant all of the products of the first-named corporation.

Model TV355 Invader, claimed to be the best all channel antenna yet made, is coming off the Atlas assembly lines and is available for immediate delivery.

Standard Telephones And Cables Enter Transformer Field

A broad range of standard and custom made transformers in the low VA groups for electronics and telecommunications application is now being manufactured by Standard Telephones and Cables Mfg. Co. (Canada) Ltd., Montreal, it is announced by F. Tomlinson, vice-president of the company. The new division of STC has been established to supply demands by Canada's constantly expanding industrial economy.



When you buy
SPRINGS

SERVICE

COUNTS

As well as the general headings covered by "SERVICE" such as delivery on schedule, modern manufacturing facilities, etc., Bohne Industries offer their customers Special Precision Spring Machinery Experience—gained over the years. You can benefit from this experience—send your specifications, blueprint or sample for quotation.

BOHNE

BOHNE INDUSTRIES LIMITED
1153 QUEEN ST. W. • TORONTO 3

Product Information Section — Cont'd from page 162

FM/AM Signal Generator TF 1066

Item 1377

FM/AM Signal Generator TF 1066 with frequency cover of 10 to 470 Mc/s is designed primarily to provide a frequency-modulated signal source for all existing communications bands and also has application in VHF broadcast and TV fields. Deviation is variable from 0 to 100 Kc/s in two ranges of 0-20 and 0-100 Kc/s. An



important feature is the directly calibrated incremental tuning system whereby small known changes of frequency may be made regardless of the carrier frequency. A "premium" model TF 1066/1 having certain additional features is also available.

Canadian Marconi Company, P. O. Box 1480, Station "O", St. Laurent, Que.

Metrawatt High Voltage Insulation Tester

Item 1378

The METRAWATT Insulation Tester model J2500 offers three voltages for testing purposes. The choice of voltage permits a careful analysis of the quality of the insulation to be made, something not possible with a single range instrument. Furthermore, the availability of the higher voltage allows a realistic voltage test to be supplied.

For example, a 115 AC motor should be tested at twice rated plus 100 volts A.C. This is equivalent to 1230 Volts A.C. or equivalent to between 2000 and 2500 Volts D.C.

The J2500 will make this D.C. test at 2500 Volts, 1250 Volts and 625 Volts without hazard.

This instrument is inexpensive, light, small, rugged and very easy to operate. It can be supplied from Montreal stock.

For full details and information on other ranges of Metrawatt Insulation Tester, please write to Canadian representatives,

ELECTRODESIGN, 736 Notre Dame St. West, Montreal.

Frequency Response Recorder

Item 1379

The Sound Apparatus Company of Stirling, New Jersey has available a new frequency response recorder, Model SL-4, for electrical and electroacoustical measurements. This recorder utilizes an electrodynamic system for the operation of a stylus or pen. Its features include electronically controlled variable writing speed and electronic damping of the pen movement.

The instrument records on a 4-in.-wide chart at chart speeds of 4½ in., 9 in., and 18 in. per minute, speed selection being lever-controlled. A number of types of input potentiometers are available for recording with a variety of scale functions including decibel, linear, square root, and phon. The SL-4 is designed for rack mounting and is 10½ by 19 by 12 in. It may be linked conveniently to various oscillators, analyzers, and other instruments with standard link-



ages available for the most widely used beat-frequency oscillators and wave analyzers. Special units and corresponding calibrated charts can be designed to order. For further technical information and specifications, write:

Sound Apparatus Company, Stirling, New Jersey.

TV Antenna Installation Equipment Wiring Accessories And Components

Item 1380

Mini and Standard wall plates in Sierra or Uniline design of Nat. Elec. Mfrs. Assoc. meet REA and Federal Specs. W-R-151a and Canadian, in single, double, triple, 4 wire rotator, AC-TV combinations, 6, 8, 9 and 10 wire, and for switching. Isolators for 2 or more (up to 100) TV's from one antenna. Connectors, crystal sockets, probes, plugs (caps), splicers and terminal sockets.

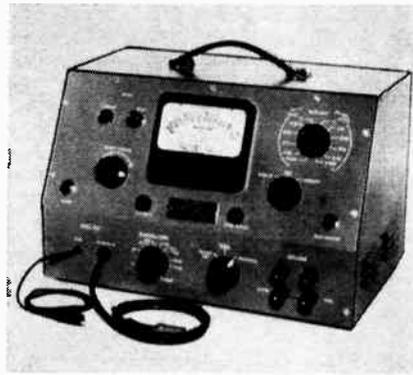
Brand names: Javex, Tenna-Tube, Tenna-Shingle, Mini-Plate, Mini-Socket, Mini-Isolator.
Contact Atlas Radio Corp. Ltd., 50 Wingold Ave., Toronto, Canada.

Six New, 2-In-1 "Megpots"

Item 1381

Ability to pre-set both current and voltage limits for rapid, non-destructive dielectric testing and insulation resistance measurements, are features of six, new "MEGPOTS" now available from General Hermetic Sealing Corporation.

Unique "sensing" automatically



limits current for non-destructive insulation testing in infinitely-variable voltage ranges of 3,000, 5,000 or 10,000 v AC. Meter, visual and audible indicators signal excessive "leakage" or breakdown with circuit opening automatically to protect equipment and operator. Re-set feature restores pre-set current and voltage limits instantly. Megohm section has comparable safeguards, provides regulated 100, 200 or 500 v DC with .5-2,000,000 or 1-4,000,000 or 2.5-10,000,000 megohm ranges respectively. At "charge" position, high resistance tests take less than 1 minute, with 3% accuracy obtained on all standard tests.

Full details on all "Megpots" from: Hermetronics Division, General Hermetic Sealing Corporation, 99 Hawthorne Ave., Valley Stream, N.Y., Phone: VA. 5-6363.

Superior Red Iron Oxides For Ferrite Electronic Components

Item 1382

Mapico Red Iron Oxides provide the maker of top-quality Ferrite components with high purity raw materials of reagent quality. Their carefully controlled particular size and shape contribute to effective control of packing and shrinking. Successfully used for many years in commercial production.

Highly modern manufacturing processes under rigid laboratory control assure uniformity and dependability. Ask us for full technical information. Our Technical Service Department is ready to give you the full benefit of its experience and will gladly co-operate in the solution of any problem.

Columbian Carbon Co. (Canada) Ltd., Mapico Color Unit, 33 Edward Street, Toronto, Canadian Distributor.

Terminal Blocks

Item 1383

Terminal blocks made of light-weight, flexible polyethylene, they are specially molded to provide 12-post terminals. Any number of posts can be cut from the block with a pocket-knife, and between each section are



installation bolt holes. Equipped with rustproof brass binding screws held in deeply molded cups. Voltage rating — 500 volts; dielectric strength — 2.5KV/mil.

X-ray and Radium Industries Limited, 261 Davenport Road, Toronto, Ont.

Expandable Cable

Item 1384

These cables will stretch over twice their normal contracted length and may be obtained in any length. Their capacity is 1.5 amps continuous or 2



amps for 30 minutes at 60 cycle. Insulated for 800 volts AC or DC between conductors. Supplied with 1 to 6 conductors per cable and a variety of terminals, jacks, clips, etc. X-ray and Radium Industries Limited, 261 Davenport Road, Toronto, Ont.

AMP Capatron Wafer Capacitors, High Voltage

Item 1385

For use especially in oil-filled hermetically sealed assemblies or in resin encapsulated units. For circuits operating at 1000 volts or more. Offer minimum size, lowest weight, high reliability. Now in wide use in high voltage pulse and d-c applications. Made of Amplifilm, a stable high temperature, low loss semi-inorganic dielectric. Catalog listing and price sheet available from:

Aircraft-Marine Products of Canada Ltd., 1764 Avenue Road, Toronto 12, Ont., Canada.

Heterodyne Voltmeter

Item 1386

The Bruel & Kjaer Type 2002, now stocked in Canada, is a selective meter for measurement of A.C. voltages in the high frequency range. Only the tuned signal is measured, all other frequencies being rejected. The high sensitivity is particularly useful for measurements on receivers, carrier systems, aeriels and similar applications. Highlight specifications are:

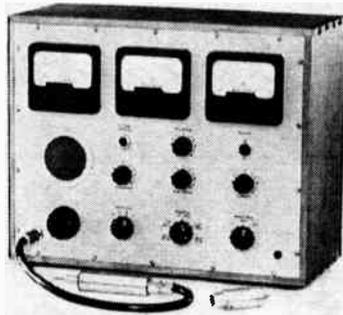
Frequency range: 20 Kc/s to 30 Megacycles/s

Voltage Range: 15 microvolts to 15 volts FSD.

Bandwidth: Minus 3DB at 3.5 Kc — Minus 80 DB at 25 Kc

Input impedance: 5 Megohms and 12 uuF.

Modulation Meter: 2 ranges, 0-30% and 0-100%



Noise level: approx. 3 microvolts.

A precision voltage reference of 1 millivolt at 100 Kc is built-in for checking calibration. A loudspeaker is built in for monitoring signal.

For further details contact:
R-O-R Associates Ltd., 290 Lawrence Avenue W., Toronto 12.

Boesch Offers New Catalog To Toroidal Winding Industry

Item 1387

Boesch Manufacturing Co., Inc. of Danbury, Conn., manufacturers of toroidal, tape and bobbin winding machines announces publication of a new 6-page catalog. This new catalog quickly pin points features and adaptable accessories for all Boesch winders: Fully-Automatic, Semi-Automatic and Subminiature toroidal coil winding machines, Bobbin Winder and Tape Winder plus shuttle and slider chart.

Shuttle interchangeability, high winding speeds, dependability, long work life, easy set-up or change-over and the unique adaptability offered by all Boesch winding machinery distinguishes these as the world's most capable winders. Because of features which eliminate operator variations, Boesch machinery winds consistently uniform and tight toroids — helps reduce your production costs. For catalog 57A write to:

Bayly Engineering Limited, First St., Ajax, Ontario or Boesch Manufacturing Co., Danbury, Connecticut.

Pressure And Angular Position Transducers

Item 1388

The Ultradyne Model S-3 Pressure Transducer is a variable reluctance type unit in which a diaphragm is clamped securely between two gage case halves. The model S-3 is especially suited for making transient pressure measurements in which fast rise time or high frequency response is required.

Ultradyne's Angular Position Transducer measures rotation by means of a new principle on which a patent is pending. Rotation of a magnetic rotor varies the amount of ferro-magnetic material in the fixed air gap. This rotor is specially shaped so the change in magnetic reluctance will vary the frequency of an oscillator in a linear manner.

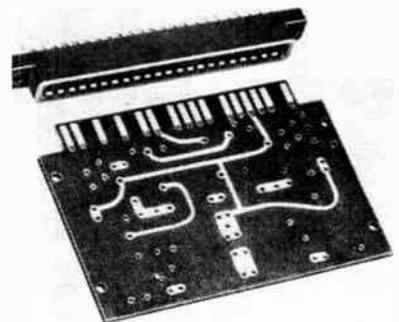
For complete details write or call: Ultradyne Engineering Labs Inc., P.O. Box 3308, Phone 82431, Albuquerque, N.M.

To obtain further information on the product write-ups in this section use the post card coupon on page 181

Printed Circuit Receptacles For Up To 56 Connections

Item 1389

Providing a positive, space-saving connection between printed circuitry and conventional wiring, an expanded line of printed circuit receptacles is designed for $\frac{1}{16}$, $\frac{3}{32}$, and $\frac{1}{8}$ " printed circuit boards. Included in the series are types with 6, 10, 15, 18, 22 and 28 contacts in single or dual rows to accommodate up to 56 connections.



An outstanding feature of these connectors is the "bellows-action" contacts for extra durability and reduction in board tolerance problems.

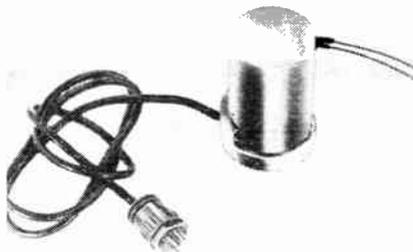
Among the types described in a 12 page brochure are those designed primarily for computer applications and for wire wrap solderless connection.

DeJUR-Amsco Corporation, Dept. EC, 45-01 Northern Blvd., Long Island City 1, New York, Canadian Representative: Atlas Radio Corp. Ltd., 50 Wingold Ave., Toronto.

Radar Transmitter Components

Item 1390

Now obtainable are pre-engineered and pre-assembled radar transmitter components, which when installed in their systems, will furnish outputs to meet reasonable performance requirements of any specific radar system employing a hydrogen thyratron tube. Put out by the Filtron Co. Inc., Flushing, L.I., N.Y., and represented in Canada by AIRCRAFT APPLIANCES & EQUIPMENT LTD., 585 Dixon Side Rd., Toronto 15, these Packages are known as: High Power Pulse Package which is built around the charging choke, pulse-forming network and pulse transformer of the linetype modulator; and the Trigger Pulse Package containing components schematically similar to the above, but designed to generate pulses of the required power and impedance to



sensitivities from 10 mv per g per volt input to 100 mv per g per volt input. Additional specifications include hysteresis of less than 0.25%, output impedance of 1900 ohms at 400 c.p.s. and a weight of 3 ounces. For further information write:

L. C. Oakley, Engineering Sales Manager, Gulton Industries, 212 Durham Avenue, Metuchen, N.J.

Listening Pleasure Scales New Heights With Sonotone's Latest Ceramic Cartridges

Item 1392

The ultimate in hi-fi enjoyment of records has been reached through Sonotone's development of its new "3" Series of ceramic phonographic cartridges. This series establishes the highest standards for phonograph cartridge performance. The cartridge shown in this picture is the "3T," the popular Sonotone turnover type, which plays records of all speeds.



Diamond needles are recommended to insure the full benefits of the outstanding performance characteristics of these cartridges, but they are also available with sapphire needles. The attractive color scheme is jet black and rich gold. Because these are Sonotone ceramic cartridges, equalizers and preamplifiers are not needed.

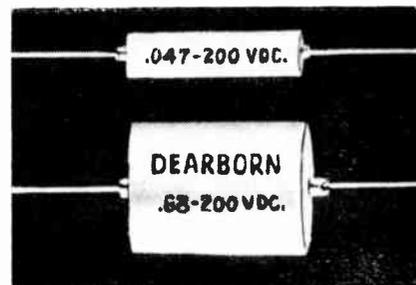
Sonotone, Elmsford, N.Y. Canadian representative, Atlas Radio Corp., Toronto.

Self-Healing Metallized Film Capacitor

Item 1393

A new principle of self-healing, employed for the first time in this type of capacitor, is responsible for unusually high reliability, and materials and methods used produce smallest possible sizes to date for a wide range of ratings.

Operating temperature range is -65°C to plus 125°C , and insulation resistance is 50,000 megohm-mfds at 25°C . The units are furnished in hermetically sealed tinned brass cases, glass to metal seals, bath tub or rectangular cases, single or multiple sections.



It is anticipated that new military specifications will be written to cover this new film dielectric.

For further information, ask for engineering bulletin DC-15. Dearborn Electronic Laboratories, 1421 North Wells Street, Chicago 10, Illinois.

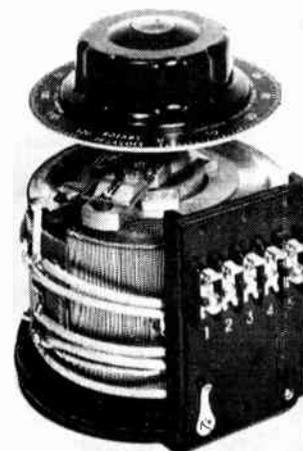
To obtain further information on the product write-ups in this section use the post card coupon on page 181

Voltage Regulator

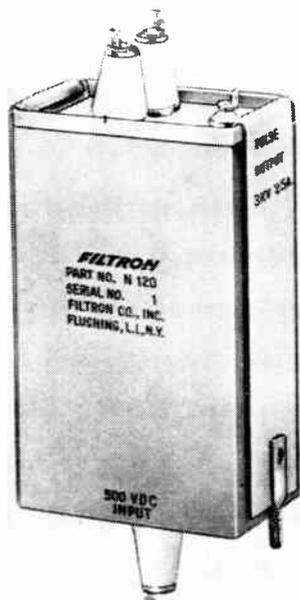
Item 1394

The Berco Rotary Regavolt provides a highly economical, compact and reliable means of obtaining a continuously variable output voltage without the heat losses associated with resistances.

Illustrated is the model 40B, designed for high frequencies from 400 to 1200 c.p.s. Other specifications are input volts 115 with output range



from 0-135 volts. Rated current is 6 amps at 400 c.p.s. 5.5 amps at 1200 c.p.s. Magnetizing current remains less than 50 ma. Load loss is kept to an ultimate minimum — 3 watts at 400 c.p.s. 1.5 watts at 1200 c.p.s. **Canadian Electric Resistors Ltd., Curity Avenue, Toronto 16, Ontario.**



properly trigger any high-power hydrogen thyratron tube.

Filtron Co., Inc., Flushing, L.I., N.Y. Canadian Representative, Aircraft Appliances and Equipment Limited, 585 Dixon Side Road, Toronto 15, Ont.

Differential Transformer Accelerometer Designed For Low Frequency Measurement

Item 1391

Slowly varying environmental phenomena, from steady state to 40 c.p.s., can now be measured by a new series of differential transformer accelerometer developed by Gulton Industries, Inc.

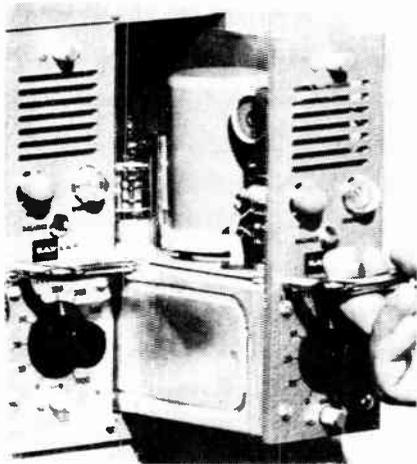
Based upon a differential transformer transducer principle, this series of instruments feature high output with high resolution, no friction, and small size.

Designated as GLENNITE ADT-700 Series Accelerometers, the line includes units with range of from $= 1\text{g}$ to $= 10\text{g}$, linearity within 1%, and

Drift-Free DC Microvolt Amplifier

Item 1395

The Model 111 provides the lowest drift of any commercially available broadband DC amplifier. Chopper amplifiers provide excellent dynamic performance — unaffected by load or gain changes. Available singly in a cabinet, or in a six-amplifier module for std. 19" racks. The 111 is ideal for any type of DC instrumentation or



general laboratory use. Specifications: $\pm 2\mu\text{v}$ Drift; integral power supply; $\pm 35\text{v}$, $\pm 40\text{ma}$ output; 100K input Z; 1Ω output Z; 0 to 1000 gain in 10 steps; $\pm 1\%$ gain accuracy; 5 μv noise; 0.3db DC to 10kc, less than 3db to 40 kc; single amplifier \$550.00.

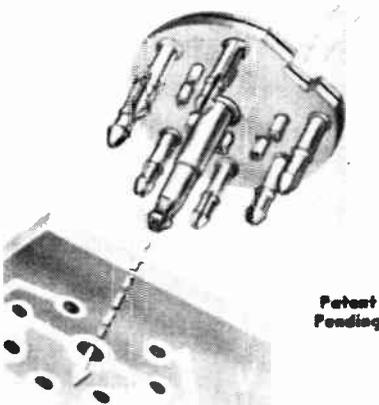
Kay Lab, Inc., 5725 Kearney Villa Rd., San Diego, Calif. Canadian Rep.: Atlas Radio Corp., Ltd.

Printed Circuit Socket

Item 1396

Positive locking action and high heat dissipation characterize this unit, designed for automatic assembly.

Terminals of the "Automaton" Printed Circuit Socket are bullet-shaped for quick location and insertion, and notches prevent the socket from loosening under vibration.



Copper foil on the circumference of the chassis hole provides good terminal contact.

An opening between socket and chassis provides excellent heat dissipation, and the units are available in both 7-pin and 9-pin types. Manufactured by:

Industrial Hardware Mfg. Co., Dept. EL, 109 Prince St., New York 12, N.Y.

General Radio X-Y Dial Drives

Item 1397

Automatic sweeping techniques, increasing in importance in electronic measurement systems, can be used with existing test equipment by means of the new *General Radio X-Y Dial Drives*. Other drives previously announced allow the display of frequency characteristics on a cathode-ray oscilloscope. The new X-Y Drives make it possible to use a two-axis plotter to obtain permanent and precise recordings of data. The tedious task of reading, logging and plotting point by point values is thus eliminated in either laboratory development or production testing.

Two sizes of drives are available, one for 4-inch and the other for 6-inch General Radio Gear-Driven Precision Dials. In each size two speeds are offered, one 8 times the other. All models use synchronous motors. A power switch as well as a disengaging control is provided, and manual setting of the dial can be made by means of a knob. This knob is mounted on one end of a potentiometer shaft which remains engaged with the dial.

The potentiometer included in the X-Y Dial Drive is used with a source of d-c to provide a d-c voltage proportional to the independent variable. The output characteristic as a d-c signal is used to drive the Y axis of the recording pen. Calibrated coordinate paper can be prepared on the recorder by manually positioning the dial and traversing the pen in the Y direction, followed by X traverses with suitable fixed values of Y voltages.

Further information and literature on the X-Y Dial Drives can be obtained from

Commercial Products Division, Canadian Marconi Company, 2442 Trenton Ave., Montreal, Quebec.

Irish "Green Band" Recording Tape Now Made By Ferro-Sheen Process At No Increase In Cost

Item 1398

ORRadio Industries, Inc., of Opelika, Alabama, manufacturers of the line of IRISH Brand Recording Tape, have announced that "Green Band", the popularly priced tape in the IRISH line, is now made by their Ferro-Sheen Process, used for their other premium tapes. This upgrading in quality has been accomplished without any increase of price to the consumer.

FERRO-SHEEN is the exclusive

IRISH Tape manufacturing process which attracted the attention of the sound engineering world when it was introduced 18 months ago and has since been given preference by numerous professional users over ordinary coated tape. IRISH Ferro-Sheen Process Tape is claimed to have the smoothest, most firmly anchored and most homogeneously bonded layer of magnetic oxide ever produced on recording tape. It is designed to end the danger of wearing out or gumming up costly tape recorder heads with the abrasive, easily shed oxide coating of conventional tape. It is claimed to give superior fidelity because the uniformity of the oxide minimizes the possibility of high frequency losses in recording and of print-through on the recorded reel during storage.

Other Ferro-Sheen Process tapes made by ORRadio Industries include IRISH Long Play on 1-mil Mylar or acetate base; IRISH Double Play on $\frac{1}{2}$ -mil Mylar. IRISH Shamrock, and IRISH Sound Plate on 1.5-mil Mylar.

Canadian Warehouse distributor for IRISH Tape is Atlas Radio Corporation, 50 Wingold Avenue, Toronto.

Motor Drives For Servo Work

Item 1399

Motor drives in a wide variety of speeds, suitable for servo work as well as for remote positioning applications, are now offered for the recently announced *General Radio Company's Type W2 and W5 Variac[®] Autotransformers*. Ganged Variacs as well as single units can be supplied with motor drives in open or completely enclosed mountings.

Full-scale traverse rates of 4, 8, 16, 32, or 64 seconds are available on all models, and a drive with a 2-second traverse can be had on the Type W2, W2G2, or W5 Variacs. The 2-second and 4-second drives are intended for servo operations and use a motor with low moment of inertia and high angular acceleration. Medium-speed drives use this same motor with different gearing. Microswitch stops are always used on the 32- and 64-second drives but are optional on the other models.

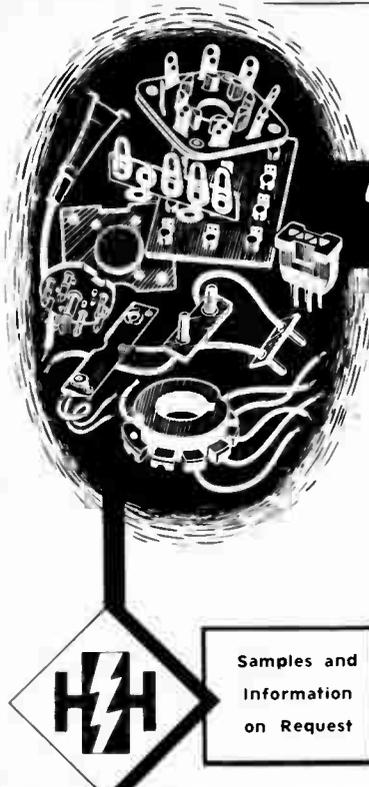
Complete details and literature on the General Radio Company's Type W2 and W5 Variac[®] Autotransformers can be obtained from the

Commercial Products Division, Canadian Marconi Company, 2442 Trenton Avenue, Montreal 16, Quebec.

Transistorized Amplifier

Item 1400

Ten watt transistorized amplifier, extremely small in size — $3\frac{1}{2}'' \times 5\frac{3}{8}'' \times 4\frac{1}{4}''$, requiring a supply voltage of 12 volts at .5 ampere. Additional data may be obtained by writing to: Industrial & Institutional Communications Ltd., 29 McNaughton Avenue, Wallaceburg, Ont.



ELECTRONIC COMPONENTS *by* "INDUSTRIAL"

- Laminated Tube Sockets
- High-Voltage Tube Sockets
- Terminal Strips
- Printed Circuit Sockets
- Subminiature And Transistor Sockets
- Wired Assemblies
- Anode Connectors
- Terminal Boards
- Bakelite And Metal Stampings

Samples and Information on Request

Our extensive design and production facilities are available for developing your special requirements and applications. Representatives in principal cities throughout U.S.A.

INDUSTRIAL HARDWARE 109 PRINCE ST., NEW YORK 12, N.Y.
Manufacturing Company, Inc.

KESTER



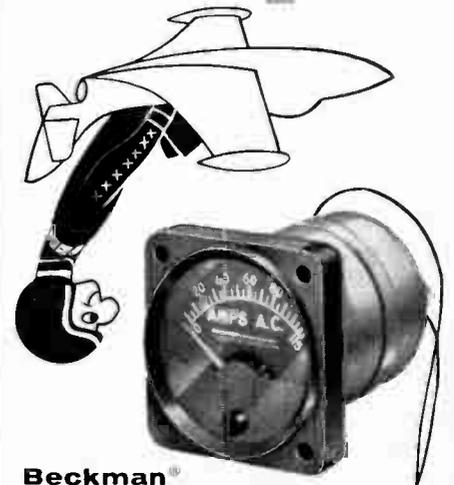
Absolutely non-corrosive and non-conductive, KESTER "RESIN-FIVE" CORE SOLDER contains an activated type of resin that gives you that fast, positive action on all your jobs . . . including the most difficult.



KESTER SOLDER COMPANY OF CANADA, LTD.
 Dept. U - Brantford, Canada

SOLDER

surprise another product from Helipot!

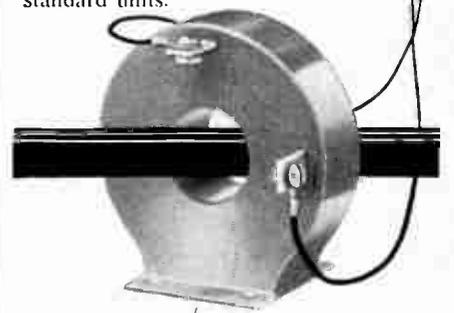


Beckman® Linear Scale AC Ammeter

There's no peck-a-boo with our new BECKMAN Linear Scale AC Ammeter, designed for rapid, accurate monitoring of generator load. We'll fly upside down to prove you can get quick readings from any angle. And no bunched-up graduations . . . the needle deflection is always directly proportional to amperage.

It's plain to see that the Helipot engineers responsible for our 22-ounce meter-transformer unit know their onions as well as their ohms. They gave it intestinal fortitude (that's right—guts!) . . . to withstand extreme vibration, shock, moisture, salt spray and fungus. They gave it airworthy performance . . . anywhere from sea level to 50,000 feet and from -55° to +71°C. And they gave it flexibility . . . the compact meter can be installed on your instrument panel, the potted transformer as far away as 150 feet (with negligible effect on accuracy).

In your next free moment (like right now), write for data file 1247, which has complete information on our standard units.

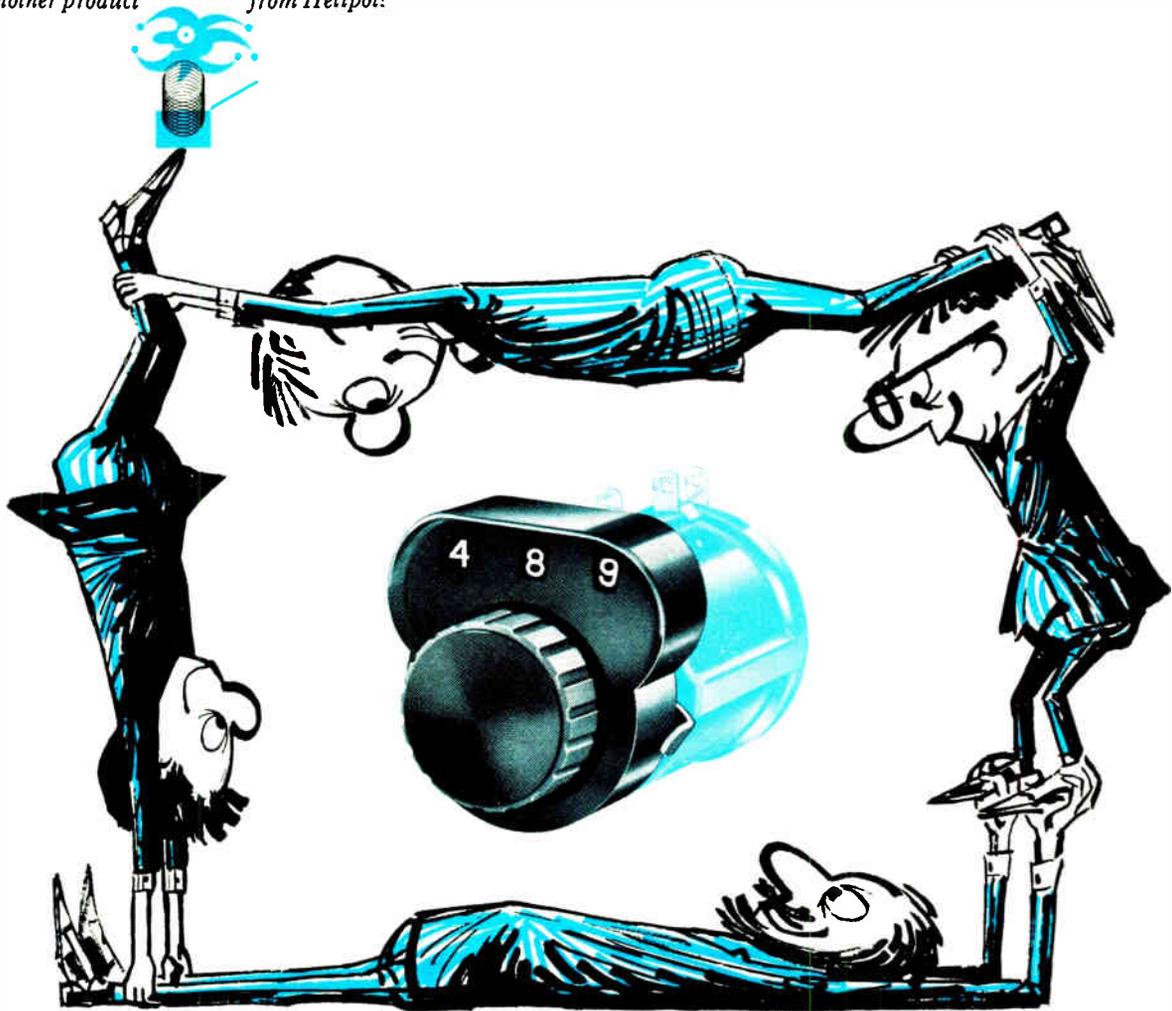


Beckman® Helipot Corporation
 a division of Beckman Instruments, Inc.

Canadian Factory:
 No. 3 Six Points Rd., Toronto 13, Ont.
 Sales Representative: R-O-R Associates, Ltd.,
 290 Lawrence Ave. West, Toronto 12, Ont.

For further data on advertised products use page 181.

Another product *surprise* from Helipot!



A Dial to reckon with

When position is everything, you can count on the new DIGIDIAL* ten-turn decimal-counting dial . . . for indicating shaft position from 0° to $3,600^{\circ}$. . . with reading resolution of 0.05% of full scale or better.

The DIGIDIAL reads by the numbers. This means farewell to interpolations and operator errors . . . hail and hello to fast, accurate reading from as far as six feet away . . . from just about any angle except behind the panel. You'll welcome its compact construction, light weight, simple installation and smooth operation. You'll utter gleeful greetings to the positive, non-distorting locking mechanism.

If position is important to you, you'll want to know more about the DIGIDIAL . . . to get the whole story, write for data file 1227.

Dial

®

Helipot Corporation a division of Beckman Instruments, Inc.

Canadian Factory: No. 3 Six Points Rd., Toronto 18, Ont.

Sales Representative: R-O-R Associates, Ltd., 290 Lawrence Ave. West, Toronto 12, Ont.

... APPLICATIONS ...

... beyond today's horizons

New HEIGHTS
OF PERFORMANCE
Achieved by
advance-design
**ASTRON CAPACITORS
AND R.F. FILTERS**

Today's design requirements foreshadow tomorrow's revolutionary applications... imposing critical new areas of performance on electronic components.

The vexing problem of efficient capacitor and R. F. filter operation under these ultra-severe conditions of extreme heat, cold, moisture and vibration challenges the imagination of the component manufacturer... truly he must create "something completely new under the sun"!

A foremost pioneer in the exacting development of advance-design components, to cope with these requirements, is Astron... leader in miniaturization, manufacturer of industry's widest variety of types, whose experience, ability and creative far-reaching point of view produces the significant, highly-engineered designs pictured here... proof of a dedication to progress.

The types and styles illustrated are but a few of the many available... for complete technical and application information on all Astron products, please request catalog AC-4.

R. F. Noise Suppression Filters. Complete noise suppression "Packaged" service—Definition of requirements • Engineering analysis • Efficient solutions. Advance-type components • Quality production.

A complete stock is maintained in Pointon's Toronto warehouse.



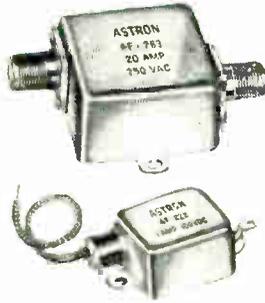
Blue • Point® Molded Plastic Paper Capacitors



Meteor® High Temperature Miniaturized Capacitors



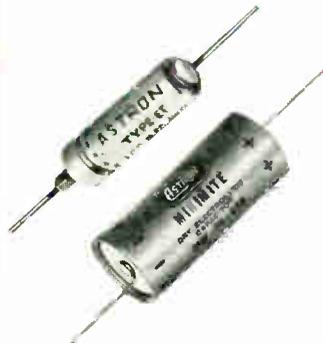
Series "X"™ Mylar I - Plus Capacitors



Comet* Molded Plastic Metallized Paper Capacitors



Metalite® and Hy-Met* Sub-Miniature Metallized Paper Capacitors



Safety Margin "SM"™ Miniature Electrolytic Capacitors



Safety Margin "SM"™ Twist-Prong and Cardboard Cased Electrolytic Capacitors



MIL-Type Hermetically Sealed Paper Capacitors



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