

canada
courier

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Electric power travels by bus

It's called a bus, but it has no wheels and carries no passengers. It's an isolated phase bus that conducts electric power from one point to another where large power concentrations are present — as generator leads to transformers, for connecting transformers to switchgear assemblies, and in switching stations.

Engineered and manufactured by I-T-E Circuit Breaker (Canada) Limited, Mississauga, Ontario, the isolated phase bus is a structure in which each phase conductor is enclosed by an individually grounded metal housing and separated by

air and porcelain from adjacent conductor housings. This design eliminates the possibility of a phase-to-phase fault.

An I-T-E development, the isolated phase bus was first used by power companies in 1937. Since then it has been installed in international projects such as Ontario Hydro's Nuclear Generating Station at Pickering, Ontario; the Alto Anchicaya Colombia Power Project, South America; the Eshkol C. Development, Israel; the Idikki Project, India, and by the Electric Generating Authority, Thailand. Continuous current ratings up to

40000 Amps. and BIL levels up to 150kV are available.

The company manufactures two types of isolated phase bus, the discontinuous-bonded type and the continuous-bonded type. The designs are basically the same except for the enclosures. In the discontinuous-bonded design the enclosures are sealed by short removable bolted covers which are gasketed, making them dust and weather tight and suitable for indoor and outdoor applications. The phase enclosures are used as very low-resistance ground bus with continuity being ensured by one solid connection across each three-phase set of removable covers.

In the continuous-bonded design the enclosures of connective lengths of bus are connected together by groups of welded aluminum flexibles arranged to allow easy access into the four insulators. Removable bolted covers are used to seal up the enclosures over the top of the flexibles. This removable cover is both located and bonded to one adjacent welded enclosure by an aluminum strap.

Both types of bus have three single-phase assemblies with a maximum length of 24 feet (7.3m) per section either welded or bolted together to form one three-phase unit suitable for shipment and installation. The three-phase units are welded together on jigs to ensure consistent phase spacing. The conductor in both designs is supported co-axially in the bus enclosure by four radially displaced

resiliently mounted insulators located at each end of the single-phase housing. At one end the four insulators anchor the conductor to the housing. At the other end the four insulator assembly allows the conductor to slide and yet prevents the insulators from being stressed in cantilever. Either welded or bolted flexible connectors are used to join conductors to allow for expansion and for differences in alignment.

Features of the I-T-E isolated phase bus include its air and porcelain insulation materials. The almost chemically inert porcelain, with zero moisture absorption, eliminates the danger of failure due to insulation deterioration with time. Field erection difficulties are completely eliminated by the design simplicity of the bus. Each section is made as long as is conveniently practical from a shipping and handling standpoint to reduce field assembly time. The new three-phase unitized design has reduced the amount of supporting steel required, and the method of supporting by simplified hangers has eliminated the complexity of field installation and reduced the overall weight of the bus.

Additional features include removable covers reduced in length to 19 inches (482.6mm) to simplify cover assembly and removal, and to reduce gasketing problems. Rolled grooves, which prevent over compression of gaskets, eliminate gasket ruptures. Conductors and housings are manufactured out of sheet aluminum to facilitate procurement of material and improve delivery time. Code 2-1



Carrying electric power from the generator to the transformers is this forced-cooled I-T-E Isolated Phase Bus at Ontario Hydro's Pickering Nuclear Generating Station. The Isolated Phase Bus, used throughout the world, is engineered and manufactured by I-T-E Circuit Breaker (Canada) Limited, Mississauga, Ontario.

Picker's automated x-ray equipment makes technicians, patients happier

Automated x-ray equipment that makes the technician's job easier has been built by Picker X-Ray Mfg. Limited of Bramalea, Ontario.

The Rapido System I is essentially a horizontal floating tabletop, mounted on an automatic film feeding unit, and integrated with an inclinable support column for the

tube and collimator assembly.

The system, which can be used for all horizontal Bucky radiography, is cassette-free. Films are stored in the base of the table in four magazines, each with a capacity of 100 films. When filled, each magazine weighs approximately 10 pounds (4.5 kg) compared to as

much as 350 pounds (159kg) in cassette systems. A control panel on the front of the table provides push-button selection of film size and the collimator automatically limits the x-ray beam to the desired film size. A patient's identification card is inserted in the card receptacle to provide patient identification: when the x-ray is completed, the film moves to the receiving magazine, tripping a mechanism that prints the data on the film edge. The exposure chamber can be removed easily for cleaning the intensifying screens.

A foot brake releases the tabletop to permit travel in lateral and longitudinal lanes, while a hand brake on the column lets the tube support be inclined as much as 40 degrees on either side of the vertical position.

Designed with the help of industrial design consultant Donald Wilson of Toronto, the x-ray unit has controls within reach of all technicians, whether short or tall. The main unit is made with a flush front so that a stretcher can be placed against the table and a patient can be easily transferred onto the table. The flush front also means technicians do not bruise their shins on protruding pieces of equipment.

The machine's film measurement and power systems conform with both American and European requirements. Code 2-2



Picker also makes the Rapido System 2, which differs from the System 1 in that it does not include an integral tubestand or collimator. Ten patients can be x-rayed in 20 minutes with cassetteless Rapido x-ray systems.

Toronto company designs low-cost automatic color paper processor

An automatic color paper processor at the price of most manual systems is now available from Braunoehler Company, Toronto, Ontario.

All the operator need do is load the basket, insert it in the processor and step on a switch. From here, the Braunoehler unit takes over: it agitates the prints at the right speed, lifts the basket and stops for drainage, gently transfers prints into the next tank, switches the wash water on and off, and keeps precise times and temperatures throughout the complete processing cycle. Solutions are heated with circulating warm air to reduce water consumption.

The main frame, patented transferring mechanism and other hardware are made of stainless steel, with the tanks and covers made of easily maintained thermo-plastic.

The durable processing baskets are made of saran mesh, polyvinyl

chloride and stainless steel. They are available in the following sizes: double baskets for 40 prints of 8 inches by 10 inches (19cm by 25cm); single baskets for 10 prints of 11 inches by 14 inches (28cm by 25cm); single baskets for 8 prints of 16 inches by 20 inches (45cm by 50cm); and single baskets for 2 prints 20 inches by 24 inches (50cm by 61cm).

Plug-in solid-state integrated circuit modules are provided for all functions and are easily accessible for speedy servicing. Modular construction of the entire unit makes it possible to change over to other processes, if desired, at a later date.

Accessories available include a manual burette replenishment system with storage tanks and a five-gallon chemical mixer. Units are available for most processes, including the new three-step chemistries. Code 2-3



Operator inserts basket in automatic color paper processor designed and manufactured by Braunoehler Company.



High resolution spectral absorption measurements are made with Alpha-metrics' Model DC1010 radiometer/photometer. The laser beam is reflected ten times between a pair of mirrors before landing on the radiation detector. This procedure increases the measurement sensitivity by ten times and results in a more precise determination of spectral absorption. Here, an operator inserts a filter glass for measurement.

Young Winnipeg company makes unique light measuring instrument

A new product for the electro-optical industry has been designed by a two-year-old Winnipeg, Manitoba company. Alphametrics Ltd. is now marketing its laboratory photometer/radiometer, the first modern light measuring instrument to provide direct readout and convenient operating controls.

The instrument, model DC1010, uses advanced concepts to simplify ultraviolet, visual and infrared radiation measurements. The main component, a solid state digital converter unit, uses a variety of detector probes which cover most possible light measurement applications. Each probe automatically selects the desired measurement units and range limits, and displays them on an illuminated multi-color information panel.

The instrument also offers another outstanding feature: an integrated approach to light measurement whereby the entire measurement setup — light source, geo-

metry, detector probe through indicator unit — is considered as a total system. This approach eliminates many sources of inconvenience, confusion and error normally connected with light measurements.

The instrument's light weight and plug-in circuit cards make it ideal for in-field service.

Additional operating features are: variable gain adjustment for simplifying filter transmission measurements; an offset control with full-scale offset capability; a display hold capability; a display intensity selector for varied lighting environments; and a band-width selector with a range of 0.1 Hz to 10 Hz.

Optional features include: a digital input/output interface which permits remote range selection and provides a buffered binary coded decimal output; automatic ranging and a pulse measurement capability. Code 3-3

Canada to host mining equipment show

The First Canadian Mining and Aggregate Equipment Exhibition will take place in Toronto November 20-22, 1973. Most companies exhibiting are Canadian.

As one of the world's great mining nations, Canada has been in the forefront of developments in equipment designed to increase productivity, cut costs and improve efficiency in the mining and aggregate industries.

Many of these innovations will be featured at the exhibition.

(With a growth rate of 7½ per cent annually, Canada is third in the world's mineral production after the U.S.A. and the U.S.S.R. Canada's current production is about \$5 billion a year.)

The show will be held in the Queen Elizabeth Building and outdoor display area at Toronto's Exhibition Park. Code 3-4

Canadian companies will exhibit at international marine congress

Ten Canadian companies will exhibit at Interocean '73, the second International Congress with Exhibition for Marine Research and Marine Exploitation. Being held November 13-18 in Dusseldorf, West Germany, the exhibition will include plants, equipment, instruments and materials employed in marine technology. The Canadian companies are: Canadian Marconi Company of Montreal, Quebec; C-Tech Limited of Cornwall, Ontario; Fathom Oceanology Limited of Port Credit, Ontario; German and Milne of Montreal,

Quebec; Guildline Instruments Limited of Smiths Falls, Ontario; Halifax Shipyards of Halifax, Nova Scotia; Pelcon Connector, a Division of Pederson Industries Ltd. of Ottawa, Ontario; Pollution Control Systems (International) Ltd. of Thornhill, Ontario; and the Foundation Group of Companies of Toronto, Ontario.

Canadian products of special interest will include submarines, deep ocean towing systems and fishing sonar and oceanographic instrumentation. Code 3-5

Baggage no burden

Conveying and distributing baggage at airport terminals is no problem for Mathews Conveyor Company Limited, Port Hope, Ontario.

Exporting since 1961, this 62-year-old company designs and builds a wide variety of baggage handling systems which are in use in air terminals throughout the world, from Auckland, New Zealand, to Lima, Peru.

The company's enplaning conveyor systems can serve frontal counters for individual airline or combined airline operations or provide pass-through facilities for passengers with individual check-in positions. Alternatively, herringbone conveyor arrangements can provide automatic conveying from

the scale position to the enplaning luggage sorting room, often on the floor below the departure room.

For sorting luggage in the enplaning luggage hall, Mathews can provide lineal conveyors, recirculating conveyors, or even Carrousel luggage dispensers which are normally utilized for automatic luggage distribution to deplaning passengers. The company also manufactures pushbutton-controlled semi-automatic sortation systems for enplaning needs.

The Mathews "Cresflight" luggage distribution loops — which can conform to any appropriate configuration within the luggage claiming hall — can be hand-loaded by operators transferring luggage directly from the ramp vehi-

cles. The loops can also be installed as "islands" within the luggage claiming hall to be fed automatically by subterranean or overhead conveying systems. Such loops maintain the feature of the island Carrousel luggage dispensers which permit the free flow of passengers around the entire periphery of the loop and avoid cross-traffic flow patterns.

One of the world's leaders in its field, Mathews will provide international air terminals with luggage conveying and distribution systems that will suit the specific needs of individual air terminal operations. The firm also forms a part of the "Airports for Export from Canada" group which, centered on the marketing branch of the Department of Industry, Trade and Commerce, is comprised of consultants, architects, contractors and equipment suppliers. Code 3-1



A first — the Carrousel luggage dispenser originally designed by Mathews, was the first dynamic system which permitted passengers to remain stationary and the luggage to be delivered to their position. Over 200 such units are now used in air terminals throughout the world.

Wide-ranging consultant services

Kilborn Engineering Limited has attained an international reputation in the design and construction of beneficiation plants for the mining industry.

Incorporated in 1947, this Toronto, Ontario company offers totally integrated consulting engineering and construction management services in the fields of mining, industry, environmental engineering, chemical engineering, public works, water conservation and food control.

Basic services provided by Kilborn include preliminary engineering, planning and feasibility studies, detailed engineering and equipment specifications, purchasing and expediting, project management, contract administration and construction management, startup assist-

ance, advisory services in research, appraisals and economic evaluations.

Though Kilborn is most widely known for its activities in the minerals beneficiation field, about one-third of its business comes from public works projects, including dams, flood control works, sewage and water works, roads and bridges, subdivision services and recreation facilities.

Engineering assignments for the design of more than 90 concentrators have made Kilborn a world leader in this field. The company also offers consulting engineering and construction management services in mineral resources development programs and complete metallurgical plants, including refineries, smelters, beneficiation

and agglomeration plants.

Kilborn has worked in 22 mineral producing countries on such projects as: a 42,000 ton per day (TPD) copper grinding plant in Montana, U.S.A.; a 3,000 TPD nickel concentrator grinding plant in Kambalda, Australia; an asbestos pilot plant in Kozani, Greece; a 2,000 TPD copper concentrator in Nicaragua, South America, and an arc furnaces fume treatment plant in Minnesota, U. S. A.

The firm, with more than 200 employees, including 50 professional engineers, has carried out similar projects in other countries of Europe, North and South America, the Middle East and Asia.

Code 3-2



Model of the 7,500 tons per day zinc-lead concentrator of Tara Mines Limited in Navan, Ireland, for which Kilborn currently is doing the design, procurement and construction management.



No buts about it: this splice works

A new method for full tension butt-splicing of concrete reinforcing bars has been developed by Stricon Products Limited of Mississauga, Ontario. According to the company, the Ultimate Stress Splicer and PortaForge system makes splices that surpass all requirements set by both the National Building Code of Canada and the American Concrete Institute Code. The system works in the following way: a specially machined sleeve is heated to the temperature at which it is malleable. Then two bar-ends are inserted into the hot sleeve. The hydraulic PortaForge forces the sleeve's inner wall into and around the bars' deformations. The machine's dies assure full ultimate stress on all deformation patterns, regardless of the size of the rebar. The additional contraction of the sleeve when cooling creates a greater bond and gives the splice increased tensile strength. Stricon representatives will train personnel in the use of the system. Code 4-1

Cuts rods, cuts costs with on-site capability

On-the-job fabrication of reinforcing rod is a simple money-saving task when it is done with the Hydrex Journeyman Bender, a portable hydraulic rod bender and shear manufactured by Hydrex Industries Limited, Vancouver, British Columbia.

Designed for use in the heavy construction field and particularly suited to remote areas, the Journeyman Bender is mounted on its own wheels and axle and, with a hitch-weight of only 130 pounds (59kg), can be moved easily by truck or car from job to job.

Changes in size or specification of rod after delivery has been made are no problem with the Journeyman. It simply cuts or bends the rod to meet the new specifications. And it's done right on the job site. Material handling and trucking expenses can also be reduced because the machine can be taken to the material rather than the material to the machine.

Described as the lowest cost

power bending and shearing equipment on the market, the Journeyman is driven by a 9-horsepower engine and uses two double-acting hydraulic cylinders that easily handle all bending and shearing requirements on all sizes of reinforcing rod. It handles No. 11 high tensile rod and will bend or shear several smaller bars at once.

Specifications of the Journeyman Bender, which is available in six models, are: table height, 38 inches (965mm); overall length, 9 feet (3m); working table size, 40 inches by 68 inches (1,016mm by 1,727mm); track, 59 inches (1,499mm); tow bar height, 15 inches (381mm) or 22 inches (559mm). Total weight is 2,600 pounds (1,180kg).

Journeyman Benders, manufactured by Hydrex Industries since 1964, are used in Canada, the United States, Australia and South America. The company is able to export anywhere. Code 4-2



The Journeyman Bender by Hydrex Industries Limited bends or shears reinforcing rod and is available in metric or imperial systems.

Airfield equipment pre-assembled

Specialist manufacturers of ground based electronic systems for aviation, International Technical Products (Canada) Limited, Pointe Claire, Quebec, produces Tacan and Vortac "total package" turnkey units and such associated equipment as air traffic control towers, airfield lighting systems and flight inspection systems. These are in use at airfields in Britain, France, Libya, South Africa, India and Pakistan.

The basic principle underlying the company's total equipment package concept — as in the Tacan and Vortac systems currently being supplied to overseas customers — is that the complete equipment, in its final mechanical and electrical configuration, be assembled and exhaustively tested in the factory to meet final performance specifications before being shipped to the field. This assures the elimination of system assembly faults, installation errors and equipment interference problems. It also reduces field installation time.

The ITP Model 4001 Vortac is a true total equipment package. It is entirely pre-assembled at the factory where all wiring, harnessing and interface of the various components is accomplished. The complete system, including such accessory equipment as air conditioning units, is then supplied with power and checked out as a complete operating unit before leaving the factory.

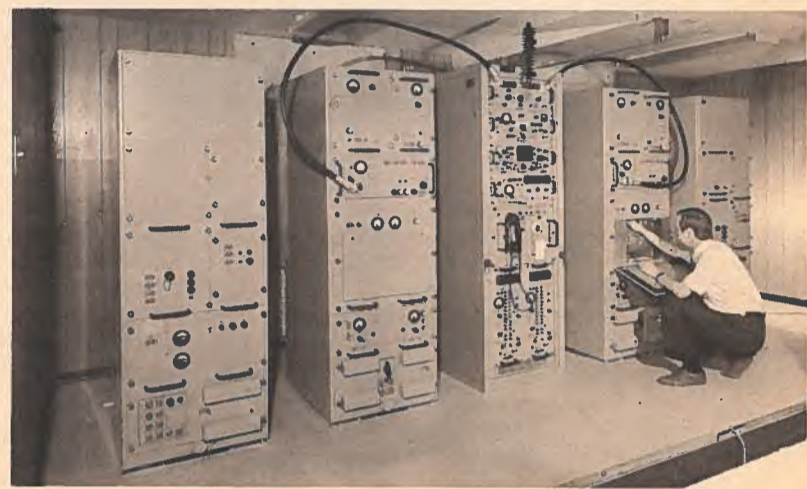
ITP's turnkey Tacan/Vortac equipment is contained in a reinforced, transportable shelter providing a floor area of 16 by 20 feet (5 by 6m). The shelter, of rein-

forced wood and fiberglass, with foam insulation sandwiched in the walls, provides a convenient and commodious equipment room when assembled. The shelter's steel floor is strong enough to support the substantial weight involved and the whole structure is designed and tested to withstand shocks which may occur in shipment.

The shelters are constructed in two halves. When factory testing is completed the halves are separated and the open ends closed with false walls to form shipping containers 8 by 8 by 20 feet (2 by 2 by 6m) which can be handled readily by standard shipping facilities. A few external portions of the system

such as climatic control equipment, antennas and antenna support structures, are separately crated and the whole equipment package is ready for transport to the site where it can be easily installed.

International Technical Products does more than manufacture these electronic systems. The company's concept for its turnkey systems also includes site selection and system design, provision of equipment (in shelterized containers if desired), system installation, flight inspection and commissioning, operation and maintenance, training for local technicians and long-term follow-on engineering and logistical support. Code 4-3



The pre-assembly concept adopted by ITP — demonstrated in this Model 4002 Vortac system — has a great advantage over previous procedures. Assembly on site of air navigation equipment installations had involved such things as the separate supply of the many equipment components, interface units, construction of buildings by local contractors and commissioning and maintenance training of local technicians by various equipment suppliers.

Garland's new char broilers make indoor barbecuing easy

Steaks and hamburgers that taste as if they've been barbecued outdoors can be made indoors quickly and safely with Garland Commercial Ranges Limited's new char broilers.

Available in electric models, the broilers are suitable for restaurants, short order counters and clubs. The units are counter models, with stands available to make them free-standing.

The broiler preheats from on to sizzle in six minutes. It broils hamburgers in four minutes and eight-ounce (187-g) strip sirloin steaks in seven to nine minutes. Recessed

elements heat the cooking grate evenly and excessive grease is removed quickly by grooves and openings in the grate.

Chefs will enjoy using this broiler for other reasons: its low ambient temperature beneath the cooking grate prevents flare-ups and it is cool to work over.

The self-cleaning unit has a stainless steel front and grey baked enamel sides. Stainless steel sides and mainback are available.

All servicing can be done from the front and top of the unit.

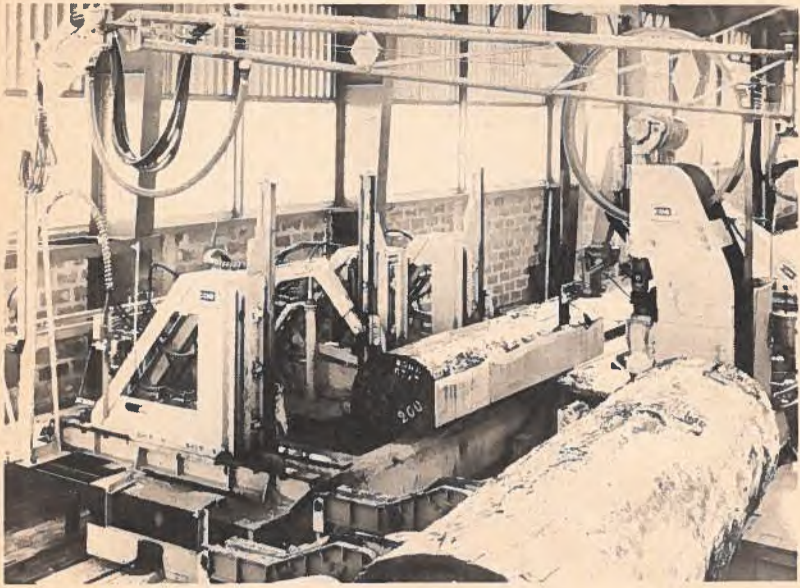
The broiler is available in three rack sizes: 11½ inches by 19

inches (29cm by 48cm), broiling five 8-ounce (187-g) steaks or ten 3-ounce (85-g) hamburgers at once; 23 inches by 19 inches (85cm by 48cm), broiling ten 8-ounce (187-g) steaks or 20 3-ounce (85-g) hamburgers at once; and 34½ inches by 19 inches (88cm by 48cm), broiling 15 8-ounce (187-g) steaks, 30 3-ounce (85-g) hamburgers or 24 6-ounce (170-g) chops at once.

Garland, which has been exporting since 1964, also makes gas and electric heavy-duty ranges, fryers, restaurant ranges and a complete line of counter equipment. Code 4-4



Garland's new char broiler gives that outdoor-barbecue flavour.



Cutting it fine!

Sawmills that need modern machinery need CAE Machinery Limited. This Vancouver, British Columbia company has been designing and manufacturing a wide variety of machinery for sawmills and pulp mill woodrooms throughout the world for more than 60 years. This carriage and 7-foot (2-m) bandmill was installed by CAE at the Scierie GIMM Sawmill in Nantes, France. Similar and other types of CAE sawmill machinery have also been installed in Canada, New Zealand, Africa, Australia and the United States. CAE Machinery has full manufacturing facilities, including a steel and iron foundry, a machine shop with tape-operated machinery and a welding and assembly shop. In addition to carriages and bandmills, CAE manufactures such machinery as: log loading and unloading equipment, barkers, chippers, chip screens, rotary type chip feeders, edgers, flakers, linebars, hogs and hammermills. Specialists in heavy duty machinery for sawing large logs, CAE will supply individual items of machinery or the complete package, including conveyors. The package can also include engineering services for mill design. Code 5-1

Satisfying sound savers sell well

Tape cassettes produced by Cartrex Electronics Limited, Montreal, Quebec, have many selling features — quality is one, individual customer labelling is another.

Of low noise high density formulation, the Cartrex magnetic recording tape uses fine-grained Gamma Ferric Oxides on a polyester base to produce a quality tape with high output characteristics. All Cartrex tape is fully calendared to give the tape a surface polish to extend the high end frequency range and greatly reduce excessive head wear.

Labelling is a special feature of the Cartrex tape. Merely by changing a plate the company affords the customer the freedom to alter the label design. Cartrex labelling involves direct printing on to the specially treated body surface — no paper labels are used. This method allows the printing of one, two or three colors in a single pass and completely eliminates the de-

lays and costs involved in printing.

Cartrex bodies are of high impact styrene and all pins, guides and mating surfaces in the tape path are interlocked into matching parts and sealed to eliminate openings or recesses into which the tape could catch or jam. Parts matching, both interior and exterior, provides a distortion-free assembly and assures consistent proper mechanical functioning of the cassette. The cassette's special window design reduces the hazard of tape damage due to finger or other foreign object penetration.

All metal shields on the tape's running parts are coupled with beryllium copper pressure pads which meet or exceed established standards. Hubs, round and true, are of full bodied construction and are of one-piece design. Leaders are secured to hubs by Delrin pins — rather than locking devices which can come loose.

Cartrex cassette containers are

Compressor inflates everything from toys to trailer tires

Automotive, camper and recreational product markets are being inflated by the Electro Air Compressor manufactured by Webster Mfg. (London) Limited, London, Ontario.

A compact unit that inflates tires, footballs, air mattresses, air tents, dinghies, inflatable furniture — everything that previously demanded awkward manual pumps, aerosol cans or good old lung power — the Electro Air Compressor is a first of its kind and has attracted world-wide interest.

Light, inexpensive and portable, the Electro Air Compressor will also pressurize water systems on travel trailers, motor homes, yachts and marine cruisers. It will inflate the Space Saver tire and the Newmatic Jack and even pressurize some air spring shock absorber and load leveler systems on automobiles.

Unlike other low pressure, low volume compressors on the market, the Electro Air Compressor exerts a pressure of 45 psi (3kg/cm²) so that boat trailer tires and travel trailer tires, which require a high pressure, can be inflated.

Oil-less and maintenance-free, the Electro Air Compressor is powered by a car's standard 12-volt electrical system (it plugs into the car's cigarette lighter socket), draws only nine amps maximum and uses a motor similar to a car's heater-blower. To the motorist, turning the compressor on means the same power drain, roughly, as turning on two headlights and two tail lights.

The Electro Air Compressor is attractively packaged in a high im-

of two individual styles: one, a semi-rigid, self-hinged unbreakable box made from translucent polyethylene; the other, a rigid, clear library box made of styrene. Both are available in a variety of colors. Printed inserts or indexes, in an unlimited range of design, are available to suit any and all packaging and display requirements.

Cartrex can also develop and produce — on short notice — special length or design configurations to meet customer requirements. An example is a 45-minute budget cassette for the teenager who wishes to record full album sides without waiting for rewinding as is required on a 60-minute cassette. Code 5-2



From toy balloons to automobile (and bigger) tires . . . inflation is easy with the Electro Air Compressor by Webster Mfg. (London) Limited.

perfect plastic case that contains all the necessary connections: air hose, electric cord with plug and four individual hose adaptors.

The 40-year-old company, noted for its zinc diecasting, also manu-

factures the model 612 unit, a medium pressure range air compressor that is permanently installed in camper trailers and motor homes to pressurize water systems. Code 5-3

Bovine semen undergoes strict testing



A bullish market?

The market is bullish for Western Breeders Ltd. of White City, Saskatchewan. This artificial insemination unit recently completed its first shipment of bovine semen to Australia and New Zealand.

The 13,000 doses had to be stored under quarantine conditions for 12 months before qualifying for export. Veterinarians from the Regina office of the Canada Department of Agriculture, Health of Animals Branch, extracted blood samples from the bulls every few weeks during the quarantine period. The blood and samples of the semen were injected into sheep which were checked daily to make certain that none of the donor animals had been exposed to Blue-

tongue disease. Although this disease is unknown in Canada, close Canadian association with areas in the United States in which the disease had been detected had left Australia and New Zealand previously unwilling to import semen from Canada. The new testing program allows both countries to make absolutely certain that their valuable sheep herds will not be endangered.

The shipment contains semen from the following breeds of bulls: Main-Anjou, Simmental, Limousin, Chianina, Charolais and Red Holstein.

Canadian suppliers are now exporting bovine semen to 33 countries. Code 5-4



Cartrex is expanding production facilities to turn out three million high quality cassette units annually.

Champions accept world challenges

Hydraulic control system and operator comfort — two main reasons why Champion motor road graders are popular in 47 countries throughout the world.

Designed and manufactured by the Dominion Road Machinery Company Limited, Goderich, Ontario, the Champion line of road grader consists of six basic models — all of which provide a power range capable of performing all types of road maintenance and construction work.

The Champion's exclusive hydrostatic drive mechanism turns circle 360 degrees in either direction and locks securely in the selected blade position. Wear on the circle is minimized because the load is spread between two separate drive pinions. Separate double-acting hydraulic cylinders, connected directly to the pinion cranks, eliminate the need for expensive replacement of worm reduction gearing. Also, the circle can be turned while the grader is moving with a full load.

The Champion's "series type" hydraulic circuit provides ease of control and the double wire braided hoses "bend power around corners" without the complexity and expense of mechanical drives. There are also separate pumps for main hydraulics, transmission and steering. The easily operating power hydraulic controls have few wearing parts and provide positive control without shake or "kick-back". And two or more controls can be operated at once without loss of power or speed.

Operator comfort is also a key to Champion's success. Because of a patented 90-degree two-way cab-operated high-lift blade control, the operator is able to place the blade in any working position — right up to the vertical, at either side, for grading or extreme bank sloping and ditching. This capability minimizes the need for manual adjustments and speeds up the job.

The cab, too, is designed for

operator comfort. The modern insulated steel cab has a forward sloping windshield and big windows for improved visibility. Instruments are mounted above the windshield at eye level for easy viewing. Sturdy doors are lock closed or latch open. The cab has a comfortable, easy riding, upholstered foam rubber cushion seat with a fully adjustable back rest. A wide bench type seat or individual bucket seat is also available.

Another characteristic of the Champion is its unique separate unit construction. Engine, transmission and final drive are separate units and can be serviced independently, making for faster, easier servicing in the field.

Some Champion models, such as the D-562, have an eight-speed constant-mesh grader transmission and others, such as the D-565T, have an easily operated power-shift transmission. The eight-speed is available with either a conventional two-lever control or exclusive single-lever control with power range shift. It has anti-friction roller bearings throughout, is made of a shock resistant steel case and the transmission is cushion-mounted to the frame.

The power-shift transmission's torque-converter instantly and automatically adjusts the engine torque to the load on the blade. It also provides a shock absorbing cushion in the drive line to prolong the life of the components. A convenient hydraulic shift console in the cab enables the operator to select the desired speed for every type of work.

In addition to Champion road graders, Dominion designs and manufactures grader wings, grader snowplows, automatic electronic blade controls, front-mounted grader bulldozers and rear-mounted grader scarifier and ripper.



Champion motor road graders such as this are used in 47 countries throughout the world. Code 6-1

Top performance pleases purchasers

Top performance in a variety of roles sells the Thordon bearing in world markets.

Manufactured exclusively by Thomson-Gordon Limited, Hamilton, Ontario, this non-metallic bearing has proved successful in a

wide range of industrial applications from the steel mills of Hamilton, Ontario, to the sand mines of Australia's east coast.

The tough elastomer bearing material, combined with special additives, gives the bearing high

impact strength and wear resistance. It is essentially self-lubricating and rejects dirt and other abrasive particles, reducing shaft wear and extending life. In addition to being abrasion-resistant, Thordon is shock resistant — even at sub-zero temperatures — and resistant to oil and a wide variety of chemicals and solvents.

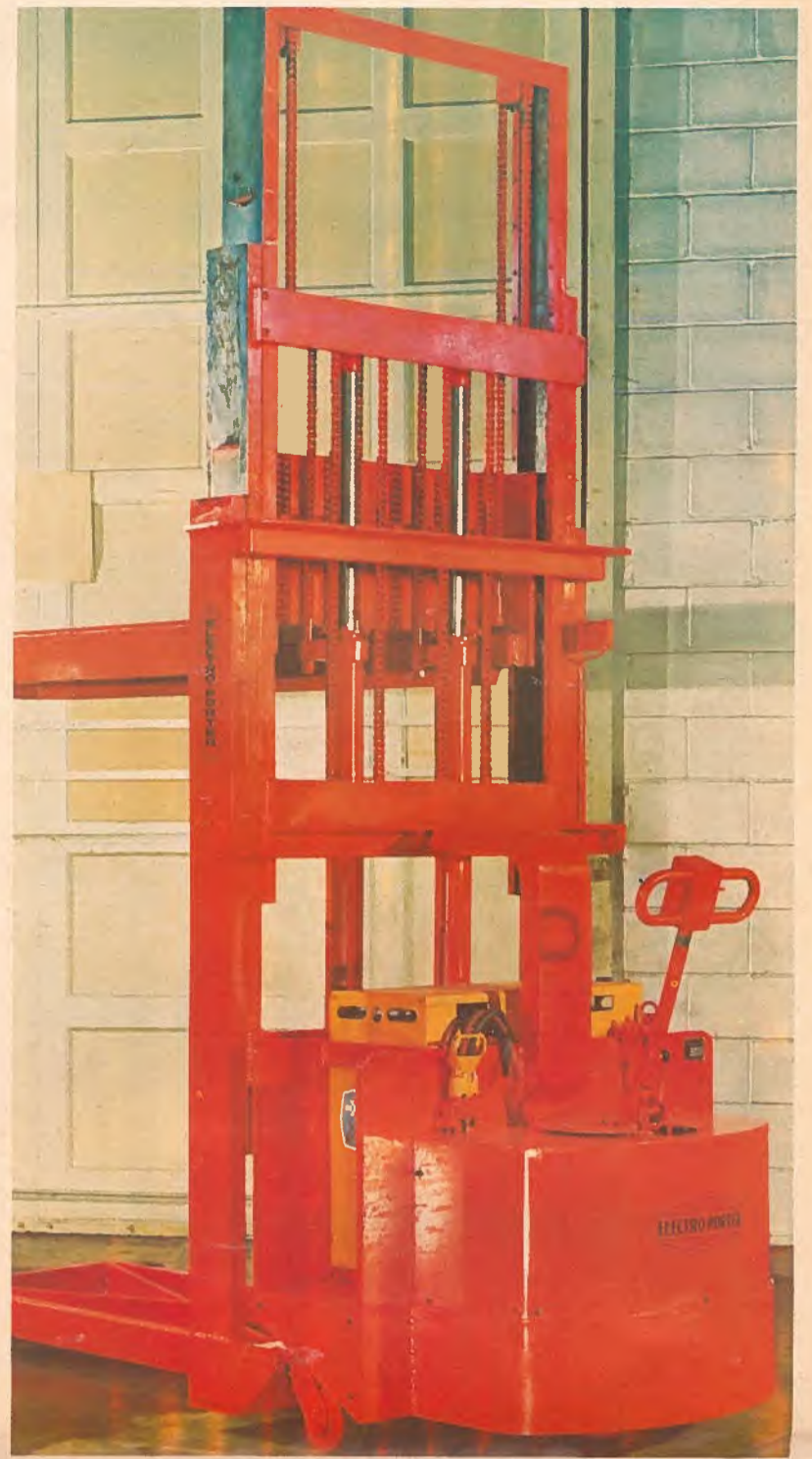
Ideal for use in dirty environmental conditions, Thordon is equally adaptable to situations where cleanliness is essential — for example, as casters and conveyors in food processing plants. As well, its outstanding wear characteristics enable Thordon to perform in applications other than bearings. In one instance Thordon was used successfully to replace a cast-iron mine slurry pump impeller. Thordon also is a good gear material because its elastomeric nature makes for greatly reduced noise, teeth that don't break off and stable dimensions and clearances.

New uses are continually being discovered for Thordon. Shipbuilders, for example, are now beginning to specify Thordon on repair jobs for water-lubricated bearings. Thordon has also made its mark in the trucking industry, in air-brake camshaft applications, rocker trunnion bearings, king pin bearings and stabilizer shock mounts.

Thomson-Gordon Limited, which can manufacture bearings to exact customer specifications, exports to such countries as Sweden, Australia, Japan and the United States and seeks additional export markets. Code 6-2



Abrasion-resistant and of high impact strength, these Canadian non-metallic Thordon bearings are sold internationally.



High lift skid stacker elevates heavy loads

A new open face high lift articulated skid stacker has been introduced by Kenneth S. Fraser Co. Ltd., a well known Canadian manufacturer of electric fork lift trucks. The Electro-Porter model WOS-4 is capable of lifting 4,000 pounds (1,816kg) at a 36-inch (91-cm) load center to a height of 16½ feet (5m). The machinery has an articulated telescoping mast, and offers good traction and stability, even on rough floors. The load platform is six feet (1.8m) long by three feet (91cm) wide and the unit will stack a six-foot (1.8 m) load in an aisle space as narrow as 10 feet (3m). The Don Mills, Ontario company has been manufacturing electric fork lift trucks in Canada for more than 20 years. It makes a complete line of narrow aisle lift trucks, ranging from two-wheel hand trucks to hydraulic side loaders with a capacity of more than 10,000 pounds (4,540kg). About 95 per cent of the company's business consists of designing and building units to meet customer requirements. The company will also design and install a complete in-plant materials handling system. Code 6-3

Automatic hydraulic dockboard will give any truck a lift

An automatic hydraulic dockboard which accommodates high and low truck beds has been developed by Hi-Lo Equipment (Canada) Limited of Mississauga, Ontario. The board facilitates the loading of trucks by linking the docking area and the truck.

Engineered with a constant smooth cycling operation, the Lo-Lift dockboard is automatic from the moment the control button is pushed until loading or unloading is finished and the board has returned to cross-traffic position.

When a truck backs into position, the dockboard is activated simply by depressing the push-button control. The lip extends automatically and the dockboard floats down until the lip touches the truck bed. When loading or unloading is completed and the carrier has left, the lip drops to the vertical position and the board automatically returns to the cross-traffic position flush with dock level.

The dockboard has a 24-inch (61-cm) operating range and is available with 12,000, 20,000

30,000 and 40,000 pound (5,440, 9,000, 13,600 and 18,100kg) capacities.

It has several safety features: if a fork lift truck is on the dockboard and the truck pulls away, the board will lock until the truck is removed; boards have safety skirts for operator protection throughout the entire operating cycle; whether loading or unloading the dockboard, the lip maintains positive contact with the truck bed at all times; the dockboard automatically returns to cross-traffic position and locks to prevent unauthorized entry into buildings; dockboards have automatic emergency safety stops.

Equipped with completely sealed, self-lubricating power unit and controls, the dockboard operates under all weather conditions with minimum maintenance.

Installation is simple: the dockboard is delivered as a completely assembled unit and only external wiring from control and power source is required before using the board. Code 6-4

Help needed? Experts available

Canadian experts in everything from accounting to tourism are offering help to developing countries. Under a six-year-old, non-profit program called Canadian Executive Service Overseas (CESO), retired Canadians with management and technological expertise go abroad, on invitation, for up to six months. Their fare and living expenses are paid but they receive no salary.

CESO's purpose is to help create more, or more stable, or better, employment for people in devel-

oping countries. The organization helps private or government enterprises, except companies controlled from outside a country. For the most part, the help consists of guidance in making feasibility studies, tuning up established operations or improving training programs.

What do the Canadians get out of the program? They learn a great deal about other people in other countries and find that helping solve problems is in itself a satisfying experience. It is also hoped

that the program will increase friendly relations between Canadians and people of other countries. Happily, this seems to be the case.

Set up in 1967 by the Canadian International Development Agency (CIDA), CESO is considered an element of Canada's foreign aid program, and so receives a grant from CIDA to help finance its operation.

CESO pays the air fare of the volunteer (and his or her spouse if the assignment is for more than

two months) to and from the country. The organization which requested the volunteer finds accommodation and pays for accommodation, meals and living expenses incurred in connection with the work. The requesting organization also provides whatever office space and services are necessary.

A number of companies ask for a second volunteer or a return of the original one at a later date. In the latter case, the client is asked to pay the air fare as well as living expenses.

At the moment, there are about 1,200 volunteers on CESO's roster. The names were assembled through advertising, word-of-mouth, interviews and suggestions from CESO representatives in 13 Canadian cities.

The Canadians go into a country only by invitation. Seven fulltime and five part-time representatives overseas publicize the existence of CESO and channel requests to the Montreal headquarters. As well, many requests go directly to Montreal. There, the roster of CESO volunteers is searched for a suitable candidate. When a volunteer is located who seems to have the necessary qualifications, he is asked to write CESO explaining how his

experience and qualifications suit him for the job. Information on his qualifications and personality is sent to the requesting organization. If the organization refuses to accept the candidate, CESO will try to find another volunteer. It takes about four months to get a volunteer on the job, provided CESO can locate a candidate quickly and the requesting organization accepts him.

More than 700 projects have been undertaken, of which more than 600 have been completed. They cover accounting, agriculture, banking, data processing, electrical utilities, fishing, forestry, hotels, insurance, maintenance, manufacturing, marketing, mining, personnel training, tourism and other fields. About 75 volunteers are in the field at any one time. Most assignments last about four months, although some run as long as six months.

CESO's overseas representatives are in Algiers, Algeria; Belleville, Barbados; Sao Paulo, Brazil; Makati, Philippines; New Delhi, India; Tehran, Iran; Kingston, Jamaica; Mexico City, Mexico; Casablanca, Morocco; Benin City, Nigeria; Port-of-Spain, Trinidad and Istanbul, Turkey. Code 7-2

Building success with team effort

Actions speak louder than words — particularly when the actions are those of Webb Zerafa Menkes Housden, a Canadian firm of architects and engineers with major offices in Toronto, Ontario and Montreal, Quebec.

In only 12 years this young company has gained an enviable international reputation for the design and construction of educational, commercial, residential and recreational complexes and currently is involved in more than half a billion dollars worth of construction, planned or underway, in Europe, the Middle East, Africa and the United States.

Hotels constitute a large part of WZMH's overseas projects. These range from the design of an 800-room hotel in Tel Aviv and a 400-room hotel in Rome to conceptual work, site evaluations and economic studies for five hotels with 3,000 rooms in Yugoslavia and scouting sites for a 600-room hotel in a new tourist-convention development in Athens. WZMH is also leaving its imprint in the de-

velopment phase. sign of a 600-bed hospital in Nicosia and twin 40-storey office towers in downtown Paris.

The 120-member firm, which is structured to provide comprehensive architectural, urban design, structural engineering and architectural interior design services, bases much of its success on its team approach to projects. The firm assigns clients an associate design partner at the preliminary design concept stage and an associate partner in charge of production of drawings, specifications and supervision. These partners, the senior captain and site supervisor are appointed and continue throughout the duration of the job, ensuring continuity in the technical implementation of the contract. Even if the architect's normal services are not extended to fully include interior design, architectural interior design, urban planning or engineering, the projects on which WZMH works still receive the specialized attention of the partner in charge of these departments during the concept

development phase.

Cost control is a high priority with WZMH and the firm has had considerable success in meeting building budgets. Preliminary budgets are established at the concept stage of design through close collaboration — which often develops into a permanent team — with cost control and building management consultants, quantity surveyors, or contractors and specialized subcontractors. Keeping abreast of current developments in the 1970s is also a WZMH priority. To do this the firm has senior personnel actively engaged in specialized training and research.

Webb Zerafa Menkes Housden, which has been presented with a number of important design awards by both industry and the profession, also provides services in design analysis of planning modules, interior space planning, systems building, gross and net building ratios, vertical transportation, traffic and parking, structural grids, external skins and cladding and specification writing. Code 7-1



Inn on the Park, London, England. One of the many international hotels designed by Webb Zerafa Menkes Housden, a Canadian firm of architects and engineers.

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Cruising in comfort with C & C

Yachts that cruise comfortably and race well account for much of the success of C & C Yachts Manufacturing Limited, Port Credit, Ontario.

The company, now with more than 40 dealers throughout North America, evolved in 1969 out of the merger of designers

Cuthbertson and Cassian and three Ontario boatbuilding firms. More than 500 boats are built a year, ranging from the Shark 24 (more than 1,250 have been sold) through the C & C 25, C & C 27, C & C 30, C & C 35 to the very popular C & C 39. C & C also manufactures

custom-designed and built boats ranging from 43 feet (13m) to 66 feet (20m). Such is the Phantom, a 50-foot (15-m) yacht built for Ralph Ryder of Miami. Launched in November, 1971, the Phantom won the Nassau Cup in the 1972 Southern Ocean Racing Circuit Championship and in the same year came second in class and third overall in the Newport to Bermuda race. Mr. Ryder now is having C & C build him a new custom 66-footer (20-m).

The C & C 27 is a big boat with the accommodation expected on a 35-footer (11-m). For instance, the galley has enough counter space to cook a three-course dinner. And it comes equipped with a large ice box, a two burner flush-mounted alcohol stove, and a stainless steel sink close to the center line of the boat.

The hull is of single unit fiberglass using alternate layers of hand laid-up mat and cloth with additional fiberglass in high stress areas. The deck, also of single unit hand laid-up molded fiberglass, uses balsa core for stiffening and insulation with minimum weight.

With the maximum potential for people and performance, the C & C 27 has a waterline length of 22 feet 2 inches (8m 51mm), a maximum beam of 9 feet 2 inches (3m 51mm), a draft of 4 feet 3 inches (1m 76mm) and a sail area of 343 square feet (32m²). Code 8-1



With a headroom of more than 6 feet (2m), the C & C 27 comfortably accommodates five adults.



Heading for hockey?

Better protection, better sizing and better comfort are strong selling points of the new inflatable hockey helmet manufactured by Cooper Canada Limited, a Toronto, Ontario, company with more than 65 years' experience in the design and manufacture of a wide variety of sporting and leather goods. The SK400 hockey helmet, designed with the assistance of a leading Canadian neurosurgeon, consists of a unique two-component suspension system that includes an inflatable foam padded liner and a one piece molded spider suspension. The entire suspension system can be removed for cleaning or replacement. The padded liner — a series of pillows each separated by ventilation channels to allow a constant stream of air to flow over the head — inflates to meet most head sizes and provides increased protection to the user. The helmet shell, with twin rows of ventilation ports, is of injection molded Cylolac and has rounded edges and flared contours on the sides to deflect blows away from the temples and ears. The helmets are available in six standard colors or special colors on request. Cooper Canada exports its helmets to practically all hockey playing countries. Code 8-3



In the swim, the eyes have it

Swimmers, surfers and sunbathers won't goggle at the newest product of International Forums Inc. The St. Lambert, Quebec firm's Swim 'n Tan goggles keep salt water, chlorine, water contaminants and sun out of eyes. The shatter-resistant lenses are set in a soft rubber rim that provides a seal against water penetration. Thus, the goggles are ideal for people who wear contact lenses. The lenses are available in clear, red, blue, green, yellow, amber and dark. The head band is made of durable white rubber and the nose strap is adjustable to six sizes. The goggles have no metal parts and will float. They are available to retailers in the following packages: a four-dozen pre-pack containing plastic tray and backer card with 12 clear goggles and six of each tint; a four dozen refill, containing 12 clear and six of each tint; a two dozen refill, containing six clear and three of each tint; a two-dozen counter or pegboard display with backer card; and a case of 175 clear and 225 mixed tints. Code 8-2



All this and jib-furling too!

A well-designed lightweight hull, driven by a generous sailspan that can be varied to suit all wind conditions, makes the Arrow "the most versatile dinghy afloat" says her manufacturer, Canada Marine and Equipment Inc., Toronto, Ontario. The Arrow's amazing stability and spacious cockpit make it particularly popular with the novice. The experts, too, find the Arrow challenging and rave about her quick planing characteristics and comprehensive equipment list, including jib furling. With a sail area of 100 square feet (9m²) the Arrow is 12 feet 4 inches (4m 102mm) long, has a beam of 4 feet 9 inches (1m 229mm) and a buoyancy of 420 pounds (191kg). Out of the water her 120-pound (54-kg) fiberglass hull and 16-foot (5-m) mast make the Arrow easy for launching and car topping. Standard colors include a cloud white hull with deck in tropical orange, primrose yellow or powder blue. The Arrow also features flip-up rudder and centerboard, internal halyard, rotating mast, dacron sails, deep forefoot for better windward performance and a wide beam aft for quick planing and stability. Code 8-4