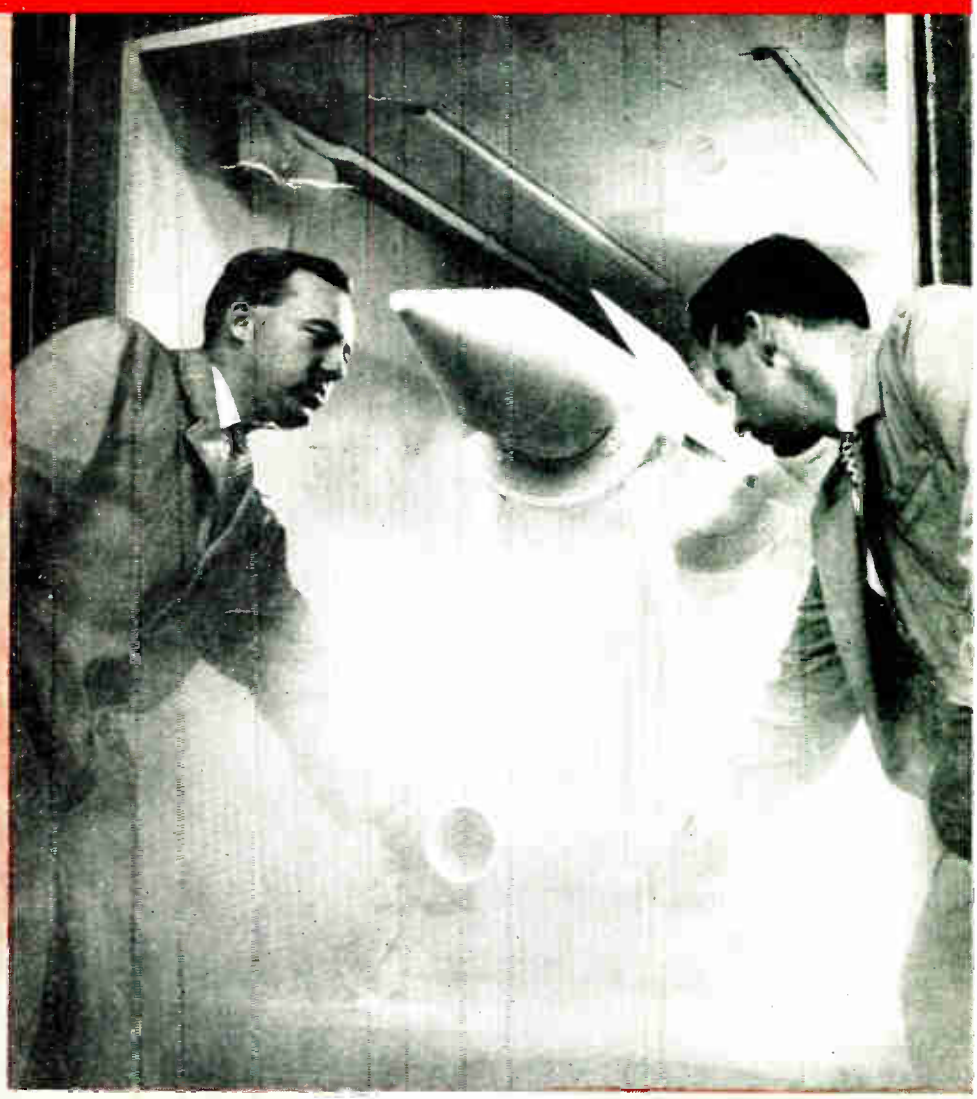
ELECTRONICS *and* COMMUNICATIONS

DESIGN — MANUFACTURE — ENGINEERING — DISTRIBUTION — APPLICATION



At 100° below zero, heavy frost coats an experimental guided missile being pulled from the altitude and climatic stratosphere chamber at the new environmental laboratory at Canadian Westinghouse Co. Ltd. At this sub-zero cold, altitudes up to 95,000 feet may be simulated in the chamber.

November, 1956 ★ $5.00 a year
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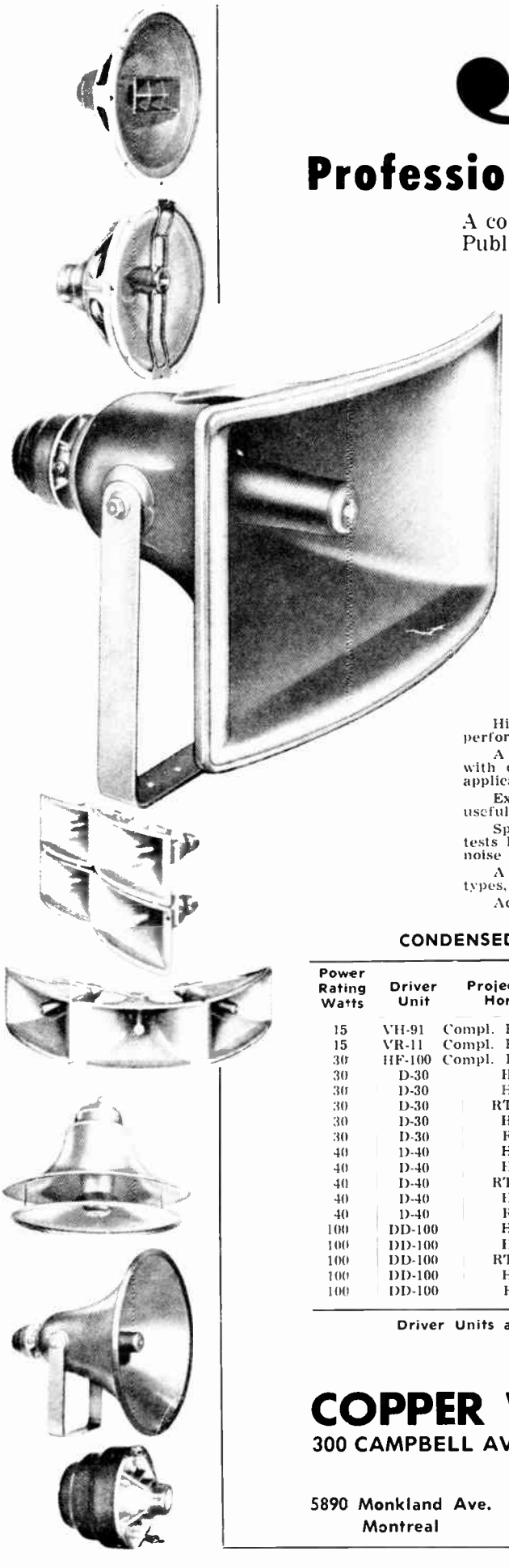

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Hypex

Professional Series Loud Speakers

A complete line for Commercial, Industrial, Institutional and Public Address Applications.

Auditoriums - Paging Systems - Arenas - Schools - Hotels - Hospitals - Railway Stations - Bus Terminals - Airports - Theatres - Fairs - Railway Yards - **for all Paging and Public Address requirements - Speech and/or Music.**

THE NEW RT-20 RECTANGULAR HORN IS MOLDED OF HIGH IMPACT STRENGTH GLASS FIBRE REINFORCED POLYESTER.

The Jensen PROFESSIONAL SERIES comprises a group of loudspeakers covering all the requirements for effective sound communication in commercial, industrial and institutional sound systems. This SERIES is the most comprehensive line ever presented. It makes possible the selection of exactly the right type and model for any application.

Most of the loudspeakers in this line are entirely new. All have been redesigned to meet new high standards for extra ruggedness and dependability.

The new INTERCHANGEABLE HYPEX LIFETIME DRIVER UNITS have higher power ratings, higher efficiency and extra ruggedness compared to previously available projector equipment. ALL ARE INDEFINITELY GUARANTEED AGAINST FAILURES when operated within their ratings. The DD-100 SUPERPOWER DRIVER is the first with this high rating.

The new RT-20 rectangular horn has new versatile utility used singly, or multiple stacked to give any desired directivity or power capacity.

High Fidelity Projector HF-100 now makes available for the first time hi-fi performance in a weatherproof outdoor unit.

A new group of TRIAXIAL 3-way and coaxial 2-way high fidelity speakers, all with compression driver horn-loaded "tweeters" in the higher channels, for applications requiring higher fidelity than conventional cone speakers.

Extended Range Series high fidelity speakers are efficient wide range units useful in a wide variety of modern sound distribution systems.

Speech Master loudspeakers have newly designed moving systems which tests have proved markedly increased speech intelligibility in the presence of noise in audio intercom and radio communications.

A complete new line of transformers including Constant Voltage Distribution types, and a weatherproof case.

Accessories include level controls, cabinets and ceiling baffles.

CONDENSED SPECIFICATIONS OF PROJECTOR ASSEMBLIES

Power Rating Watts	Driver Unit	Projector Horn	Type	Freq. Range Cycles	Coverage Angle	Mouth Dia. Inches	Air Col. Length in Inches	Length O.A. Inches (4)	Impedance Ohms
15	VH-91	Compl. Proj.	Axial	300-7000	100°	$8\frac{7}{8}$	16	$7\frac{5}{8}$	8
15	VR-11	Compl. Proj.	Radial	280-7000	360°	11	18	$10\frac{3}{8}$	8
30	HF-100	Compl. Proj.	Coaxial	60-15000	120°	$24\frac{3}{8}$		$11\frac{3}{8}$	16
30	D-30	H-150	Axial	200-7000	95°	$15\frac{3}{4}$	31	$15\frac{5}{8}$	16
30	D-30	H-200	Axial	150-7000	85°	$20\frac{3}{4}$	41	$18\frac{1}{8}$	16
30	D-30	RT-20	Rect. Ax.	140-7000	80°	$26x13\frac{1}{2}$	41	20	16
30	D-30	H-240	Axial	120-7000	75°	$25\frac{1}{4}$	59	$24\frac{1}{4}$	16
30	D-30	R-242	Radial	140-7000	360°	$25\frac{1}{4}$	40	$18\frac{1}{8}$	16
40	D-40	H-150	Axial	200-10000	95°	$15\frac{3}{4}$	31	$16\frac{1}{8}$	16
40	D-40	H-200	Axial	150-10000	85°	$20\frac{3}{4}$	41	$18\frac{5}{8}$	16
40	D-40	RT-20	Rect. Ax.	140-10000	80°	$26x13\frac{1}{2}$	41	$20\frac{1}{2}$	16
40	D-40	H-240	Axial	120-10000	75°	$25\frac{1}{4}$	59	$24\frac{3}{4}$	16
40	D-40	R-242	Radial	140-10000	360°	$25\frac{1}{4}$	40	$18\frac{5}{8}$	16
100	DD-100	H-150	Axial	200-10000	95°	$15\frac{3}{4}$	31	20	8/32
100	DD-100	H-200	Axial	150-10000	85°	$20\frac{3}{4}$	41	$22\frac{1}{2}$	8/32
100	DD-100	RT-20	Rect. Ax.	140-10000	80°	$26x13\frac{1}{2}$	41	$24\frac{3}{8}$	8/32
100	DD-100	H-240	Axial	120-10000	75°	$25\frac{1}{4}$	59	$28\frac{5}{8}$	8/32
100	DD-100	R-242	Radial	140-1000	360°	$25\frac{1}{4}$	40	$22\frac{1}{2}$	8/32

Driver Units and Horns must be ordered separately except in the case of VH-91, VR-11 and HF-100 Projectors

Write for Catalogue 1070

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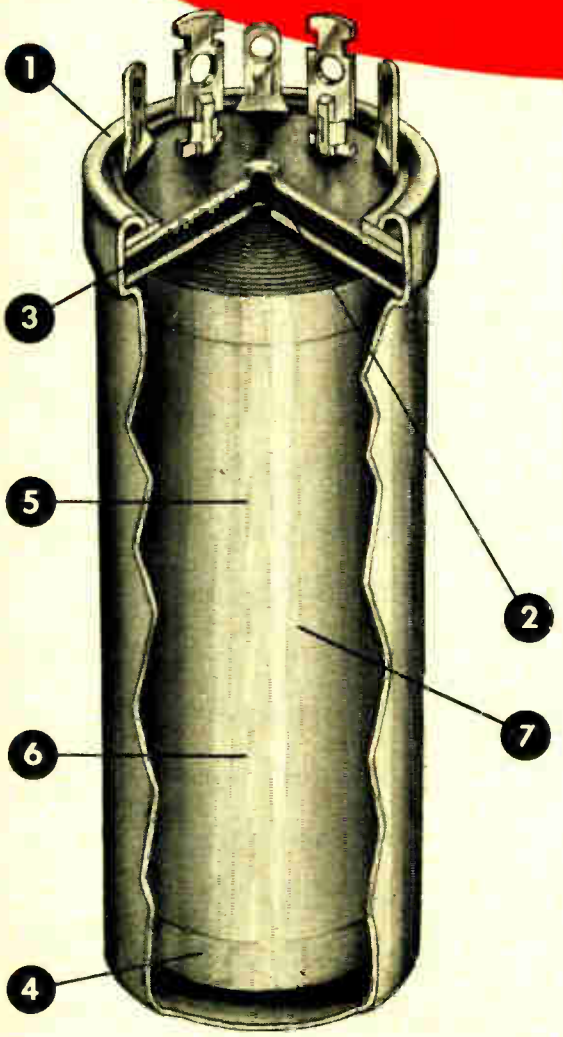

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HUNT K TYPE TWIST PRONG MOUNTING ELECTROLYTICS

1 Mounting ring welded to cathode tab.
2 Safety vent.
3 Sandwich seal.
4 Extended and swaged cathode on all multi-section windings for low power factor and minimum coupling.
5 Choice of etched foil or sprayed gauze anodes (both super high purity aluminum)
6 Choice of plain, brushed, etched or sprayed cathode according to ripple requirements.
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Engineered to exceed all Canadian requirements, perfected through new manufacturing techniques and safeguarded by close quality control and assembly in specially conditioned atmospheres, this new series promises a new standard of performance. Aluminum foil of the highest obtainable purity . . . 99.98–99.99% purity . . . is used for the first time in regular capacitor manufacture. Capacitors are produced to specific customer requirements.

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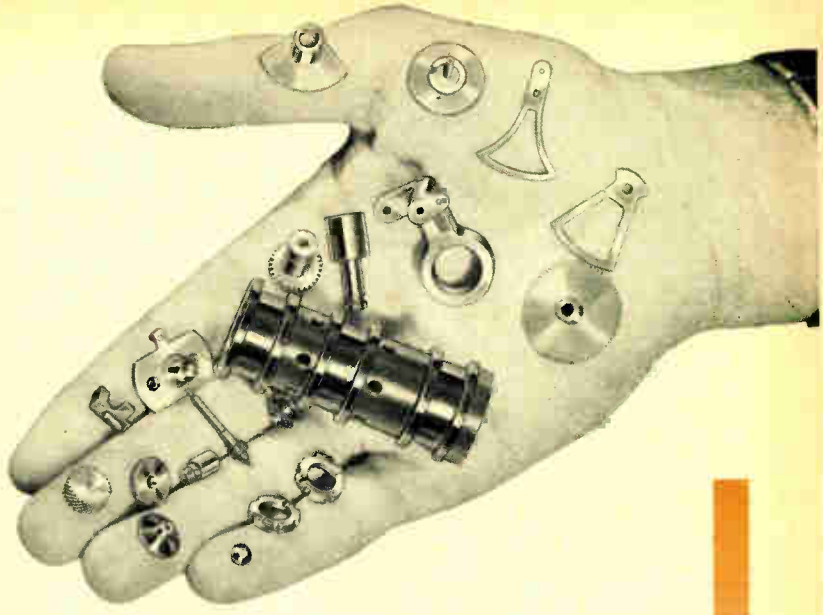

do you know

that these small component parts were tooled and manufactured on a production line basis at the Montreal plant of Aviation Electric Limited.

that our continued INDUSTRIAL MANUFACTURING expansion programme plus our wide range of new equipment now make it possible for us to assist you with your manufacturing problems.

Whether your need concerns the production of minute component parts — or large completely assembled products, we can offer complete facilities including design engineering, planning, tooling, manufacturing, assembling, testing and final inspection — all housed in one modern plant and backed by a quarter of a century of experience.

Whatever your problem, large or small, you owe it to yourself to consult

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AVIATION ELECTRIC LIMITED

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NEW PRODUCTS by COSSOR

A NEW AID TO AIR TRAFFIC CONTROL AND AIR SAFETY
COSSOR SECONDARY RADAR SURVEILLANCE SYSTEM

The system offers:

- ★ Reliable ranges up to 170 miles on all equipped aircraft irrespective of size.
- ★ Complete freedom from weather interference.
- ★ No ground clutter.
- ★ Positive and certain identification.
- ★ Complete side lobe suppression.
- ★ An invaluable emergency aid if other equipment fails.
- ★ Very low cost and power consumption.
- ★ No complexity; simple and easy maintenance.
- ★ An airborne transponder weighing under 30 pounds with only 11 tubes.
- ★ Complete ground equipment weighing only 250 pounds.

Four years extensive flight trials.

Increasing air traffic density and ever-increasing speeds show clearly the limitations of even the most modern primary radars. Ranges vary with aircraft size so that traffic control can not be certain that it is seeing all the traffic at even modest distances; ten mile a minute speeds limit tracking time to a very few minutes; positive identification is slow and difficult and overloads voice channels; solutions to weather interference and ground clutter are limited and costly.

Cossor this year celebrates its twentieth continuous year of radar development and now offers a complete, simple, rugged and low cost solution with its SECONDARY RADAR SURVEILLANCE SYSTEM. This comprises a small ground transmitter and receiver which interrogates and receives answers from a simple airborne transponder. The ground set can be used alone or in combination with any primary radar. The system gives great range, freedom from weather and ground clutter and automatically coded replies give positive identification.

PRECISION DEFLECTION YOKES

COSSOR (Canada) are now supplying precision deflection yokes to many of the largest laboratories and defence project industries in the U.S.A. Yokes are available to customer's specification, in Nickel Iron, Ferrite, Class A, Class H insulation.

- → Linearity - standard ± 1%, custom build to ± .1%.
- → Orthogonality ± ¼°.
- → Half-axis colinearity ± ½°.
- → Mutual interaxis coupling .0025 or as specified by customer.
- → Differential capacity unbalance - 3.5 uuf max.
- → High Altitude Performance is limited only by flashover point of the terminals, which can be specified by customer.
- → Temperature Range -

  Standard deflection yokes will operate as specified from — 10°C. to + 60°C. Class H insulated deflection yokes will operate from — 50°C to + 160°C.
- → Humidity: The yoke is unaffected by humidity.
- → Meet JAN and MIL Specs.

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For further data on advertised products use page 49.

Rugged EIMAC 2C39B UHF Ceramic Triode Operates up to 250°C

TYPICAL OPERATION
(RF Oscillator 2500mc)

D-C Plate Voltage	900v
D-C Grid Voltage	-22v
D-C Plate Current	90ma
D-C Grid Current	27ma
Useful Power Output	15w

Unilaterally interchangeable with the 2C39A, but designed with outstanding extras, Eimac's ceramic-and-metal 2C39B has proved its advantages in such UHF applications as missiles, air navigational systems and communications systems.

Because of its unique design and ceramic-metal construction, this air-cooled, planar-type, 100 watt triode has an envelope temperature rating of 250°C, ceramic replaces glass. And the copper anode is fitted terminal surfaces are silver plated. Sturdy, low-loss ceramic replaces glass. And copper anode is fitted with lightweight fins for forced air cooling.

Used in systems up to 3000mc, the 2C39B has all the virtues of the 2C39A plus a longer life, more useful power output, and a greater immunity to damage by thermal and physical shock.

For additional information, contact our Application Engineering Department.

Eimac

EITEL-McCULLOUGH, INC. SAN BRUNO CALIFORNIA

The World's Largest Manufacturer of Transmitting Tubes

Represented in Canada by

THE **AHEARN AND SOPER** COMPANY LIMITED P.O. Box 715, Ottawa, Ontario

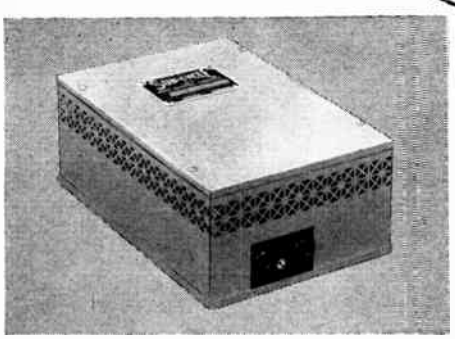
For further data on advertised products use page 49.

Lorain R.T.

ringing-talking power units for PBX and switchboards

END ALL MAINTENANCE!

The R.T.2, one of 7 Lorain ringing-talking power units to meet all needs. The R.T.2 operates on 115-125 volts, 60 cycle supply. It has heavy overload capacity.



The BX-60, one of a complete range of Lorain ringing machines. It operates on 105-125 volts, 60 cycle supply. Lorain also make high quality auxiliary transformers, stand-by generators, ringing converters etc.

With Lorain R.T. Units there are no moving parts. No lamps, vibrators or brushes to cause service interruptions . . . to be continually replaced. An inductance containing a saturable magnetic core and a capacitor connected in the circuit, handle the frequency conversion. The stable circuit elements operate without any mechanical movement. They do not wear out. And there is no change in their characteristics—even after long use.

Lorain R.T. Units give absolutely reliable ringing and talking currents year after year—without maintenance, lubrication or replacements—without inspection of the ringing generator!

Write us today for your copy of Bulletin 159A. It gives you full details of the complete Lorain range of ringing-talking power units for PBX and switchboards.

5609

Distributor in Canada

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For further data on advertised products use page 49.

FRASER COMPANIES' LARGEST WOODLAND DIVISION BLANKETED WITH PYE 2-WAY RADIO SYSTEM

PYE CANADA LIMITED installs a complete network of mobile and fixed radio communications for Fraser Companies, Limited, at their Miramichi Woodland area in and about Newcastle, N.B.

Mr. L. R. Burrell, Division Superintendent, and Mr. J. Hall, Division Forester, discussing locations in their wood limits where communications are necessary. Part of the 2000 square mile area which is now completely co-ordinated with Pye Radio Communications, can be seen on the map.

Mr. L. G. Cummings, Paymaster, obtaining particulars from camp clerks on hours worked and quantities of wood cut for payroll purposes. When personnel apply for work, he can also find out if wood camps require additional help and deploy the men accordingly.

RICH BUT REMOTE — The wealth of Canada's woodlands is vast — and remote. An excellent example of this is the Miramichi area at present being worked by Fraser Companies, Limited. Over 2,000 square miles of rugged terrain dotted from end to end with logging camps, trucks, cars, tugs, offices, a mill, and the vast amount of stations and equipment needed to operate an undertaking of this size.

RADIO ELIMINATES MUCH PAPER WORK AND DELAY — Up 'till a few months ago the enormous task of co-ordinating and administrating was carried out through an outmoded telephone line which carried 37 subscribers. Mobile operations such as log driving and wood-cutting were only contacted by messenger. The new Pye system has eliminated all this delay.

AUTOMATIC REPEATER STATIONS INCREASE RANGE — Two huge towers, rising from the highest peaks in the area are fed by automatic repeater stations which require only a monthly service check. The effective range is conservatively rated at 50 miles in any one direction for fixed-to-mobile and mobile-to-mobile communications, more than covering the Fraser Companies' workings in the Miramichi area. The coverage pattern is oblong in shape, approximately 100 miles long by 60 miles wide.

AS THOUGH IN THE ONE OFFICE — The woodlands manager in his office, the foreman in the bush, the skipper of a tug, the driver of a truck, the supervisor in his car, and all other key men can now work together as though in the one office — a great step forward in logging efficiency, and one of which both Fraser Companies, Limited and Pye are justly proud.

PYE CAN SOLVE YOUR COMMUNICATION PROBLEM — Your communication problem may not be as large as the one illustrated here — but no matter what it is or where it is, the world-wide experience and knowledge of Pye engineers can help you solve it. Drop us a line and one of our technical representatives will be glad to talk the matter over with you.

COMMUNICATION DIVISION

PYE CANADA LIMITED

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193 E. HASTINGS ST., VANCOUVER
1191 UNIVERSITY ST., MONTREAL
78 BANK ST., OTTAWA
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Manufacturers and engineers of H.F., V.H.F., U.H.F. radio systems, suppliers of telephone apparatus of all kinds, scientific instruments, industrial and commercial television cameras, marine radiotelephones, fish finders and depth sounders.

For further data on advertised products use page 49.

ELECTRONICS and COMMUNICATIONS

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

NOVEMBER • 1956
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EDITORIAL CONTENTS

FEATURES

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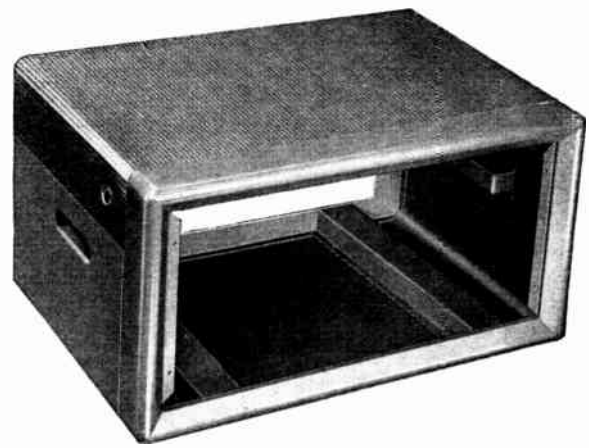
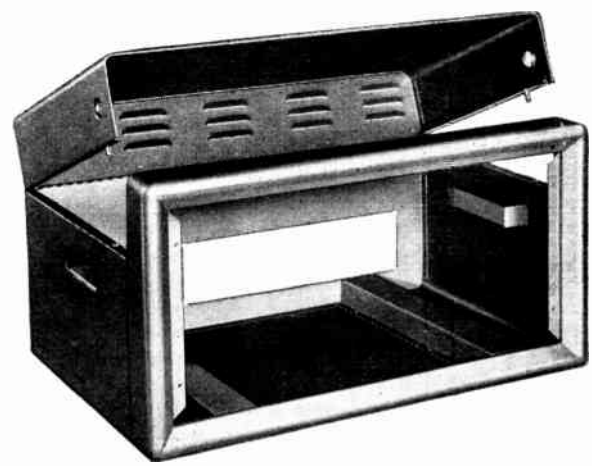
BUD "PRESTIGE" CABINETS





☆ Again Bud is first with the finest . . . the new line of "PRESTIGE" cabinets. These cabinets have the sleek "custom-made" appearance yet sell at standard stock prices.

Here's the first really different cabinet in years, one that you will be proud to show your customers . . . one that will enhance the appearance and increase the utility of any instruments or equipment which it may house.

Note how the hinged cover — available solid or perforated — swings back completely to provide easy access. See the two movable supporting channels, adjustable laterally to accommodate any width chassis or mounting platform. Carrying is made easy by means of two comfortable recessed handle slots.

These cabinets are fabricated of 16-gauge steel and flawlessly finished in gray hammer-tone. They will accommodate standard size relay rack panels 7" x 19"; 8¾" x 19"; 10½" x 19". Bud "PRESTIGE" cabinets are available in 3 sizes with either solid or perforated tops.

Be the first to stock and sell Bud "PRESTIGE" cabinets. Take advantage of our large advertising and direct mail promotion on these new cabinets.

Write us for further details or contact the Bud Representative in your territory.

See these and other Bud Products at your nearest distributor or write for catalog.

TENATRONICS, LTD.

DAVIS DRIVE EAST — NEWMARKET, ONTARIO

Exclusive Canadian Representative For

BUD RADIO INC.

2118 East 55th Street — Cleveland 3, Ohio

For further data on advertised products use page 49.

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.

Receiver Engineering Sub-Committee on Color Television

At the last meeting of the Receiver Engineering Committee of the Radio-Electronics-Television Manufacturers Association of Canada, it was decided to form an engineering sub-committee on color television. This indicates the forward-thinking attitude of RETMA which has repeatedly advocated that the telecasting authorities come to an early decision for introducing color television in Canada.

The engineering sub-committee on color television will deal solely with engineering and other technical matters relating to color television. There has been a committee dealing with UHF and color television, in the government relations field, for a number of years within RETMA. It has been this latter committee which has been in touch with the authorities responsible for telecasting and has pressed for an early start on color television.

RETMA Members Visit Chalk River

On November 12 and 13 a party of RETMA members visited the Chalk River installations of Atomic Energy of Canada Limited. The visit was made as a result of an invitation extended to the electronics industry by W. J. Bennett, president of Atomic Energy of Canada, at the 27th annual meeting of RETMA last June. During the course of his address at the RETMA annual meeting Mr. Bennett had said that "there was no single branch of industry which had a greater or more comprehensive role in the atomic energy program than the Canadian electronics industry."

The RETMA group was particularly interested in the range of the electronic instrumentation and recording equipment used at Chalk River. Many different types of electronic equipment are already being supplied for nuclear development in Canada, including computers, simulators, wide-band amplifiers, kicksorters, and experimental electronic equipment for nuclear control and instrumentation purposes.

International Association of Electrical Inspectors' Meeting

RETMA was represented at the recent Toronto meeting of the International Association of Electrical Inspectors, held under the auspices of the Canadian Standards Association. The event was a combined meeting of the Canadian section and the Ontario chapter of the IAEI.

F. W. Radcliffe, RETMA General Manager, gave an address entitled "Over The Horizon In Electronics". He gave a preview of the electronic developments and products of the next decade, and mentioned that the Canadian electronics industry was the fastest growing industry in Canada today.

Scatter Propagation – Mr. Radcliffe drew attention to the progress in scatter propagation, where a high power radio transmission was focussed in a narrow beam directed just above the horizon and scattering small amounts of this energy far over the horizon. By this means it was possible to locate relay stations over 200 miles apart, a good feature for such a country as Canada where long distances between centers of population were common. He foresaw the possibility of a trans-Atlantic television network by using microwave relay stations located along the Labrador Coast to Baffin Island, to Greenland, Iceland, the Faroes, and to Scotland. The largest jump in such a system would be about 290 miles.

Electronic Data Processing Machines – The speaker told his audience of the future possibility of a store-keeper having all his accounts and books electronically processed. All transactions would be recorded on a magnetic tape connected with the cash register and the tape sent to the bank with the bank deposit. The tape would be fitted into a small electronic data processing machine at the bank and the storekeeper would be provided with accurate figures on sales by departments, by products, model numbers and color ranges. Inventory control could be accomplished in a similar electronic manner.

Continued Overpage

RETMA REPORT

Canadian RETMA Directors Meet U.S. RETMA Directors

The 12th Joint Meeting of the Canadian RETMA and the United States RETMA directors was held recently in Virginia. 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 during the course of the meeting. It dealt with the present trends and the future prospects of the electronic industries in the two countries. Four speakers from the Canadian RETMA took part and the most relevant address to readers of "RETMA REPORT", dealing as it did with military electronic equipment, was given by J. C. R. Punchard, Chairman of the Canadian RETMA Electronics Division and a vice-president of RETMA.

J. C. R. Punchard said that the Canadian electronics industry since 1939 had grown at a fast but consolidated pace. In 1939 the total output of the industry, including radio receivers and components, was just under $20 million a year at factory billing prices. However, during the last full year of the war, 1944, the total volume output of the industry, exclusive of Crown companies, was over $120 million. Productivity at that time was gaining momentum at such a rapid rate that the total output for 1945 would have been double this, if the war had continued. If the outputs of the Crown company, Research Enterprises Limited, and its sub-contractors, were added to the previous output, it is estimated that the total volume during the peak year of war-time production was about $250 million.

Although retrenchment took place after the war, the industry did not diminish to its pre-war size. The enlarged, modern and well-equipped industry converted to the production of improved broadcast, frequency communication and power line carrying equipment and other industrial and commercial electronic equipment.

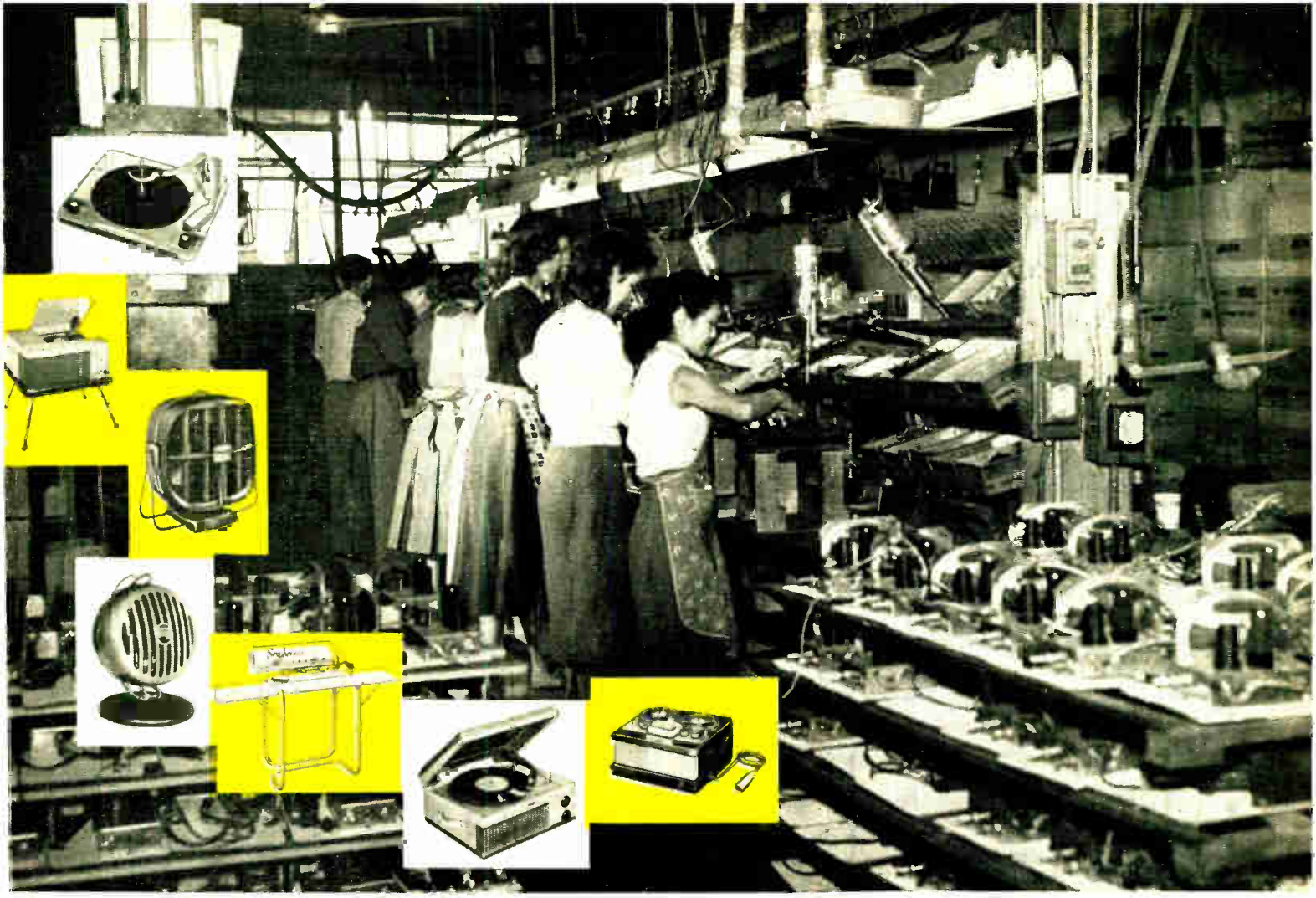
The Department of Defense Production was established by the Canadian Government in 1951 to procure goods and services required by the Department of National Defense. Expenditures by the Department of Defense Production for electronics and communication equipment for the four year period 1951 to 1955 were just over $400 million, or an average of $100 million per year. Of this, $327 million, or 82%, was spent in Canada, $64 million, or 16%, in the United States, and $8 million, or 2%, in Great Britain. As a matter of interest, the breakdown of the Canadian defense dollar is 38% for aircraft, 12% for construction, 8.5% for electronics and communication equipment (including telephone, telegraph, and teletype equipment) and 7% for ships.

> "One of the major electronic projects in Canada," said Mr. Punchard, "has been the building of the coast-to-coast microwave relay system for transmission of television programs and to supplement the trans-Canada telephone system. This microwave system is now in operation between Quebec City and Winnipeg, and extensions to both coasts are now under construction."

The vast uninhabited areas in Canada are admirably suited for transmission by UHF tropospheric and VHF ionospheric scatter propagation. A considerable quantity of such equipment has been built and installed in Canada for military purposes and other commercial projects are now underway.

The areas of growth which show most promise are the microwave, computer and data processing, and industrial control fields. Microwave transmission is a "natural" for Canada for both topographical and geographical reasons. Installation of the DEW and Mid-Canada radar lines will gradually open up much of the hitherto inaccessible north country. This will require more and better communications to the north. Since telephone communications will not be practical until roads to the north are built, increasing requirements for multi-channel line of sight and scatter micro-wave systems are anticipated.

It is expected that the need for computer and data processing equipment will grow as Canada's total industrial strength grows. Industrial control, which is closely associated with automation, is perhaps more necessary in Canada than in the United States because of Canada's smaller domestic market and the need for higher efficiency and lower costs to compete with imports from countries with high volume production.



WINDING COILS AT SEA BREEZE MANUFACTURING LIMITED, TORONTO

Federal Magnet Wires are being used more and more throughout Canadian industry. And for very sound reasons. Federal are specialists in the manufacture of Magnet wires—of every type. At every stage of manufacture—rolling, drawing, annealing, enamelling, and serving—Federal exercise rigorous control to ensure utmost quality and dependability. Every magnet wire Federal produce is backed by almost 40 years of research and manufacturing experience.

Federal Magnet Wires for every type of coil—electronic, motor, generator, transformer, etc.—are readily available. They can be supplied in a wide range of shapes and sizes and with many types of insulation. Where required, they can be produced to meet special applications and particular needs.

There is a Federal Magnet Wire for every winding or rewinding operation. For solutions to your magnet wire problems, call on Federal research and production experts. They will be pleased to help you at any time.

5612

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VOLUME 4, NUMBER 10 • NOVEMBER, 1956

ELECTRONICS & COMMUNICATIONS

Electronics For The CF-105

It is seldom, in Canada, that opportunity affords itself to permit the Canadian electronics industry the chance of tackling something big and worthwhile in the matter of research and development and when such an opportunity does arise, it is little less than disheartening that it should be denied Canadian enterprise by being awarded outside of the country.

Such is the case with the multi-million dollar research and development contract for an electronic control system for the Canadian CF-105 jet fighter which has recently been awarded to an American firm through the United States Air Force acting on behalf of the Canadian Department of Defense Production.

★ *Since it is the accepted government procedure to afford all approved firms the opportunity to tender on government contracts, it can be reasonably assumed that National Defense and Defense Production authorities in Ottawa received and examined bids from Canadian firms for carrying out the CF-105 electronic systems contract, and it can just as reasonably be assumed that there were only two logical reasons why this contract did not remain in Canada. Either the prices quoted by Canadian firms did not include the lowest bids or Canadian firms were not considered qualified to carry out the contract.*

While it is conceivable that delivery dates may have had some bearing on the question of awarding the contract, we have a strong suspicion that the dollars and cents aspect of the matter may have been the influencing consideration that shot the contract across the border into the United States. As far as the technical ability ★ *of Canadian firms to carry out such a program is concerned, we cannot bring ourselves to believe that they are anything other than amply qualified to do so.*

On occasion we have heard it suggested that there exists in Ottawa, at certain levels of official thought, the opinion that the Canadian electronics industry has not yet proved itself. It has, we further understand, been compared to the Canadian aircraft industry which, in official opinion and by virtue of its past record in producing such aircraft as the F-86, the CF-100, the JT-33 and the North Star is now considered sufficiently mature and worthy of being awarded both development and production contracts valued in the hundreds of millions of dollars. Observing that the Canadian aircraft industry has reached this admirable position largely through government aid in the matter of financial support during its early days, it seems a little short-sighted and inconsistent that government authorities should now with- ★ *hold similar support from the Canadian electronics industry, particularly in view of the fact that a strong, healthy and vigorous electronics industry is a vital adjunct to a self-supporting aircraft industry.*

The reason for not awarding the CF-105 electronic development contract to a Canadian firm or firms is now a matter of record and probably reposes on file in the central registry office of the Department of Defense Production in Ottawa. We wonder if this file could be dusted off and placed on the Minister's desk with the suggestion that he make public the reasons why this contract was not retained in Canada. If it is a matter of getting the job done cheaper outside of Canada, then it is suggested that government authorities may well consider the wisdom of spending a little more money on the project in order to keep the work at home and thereby assist in strengthening the electronics industry without which the aircraft industry in time of national crisis would be as useless as a one-winged duck.

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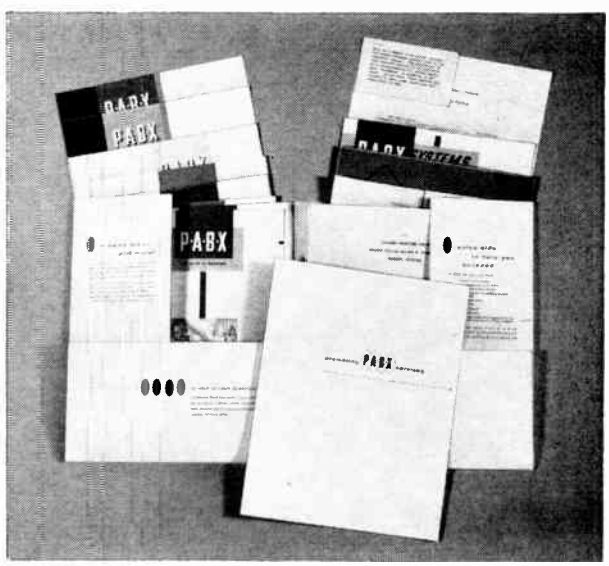

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business briefs & trends

★ Labor Minister Milton Cregg said in a recent interview that Canada is closer to full employment than the country has ever been. Mr. Cregg said that automation will undoubtedly create a trend to a shorter work week, but added that automation is moving more slowly than the public is led to believe.

* * *

★ According to Professor Wilson Greatbach of the University of Buffalo's Engineering School, electronics has once again placed the individual inventor in a position where he can compete with the large research staffs of major corporations.

* * *

★ Robert S. Bridge, vice-president of manufacturing, Ford Motor Company, claims that it is nonsense to believe that automation will put men out of jobs. Far from taking jobs away from men, Mr. Bridge said, machines have created jobs by the millions.

* * *

★ The importance of the tape recorder as a significant educational tool was highlighted recently by the announcement that Audio Devices' educational awards have been established to increase the effective use of magnetic tape and disc recording in schools and colleges. The awards by Audio Devices Inc. will total over $16,000 in sound recording machines, magnetic tape and discs for the 1956-57 school year.

* * *

★ The use of television at highway railroad grade crossings is now being tried out under actual operating conditions. Recent television installations in the United States permit a crossing watchman to see and untangle traffic jams blocking railroad tracks well in advance of a train's arrival.

* * *

★ The prediction of George A. Peters, Jr., engineer of the Picatinny Arsenal, Dover, N.J., is that machines are becoming so complex that engineers who design them will have to place less emphasis on the output of the machines and pay more attention to making them easier and simpler to operate.

* * *

★ Rapid growth of the Canadian office machines industry as a result of the mounting needs of business for more modern and automatic equipment has been forecast by Joseph M. Klein, head of the international operations for Clary Corporation.

* * *

★ The increasing use of marine radar throughout the world was indicated in the recent report that in March, 1956 the total orders received by Decca Radar exceeded 5,000 sets. The 5,000 sets represent fittings for over 20 million gross tons of shipping, one-fifth of the world's total registered tonnage.

* * *

★ The RCA Tube Division of Harrison, N.J., is reported to have established a new preferred tube types program as a move toward achieving greater standardization in television circuitry and receiving tubes to help electronics equipment manufacturers concentrate on fewer tubes.

* * *

★ Dr. W. R. G. Baker, president of RETMA of the United States, says that the potential growth of the electronics industry is unlimited. Dr. Baker pointed out that many forecasters believe that the 9 billion dollar American electronics industry will reach a 15 billion dollar annual turnover by 1960.

* * *

★ The American instrument business has more than doubled in sales volume in the past decade. Published statistics show that shipments of instruments have climbed from 24 million dollars in 1947 to 60 million dollars in 1954, and it is anticipated that this year's total volume may be in excess of 70 million dollars.

* * *

★ A British firm of tape manufacturers have reported enquiries from all over the world regarding a new type of electrical heater tape. Originally developed for heating electric blankets, it is now being used in aircraft for de-icing, heating interiors and high altitude suits, in railway coaches, factories and domestically for central heating, and in agriculture for soil heating.

* * *

★ H. Thomas Hallowell, Jr., president of Standard Pressed Steel Company, says that miniaturization is not a philosophy of less and less, but that it signifies more and more — more function, more service, more utility per unit of material, time or cost. He described miniaturization as "a frame of mind that equips management with seven-league boots to get rapid and dramatic results by a process of multiplication instead of by the slower method of addition."

* * *

★ A unique venture that will send two Canadian Westinghouse Company engineers to the Nova Scotia Technical College as instructors for the academic year 1956-57 has been jointly announced by Westinghouse officials and college authorities. An agreement with the college will allow the two men to complete work on their Master's Degree while they assist the faculty with teaching assignments.

* * *

★ Exports of the British radio and television industry last year amounted to 33 million pounds sterling and are expected to reach 40 million pounds sterling in 1956 as compared to 2 million pounds sterling in pre-war years.

* * *

★ The French electronics industry now employs 40,000 persons, 40 per cent of whom are trained technicians and who are employed by 400 companies. The industry has a constantly increasing annual turnover (80 billion francs in 1954 — 100 million francs in 1955). One of the most important sectors of the French economy, the electronics industry ranks third among the 28 branches of the electrical industry, accounting for 14 per cent of the total turnover figure. General activity in the French electronics industry has increased 60 per cent since 1948.

* * *

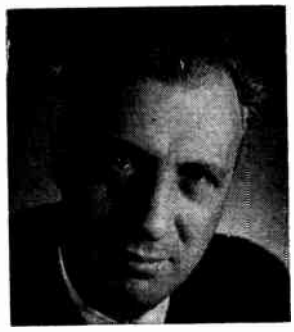
★ H. M. Turner, president of Canadian Electrical Manufacturers' Association, has reported that domestic production by companies in Canada's electrical manufacturing industry was $1,085,500,000 for 1955, an increase of 10 per cent over 1954. This marks the first year that the industry has passed the billion dollar mark in production.

* * *

★ The United States RETMA have recently passed a resolution barring the term "transistor radio" in advertising except where the set uses no conventional tubes.

* * *

The EDITOR'S PAGE



A Job For D.B.S.

The Canadian electronics industry is reported to be growing at a rate three times in excess of the rate of growth of the gross national product and, according to industry authorities, indications are that this steady expansion will continue. At the present time the industry in Canada is doing a half billion dollar yearly business, a volume which is bound to grow as the applications of electronic equipment become more widespread, both in industry and defense.

With this prospect in view it is natural that many business concerns are anxious to branch out and embrace some part of the ever-growing component market in Canada. From figures on file in Electronics and Communications' office, there has been a thirty one per cent increase in the number of American electronic component manufacturers who have established representation in Canada over the period of the past twelve months. These figures are based on a survey of 3,500 American firms carried out for Electronics and Communications magazine for purposes of directory compilation. In all there are 589 American firms who maintain Canadian representation for purposes of selling and distributing American manufactured electronic components and equipment in Canada. According to the most reliable figures obtainable there are 261 Canadian business firms engaged in the manufacture of electronic components. In view of the foregoing it is evident that the Canadian electronics industry is becoming self-sufficient at a rapid pace. In so far as the manufacturer of radio and television receivers is concerned, it may be assumed that we are already on a self-supporting basis and the vast variety of components required for scientific, industrial and defense equipment are becoming more readily available in Canada through Canadian representation of and affiliation with American firms, many of which now maintain manufacturing facilities in this country. There still is, however, considerable scope for the future growth of the Canadian electronics market.

That this fact is appreciated by business management is evidenced by enquiries directed to Electronics and Communications magazine seeking detailed information concerning the dollar import value of various items and other pertinent information and vital statistics relevant to the electronics industry, upon which market surveys may be based.

In so far as other industries are concerned, this type of information is compiled in detail by the Dominion Bureau of Statistics which provides significant factual data for such varied types of business as the Corset Industry, the Macaroni and Kindred Products Industry, Laundries, Cleaners and Dyers, and for the Wine, Twine and Swine Industries.

In view of the growing importance of the Canadian electronics industry, it is considered that the Dominion Bureau of Statistics could assist immeasurably in the further development of this industry by implementing the recent recommendation of the Radio-Electronic-Television Manufacturers' Association which suggested categorizing the electronics industry as an entity unto itself and treating it accordingly in the matter of publishing pertinent statistics relative to the industry as is done in the case of many other fields of manufacture.

It is realized that the compilation of such statistics and their presentation in published form would constitute a task of no small proportions for the Bureau of Statistics but the industry has surely reached sufficiently significant economic proportions to justify the task, a task which the industry earnestly anticipates will shortly be undertaken by DBS.

★ ★ ★

Color Television For Christmas

It has been reported by reliable sources that if government authorities in Ottawa approve the plans of one Ontario television station it will be able to telecast in color to its viewers by Christmas Eve. Complete color telecasting equipment has been ordered by the station owners whose reported schedule of installation calls for color telecasting to commence just about the time Santa Claus is making his rounds on Christmas Eve in central Ontario.

★ ★ ★

A Noteworthy Contribution

The Canadian Government's multi-million dollar production contract for the R-Theta Navigation and Interception Computer is of international significance. By being adopted as standard on the RCAF's CF-100 twin-jet interceptors, the equipment now has a good chance of being sold abroad in quantity to allied air forces and other fighting services, several of which have already bought sets for evaluation.

The equipment was developed and produced in three years by PSC Applied Research Limited, a feat worthy of praise anywhere. The R-Theta, because of its unique features, is a noteworthy contribution not only to Canadian but to international aviation, both military and civil.

The contract is another milestone in the five-year history of the Toronto firm, whose many products have been designed, or engineered, and produced entirely by itself.

Security regulations prevent the publication of the number of R-Theta units ordered. However the contract is the largest of its type ever awarded by the Department of Defense Production in Ottawa. The order is such that it possibly might be increased considerably in time.

The significance of this Canadian developed instrument is indicated by the following:

The R-Theta is being seriously considered for adoption by at least eight other fighting services of allied countries outside Canada, including NATO; it has been ordered by the Canadian, British and United States armies for evaluation as an aid in tank warfare and has also been ordered for evaluation by the Swedish Air Force. It is also being studied with interest by various international airlines for commercial use, especially with future jet transports.

The latest version of the instrument is transistorized and as such is the world's only transistorized navigational computer.

The development of this instrument which has won international acclaim stands as evidence of Canadian ability in the field of electro-mechanical development and engineering, an ability which is second to none and an ability that should be encouraged on every possible occasion by the award of research and development contracts to the Canadian electronics industry whenever such contracts are available from government or industry.

As pointed out in our editorial on page 15 of this issue it is difficult to understand why the development contract for the electronic systems for the Canadian CF-105 fighter has been denied to Canadian enterprise. As stated previously in these columns, there is little use in becoming concerned about our future supply of scientists for Canadian industry without first creating and maintaining positions for them to fill and the only means of doing this is to entrust Canadian industry with development contracts when such become available. To do otherwise surely, is tantamount to denying Canadian scientists the opportunity of finding employment in their own country and an inducement for them to emigrate to countries where such work is available.

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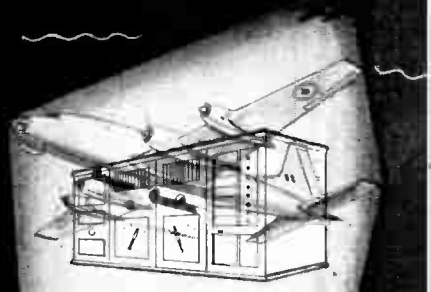

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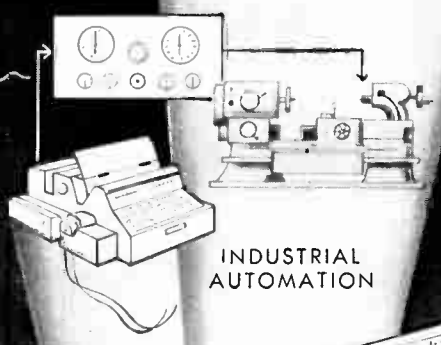

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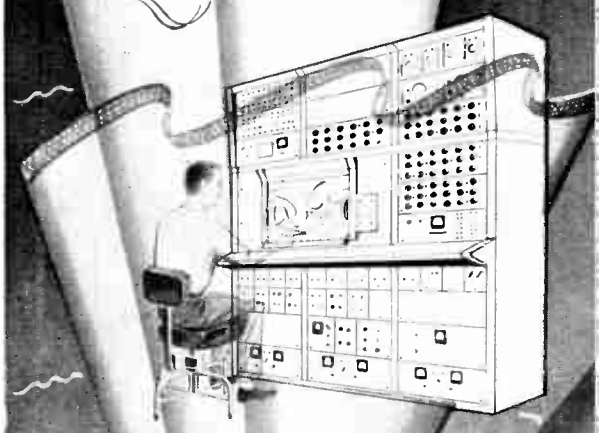

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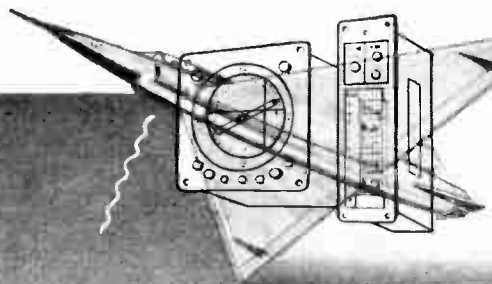

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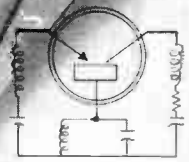

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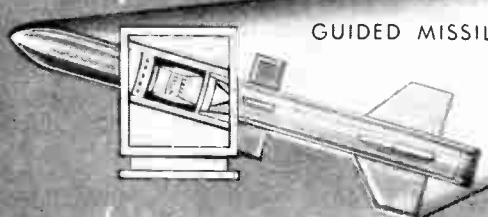

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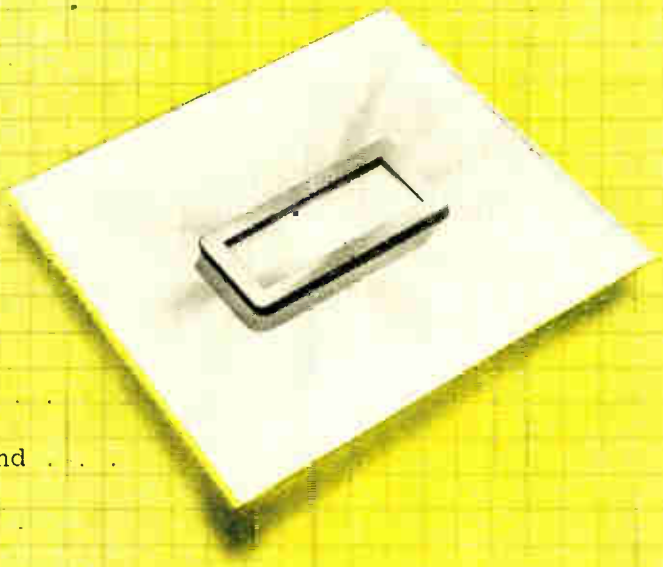

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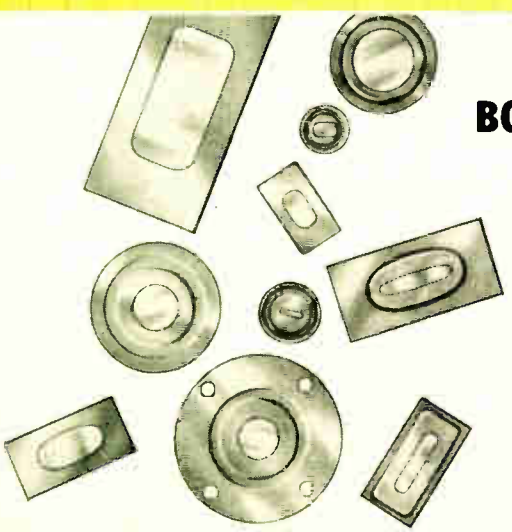

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The availability of silicon diodes as an additional tool for rectifier design presents a new challenge to design engineers. As the newest and most promising addition to the rectification field, silicon offers many unique and noteworthy properties. It opens a new dimension in temperature operating range, peak inverse voltage ratings, forward to reverse resistance ratios, power handling capabilities and miniaturization compared to other solid state rectifying devices.

The following article presents some of the unique and underlying properties of silicon diodes that must be considered to assure optimum performance and life in any specific application.

Application Notes

SILICON RECTIFIERS

By HARRY NASH
Courtesy Silicon Rectifier News

BEFORE entering into a description of silicon rectifiers, their properties and applications, it is worthwhile to define a few of the terms that are used in these descriptions, and also to present some of the philosophy that has led to the presently accepted standards.

The rating system that is used to define the characteristics of silicon power rectifiers is the "Absolute Maximum Rating System". This system defines the maximum operating parameters that may be applied to the rectifier without damage or permanent change in its characteristics, and that assure satisfactory life and performance.

The "Absolute Maximum Rating" system is one of two systems in common use in the electron tube field. The second system, known as the "Design-Center Rating" system, established operating parameters to provide satisfactory average performance in the greatest number of equipment. In the case of rectifiers, such a rating system would incorporate additional safety factors over those of the "Absolute Maximum" system to allow for typical line voltage variations, switching surges, and other statistical circuit variations encountered in average equipment. However, since the magnitude of overload transients and surges are generally different for each application, the use of this system provides the designer with either too much safety factor for a particularly stable and regulated device, or too little safety factor for the other extreme of regulation.

In the "Absolute Maximum Rating" system, the equipment designer has complete and explicit information on the capabilities and limitations of the device. It is his responsibility to properly evaluate the supply voltage variations, load variations and ambient condition variables, and to incorporate the necessary safety factor for an optimum design. This rating system is therefore better suited for rectifier design and has become accepted by the industry.

Peak Inverse Voltage (PIV)

The peak inverse voltage (PIV) of a silicon diode is defined as the peak voltage of inverse polarity which may be applied across the rectifier without damage or permanent change in its characteristics. The electrical properties of silicon diodes are such that the significance of this rating may be very easily defined. Figure 1 shows the typical volt-ampere characteristic of a silicon diode. The following characteristics will be apparent:

1. A very low reverse leakage current within the operating PIV range.
2. A low reverse power dissipation within the operating PIV range.
3. A very sharp avalanche breakdown voltage (Zener); this breakdown voltage has a positive temperature coefficient, i.e., breakdown voltage increases with increasing temperature.
4. A very high reverse power dissipation within the diode at the avalanche breakdown voltage. The diode should never be operated at this breakdown point without use of a current limiting resistor to limit the power dissipation to a safe value, such as for voltage reference applications.

It may be seen from these characteristics that the PIV rating of a silicon rectifier is determined primarily by the avalanche breakdown voltage of the silicon junction. The International silicon diodes are classified for absolute maximum PIV ratings that may never exceed 80 per cent of this breakdown voltage, at 25° C ambient temperature. This 20 per cent safety factor between the PIV rating and the breakdown voltage will increase somewhat at higher temperatures and decrease at lower temperatures. Figure 2 illustrates the typical variation of avalanche breakdown voltage as a function of temperature. It will be seen from this curve that there is a typical safety factor between voltage breakdown and operating PIV of 10 per cent at the —55°C ambient temperature and 45 per cent at +150°C ambient temperature; no voltage derating is required over the entire temperature range from—55°C to +150°C ambient.

A noteworthy advantage of silicon rectifiers over other types of metallic rectifiers is that the same maximum PIV rating applies for any type of input voltage waveform, as long as the maximum instantaneous value of this voltage does not exceed the voltage rating. The maximum continuous d.c. voltage input for blocking and switching applications may therefore be of the same amplitude as the maximum peak voltage of a sinusoidal wave or the peak value of a pulse input.

Absolute Maximum Current Ratings

The maximum current rating of a silicon rectifier is defined as the current that may be carried by the rectifier without damage or permanent change in its characteristics, and that assures satisfactory life and performance. This maximum current rating is based primarily upon the maximum junction temperature rating of the rectifier, and it is therefore dependent upon ambient temperature, duty cycle, and particularly the heat transfer properties of the rectifier mounting or heat sink; it is fairly independent of the reverse voltage across the rectifier because the reverse power dissipation contribution to junction temperature rise is small by comparison with the forward dissipation.

It should be noted that the maximum surge current rating, as well as the d.c. output current rating, must be closely observed. This surge rating is established to protect the junction, with its very small thermal time constant, from being excessively heated by momentary current surges.

Silicon Rectifier Junctions

The silicon junctions for medium power applications described here are made by the fused junction process. They are well suited for medium power rectification since they offer the low forward voltage drop and good thermal and electrical conductivity that is necessary for optimum power handling capacity.

The operating temperature range of silicon rectifiers presently in production is from —55°C to +150°C ambient with a storage temperature range from —55°C to +170°C ambient. The low temperature limit is being extended to —65°C ambient in accordance with military requirements, and prototype tests at these low temperatures are presently being conducted. The high temperature limit also may be extended since the present maximum junction temperature of 170°C is well below the temperature at which the silicon loses its unidirectional rectifying properties and becomes intrinsic (approximately 250°C). It is hoped that silicon powers rectifiers may be rated for operation from —65°C to +200°C junction temperature in the near future.

TYPICAL INVERSE VOLT — AMP CHARACTERISTICS OF A 300 VOLT PIV SILICON DIODE STYLE S — PIGTAIL MOUNTED

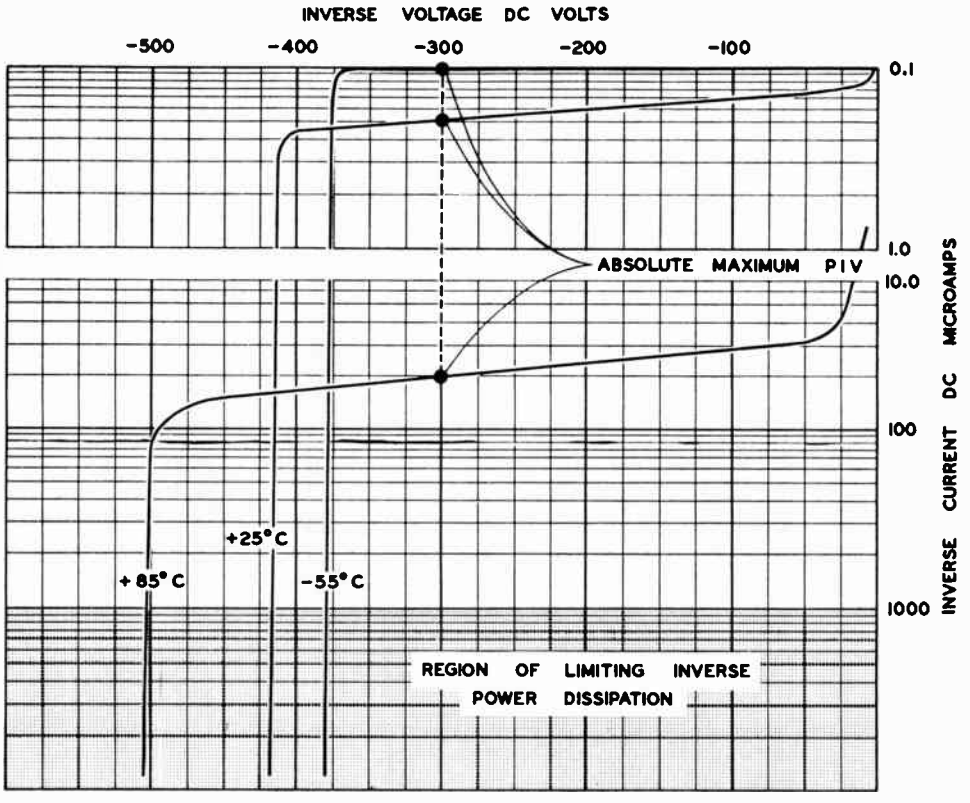


FIGURE 1

Application Notes

The rated PIV classifications in which these silicon junctions are available in production range from —50 v to —600 v. For special applications, higher voltage units with avalanche breakdown voltages (Zeners) greater than 800 v are available, on request. These silicon junctions lend themselves very well to series connection for very high voltage requirements since no special matching of inverse characteristics is required. Even if the reverse voltage distribution in a series string of diodes is so unbalanced that one of the diodes operates at its voltage breakdown point the series resistance introduced by the other diodes limits the reverse dissipation to safe operating values. For such series connection, the prime precaution that needs to be observed is that the total PIV requirement, including design safety factor, of the rectifier does not exceed the sum of the PIV ratings of the individual diodes. The maximum d.c. current rating of such a series connected high voltage rectifier may be the same as for the individual diodes, provided that the spacing between diodes is sufficiently wide to allow normal convection cooling.

The maximum rectified d.c. output current rating of the standard low power silicon junctions, unmounted and convection cooled in free air, is 300 ma at ambient temperatures up to 100°C. Under the same conditions, the continuous d.c. current rating for blocking and switching applications is 400 ma, at a duty up to 100 per cent. These output current ratings may be greatly increased by mounting the diode on a copper cooling fin, convection or forced air cooled, or by mounting directly to the chassis; the stud mounted diodes, Style T, are designed for this application. The d.c. output current rating of this junction when mounted for optimum heat transfer (infinite heat sink), is 1.25 amperes, half wave, resistive load.

Parallel operation of these diodes is recommended for applications requiring higher d.c. output current in the medium power range. For such application it is recommended that the rectifiers be matched in their forward conductance characteristics to prevent possible unbalance in the load distribution. Alternately, small equalizing resistors may be connected in series with each diode to prevent load unbalance.

SILICON POWER DIODES TYPICAL VARIATION IN AVALANCHE (ZENER) BREAKDOWN VOLTAGE VS TEMPERATURE

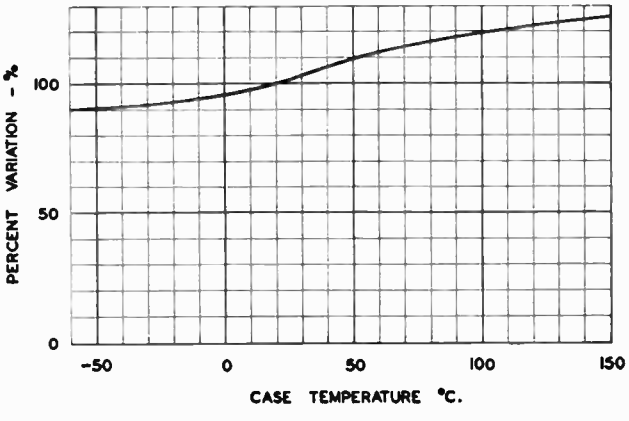


FIGURE 2

(Turn to page 25)

With customers placing more and more emphasis on specification requirements calling for equipment and components to withstand extreme environmental conditions, manufacturers have taken the guesswork out of development projects by subjecting apparatus to gruelling tests under simulated operational conditions.

Environmental Testing Of Electronic Components

SOME of the most modern environmental test equipment in Canada has been placed in operation by the Canadian Westinghouse Company at its Hamilton Electronics plant. Purpose of the new half-million dollar laboratory is to test airborne electronic equipment.

In the laboratory, design engineers can test their equipment under controlled conditions that actually simulate expected operational stresses, temperature and climate.

Housed in the 9,000 square foot laboratory building are facilities for testing components and fairly large completed units, that include machines for vibration, impact, sustained acceleration, climatic, and altitude tests.

A Tenney Stratosphere Chamber is one of the most compact and complete ever built. Specifications called for one unit that could simulate all varying climatic conditions required in government specifications.

In addition to the altitude and temperature tests, vibration tests can be carried out under any specified climatic conditions. Temperatures can be varied over a range of -100°F to +200°F. Over the range -50°F to +120°F an average rate of change is 28°F/min. For extreme cold tests the temperature can be lowered from ambient to -100°F in a matter of minutes. A similar period is required to reach +200°F. All conditions can be programmed over a 24 hour period so that automatic cycling can be carried out.

Altitude tests can be carried out from sea level to 50,000 feet at an average rate of 5,000 feet per minute climb. It requires 30 minutes to reach the stratospheric height of 90,000 feet.

There are three 6-inch and two 3-inch ports for electrical leads on the side of the chamber. They can be airtight when the leads are being used. All the ports have blanking plates which can be made up for specific pieces of equipment. There are also three hydraulic feed throughs for operating hydraulic equipment.

It is possible to carry out vibration tests during the various climatic cycles, because a vibration bellow seal for use with the push rod of the vibrator allows the use of a Calidyne Model 58 vibrator with the chamber.

A Tenney altitude chamber permits the study of high speed ascents and descents, so that actual flight conditions can be simulated.

In other climatic test chambers, an Aminco Test Chamber can test equipment under a variety of altitude, temperature and humidity conditions. The Aminco Chamber can test components and small assemblies under non-operating conditions.

Climatic Testing

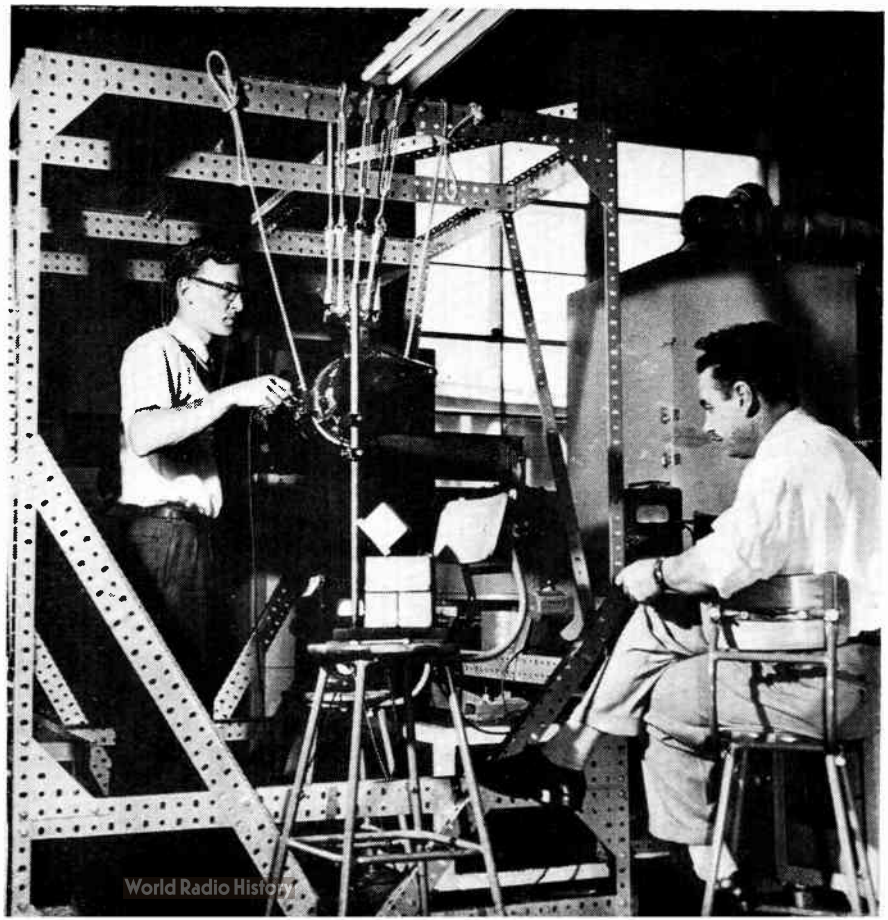
In the climatic testing portion of the laboratory facilities are also available for the testing of components under conditions simulating rain, salt spray, dust, fungus, fume corrosion, shallow and deep erosion, and transportation shocks.

In the mechanical testing section are nine vibrators which are capable of carrying out any required tests. Assemblies can be mounted on any of the four M.B. Model C5H vibrators that can heat or cool as required. The sample can then be tested for performance under varying conditions and change in operating conditions can be noted.

Equipment is also available to carry out tests on both sustained and shock acceleration. Two centrifuges, one the Schaevitz and the other a Westinghouse machine are available in the laboratory. The Schaevitz is primarily intended for testing components and small assemblies, the larger model is mounted in a pit and can be used for medium size assemblies.

On the first the speed is controllable in order to produce the desired acceleration and maximum speed will produce 500 G at a 10-inch radius using a one pound load. With a three

(Turn to page 47)



● Canadian Westinghouse engineers use development missile on test-bed for torsional studies simulating actual flight conditions. This research is carried out in a section at the company's new environmental and appraisal laboratory at Hamilton.

With the increasing congestion of air traffic in the proximity of airports and with the introduction of high-speed jet transports, airline operators are seeking more efficient means to prevent the occurrence of mid-air collisions through the use of . . . .

Aircraft Collision Avoidance Equipment

DEVELOPMENT of an electronic device to prevent aircraft midair collisions has been given top priority by the Air Transport Association in the United States.

The Air Transport Association recently announced that a plan proposed by Collins Radio for such a device was the "most satisfactory" of several proposals to solve the collision problem arising from the increasing congestion of airways and higher speeds of aircraft. The ATA is a national organization of the major airlines.

The plan proposed development of an interim equipment to warn the pilot of the presence of any aircraft dangerously close to his own. A more comprehensive equipment to follow this initial development will automatically determine if a nearby aircraft is on a collision path and advise the pilot of the evasive action to take.

The latter development will be especially important with the introduction of jet transports which will travel at such high speeds the pilot has little time to avoid an oncoming aircraft after he sights it.

The device would be designed so that it would be as compatible as possible with the more extended functions of the second phase. The latter will require considerably more research and development, since the equipment will be required to automatically solve mathematical formulas to determine if two aircraft are on collision paths.

The manufacturer expects to have the detection device or "Proximity Warning Indicator" available to the airlines in 1958, with the "Collision Detection and Avoidance" equipment ready the following year.

The Air Transport Association gave impetus to solution of the collision problem back in April of 1955 when it supplied a large number of electronics equipment manufacturers with an analysis of the problem and the requirements for the solution.

Two Functions

The proximity warning equipment will provide two functions. The first function is to detect and display any aircraft that enters the flight plane (within an included vertical angle of 15 degrees) in any of the four quadrants, fore, aft, left, or right, of the aircraft. For this phase of the operation, maximum ranges of either 800 feet or two nautical miles can be selected. Information from each quadrant is independently displayed, and four different lamps will be provided in each quadrant to show maximum ranges of 400 feet, 800 feet, 1 mile, and 2 miles. This will provide the pilot with information as to which quadrant and about how far out an intruding aircraft is located. If the intruding aircraft is in one of the nearer ranges, a second aircraft in that quadrant will be detected entering the far ranges.

In addition to the range detection, the equipment will, at the same time, detect and display an aircraft that comes within either a 400 or 800 foot range radius of the aircraft. This will be displayed to the pilot by lighting lamps that indicate whether the intruding aircraft is above or below the flight plane. The equipment will give additional warning if another aircraft enters the opposite hemisphere from one that is presently displaying a warning. The indication will continue until the object either goes beyond the 800 foot radius or is within a minimum distance of 400 feet of the center of the aircraft, when the 400 foot warning lamp will light. This indication will continue until the object goes beyond 400 feet or is within a minimum distance of 200 feet. This minimum is necessary to prevent the indication of one's own wingtips or tail extremities.

The PWI antennas will consist of four directional types for azmuth coverage and one for each of the upper and lower hemispheres. Location of the antennas will be determined by the aircraft type.

Cw-Fm radar will be utilized for the basic rf system. Range detection will be by frequency change as the transmitter frequency is swept in a sawtooth manner.

The PWI equipment will be encased in an ATR size box ($10\frac{1}{8}$ x $19\frac{9}{16}$ x $7\frac{5}{8}$) weighing approximately 55 pounds.

Silicon Rectifiers

(Continued from page 23)

The forward conductance characteristic of the silicon power diode is relatively unaffected by variations in temperature when operating near its rated current value. Figure 3 illustrates the typical variation in d.c. forward voltage drop for rated current output, over the operating temperature range. It will be noted that the forward voltage drop has the negative temperature coefficient that is characteristic of semi-conductor devices; the graph shows a nearly constant slope of —0.15 per cent per degree Centigrade over the temperature range. For a typical "Magnetic Amplifier type S" diode operating at its rated current of 300 ma dc this represents a change in forward voltage drop of approximately 0.002 volts per degree centigrade. This characteristic also points out the advantage in operating the silicon diode at elevated temperatures; since the reduced forward voltage drop permits somewhat higher operating efficiencies.

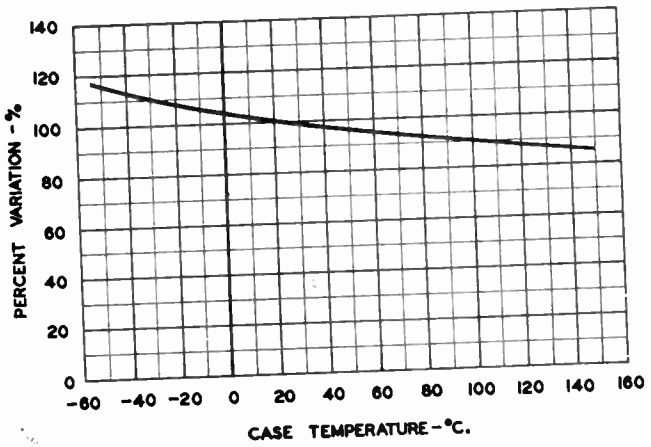
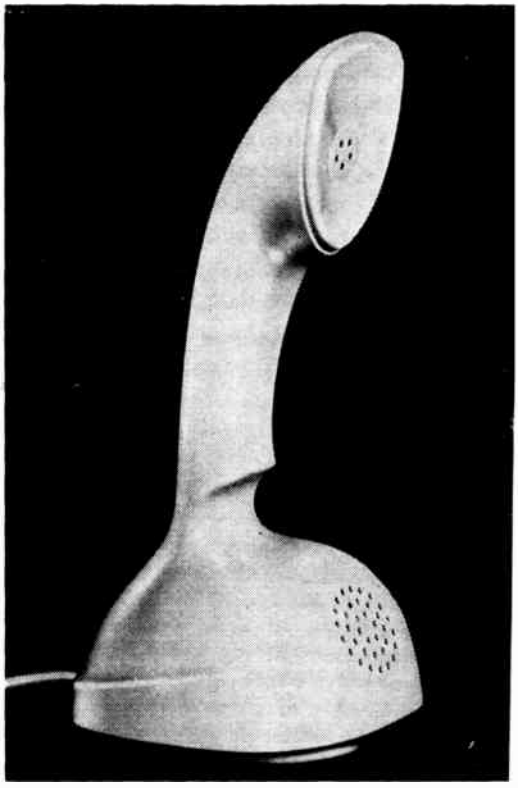


FIGURE 3

● Silicon power diodes typical variation of static forward voltage drop at rated current vs. temperature.

An entirely new concept in telephone design and efficiency was introduced on October 15 to the Independent Telephone Industry at their annual convention in Chicago. Not since the telephone was conceived has there been such a bold and successful attempt at . . . .

Modernizing Telephone Handsets



● The Ericofon, a one-piece dial telephone, combines modern design with efficiency in operation.

THE Ericofon, a one-piece desk or table model dial telephone, is an exciting departure from the conventional two-piece handset-pedestal combination. Standing 9¼" in height, the Ericofon requires a minimum of space since the base measures only 4½" by 3⅞", less than one-half the size of the standard telephone. Located in the underside of the base, the dial can now be viewed and operated from the most convenient angle possible since it actually "comes to the user" when the instrument is lifted for use, instead of the usual reaching for the dial. Bedside telephoning is both pleasant and easy and dial is "letter-perfect," the dial numbers being located outside the finger-holes for complete legibility while dialing. The dial itself is extremely quiet and smooth in operation.

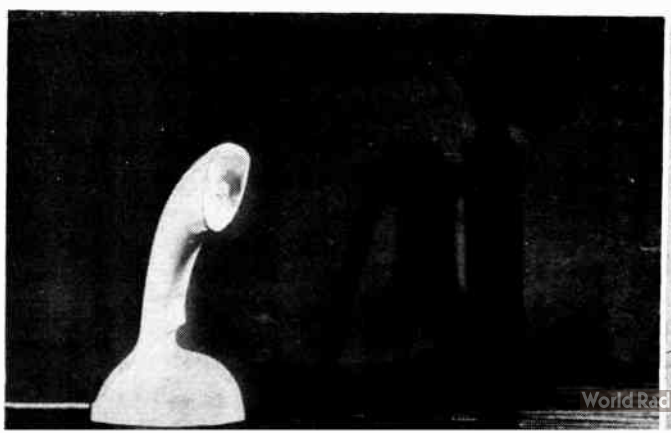
Because of the unit's single unit construction, a "standswitch" was devised and placed in the underside of the base in the center of the dial. This "standswitch" performs the usual line-connecting operations — when the unit is lifted, it allows the "standswitch" to release and the instrument is connnected; when placed back on its base, it is disconnnected by the depressed "standswitch".

Light in weight, the complete Ericofon weighs less than most handsets alone. The case is molded of a thermoplastic material noted for its high resistance to impact, scratches and stains, and is available in six colors — Ivory, Green, Light Grey, Red, Blue and Dark Grey. These beautiful colors harmonize or complement every color scheme, every decorating motif. Because of the unique construction of the Ericofon, it is possible to interchange cases for different colors, if desired. The graceful curving shape of the case fits naturally in either hand for utmost convenience, utility and efficiency.

The receiver is permanently sealed inside the upper part of the case; the transmitter is located in the inside lower part of the base; both positions determined for efficient operation as well as for comfort and simplicity.

The concentration of components and parts in the chassis located inside the base of the Ericofon reduces electrical connections to a minimum. Compared with the conventional telephone, the number of soldering points, terminal screws, wiring, etc., has been reduced nearly 50 per cent. Nothing has been overlooked to offer the ultimate in design and utility — even the cord reflects perfect functional design. The combination of a straight and coiled cord eliminates cord strain and permits the unit to be carried nearly seven feet from its terminal, yet the straight cord section connected directly to the instrument allows easy movement over desk edges with no coils to catch edges or sharp corners.

● *Left (below):* The modern stream-lined handset compares favorably with its silhouetted predecessor of half a century ago.



● *Right (below):* The operator turns the underside of the handset up to reveal the dial, and numbers clearly shown outside the finger-holes add to its easy operation.

Dangerous fire hazards, costly down-time, and time-consuming clean-up operations eliminated by the introduction of . . . .

Electronic Level Controllers For Large Bakery Operations

SIMPLIFIED electronic control instruments are helping the baking industry make extensive strides toward automation.

The National Biscuit Company, one of the largest U.S. bakers, will use low cost, one-tube electronic instruments to control steps in production operations in its new plant nearing completion at Philadelphia. The new devices will automatically control the flow of flour, cracker meal, sugar, shortening, and oil, as these basic ingredients are transformed into baked products.

The baking company became interested in electronic level control two years ago when production personnel at its Chicago operation were unable to solve a number of control problems. Several conventional devices, including paddle wheels, sight gages and diaphragm controllers, were tried without success.

A team of industrial instrumentation engineers, representing the Fielden Instrument Division of Robertshaw-Fulton Controls Company, was called in to study the problem. Checking on all practical solutions, the engineers recommended the installation of simplified electronic controllers that operate on the principle of electrical capacitance. These capacitance controllers, called Tektors, can sense minute changes in the electrical currents, which are present in the air at all times. As the level or flow of a material changes, the surrounding electrical impulses are similarly changed, and recorded by the electronic device.

The major problem at National's Chicago bakery involved controlling the level of cracker meal in filler bins. From these bins, it is packaged automatically in smaller boxes for shipment to distributors. A gravity feed conveyor system is employed to move the meal into the filler bins from fracturing and grinding devices, or comminuting machines, where specially baked crackers are reduced to meal.

A dangerous fire hazard was created when the meal, permitted to overflow the filler bins, backed up into the grinding apparatus. Trapped in the grinding machinery, the meal became hot and likely to fire. In addition to the safety hazard created, attendant difficulties included costly down-time and clean-up.

Sensing Probe Solves Problem

From the top of the filler bin, a plastic covered sensing probe, six inches in length, was installed downward into the bin. As the bin filled to within three inches of the top, the electronic device "triggered" automatically, stopping the flow of cracker meal.

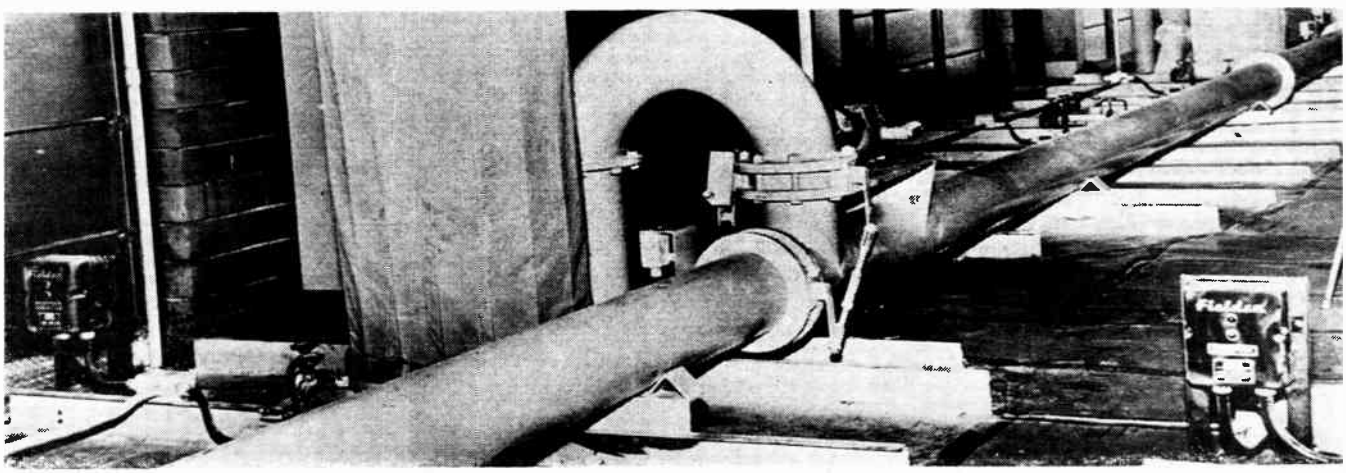
Once the volume of meal is reduced to a safe level, a conveyor system is re-started automatically and the flow into the filler bins is begun again. The electronic device accomplishes a dual function, that of maintaining an adequate supply of meal in the filler bins and also eliminating the fire hazard.

After two years of continuous operation in the Chicago plant, Tektor installations, which contain no moving parts, have shown little tendency to wear out or break down.

Another application of the Tektor level controller at National Biscuit helped solve a flour storage problem. For this installation, instrumentation experts recommended a special armored Tektor, suitable for hazardous applications.

Flour is received at the Chicago bakery in specially-constructed Transflow railroad cars. These cars are unloaded into 60-foot-high steel bins by a pneumatic filler system, called an airveyor. Here, too, several types of controllers had been used unsuccessfully to stop the flow of flour once the storage bin was filled.

Tektor controllers were installed at the top of ten flour bins at the baking plant. A 50-inch sensing probe, connected to each Tektor, extended down into the bin. As the level of flour came within 50 inches of the top, the electronic device automatically stopped the airveyor system. The remaining 50 inches at the top could handle the flour remaining in the conveyor tubes.



● Top of 20-foot flour storage bins at National Biscuit Company plant, Chicago, shows airveyor ducts and Tektor electronic controllers which direct the flow of flour. Attached to each controller is 50-inch probe (not seen) extending through roof of tin.

New office of the New York Savings Bank incorporates latest in electronic equipment with anticipated 333 per cent increase in deposits and only a 25 per cent increase in equipment and personnel.

Modern Banking Methods Feature Electronic Equipment

NEW electronic equipment is playing an important part in the plans of the New York Savings Bank for present operations and future expansion.

At the opening of its Radio City, New York office, the newest in electronic banking equipment and techniques were demonstrated. The bank confidently expects its new electronic teammates — closed circuit television equipment and cash register accounting machinery — to provide the facilities for a 333 per cent increase in deposits with only a 25 per cent increase in equipment and personnel.

The New York Savings Bank pioneered in the use of closed circuit television in banking two years ago in its first Radio City office. In two short years this office proved to be the fastest growing savings bank office in New York history. Against estimates of accommodating a deposit total of $50,000,000 in 1500 square feet, actual events proved that the branch office could handle as high as $75,000,000 without increasing equipment or personnel.

At the new office, containing 4,000 square feet, the New York Savings Bank now says with a confidence born of experience that a deposit total of $250,000,000 can be accommodated in this space with only a 25 per cent increase in equipment and personnel.

Own TV Network Via Micro-Wave

Closed circuit television is credited in large part in making all this possible. The use of television in banking not only made it possible to extend banking hours, but also offered better teller service because the teller was never required to leave her station. A special television screen is installed in every teller's counter so that all information may be immediately available to the teller. The teller does not have to leave her station and can devote herself entirely to the needs of the customer.

At the opening of the office, bank officials and General Precision Laboratory provided two way televised communication between the banking room at Avenue of the Americas at 49th Street, in the U.S. Rubber Building and the Rockefeller Center Luncheon Club 1000 feet away and 65 floors up where a reception was held for guests and friends. This two way communication marked the first bank use of TV transmission by micro-wave. The use of micro-wave is experimental and may provide facilities in the future for the transmission of banking information over a private network. If the bank opens another office television transmission could be made from its main office at 14th Street by micro-wave to the Rockefeller Center Office and any new office and the rental of coaxial cable could be saved.

Offices Connected By TV

A television camera is located in the accounting room at the bank's main office at 14th Street and 8th Avenue. It weighs five pounds and is no bigger than a football, operating at extremely low light levels so that no special lighting equipment is necessary. The camera operates off an ordinary wall outlet.

A picture of the record required is transmitted by camera over telephone company lines, two and one half miles from the main office to the Radio City branch-office, and the 10 tellers have monitors mounted in the desks before them to receive the picture.

The teller flicks a switch and is connected to the central accounting room two and one half miles away. She asks for the desired information, the record clerk puts the proper record card under camera lens and the picture is instantaneously transmitted to teller's monitor.

Commenting on the future use of TV for banking services bank officials have predicted the expanded use of television with individually designed screens for each teller and additional camera equipment at the 14th Street Office, some 40 blocks away which will make for even faster and better service. Also experiments with micro-wave transmission may lead to the setting up of transmission facilities for the Bank's own TV network.

Bank authorities think that the introduction of new accounting machinery will make one stop banking for all facilities a reality as deposits, withdrawals, checks, money orders and Christmas Club can be handled at the same station and on the same machine.

Bank officers also anticipate the introduction in a few months of an automatic recording machine which will simultaneously punch each transaction on a tape which in turn can be used to automatically reproduce an IBM card for each transaction.

● View of the specially designed teller's counter with the teller verifying signature and balance transmitted by GPL television camera 2½ miles away. Direct intercom line is at the rear of television screen to central bookkeeping division at 14th Street.

A new hand-held underwater television camera developed by a world-leader in this type of television equipment promises to speed the general use of this equipment wherever submarine study is necessary for commercial operations.

Hand-Held Underwater Television Camera

A NEW hand-held underwater television camera which will enable divers to be effectively supervised from above water is claimed to be the smallest and cheapest underwater TV camera yet to be produced.

The general trend in present diving methods is to relieve the diver of as many encumbrances as possible. A free-swimming non-suited diver carrying his own self-contained breathing apparatus is able to perform underwater operations far more efficiently than the heavily-clad, slow-moving conventional diver. With practically unrestricted movement a free-swimming diver is independent and necessarily cut off from the ship. This method presents certain difficulties in that personnel on board ship are unable to tell what has happened underwater until it is related to them by the diver. Consequently, incorrect information given by the diver and mis-direction by officials may result in absolute confusion. Time lost by this method of relaying information is an important factor and undoubtedly a large amount of money is at present being wasted.

With the new camera, instead of having to rely on a diver's report, a number of expert observers may view the underwater scene displayed on large-screen picture monitors. A record of the picture reproduced on the monitor screen is easily made by photographic means, which obviates the difficulty of taking photographs underwater. The equipment will find many applications in salvage operations, submarine engineering, marine biology and oceanography.

With accurate visual information available on the display monitor, it is possible for expert direction to be given to the diver and an accessory for this equipment, the underwater loudspeaker, provides a simple method. Two divers, one holding the camera and the other concentrating on a complex project, may be directed by observers above water to derive the utmost advantage from favorable weather conditions.

The camera is intended for operation down to a depth of 250 feet, but to provide an adequate safety margin the container has been designed to withstand a water pressure of 220 lbs. per square inch, corresponding to a depth of 500 feet. The unit is buoyant in water and weighs 38 lbs. in air.

Normally, the spherical camera is fitted with two handles held in position by means of two clamping rings. When not required the handles can be removed and replaced by weights or lamps so that the unit can be used without the assistance of a diver. An output socket is provided for the connection of lamps or an underwater loudspeaker.

The equipment consists of a spherical-shaped camera unit, twelve inches in diameter, and a picture monitor and camera control unit which may be on board ship or at any other convenient location above water. All camera adjustments are carried out from the control position, the only concern of the diver being to position the camera correctly.

The container for the camera unit consists of two Duralinox hemispheres held together entirely by external air or water pressure to form a sphere twelve inches in diameter. The action of forcing the two halves together by means of a simple hand tool pushes air through a release valve and creates low internal pressure.

The electronic details of the equipment are similar to those of Pye industrial television. The camera, control unit and monitor comprise a complete closed circuit television system capable of providing a high definition picture in accordance with international standards.

A Staticon pick-up tube, which has a light characteristic similar to that of the human eye, is used in the camera unit to convert the optical image to an electrical signal. Pictures displayed on the monitor are therefore extraordinarily close in monochromic detail to those of the images seen by the diver. The camera control unit is contained in a rectangular metal case incorporating all the essential requirements for the control of the signal produced by the camera. The 14" picture monitor is self-contained and is large enough to be viewed by a number of persons at a distance or to be used for the close examination of fine detail. Definition of the picture is very high and permits excellent photographic records to be taken. In practice it is sometimes advantageous to have separate monitors, suitably located, in order that

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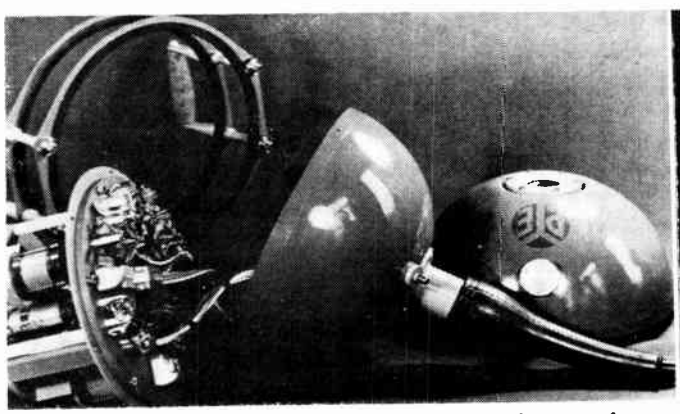
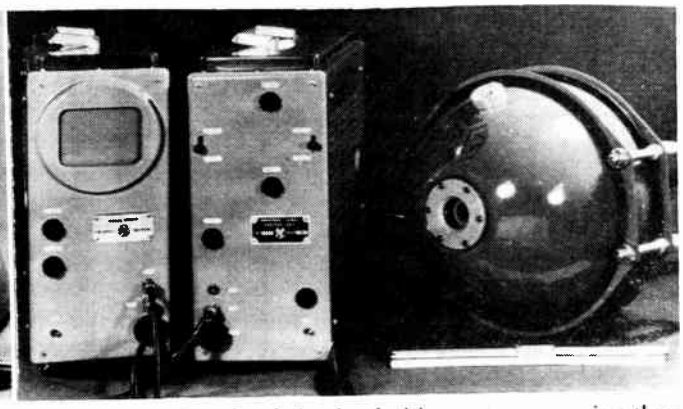


● The underwater camera is housed in two halves of a sphere twelve inches in diameter, and is fitted with detachable handles held by two clamping rings.

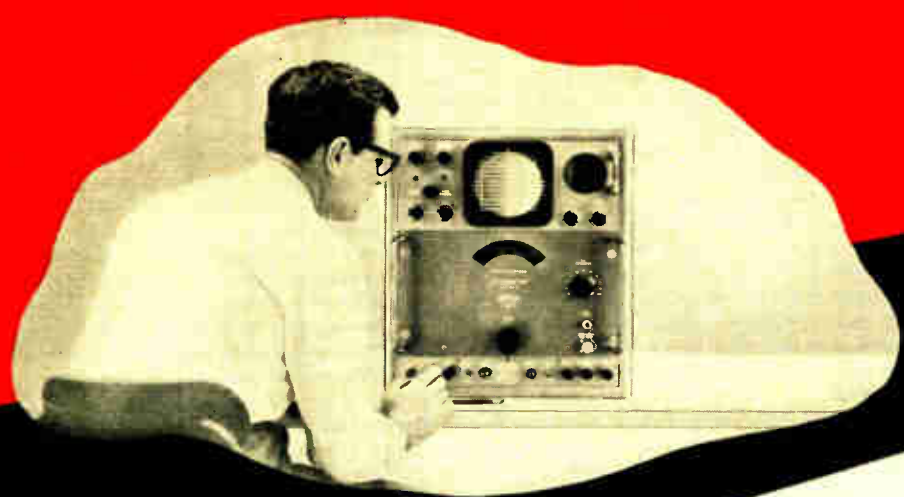


● The complete closed circuit television system comprises three pieces of equipment: a spherical-shaped camera unit, a picture monitor and camera control unit.

Direct Reading Spectrum Analyzer

for
- Visual frequency calibration — high resolution
- Leakage and interference measurements
- Standing wave measurements
- Pulse modulation analysis
- Sensitive receiver

The BASIC SCOPE for VISUAL MICROWAVE



SPECIFICATIONS

Model No.	Equipment
Model Du.....	Spectrum Display and Power Unit
Model STU-1...	RF Tuning Unit 10-1,000 mc.
Model STU-2A.	RF Tuning Unit 910-4, 560 mc.
Model STU-3A.	RF Tuning Unit 4,370-22,000 mc.
Model STU-4...	RF Tuning Unit 21,000-33,000 mc.
Model STU-5...	RF Tuning Unit 33,000-44,000 mc.

Frequency Range: 10 mc to 44,000 mc.
Frequency Accuracy: ±1%
Resolution: 25 kc.
Frequency Dispersion: Electronically controlled, continually adjustable from 400 kc to 25 mc per one screen diameter (horizontal expansion to 20 kc per inch)

Input Impedance: 50 ohms—nominal
Overall Gain: 120 db
Input Power: 400 Watts
Sensitivity: (minimum discernible signal)
STU-1: 10-400 mcs—89 dbm
400-1,000 mcs—84 dbm
STU-2A: 910-2,200 mcs—87 dbm
1,980-4,560 mcs—77 dbm
STU-3A: 4,370-10,920 mcs—75 dbm
8,900-22,000 mcs—60 dbm
STU-4: 21,000-33,000 mcs—55 dbm
STU-5: 33,000-44.000 mcs—45 dbm
Attenuation:
RF internal 100 db continuously variable (STU-1, STU-2A, STU-3A)
IF 60 db continuously variable

Frequency differences as small as 40 kc measurable by means of variable frequency marker with adjustable amplitude.
Portable and completely self-contained.

For further data on advertised products use page 49.

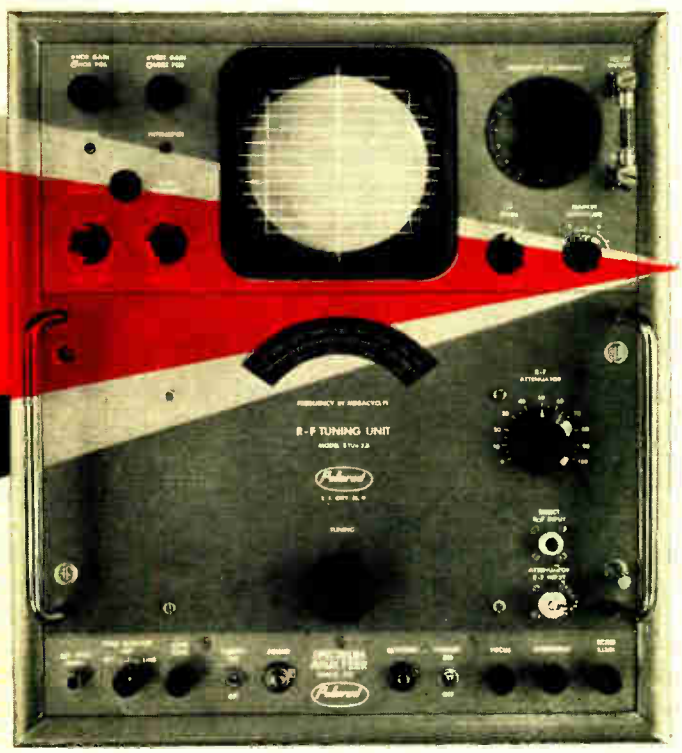
Broadband 10-44,000 mc

Now, the Polarad Model TSA Spectrum Analyzer provides the same visual advantages for microwave testing as the standard oscilloscope accomplishes for low frequency signals. This is a "must" instrument for microwave work! It displays with high sensitivity on a bright easily defined CRT, pulse modulation components, frequency differences, attenuation and band width characteristics, leakage detection, radiation and interference signals, and VSWR information.

This is visual instrumentation—it provides immediate and complete information because of the high resolution obtainable.

Frequencies are read directly on the linear dial with 1% accuracy as the set is tuned. Maximum reliability and long life are assured through use of non-contacting oscillator plungers. A variable frequency marker with both frequency and amplitude adjustable is provided.

ANALYSIS



Write today—directly to Polarad, or your nearest Polarad representative—to find out how the Model TSA Spectrum Analyzer can speed your research and solve your microwave measurement and testing problems.

Write for your copy of the Polarad "Handbook of Spectrum Analyzer Techniques". 50c per copy. Includes discussion of Spectrum Analyzer operation, applications and formulae for analysis techniques.

AVAILABLE ON EQUIPMENT LEASE PLAN

FIELD MAINTENANCE SERVICE AVAILABLE THROUGHOUT THE COUNTRY

POLARAD
PROVEN RELIABILITY

ELECTRONICS CORPORATION
43-20 34th Street, Long Island City 1, N. Y.

REPRESENTATIVES IN CANADA: Measurement Engineering Limited, Arnprior, Ontario • Burlington, Ontario

NEWS ☆ ☆ ☆

Western Headquarters For CDC

A headquaters for the Western operations of Computing Devices of Canada has been established in the Commercial Building, 10120 Jasper Avenue, in Edmonton. The move follows more than a year of intensive study of the western market potential for the specialized products and services of the Ottawa company.

J. GREENAWAY

Initially, the Edmonton branch will be a sales office under the direction of John Greenaway, who has been transferred from Ottawa. It is expected that the activities will expand to include data processing and consulting services in the near future. Later, subsidiary sales offices are to be established in Calgary and Vancouver.

Company Announces Name Change To Honeywell Controls Limited

A name change involving the Minneapolis-Honeywell Regulator Company Limited, with head office in Leaside, Ontario, has recently been announced by president, W. H. Evans.

The company will henceforth be known as Honeywell Controls Limited.

The change was made for several reasons, said Mr. Evans. It has the advantage of being shorter, it stresses the Honeywell name by which the company has become generally known and the inclusion of the word "controls" more accurately reflects the enlarged scope of the company's present day operations.

Honeywell Controls Limited, which has begun an expansion program on a recently purchased 35 acre site in the Township of Scarborough, is one of Canada's largest manufacturers of automatic controls.

Workman TV Inc. Finds Warehousing Facilities In Canada

As a convenience to Canadian and other non-domestic jobbers, all the products manufactured by Workman TV Inc., Teaneck, N.J., are now warehoused in Canada by Len Finkler, Port Credit, Ontario and E. S. Gould Sales Co., Montreal, Quebec.

Environmental Engineers Propose Canadian Branch

Environmental testing is rapidly becoming a prominent phase of manufacturing and government operations. A number of individuals have indicated a sincere desire to form a Toronto technical group and the preferred procedure would be to establish a Canadion branch of the Institute of Environmental Engineers with the initial section in Toronto.

The Institute of Environmental Engineers will supersede the Science Section of the Environmental Equipment Institute and is being incorporated as a separate association.

PSC Applied Research Limited is the prime mover in this endeavor to establish a Canadian branch, and it has the authority of The Institute of Environmental Engineers to make a survey of those persons potentially interested in such a movement.

Those interested in this new group should communicate with Mr. J. W. Speight, c/o PSC Applied Research Limited, 1500 O'Connor Drive, Toronto 16, Ontario.

Hamilton Branch Of E.I.C. Sponsors Nuclear Course

Hamilton and district engineers are receiving an insight into the mysteries of the atom and the increasingly important field of nuclear physics through a six-lecture course on atomic energy being sponsored by the Hamilton branch of the Engineering Institute of Canada.

Two prominent Hamilton physicists, Dr. M. W. Johns, of McMaster University, and Dr. D. M. Roberts, of the Canadian Westinghouse atomic energy division are delivering the lectures. It is the first project of the newly formed technical section of the Hamilton branch of the E.I.C.

The course represents a unique opportunity for engineers to gain knowledge of nuclear physics and was prompted because of the limited opportunities for engineers to gain knowledge of atomic energy through extension study courses. The course will consist of three lectures on the basic theory of nuclear energy and three on elementary nuclear reactor design.

The course will continue through the winter months with the two-hour lectures scheduled for the first Monday of each month. All the lectures are being held in the auditorium of the Westinghouse electronic building.

Ward Leonard Comes To Canada

Ward Leonard Electric Company's quality products are now being manufactured and sold in Canada by Ward Leonard of Canada Limited, a wholly owned subsidiary of the parent company. The experience, manufacturing techniques, engineering and research facilities of the American company are now an integral part of the Canadian organization.

Ward Leonard of Canada are Canadian representatives for Statter oil & air circuit breakers, Kenco pumps, Esco electro switches, Barkelew instruments. In addition to Ward Leonard electric control devices, Ward Leonard of Canada are the Canadian representatives for Saft, the leader in the Nickel-Cadmium Battery field, who manufacture hermetically sealed units.

The arrival of the Ward Leonard Electric Company on the Canadian industrial front was due to healthy expansion, as a result of which the company acquired D. M. Fraser Limited, who represented the parent firm for many years. Since adequate representation in an ever expanding economy cannot be made on some products on an agency basis only, it is the intention that many of the above products will be manufactured in Canada.

Measurement Engineering Appoints Sales Rep

Measurement Engineering Limited of Arnprior, Ontario, recently announced the appointment of J. B. Turner as sales representative for Ottawa and Eastern Ontario.

Mr. Turner studied chemical engineering at the Detroit Institute of Technology, and, after furthering his education at the Haileybury School of Mines began his career as research chemist for the Dome Mines Limited. He served overseas with the R.C.A.F. as radar mechanic and joined M.E.L. in 1952. As purchasing agent and sales representative for Measurement Engineering Limited and Computing Devices of Canada, Mr. Turner has gained extensive experience in the field of electronic instrumentation.

J. B. TURNER

Shipborne Repair Depot Represents Dollar Savings

Northeast Air Command's floating electronic and diesel maintenance repair depot, the USS NEAC, made her first trip of the 1956 season recently.

The 140-foot freight ship, officially known as the C-50-1222, was used in 1955 to transport 24 Canadian Marconi radar and diesel-generating maintenance "Tech Reps" north to NEAC's sub-polar radar installations, units of the 64th Air Division, in the Newfoundland, Labrador and Baffin Island areas.

Dollar savings to the United States Air Force resulting from the use of the ship in place of airlift last year amounted to approximately $115,250.00.

Permitting simultaneous movement of the sensitive electronic test and calibration apparatus along with the highly trained specialists who use them, the USS NEAC will be making shuttle runs from support bases to isolated AC & W Sites until late December.

In addition to the savings in operating costs, the use of the USS NEAC has virtually eliminated the time-consuming delays formerly encountered by separating men from their tools for days on end because of adverse weather or limited aircraft space.

The USS NEAC houses a complete machine shop test and calibration equipment and spare parts. Used in the past as a supply boat for Northeast Air Command's far-flung arctic and sub-arctic installations, it is now performing a vital job of preventive maintenance along the northern border of the free-world's first line of defense.

Federated Metals Opens New Montreal Plant

Official opening ceremonies for the second of its two new Canadian nonferrous metal fabrication, processing, and refining plants were held on November 2nd at the Montreal facility of Federated Metals of Canada, Ltd.

The new plant is located on a 9-acre tract in the suburb of Lachine, and consists of some 40,000 sq. ft. of floor space. Federated recently opened another plant in Toronto, located on an 18-acre tract in the township of Scarborough.

These new plants will produce and distribute such specialized products as solder, grid metals, antimonial leads, type metals, babbitt metals and zinc die casting alloys. In addition, the new Montreal plant will also fabricate lead sheets, pipes, traps, and bends, and will operate a lead construction department for Canadian industry. Further, the new plant will also handle and process practically every type of non-ferrous scrap available in Canada.

Leonard Electric Appoints Eastern Canada Rep.

To provide the best possible service on the products of Leach Relay Company, Airpax Products Co., Hetherington Inc., G-V Controls Inc., Ebert Electronic Corp. and Soderberg Mfg. Co., Leonard Electric Ltd. have assigned Douglas M. Gow as sales representative to cover exclusively the Province of Quebec and Eastern Ontario.

Mr. Gow has been associated with Leonard Electric for over three years and has a splendid background in the electrical and electronic field.

Pye Canada Distributor For Stanton Instruments

Stanton Instruments Ltd., announce that they have appointed Pye Canada Limited, the Instrument Division of which, under the management of Mr. Eric Sullivan, is located at 78 Bank Street, Ottawa, Ontario, as sole distributors in Canada for their precision balances.

Stanton Precision Balances are already well-known in most of the laboratories of Canada, and Pye Canada Limited will provide sales and service facilities through their organization.

(Turn to page 34)

NEWS

(Continued from page 33)

Marconi Re-organizes Commercial Products Division

C. P. McNamara, manager of the Commercial Products Division of Canadian Marconi Company has announced changes in the organization of the division.

J. A. HAMMOND

J. A. Hammond has been appointed general sales manager of the Commercial Products Division with responsibility for all sales activities within the division.

Mr. J. H. Martin has been appointed sales manager of the Standard Lines Department of the division.

Prior to this appointment Mr. Hammond was manager of the Broadcasting Division of the Company and Mr. Martin was technical assistant to the Standard Lines Sales Manager.

Canadian Standards Assn. Re-names Laboratories

The laboratories of the Canadian Standards Association, previously known as the Approvals Laboratories, have been re-named the CSA Testing Laboratories, according to a recent announcement by Dr. W. P. Dobson, Chairman of the Administrative Board of the CSA Testing Laboratories.

Concurrently with this change of name, the service rendered by the CSA Testing Laboratories will be known as CSA Certification service, replacing CSA Approvals service.

Levene Die Co. Increases Plant Facilities

Harry Levene, president of the Levene Die Co., Ltd., Kitchener, Ont., has announced the completion of a new building to increase the company's present plant facilities for precision machining.

A battery of new presses and other machinery has now been added, and includes a GE-Ajax-Hultgren salt bath furnace for heat treating, radial drill and equipment for heavy, 3 dimensional tracing and profile milling for improved production and die-making.

The firm's Dinking Die and other departments have also been reorganized for speedier production of dies for gaskets, washers, plastic and other parts requiring sharp edge dies.

The enlarged facilities have also enabled the firm to enter into the manufacture of "Concrete Form" hardware, and heat-sealing dies for electronically sealing plastic materials.

For further data on advertised products use page 49.

Lenkurt Electric Sets Up Research Dept.

Lenkurt Electric Company has stepped up its study of communications industry needs and ways to increase service to the industry through new developments.

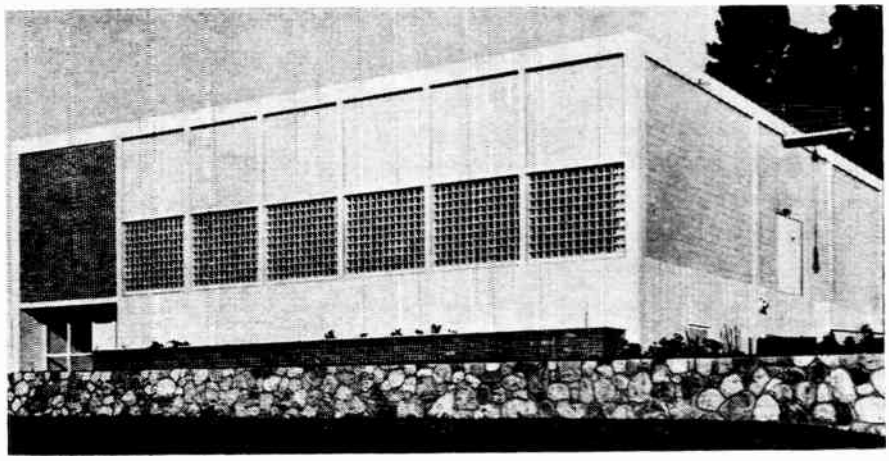
The carrier and microwave firm's Product Planning Division is now concentrating these efforts in a newly organized Communications Engineering Dept. This group will carry out the previously decentralized work of evaluating new methods, spotlighting new needs of the industry, and proposing new products to fill them.

Heading the research group is Thomas A. Combellick, former manager of the firm's Product Standards Dept.

Eastern Joint Computer Conference Planned For Dec. 10-12

The 1956 Eastern Joint Computer Conference, which will meet Dec. 10-12 at the Hotel New Yorker and adjoining Manhattan Center in New York City, has announced that some 28 technical papers will be presented by the foremost computer authorities.

Leading manufacturers of computers and associated products will exhibit their equipment to an anticipated record attendance of engineers and management executives.



● Recently opened in West Vancouver, this ultra modern telephone exchange building was designed and landscaped to harmonize with its residential surroundings. It forms part of the B.C. Telephone Company's $2,000,000 dial conversion program for West Vancouver. Telephone equipment was supplied by Automatic Electric Sales (Canada) Limited.

Aeromotive Engineering Represents West German Manufacturer

Aeromotive Engineering Products, of 5257 Queen Mary Road, Montreal, Que., have been appointed as exclusive Canadian representatives of Irion and Vosseler Zahlerfabrik in West Germany.

Irion and Vosseler are designers and manufacturers of counters, a representative list of the types of which are: piece counters; head speed indicators; automatic speed indicators; revolution counters; stroke counters; measuring counters; predetermining counters; electro-magnetic counters for remote indication; printing counters; sheet counters and many other types of special counters.

Aeromotive Engineering Products maintain engineering staffs in Montreal and Toronto who are available to assist manufacturers in selecting and applying the correct counter for their application.

(Turn to page 35)

  For further data on advertised products use page 49.

● O. W. Titus (left) is president of the newly formed Telecables and Wires Ltd. and general manager of the Canada Wire & Cable Co. Ltd.'s new plant recently opened at Fort Garry, Manitoba. H. B. Carnahan (centre) and H. O. Coish (right) are plant manager and manager, sales and engineering, respectively of Telecables and Wires Limited.

West's Largest Cable And Wire Plant Opened

Western Canada's first telephone cable plant and the West's largest wire and cable factory were simultaneously opened officially on October 29th, by Manitoba's Premier, Douglas L. Campbell.

Under the 92,000 sq. ft. roof there are two separate plants. Both, however, are controlled by Canada Wire.

Telecables is a new company, formed through a partnership between the leading Canadian, British, and U.S. cable makers. Canada Wire has the majority share interest, and minority holdings are owned by the General Cable Corporation of the United States and the Telegraph Construction and Maintenance Co. Ltd. of London, England.

The Canada Wire section of the plant is the latest step in an eight year $9 million expansion, modernization, and decentralization program. This, the Prairies' major wire and cable plant, will draw copper and aluminum rods into wires and, when desired, insulate them with plastics. Its products will be part of the normal Canada Wire line: bare copper wire, plastic insulated building wires, line wires, and triplex. One of the factory's most important functions will be to supply soft copper wires to Telecables.

Among the reasons these plants were located at Fort Garry, Canada Wire General Manager and Telecables President O. W. Titus told the official opening day guests, was the fact that the Manitoba government seemed aware of the "absolute essentiality of secondary industries in building a balanced Canada."

Canada Has Part In ElectroData Expansion

ElectroData Division of Burroughs Corporation, Pasadena, recently disclosed the formation of four regional marketing areas in a move to provide increased computer sales and service facilities in the United States and Canada.

Headquarters for the newly established areas will be located in Washington, D.C., Chicago, San Francisco and Ottawa.

Among the regional managers named was George Glinski, who will direct the Canadian Region.

E. S. McCollister, marketing director, who announced the appointments, said that the regionalization program — which encompasses some nine district sales offices — resulted both from threefold computer sales increases in the past year, and the assumption of responsibility for several new computing products by ElectroData, following its recent merger with Burroughs Corporation.

For further data on advertised products use page 49.

New Linde Appointment

The appointment of Robert G. Leckey as manager, advertising and sales promotion, of Linde Air Products Company, Division of Union Carbide Canada Limited, was recently announced by W. S. Wyman, vice-president and general manager.

A graduate in commerce from the University of British Columbia, Mr. Leckey was formerly responsible for new consumer products development with National Carbon Company, Division of Union Carbide Canada Limited. In his 16 years with that organization he held several positions including that of assistant general sales manager, consumer products.

R. G. LECKEY

Mr. Leckey will make his headquarters at the Linde general offices at 40 St. Clair Avenue East, Toronto, and will be responsible for the direction of advertising and sales promotion of all Linde products.

Electro-Measurements Appoints Canadian Service Depot

Douglas Strain, general manager of Electro-Measurements Corp., 7524 S.W. Macadam Avenue, Portland 1, Oregon, U.S.A.. recently announced the appointment of Measurement Engineering Limited, Arnprior, Ontario, as the Canadian Service Depot for their complete line of impedance bridges, comparison bridges, amplifiers, oscillators and decade boxes.

Donald R. Moffat Ends Connection With Moffats Limited

The recently announced resignation of Donald R. Moffat from the presidency of Moffats Limited and the executive vice-presidency of Avco of Canada Limited brought to a close a family connection which has lasted since the firm was founded in 1882. Mr. Moffat had himself been associated with the company for twenty-nine years.

In 1953 Mr. Moffat sold his interest in Moffats to Avco of Canada Limited and was appointed to direct the Canadian operations of Moffats and its affiliated companies.

Although disagreement as to company policy is the reason for Mr. Moffat's action, he has publicly expressed his hope that the organization will have a continuation of the success that Moffats Limited have enjoyed in Canada for seventy-five years.

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For further data on advertised products use page 49.

NEWS

(Continued from page 37)

Sola Electric Co. Forms Canadian Subsidiary Co.

Establishment of a subsidiary company in Canada is announced by Sola Electric Co., Chicago. The newly-formed company, Sola Electric (Canada) Ltd., will market fluorescent lighting ballasts, mercury vapor lamp transformers, dc power supplies, constant voltage transformers, and other specialty transformer products under the trademark "SOLA".

J. R. McGOVERN

Activities of the Canadian company are under the supervision of J. R. McGovern, who has been elected to the position of managing director. Mr. McGovern is a graduate, in electrical engineering, of McGill University, Montreal. Since being graduated, he has been associated with the specialty transformer field in Canada and has served as district sales engineer for the Sola Electric Co., Chicago, for the past two years.

Fully available to the company will be the resources of the engineering and research departments of the parent company. The Canadian company is located at 102 Laird Drive, Toronto 17, Ontario.

D.O.T. Purchases 150 Pye "Rangers"

I. H. Nixon, sales director of Pye Canada Limited announces that the Department of Transport has placed an order with his firm for 150 "Ranger" mobile radiotelephone units. This is the 5-watt A.M. unit which was recently introduced by Pye Canada Limited.

When this order is completed the Department of Transport will have approximately 300 Pye mobile units in use at airfields across Canada.

The same set is also used by municipal airports at St. Johns, Nfld., Calgary, Alta., and by the U.S.A.F. at Torbay, Nfld.

Toronto Section, IRE, See St. Lawrence Seaway Model

Plans for the November 15 meeting of the Toronto Section, IRE, call for a joint session with the A.I.E.E., and will consist of a visit to the St. Lawrence Seaway Model at the A. W. Manby Service Center (H.E.P.C.), Kipling Avenue, Toronto. Dr. Holden will be the speaker on that occasion.

For further data on advertised products use page 49.

Airtron Wave Guide Items Now Made At Renfrew Plant

Airtron Canada Limited has commenced the manufacture of wave guide items in Canada. It is their policy to follow the specific needs of the Canadian market.

Airtron micro-wave accessories have been used extensively in Canada for a number of years.

A complete line of standard wave guide components for all requirements from the magnetron to the antenna is available for all bands — and many "specials" have been successfully designed and produced since this company was formed in 1946.

The acceptance by the field of the policy, organization and end product is attested by the progress made from a staff of 15 to their present position as one of the world's largest producers of quality micro-wave components with a staff of more than 1,000 including a professional complement of more than 200.

The sales office is located at 300 Campbell Avenue, Toronto, Ontario with manufacturing facilities at Renfrew, Ontario.

Honeywell Appoints Additional Executives

W. H. Evans, president of Honeywell Controls Limited, recently announced the appointment of three vice-presidents and a treasurer in a move reflecting the company's growth. They are L. F. Wills, formerly works manager, who will be vice-president in charge of administration and production; John H. Fox, vice-president in charge of sales; and Carl A. Anderson, who has been appointed vice-president of the company's aeronautical division. C. J. Hooks, formerly comptroller of the company, was named treasurer.

Westinghouse Builds Package TV Station

British Columbia's first private TV station, CHEK-TV, Victoria, commenced broadcasting in October. The station is operating from a combined studio and transmitter location.

The equipment manufacture, and installation, was handled by the Canadian Westinghouse Company. The package station included tower, antenna, transmitter and studio equipment. Station CHEK will broadcast with a peak visual power of 1800 watts and aural power of 900 watts. The low output was necessary to conform with CBC coverage regarding single service policy.

The complete installation was performed by the field service section of the electronics division, of Westinghouse.

(Turn to page 49)

For further data on advertised products use page 49.

NEWS

(Continued from page 39)

New Field Rep For Professional Engineers Of Ontario

An increase in membership and the expansion of engineering activities has resulted in the appointment of Blakeley H. Goodings, P.Eng., as field representative of the Association of Professional Engineers of Ontario. He will work out of the Association's headquarters in Toronto. The A.P.E.O. now has a membership of 15,000 registered professional engineers in the province and is the largest professional group in Canada.

B. H. GOODINGS

In his new position, Mr. Goodings will represent the Association in its liaison with industry and members of the A.P.E.O. throughout the province.

A native of Port Colborne, Ont., Mr. Goodings is a graduate of the University of Toronto in mechanical engineering. Until recently, he served on the staff of the Adjutant-General at Canadian Army Headquarters, Ottawa, with the rank of captain.

Confederation Life To Purchase Electronic Computer

J. K. Macdonald, president of Confederation Life Association, announced recently that his organization will spend close to $2 million in preparing for and installing an electronic computing system at its Toronto head office.

As the first insurance company in Canada to purchase an International Business Machines' "705" system, Confederation Life will be equipped to consolidate many functions of separate departments and reduce the work of days and weeks to a matter of hours.

Company officials feel that the expected savings made possible by this new system will, in five years, compensate the company for such a large initial expenditure.

Many of the present 650 head office staff will receive instruction on how the computer operates and no one, it is stressed, will be without a job or be required to take a cut in salary. On the other hand, company officials feel that, besides improving efficiency of service to policyowners and effecting savings in operating costs, the new program will provide more interesting jobs for its staff and greater scope and opportunity for growth.

For further data on advertised products use page 49.

Bendix Acquires Minority Interest In CDC

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

As well as the 40 per cent interest purchased by Bendix, 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 and progress.

Bendix products to be handled in Canada by CDC include electronic computers, missile components of all kinds, telemetering, radio communication and navigation equipment, radio mobile equipment, radar and several new Bendix industrial electronics products such as Lumicon, industrial control and telemetering systems, nuclear and dosimeter gages and meteorological equipment.

CDC President C. F. Hembery said that the new agreement will have many advantages for both companies. The wide range of proven Bendix products, and the experience and knowledge of Bendix engineering staffs will strengthen CDC activities in fields in which it is already well established, and will give the company an opportunity to enter new fields. Bendix, in turn, will have effective access through the CDC sales engineering force to the expanding Canadian market, and as well, with permission of the Canadian government, will have available for U.S. exploitation many of the advanced CDC military developments.

CESCO Moves Its Toronto Location

M. I. Rosenthal, president of Canadian Electric Supply Co. Ltd., has announced that the company's Toronto branch is moving to new, larger quarters at 881 Yonge Street.

This new location will provide a larger area of 25,000 sq. ft., for the rapidly expanding Toronto branch and enable the company to provide many extra facilities for the benefit of dealers and servicemen. The larger, brighter air conditioned store area will feature a specially designed high-fidelity studio which is at the disposal of all dealers.

With the increased space available, larger stocks will be maintained so that faster service can be given to dealers, servicemen and industrial accounts.

(Turn to page 42)

For further data on advertised products use page 49.

NEWS

(Continued from page 41)

Dr. W. G. R. Baker Addresses Radio Fall Meeting

The president of the U.S. Radio-Electronics - Television Manufacturers Association sees a bright future ahead for all facets of the television industry.

In a report delivered to Canadian and American delegates at the radio fall meeting of the Institute of Radio Engineers and RETMA, Dr. W. R. G. Baker stated:

About 10 million television sets will be sold annually in 1960, in contrast to the 7,500,000 sets sold now;

Present industry wide sales of industrial closed-circuit television of about $6 million will grow to about $24 million by 1960;

Trans-oceanic television broadcasts are "only a matter of time" through rapid development of scatter transmission techniques;

The foreign market potential for sales of TV equipment continues to increase and many new countries will actually begin their first television broadcast in 1957;

Transistorized true portable television sets are expected to be on the market within two years.

Because of last minute change of plans, Dr. Baker, who is also a General Electric Company vice-president, was unable to deliver his report. The report was delivered by Arthur V. Loughren, president of IRE.

In the report, Dr. Baker said "It has been my observation that many predictions about the electronics industry have proved in later years to have not been optimistic enough."

In the manufacture of broadcast equipment, Dr. Baker reported "the most significant marketing trend anticipated in 1957 is a firming up of the ultra-high-frequency market segment and a higher industry volume in sales to existing stations."

Automatic Electric Staff Appointment

Mr. C. R. Hughes, President of Automatic Electric Sales (Canada) Limited, announces the appointment of Mr. C. E. Marshall as Staff Engineer. Formerly supervisor of Equipment Engineering, Mr. Marshall has had wide experience in the design and layout of automatic telephone exchanges and

C. E. MARSHALL

switching systems in Canada. In his new position he will be engaged on field engineering services and will be available for consultation and technical assistance to independent telephone systems. Mr. Marshall is a graduate of Queen's University and is a member of the Association of Professional Engineers of Ontario.

Chartered Accountants Appoint Director Of Electronics

L. J. Lacey, P.Eng., of Toronto, has been appointed associate director of electronics with the management advisory services division of Price-Waterhouse & Company, Toronto. He was formerly mathematician-in-charge of Ontario's Hydro computing center and more recently chairman of Hydro's data processing team.

For further data on advertised products use page 49.

Peter Gregory Heads CDC Marketing Division

Peter G. Gregory has been appointed Marketing Services Manager of Computing Devices of Canada Limited. In this position he will be responsible for the market research, product planning, sales analysis, and sales service activities for the Marketing Division of the company, reporting to Marketing Director W. S. Kendall.

P. G. GREGORY

Before coming to CDC, Mr. Gregory was Toronto branch manager for Phillips Electrical Company.

His considerable engineering background in the textile, metallurgical and paper industries, as well as his wartime experience in the Aerodynamics Division of the National Research Council, qualify Mr. Gregory well for his new work with the rapidly expanding Ottawa electronics company.

Mobile Telephone Service Opens In Hamilton

Mobile telephone service was inaugurated in Hamilton on October 23rd when Frank E. Lennard, M.P. for Wentworth, and Raymond Connell, M.L.A. for Hamilton-Wentworth, placed the first official calls.

On the opening of the service there were 19 units, but C. O. Colbert, Bell Telephone's Hamilton district manager, expected more to be added in rapid succession. Bell now has more than 700 mobile telephones in service in Ontario and Quebec, enabling the users to place or receive calls to or from any telephone that can be reached through local or long distance channels.

Hamilton mobile telephone users are served by a radio transmitter-receiver station near Dundas, just north of Highway 5.

Although mobile telephone service is only beginning in Hamilton, 39 of Bell's two-way private radiophones have been used by the city and the Steel Company of Canada for some time.

Measurement Engineering Offers Helpful Guide

A guide for purchasing, engineering, and administrative personnel has been released by Measurement Engineering Limited, Arnprior, Ontario.

The two color, pocket size brochure summarizes two phases of operation — first, the manufacturing facilities, and secondly, the products of U.S.A. manufacture which are represented and serviced in Canada by Measurement Engineering Limited.

G. C. W. Browne Noted Communications Expert Passes

G. C. W. Browne, 66, consultant to the Fowler Royal Commission on Broadcasting and former Transport Department Controller of Telecommunications, died September 20th, 1956, following a traffic intersection crash of two automobiles.

Mr. Browne had been acting as consultant to the Fowler Commission since his retirement last year.

In 1936, when the Departments of Marine and of Railways and Canals were merged into the Department of Transport, he was appointed Assistant Controller of Radio, and in 1947 was made Controller on the retirement of the late Walter A. Rush.

His attendance at major International Conferences dates from the International Administrative Radio and Telegraph Conferences in Cairo in 1938.

He participated actively in the Plenipotentiary Conference of the International Telecommunication Union and in the Administrative Radio and Telegraph Conferences held in Atlantic City in 1947, as well as attending both sessions of the North America Regional Broadcasting Conference held in Montreal and Washington in 1949 and 1950.

He personally headed groups going to Mexico and Washington for extensive consultation on television and sound broadcasting matters.

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For further data on advertised products use page 49.

NEWS

(Continued from page 43)

Federal Wire And Cable Appoints New Chief Engineer

E. POLLARD

Eber Pollard, assistant chief engineer at Federal Wire and Cable Co. Ltd. has recently been appointed chief engineer.

Mr. Pollard graduated in engineering physics at the University of Saskatchewan in 1941. He worked for the National Research Council, first at the Department of Physics, University of Toronto in conjunction with the R.C.A.F. on equipment for high altitude flying, and later at Montreal on the Atomic Energy Project. In 1945 he joined the engineering research department of the Massey-Harris Co. and was subsequently transferred to the engineering department. Mr. Pollard has been with Federal Wire and Cable since 1950.

Toronto Section, IRE Hold October Meeting

The Toronto section of the Institute of Radio Engineers held their second Fall meeting on October 22nd at the University of Toronto. The guest speaker was Mr. Torsch of the Rola Company, Cleveland, Ohio.

Mr. Torsch spoke on the problems of the new 110° deflection yokes and power requirements. On exhibit was a new light weight 110° deflection yoke system requiring less power than earlier 50° and 90° systems. Of great interest was the fact that the new yoke assembly is so light that it can be supported solely by the neck of the 110° TV tubes — no other mechanical supports being required. Small vanes inside the coil assembly act as friction locks on the tube neck, holding the whole unit in place. The complete yoke assembly can be assembled and disassembled in a matter of seconds since it is made up of "snap-in" sections. Small adjusting magnets on the assembly readily convert 110° yokes for use on 90° tubes.

Also on display was a small super-efficient fly-back transformer. Working on the principle of the "no-gap" core and no DC flux, this small fly-back transformer can drive a 110° deflection circuit and consume very little power. Nine pin miniature tubes have already been designed as oscillator drivers for this system — and standard 250V power supplies can be used. Mr. Torsch stated that these engineering advances will be available to the TV industry shortly.

(Turn to page 46)

For further data on advertised products use page 49.

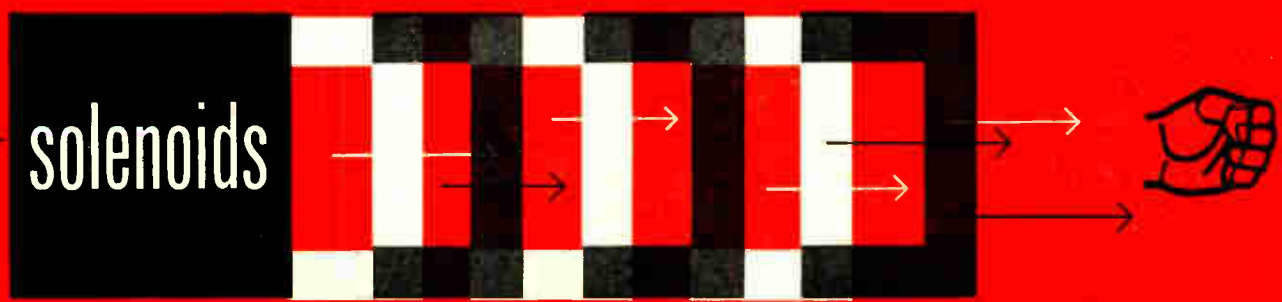
true hermetically sealed solenoids

Just like a sealed vacuum tube! True hermetic sealing around a solenoid . . . glass seal terminals, lugs, and connectors. All welded and brazed construction. Completely plated after assembly. Exceed most requirements of military specification MIL-S-4040 (USAF). Priced at approximately the same level as conventional types.

high-temperature solenoids

These modern new solenoids give you a reasonable life expectancy at temperatures as high as 350° C. A by-product of hermetic sealing. Class H insulation combined with inert gas filling add those necessary extra few degrees needed in your temperature limits . . . make these solenoids exceptional high-quality, high-temperature units.

D C solenoids



. . . and those unusual specialties you look for!

Having trouble finding solenoid specialties? Here at Cannon, we'd like to help you. Standard production now includes multiple-strip solenoids for keyboard operation, locking types requiring no holding current, and miniatures and sub-miniatures ½" diameter. In addition, our expanded solenoid engineering department is ready to serve you at any time.

CANNON PLUGS

CANNON ELECTRIC CANADA LIMITED, 160 Bartley Drive, Toronto 16, Ontario.
Montreal Office: Montreal Airport, Dorval, P.Q.
Factories also in Los Angeles, East Haven, London, Melbourne.
Licencees in Paris, Tokyo.

5602

Please ask for latest SR-S releases and or Solenoid Bulletin

For further data on advertised products use page 49.

NEWS

(Continued from page 44)

Surpass, Alox Appointment

The appointment of Fred W. Evans, B.Ch.E., M.B.A., as assistant to the president of Surpass Petrochemicals Limited, Scarborough, Ontario, and Alox Corporation of Niagara Falls, N.Y., was recently announced by James E. Shields, president of the aforementioned companies.

Mr. Evans brings with him to his new post a valuable and diversified knowledge of the chemical industry obtained, in part, through his long association with Hooker Electro Chemical Co., in the capacity of supervisor of process development and research.

F. W. EVANS

Mr. Evans' new duties will include the correlation of an intensified program of research and development at both companies as well as supervision of all phases of engineering, production sales and general plant operations at Surpass Petrochemicals Limited.

Consolidated Diesel Of Canada Has New Office And Sales Manager

Consolidated Diesel Electric Corporation of Canada, Ltd., has established general offices, manufacturing and assembly facilities at 66 Racine Road, Rexdale, Toronto, according to an announcement by Norman I. Schafler, president.

A further announcement made by President Schafler is the appointment of Jens F. Louv, Jr., as sales manager for the Canadian company, which is a subsidiary of Consolidated Diesel Electric Corporation of Stamford, Conn.

Thomas Edison and McGraw Electric Merge

K. R. Swinton, general manager of Thomas A. Edison of Canada Limited, announced recently that the McGraw Electric Company and Thomas A. Edison Incorporated have agreed by action of the board of directors of each company to a merger of the two companies into the McGraw-Edison Company. The consolidation is subject to appropriate stockholder action.

The combined sales of Edison and McGraw in the U.S. and Canada are running at the rate of about $250,000,000 annually. The new company will thus be one of the largest electrical and electronic companies on the continent.

For further data on advertised products use page 49.

CGE Equipment For Radio Station At St. John, P.Q.

Canadian General Electric Company has announced the signing of a contract for complete transmitting and studio equipment to supply the new radio broadcasting station in St. Jean, Quebec. This is the 63rd station in Canada to be equipped with broadcast equipment supplied by Canadian General Electric.

The contract calls for the supply and installation of a 1 KW AM transmitter operating into a single 150 foot tower, as well as monitoring and control facilities and complete broadcasting studios.

Canadian National Telegraphs Creates New Post

Appointment of J. E. O'Brien to the newly-created post of assistant chief engineer, Canadian National Telegraphs, is announced by John R. White, general manager.

Mr. O'Brien in his new assignment will handle day-to-day operating and administrative problems of the CNT's engineering department, and will be responsible to the chief engineer for the smooth and coordinated functioning of all groups in the department.

J. E. O'BRIEN

Mr. O'Brien graduated from the University of Toronto in 1929 and joined Canadian National Telegraphs the same year. He became general outside plant and foreign relations engineer in 1945, and will continue to hold this post in addition to his new appointment pending naming of a permanent successor.

Propose Bill To License TV Repair Technicians

A bill for the licensing of all television repair technicians in Ontario will be presented at the next session of the Ontario Legislature. The bill it is understood will recommend that all persons employed in this trade shall be graduates of a recognized training school.

David Fingard, president of the Radio Electronic Television Schools of Canada is wholeheartedly behind the proposed legislation and reports that his school is prepared to back up the legislation with free legal council to all parties concerned in having the proposed bill passed by the Ontario Government.

In speaking to Mr. Fingard he reports that three new directors have been appointed to RETS of Canada. They are: Gerald Hayden, John Brooke and Melvin Huffaker.

The 13th school of Radio Electronic Television Schools was opened in Halifax last November 1st.

Measurement Engineering Opens New Branch Office

Mr. D. A. Bamford, president and general manager, recently announced the opening of their new central Ontario branch sales office at 5 Harris Crescent, Burlington, Ontario.

This new branch office operation has been established to provide closer liaison facilities in this important sales area.

Mr. Bamford stated that increased customer demands for their principal's products and for their own equipment products and manufacturing facilities had necessitated this recent branch sales operation to be established.

The branch operation is being directed by Wally Evan-Jones, who has recently been appointed to their sales department, and he will be responsible for all sales operations in this newly established district office.

MEL Executive Attends Servo Corp. Demonstration

Mr. E. E. Whittaker, sales manager, Measurement Engineering Ltd. Arnprior, Ontario, recently attended a special demonstration put on by the Servo Corporation of America for their railroad hot box detection equipment held in Philadelphia.

Mr. Whittaker reported that this equipment will be available to all Canadian railroads in the very near future and this type of electronic control hot box detection equipment will save both lives, valuable time and money to the railroads in preventing wrecks and loss of time brought on by hot boxes occurring while the trains are in motion. This equipment automatically sounds an alarm whenever a hot box develops on rolling stock equipment.

Servo Corp. Executive Visits Canada

Frank G. Willey, sales manager Servo Corporation Of America, Long Island, N.Y. recently visited Canada to discuss with their sales representatives, Measurement Engineering Limited, sales promotion plans for introducing several new Servo equipment lines to Canadian industry.

While in Canada Mr. Willey visited the head office and plant of Measurement Engineering Ltd. in Arnprior, and also visited their newly established branch sales office located in Burlington, Ontario.

Mr. Willey reviewed the central Ontario sales market situation with Wally Evan-Jones, Measurement Engineering Limited's newly appointed sales representative who is in charge of all central Ontario sales and advertising promotion operations.

ENVIRONMENTAL TESTING

(Continued from page 24)

pound load the maximum permissible G is 60.

The centrifuge has a seven-foot diameter rotating arm that is designed to stand a 40 lb. load being accelerated up to 60 G. This machine has 20 low noise slip rings and one microwave channel available for electric monitoring during operation. The centrifuge is mounted in a pit with clearances which will allow a four-foot overhang for large pieces of equipment.

The new laboratory is also equipped with three pieces of shock testing apparatus, a Barry Type 150-400 Impact Shock machine, and two Condean Shock machines. There are also facilities for the installation of a free fall type of lead block decelerator.

Apart from the environmental testing facilities of various government departments which, on the whole, are not available to industry for testing purposes, the Westinghouse facilities for environmental testing are, as far as is known, one of two such laboratories that are at the disposal of industry at large. The only other such privately owned service which came into service recently is that of PSC Applied Research in Toronto.

UNDERWATER TV

(Continued from page 29)

all personnel concerned may follow the operation. The equipment has been designed with this in mind and a number of monitors may be added at will. A close-fitting waterproof cover and visor are also available as accessories to permit the monitor to be operated in the open under unfavorable weather conditions.

A larger version of this camera will be able to operate 3,000 feet below the surface. The television camera concerned is encased in an aluminum sphere only 19 inches in diameter, weightless in water. It can be held in a diver's hand, suspended by cable from a moving ship or propelled by an electrically-operated, steerable cradle.

There is, therefore, nothing to prevent the camera from being launched by a submerged submarine and operated by remote control. It can be withdrawn to a housing on the hull at the end of the operation.

The U.S. Navy has up to now bought seven of the earlier type Pye camera used for the Comet search. Ten have been purchased by Canada, three by Italy, three by Britain, two by Japan. and one each by Poland, Finland, Australia, New Zealand and Venezuela. The original is now in the Science Museum, South Kensington.

NEW PRODUCTS

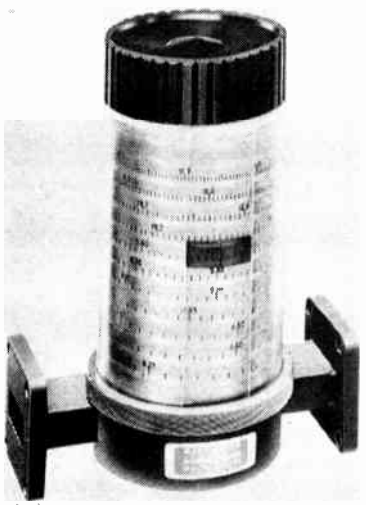
New Product specifications published in Electronics and Communications have been briefed for your convenience. If you require further information on any of the items published you may readily obtain such by using our Readers' Service, Page 49. Just mark the products you are interested in on the coupon on Page 49 and the information will be in your hands within a few days.

● *Direct-Reading X-Band Frequency Meter*

Item 1277

The first of a new series of wideband, direct-reading waveguide frequency meters has been announced by the Hewlett-Packard Company.

The new instrument, Model X532A Frequency Meter, is for X-band operation and provides direct reading measurements over the full X band from 8.2 to 12.4 KMC. Accuracy is 0.8%, resetability is 0.01% and backlash is held to 0.005%.



The X532A comprises a special waveguide section mounting a high Q resonant cavity tuned by a choke plunger. No sliding contacts are used, and the waveguide section is arranged to transmit nearly full power at resonance. Resonance is indicated by a 1.5 db dip in output, and is constant throughout range without spurious modes. Tuning is by a precision lead screw, spring-loaded to virtually eliminate backlash. Effective length of the spiral scale is approximately 77", with calibration in 5 MC increments. Since frequency is direct reading, no interpolation or charts are required.

Hewlett-Packard Company, 275 Page Mill Road, Palo Alto, California.

● *Technical Bulletin On "DC Solavolt"*

Item 1278

Sola Electric Co., manufacturer of constant voltage transformers and lighting ballasts, offers on request a technical bulletin on the "DC Solavolt" — a new, adjustable-output, constant voltage dc power supply.

The Sola bulletin discusses features and applications of six stock DC Solavolts, and gives electrical and mechanical specifications for each.

This 4-page bulletin is pre-punched to fit a standard 3-ring binder. Write to **Sola Electric (Canada) Ltd., 102 Laird Drive, Toronto 17, Ont., for Bulletin DC-245.**

● *Control Thyratron With Three Base Connections*

Item 1279

A new control thyratron which will give manufacturers high standards of reliability and offer equipment designers three different base connections, is available from Canadian General Electric Company's Tube Section.

The tube will give improved performance, yet be less expensive than the GL-5545 which now is superseded. The three new types of this 6.4-ampere negative control characteristic thyratron — GL-6807, GL-6808 and GL-6809 — all incorporate element and envelope construction designed to provide maximum cooling to eliminate major causes of inoperation resulting in loss of factory time and possible damage to equipment.

The GL-6807 has a pin-type base and can be used interchangeably with the GL-5545. The GL-6808 has flexible "flying" leads and the GL-6809 is made with spade lug terminals extending from the base.

Because they carry high commutation factory ratings they are particularly suited to motor control and other inductive load circuits without cushioning. Their ability to operate over a wide ambient temperature range (—55 to + 70°C) and a quick-heating cathode (1 minute) are features of particular usefulness in industrial applications.

By brazing the anode cap directly to the anode lead and using a new basing cement, the mechanical problems usually related to loose anode caps and a loose cathode base have been virtually eliminated in the new tubes.

Maximum average cathode current of these motor control thyratrons is 6.4 amperes and fault current 1120 amperes. Maximum negative control grid voltage before conduction is minus 250 volts and during conduction minus 10 volts. Maximum positive control grid current is 0.20 amperes with the anode positive and 0.10 amperes with the anode negative.

Electronic Tube Marketing, Canadian General Electric Company Limited, 189 Dufferin Street, Toronto.

● *Bulletin Describes Silicon Rectifiers*

Item 1280

Bulletin Vol. 2 No. 10 issued by Sarkes Tarzian, Inc. of Bloomington, Ind., covers the introduction of Silicon Rectifiers to the radio and television replacement market.

The Silicon Rectifier Division has designed and developed a silicon fuse-type rectifier which can be used in place of selenium rectifiers in television sets.

Tests made included the installation of 12 of these silicon rectifiers in old television sets that were using the selenium rectifiers. The results showed that the television set immediately had a brighter picture. The vertical size of the picture became longer and the horizontal size became wider. The set had approximately twice the contrast it had had previously. The sensitivity of the picture went up to such an extent that it was possible to pick up cities in two neighboring States with a picture that had sufficient definition to be looked at, an impossible feat previously with these old sets.

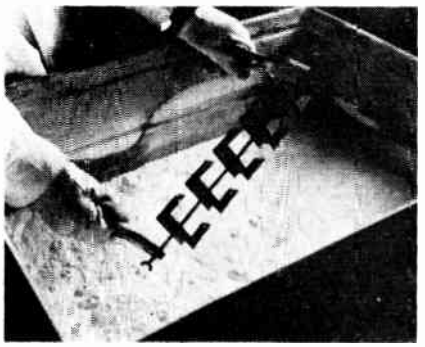
A. T. R. Armstrong Limited, 700 Weston Road, Toronto 9, Ontario.

● *Coating Process For Metals, Ceramics, Glass, Etc.*

Item 1281

Polypenco, Incorporated, Reading, Pa., U.S.A., distributors of Nylon, Teflon and other plastic materials in Canada, has announced that its affiliate, Polymer Processes, Incorporated, has introduced a new coating process.

The process is designed for coating metals, ceramics, glass or wood with various plastics and other substances. Its purpose is to combine the natural advantage of the coating materials with those of the parent materials to be coated.



The method is reported to require relatively inexpensive apparatus. It consists essentially of dipping preheated articles into a dry fluidized bed of coating material in finely divided solid form. If desired, heavier coatings can be obtained with a single dip than is customary with solvent coating methods. The melting point of the material to be coated must be higher than that of the coating material.

The process will be known under the trade-mark name WHIRLCLAD. Polymer Processes, Incorporated has a standard licensing program for selected companies desiring to do their own coating. The necessary equipment to operate the process is also available under this licensing program.

The process is said to permit use of coating materials which never before have been applied satisfactorily. The polymers used are prepared in finely divided solid form especially for the process. No solvents or dispersing liquids are required.

● *Level Controller Combines Electronics And Pneumatics*

Item 1282

A new level controller that combines the "greatest practical advantages" of both electronic and air pressure control instruments has been developed by Fielden Instrument Division, Robertshaw-Fulton Controls Company.

The new device, called "Pneutronic" level control, utilizes the accuracy of electronic capacitance sensing elements to detect minute changes in levels in tanks, drums, process baths, pipelines and other conveyors. Electronic signals are then converted by the Pneutronic control into proportional pneumatic output.

This modulating air output, the company says, is sufficiently powerful to operate control valves and other pneumatic control equipment. Because of the modulating control action of the new device, it is pointed out, much of the wear caused by "on-off" systems is avoided.

The closed-loop Pneutronic control is largely unaffected by external changes in voltage, air supply, temperature and pressure. The device provides high speed response and may be adjusted to give a full change of air pressure output for a two-foot change in the level of hydrocarbon or similar low dielectric material. An air output signal may be connected for either forward or reverse operation.

Keith Mercer Company, Ltd., Suite 101, 5165 Sherbrooke Street West, Montreal 28, Quebec.

(Turn to page 51)

INDEX TO ADVERTISERS

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INDEX — Continued

NEW PRODUCTS

(Continued from page 48)

● *New Concept Record Storage*

Item 1283

One of the main problems concerning anyone working (or playing) with records is their convenient and safe storage. Robins Industries Corp., of Bayside 61, New York, is introducing a new product which it believes completely solves this problem. Known as "Audio-File" AF-50, the unit features heavy self-closing transparent plastic containers suspended from slide rods. The transparent plastic allows the user to file records in any manner he wishes, by selection, composer, orchestra, etc., without the use of cumbersome indexes.

Each plastic container is suspended from two horizontal rods so that all the containers close at once when they are pushed to one end. This eliminates the need for record albums, jackets and individual plastic record covers and the annoyance of removing and inserting records in their covers.

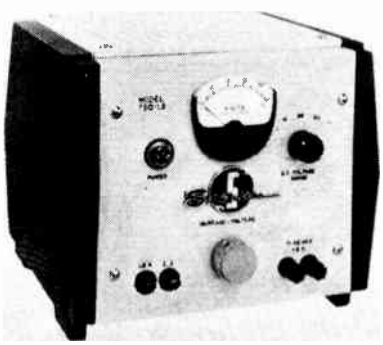
The unit, which holds 50 records, is only 13" x 14" x 14" high, an important feature where space is at a premium.

Canadian Representatives, **Atlas Radio Corporation Ltd., 50 Wingold Avenue, Toronto 10.**

● *Low Cost Transistor Circuits*

Item 1284

A variable voltage, low cost supply especially designed for transistor circuit work has been introduced by Sorensen & Company, Inc., manufacturers of voltage regulators and power supplies, Stamford, Connecticut.



The new unit, known as a "T-Nobatron", Model T-50-1.5, features excellent line voltage regulation and transient response for line and load pulses.

Input range of the unit is 95-130 VAC. 60 c.p.s. Output voltage is 0-50 volts DC in 3 ranges, 0-10, 0-25, and 0-50 volts. Regulation for line changes is ±1% for 105-125 volts, ±2% for wider input. Ripple is 50 MV maximum.

Sorensen & Company, Inc., 375 Fairfield Avenue, Stamford, Connecticut.

● *Catalog Of Variable Resistors And Switches*

Item 1285

Dimensions, mounting styles, ratings, standard modifications, and performance characteristics for its complete line of variable composition resistors and snap switches are contained in the new thirty-page Bulletin RC-10B recently announced by the Stackpole Carbon Company.

A convenient fold-out chart at the rear of the bulletin serves as a quick guide to the most important features of each unit shown in detail on the inside pages.

Electronic Components Division, Canadian Stackpole Ltd., 550 Evans Ave., Etobicoke, Toronto 14, Ontario.

(Turn to page 52)

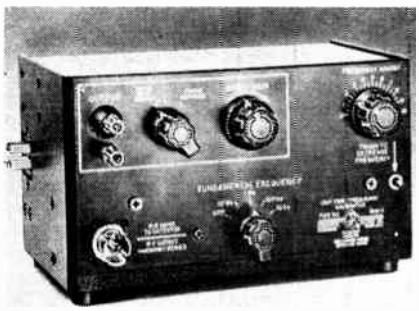
NEW PRODUCTS

(Continued from page 51)

● *Type 1213-C General Radio Calibrator*

Item 1286

The new, accurate, reliable, compact, and convenient Type 1213-C General Radio Calibrator comprises, with power supply and headphones, all the circuits necessary for the calibration of oscillators, receivers and other wide range devices up to frequencies above 1000 megacycles. It also



provides square-wave markers for oscilloscope sweep-time calibration at intervals from 0.1 microsecond to 100 microseconds.

Many new features have been incorporated into this instrument including: harmonic series with fundamentals of 10, 1, 0.1, and 0.01 Mc, a crystal mixer good from low frequencies to frequencies above 1000 Mc, an amplifier for audible beats, and a video-frequency amplifier output for sweep-time calibrations. The output pulse has adequate power to trigger most pulse generators and oscilloscope sweeps, thus providing a stable driving source for timing pulse systems for various applications.

Commercial Products Division, Canadian Marconi Company, 2442 Trenton Avenue, Montreal, Quebec.

● *EIMAC Quick Reference Catalog*

Item 1287

A new 12 page quick reference catalog listing all Eimac production vacuum tubes and accessories is available. Eimac has also released a tentative data sheet and two brochures describing its new 4CX300A ceramic power tetrode.

The 4CX300A data sheet and brochures have been mailed to Eimac catalog holders. Persons desiring these data, and those wishing the quick reference catalog, may obtain them by writing **The Ahearn and Soper Co. Ltd., P.O. Box 715, Ottawa, Ont.**

● *Snap-Action, Split-Contact Switch*

Item 1288

Acro Manufacturing Company, Columbus, Ohio, has introduced, and now has in production, a new Snap-Action, Split-Contact Switch — Model C-11008. This new design features high capacity — up to ¾ hp; dual circuitry — five terminals; and the time-tested Acro rolling spring snap-action principle.

Although the Model C-11008 is a normally closed switch, the double-throw arrangement can control two single pole throw circuits, or can be used for double make or break in a single circuit. Rating of the switch is 15 amps and it is furnished with a pin plunger or any type of actuator to suit the desired application.

According to the manufacturer, this new switch is not only versatile, but can be expected to give extra long service life. In actual tests, it was actuated 40 million times without any sign of failure. **Acro Manufacturing Co. of Canada Ltd., 1290 Eglinton Avenue West, Toronto, Ontario.**

● *Magnetic Tape Storage For Digital Computers*

Item 1289

A machine that can feed data into a computer at a speed equivalent to that of seventy-five punch card tabulators all operating simultaneously has recently been developed.

The tape storage equipment consists of six units which are housed in an enclosed steel rack (6' x 19") mounted on a four wheel trolley. It can accommodate two 10½" spools carrying 2400 feet of plastic base magnetic recording tape. Running speed is 100" per second and stopping or starting time is less than 10 milliseconds.

The tape driven capstans are continuously rotating and drive to the tape is effected by electric-pneumatic switching to produce a vacuum inside that capstan which is required to operate. Atmospheric pressure is then effective in providing tape pressure on the selected capstan. Breaking is similarly effected by evacuating the table under the recording heads. Since stop and start times must be at a minimum, the spool drives are completely divorced from the capstans and the tape hangs between them in a free loop.

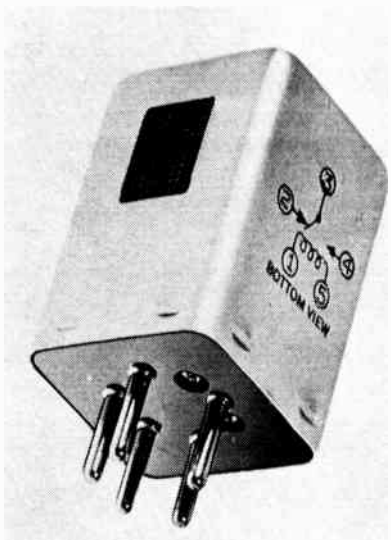
The equipment is entirely self-contained and automatic and possesses its own power supply, ventilation, cooling system, safety interlocks and soundproofing. It is available in two versions using either a ½" or a ¼" tape. The ½" tape accommodates 8 channels while the narrower width handles 4 channels.

Pye Canada Ltd., 82 Northline Road, Toronto 16, Ontario.

● *"Photorelay" Offers Compact Control Package*

Item 1290

A new photoelectric control utilizes a broad area cadmium sulfide photocell and Sigma Series 41 relay, which are mounted on a 5-pin plug-in base and housed in a dust can measuring only 1½" square x 2¼" high.



The "Model 1 CDS Photorelay" operates at five foot-candles or less, releases at 0.1 f-c or more, at a guaranteed speed of two operations per second. Supply voltage of the Model 1 is 115 AC, 50-60 cycles and temperature range is -40°C. to +75°C.

The new Photorelay is being considered for such applications as furnace flame-out controls, pinball machines, elevators, conveyors, weighing equipment, automatic bottle washing machines and bagging machines.

Samuel C. Hooker (Canada) Ltd., 21 King Street East, Toronto and **Ron Merritt, Vancouver, B.C.**

For further data on advertised products use page 49.

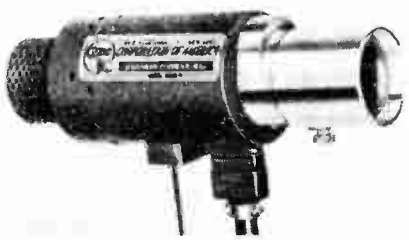
• *Thermistor Heat Detector Cells*

Item 1291

Thermistor heat detector cells for remote detection, measurement and control systems, manufactured by Servo Corporation of America, New Hyde Park, N.Y., were displayed by Measurement Engineering, Ltd., Arnprior, Ontario, sales representative, at the Canadian IRE Convention, in Toronto.

The Servotherm cells are used wherever heat is a factor to be measured and controlled. Constructed of very thin flakes of electronic semi-conductor material with a high negative temperature co-efficient of resistance, they are finding wide commercial and laboratory application.

Model 1317 is a low cost remote detector of infrared energy designed for commercial applications where "non-contact" is required. Model 1312 is designed for the laboratory and has a higher order of accuracy than the 1317. The Servotherm cells contain both active and matched compensating flakes. These are attached to a heat sink which aids in determining sensitivity and speed of response. The two matched flakes form a bridge circuit compensating for changes in ambient temperatures.



Size of the flake is generally determined by the ultimate use of the detector cell. Performance values vary with these sizes. For a 1 mm x 1 mm flake in the Model 1317, resistance at 25°C is approximately 3 megohms; operating bias is ±80 volts (160 volts total); sensitivity is 50 volts per watt when shunted by 3.3 megohms amplifier input impedance. It has a 12 millisecond time constant. Noise when biased is less than twice theoretical.

Superior sink construction in the 1312 results in faster response and higher sensitivity. A typical time constant is 2.5 milliseconds, depending on flake size. Sensitivity, varying with flake size, is 1.6 volts per watt per square centimeter of flake size per 100 volts of bias.

Measurement Engineering Ltd., Arnprior, Ontario.

• *"Nylaflow" Flexible Polyamide Tubing*

Item 1292

"Nylaflow" is a flexible polyamide tubing of tough, horn-like structure with very great resistance to flexural and vibrational stresses. It has excellent abrasion and impact resistance and exceptional resistance to most chemicals. Its burst strength per unit weight is higher than any other extruded plastic tubing or hose.

"Nylaflow" is light, easy to coil and handle, eliminates prebending, flexible couplings and intermediate fittings. It can be quickly preformed or bent with clips and can be secured with standard metal fittings.

It is being used successfully for air lines, hydraulic lines, instrumentation lines, oil lines, beverage lines and many others.

"Nylaflow" is specially processed under exacting control conditions to maintain maximum uniformity of its outstanding properties.

Polypenco, Inc., 2052 St. Catherine St. West, Montreal, Quebec.

(Turn to page 54)

For further data on advertised products use page 49.

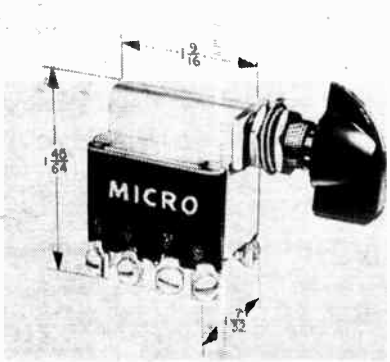
NEW PRODUCTS

(Continued from page 53)

● *New Rotary "Toggle" Switch*

Item 1293

A new rotary "toggle" switch has been announced by the Micro Switch division of the **Minneapolis-Honeywell Regulator Co. Ltd., Vanderhoof Ave., Toronto, Ontario.** This switch, Catalog Listing 4TR1, offers a solution to the problem of controlling many circuits with single motion, mechanical actuation.



This small switch can handle a high electrical load, thus eliminating the use of relays and other electrical devices.

Rugged enough for most airborne and industrial applications, this switch has successfully passed impact, shock, acceleration, and vibration tests.

The 4TR1 is maintained in all three actuation positions; on-off-on. This four-pole double-throw switch has 12 terminals.

Other "TR" switches, with up to 24 terminals (8 poles), are also available.

● *Station Magnetometer*

Item 1294

Type T613 Station Magnetometer, designed to record the three orthogonal components of the earth's magnetic field, was engineered and produced by **PSC Applied Research Limited, 1500 O'Connor Drive, Toronto,** to assist in Canada's International Geophysical Year measurements.

Designed by Dr. P. Serson of the Dominion Observatory, the magnetometer consists of three assemblies — a remote detecting head, an oscillator-amplifier assembly and a regulated power supply. In addition, three recording type meters are required. The normal sensitivity of recording is 1000 gammas full scale (1 gamma equals 10^{-5} oersted). Since the instrument gives a voltage output (1 volt d-c per 100 gammas, at essentially zero output impedance), the recording sensitivity may be changed by changing the voltage sensitivity of the recording meter, and the magnetic field component may be recorded by more than one meter at different sensitivities.

The detecting head, which may be levelled, consists of the three orthogonal flux gate detecting coils enclosed in a polyester fiberglass cover. Particular care has been made in the design to ensure a firm mechanical assembly. Materials used in the head have been selected for freedom of magnetic properties, and have been finished to avoid deterioration due to corrosion.

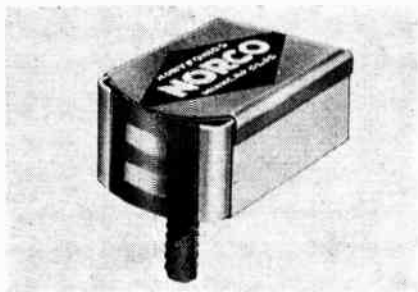
The amplifier assembly, which may be mounted in a standard relay rack, has been designed in modular form; each of the component amplifiers may be plugged into the rack assembly. This method of construction permits rapid interchange of units for service and maintenance and, with spare modules, permits continuous use of the equipment.

The regulated power supply unit also mounts on a relay rack panel and is supplied with cables to the other assemblies.

● *Stereophonic Record And Playback Head*

Item 1295

The Nortronics Company, 1015 South Sixth Street, Minneapolis 4, Minnesota, has announced its model TLD in-line magnetic head for low cost, high quality recording and reproduction in stereophonic sound applications.



The head can be compensated for flat response between 30 and 10,000 c.p.s. at 7.5 inches per second. It is compact and will provide long wear, negligible oxide accumulation, excellent rejection of surrounding fields, and uniformity of frequency and amplitude response.

This new head features precision ground and lapped gap, balanced electric and magnetic structure, high output, and precise colinear alignment. The active tape surfaces do not pass over any epoxy resin or plastic surfaces, thereby eliminating the need for frequent cleaning even under humid conditions. The head is suited for use in new equipment design, replacement, and for conversion of existing tape recorders to stereophonic tape "phonograph" equipment. Detailed dimensional drawings, specifications, and prices to manufacturers, distributors, and dealers will be furnished upon request.

For further data on advertised products use page 49.

● *Magnetic Industrial Counters*

Item 1296

Theory and circuitry underlying substitution of magnetic devices for vacuum tubes in industrial high speed counting equipment is explained in the new Data File 109 published by Berkeley division of high line Beckman Instruments.

Titled "Application of Magnetic Techniques to a Reliable 40 KC EPUT® Meter Design," the paper originally was presented at the March, 1956, IRE convention in New York City by Berkeley Engineer David A. Weinstein.

It explains how a miniature saturable reactor device (christened "Ferristor" by Berkeley) replaces most of the short-lived vacuum tubes to produce a more rugged and reliable events-per-unit-time instrument for countless industrial uses.

This Ferristor reactor functions as both a bi-stable ferroresonant element and a magnetic amplifier with fairly linear transfer characteristics between cutoff and saturation points.

Besides describing the Ferristor itself, the data file includes a detailed study of circuitry, time base and other electronic components involved in designing the revolutionary Magnetic EPUT®. Complete diagrams illustrate the text.

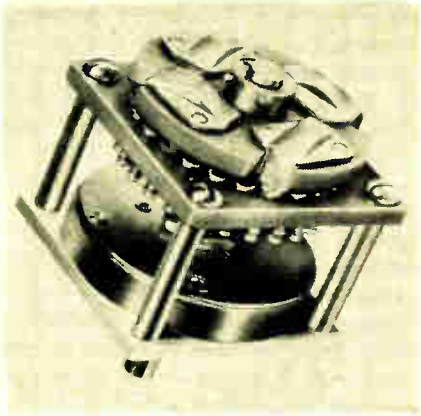
Department 5321, Berkeley Division of Beckman Instruments, Inc., 2200 Wright Avenue, Richmond, California.

● *New Version Of Knee-Action Rotary Switch*

Item 1297

The Daven Company, Livingston, New Jersey, announces the design and availability of a newly developed version of its knee-action rotary switch, Type 142-CM. This newly developed switch is 1⅜" square and is available with as many as four poles on a single deck. In addition, as many as seven positions per pole, with shorting action, and four positions per pole, with non-shorting action, can be obtained with the new units.

The new 142-CM employs rotors, slip rings and contacts of solid silver alloy. Turret-type terminals, gold plated to facilitate soldering, are supplied for easy wiring.



The switch can be supplied in multi-deck arrangements, with as many decks as required. In the single deck version, the switch can be furnished as a round unit. This variation is designated as Type 42-CM.

Phenolic parts of the switch are XXXP in accordance with MIL-P-3115B. All metal parts are plated to withstand 200 hour salt spray tests.

The new 142-CM switch is capable of several million cycles of operation. A roller-type detent is used for accurate contact positioning.

Adams Engineering Ltd., 1500 St. Catherine St. W., Montreal, or 65 Bloor St. West, Toronto.

(Turn to page 56)

For further data on advertised products use page 49.

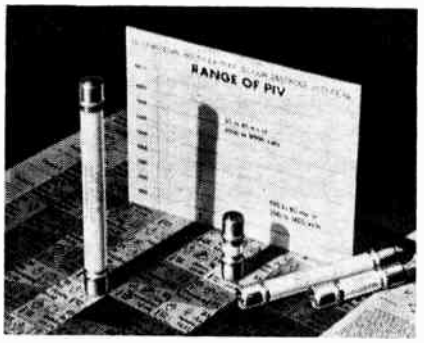
NEW PRODUCTS

(Continued from page 55)

● *16,000 Volt Silicon Diodes*

Item 1298

Sixteen thousand volt silicon diodes have been developed by the research and development laboratories of International Rectifier Corporation and are now in production. These diodes are a series of high voltage silicon rectifiers especially designed for power applications where high ambient temperature, reliability, high efficiency and miniaturization are prime requirements.



Standard size silicon type diodes now available in production quantities have ratings ranging from 600 volts at 100 ma half-wave d.c. output to 16,000 volts PIV at 45 ma and offer high rectification efficiency over an operating ambient temperature range of minus 55°C to plus 150°C. To assure reliability, stability and freedom from contamination, matched and selected P-N junctions are assembled in series into a metallized ceramic housing with ferrule type terminals, thus providing hermetic seal.

Because of these features, silicon diodes are ideal components for all types of high voltage, low current power supplies, that is, computing machines, magnetic amplifiers, cathode ray tube and radar high voltage supplies, electrostatic precipitator, guided missile circuits and many special military applications.

International Rectifier Corporation, El Segundo, California.

● *Frahm Frequency Monitor*

Item 1299

The Frahm Frequency Monitor is used to open or close an electrical contact when the frequency of the power line to which the monitor is connected reaches a preset limit. Monitors can be supplied for low or high limit operation, separately or in a single case. It can be used in power transmission systems, for generators, turbines, and other rotating machinery when used in conjunction with an A.C. tachometer generator.

The Frequency Monitor consists of a precision resonant reed relay, an auxiliary relay to operate an external electrical alarm or control device, complete electrical circuit for both relays, components to ensure close limits of response frequency, indicator lamps to show when the supply voltage is applied and when the working contacts are operated, and a switch for manual reset of the working contacts. The case is designed for front-of-panel mounting, with rear terminals.

Units can be supplied for a normal operating frequency of any one value between 50 and 500 c.p.s. The response frequency may be any one value above or below the nominal frequency, also between 50 and 500 c.p.s., but should differ from the nominal frequency by at least 0.25% to ensure reliable monitor action. The monitoring action is initiated when the supply frequency comes to within 0.1% of the response frequency, and this tolerance will not be exceeded when the monitor is operated in ambient temperatures between 10 and 40°C.

The signal contact is single pole single throw, normally open, maximum non-inductive load 5A, 11tV, 50 to 500 c.p.s. Normally closed contacts can be supplied on request. Input voltage may be 105-125V. Potential transformers can be used to adapt the monitor input to any specified supply voltage. Input power is about 14 watts. Dimensions are approximately 5" x 4¼" x 3½" deep, weight 2¾ lbs.

R. H. Nichols Ltd., 2781 Dufferin Street, Toronto, Ontario.

● *Magnetic Filament For Airborne Use*

Item 1300

A new magnetically regulated AC filament supply excellently suited for any airborne application where regulated filament voltage is required, has been announced by Engineered Magnetics Division, Gulton Mfg. Corp., of Culver City, California.

The rugged, precision unit, designated Model ZA-12630-A, and another in the rapidly expanding line of Magnapack Magnetic Amplifiers and Power Supplies, needs no maintenance or warm-up time, measures only 4½ x 5 x 6¾ inches, and weighs only 10 pounds. With a response time of 0.2 seconds and ± 1% regulation, the unit will supply 6.3 volts AC and 40 amperes from an input of 1-5-125 Volts AC and 380-420 CPS, single phase.

Other features of the ZA-12630-A include long life, no filaments, no moving parts, and an operating temperature range of from -67°F to +165°F.

Lake Engineering Co. Ltd., 36 Upton Rd., Scarborough, Ontario.

● *Miniature Power Supply*

Item 1301

A 5,000 volt DC power supply that fits in the palm of a hand, manufactured by Servo Corporation of America, New Hyde Park, N.Y., was shown by Measurement Engineering, Ltd., Arnprior, Ontario, sales representative, at the recent Canadian IRE convention, in Toronto.

This Servomation power supply, Model 503, is ideal for application where size and weight must be kept to a minimum. Weighing only two pounds, the power supply measures 4" x 2⅝" x 5½".

Input of 275 volts DC provides 5,000 volts DC at 300 micro-amperes; lower output voltage at higher current can be obtained by varying the screen voltage on the oscillator tube.

The transformer which also furnishes power to light the filament of a IZ2 rectifier tube, is hermetically sealed in an epoxy resin casting and operates on 30 kilocycles.

The unit operates on input voltage (No. 1) of 6.3 @ 1.25 amperes AC (heater). Input No. 2 is nominally 275 volts DC; if desired it can be -150 and +200 to total 350 volts. Input current is dependent upon the output power requirements.

Measurement Engineering Ltd., Arnprior, Ontario.

● *6⅛" 50 Ohm Coaxial Transmission Line*

Item 1302

Availability of the new 6⅛" 50 Ohm Coaxial Transmission Line for high power, low loss military and commercial services, has been announced by Prodelin, Inc., of Kearny, N.J., manufacturer of microwave and television systems equipment.

The 6⅛" RETMA 50 Ohm Line is built in accordance with RETMA Standard TR-134 for the latest coaxial transmission lines. Service-proved pin-type reactance-compensated Teflon insulators provide constant impedance and broadband characteristics.

Dimensionally interchangeable with all other standard RETMA manufactured lines, these new lines are also available in other RETMA-specified sizes. A complete line of associated components and connectors is also available.

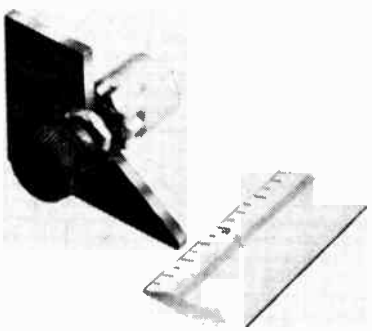
Prodelin, Inc., Dept. GE-3, 307 Bergen Ave., Kearny, N.J.

For further data on advertised products use page 49.

• *Miniature Ten Position Tap Switch*

Item 1303

The **Pacific Division of Farnsworth Electronics Company, 815 San Antonio Road, Palo Alto, California,** announces a new hermetically sealed switch designed to meet the increasing demands for reliability in modern electronic equipment. It features rigid, simplified mechanical design making use of low-loss glass insulation, solid molybdenum contacts points, solid coined-silver contact arm, hardened shafts and wear surfaces.



This switch is rated at 3 amperes at 115 volts inductive load, and withstands 5G vibrations from 5 to 2,000 cycles per second. It may be operated at temperatures as high as 350°F. without damage to functional portions of the switch.

When panel mounted, it fills the need for a compact, highly rated switch which is explosion, splash, and drip proof. It may be flange soldered into hermetically sealed units permitting internal switching without the necessity of bringing out leads.

The switch is available in a variety of terminal designs and for a variety of mountings.

• *Packaging Miniature Electronic Components*

Item 1304

An entirely new concept in packaging miniature electronic components, including a new super-small transistor, has been developed and perfected by **Centralab, a Division of Globe-Union Inc., of Milwaukee.** For the first time, ultra-miniature, standard packaged transistor amplifiers in one, three and four stages are available to the electronic industry for use in the design of a wide range of electrical and communications equipment.

Some of the present and future uses for the new technique are in tiny hearing aids, small radios, electronic brains, recorders, military equipment, television, electro-medical units, transceivers and other applications where space-saving is a valuable asset.

The heart of this new development is the extremely small high-gain, low-noise transistor, specially produced by patented processes for this new technique.

Largest of the new miniature transistor amplifiers in the new line is the four-stage unit which measures only approximately one-inch by a half inch wide, and ¼" thick. Yet it replaces 21 large parts — four transistors, five capacitors, and 12 resistors, plus wiring. Soldering connections are reduced from 46 to only 7. The smallest unit, a single stage amplifier, is no larger than the eraser on a wooden pencil. A complete four stage amplifier could be built in less space than a one-inch length of an ordinary wood pencil.

Specifications on the new miniature four-stage transistor amplifier show a gain of 75 db. nominal at 1 KC; input impedance of 1000 ohms; supply voltage 1.3 v; power output of 1 milliwatt at 15% distortion, and .36 mw at 2% distortion; current drain of 4 milliamperes; signal to noise ratio of 38 db. nominal; frequency characteristics of 250 to 20,000 c.p.s. ±5 db.

(Turn to page 58)

For further data on advertised products use page 49.

NEW PRODUCTS

(Continued from page 57)

● *High Temperature Transformers For Aircraft Use*

Item 1305

To meet the demand for smaller lighter electronic equipment, primarily in the aircraft industry, Canadian Westinghouse has recently developed a new line of high temperature transformers.

Designated the Class H transformer, they are the 400-cycle power and filament type used in typical airborne electronic equipment. They cover the volt-ampere range up to 1500 VA, with limiting operational conditions to a 75° C temperature rise over an ambient temperature up to 125°C for a total winding temperature of 200°C. The expected life is better than 1000 hours.

Stabilized grain oriented silicon steel "C" cores are used. The use of a 200°C bonding agent, in addition to a new core joint compound ensure that core characteristics remain more stable over the wide temperature range and environmental conditions than previously used cores.

The coils are made of Class H materials, impregnated with Fosterite resin, and they exhibit excellent moisture resistance. The general construction follows the pattern of standard Fosterite transformers and has passed rigid military requirements.

Electronics Division of the Canadian Westinghouse Company, Hamilton, Ontario.

To obtain further information on New Product items, use coupons on page 49.

● *Miniature Indicator Lamp*

Item 1306

This lamp is suitable for instrument panels, business machines, computers, test equipment, appliances, and warning devices where it is necessary to indicate, warn, remind or convey a message.

The features of this lamp are as follows:

SMALLER SIZE only 3/8" diameter, 5/16" front panel projection, 1/2" rear panel projection.

MOUNTS ON CLOSE CENTERS only 7/16" apart in strips or banks. Over 250 Circon miniature indicator lamps can be mounted on a 6" x 6" panel.

PERMITS WIRELESS INSTALLATION in printed circuit designs, and simplified wiring in conventional installation.

WIDE RANGE OF LIGHT INTENSITIES available for both low level and high level applications.

SEALED CONSTRUCTION available providing both a sealed indicator unit and a sealed panel installation.

QUICK VIBRATION-PROOF INSTALLATION without nuts, lock washers or supplemental holding devices on panel thicknesses from .040" to .095". Other panel thicknesses accommodated on special order.

STANDARD COLORS available from stock include red, green, yellow, blue, white and clear. Special colors available as required.

MESSAGE INDICATIONS on special order including numerals, warnings, words and labels. Designed so that messages can either be seen or are entirely absent when lamp is not illuminated.

REPLACEABLE LAMPS of standard incandescent construction having long life and proven performance.

HIGH QUALITY design, construction, materials, workmanship and quality control insure a product suitable for military end-use or for the finest of commercial applications.

LOW COST permits economical use in place of larger, less efficient designs.

E. G. Lomas, 227 Laurier Ave. West, Ottawa, Ont.

For further data on advertised products use page 49.

surprise

Another product from Helipot!

Discriminating engineers, the world's toughest critics, applaud the brilliant performance of Helipot's brand new trio - - series 5400, 5600 and 5700 single-turn precision potentiometers.

According to the program notes, these three virtuosi come in a choice of five mounting-and-bearing combinations. A one-piece, dimensionally-stable plastic housing eliminates a separate rear lid. There are tighter tolerances on linearity and mechanical run-out.

A new rotor design reduces mass . . . permits lower contact pressure . . . results in decreased coil wear, more reliable operation, greater life expectancy. Incidentally, torque is lower.

They're a quiet trio, too. Maximum noise, at 100 rpm, with 1 milliamp of slider current, is 100 millivolts.

Sweet music to any electronic designer's ear!

For complete information and specifications on these three new HELIPOT* precision potentiometers, write for data file 1127

Beckman®/**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.

708 *REG. U. S. PAT. OFF.

New source for communication cables

CANADA WIRE now offers a complete line of telephone wires

With the addition of telephone wires to the familiar family of "Red Reel" quality products, Canada Wire is now equipped to supply wire and cable requirements of the communications industry.

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