

Canadian Aviation's program preview and display guide



First Canadian Aeronautics and Space Exhibition

Queen Elizabeth Hotel, Montreal, — October 21-23, 1963
**Held in conjunction with the 9th Anglo-American Aeronautics
Conference**

Opened by the Hon. C. M. Drury, Minister of Industry

CANADA will be host, for the first time, to the most important international aeronautical conference in the English-speaking world, at the Queen Elizabeth Hotel, Montreal, from October 20-23, 1963. It will be the latest in the series of Anglo-American Aeronautical Conferences, started by the British Royal Aeronautical Society (RAeS) and the American Institute of the Aeronautical Sciences (IAS) in 1947.

Object of the series is to promote the exchange of ideas and the professional association between the leading aeronautical scientists and engineers on both sides of the Atlantic. The conferences have been held biennially since 1947. In 1959 the Canadian Aeronautical Institute (CAI) was invited to join the partnership, but the original name of the conference was not changed.

The Ninth Conference will open in Boston on October 13, 1963, under the sponsorship of the American Institute of Aeronautics and Astronautics (a recent consolidation of the IAS and the American Rocket Society). After a week in Boston, the conference will move to Montreal for four days of technical sessions and field trips, at which time the Canadian Aeronautics and Space

Institute (formerly the CAI) will be the host society.

The principal themes to be discussed in Montreal will be Re-entry Aerophysics (2 American and 1 Canadian paper) and Ground Effect Machines and Vertical/Short Landing and Take Off (4 British, 1 American and 1 Canadian paper).

To take advantage of the presence of important guests from the British and American government, industry and research establishments, the CASI is staging an exhibition concurrently with the conference. Known as the Canadian Aeronautics and Space Exhibition, it will be the first such show organized by the CASI. The idea seems to have captured the imagination of the industry, and up to the time of going to press, 25 companies and organizations had taken space.

The exhibition will be open Monday, October 21, 2-10 p.m.; Tuesday, 10 a.m.-6 p.m.; and Wednesday, 10 a.m.-10 p.m. Admission will be restricted to registered delegates, CASI members, exhibitors and their guests, except during the hours of 6-10 p.m. on the Monday, when university and technical students are invited, and all day on the Wednesday, when the show will be open to the general public. ▶

Conference program

Field Trips

October 14th 1963

General Electric, Flight-Propulsion Div., West Lynn, and AVCO Research and Development Div., Wilmington

October 15th 1963

USAF Hanscom Field: AFSC Electronic Systems Div., and MIT Lincoln and Instrumentation Laboratories

October 16th 1963

Raytheon Corporation, Andover and Lowell.

October 23rd 1963*

Morning: Canadian Aviation Electronics, Montreal, and the TCA base or Montreal International Airport facilities

Afternoon: Canadair Limited, Montreal, or United Aircraft of Canada, Montreal.

October 24th 1963*

Canadian Armament Research and Development Establishment, Valcartier.

*These field trips will not be open to CASI members or other Canadian residents, except in special circumstances; they are intended primarily for RAeS and AIAA visitors.

Technical sessions

October 17th 1963

Kresge Auditorium,
MIT, Cambridge

9:00 a.m. AIR TRAFFIC CONTROL

"The Effect of Future Developments in Aeronautics on Air Traffic Control"—H. Davies, Deputy Director (Air), and Capt. V. A. M. Hunt, Director of Control (Plans), National Air Traffic Control Services, RAE.

"Planned Evolution for Air Traffic Control"—R. J. Shank, Associate Administrator for Development, FAA.

2:00 p.m. RESULTS OF SATELLITE RESEARCH

"The Anglo-American Satellite Ariel and Some Results from its Operation"—M. O. Robins, Head of Space Research Management Unit, Office of the Minister for Science.

"The Alouette Topside Sounder Satellite, Experiments, Data and Results"—Dr. J. H. Chapman, Deputy Chief Superintendent, DRTE.

"Results of the first Orbiting Solar Observatory"—J. C. Lindsay, Associate Chief, Space Sciences Division, Goddard Space Flight Centre, NASA.

October 18th 1963

Kresge Auditorium,
MIT, Cambridge

9:00 a.m. PROPULSION I

"Vectored Thrust Engines for Single and Multi-engined Aircraft"—T. P. Frost, Chief Test Pilot, Flight Test Division, and G. Lewis, Assistant Chief Engineer, Bristol Siddeley Engines, Ltd.

"Modern Air Transport Powerplants"—D. J. Jordan, Chief Engineer, and H. S. Crim, Project Engineer, Advanced Gas Turbine Engines, Pratt and Whitney Aircraft Div. of UAC.

"Some Aspects of the Control of Turbojet Engines"—L. Airey, Head of Engine Dynamics Section, Engine Research Dept., NGTE.

2:00 p.m. PROPULSION II

"Investigation of Non-linear Axial Combustion Instability in Solid Rocket Motors"—Major W. G. Brownlee, Royal Canadian Artillery, Ballistics Group Leader, and A. K. Roberts, Defence Scientific Service Officer, Rocket Engine Development Section, Propulsion Wing, CARDE.

"Liquid Hydrogen-Liquid Oxygen Rockets"—J. L. Sloop, Director, Propulsion Power Generation, NASA.

October 21st 1963

Salle Marquette
Queen Elizabeth, Montreal

9:00 a.m. RE-ENTRY AEROPHYSICS

"Some Recent Studies of New Re-entry Problems"—M. C. Adams, Vice President and Technical Director, H. Hurwicz, Associate Manager, Engineering, Analysis Department, S. Georgiev, Manager, Aerophysics Department, and P. Levine, Project Engineer, Research and Advanced Development Div., AVCO Corp.

"Some Recent Studies in Re-entry Physics"—G. H. Tidy, Superintendent, Aerophysics Wing, CARDE.

"The Physics of Hypervelocity Flight as it Affects Design of Re-entry Vehicles"—T. N. Canning, Chief, Hypersonic Free-Flight Branch, Vehicle-Environment Division, NASA.

2:00 p.m. GEMs AND V/STOL I

"Lessons From Five Years of Hovercraft Operations"—D. J. Hardy, Chief Project Engineer, Saunders-Roe Division, Westland Aircraft Ltd.

"Some Practical Experience with Ground Effect Machines"—LCDR F. A. H. Ashmead, Royal Navy, Officer in Charge, Interservice Hovercraft Trials Unit.

October 22nd 1963

Salle Jolliet
Queen Elizabeth, Montreal

9:00 a.m. GEMs AND V/STOL II

"VISTOL in the United Kingdom"—C. Moore, Director of Aircraft Weapons Systems, Ministry of Aviation.

"Status of V/STOL Research and Development in the United States"—J. P. Campbell, Assistant Chief, Aero-Space Mechanics Division, NASA.

2:00 p.m. GEMs AND V/STOL III

"The Domain of the Convertible Rotor"—R. Hafner, Technical Director (Research), Westland Aircraft Ltd.

"The Aerodynamic Approach to Improved Flying Qualities of Tilt-Wing Aircraft"—J. F. Martin, Group Leader, Aerodynamics, and O. E. Michaelson, Group Leader, Engineering, Canadair Ltd.

Reception and dinner

October 22nd 1963

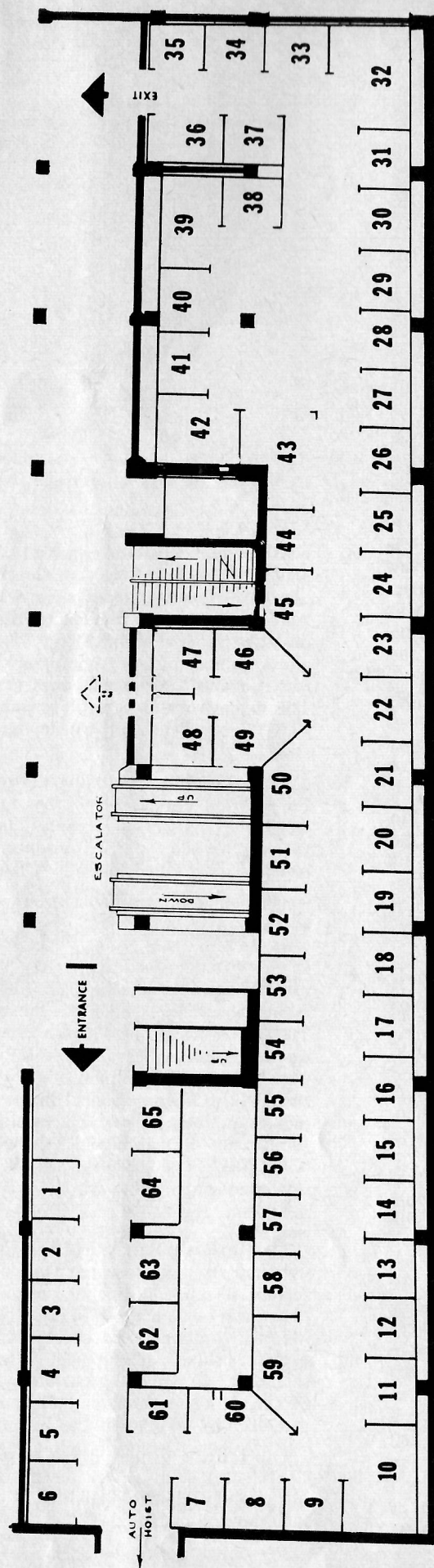
7:00 p.m. Reception—
7:30 p.m. Dinner-Dance

Queen Elizabeth, Montreal

Galerie 4.
Salles Marquette/
Jolliet.

Canadian Aeronautics and Space Exhibition

Mezzanine floor, Queen Elizabeth Hotel — October 21-23, 1963



Key to exhibitors:

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| 1 EMI-Cossor Electronics Ltd. | 16 Jarry Hydraulics Ltd. | 50, 51, 52 United Aircraft of Canada Ltd. |
| 2 Hawker Siddeley Canada Ltd. | 17 Westland Aircraft Ltd. | 53, 54, 55 de Havilland Aircraft of Canada Ltd., SPAR Division. |
| 3 Avionics Limited | 18 R.C.A. Victor Company Ltd. | 56 Bourns (Canada) Ltd. |
| 4 & 5 Computing Devices of Canada Ltd. | 19 Hughes International | 57 & 58 Canadian Westinghouse Ltd. |
| 6 Canadian Marconi Ltd. | 20 Lucas Rotax Ltd. | 59 Litton Systems (Canada) Ltd. |
| 7 Canadian Aviation Magazine | 21 Fairey Aviation Company of Canada Ltd. | 60 & 61 Trans Canada Air Lines |
| 8 & 9 Garrett Manufacturing Ltd. | 22 & 23 Canadian Aeronautics & Space Institute | 62 & 63 Aviation Electric Ltd. |
| 10 Canadian Bristol Aerojet Ltd. | 46 & 47 Defence Research Board | 64 Rolls Royce of Canada Ltd. |
| 11, 12, 13 Canadair Limited | | 65 National Research Council |
| 14 Dowty Equipment of Canada Ltd. | | |

Industry and government exhibits



PRODUCTS of Aviation Electric Ltd.

Aviation Electric Ltd., Montreal, will again display the stand constructed for the Paris Air Show. This features the company's land navigation set, the Aviation Electric family of ball resolvers and the registering G meter, and permits full audience participation in the demonstration of these items.

The land navigation set was developed by Aviation Electric for wheeled and tracked vehicles of the Canadian Army, and provides a continuous pictorial and digital display of position and heading.

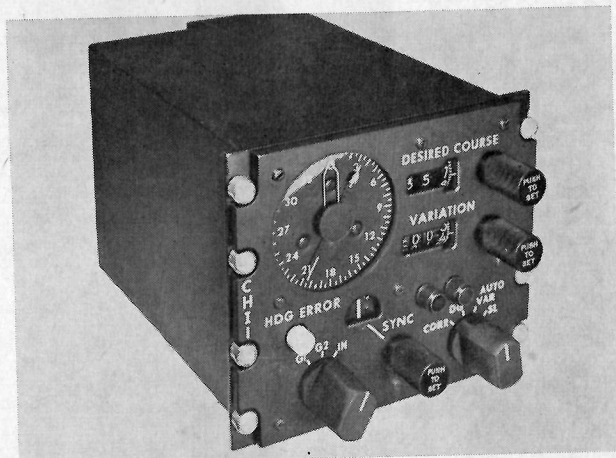
The registering "G" system comprises two units; a transducer to measure "G" forces and a register to record these forces. It offers a reliable lightweight (28 oz.) system to record loads imposed on an airframe by manoeuvres, rough air, landings, etc. These readings when correlated with the stress analysis of the aircraft provide useful safety of flight and maintenance information.

In addition to the main display, Aviation Electric will have sections featuring its Research, and Design Engineering, and its Overhaul and Repair activities.

Personnel in attendance: D. R. Taylor, senior vice president; C. D. Garbutt, director of sales & service; E. Wall, director of engineering; C. N. Watts, sales & service manager; A. J. Warwick, assistant sales manager; J. Barnes supervisor, instrument sales.

Canadair Ltd., Montreal, is placing emphasis upon Research and Development in its thirty-foot long booth, displaying models and illustrations of a number of projects including the CL-41R (systems training version of the Tutor jet trainer); CL-44 (development of the swing-tail mechanism); CL-84 V/STOL project (being developed in conjunction with the Defence Research Board with the assistance of Department of Defence Production); CL-89 (surveillance drone being developed for Canadian and U.K. armies); Black Brant II (re-design of fins and nose cone); and an aircraft survivability study. The latter is type of "war games simulator" used to study the probability of aircraft penetration of radar defences.

The multi crew orbital escape system studied by Canadair engineers will also be portrayed, along with a number of structural research projects.



CENTRAL HEADING indicator—by Computing Devices.

Canadian Bristol Aerojet Ltd., Winnipeg, will display a Black Brant III sounding rocket, various items of rocket instrumentation, a model of Canadian Bristol Aerojet's new solid rocket propellant plant, four small desk-size models of the Black Brant II, III, IV and V and a number of color photographs, illustrating various rocket manufacturing activities at the Winnipeg plant. The extensive and versatile capability of CBA in the rocket, propellant and instrumentation field is emphasized.

A color folder outlining the overall aspects of the Black Brant development program will be available as well as a number of technical bulletins detailing the various telemetry units, transducers and special rocket instrumentation developed by CBA.

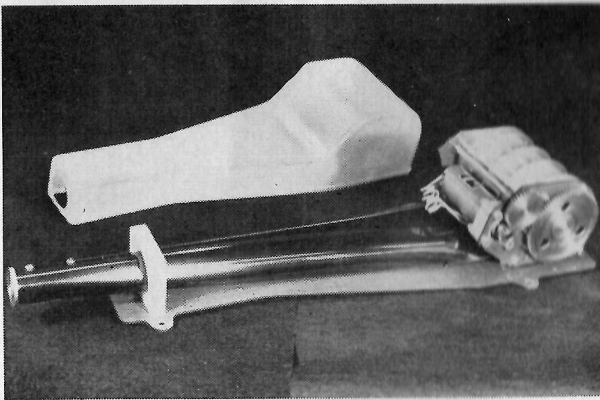
Personnel in attendance: Marketing engineers, W. N. Isberg and W. A. Bergman.

The Defence Research Board will be exhibiting the Alouette satellite under the auspices of the Foreign Trade Service of the Department of Trade and Commerce. Representative of the DRB is Mr. J. A. Warwick, of the Telecommunications Establishment, Shirley Bay, Ont. Other personnel in attendance: R. F. Chinnick, superintendent of Electronics Wing of Canadian Armaments Research and Development Establishment (CARDE); D. L. Bulleid, K. H. Clark, both of the armament engineering wing (CARDE).

De Havilland Aircraft of Canada Ltd., Special Products and Applied Research Division, Malton, Ont., will feature its current line of aerospace equipment. Emphasis will be on the STEM (Storable Tubular Extendible Member) antennas and booms which have become accepted as standard equipment on many North American satellite and manned spacecraft projects. A scale model of the Alouette satellite, hull and antenna which was produced by DHC, will also be on view.

Other items displayed will be examples of the division's solid state power devices, and information on infrared development activities, as well as details of plant facilities and capabilities.

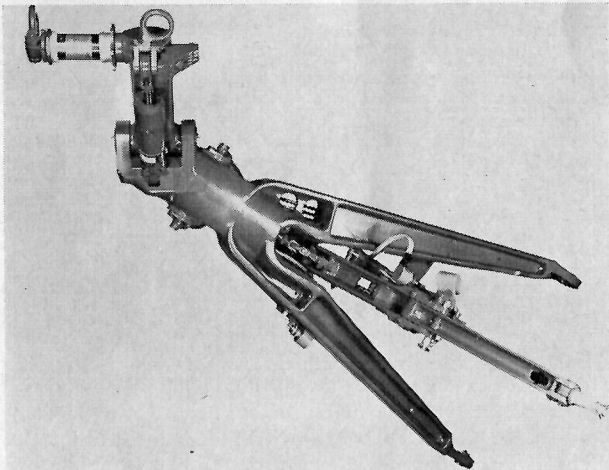
Personnel in attendance: W. V. O'Leary, chief appli-



STEM antenna by de Havilland SPAR Div.

cations engineer, electronics; D. B. Cannon, chief applications engineer, aerospace; and D. J. Dalzell, sales manager.

Dowty Equipment of Canada Ltd., Ajax, Ont., is displaying a variety of hydraulic and other components, including the following: main landing gear for Kamam "Seasprite" helicopter; Selector valve (electro-hydraulic, solenoid operated 4 way selection); Nose Landing Gear for CF-104 aircraft; Flap actuator/control for De Havilland STOL Caribou; Main landing gear for Avro CF100 interceptor; Main landing gear, swivel couplings, nose landing gear actuator, emergency selector valve, and flap control valve for Canadair CL-41A Tutor;



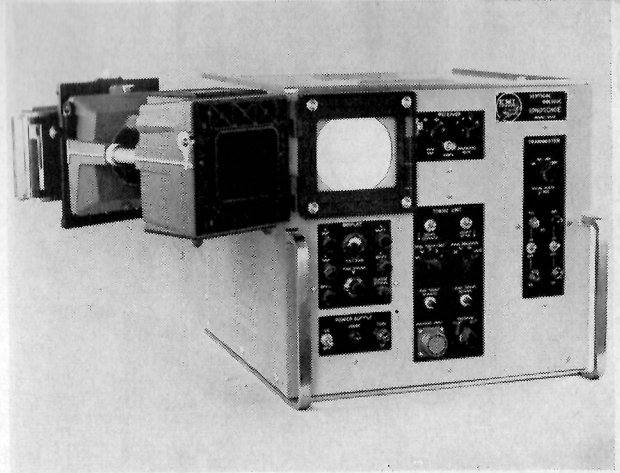
KAMAN helicopter gear—by Dowty of Canada.

CECO fuel pump producer for Orenda Engines Ltd.; and Liquid Spring (Typical section).

Personnel in attendance: K. D. Morley, vice-president and general manager; T. H. Staples, sales manager; G. F. W. McCaffrey, chief engineer; H. R. Stratford, chief design engineer, aircraft products.

E. M. I. Cossor Electronics Ltd., Dartmouth, N.S., displays its new Model 8000 Ionosonde, Electronic chronometer, and Radiac training set. The Ionosonde is claimed as an entirely new concept in the ionospheric measurement field; by utilizing solid state circuitry and advanced design techniques, EMI Cossor has produced this vertical/oblique sounding terminal equipment that can be used for fixed station or mobile roles. It will have many applications in the ionospheric research field and by military and civilian radio communication agencies.

The electronic chronometer is extremely accurate,



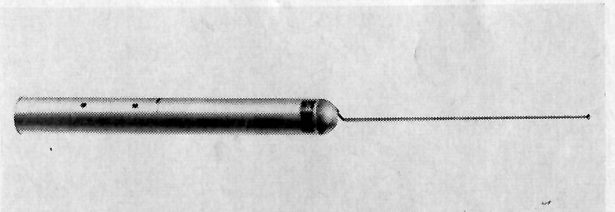
IONOSONDE by EMI Cossor Electronics Ltd.

providing a low cost tool for accurate time indication.

The Radiac training set simulates the techniques of radioactivity radiation measurement without the use of radioactive materials and, therefore, makes it possible to train personnel without the danger of exposing them to radioactivity.

Personnel in attendance: B. L. Robinson, contracts administrator; W. Kells, laboratory administrator.

Garrett Manufacturing Limited, Rexdale, Ont., displays examples from its range of avionic items, including a static inverter, pneumatic signal generator, various temperature controls, and an automatic beacon for use on aircraft emergency rafts and similar equipment. Weighing only 4½ lb, the latter is attached to the raft



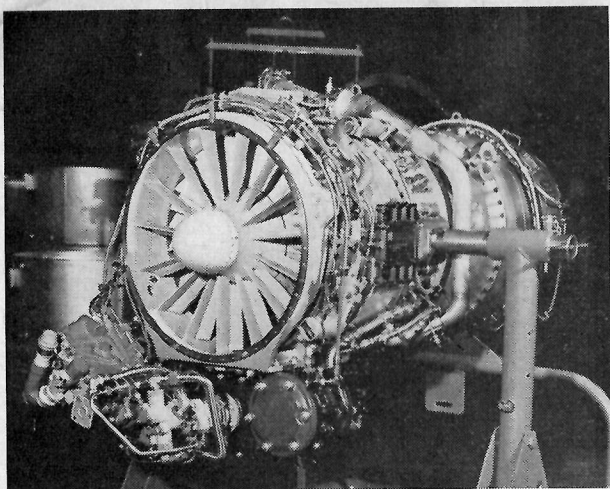
AUTOMATIC beacon by Litton Systems (Canada) Limited.

and begins to transmit a distress signal automatically on contact with water.

Personnel in attendance: T. Ussher, chief engineer; Brian Montyro, avionics chief; Brian McNally aerospace ground equipment chief; J. L. Gardner, sales manager; Frank Halpin, manager, Montreal office of Garrett Corp.; Bruce Darling, manager, Garrett Canadian field sales; and D. A. Campbell, marketing services administrator.

Hawker Siddeley Canada Ltd., Orenda Engines Division, Malton, Ont., is featuring the J85-CAN-40 gas turbine engine currently in production under licence to the GE Company, for the CL-41 Tutor jet trainer. In addition to this actual engine there will be a pictorial display of other aviation and industrial turbines produced. These will include the J79, in production for the CF-104, and turbines applicable to the aviation and space fields, such as the OT-C-5 transportable generating set for emergency standby use at airfields and aerospace installations.

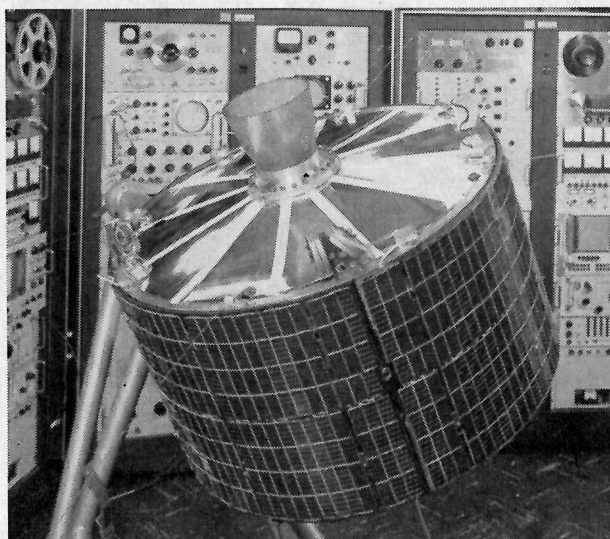
Personnel in attendance: W. S. Bellian, military sales



J85-CAN-40 engine built by Orenda for CL-41.

manager; R. L. Hughes, sales engineer; and A. S. White, assistant to the marketing manager.

Hughes International (Hughes Aircraft Company), Culver City, Calif., was the only non-Canadian company scheduled to participate in the exhibition as this magazine went to press. The company is featuring a wide variety of aerospace products including the Syncom synchronous orbit communications satellite, a one-fifth scale model of which will be displayed; Frescan III three dimensional radar, said to have three times the range surveillance capability of previous Frescan radars; the HM-55 Falcon missile with all weather radar guidance and 360 deg attack capability, selected by the



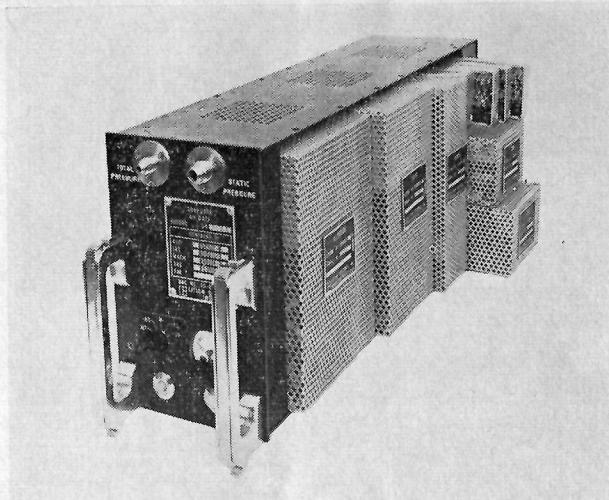
SYNCOM communications satellite by Hughes.

Swedish and Swiss air forces; and the GAR-2A Falcon and MG-13 fire control system currently in use on the McDonnell CF-101B Voodoos of the RCAF.

Other items displayed by Hughes will be infrared systems, parametric amplifier, digital data transceiver, and HC 162 Manpack HF transceiver.

Personnel in attendance: D. F. Payne, market manager—Canada, Military Products; W. F. Wycoff, general representative — Ottawa Office; J. T. Corser, head, public relations & advertising.

Litton Systems (Canada) Ltd., Rexdale, Ont., will display an actual hardware form its LN-3 Inertial Air



AIR DATA Computer displayed by Litton Systems.

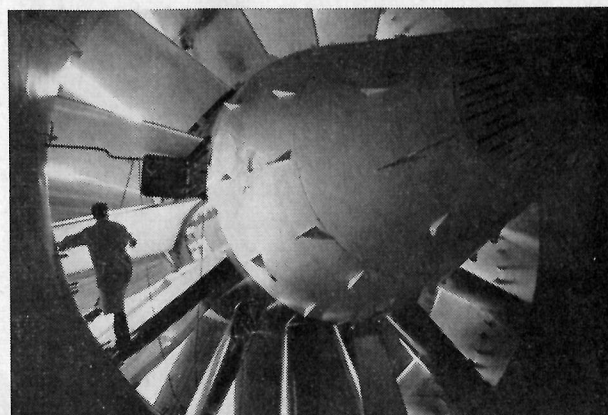
Navigation System, being produced for the F-104; the IC-4 Air Data Computer; the Westrex Facsimile transmitter and recorder system, which can be seen in operation; a Flying Spot Scanner and Fibre Optic Readout system. Company facilities and capabilities will be portrayed.

Personnel in attendance: J. M. Bridgman, vice-president and general manager; E. C. Hodsol, vice-president, operations and assistant general manager; D. J. J. Green, director of research; D. W. MacKellar, chief of application engineering; V. V. R. Symonds, director of government relations; H. V. Braceland, marketing manager; W. F. Haehnel, senior application engineer; R. A. Gordon, application engineer; and C. W. Pittman, advertising and public relations manager.

The National Research Council, Ottawa 2, will have different displays on each of the three days of the exhibition. The first day it will feature the VTOL program that is under way within the council. The display will feature photographs, drawings, reports, add items of equipment illustrating current NRC test facilities and research programs in the field of VTOL aircraft.

The main exhibits will include an experimental aerodynamic fan-in-wing model and an exhibition of one of the various lift propulsion schemes being investigated, together with some scenes of the rugged territory in Canada's north which are an appropriate operating area for this type of aircraft.

On the second day, the crash position indicator, developed in the National Aeronautical Establishment and the Division of Radio and Electrical Engineering,



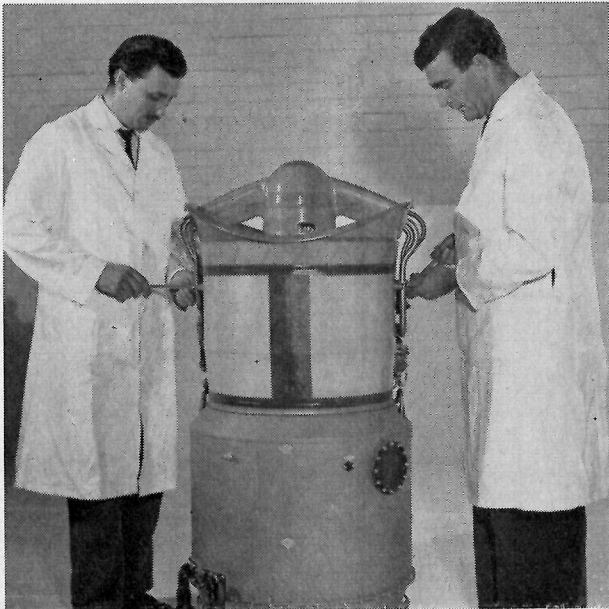
DRIVING fan of NRC's VTOL propulsion tunnel.

will be shown. This emergency survival equipment uses a "tumbling aerofoil" principle to deliver an automatic radio transmitter to a safe operating location even if everything else on the aircraft is destroyed. The transmitter is completely potted in foam and will operate for 100 hours. It has a transmitting range of 30 to 40 miles.

For the final day, it is hoped to show the analytical plotter which was the focus of a recent international photogrammetric conference. The use of this versatile machine has already produced enormous advances in speed and accuracy of map making and of measurements from aerial and satellite photographs.

Personnel in attendance: Dr. E. P. Cockshutt, R. T. Tyler and H. S. Fowler (VTOL display); H. T. Stevenson and D. A. Baker (crash position indicator); T. J. Blachut (analytical plotter).

Rolls-Royce of Canada Ltd., Montreal, displays an engine which seems destined to play a prominent role in the development of VTOL in the years ahead. This is the RB.162 lightweight jet lift engine, which attracted much attention at the 1963 Paris Salon at Le Bourget,



RB.162 LIFT jet by Rolls-Royce.

and is designated for a number of vertical take-off aircraft. It is shown complete with accessories, and indicates simplicity of design and ease of installation.

The RB.162 has a thrust of 16 times its weight, and is claimed to have a higher thrust/weight ratio than for any other turbojet. Weight is 275 lb., thrust without bleed: 4,409 lb. The engine has been running on test since November 1961 and has completed a flight clearance test at design rating with bleed. Plastic materials are used in the construction of this engine to reduce cost. The first aircraft to fly with RB.162s will be the VTOL Dassault Mirage IIIV which is under development for the French Air Force.

Personnel in attendance: K. O. W. Crooks, vice-president and general manager; D. Boyd, vice-president and deputy general manager; A. B. Simpson, vice-president and chief engineer; K. J. Grundy, vice-president and works manager; P. M. Howard, chief metallurgist; P. J. Waite, sales manager; C. J. Davidson, sales engineer; W. Skelding, assistant to general manager; P. B. Clay, chief project engineer; J. Hall, service manager.

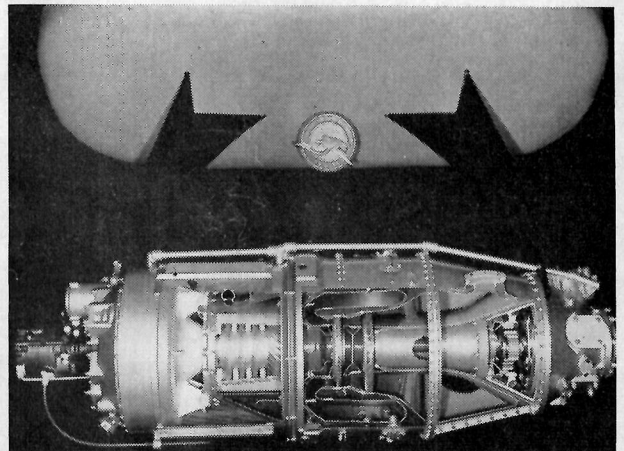


HOVERCRAFT during Westland's Montreal tour.

Westland Aircraft Ltd., Yeovil, England, the only British company represented directly at the exhibition, has attracted much attention in Canada in recent months by the demonstration of its SR.N2 Hovercraft in Montreal. The accompanying picture shows the machine leaving the port area on its way to the Royal St. Lawrence Yacht Club to begin its demonstration program. This vehicle weighs 27 tons and carries 70 passengers. At the exhibition Westland will demonstrate two other models, the SR.N2 Mark 2, and SR.N5, which will be 40-ton and 8-ton vehicles, respectively.

Personnel in attendance: Lewis Boddington, group assistant managing director (technical); Raoul Haffner, group research director; Derek Hardy, chief project engineer (Saunders-Roe Div.); Max George, route analysis & economic surveys (Saunders-Roe Div.); and Stuart Miller, North American sales representative for Westland.

Other exhibitors, from whom descriptions of their displays had not been received at the time of going to press, are: **Avionics Ltd.**, Niagara on the Lake, Ont.; **Bourns (Canada) Ltd.**, Toronto 16; **Canadian Marconi Co. Ltd.**, Montreal 16; **Canadian Westinghouse Co. Ltd.**, Hamilton, Ont.; **Computing Devices of Canada Ltd.**, Ottawa 4, Ont.; **Fairey Aviation Co. of Canada Ltd.**, Dartmouth, N.S.; **Jerry Hydraulics Ltd.**, Montreal 18; **Lucas Rotax Ltd.**, Montreal 9, Que.; **RCA Victor Co. Ltd.**, Montreal; **Trans-Canada Air Lines**, Montreal; and **United Aircraft of Canada Ltd.**, Longueuil, Que.



VERSATILE PT6 turbine—by United Aircraft of Canada.

Visitors to the 1963 CASI Exhibition

This list is provisional and tentative. The names of American Institute of the Aeronautical Sciences members attending the conference was not available at press time.

Canada

Baker, D. R., NRC.
Barnes, J., Sup., Instrument Sales, Aviation Electric Ltd.
Bellian, W. S., Mil. Sales Mgr., Hawker Siddeley Canada Ltd.
Bergman, W. A., Marketing Eng., Canadian Bristol Aerojet Ltd.
Boyd, D., Vice-president, Rolls-Royce Canada Ltd.
Braceland, H. V., Marketing Mgr., Litton Systems (Canada) Ltd.
Bridgman, J. M., Vice-president/Gen. Mgr. Litton Systems (Canada) Ltd.
Browne, P. G., Manager, Normalair (Canada) Ltd.
Bulleid, D. L., Armament Wing, CARDE.
Campbell, D. A., Marketing Services Administrator, Garrett Manufacturing Ltd.
Cannon, D. B., Chief Applications Eng., Aerospace, DHC SPAR.
Chapman, Dr. J. H., Deputy Chief Superintendent, DRTE.
Chinnick, R. F., Superintendent of Electronics, CARDE.
Clark, K. H., Armament Engineering Wing, CARDE.
Clay, P. B., Chief Project Engineer, Rolls-Royce Canada Ltd.
Cockshutt, Dr. E. P., NRC.
Corser, J. T., Public Relations and Adv., Hughes International.
Crooks, K. O. W., Vice-pres./Gen. Mgr., Rolls-Royce Canada Ltd.
Dalzell, D. J., Sales Manager, de Havilland Canada SPAR Div.
Darling, B., Manager, Garrett Corp. Canadian Field Sales.
Donaldson, S. R., Enheat Aircraft Div. of Enamel & Heating Products.
Fowler, H. S., NRC.
Garbutt, C. D., Director, Sales & Service, Aviation Electric Ltd.
Gardner, J., Sales Manager, Garrett Manufacturing Ltd.
Gordon, R. A., Applications engineer, Litton Systems (Canada) Ltd.
Green, Dr. J. J., Director of Research, Litton Systems (Canada) Ltd.
Grundy, K. J., Vice-president/Works Manager, Rolls-Royce of Canada Ltd.
Haehnel, W. F., Snr. Applications Eng., Litton Systems (Canada) Ltd.
Hall, J., Service Manager, Rolls-Royce of Canada Ltd.
Halpin, F., Manager, Garrett Corp., Montreal office.
Hoddsell, E. C., Vice-president Ops., Litton Systems (Canada) Ltd.
Howard, P. M., Chief Metallurgist, Rolls-Royce of Canada Ltd.
Hughes, R. L., Sales Engineer, Hawker Siddeley Canada Ltd.
Isberg, W. N., Marketing Eng., Canadian Bristol Aerojet Ltd.
Kells, W., Laboratory Admin., EMI-Cossor Electronics Ltd.
MacKellar, D. W., Chief, Applications, Eng., Litton Systems (Canada) Ltd.
McCaffrey, G. F. W., Chief Engineer, Dowty Equipment Canada Ltd.
McNally, B., Chief, Aerospace Ground Eqpt., Garrett Mfg. Ltd.
Miller, S., North American Sales Representative, Westland Aircraft.
Montyro, B., Chief, Avionics, Garrett Manufacturing Ltd.
Morley, K. D., Vice-president/Gen. Mgr. Dowty Equipment Canada Ltd.
O'Leary, W. V., Chief Applications Eng., Electronics, DHC SPAR.
Pickett, J. A., Manager Aircraft Dept., SKF Co. Ltd.
Pittman, C. W., Advertising PR Mgr., Litton Systems (Canada) Ltd.
Robinson, B. L., Contracts Admin., EMI Cossor Electronics Ltd.
Simpson, A. B., Vice-president/Chief Engineer, Rolls-Royce of Canada Ltd.
Skelding, W., Asst. to General Manager, Rolls-Royce of Canada Ltd.

Staples, T. H., Sales Mgr., Dowty Equipment Canada Ltd.
Stevenson, H. T., NRC.
Stratford, H. R., Chief Design Eng., Dowty Equipment Canada Ltd.
Symonds, V. V. R., Director of Government Relations, Litton Systems (Canada) Ltd.
Taylor, D. R., Snr. Vice-President, Aviation Electric Ltd.
Tyler, R. T., NRC.
Ussher, T., Chief Engineer, Garrett Manufacturing Ltd.
Waite, P. J., Sales Manager, Rolls-Royce of Canada Ltd.
Wall, E., Dir. Engineering, Aviation Electric Ltd.
Warwick, A. J., Asst. Sales Mgr., Aviation Electric Ltd.
Warwick, J. A., Telecommunications Establishment, DRB.
Watts, C. N., Mgr., Sales & Service, Aviation Electric Ltd.
Weinand, W. J., Jr., Enheat Aircraft Div., Enamel & Heating Products.
White, A. S., Asst. Marketing Mgr., Hawker Siddeley Canada Ltd.

Britain

Airey, L., National Gas Turbine Est., Ministry of Aviation (in charge of Dynamics Group).
Amer, P. A., Hawker Siddeley Aviation Ltd., (Senior Project Engineer).
Anderson, J. R., Hawker Siddeley Dynamics Ltd. (Chief Superintendent, Wind Tunnels).
Andrews, D. R., MOA, British Embassy, Washington (British Defence Staff).
Ashmead, Lt. Cdr. F. A. H., Royal Navy Interservice Hovercraft Trials Unit (Officer-in-charge).
Ballantyne, Dr. A. M., Royal Aeronautical Society (Secretary).
Barrett, Dr. A. J., Royal Aeronautical Society (Head of Technical Department).
Baxter, A. D., Bristol Siddeley Engines Ltd., (Technical Executive).
Bishop, R. A., Bristol Siddeley Engines Ltd. (Group Leader, Aircraft Project Group).
Bloch, Captain R. M., Ministry of Defence, France. (Assistant Director of Aeronautics for Internal Affairs).
Boddington, L., Westland Group Assistant Managing Director (Technical).
Bowen, I., Sperry Gyroscope Co., Ltd. (Consultant).
Brown, A. A., Kollsman Instrument Ltd. (Managing Director).
Brown, D. G., Hawker Siddeley Aviation Ltd., de Havilland Div. (Chief Project Engineer).
Cameron, Dr. D., MOA, A & AEE, Boscombe Down. (Chief Superintendent).
Carpenter, L. G., Integral Ltd. (Managing Director).
Clarkson, R. M., Hawker Siddeley Aviation Ltd., de Havilland Div. (Research Director).
Cleaver, A. V., Rolls-Royce Ltd. (Chief Engineer and Manager Rocket Engines).
Clifton, A. N., Vickers-Armstrong (Aircraft) Ltd. (Assistant Chief Engineer).
Clinton, A. Cadman, Aeronautical Consultant.
Cockburn, Sir Robert, Ministry of Aviation. (Chief Scientist).
Coles, R. B., English Electric Aviation Ltd. (Chief Mechanical Systems Designer).
Collar, Professor A. R., President, Royal Aeronautical Society, Professor of Aeronautical Engineering, University of Bristol.
Craven, Sqn. Ldr. A. H., RAF Technical College, Henlow. (Senior Lecturer in Aerodynamics).
Davies, Handel, MOA, RAF, Farnborough. (Deputy Director).
Davies, S. D., Hawker Siddeley Aviation Ltd. (Technical Director).
Dawson, L. G., Rolls-Royce Ltd. (Chief Engineer, Military).
Deaton, N. J. A., Royal Aeronautical Society. (Accountant).
Dowlen, E. M., British Aircraft Corp. (Systems & New Project Manager).
Dykes, C., BOAC Associated Companies Ltd. (Member of Board).

Frost, T. P., Bristol Siddeley Engines Ltd. (Chief Test Pilot).
Gabbay, Dr. E. J., Curtiss-Wright Corp. (Chief Project Engineer).
Giddings, H., Bristol Aircraft Ltd. (Chief Development Engineer).
Gladwell, R. J., British Aircraft Corp. (U.S.A.) Inc. (Assistant to Executive Vice-President).
George, M., Route Analysis & Economic Surveys, Saunders-Roe Div. of Westland.
Greenland, L. S., H. M. Hobson Ltd. (Director of Engineering).
Hafner, R., Westland Aircraft Ltd. (Technical Director, Research).
Hardy, D. J., Westland Aircraft Ltd., Saunders-Roe Div. (Chief Project Engineer).
Hills, R., Aircraft Research Association Ltd. (Chief Executive).
Jackson, C., BOAC (Assistant Chief Engineer).
Jauncey, H. J., Strabor (Aircraft) Ltd. (Managing Director).
Keith-Lucas, D., Short Bros. & Harland Ltd. (Technical Director).
Laight, B. P., Hawker Siddeley Aviation Ltd.
Legg, K. L. C., Loughborough College of Technology (Head of Dept. Aeronautical & Automotive Engineering).
Lloyd, P., MOA (Director, General Engine Research & Development).
Loening, G., Self-employed.
Monaghan, R. J., MOA British Embassy, Washington (Assistant Director, Aircraft).
Moore, C., MOA (Director of Future Aircraft Weapon Systems).
Morgan, M. B., MOA (Controller of Aircraft).
Morgan, R. C., British European Airways (Chief Project and Development Engineer).
Mout, Dr. E. S., Bristol Siddeley Engines Ltd. (Director).
McClure, W/C C. G. B., College of Aeronautics, Cranfield (Head of Department of Flight).
Page, F. W., English Electric Aviation Ltd. (Director and Chief Executive).
Pike, E. W., General Precision Systems Ltd. (Divisional Manager).
Robins, M. O., Office of Minister for Science (Head, Space Research Management Unit).
Robinson, P., Hawker Siddeley Aviation Ltd. (Head, Project Analysis, Advanced Projects Group).
Sadler, A., Ultra Electronics Ltd. (Executive Director, Engineering).
Shaw, R. A., MOA (Assistant Director, Aircraft Research).
Shunker, P. E. Q., Westland Aircraft Ltd. (Chief Designer, Yeovil Division).
Simmons, Dr. N., MOA (Assistant Director Space 1).
Sinnott, Dr. C. S., Hawker Siddeley Aviation Ltd. (Chief Aerodynamicist).
Smith, F. H., Royal Aeronautical Society (Librarian).
Stephens, W. H., ELDO (Technical Director).
Sutcliffe, P. L., Avco Corporation (Director, Systems Engineering).
Van der Maas, Dr. H. J., Technological University, Delft (Chairman, Dept. of Aeronautical Engineering).
Vogel, H., Hunting Aircraft Ltd. (Chief Aerodynamicist).
Ware, W/C E. M., Civil Aviation, Bermuda (Director).
Weir, R. H., MOA, NGTE (Director).
Whitehead, Dr. D. S., Cambridge University (Lecturer).
Wilde, G. L., Rolls-Royce Ltd. (Chief Designer, Projects).
Willcox, F. G., English Electric Aviation Ltd. (Chief Project Engineer).
Wilson, Dr. H. M., MOA British Embassy, Washington (Director General, Defence Research Staff).
Winn, H. F., Westland Aircraft Ltd. (Chief Designer, Hayes Division).

United States

Payne, D. F., Mil. Market Manager, Canada, Hughes International.
Wycoff, W. F., General Representative, Hughes International.