

The Breakthrough Airliner

FAA ADMINISTRATOR SAYS CL-44 WILL "EXPLODE" AIR CARGO MARKET

By C. W. THOMAS

THIS MONTH the first CL-44 transport was rolled out of its final assembly hangar at Cartierville and now there's a growing air of excitement at Canadair as the time for the maiden flight draws closer. That auspicious day, scheduled for early November, may well be the beginning of a flood tide in the affairs of this solid Montreal aircraft manufacturer if, indeed, this tide has not already begun to flow.

Canadair's optimism, still cautious and reserved, is, excusable. The realization has filtered down to the lowliest shop employee that in the CL-44—as the right airplane at the right time—they have a world-beater that can do for the air cargo field what the DC-3 did for the air passenger market.

Slashing Fares: And the usefulness of the CL-44 is not limited to the hauling of air cargo, for it offers such low passenger/mile direct operating costs (less than one cent, international and domestic) that its adoption by the international carriers could make possible the slashing of trans-Atlantic fares by almost one half.

The wonder is that more airlines, both cargo and passenger, have not already beaten a path to Canadair's door to buy this airplane. One can only assume that the carriers have not yet fully comprehended the revolutionary character of the CL-44, a glaring oversight that can only be explained by the simple fact that the CL-44 looks so conventional it is hard to believe it possesses the intrinsic capability of altering the character of a whole industry.

In view of the tonnages that have been airlifted in recent years by both commercial and military carriers, this sounds like a statement to be regarded with some skepticism. But these tonnages, usually quoted in astronomical ton/mileage figures, are deceiving, a fact that becomes only too clear when they are considered in relation to the

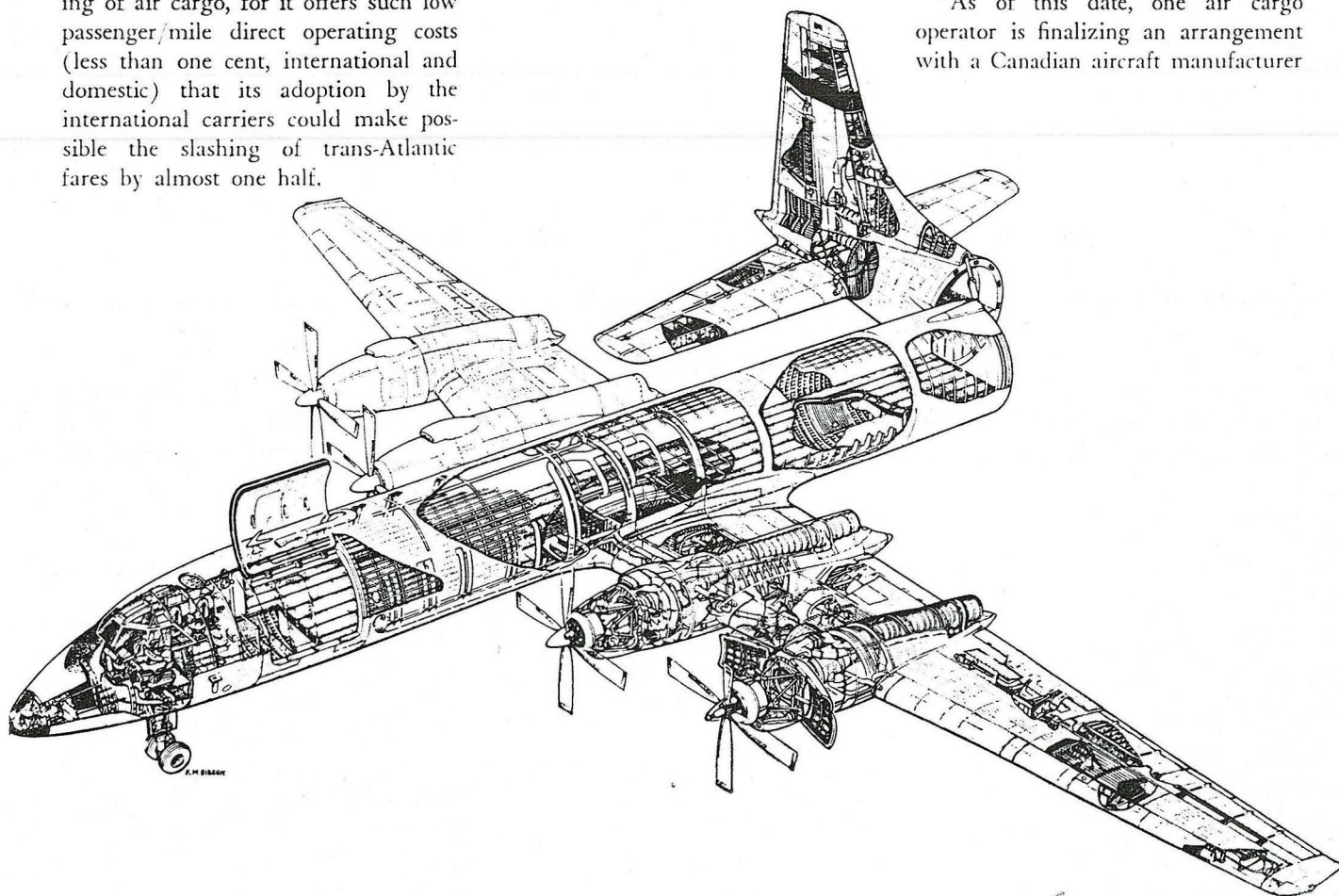
amount of freight moved by surface transportation.

Infinitesimal: Statistical reports show that only one tenth of one per cent of all commodities moved within the U.S. are transported by air. In other words, if air cargo could capture but one per cent of this vast market, it would still be enjoying a staggering 900 per cent increase.

This is what Elwood R. Quesada, administrator of the U.S. Federal Aviation Agency, meant when he said recently that . . . "The potential air cargo market will, we believe, 'explode' immediately after the introduction of this aircraft."

General Quesada was outlining in a public speech the FAA's position on the creation and operation of a national air cargo fleet. In a direct reference to the CL-44, he said:

"As of this date, one air cargo operator is finalizing an arrangement with a Canadian aircraft manufacturer



A. V. Roe Adds PSC

PSC Applied Research Ltd., one of Canada's leading designers and manufacturers of electro-mechanic instrument systems has been acquired from the Hunting Group by A. V. Roe Canada Ltd. Acquisition of PSC Applied Research, which grew from 58 employees and sales of \$250,000 in 1951 to more than 300 employees and sales of \$2.5 million in 1955, will provide further diversification of the A. V. Roe Canada Group.

PSC becomes the sixth operating operating company in the A. V. Roe Group. The others are: Avro Aircraft Ltd.; Canadian Car Co. Ltd. (formerly Canadian Car & Foundry Co. Ltd.); Canadian Steel Foundries (1956) Ltd.; Canadian Steel Improvement Ltd.; and Orenda Engines Ltd. In addition, through CanCar, the group has controlling interest in Canadian General Transit Co. Ltd., which is engaged in the leasing of railway tank cars.

In its six year history, PSC Applied Research has designed, engineered and produced a line of outstanding products. Probably the most widely known of these is the R-Theta Computer which is now in quantity production for the RCAF. In addition, it has designed and developed such

equipment as: aerial survey cameras, radio-activity detectors, airborne magnetometers, airborne profile recorders, radar equipment and aerial navigation equipment, some of which was designed for the RCAF.

DH Gyron Declassified

The de Havilland Engine Co. Ltd. has announced that the supersonic Gyron turbojet has successfully completed its first development stage and is at present running, with reheat, at 25,000 lb. static thrust. The Gyron was specifically designed for optimum performance at speeds up to Mach 3.

The Gyron's existence is credited to the de Havilland Engine Company's foresight, over six years ago, in undertaking as a private venture the development of an engine which would satisfy the powerplant requirements of the advanced military aircraft of a later generation. It was foreseen that these aircraft would be called upon to operate at high supersonic speeds, be capable of high altitude operation and, under these conditions, possess a useful endurance.

However, news reports from the U.K. indicate that the British Ministry of Supply is to withdraw its backing for the Gyron. A Ministry official is quoted as saying that "financial support

for the Gyron is due to end shortly and is unlikely to be renewed."

This is taken as indicating that there are no projects incorporating the Gyron presently enjoying official support. That is, although the Ministry views the engine as good, no 2,000 mph fighter has been ordered. The plan to drive ahead to a fighter capable of more than 2,000 mph has been scrapped in favor of guided missiles. And unless this decision is modified, the English Electric P-1 twin-jet fighter, which will have a speed of 1,500 mph, is likely to be the last manned fighter used by the RAF.

Sabre 5's at Dartmouth

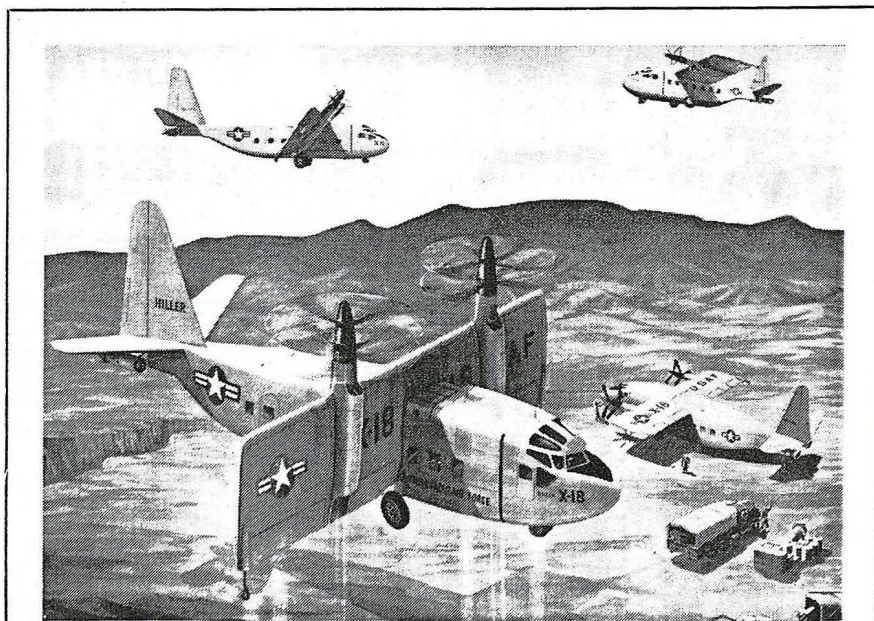
Canadair has a 23-man team working at Fairey Aviation Co. of Canada Ltd. at Dartmouth, N.S., preparing the 59 Mark V Sabres brought over on the Magnificent, for shipment by rail to Canadair. The work of preparing the aircraft for shipment to Montreal is extensive. It involves the following steps: de-cocooning, inventory, cleaning, pre-dismantling, dismantling and cradling. A dismantling line has been set up at the Fairey plant for these operations.

Parallel AC System

The first aircraft electrical system in the world wired for automatic parallel operation of four engine driven generators supplying high voltage AC power has been supplied to Canadair Ltd., by the Canadian Westinghouse Co. The system will provide the power for radar, electronic and electrical equipment aboard the Canadair Argus being built by the Montreal aircraft firm for the RCAF's Maritime Air Command.

Unique in the aviation field, the parallel generating system has 40-KVA alternators driven at 6000 rpm by constant speed hydraulic transmissions from each of the aircraft's four engines. The total 160-KVA exceeds the demand but assures constant reliable power. Exciters to supply DC power for the alternator field are integral parts of the generators.

In the event of an emergency, the generators from two engines can maintain the entire electrical system and electronic equipment. All switching and protective functions for the system are operated automatically from a control panel. Westinghouse magamp regulators maintain constant voltage



TILT-WING TRANSPORT: The USAF has announced that an initial contract for the development of transport-sized, tilt-wing aircraft has been awarded to Hiller Helicopters, Palo Alto, Calif. The tilt-wing transport will be propeller-driven and capable of vertical take-off and landing. Artist's conception of Hiller X-18 research aircraft is shown above.



FIRST CANADAIR CL-44 is shown in commercial livery following roll-out. Aircraft shown is actually an RCAF machine. First flight took place on Nov. 15 and lasted 2 hrs. 10 min. Orders for CL-44 airliners have risen to 29.

CPA to Rome

An agreement providing for the establishment of reciprocal air services between Canada and Italy, was announced Nov. 20 by the Secretary of State for External Affairs, Hon. Howard Green. Canada has designated Canadian Pacific Airlines to operate over the route. It may be anticipated that Alitalia will be the designated Italian airline.

Commenting on the new agreement to exchange air rights, Transport Minister Hees noted that . . . "the agreement provides for the establishment of Canadian and Italian air services between Montreal and Rome, effective March 1, 1960. It is expected that the Italian airline and the Canadian airline initially designated under the agreement will operate on the basis of two round trips each week to begin with. Additional frequencies might be added later for both airlines . . . if traffic warrants."

Under the new agreement, Canada is granted the right to operate from Canada to Rome by way of Lisbon or Paris, with intermediate pick-up rights at Lisbon and/or Paris; and to operate with onward traffic rights from Rome to Bangkok and points beyond.

Italy is granted the right to operate on a route from Italy to Montreal without intermediate pick-up points but with onward rights from Montreal to Chicago, Mexico and Los Angeles. (Subject to agreement of Mexican and U.S. governments.)

Since it appears that service from Canada to Rome represents a logical extension of the existing CPA route

from Montreal to Lisbon and Madrid, this airline was designated to operate on to Rome, Mr. Hees explained.

There is, said the Hees announcement, no indication that the newly acquired rights from Rome onwards to Bangkok will be utilized in the near future, but they represent an excellent basis for ultimate expansion of service around the world if, at a future date, developments in government policy should make this feasible for either or both of Canada's major international airlines.

CPA will ultimately fly the Montreal-Lisbon-Rome route with DC-8 aircraft.

Carriers Show Deficit

Latest Dominion Bureau of Statistics reports show that for the month of May 1959, the number of revenue passengers flown by Canadian air carriers increased 19.2% over May 1958, and the volume of cargo rose 15%.

Although operating revenues rose 15.3% to \$17,801,434 from \$15,438,163 the increase was not sufficient to keep pace with the operating expenses which increased 16.2%, advancing from \$15,375,210 to \$17,871,185. As a result, there was an operating deficit of \$69,751 as against an operating income of \$62,953 in May of the preceding year.

All revenue accounts registered significant increases over the corresponding month of last year. Passenger fares rose 15.7% to \$12,714,366; mail to \$1,083,560 from \$1,034,087; revenue from freight in unit toll service to \$705,905 from \$605,668; express to

\$301,679 from \$245,770 and excess baggage to \$144,634 from \$114,616. Revenue from bulk transportation, which includes both cargo and passengers flown in charter service, advanced 21.4% to \$2,051,999 from \$1,690,355.

All expense accounts recorded increases for the month under review in comparison with May 1958. Aircraft operation and maintenance charges rose to \$10,802,697 from \$9,078,139; ground operation and maintenance to \$3,706,155 from \$3,273,042; traffic expenses to \$2,088,245 from \$1,914,588; general administration costs to \$1,191,368 from \$1,045,033 and general taxes rose to \$82,720 from \$64,438.

Low-Cost Airfreight

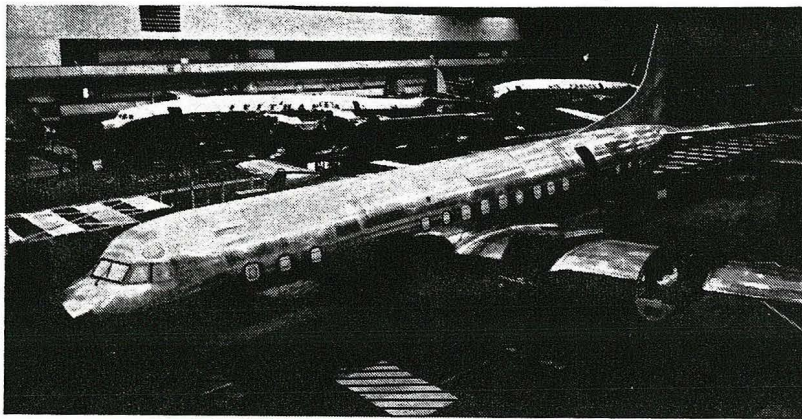
A joint sales research program to develop a break-through tariff which will bring airfreight rates down to levels comparable with many truck and rail freights has been announced by Canadair Ltd. and The Flying Tiger Line. In the next year the program will cost the two companies \$200,000.

A research staff which has been working for several months for Flying Tiger under R. L. Brunner, manager of the airline's rates and tariff department, has been joined by K. A. Miller, manager of sales research for Canadair. In addition to the research groups of the two companies, S. H. Brewer, professor of transportation for the University of Washington, and R. B. Ulvestad, of the University of California, have been retained as consultants. Both men are recognized as among the outstanding authorities in the field of airfreight traffic development.

Said a spokesman for Flying Tiger, which has on order a fleet of ten CL-44D-4's: "We believe that rates as low as six cents a ton mile are possible with this aircraft, and that we can achieve an average rate of some 13-14 cents, compared to the existing average of 18-19 cents."

Studies made by Professors Brewer and Ulvestad indicate that such rate levels (six cent) would create an airfreight market from seven to ten times today's volume.

The research program being undertaken has two phases. The first is to analyze in detail, the characteristics of



ELECTRA NEARS COMPLETION: The first Lockheed Electra scheduled to fly in January, looks almost ready. It is shown here in the final assembly area. The last major components, Allison Model 501 turboprops and Aero products 606 four-bladed propellers, were added in October. Electra will enter service with Eastern Air Lines next fall.

round trips per week to London and Paris from San Francisco, Los Angeles and Seattle-Portland.

Airlines presently flying the trans-polar route between west coast U.S. cities and the capital cities of Europe have long been aware of the fact that Frobisher is ideally located as a refuelling point, but the field has been available only as an alternate base since it has been controlled by the military and fuel supplies could be purchased only on an emergency basis.

However, the DoT took over operation of Frobisher September 1 and intends launching a \$500,000 expansion program which includes a terminal building and control tower. As a direct result of this decision to develop the field as a civil airport, and the availability of fuel, several airlines have expressed an interest in starting trans-polar flights using the field as their midway refuelling base.

CPA Out; PWA In

On November 1 Pacific Western Airlines will take over CPA's scheduled service between Regina, Moose Jaw, Saskatoon, Prince Albert, North Battleford, Lloydminster and Edmonton.

The action is in line with CPA's planned program of consolidation of its domestic services in order to concentrate on the operation and development of its network of international routes. At the same time, PWA has been enabled to extend its growing empire eastwards from British Columbia. PWA has long been trying to expand in this direction, but its previous efforts have all been thwarted by ATB

rulings. The firm's break came when CPA decided to abandon the service which PWA has now taken over.

The license covering the service has a restrictive clause preventing PWA from operating direct services between Regina and Edmonton or between Saskatoon and Edmonton.

Further planned expansion of PWA services depends for the moment on applications before the ATB for permission to provide scheduled services out of Winnipeg to northern points such as Prince Albert, Uranium City, and Yellowknife. To improve navigational aids on route, PWA has expressed a willingness to install radio beacons at Lac la Ronge and Cree Lake, between Prince Albert and Uranium City.

Nordair Adds Flight

Nordair has increased to two flights per week its service between Montreal

and Frobisher, N.W.T. The service, which was inaugurated as once weekly on July 10, was doubled up at September's end.

Using DC-4 equipment, Nordair Ltd. is now scheduling flights from Montreal every Tuesday and Friday morning, and from Frobisher every Tuesday and Friday evening. The added flight was made necessary by the popularity of the service, Nordair says.

February Deficit

Operating revenues of Canadian air carriers in February, 1957, totalled \$11,959,400, an increase of 10.5% from 1956's February total, according to the Dominion Bureau of Statistics. The Bureau says, however, operating expenses went up 7.2% at \$13,067,800 from \$12,195,000, making an operating deficit in the month of \$1,108,400 as compared with \$1,371,200 in February of last year.

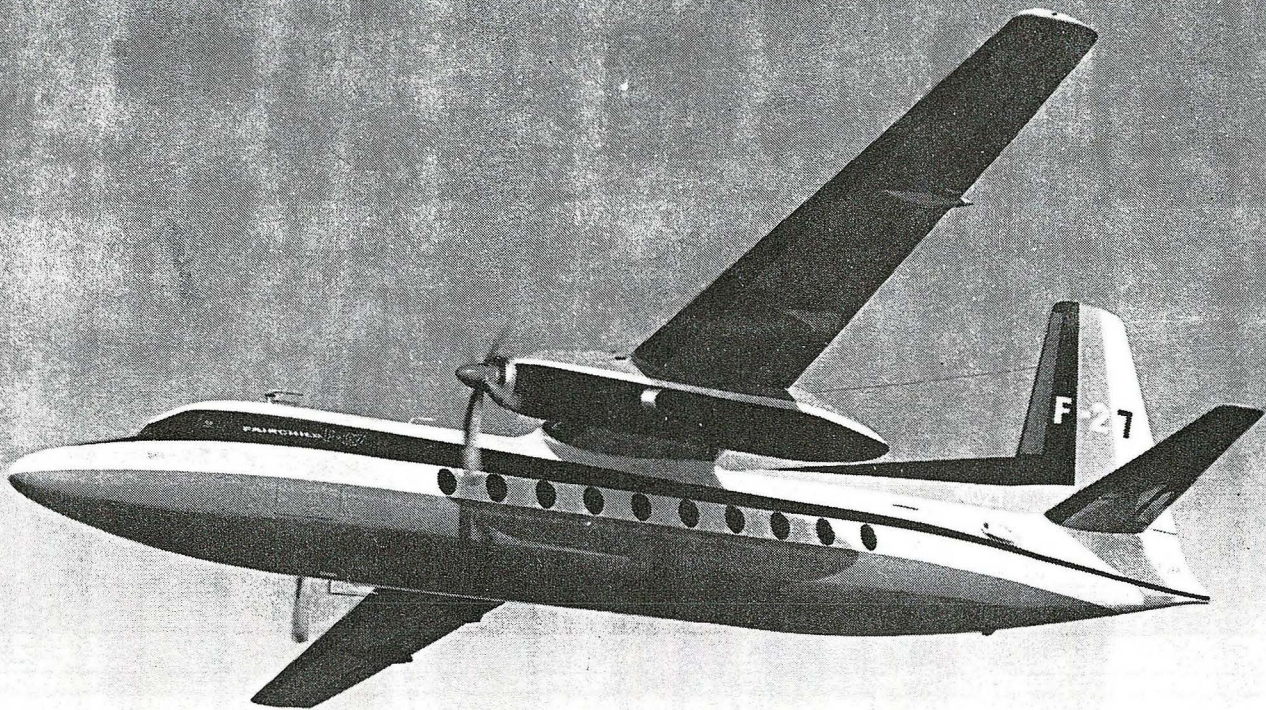
All revenue accounts except bulk transportation recorded gains over a year earlier, revenue from passenger fares increasing to \$7,089,300 from \$5,869,600; mail to \$998,600 from \$974,700; freight to \$519,400 from \$451,800; express to \$238,800 from \$196,700; and excess baggage charges to \$96,900 from \$71,100. Revenue from bulk transportation services fell to \$2,713,300 from \$2,854,700.

Aircraft operation and maintenance costs rose to \$7,723,200 from \$7,365,300; ground operation and maintenance to \$3,021,000 from \$2,870,700; traffic to \$1,389,500 from \$1,173,800; general administration to \$873,300 from \$730,800; and general taxes to \$60,700 from \$54,300.

Some 207,370 passengers were carried



FIRST PRODUCTION COMMANCHE: First production model of the four-place Piper Commanche is shown here in flight. Production target is one per day in January, 1958, with an eventual goal of five per day. With 180 hp Lycoming, the Commanche cruises at 160 mph at 75% power at optimum altitude.



RELIABLE VERSATILE ECONOMICAL

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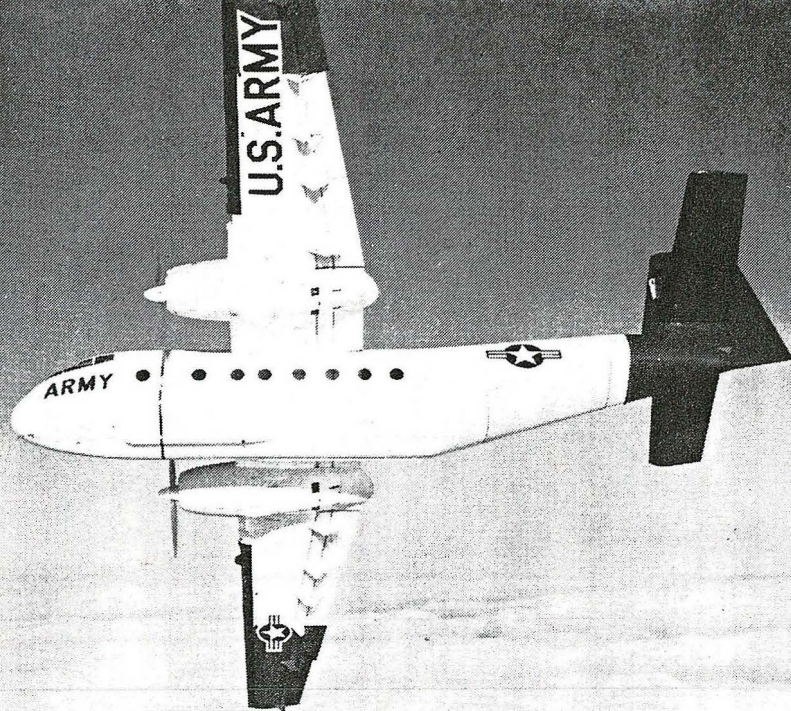
Rolls Royce powerplants, renowned as the world's best, help assure on-time operation, while designed-for-business interiors permit business to be conducted enroute to every appointment.

Simple and economical to maintain, the F-27 propjet is built around the features that businessmen want—and need—in a corporate plane.

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The Industry



DE HAVILLAND AC-1 CARIBOU is shown in its striking red, white and black U.S. Army Arctic livery. Recent Army re-orders have raised the number of Caribou in use or on order to 27. An Army general recently told aviation writers Army had a long-term requirement for about 300 Caribou.

Bristol Prospers

The Bristol Aeroplane Co. Ltd., Filton, England, reports that its Canadian subsidiary, Bristol Aero Industries Ltd., recorded sales for the last fiscal year in the area of \$56 million, while net profits were approximately 25% in excess of the previous year; and the capital, reserves and surplus at the end of the year showed a value of over \$18.9 million.

Activity in Montreal and Vancouver was concentrated on engine overhauls for the airlines and for the RCAF. In Winnipeg, overhauls of CF-100, Expeditor and Mitchell aircraft were supplemented by a growing volume of sub-contracts. Some of these are American contracts gained under the U.S.-Canadian production-sharing policy.

A special projects group established in 1958 was strengthened during the year for the purpose of furthering diversification and thus replacing as may be necessary conventional aircraft and engine work by newer developments associated with communications, aerial survey and high altitude research.

The Aviation Service Division developed its airport maintenance and

handling activities. In its early stages, this division's financial results were disappointing. However, in more recent times the company has been awarded contracts by the major trans-Atlantic carriers.

The most important development in the past year was the acquisition of 46½% of the issued share capital of Spartan Air Services Ltd., by Bristol.

Marconi Dopplers for CPA

Canadian Pacific Airlines has announced intention of buying the Canadian Marconi Co.'s airborne Doppler navigation aid known as the CMA-623. It was announced at the same time that the airline had placed an order for the navigation computer which is used in conjunction with the CMA-623. The two go to make up an advanced navigation system for high-speed jetliners.

It was erroneously reported in the May issue of *AIRCRAFT* that CPA had purchased Collins Doppler equipment for its DC-8's.

Said a Marconi spokesman: "It gives great satisfaction to note that although the basic system has been

adopted by four other major world airlines, this purchase, the fifth, marks the second occasion within a few weeks that a major international airline has decided upon the Canadian Marconi's total system, i.e., the sensor and the computer."

Deliveries of CPA's new DC-8's are scheduled to begin in 1961, and will be fitted with twin sensor and computer systems.

Common Market?

The Aircraft Industries Association of the U.S. is studying a proposal to determine the possibility of establishing a common market between the U.S. and Canada on aviation products, the AITA reports.

AITA representatives who attended a recent export meeting of the AIA say that all the U.S. manufacturers of light planes were in favor of a common market, and that two of the larger firms also indicated their approval. An ad hoc committee was formed by the AIA to investigate how a common market could be achieved within the framework of existing U.S. tariff legislation.

Starfighter Contracts

Up to April 27, contracts totalling \$239,621,209 has been awarded in connection with the CF-104 program, Defence Production Minister O'Hurley informed the Commons.

Estimated production cost of a completely equipped CF-104 is \$1,032,000 and of a CF-104D trainer \$1,409,800. These prices don't include armament.

It is expected, Mr. O'Hurley said, that CF-104's will be coming off the Canadair line by the end of February, 1961.

Asked whether subsidies will be paid to industry so that CF-104 components will be made in Canada, the minister replied: "In appropriate cases industry is being assisted to make components in Canada."

"The successful prime contractor included in his proposal a comprehensive outline of its recommendations for subcontract arrangements. These arrangements contemplated a wide distribution of subcontract work. The department is being particularly careful to monitor the prime contractor to ensure this wide distribution of sub-contracts and, in fact, the term of the contract requires that the prime con-

The Argosy Air Freighter

By JAMES HAY STEVENS, AFRAeS

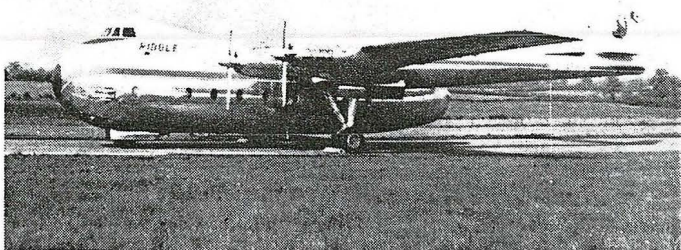
LAUNCHING a new airplane in Britain today is quite an adventure . . . in the sordid realms of finance and taxation rather than those of the merchant venturers of the past. Added to the normal risks of gauging the market between five and ten years after the date when the design *must* be finalized if it is to get on to the market at that date, there are the hazards of customers who obviously do not know what they want and, in Britain, a taxation system that penalizes risk capital expenditure. On top of this, Sir W. G. Armstrong Whitworth Aircraft Ltd.

launched the Argosy just prior to the government's blackmail campaign to squeeze the British Aircraft Industry into a different shape.

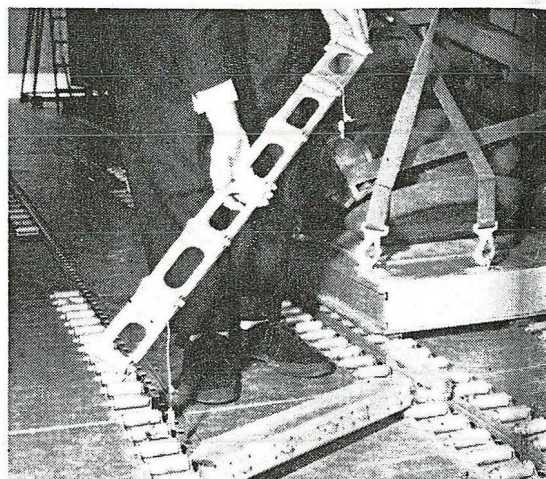
In the event, the Hawker Siddeley Group showed its customary perspicacity when it decided to jump into the freighter market with all four feet. For several years the RAF had been trying to decide what sort of tactical transport it needed to replace the Valetta—replace it in the "DC3 replacement" sense, that is, by a different hanimile. Specs had been issued, projects dreamed out, and tenders submitted; only to be met by new ideas

from the customer who was, in any case, having a constant battle with the Treasury on behalf of Transport (Cinderella) Command. In 1956 it became clear that, like the rest of the RAF's needs, no decision would be allowed until the Industry had reshaped itself to its ordained end.

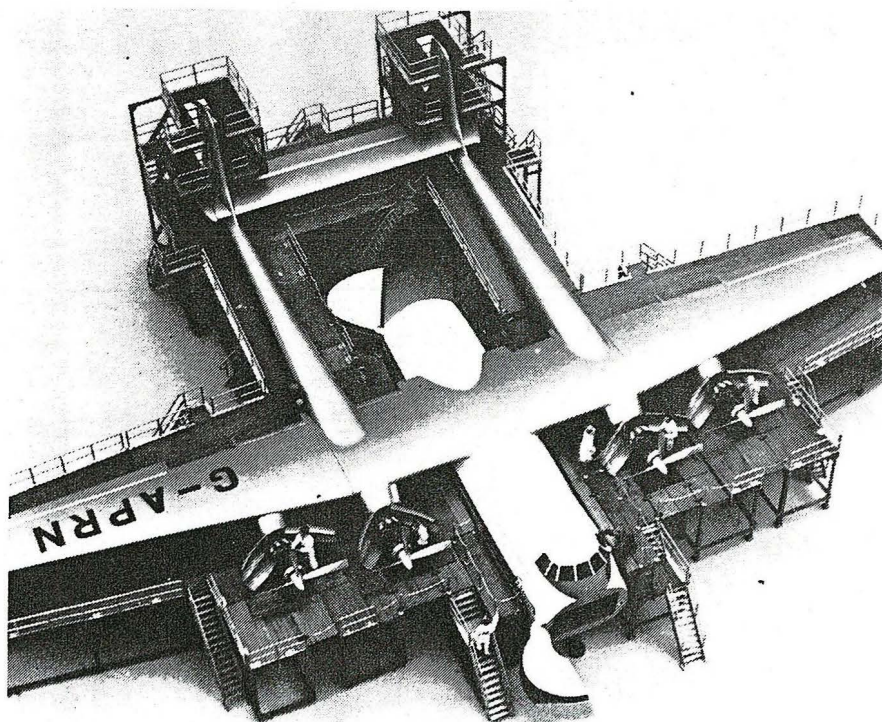
Dual Purpose: It was then that the Hawker Siddeley Group decided to investigate the civil market and build for that—but with an eye over the shoulder on the needs of the RAF. At about this time, too, The Air League of the British Empire started campaigning for pooling of military



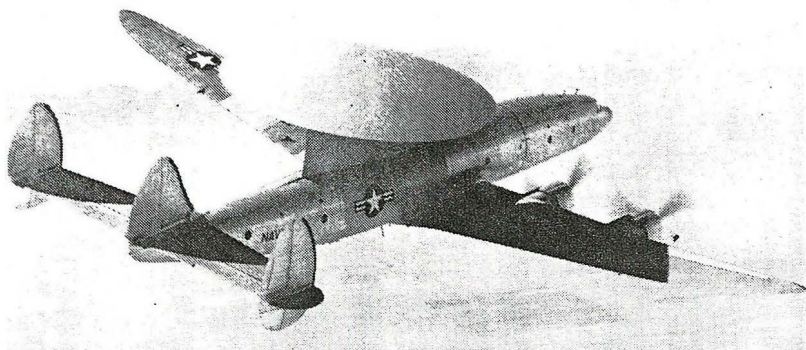
Argosy is shown in colors of Riddle Airlines, which originally optioned four but was unable to complete financing.



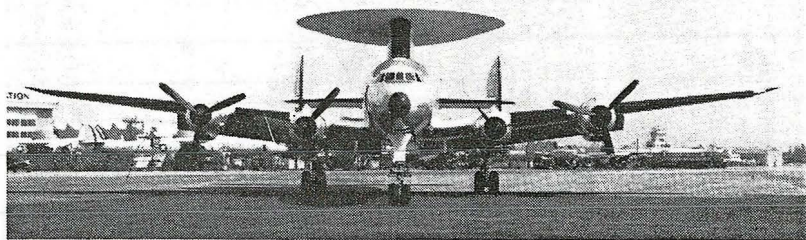
Details of AWA Rolamat system are clear to see in this close-up. Sections are pinned to floor to prevent slipping, but are otherwise free.



Armstrong Whitworth forward thinking on the Argosy extends way ahead to offering operators this complete airline maintenance dock design.



FLAT HAT: Latest version of the USN's Lockheed WV-2 radar picket is fitted with this unusual dorsal-mounted radome. It will be recalled that while current versions of the WV-2 also have a dorsal fin type radome, their main scanning gear is housed in a large ventral radome, the appearance of which has resulted in this version of these aircraft being nicknamed the "Pregnant Goose".



industry and defence purposes.

Norman I. Schafler, president, said that Con Diesel of Canada is a wholly owned subsidiary of Consolidated Diesel Electric Corp., Stamford, Conn. Jens F. Louv, formerly with the parent company's aircraft division, has been appointed sales manager for the Canadian operation. The U.S. company has maintained an office in Ottawa since 1954.

Airtron Canada Opens

The formation of Airtron Canada Ltd., a wholly owned subsidiary of Airtron Inc., Linden, N.J. was announced in September. W. J. Muller is in charge of production at the Airtron Canada plant at Renfrew, Ont., while the sales operation is handled by E. D. Smith from Airtron Canada's main office at 300 Campbell St., Toronto.

Canadair in Ottawa

To facilitate closer liaison with AFHQ, Canadair Ltd., Montreal, has opened an office in Ottawa. Heading the new operation will be C. F. Fincham, special assistant to Peter H. Redpath, vice president sales. Prior to his retirement from the RCAF, Mr. Fincham was in charge of RCAF aircraft programming.

The Canadair office will be in the newly-built Commonwealth Building on Metcalfe Street.

More Otters to PAL

Philippine Airlines is ready to double its feeder line service to out-of-the-way communities after the completion of some fifteen months operation with three de Havilland Otters. The airline has taken delivery of three additional Otters and these will enable it to extend its unique service to some 35 communities through the Philippine jungles.

New CDC Computer

An analogue computer, designated the REAC 400, designed to make it "particularly suited to the study and development of industrial content problems and mechanical design" has been installed by Computing Devices of Canada Ltd. in its data processing centre of Bells Corners, near Ottawa.

The machine, manufactured by the Reeves Instrument Corp., is said to be the most up-to-date of a long series of analogue computers made by this firm. Custom-built to CDC specifications, it will be available to customers on a time rental basis. A team of experienced mathematicians and engineers, under B. Farrell Chown, P. Eng., head of the CDC analogue computer

department, will operate the machine.

CDC states that a customer may rent machine time only, operating it himself. This is sometimes desirable when the problems and their solution are of a confidential nature. If necessary, CDC is prepared to train a customer's engineers in the use of the machine.

New Avro Skin Mill

A 200 ton skin milling machine, part of a battery of new machines lined up for the production of the CF-105, has been installed by Avro Aircraft Ltd. Said to be the only one of its type in Canada, the mill was built by Kearney & Trecker of Milwaukee to Avro specifications, and is one of the most versatile in the field. It is capable of carrying out any skin milling operation on aircraft designs of the foreseeable future, Avro says.

Due to the company's pioneering in this field Avro purchased the new machine for \$325,000. In building the first model, Kearney & Trecker invested over \$1,000,000 for design and construction, most of which the company is looking forward to recovering on further sales of the new mill. Today's price for the same model is \$600,000.

Contracts Awarded

Contractors awarded business in excess of \$10,000 by the Department of Defence Production during the period July 16-August 15, 1956, include the following. The list does not include orders placed by the Department outside Canada, or with other agencies, and increases in orders placed earlier — nor do orders classified as secret appear here.

(Name appearing in bold face are current Aircraft advertisers.)

Aircraft Industries of Canada Ltd., St. Johns, P.Q., \$50,413, for aircraft modification kits.

Aircraft Welding & Sheet Metals Co. Ltd., Ville St. Michel, P.Q., \$42,647, for engine containers.

Austin Airways Ltd., Toronto, \$100,760, for charter of aircraft.

Aviation Electric Ltd., Montreal, \$11,227, for airframe spares.

Bancroft Industries Ltd., Montreal, \$50,000, for aircraft spares and accessories during year ending March 31/57.

Bristol Aero Engines Ltd., Montreal, \$10,000, for investigation of aero engines and engine components during year ending March 31/57.

Bristol Aircraft (Western) Ltd., Winnipeg, \$175,000, for airframe spares.

Canadair Ltd., Montreal, \$54,492, for aircraft electrical equipment.

Canadian Aero Service Ltd., Ottawa, \$13,000, for mapping service.

Canadian Comstock Co. Ltd., St. Catharines, Ont., \$54,658, for spares for energizers.

Canadian Pratt & Whitney Aircraft Co. Ltd., Longueuil, P.Q., \$90,000, for repair and overhaul of aero engines and engine components during year ending March 31/57.

Trans-Air Limited, St. James, Manitoba, \$309,575, for charter of aircraft.

plant, preparatory to acceptance of the planes.

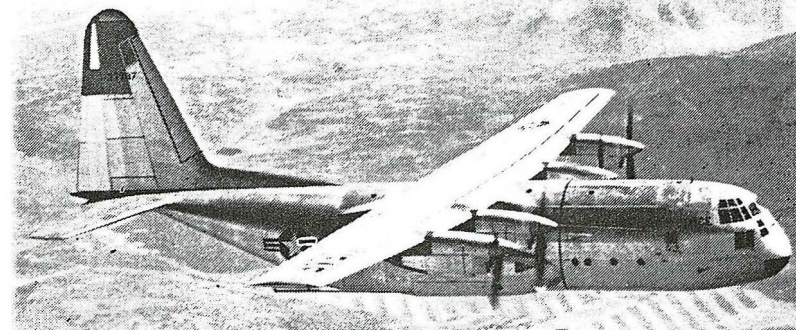
The Neptunes will be flown by RCAF crews from California to their new home at Greenwood, N.S., where they will go into service with RCAF maritime squadrons. They will supplement the maritime reconnaissance Lancasters now in service with these squadrons.

Brave Conduct

Flight Lieutenant David E. MacLeod, an RCAF medical officer stationed at North Bay, Ont., has been awarded the Queen's Commendation for Brave Conduct, it was announced recently by AFHQ. The award, approved by Her Majesty the Queen, is for outstanding personal bravery displayed during an attempt by F/L MacLeod to save the lives of two officers in a burning aircraft at RCAF Station North Bay, September 8, 1954.

Born in Brule, N.S., in July, 1925, F/L MacLeod joined the RCAF in March, 1943, and was trained as an air gunner. He served as a gunnery instructor in Canada until the end of World War II when he left the RCAF to attend Acadia University. After graduating with a Bachelor of Science degree in 1949, F/L MacLeod enrolled at Dalhousie University, Halifax, N.S., where he graduated in medicine in 1953.

While attending Dalhousie F/L MacLeod re-enrolled in the Medical Branch of the RCAF and was taken on active Air Force duty at North Bay in June, 1954.



FIRST IN FLIGHT: This photo is the first one to be released showing the USAF's Lockheed C-130 transport in full flight. Known as the "Hercules", this big aircraft has been designed to carry troops and military supplies in and out of small make-shift fields. In production at Marietta, Georgia, the Hercules is powered by four Allison T-56 turboprops. It has a wingspan of 132 feet.

The citation reads:

"On the night of Wednesday, 8 Sept. 54, a CF-100 aircraft swung off the main jet runway at RCAF Station North Bay and crashed into two aircraft which were parked on a taxi strip adjacent to one of the hangars. The crew of the CF-100 were killed on impact and a fierce conflagration was started involving the three airplanes.

"F/L MacLeod was the Medical Officer on duty at the time of the accident and he was on the scene minutes after the crash occurred. The pilot and the crew member of the CF-100 were still seated in the aircraft and could be plainly seen by the light of the flames. F/L MacLeod, disregarding his own safety, climbed onto the fuselage of the burning aircraft to determine whether or not the occupants were still alive;

the heat of the flames was so intense that he had to be continuously sprayed with water while he was finding out if life still remained. He remained until he had definitely proven to his own satisfaction that the two occupants were in fact dead and only then did he leave the aircraft. During the time that he was examining the occupants, the explosive charges in the canopy mechanism might have gone off at any instant and without any doubt whatever would have caused instant death to this officer . . ."

Citation

Presentation of the United States Medal for distinguished service flying in the Korean War on ex-duties with the USAF has been to Flying Officer Andrew La DFC.

Vickers **VISCOUNT** air conditioned by

GODFREY

The Vickers Viscount, now in Canadian domestic service for Trans-Canada Airlines, is fitted with the Godfrey Type 15 Cabin Supercharger, and the Godfrey CA-7 Mark 3 Cold Air Unit. Thus a cabin pressure condition equivalent to 8,000 ft. is maintained while the aircraft is flying at 20,000 ft.

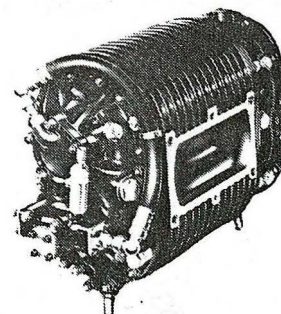
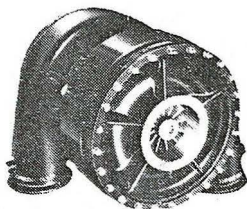
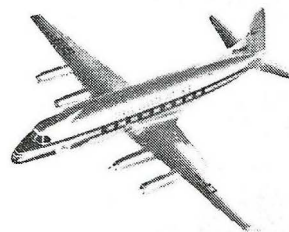
Godfrey Engineering is the only company in Canada manufacturing aircraft cabin pressurization and air cooling equipment.

GODFREY ENGINEERING CO. LTD.

Affiliated with SIR GEORGE GODFREY & PARTNERS LTD., England.



480 METROPOLITAN BLVD. — MONTREAL 32 — CANADA



THE AIRBORNE SERVICES

New DND Deputy

A second senior RCAF officer has been appointed to a high post in the Defence Department. He is 53-year-old Air Commodore C. Frederick Johns, who retains his commission and becomes assistant deputy minister in charge of construction, engineering and properties.

His appointment brings to four the number of assistant deputy ministers in the Defence Department. The others, none of whom hold military rank, are J. A. Sharpe, administration; E. B. Armstrong, finance, and L. M. Chesley, requirements.

Previously, the appointment had been announced of Air Marshal Frank R. Miller to the post of deputy minister. He succeeded C. M. (Bud) Drury, former army brigadier, who retired to enter private business.

A/C Johns' appointment was approved June 22 by Defence Minister Campney but it was not announced until late in August. A department spokesman said it was considered an internal matter. However, it is learned that there was concern lest the newest appointment, coming close after the Miller elevation, might lead to criticism that the Defence Department was coming under RCAF control.

The new deputy is a native of Portsmouth, England. He joined the RCAF in 1940 and served until 1945. He rejoined in 1950 to assist in a major construction program which included RCAF bases at Grostenquin and Marville, France, and Zweibrücken and Baden-Söllingen, Germany, and the Army's 1st Brigade base at Soest, Germany. He is also directing construction of the new Army camp at Gagetown, N.B.

A/C Johns is publisher of the bi-weekly Sackville Tribune Post in Sackville, N.B. His duties keep him away from Sackville and he leaves the operation of the newspaper to his editors.

Somebody Goofed

Keen annoyance was felt in Ottawa last month over a British Air Ministry statement, prepared without consultation with Canadian officials, and released simultaneously in London and Washington, which dealt with the disposition of some 400 F-86 Sabre fighters supplied to the RAF in 1952

and 1953 by the Canadian and U.S. governments.

The announcement — disregarding the fact that 75 per cent of the cost of the contribution had been met by Canada — said that as the Sabres were succeeded by Hawker Hunters they would be "rehabilitated and transferred to the U.S. Government for reallocation under the Mutual Defence Aid Program."

The question immediately arose in Ottawa: Who is doing what with our gifts?

Under a 1952-53 mutual aid agreement, the Canadian Government financed the construction of the aircraft by Canadair Ltd. The U.S. Government provided engines and certain electronics equipment, which

Canadair installed — at the expense of the Canadian taxpayer. Canada's share in the program was estimated at \$90,000,000 — or about 75 per cent.

What will happen, once Hunters begin flowing in increased numbers to RAF squadrons, is that the Canadian-built Sabres will go into a NATO pool for allocation by a NATO standing committee to various member nations, an Ottawa informant said. The Sabres will not, as the Air Ministry announcement tactlessly said, become U.S. Government property.

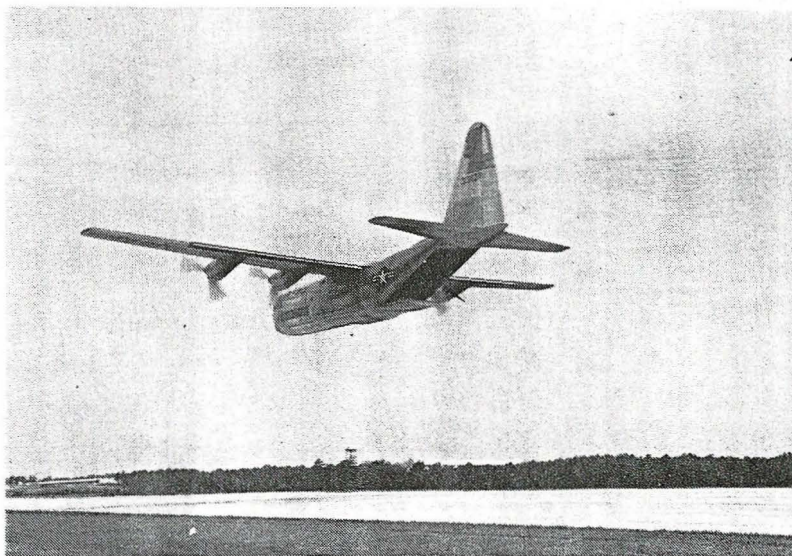
VC 920 in Action

Pilots of VC 920, the RCN's Toronto-based reserve naval air squadron, last month became the first RCN reservists to carry out carrier landings. Flying Grumman Avengers, they were embarked for two weeks' summer training on HMCS Magnificent.

In a single day, five pilots com-



TRANSPORT TRICKS: Fairchild C-123B transport experimentally fitted with wing-tip-mounted Fairchild J-44 turbojets of 1,000 lbs. th. each for thrust augmentation, is shown above making a low level flypast with one propeller feathered. Performance is described as "spectacular". Below, the Lockheed C-130 Hercules is shown flying by in "aerial delivery configuration" with rear ramp and door in open position, thus exposing the entire 9 ft. by 10 ft. cross section of the cargo compartment.



THE AIRBORNE SERVICES

Army Air Force?

The Canadian Army may shortly seek government permission to establish an air arm specializing in troop and supply transport and casualty evacuation, according to Lieutenant General Howard Graham, Chief of the General Staff. At present, Canadian Army aviation consists of two flights of air observation aircraft.

"Just as the Air Force has ground vehicles for transportation of its personnel, so the Army of the future may have to have air vehicles for transportation of the infantry," Gen. Graham declared.

Senior RCAF officers, it is learned, are not wildly enthusiastic about the scheme. But, though several expressed strong reaction, none would consent to be publicly quoted.

Before becoming a reality, any such plan would first require the sanction of the Joint Chiefs of Staff, the Defence Council and the Cabinet.

Army thinking seems to favor fixed-wing craft, rather than helicopters, which would be operated by the 7,000-man Royal Canadian Army Service Corps. The Army would train its own pilots and provide its own aircraft maintenance.

Gen. Graham has indicated that specific recommendations will be ready for government consideration by mid-summer.

500 Deliveries

The RCAF's No. 1 Overseas Ferry Unit last month completed delivery of its 500th jet aircraft, a record which brought a congratulatory message from Air Commodore H. M. Carscallen, Air Officer Commanding Air Transport Command. The ferry unit is commanded by Squadron Leader Bob Middlemiss of Montreal.

It still holds the record for the fastest delivery of a mass flight of jets across the North Atlantic. The time of 45 hours from leaving St. Hubert to touching down at 4 Fighter Wing at Soellingen, Germany, has not been equalled by the USAF or the RAF.

Two-Carrier Navy

The Royal Canadian Navy, awaiting completion at Belfast of its new aircraft carrier, HMCS Bonaventure, would like to retain its present carrier,

the British-loaned HMCS Magnificent, as a training ship. The Magnificent would replace the training cruiser Quebec, which would go into reserve.

When news of this plan first appeared in the daily press there was considerable embarrassment at Naval Headquarters since, it developed, there had been no official prior consultation with the Magnificent's owners, the Royal Navy. However, it is not expected that the RN would object.

One view is that the Magnificent would be more useful to the Navy in time of war than a cruiser, since the RCN's traditional role is protection of shipping, and cruisers are not noted for their anti-submarine capabilities.

Arctic Airports?

Informed sources in Ottawa say Canadian defence planners are giving increasing thought to the establishment of interceptor bases in the Far North, possibly within the Arctic Circle. Most of the RCAF's home defence squadrons are presently stationed within a few hundred miles of the U.S. border.

Air Commodore Clare Annis, RCAF Chief of Telecommunications, declared recently that, to gain an hour's warning of an air attack on North America across the Polar regions, the radar warning system has

had to be moved northward. He added: In a generalized way, what I state about the warning also holds true of the combat zone."

However, one informant says the government will not likely approve any heavy expenditures on Far Northern airfields at least until the Distant Early Warning and Mid-Canada radar belts are completed, probably in 1957.

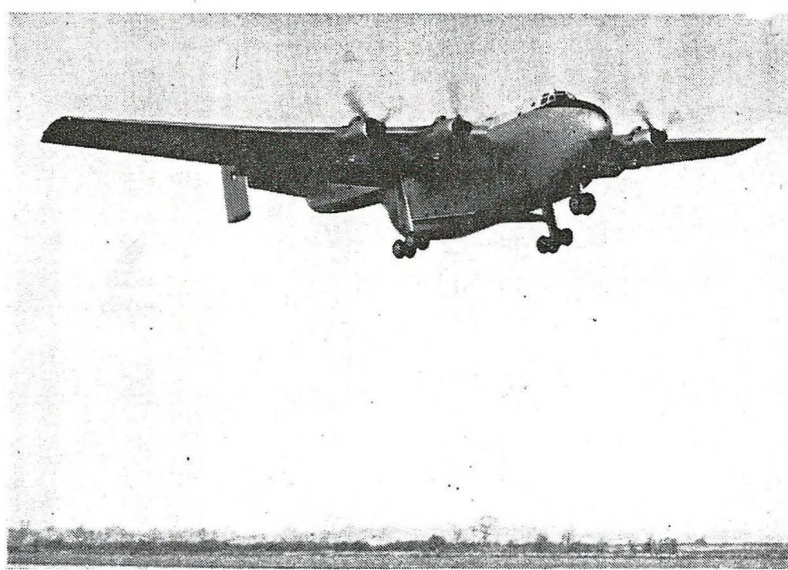
Pensacola Pupils

Twenty Canadian naval pilots are graduating each month from the U.S. Navy's Pensacola, Fla., training base. The course, which lasts 18 months, costs the Canadian Government \$67,000 per graduate. Aircraft used include the T-6 and T-28 piston trainers, the T-33 jet trainer and such operational craft as the Skyraider, Cougar, Mariner, Privateer and Neptune.

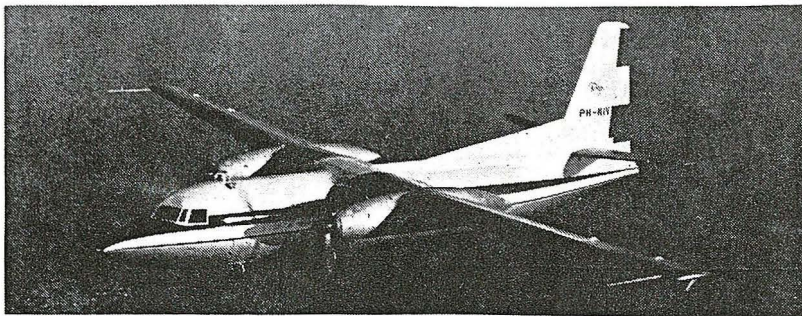
Advanced students are carrying out carrier takeoffs and landings aboard the USS Saipan. Most of the graduates, it is expected, will be posted to new RCN Banshee jet squadrons.

Last of the Lancs

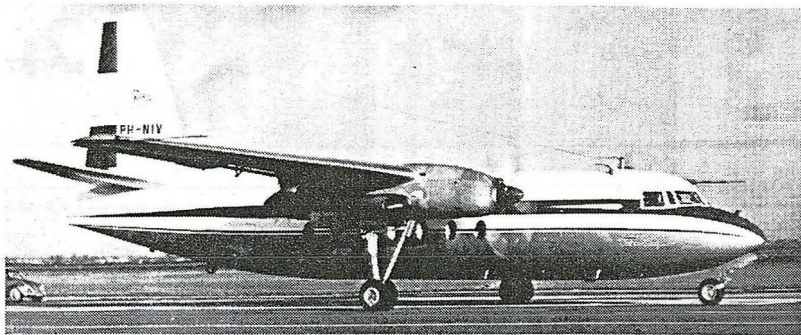
The RCAF is down to its last 30 Lancasters, the two East Coast maritime squadrons having been converted to Lockheed Neptunes. Only 407 Squadron, at Comox, B.C., retains a full complement of the Second World War machines. A small number will be used for some time for search &



BIG AND BUXOM: The huge Blackburn Beverley (span, 162 ft.; length, 99.5 ft.; height, 37.5 ft.) recently arrived in Canada for cold weather trials. At present being produced as an R.A.F. troop & freight transport, the Beverley is also being touted as a king-sized bush transport by Blackburn's Canadian agents, Field Aviation Co. Ltd. According to the manufacturer, the Beverley, or "Universal" as the civil version is known, on a recent flight carried a payload of 24,124 lbs., comprising some 20,124 lbs. of goods and 20 personnel.



THAT'S FRIENDSHIP: Now undergoing flight testing is the Fokker F-27 Friendship, a 40-passenger airliner powered by two Rolls-Royce Dart RDA-6 turboprops. Cruising speed is in excess of 270 mph. Fairchild Aircraft holds manufacturing and sales rights for the Friendship for North and South America (excepting Brazil) and has already started the engineering conversion of the design for U.S. production.



tail rotor of a helicopter. A DoT report on the accident says: "Of several people who approached the aircraft . . . the one who was struck by the tail rotor seemed to be unaware of its existence, and did not hear or did not heed the shouted warnings of bystanders, or the warning signals of the crewmen."

Anti-Collision Lights

Flashing white anti-collision lights are being installed on all TCA aircraft, the program to be completed by spring. First installation was on a DC-3.

Claims Settled

The federal treasury has paid nearly \$1,000,000 in settlement of claims arising from the deaths of 35 persons aboard a TCA North Star which collided in 1954 over Moose Jaw with an RCAF Harvard. At one point the claims totalled \$3,630,000. There has been no official mention of any claim arising from two other deaths — the Harvard pilot and a woman on the ground killed by falling wreckage.

Record Season

Saskatchewan Government Airways reports that from November 1, 1954, to October 31, 1955, its 19 aircraft

logged more than 10,000 hours over some 1,050,000 miles. It was its busiest season so far.

Manager Ian MacLeod said: "Without our DC-3 and its remarkable carrying capacity, SGA would never have been able to meet the greatly increased demand for transportation experienced this past year." On the Prince Albert-LaRonge-Stony Rapids-Uranium City run, the DC-3 flew 884 hours over 128,000 miles.

Air Ambulance

Saskatchewan Government Air Ambulance Service during December transported 93 patients. The majority were victims of fractures, burns and

gunshot wounds. Forty-seven cases were cared for by Saskatoon crews, the balance from Regina. Five flights were made to transport whole blood and plasma.

Dominion 171?

Toronto-based Dominion Helicopters Ltd., an associate of Leavens Bros. Ltd., is contemplating the acquisition of a Bristol 171 Sycamore helicopter, it is learned. It has already added a Bell G-2 to its fleet.

Link with Regina

Two U.S. local-service airlines, North Central and Frontier, are seeking permission to extend their North Dakota operations to Regina. The first would operate from Minot, 220 miles away; the second, from Williston, 150 miles away.

Decision Postponed

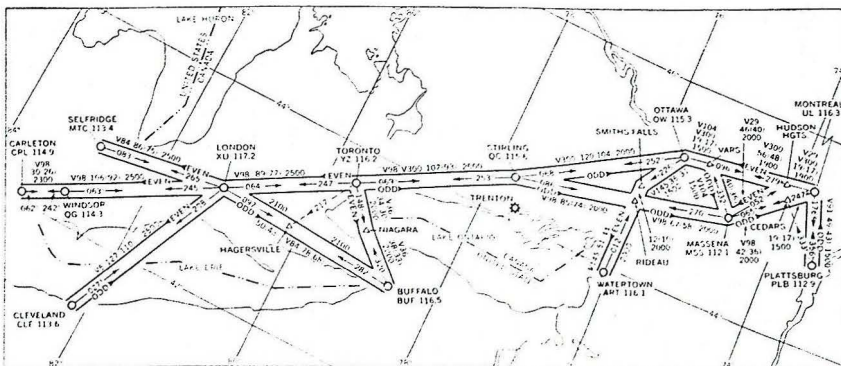
After considering representations from the Royal Canadian Flying Clubs Association and the Canadian Owners and Pilots Association, the Transport Department has postponed until spring a final decision on reserving a block of altitudes for large aircraft.

Under the DoT plan, no aircraft, regardless of weather conditions, would be flown in VFR flight within designated airways between 9,500 feet above sea level and 23,000 feet when east of longitude 115° west or between 11,500 and 23,000 feet when flying west of longitude 115° west.

The flying clubs described the proposal as unjust and arbitrary.

Cargo Figures

TCA last year carried 25,217,340 pounds of cargo, an increase of more than 25 per cent over 1954. Its air-freight volume between Canada and Britain was larger than that of any



CANADIAN VOR: Chart shows location of new VOR airways in eastern Canada. Only those airways that are via or terminate at Canadian VOR stations are shown; similarly, only those U.S. VOR stations which are on these airways are shown.

initiated.

The Golden Triangle was chosen as the first area for the full control of scheduled airliners because of the concentration of traffic control facilities in the area, the heaviest in the world. Since the plan went into effect, airline pilots may climb VFR to no more than 9500 feet from which point upwards they must have an IFR (or positive separation) clearance. It is proposed eventually that positive separation will cover the airspace over the entire continental United States.

ATB Orders

- **Cascade Air Service** has been authorized to operate a Class 3 irregular specific point service from Harrison Hot Springs, B.C., serving Bear Creek, Silver River, Rustads Logging Camp, Stewarts Logging Camp, Lakeberg Logging Camp, Cattermole Camp, Spring Creek Logging Camp, Port Douglas (all on Harrison Lake); and Lillooet Narrows, Creekside, Birken Lake, D'Arcy, Seton Lake, Lillooet (all north Harrison Lake).

- The license of **Gateway Aviation Ltd.** to operate a Class 7 specialty/flying training service from Dawson Creek, B.C., has been cancelled at the request of the licensee.

- **Pacific Western Airlines** has been authorized to add Cambridge Bay and Parry Point, N.W.T., and Edmonton, without traffic rights between Edmonton and Yellowknife, to its Class 2 regular specific point (unprotected) service serving Yellowknife, Rocher River, Fort Rae, Indian Lake, Port Radium, Coppermine, Hottah Lake, and Northwest Territories.

- The license of **Pacific Western Airlines** to operate Class 2 regular specific point service between Terrace, Kemano, Kildala Arm, and Kitimat, has been suspended until Dec. 24, 1957, at the request of the licensee.

- The license of **Pacific Western Airlines** to operate Class 2 regular specific point service between Vancouver, D'Arcy, Gun Lake, Shalalth, and Lillooet, B.C., has been suspended until Dec. 24, 1957, at the request of the licensee.

- **Canadian Pacific Airlines** has been authorized to add Yellowknife, N.W.T., to its Class 8 international scheduled service between Vancouver, B.C., and Amsterdam, The Netherlands.

- **Muskoka Air Trails Ltd.** has been authorized to provide Class 7 specialty/flying training service from Huntsville, Ont.

- **Crystal Lodge Airways** has been authorized to operate a Class 4C charter service from Atikokan, Ont.

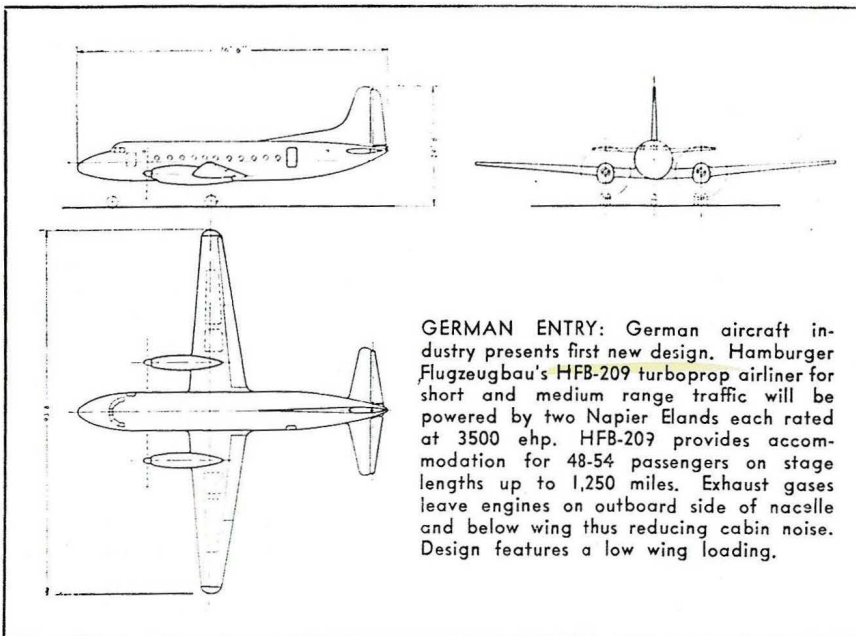
- The application of **Helicopter Transport Service Ltd.** to operate a Class 4 charter service with rotary wing aircraft from Montreal, has been denied.

- **Kenneth G. Nicholson** has been authorized to operate Class 7 specialty/flying training/recreational flying service from Estevan, Sask.

- The application of **Sudbury Aviation Ltd.** to operate a Class 4C charter service to transport clients, employees, and guides of the company in the operation of its tourist camp in the Sudbury district, has been denied.

- The authority of **McKay Airways** to operate Class 7 specialty/aerial pest control/aerial advertising services, has been suspended until April 1, 1958, at the request of the licensee.

- **Interlake Flights Reg'd.** has been



GERMAN ENTRY: German aircraft industry presents first new design. Hamburger Flugzeugbau's HFB-209 turboprop airliner for short and medium range traffic will be powered by two Napier Elands each rated at 3500 ehp. HFB-209 provides accommodation for 48-54 passengers on stage lengths up to 1,250 miles. Exhaust gases leave engines on outboard side of nacelle and below wing thus reducing cabin noise. Design features a low wing loading.

authorized to operate a Class 7 specialty/flying training service from Lac Masson, Ste. Marguerite, P.Q.

- **Fort Nelson Air Service** has been authorized to operate a Class 4B & C charter service from Fort Nelson, B.C.

- The license of **George Henry Green** to operate Class 4B & C charter service from Red Lake, Ont., has been cancelled.

- The authority of **Farmers' Flying Service** to operate a Class 7 specialty/flying training service has been cancelled at the request of the licensee. At the same time, the move of the operator's base from Briercrest, Sask., to Moose Jaw, was approved.

- **Beckett Aviation Corp.** has been authorized to operate a Class 9-4 charter service from an area within 50 miles radius of Allegheny County Airport, Dravosburg, Pa., to points in Ontario and Quebec, restricted to the use of Groups B and C aircraft.

- **Gananoque Air Services** has been authorized to operate a Class 7 specialty/aerial advertising service from Gananoque, Ont.

- The application of **Laurentide Aviation Ltd.** to operate a Class 4 charter service using rotating wing aircraft, from Montreal, has been denied.

- The application of **Laurentide Aviation** to operate a Class 7 specialty/flying training service, using rotating wing aircraft, from Montreal, has been approved.

- The application of **Wheeler Air Lines** to operate a Class 3 irregular specific point service from Val d'Or, serving Chibougamau, P.Q., has been denied.

- The application of **Wheeler Air Lines** to operate a Class 3 irregular specific point service from Val d'Or, serving Great Whale, P.Q., has been approved.

- The application of **Stayner Air Service** to operate a Class 4C charter service from Stayner, Ont., has been approved.

- The application of **Quebecair Inc.** to operate a Class 2 regular specific point service between Rimouski, Mont Joli, Lake Barbel, and Seven Islands, has been denied.

- The application of **Quebecair Inc.** to add Point Wabush, P.Q., to its Class 2 regular specific point service between Seven Islands, Ross Bay, and Schefferville (Knob Lake), P.Q., has been denied.

- The application of **Notre Dame Air Transport Ltd.** to operate a Class 5 contract service to transport personnel, camp supplies and equipment, of Eastern Canada Stevedoring Co. Ltd., from Montreal Airport, in support of Mid-Canada and Dew Line construc-

tion and maintenance work, has been denied.

- **B.C. Airlines Ltd.** has been authorized to operate Class 3 regular specific point services between Campbell River/Comox, and Manson Landing, Refuge Cove, Homfray Creek, Waddington Harbour, Stuart Island, Thurlow, Heyden Bay, Port Neville, Rio, Tatlayoko Lake, Vernon Lake, and Woss Lake, all in B.C.; also between Port Hardy/Alert Bay and Holberg, Winter Harbour, Mahatta River, Port Alice, Jeune Landing, Quatsino, Coal Harbour, and Allison Harbour, B.C.

- **Northern Wings Ltd.** has been authorized to operate a Class 3 irregular specific point service from Seven Islands, P.Q., serving Cartier, Pepler, Midway, Mount Wright, and Carol, P.Q., and Wabush and Ross Bay, Nfld.

- The ATB has denied the applications of **Dorval Air Transport Ltd.** to operate a Class 3 irregular specific point service from Montreal serving Val d'Or, Chibougamau, Great Whale River, Fort Chimo, P.Q., and Coral Harbour, Hall Lake and Frobisher, N.W.T.; a Class 3 irregular specific point service from Montreal serving Val d'Or, P.Q., Cape Henrietta Maria and Weenusk, Ont., and Churchill, Man.; a Class 3 irregular specific point service from Montreal serving Schefferville (Knob Lake), P.Q., and Goose Bay, Nfld.

- The application of **Stayner Air Service** to operate a Class 7 specialty/flying training/recreational flying service from Stayner, Ont., has been approved.

- **TransAir Ltd.** has been authorized to operate a Class 2 regular specific point service serving Montreal, Ottawa, Weenusk, and Churchill, provided that no traffic rights are exercised between Montreal and Ottawa.

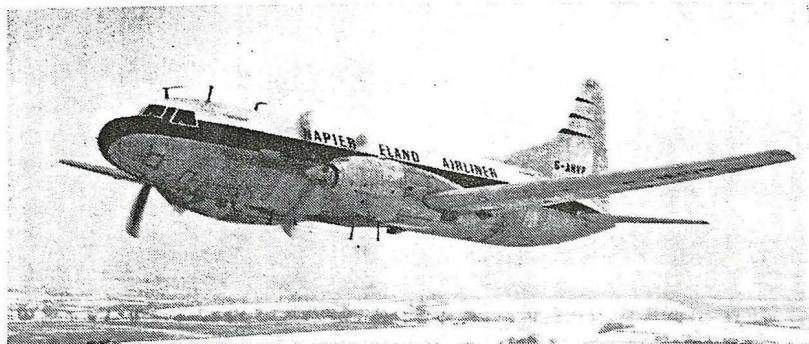
- **A. V. Aviation** has been authorized to operate Class 4C charter and Class 7 specialty/flying training/recreational flying/aerial patrol and inspection services from Blackville, N.B.

- **Harold Robert Oakman** has been authorized to operate a Class 7 specialty/recreational flying service from Bewdley, Ont.

- **Eastern Airways Ltd.** has been authorized to transfer its base of operations from St. Come, P.Q., to St. Georges de Beauce, P.Q.

- The application of **St. Johns Flying Class 4ABC** charter and Class 9-4 international charter services from Sherridon, Man., has been cancelled.

- The application of **St. Johns Flying School** to operate Class 7 specialty/flying training/recreational flying services from St. Johns, P.Q., has been approved.



ELAND AIRLINER: This Convair 340 is powered by Napier Eland turboprops. Conversion was carried out by the engine makers, D. Napier & Son, as a private venture, to explore the Eland's possibilities as a powerplant for the Convairliner. Early model Elands used for this installation provide a total power gain of approximately 1,600 hp coupled with a weight saving of 2,000 lbs. The Eland 6, soon available and rated at 3,500 hp, will provide a total power gain of 2,200 hp. Stage length with max. payload is increased from 290 miles to 1,220 miles.

The newspaper reports that the recorded cases represent no more than 10 per cent of those actually experienced, because many pilots are reticent about reporting "what to them has become a fairly common, if disturbing, occurrence."

The hazard is attributed to the mixture on the approaches to major air terminals of civil and military traffic. One cure, it is suggested, would be a system of radar-policed approach speeds.

For Better Control

Plans to double the Air Traffic Control staff of the Transport Department were announced last month in the Commons by Transport Minister Marler. He made provision in his departmental estimates for an additional 206 persons and noted that traffic control schools had been opened at Winnipeg and Toronto.

Still under consideration, he said, was a plan to reserve certain altitude blocks on the airways system for aircraft under traffic control. "As is to be expected," he added, "some groups, particularly light plane owners, fear that they may not be able to achieve the higher standards of competency necessary to fly at these altitudes."

"We think that the difficulties have been somewhat exaggerated, because light aircraft do not normally use these altitudes; and though we are not indifferent to the rights of operators of light aircraft, we think that we must give a high priority to all factors affecting the safety of large aircraft which carry a substantial number of passengers."

An item of \$25,000 in the estimates was included "to enable us to develop

the possibility of operating one of the important northern airfields on a contract basis."

In connection with a program to replace old icebreakers, Mr. Marler said: "It has now been clearly demonstrated by our experience in helicopter use on our Arctic supply missions . . . that our icebreakers should have a helicopter permanently stationed on them."

Moving Trucks

A recent accident involving an aircraft engaged in DEW Line operations is believed to have been caused by a freak mid-air mishap when a heavy truck being carried by a Bristol Freighter shifted during flight. A board of inquiry appointed by the DoT has been investigating the February 13 crash of the Maritime Central Airways aircraft and is expected to report shortly to Transport Minister George C. Marler.

It is expected the board will say that the truck worked away from the shackles holding it in the cargo section of the aircraft and caused it to plunge to earth, killing all three crew members. The Freighter was flying out of Mont Joli, P.Q., a supply base for central DEW Line construction operations.

Budworm V

Ninety aircraft will be enlisted by the Province of New Brunswick in their fight against the ravagings of the spruce budworm this year, according to B. W. Flieger, manager of Forest Protection Limited.

More airplanes will be used this year than in any of the four previous operations. The 90 Stearman spray aircraft will be augmented by a squad of 12 inspection machines, and to cover

the two million acres involved they will operate from 11 bases, four of which are new and will be completed this spring.

For the first time, the sprayers will be carrying Canadian-made insecticide, DDT in an oil solvent. Until recently the special oil base had to be imported; however, a special plant has been set up near Chatham, N.B. to manufacture the one million gallons that will likely be required.

The areas to be treated this summer include large acreages previously sprayed in 1953.

PSC to Venezuela

A contract to share with two other companies a 225,000-acre aerial survey along the Caroni River of Venezuela has been awarded by the Venezuelan Government to the Photographic Survey Corp. of Toronto. It will take a year to complete.

The survey is intended to help develop electric power for the growing industrial area around Ciudad Bolivar. Technical consultant will be John Baber, PSC's topographical chief.

Winterized C-46s

The first of two winterized C-46 freighters ordered by World-Wide Airways of Montreal from L. B. Smith Aircraft Corp. of Miami was delivered last month. Cold-weather equipment

COMING EVENTS

April 19-20—Annual Meeting of the Environment Equipment Institute, Sheraton Hotel, Chicago.

April 23-24—AITA Semi-Annual Meeting, Empress Hotel, Victoria, B.C.

May 2—Society of Aeronautical Weight Engineers, 14th annual conference, Fort Worth, Texas.

May 2-5—Twelfth Annual National Forum of the American Helicopter Society, Sheraton Park Hotel, Wash., D.C.

May 3-4—CAI Annual General Meeting, Sheraton-Mount Royal Hotel, Montreal.

May 9-11—American Welding Society, Welding Show, Memorial Auditorium, Buffalo, N.Y.

May 14-17—ASME Design Engineering Conference, Convention Hall, Philadelphia, Penn.

June 21-22—27th Meeting, Aviation Distributors & Manufacturers Assoc., Grove Park Inn., Asheville, N.C.

August 5-17—IAS National Turbine-Powered Air Transportation Meeting, San Diego, Calif.

September 3-9—SBAC Flying Display & Exhibition, Farnborough, England.

October 1-3—Annual Convention, Institute of Radio Engineers, Exhibition Park, Toronto.

— OPERATORS' NOTES

More CPA Britannias

The original order placed last October by CPA for three Bristol Britannias has been increased to five, according to a recent announcement from Bristol. The airline's option on five more of the transports remains unchanged.

The CPA Britannias are Series 310 aircraft, which have a longer fuselage than the present Series 100 now in production. They will be powered by Proteus 755 engines of 4,120 ehp, and will incorporate increased fuel capacity in the wings, giving a maximum range of 6,220 miles.

Civil Course

For the fifth year the DoT will sponsor instructor refresher courses for civil flying instructors. Administered jointly by the Royal Canadian Flying Clubs Association and the AITA, the western course, Lethbridge, Alta., will be managed by William Paris, secretary-manager of the RCFC, and the eastern course at Brantford, Ont., by R. Scholfield of Laurentide Aviation.

Dates for the two courses are May 28—June 7 and August 20-30 respectively. Each course has a limited enrollment of 30 instructors.

Highlights this year will be an expanded instrument syllabus with demonstration flights covering advanced instrument flying in DoT Piper Apaches; continuous Link instruction; mutual instructor patter; and lectures on the psychology of teaching by Professor Carl Williams.

Bud Worm Battle

Additional forest areas in the Gaspé peninsula will be sprayed this spring against the spruce budworm, it has been announced by the Hon. John S. Bourque, Quebec, minister of Lands & Forests & Hydraulic Resources. This spraying operation is usually carried out as a complementary one to the New Brunswick operation.

The area to be doused with insecticide extends to nearly 400,000 acres, or 600 square miles, the minister noted. Three air-strips built for previous operations will be used—at Patapédia,

Cap Chat and Farm Lake and the necessary aircraft will be drawn from a fleet of 90 Stearman aircraft gathered for budworm spraying by Wheeler Airlines Ltd., St. Jovite, P.Q.

The 200,000 gallons of insecticide, DDT in an oil solvent, and the airplane fuel are already in place at the three fields, in preparation for the actual spraying which will be carried out in early June and must be completed within the few weeks during which the insect has the form of a caterpillar about $\frac{3}{4}$ of an inch long which is killed by DDT. The insecticide is sprayed in a very fine cloud, at the rate of half a gallon per acre. This year's operation in Quebec is less than half that of last year, when over one million acres were sprayed.

New CPA Hangar

Canadian Pacific Airlines has announced its plans to build a \$1,500,000 hangar at the Vancouver International Airport. The proposed building will be about five storeys high and of full cantilever construction to permit storage of the new Bristol Britannia aircraft now on order. Five of the aircraft are scheduled for delivery in 1957.

New Receivers

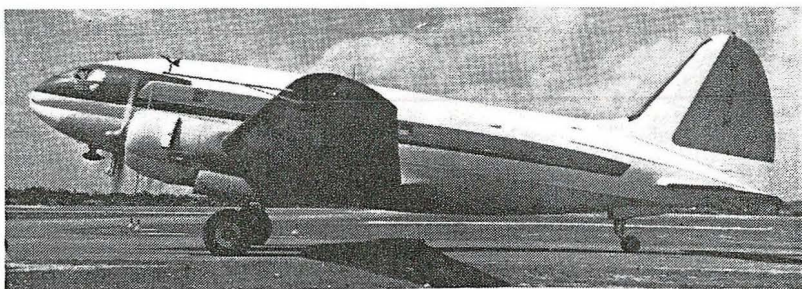
The fleet of 39 Beavers and five Otters of the Air Service Div. of the Ontario Department of Lands & Forests will be equipped with 10-channel radio receivers this summer. This will permit constant communication when an emergency requires movement of the aircraft to "hot spots" anywhere across the 1,000 mile extent of Ontario's fire district.

The regular fleet will also be supported by four helicopters, two of which will carry aerial pumping equipment, according to department officials.

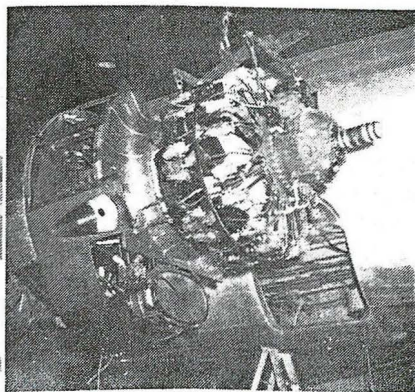
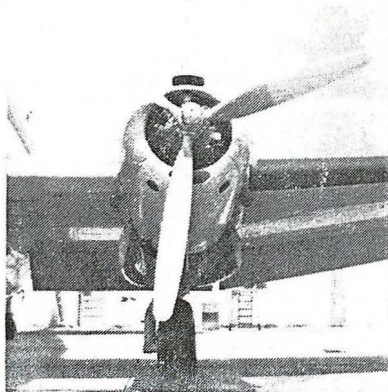
TCA Viscounts

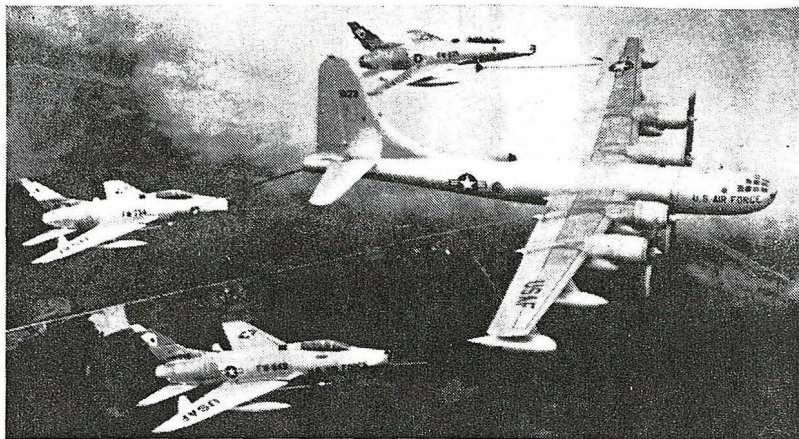
G. R. McGregor, president of TCA, has nothing but complimentary remarks for his company's new fleet of Viscounts in summing up the first year of their operation in North America. The turboprop Viscount observed its first anniversary of service in Canada on April 1. Trans-border service between Toronto and New York commenced April 4.

"The passenger appeal of the Viscount has been evident from the first



PASSENGER C-46: Modernized version of the C-46, certificated for passenger carrying at maximum gross take-off weight of 47,650 lb., has been developed by Air Carrier Engineering Services and L. B. Smith Aircraft Corp., both of Miami, Florida. Up-dated C-46 has 2100 hp P & W R-2800C powerplants. New powerplant installation is shown in pictures below; features include new stainless steel firewall and engine accessory compartment, plus effective fire detection and extinguishing units, as well as larger oil coolers.





DRAW THREE: USAF's Tactical Air Command is currently carrying out tests on the use of converted Boeing KB-50 tankers for flight refueling of F-100 Super Sabres. Using probe & drogue equipment made by Flight Refueling Inc., the KB-50 can refuel three F-100's simultaneously. The tanker can carry sufficient fuel to refuel total of seven fighters. Fuel is carried in tanks in bomb bay and under wings.

taken to go ahead with production. Such a decision, they stressed, could only be taken on the basis of potential volume production. On this point the operators were quite certain that there would be no market shortage if the right aircraft were produced . . . and a potential market for at least 200 such aircraft was confidently predicted for the U.S. alone.

Another point emphasized by the meeting was the requirement for adequate heliport facilities, particularly in large metropolitan areas. Specific guidance to city planners was agreed with respect to obstruction clearance profiles required in addition to the 200 ft. by 400 ft. take-off and landing area mentioned above. It was held to be most important that responsible city administrations make provision in their current planning for future heliport sites and that they adopt suitable zoning laws to protect approach paths to the heliport.

Engine Out: On the performance side, operators were very pleased to hear from certain manufacturers that economic multi-engined transport helicopters capable of hovering with one engine inoperative with full payload would be made available in three to five years and felt that this potential opens up a whole new horizon of operating techniques. It was agreed that, although with the development of suitable techniques, safe economic operations could be conducted without this ability, it was most desirable in order to attain regularity of schedules under low visibility conditions and to expedite traffic at congested heliports.

Throughout the meeting, it was emphasized that neither detailed regulations for operation or certification should be imposed on future multi-engined helicopters until sufficient operating experience had been gained on such aircraft.

DC-8 PREPARATIONS

(Continued from page 46)

testing an airdock at its Denver terminal. This airdock, which will be used for the DC-8, was displayed and described at the San Francisco AWA meeting. A film illustrating its operation was also screened. The airdock is a two-storey building with facilities for handling four aircraft at a time. As many airdocks as are necessary can be built at an airport, each connected by covered passageway with the next and with the main airport administration building.

Airliners are loaded or unloaded at fixed positions at the four corners of the airdock. To bring the aircraft to the fixed position, dollies are used in guide rails to take it out or bring it in to the apron. Once the aircraft is in position, its passenger doors open onto a platform leading, without steps, to the second floor of the airdock. Passengers then move along a level passageway to stairways in center of airdock which lead to the ground floor and interconnecting passageway to the administration building or other airdocks.

At same time that passengers are emplaning or deplaning, baggage moves on conveyor belts directly to or from the cargo compartment on the airplane, so that baggage arrives at ground floor center of airdock almost simultaneously with passengers, cutting down waiting time. While passengers and baggage are being looked after, refueling is being carried out from fixed platforms above the wings. Since the airplane moves to its fixed position on a guide rail, these refueling platforms can be kept in fixed places, the airplane moving up under them. This again



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Super Husky Flies

First flight of the new Leonides Husky took place at Vancouver on July 8 with A. M. (Mac) McKenzie in the pilot's seat. Mr. McKenzie, who is also vice-president of Husky Aircraft Ltd., the firm that developed the conversion, reports that flying time is accumulating rapidly and that performance has proven to be outstanding. To back up his claim for "outstanding" performance, he cites the following test figures which have been established for the seaplane version:

- Take-off at full gross in still air at SL—600 ft.
- Take-off at full gross in still air at 1,750 ft. altitude—625 ft.
- Take-off at full gross in still air at 4,500 ft. altitude—1,200 ft.
- Rate of climb at SL at take-off power—1,250 fpm.
- Rated power climb—from SL to 5,000 ft. at full gross in 5 mins. 30 secs.
- Economical cruise at 5,000 ft. at 220 hp, with a fuel consumption of 15 gph, gives a TAS of 110 mph at full gross load.
- Cruising speed at 8,000 ft. at 220 hp at full gross—118 mph.

• Cruising speed at 8,000 ft. at 305 hp at full gross—128 mph.

Says Mr. McKenzie: "The handling qualities are excellent; in fact, the larger, slow turning propeller seems to have improved handling on the water and in the air."

"We are now in a position to convert existing Husky aircraft to the new power or to offer conversion kits to the owners of these machines. We hope to have DoT approval for an increase in gross weight of 450 lbs. on floats and 750 lbs. on wheels or skis [which would bring the gross for floats, wheels, or skis, to some 7,250 lbs.]. The increase in gross on skis or wheels will make necessary a new main undercarriage incorporating a longer and larger main strut with a great increase of energy absorption. We plan to have the new undercarriage available in December."

Husky Aircraft is currently arranging for facilities to put the Husky back into production. According to Mr. McKenzie, the firm hopes to get the first "Super" Husky off the line within a year.

Conversion of the prototype Leonides

Husky was carried out for Husky Aircraft by Vancouver Aircraft Sales Ltd. However, it is understood that a subsidiary firm, Flight Products Ltd., has been set up by Husky Aircraft to carry out future conversions. Two machines are already slated for conversion to Leonides power, it has been indicated. (Additional details of the Super Husky appeared in the June issue of *Aircraft* P. 33).

Avro Shares for Sale?

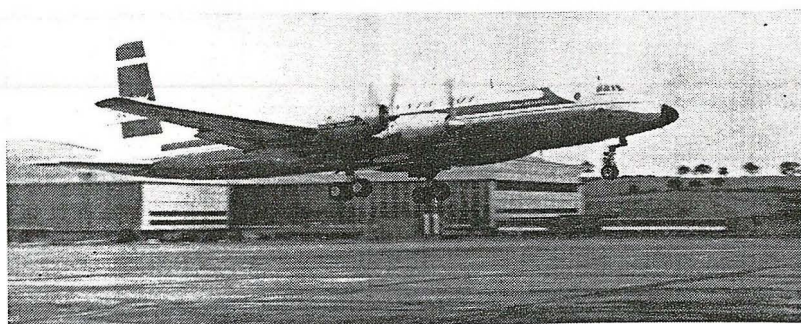
Canadian investors may soon be able to buy shares in the A. V. Roe Canada Ltd. organization, according to reports emanating from the U.K.

"Magpie's Gossip", an authoritative financial column which appears regularly in the highly reputable *Stock Exchange Gazette*, notes in the issue of July 20 that while it is not a new rumor that Hawker Siddeley may be selling part of its holding of 1,600,000 shares in A. V. Roe Canada to Canadian investors . . . "What is new is the 'hard' rumor which reaches me this week that the arrangements for marketing the shares are likely to be settled in three months time, and that the initial price is expected to give Hawker Siddeley's Canadian assets a value of [\$110,000,000] or only [\$17,875,000] less than the present market value for the British company's ordinary capital with the [\$2.75] ordinary shares standing at [\$5.50]. . .

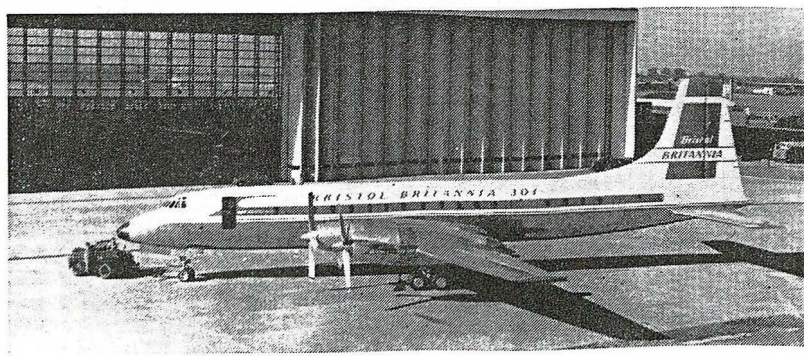
"Attaching a price tag to the Canadian assets will not increase their earnings by a cent, and pending knowledge of the portion of the issued capital of A. V. Roe Canada which is going to be placed, it would seem that the whole purpose of the operation is to enable that undertaking to place itself in funds after purchasing the entire capital of Canadian Car & Foundry last year for \$22,000,000.

"The earnings of A. V. Roe Canada have been a closely kept secret, but its assets and earnings are regularly included in the Hawker Siddeley Group consolidation, and the remarkable feature of the accounts for the year to July 31 last was the leap in the Dominion tax provision from [\$1,081,000] to just under [\$6,875,000]. Doubling this [\$6,875,000] to get a before tax profits figure and multiplying by ten would give [\$137,500,000], and mean a 10% earnings yield evaluation.

"This is 'black magic' arithmetic, but it has at least the virtue that I have not included the Canadian Car



A NEW BRITANNIA FLIES: First flight of the Britannia 301, prototype of the Series 300 and 310, took place July 31. The aircraft is shown taking off on its first flight above, and below, being towed back to its hangar after engine trials prior to the initial flight. The 301 will be used for certification tests for the 300 and 310, both of which are bigger and faster than the earlier 100, a version of which has recently been on a tour of the United States and Canada.



OPERATORS' NOTES

TCA Passengers Up 29%

An estimated 2,000,000 passengers will be carried by TCA during 1956. According to the airline, there has been an increase of 29% in the number of passengers carried during the first six months of this year over the same period last year. To June 30 of this year, 966,135 passengers were carried.

At the same time substantial increases were reported in freight, express and mail. Almost 10,000,000 pounds of air freight were carried and 5,498,200 ton miles flown for an increase of 19% over the first half of 1955. Air express increased by 11% to more than 3,000,000 pounds and mail ton miles increased 14%. A total of 542,156,249 passenger miles were flown, an increase of 25% over the results during the comparable period of last year.

100% Increase for CPA

Traffic over the CPA system has increased by 100% over that for last year according to Grant McConachie, president of the airline. Much of this increase can probably be credited to CPA's lucrative Toronto-Mexico City and Vancouver-Hawaii services. CPA has indicated that as soon as staff and equipment are available, it will step up

its once-weekly Toronto-Mexico service to twice a week, and again to four times a week during winter months.

In addition, the airline has requested permission to increase the frequency of its trans-polar flights, from Vancouver to Amsterdam, to four or more flights per week from the present three. To date CPA has carried over 4,500 passengers on this route.

The airline has also asked right to pick up trans-polar service passengers at Winnipeg. However, the Federal Government has suggested that this is too far out of the way of the Vancouver-Amsterdam flight and that it would cut into TCA's present trans-Atlantic service.

Mr. McConachie said proposals about company operations on the Vancouver-Amsterdam service via Edmonton will have to wait until a new airport is built in that city. The airline expects the airport to be ready in 1958.

Radar Units Dropped

Two airports, London, Ontario, and Seven Island, P.Q., have been dropped from the DoT's list of locations for the long range surveillance radar units soon to be installed for air traffic control purposes. These two air-

ports were among the 15 major airports across Canada that were to receive the units; however, the DoT has reconsidered its choice of sites and decided the overlap of some of the radar ranges would be too great. Each unit has a range of approximately 200 miles.

Kenora and Halifax airports have been chosen as alternative locations.

Rather than install the more expensive long range units at London and Seven Islands the Department expects to use the shorter range Decca surveillance units similar to those that have been installed at Montreal and Toronto pending the building of the Raytheon long range radar.

New Base

A new base of operations from Burrard Inlet on the outskirts of Vancouver is planned by Pacific Western Airlines. The city has given the airline permission to build a passenger terminal building at the foot of Clark Drive.

The outcome of the plan, however, depends on the DoT, which is said to have opposed in principle the idea of commercial flying in Burrard Inlet.

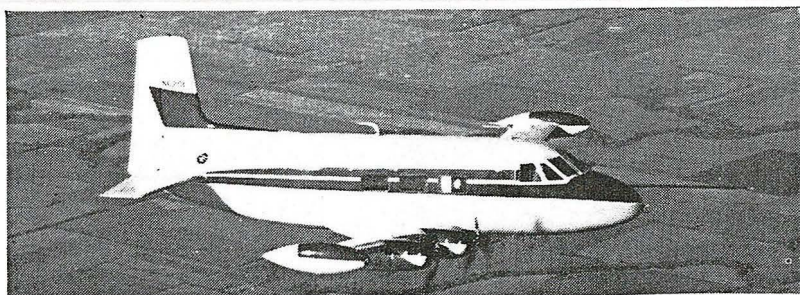
According to the Vancouver port manager, the National Harbors Board set aside two areas within the harbor for seaplane landings. One is along the north shore opposite Brockton Point, near the tidal flats; the other stretches a mile east of Ballantyne pier. It is in this latter area PWA aircraft will be allowed to land.

PWA has been granted a permit to land in the harbor on a year-to-year basis. Airline officials said that with the new base, it may be possible to resume the Vancouver-Nanaimo flight which was discontinued in June for lack of passenger traffic.

New CPA Building

Canadian Pacific Airlines has granted a contract for \$375,997 to Commonwealth Construction for the construction of a new two-storey office building at Vancouver International Airport. The contract calls for completion of the project by February 27, 1957. The new executive and administrative building is to be the nerve centre for CPA's international operations.

Attached to the present general office building by a wing measuring 35 ft. by 65 ft., the new building will con-



CESSNA 620 AIRBORNE: On August 11, Cessna Aircraft Co.'s, new Model 620 successfully made its maiden flight, remaining in the air for about 45 minutes. Cessna describes the 620 as being the world's first four-engine, pressurized airplane to be developed for the executive transport market. The engines are Continental GSO-526-A's, each developing 320 hp for take-off. Design cruising speed is 235 mph @ 18,000 feet.



ditions have been fully tested and found satisfactory by that company and BOAC.

During flights in the inter-tropical front region earlier this year, the Britannia encountered special atmospheric conditions in which dry ice crystals accumulated and compacted in the air intakes of the Proteus powerplant. These lumps of ice then passed into the engine, causing the extinction or partial extinction of the flame in one or more combustion chambers.

Since no one had experienced the trouble before, an intensive program of research had to be undertaken to determine its precise nature and, when this was known, to produce a cure. The investigation included a number of special flights from Entebbe, Uganda, in the area where the worst conditions for icing could be found. Television cameras were mounted in the powerplant so that the formation and break-away of ice could be studied during flight.

From the results of these tests, two methods of overcoming the problem were developed: 1) The use of glow

plugs in the flame tubes to ensure continuity of combustion; and 2) Modifications to the powerplant intake ducting to alter the airflow characteristics in such a way as to prevent the accumulation of dry ice. These methods will be standard in future powerplants and modifications are being made to the power units of those Britannias already delivered to BOAC.

Ski Flights

Wheeler Airlines' ski service, which brings the famous Mount Tremblant area within half an hour of Montreal Airport, has been resumed for the fourteenth consecutive year. Wheeler commenced its 1956-57 winter service between these points on December 21.

TCA Buys Collins

TCA will equip its entire Viscount fleet with Collins Automatic Pilot Systems. Installation is scheduled to begin in April with the systems being installed at the rate of three to four a month. The initial order placed by TCA with Collins is for eighteen AP-101 Automatic Pilot Systems plus

spares. The AP-101's include the Integrated Flight System which provides monitoring by pictorial representation on two easy-to-read instruments.

New Comox Terminal

Comox's new \$50,000 terminal has been officially opened by DoT District Controller of Air Services Dr. Tom How. Opening of the terminal will speed civilian air passenger traffic to and from all parts of upper Vancouver Island. Formerly, passengers had to clear through RCAF property and were restricted to a tiny waiting room in one of the Air Force hangars. A new highway, recently completed, provides a direct link between the new terminal and Comox.

This terminal is the second to be opened in B.C. recently by the DoT. The first was at Sandspit in the Queen Charlottes; a third is planned for Port Hardy.

Radar By Timmins

When a Bendix X-Band weather radar unit was installed recently by Timmins Aviation Limited in the executive DC-3 operated by Robertson-O'Connell Limited, Montreal contractors, it was the first of its kind to be installed by a Canadian company in a business aircraft.

Timmins Aviation has recently established new facilities for electronic and radio installation and servicing at its Montreal base. The company has also been named Quebec and Maritime province dealers for Aircraft Radio Corporation, and Collins Radio Company.

Revenues Up

Canadian air carriers completed a highly successful year in 1955, reporting an operating income of \$6,084,000, more than three times the income of \$1,877,000 in the preceding year. Net income after taxes amounted to \$4,133,000 compared with \$850,000 in 1954.

Dominion Bureau of Statistics figures show that with all revenue accounts showing significant increases, total operating revenue for the year reached a new high of \$152,739,000 compared with \$108,864,000 in 1954, an increase of over 40%. Operating expenses climbed 37% to \$146,655,000 from \$106,987,000 in the preceding year.

Revenues received from the transportation of passengers advanced to \$77,598,000 from \$66,749,000 a gain of

FIRST IN CANADA

World-Wide Airways Inc., Montreal, recently accepted delivery of this Curtiss C-46, which is the first of its type to get a Transport category license in Canada, and only the fifth in the world. World-Wide has since acquired a second Transport-licensed C-46.

Conversion of the aircraft to qualify them for Transport category licensing was carried out by L. B. Smith Aircraft Corp. of Miami, Florida.

The L. B. Smith conversion—known as the CW-20T—makes it permissible for the C-46 to carry passengers at a gross take-off weight of 47,650 lbs., as compared to the 45,300 lbs. to which unconverted C-46's are limited. At the former weight,

World-Wide's CW-20T's could carry up to 58 passengers; however, this company is making provision for only 42, due to the mixed loads usually carried.

The CW-20T's Pratt & Whitney R-2800 "C" engines are fitted with BMEP gauges and flowmeters, and are rated at 2100 hp each. Besides the standard CW-20T improvements, World-Wide has also incorporated in its Transport C-46's, an additional long range fuel tank, auxiliary power generator, and a special 400,000 BTU internal heater which has special ducting to direct the heat to the engine nacelles or the cabin as desired, obviating the need for ground heaters when at an out-base.



AIR LINE TRENDS

TCA Cargo Rates

The ATB has announced approval of TCA's proposed cuts in air cargo rates. The air line applied for authority to make the reductions some months ago, but the ATB withheld its decision pending settlement of the CPA application for a scheduled cargo service across Canada.

The rate reductions amount to as much as 50% in some cases, but generally average 30%. The new rates, which are expected to go into effect on January 1, apply to air cargo only, and not to air express.

Rejected

Rejection of CPA's trans-continental air cargo application, contained in a Cabinet announcement on November

loud cries of "government versus free enterprise," "socialistic," "government monopoly," etc. The hullabaloo has been so great that many seem to have lost sight of the fact that practically all passenger carrying air services in Canada are operated on a monopolistic, rather than a competitive basis. While in this particular instance the principals involved were a crown company and a private concern, similar disputes over other major routes could just as easily concern two private companies (e.g., Queen Charlotte and Pacific Western on the west coast; CPA and Quebecair in the east).

CPA was able to enlist considerable and powerful support for its cause from municipal and provincial govern-

out altering the fundamental policy of protection."

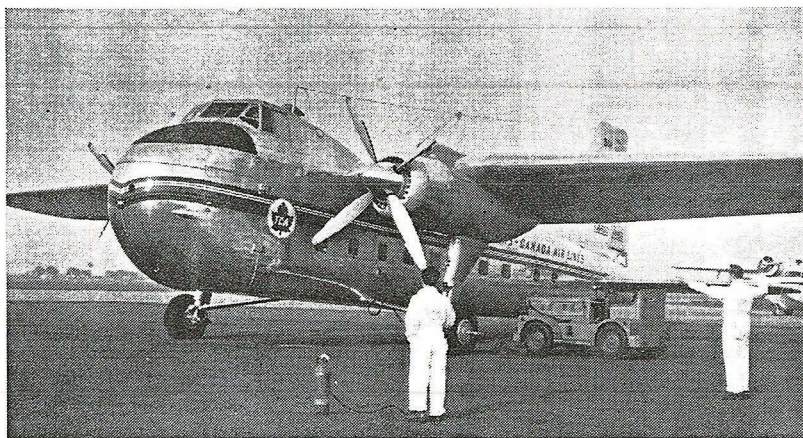
The ATB did not make any recommendations in the report on its hearing to the Cabinet, though some of its comments seemed to indicate that it favored the CPA. Said the Board, in part:

"There will always be a large volume of air cargo which will continue to move in aircraft primarily used for the transportation of passengers and mail . . . experience in the U.S. has shown that there is room and a need for both this service and for the operation of scheduled all-cargo flights in aircraft specifically designed for that purpose . . . Canada has already fallen behind other countries in this field. In the U.S., scheduled all-cargo trans-continental air services are already numerous and continue to grow.

"Although during the development stage such a service may result in an operational loss, it is considered that with proper promotional backing it should be self sustaining within a reasonable time and eventually profitable."

One interesting aspect of the case was that the Air Transport Board actually did not have the legal power to make a decision. The Aeronautics Act specifically states that: "No . . . license shall be issued in respect of a commercial air service, owned, leased, controlled or operated by any person who is engaged in the transport of goods or passengers for hire or reward by means other than aircraft unless the Governor in Council is of the opinion that it is in the public interest that such license be issued." This clause, of course, does not apply to TCA, which is owned by the CNR.

In any event, though the door has been temporarily slammed in CPA's face, it is fitted with a time lock. Nobody knows what date that time lock is set to open, but the promise that it would eventually open is to be found in Prime Minister St. Laurent's recent address to the AITA: "The decision . . . will not in the long run be a decision in favor of the perpetuation of monopoly conditions. I have stated, many times . . . that the government to which I belong believes that as a general rule the public can best be served under competitive conditions. And I believe that once the air transport industry is soundly established, the decisions to be made



FIRST ARRIVAL: The first Bristol Freighter to be delivered to TCA is shown here at Montreal's Dorval Airport. Schedule called for third and last Freighter to be delivered by the middle of this month. The aircraft are being put through a modification program by the air line's Overhaul & Maintenance Department prior to being placed in service between Winnipeg, Toronto, Montreal and New York.

11, finally rings down the curtain on a little drama that has had a record run. The fact that this drama could captivate a nation-wide audience for nearly a year virtually guarantees that it will be revived in the not-too-distant future.

The final decision was made by the Cabinet after it had considered evidence submitted by CPA and TCA, as well as other interested parties, at the Air Transport Board hearing held early this year, and also at the more recent *in camera* hearing, in which the full Cabinet heard submissions directly from the two major air carriers concerned.

The case and the decision have caused considerable controversy, and

ments most affected by its proposed service. Newspapers, too, by and large seemed to favor the private company's application; the Vancouver papers' being particularly partisan in this respect.

The air transport industry, as a group, did not take sides in the dispute, for the obvious reason that it could have caused a serious rift in the operators' section of the AITA. The members of this section did, however, cautiously say that they did not approve of competition simply for competition's sake. They also said that they believed "public interest can be adequately safeguarded by permitting competition in specific cases when it appears necessary and desirable to do so, with-

will be somewhat less in 1954, due to the introduction of tourist service and the company must depend on increased volume of passenger traffic to support its gross earnings.

At the same time, expansion of the fleet will strengthen the air line's working ability and open new opportunities for service, said Mr. McGregor.

Air Travel Survey

CPA recently carried out a large-scale concentrated survey to determine the reaction of the public to air service in general, and to their community in particular. Penticton, B.C., the city chosen for the experiment, awoke one

scheduled service between Moncton, N.B., and Goose Bay, Labrador. At present, this route is served by a Class 2 regular specific point service.

Originally, MCA made application to extend the Class 2 service between Moncton and Goose Bay, to the additional points, Gander and Torbay. This was later amended to an application to upgrade the Moncton-Goose Bay route to Class 1, at the same time extending the proposed scheduled service to Gander and Torbay, Newfoundland. Simultaneously, Eastern Provincial Airways asked permission to operate a Class 3 irregular specific point service from Torbay, serving Cartwright, Rigolet, Nain, Makkovik,

decision. Assuming that MCA's Class 3 service is successful, it will be upgraded to a Class 2 if MCA desires, at which time Eastern Provincial's application for the Class 3 service previously described, will be given further consideration.

In handing down its decision on the applications, the ATB had this to say:

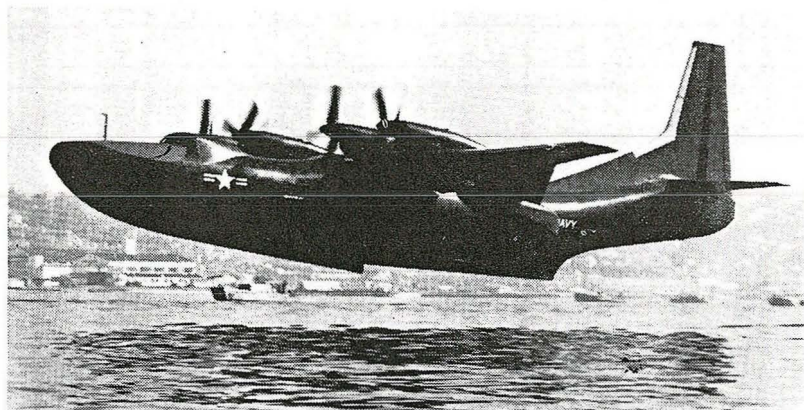
"MCA has pioneered air transportation between the areas of Goose Bay, Gander, and Torbay, and has developed over a period of years a good volume of traffic between these areas on a charter basis and has, moreover, been using twin engine equipment in the services which it has rendered to the public. While the Board does not recognize 'grandfather' rights and desires it to be known that nothing in this decision should be taken as an indication of a change in this policy, [it] is satisfied that if pioneer efforts on the part of air carriers were to be entirely disregarded it might act as a serious deterrent to the development of the aviation industry.

"Moreover, MCA has had more experience in the development and operation of regular routes than has Eastern Provincial Airways . . . and the new route applied for could be added to other regular routes at less cost to the travelling public than would be the case if Eastern Provincial . . . were to operate this route as a single unit.

"It was argued on behalf of Eastern Provincial that . . . being a company registered and carrying on business in . . . Newfoundland [it] should be allowed to develop commercial aviation within that province in preference to a company whose headquarters were elsewhere. While this is a principle which might well be given some weight in any Board decision, the Board is satisfied that it should not be by any means the major determining factor, since its acceptance as a principle could lead to a solely provincial concept of commercial aviation, rather than a national concept . . ."

Mail Plane

Deputy Postmaster-General Walter Turnbull foresees the day when night mail airplanes carrying crews of sorters to ensure morning delivery in widely-separated cities, will be operated on behalf of the Canada Post Office. Mr. Turnbull made this forecast before the



CONVAIR TURBOPROP FLYING BOAT: Shown on take-off on its initial test flight during February is the Convair R3Y Tradewind, in production for the USN. Powered by four Allison T-40 turboprops developing 5,500 hp each, the Tradewind has a maximum gross weight of 160,000 lbs. It is pressurized and will cruise at high altitudes at 350 mph. Span is 145 ft.; length, 142 ft. 6 in.; height, 51 ft. 5 in. The aircraft is designed as a long range personnel and cargo transport.

morning to find 20 CPA representatives waiting in the main streets, pencils at the ready, intent on recording the likes or dislikes of the populace with regard to air transportation.

Over 500 people were questioned during the period of a morning. As well as being asked for opinions, the public was invited to inspect a CPA Convairliner, on display at Penticton airport for the occasion. Over 20% of the population filed through the airliner in answer to the invitation. Result of the survey: inauguration of excursion fares between Penticton and Vancouver, and the commencement of a three-times-weekly Convairliner service on the route.

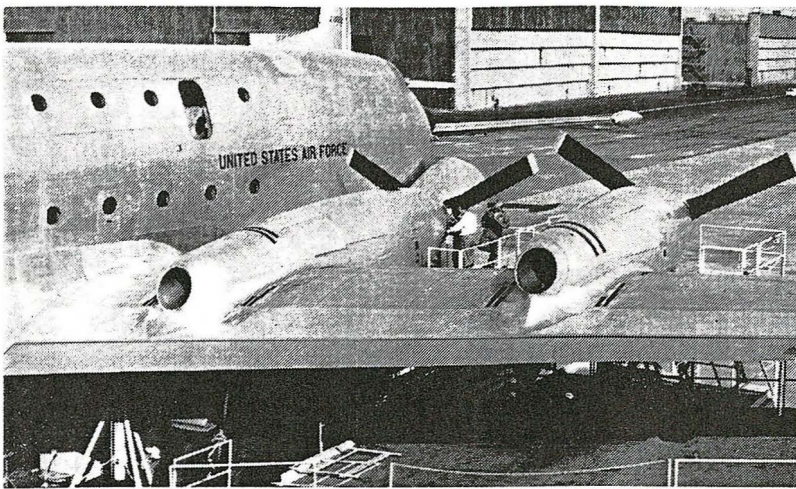
New Class 1 Service

Maritime Central Airways plans to start operation this month of Class 1

and Hopedale, via Goose Bay.

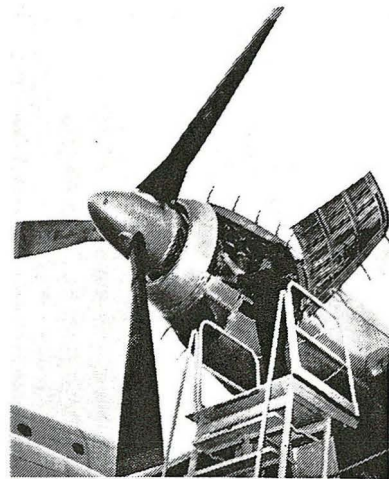
An ATB hearing was held to consider both applications and, at the outset, the DoT announced that it would not grant an operating certificate for a Class 1 service between Goose Bay, Gander, and Torbay. Subsequently MCA amended its application to a request for permission to operate a Class 1 service between Moncton and Goose Bay, and a Class 2 service between Goose Bay, Gander and Torbay.

The final result was that MCA was granted authority to operate the Class 1 segment but the service between Goose Bay, Gander, and Torbay was reduced to a Class 3 irregular specific point service to be operated on a trial basis for a year. Eastern Provincial was not so lucky; the best it could get on its application was a deferred



TURBOPROP GLOBEMASTER: The Douglas YC-124B Globemaster, with an experimental installation of four Pratt & Whitney T-34 turboprop engines, made its initial flight early in February. Each T-34 develops 5,300 shp plus 1,040 lbs. th. for take-off. The YC-124B has a normal maximum gross

weight of 194,000 pounds, a span of 174 ft. 2 in., and a length of 130 ft. Production versions of the Globemaster, which can carry up to 200 passengers, are powered by four Pratt & Whitney R-4360 reciprocating engines of 3,800 hp each. Curtiss Electric propellers are teamed with the T-34's.



and square miles of valuable and productive forests alive for as long as we have to, in order to save them from destruction by an insect epidemic."

The cost of forest spraying has been drastically reduced through improved spraying techniques, Mr. Johnson indicated. The area covered in 1953 could be sprayed again, if necessary, using existing air bases and facilities for a very reasonable figure.

It was foreseen in the report that the present three-year spraying program in New Brunswick might be extended to a longer period, as it has now become possible to spread the same expenditure over the years, and thus buy that much more time if required.

Reporting on the specific results of the 1953 operation, Mr. Johnson said that they had been satisfactory from the point of view of both the entomologist and the forester. A very high proportion of the insects were killed, and the balsam fir and spruce in the spray area show visible improvement, having retained much of their new foliage.

This year's spraying objective has been set at 1,000,000 acres, compared with 1,800,000 acres last year. The operation will cover new ground, where the epidemic is reaching the critical stage.

Some 40 spray airplanes supplied by Wheeler Airlines Limited, St. Jovite, P.Q., will be used in 1954 operations. The aircraft will operate from five airfields, of which two new ones were built last fall. This year's operation

will be located mainly in the watershed of the Miramichi River, south-east of the 1953 operation.

B.C. Propellers

Latest addition to aircraft service facilities at Vancouver International Airport is B.C. Propellers Limited. The new company, headed by K. E. Hillstrom, is located in the hangar of B.C. Airlines Limited, and offers what is described as a much needed service to B.C. operators—propeller overhaul & repair.

The repair depot is equipped to handle all metal airscrews and constant speed units. A stock of Hamilton Standard and Hartzell propellers is being maintained.

Mr. Hillstrom was formerly associated with Bristol Aeroplane Engines (Western) Limited, as foreman of the propeller shop.

Refreshing Instructors

Sponsorship of instructor refresher courses will be continued this year by the DoT. The courses will be operated on the same basis as in past years, with a total of 60 civilian instructors receiving the refresher training. The enrolment is divided equally between instructors from RCFCFA member clubs and AITA member commercial flying schools.

Once again, two courses will be operated, the first to be held at the Brant-Norfolk Aero Club, May 11-20, and the other at the Lethbridge Flying Club, August 24-September 2.

Herb Taylor of the Winnipeg Flying Club will manage the courses this year, replacing A. C. Morrison, secretary of the AITA, who has found it necessary to relinquish the managerial job because of pressure of his AITA duties.

Aero Activities

Aero Activities Limited, which had to move its base of operations as the result of the closure of Toronto's Barker Airport, has located at a new turf airfield near Maple, Ontario. The airfield has two runways, both of which have been graded and seeded.

ATB Orders

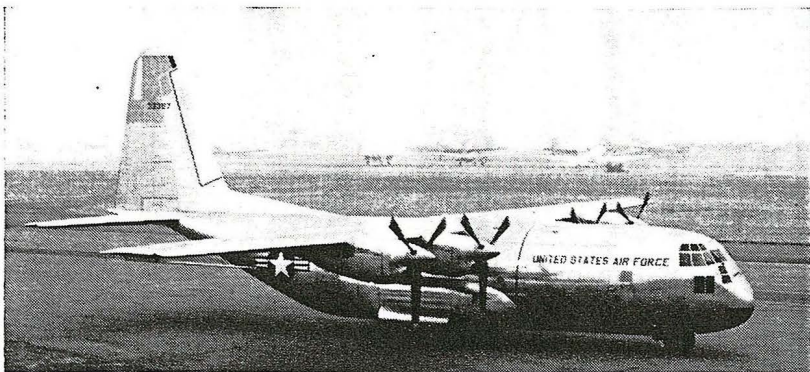
- Pacific Western Airlines has been authorized to add Victoria to its Class 2 regular specific point service serving Vancouver, Ganges Harbour, Mayne, Galiano, and Port Washington, B.C., and subject to the condition that no through passengers be carried between Vancouver and Victoria.

- The authority of Stayner Air Services to operate a Class 7 specialty/aerial advertising service from Stayner, Ont., has been suspended at the request of the licensee.

- Eastern Provincial Airways has been authorized to extend Class 3 irregular specific point service to Nain, Black Tickle, and St. Charles River, Newfoundland, and at the same time to discontinue similar service to Burlington, Western Arm, Grey Island Harbour, and Porcupine, Newfoundland.

- The application of Alton B. Macdonald to operate a Class 4 charter service from Moncton, N.B., has been approved, subject to the restriction that only Group C aircraft be used.

- The application of Cariboo Air Charter to operate Class 4-C charter and Class 7 specialty/recreational and flying training services from Kelowna, B.C., has been approved.



TURBOPROP BUNDLE BUGGY: The Lockheed YC-130, USAF turboprop-powered transport, made its initial flight late in August, getting airborne in an extremely short distance, according to the manufacturers. Powered by four Allison T-56 turboprop engines of 3,750 eshp each, driving Curtiss-Wright Turboelectric propellers, the YC-130 can carry loads of up to 20 tons. It is pressurized and has a span of 132 feet, a length of 95 feet, and a height of 38 feet.

conduct in saving an airman from death or injury from an exploding grenade during ground defence training.

BUSINESS FLYING

(Continued from page 16)

but widely available on the second-hand market have not been singled out for individual attention, yet they form



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a substantial part of the Canadian business fleet. Airplanes in this category include the Stinson Voyageur and and Station Wagon, the Sea Bee, the Fleet Canuck, the Aeronca Sedan, and the Cessna 120-140, to name just a few typical types.

the future

WHAT is the future of business flying in Canada? It is promising, but growth will be slow. Government regulations tend to stifle it to some degree and are directly responsible for the contrast between Canadian and American operating costs for identical types of machines. The 10% sales tax is the biggest offender in this respect. While the complete elimination of this tax is highly desirable for a healthy Canadian business flying industry, its insidious effect would be largely nullified if spare parts and equipment for use on aircraft in Canada were exempted. The 10% on the original

purchase price of the airplane cuts deep enough, but it is the continued gouging on spares that really hurts.

DoT hangar rental policies also arouse the ire of the business airplane owners and the very mention of the DoT at all is apt to bring incoherent strangling sounds from some of these individuals. As one owner succinctly sums it up: "We'd like to buy an additional Navion for our business . . . also a Mooney Wee Scotsman for good, cheap one-man transportation. But the DoT's attitude toward hangar rental space is stupid and short-sighted, and by charging exorbitant rates they are stifling small-plane ownership. Tell them to wake up and help the plane owner, not make it more difficult to own and operate a plane."

But these shortcomings do not represent the biggest hurdle that the Canadian business flying industry must clear before it begins to make the enormous strides of its American counterpart. More formidable is the ignorance barrier of Canadian business in general. Business men simply are not aware of the advantages of airplane ownership. They have to be shown. There is clearly a need for a large-scale promotional campaign aimed at the business man whose knowledge of aviation is limited or non-existent. Whether the leadership necessary for this promotional campaign comes from the Canadian Owners & Pilots Association or the new executive aircraft owners and operators committee of the AITA is relatively unimportant. The important thing is that it cannot come too soon.

P & W J-57

(Continued from page 20)

The big turbojet weighs in at a hefty 4,200 lbs. and has a length (as shown in the accompanying photographs) of 160 inches. Diameter is 40 inches. The considerable weight of the J-57—nearly 700 pounds more than the Bristol Olympus—is due mainly to the high steel content of the Pratt & Whitney engine. The company reckons that extensive use of titanium would bring engine weight down by several hundred pounds. However, the high cost of titanium and its limited availability at the present time make this method of weight reduction impractical for now.

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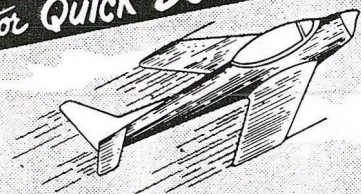
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NEWS ROUNDUP

Crown Assets Disposal

The annual report of Crown Assets Disposal Corporation for the year ended March 31, 1954, shows that the Crown company sold aircraft and aircraft components for a total of \$54,320.05 during the twelve months.

Individual sales were as follows: Ventura airframe (1), aircraft seats (12), Wasp engines (15), and Ventura spares, to Leeward Aeronautical, Miami, Florida, \$22,305; Wasp engines (12), to Spartan Air Services Ltd., Ottawa, \$9,600; aircraft material, to H. Z. Rosenberg Co., Buffalo, N.Y., \$4,905.05; aircraft equipment, to Ajax Aircraft Parts Ltd., Ottawa, \$4,325; aircraft standard parts, to Ajax Aircraft Parts Ltd., \$3,595; aircraft materials, to Wright Aeroplane Salvage, Calgary, \$3,575; miscellaneous aircraft equipment, to H. Z. Rosenberg Co., Buffalo, N.Y., \$3,350; aircraft equipment, to Consolidated Aircraft & Supply Co., Rochester, N.Y., \$2,665.

Well Worth Noting

A monument was recently unveiled at Wasaga Beach, Ontario, commemorating an epic flight of twenty years ago, when two fliers completed the first non-stop air trip between the mainland of Canada and England.

The two men, James R. Ayling and Leonard G. Reid, took off from Wasaga Beach (on Georgian Bay) with the intention of flying to Baghdad, India. However, they were forced down by lack of fuel and bad weather at London, England, after flying 3,700 miles in 30 hours, 55 mins. The earlier and better known flight of Alcock and Brown was between England and Newfoundland, rather than the mainland of Canada.

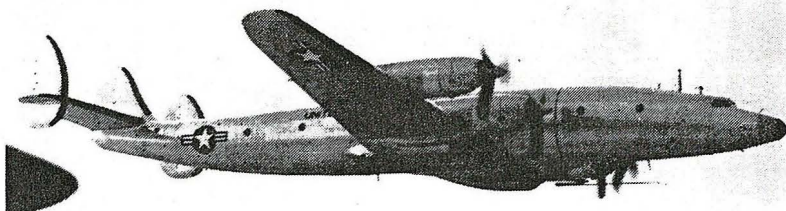
James Ayling, who was born in India, now lives in South Africa, while Leonard Reid, a native of Montreal, was killed in an automobile accident in England in 1939.

Ice Wagon Goeth

The RCAF's "Rockcliffe Ice Wagon" is no more. After about five years of operation in icing research work, the specially-fitted North Star has been shorn of its great dorsal fin atop the forward section of the fuselage, and



LOCKHEED TURBOPLANES: Above is the USAF's Lockheed YC-130 transport taking off on its first flight, while below is the USN's Lockheed R7V-2 turboprop-powered Super Constellation. The YC-130 is powered by Allison T-56 turboprop engines, and the R7V-2 has Pratt & Whitney T-34's of 5,700 hp each. Lockheed claims that this turbine version of the Super Constellation is the fastest propeller-driven transport in the world—440 mph cruise.



AIR LINE TRENDS



Easy Journey

Many of the obstacles to fast international air travel hitherto presented by government red tape requirements have been substantially ironed out on world routes, according to a recent announcement from IATA. This organization reports that action by national governments, in line with recommendations by ICAO, has eliminated many slow-downs and waste motions due to overlapping, conflicting or unnecessary demands for aircraft, crew, passenger, and cargo documents for customs, immigration, health and currency control.

The following routes have to a large degree been freed of red tape: Internal European routes; long-line routes, via the North Atlantic to London, Rome, Western Europe, and the Middle East, India and Pakistan, to Singapore and Bangkok; North Atlantic routes via Western Europe to South Africa; North Atlantic routes via Western Europe to Australia; Middle Atlantic routes to Europe.

Difficulties are still experienced, however, on routes between Europe and South America, and between the United States and South America, Australia and Japan, and the Philippines. Operations inbound to the U.S. and Canada also still present documentary troubles.

Among the formalities that are noted as troublesome by IATA are Canadian requirements for aircraft cargo documents; Turkey's requirements that international aircraft documents be filled out in Turkish; burdensome documentation in Brazil; special passenger address information required by Australia; the Iraqi requirement of transit visas for all passengers flying through Basra.

IATA recommends a standard visa

form which would be intelligible to all air line and government personnel despite variations in language.

New CPA Service

CPA recently inaugurated a tri-weekly service between Edmonton and Dawson Creek, B.C. Dawson Creek, which is located in the Peace River country and is Mile Zero on the Alaska Highway, as well as terminal of the Northern Alberta Railway, will be served by DC-3s. Dawson Creek civic officials have expressed the hope that traffic volume will soon be sufficient to warrant daily service.

Flying Pilgrims

Arrangements have been made with the Catholic Travel League by Colonial Airlines to fly pilgrims along its route system to Montreal, where groups will leave every Sunday for a seven-day religious tour, culminating on the

fourth day at the Shrine of Miracies, Ste. Anne de Beaupre, Quebec City.

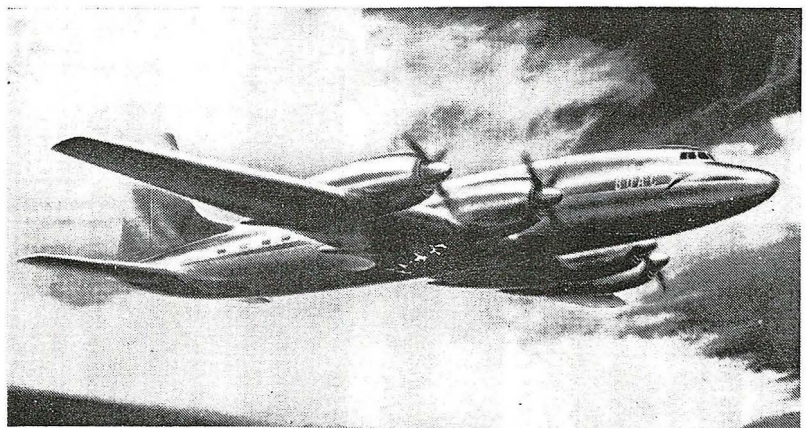
Each pilgrimage will be under the personal leadership of a specially appointed spiritual director and tour escorts. The tour includes a full day at the Shrine, a three-day cruise on the St. Lawrence and Saguenay Rivers, and accommodations at the Chateau Frontenac in Quebec and the Mount Royal in Montreal.

Airplane Wharf

The advent of the widespread use of all-cargo airplanes between major air terminals has brought operators face to face with many new problems of rapid loading and unloading. To cope with these problems Northwest Airlines is planning to make use of facilities which will make it possible to load and unload a freighter aircraft like a ship at a wharf. The first of these wharfs is now nearing completion at Wold-Chamberlin Field, the Minneapolis-St. Paul airport.

A large concrete dock, extending to the aircraft apron, will serve as the wharf; a conveyor belt will be the modern version of a gangplank; and a large specially-built door will do duty as a hatchway. This will make it possible for a freighter to pull up to the dock where the loading and unloading may be carried out speedily and with a minimum of handling.

In addition to the dock, Northwest is building a new air freight terminal and are considering the installation in this building of a 75-foot conveyor belt



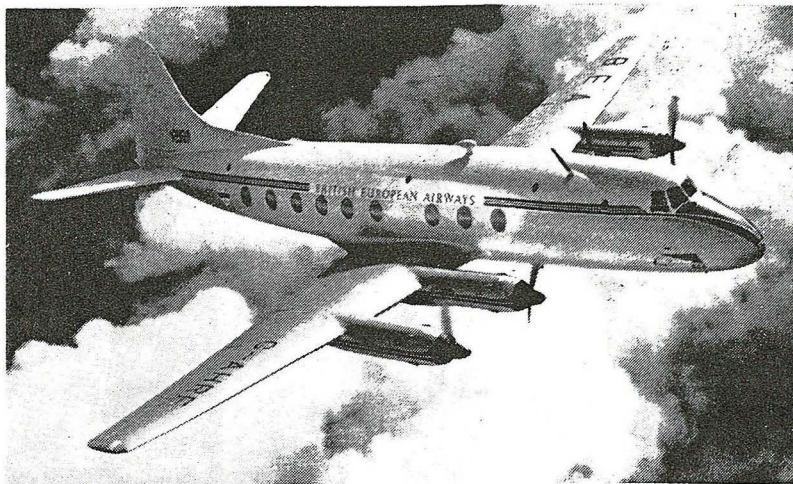
BRISTOL 175: An artist's impression of the Bristol "175" civil airliner, several of which are being built for BOAC. The 175 is intended to carry up to 62 passengers over moderate ranges. It may be powered either by Bristol Proteus prop-jets or Bristol Centaurus 663 engines. A payload of 17,610 pounds may be carried for a still air range of 2,300 nautical miles at a mean cruising speed of 295 knots TAS and mean altitude of 29,000 feet (with Proteus engines). Undercarriage is tricycle.

to drop the banner immediately, no danger will be caused to the people below, as the banner's rate of drop is similar to a released kite and there is nothing very solid to do any damage.

With the lighter Cessna 170, the pilot is well aware that he has something attached behind; the whipping of the tail end of the banner sends continual small jerks up the aircraft. On the T-50 however, one can hardly tell that there is anything attached; during a rate one turn or greater it is possible for the pilot to look behind and see the banner. Thus in straight flight it is possible to lose the banner without immediately realizing it.

No Harm Done: This did occur once over the city of Edmonton. The towing rope snapped during an increase in rpm; unaware that the banner was slowly floating down onto the city below, the pilot flew on, intent on boost, height, and airspeed, which, on as bumpy a day as this was, keep one busy. The Edmonton airport control tower, who had been watching with glasses, informed the pilot by radio that he had lost something. On doing a turn, a significant short length of rope was all that could be seen. As for the banner, it had floated down and settled over some street car lines. Upon recovery later it was found to be undamaged and had caused no harm.

Forwards and Backwards: There is no doubt that anything unusual in the air attracts a great deal of attention. If one person looks up, it automatically induces the majority of those around to do likewise. An aerial banner has the aspect of being unusual, and consequently the advertising value is correspondingly high. Messages are easily legible to the average eye for a distance of some two miles on either side of the aircraft. To viewers on the left hand side the message is like an outstanding newspaper headline, but to people on the right the message is opposite to normal reading. This does not detract from its advertising value, rather it tends to increase it. Humans are instinctively curious beings, and nine people out of ten when seeing a short message in clear block capitals, backwards, will spend a few seconds deciphering for their own curiosity. In addition, the message is clear cut, short, and has no other distractions around it. The red letters stand out as well against clouds as against blue sky.



FLYING IN THE VISCOUNT

While in England recently the Editor of *AIRCRAFT* had an opportunity to fly in the prototype of the Vickers Viscount. This flight, arranged by Vickers-Armstrongs, designers and builders of the aircraft, proved to be a most unusual flying experience.

Much has been written about the quietness and freedom from vibration of the Viscount and we are only too pleased to report that it is all quite true.

Even taxiing in the Viscount is a pleasant experience. The pilot apparently has extremely positive steering and braking control for he is able to scoot along taxi strips and turn corners at a rate of speed that seems highly unusual for an aircraft the size of this one.

We flew in the Viscount from Wisely Aerodrome, Vickers own field, which has an excellent all-turf surface and is located at Weybridge, near London. The sod runways, though as smooth as it is possible for their type to be made, were uneven enough to give a good demonstration of the springing in the undercarriage of the Viscount. This is particularly good.

Noise while taxiing is limited to a slight rumble and a faraway whine that is not in the least disturbing and does not interrupt normal conversation.

For take-off the brakes are set and the four Rolls-Royce Darts opened up. Only when these were

winding right up was there any additional noise, and this, we understand, was propeller noise. Acceleration was rapid, with the Viscount getting airborne smartly. We climbed quickly to 12,000 feet and flew above the overcast.

The smoothness of the flight, the quietness, and the ostensible manoeuvrability of this aircraft were genuinely impressive. There was little difference between the noise level when taxiing with the engines only idling and when cruising at altitude. To say that the passenger cabin is silent would be erroneous, however, the most obvious noise is the high pitched whine already mentioned. This, we were told, was made by the pressurization equipment and it was expected that it would be silenced in the production version, which will be known as the Viscount 700.

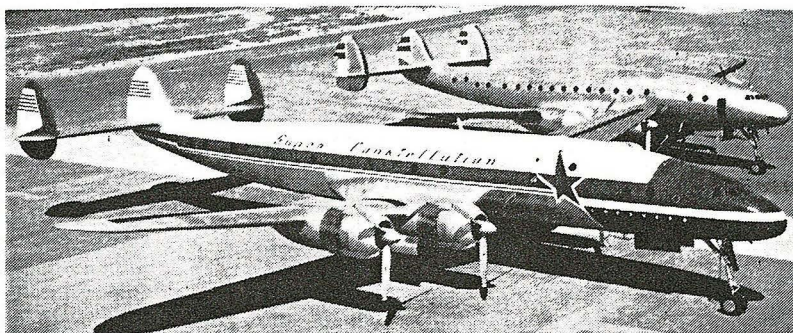
The windows are elliptical in shape and very large for a pressurized airplane (as are the doors). We were sitting on the starboard side in approximately the same position as the fourth window from the rear, so that by squishing our nose against the window we were able to see the horizontal stabilizer almost in its entirety. In other words the passengers' visibility is particularly good. Quite frankly, from the passengers' point of view, we can't imagine wanting to travel in a piston engine type of airplane after a ride in the Viscount.

now in Texas which will be for nothing but agricultural use, and that it will embody all the features which the operators feel are necessities in this line of work. When you see a little 85 or 90 hp aircraft use up the best part of a mile field of summerfallow to get off, and then stagger into the air on a hot day, clearing wires by inches, you know that this is a threat to safe operation which you just cannot tolerate very much longer. When you see a small airplane thrown over on its back because of a sudden prairie whirlwind, you realize that here again is another threat to the success of the general operation.

Personnel Qualifications: Following close on the regulations of types of aircraft approved, comes approval of personnel to fly the aircraft. We have found that if a pilot has a commercial license, it certainly doesn't mean that he's going to make a spray pilot. Conversely, too, we have found that a good spray pilot may not be much good when it comes to doing a safe long range cross country flight.

We believe that a course of at least fifteen hours in spray flying procedures should be given to any pilot who desires to do this type of work, and that his license should be endorsed to show that he is approved to do it. We believe that such an approval should also contain some form of authorization from the Department of Agriculture indicating that the pilot has a reasonable knowledge of the chemicals he is applying, so he's not just out spraying anything that happens to be in his tank. This is very important, because the amount of damage which could be done by a pilot mishandling a chemical, could run into thousands of dollars of crop in only a few minutes of work.

Crop Insurance: This brings up the problem of crop insurance. Crop insurance is the sort of thing which we believe will be made mandatory, possibly by the Department of Agriculture, before the aerial spraying business gets too far along. The reason for this is, as I just mentioned, a pilot could do a tremendous amount of dollar damage in a very few minutes. To put it down into actual figures, suppose a pilot was spraying with a Beaver and he sprayed 400 acres in roughly 45 minutes. If he did not take care in the loading of his airplane, if he wasn't positive of the mixture in his chemical



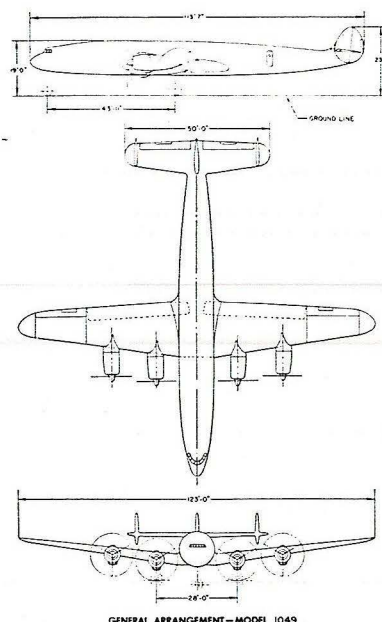
The Super Constellation

Almost ten years ago the first Lockheed Constellation was laid down by Lockheed Aircraft Corporation. The Constellation seemed, and was, a big, sleek airplane at that time. Since then the Constellation has proved to be one of the world's superior transports . . . an opinion that is borne out by its popularity as indicated by the more than 200 aircraft of this type that are being flown all over the world by a variety of air lines.

Latest in this long line is the 1049C Super Constellation the prototype of which was displayed recently to the annual meeting of the IATA, held this year for the first in San Francisco. Some idea as to what lengths the development of an airplane can be carried may be derived from the increase in maximum take-off weight of the Super Constellation to 130,000 lbs., almost double that of the first Constellation. And with its fuselage length of 113 ft. 7 ins., it is 18.4 feet longer than earlier models.

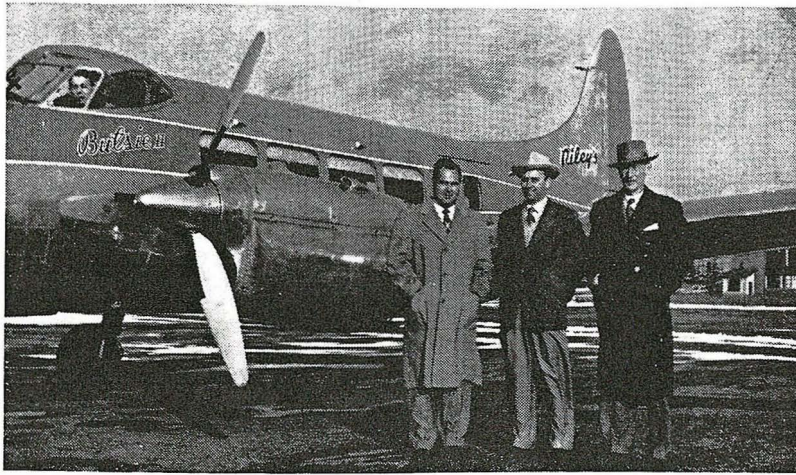
No firm performance figures have been announced, but Lockheed claims that this aircraft will be the fastest American-built commercial transport . . . and that it is the first truly non-stop trans-Atlantic transport ever to be built. It is powered with four Wright 3350-DA Turbo-Cyclones developing 3250 hp for take-off, which is roughly 30% more power than its predecessors had at their disposal. Lockheed also states that it will be 50 mph faster than present competitive trans-ocean planes.

Still with the percentages, the Super Constellation also lords it over preceding Constellations in the



matter of passenger capacity by some 41% and cargo space by 68%. Cabin space is provided for 76 standard fare passengers or up to 110 coach fares.

An interesting innovation for commercial transports is the stressing of the wings to carry tip tanks to increase fuel capacity for long range flights, should such be desirable to the operator. According to Lockheed, the 1049C's passenger windows are the largest ever built into an airplane. The machine is pressurized for up to "the 30,000 foot altitudes at which turbo-propeller power operates most efficiently". The latter statement has reference to Lockheed's plans to eventually replace the Turbo-Cyclones with turbo-prop engines at what it considers the suitable time. Electro-pneumatic de-icing is to be used on the flying surfaces.



NATURALIZED DOVE: First de Havilland Dove to be certified in the U.S. is shown above. The aircraft was delivered at Toronto during December bearing registration N 4550N. Shown in front of Dove, L. to R. are: Jack Riley of Riley Aircraft Corporation, Shreveport, Louisiana, first Dove distributor to be appointed by de Havilland in the U.S.; Thane Minor, sales manager & demonstration pilot, Riley Aircraft; Sandy A. F. MacDonald, sales manager for de Havilland Aircraft of Canada. The aircraft shown is an executive model.

pay the transportation costs to and from the conference, and supply aircraft and gasoline for any or all air work involved. Participants would be expected to pay their own accommodation and personal living expenses. August has been put forth as the best month for the courses, which would be nine days in duration. The lecturers will possibly include personnel from the RCAF and from the major air lines.

First Arrivals

The first group of RAF aircrew trainees scheduled to earn their wings at RCAF flying schools during 1951 arrived by air at Dorval P.Q., on January 13. The initial party consists of 28 pilot trainees, and arrived aboard an RAF Handley Page Hastings transport. The group immediately

proceeded to RCAF Station, London, Ontario, for a two week pre-flight course before going to Gimli, Manitoba.

The trainees form the first contingent of 200 RAF aircrew, including both pilots and navigators, to be trained in Canada during 1951.

It was further announced recently by Defence Minister Brooke Claxton that Canada was offering the North Atlantic Treaty Organization the chance to increase substantially their training in Canada. Mr. Claxton added that he considered this "one of the most important ways in which our special facilities and experience can be made available to assist other countries in meeting the need they all feel." The increase referred to would be in addition to the 200 RAF and 100 Continental trainees previously mentioned.

Third Party Risk

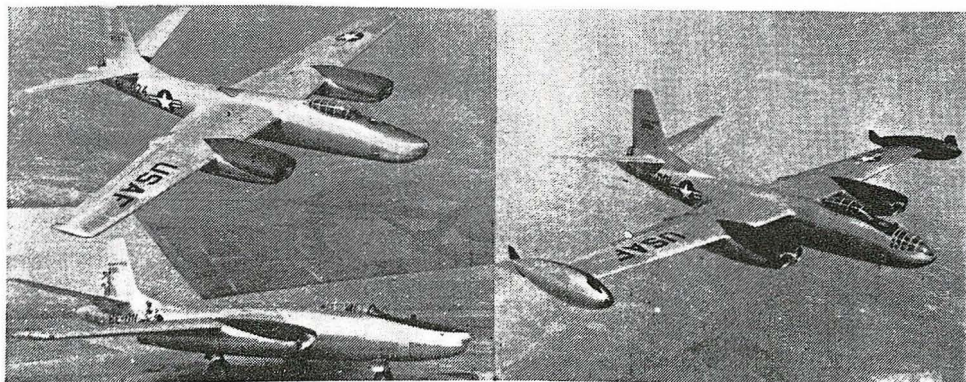
The protection which must be afforded innocent third parties on the surface against the risks of air navigation is being studied by ICAO's Legal Committee, now meeting in Mexico City. Legal experts from more than 25 countries are attempting to finalize a new draft convention on damage caused by aircraft to third parties on the surface with a view to having the convention adopted in 1951.

The main problems to be solved before a final draft of the convention is prepared include such matters as the definition of the term "operator"; the system of liability; the jurisdiction of courts to adjudicate claims, arising under the convention, and to grant execution, where required, of the judgments rendered in the courts of contracting states and the insurance requirements to be included in the convention. In addition, the Committee is also considering aspects of the problem of aerial collisions which relate to the draft convention.

The present draft provides for limited liability of the operator except when his conduct is such that it would be against the public interest to limit liability. However, it has been argued that, if unlimited liability should apply to all cases of negligence, the practical importance of a system of limited liability would be extremely small. Therefore, a special group of circumstances has been introduced to cover cases where the person suffering damage is able to prove negligence, or another wrongful act, on the part of the operator, which cannot be classified as intentional; in such circumstances, the liability would be three times the usual amount of limited liability.

SPECIAL MISSIONS:

The latest version of the North American Tornado is the RB-45C, a photo-reconnaissance bomber, shown at left. At right is B-45C with wingtip tanks. The YB-45C is fitted with five camera stations and is powered by four GE J-47As. Aircraft is said to be in the 550 mph class. With a maximum gross t/o weight of 110,000 lbs., it has a service ceiling of over 40,000 feet.



Fleet Is Back

When Fleet Manufacturing and Aircraft Limited dropped the "Aircraft" from its name, and became simply "Fleet Manufacturing Limited", it was generally accepted that Fleet had abandoned aircraft manufacturing for good. Soured by the failure of the predicted postwar personal plane market to materialize, the Company reorganized its facilities to make buses, aluminum screen-storm windows, and other sundry products. This kept the firm busy until such time as materials shortages started to pinch output seriously.

But President George Clarke looked over the Fort Erie, Ontario, plant and decided that if it had played such an important part in World War II aircraft production, it could easily do the same job in the present defence build-up. He and his men went out after orders—they got them, too. Recently Fleet revealed that it had letters of intent for orders with a reported total value of about \$7,000,000.

It is going to produce nose assemblies for USAF Republic F-84 Thunder jets as sub-contractor to Republic Aviation Corporation; for Avro Canada it is to make outer wing panels for CF-100s; and for de Havilland it is going to manufacture Beaver wing and fuselage components. In addition, it is to do sub-contract work for two electronic firms. These orders are expected to boost employment from its present 200 to a possible top of 2,000.

RCN Buys Bells

The RCN has purchased three Bell helicopters which it plans to use in connection with its Arctic operations. The machines will be based at HMCS Shearwater until such time as a specially built patrol craft now under construction for the Navy at Sorel, P.Q. with helicopter landing platforms fore and aft is completed.

The helicopters will be used for spotting ice fields, and general communications, liaison, and northern rescue work.

New Sub-Contractor

Chatco Steel Products Ltd., of Tilbury, Ontario, has been given the job of manufacturing CF-100 sub-assemblies, according to a recent joint announcement from Avro Canada Vice-President & General Manager Walter

Deisher, and Chatco President H. S. Shannon.

The assemblies to be made by Chatco include rear centre section fuselages, rear fuselage sections, tailplanes, rudders, fins, and tail cones.

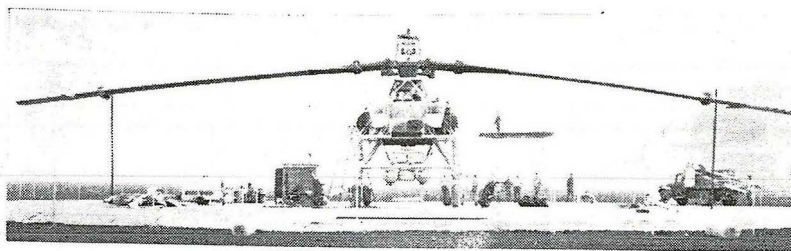
It is estimated that the program will require from 800 to 1,000 workers.

RCAF Neptunes?

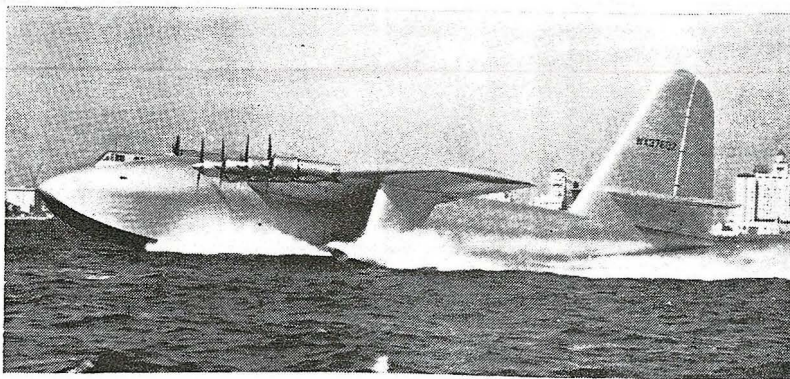
An RCAF party recently paid a visit to Lockheed Aircraft Corporation in California, where they studied performance and technical data on the P2V Neptune. The party, composed of

Beechcraft T-36 twin engine trainer, has been made by Canadair President John Jay Hopkins. American sources say that the bulk of the order has gone to Canadair, rather than to Beech, whose design proposal was selected by a narrow margin over Canadair's in a USAF design contest. Canadair says that it will also be producing an unspecified number of the trainer/transports for the RCAF.

In addition to the aircraft which the Canadian company will produce as a prime contractor, it will co-operate with Beech in the engineering design of the aircraft, and in the design and fabrication of many of the tooling items. Production of the T-36 by Can-



TWO GIANTS: Each the biggest thing in its class, the Hughes HK-1 flying boat and XH-17 helicopter are soon to be taking to the air. The HK-1 first flew in 1947 and is scheduled to fly again this month. Built entirely of Duramold processed plywood, it grosses 300,000 lbs., and is powered by eight P & W Wasp Majors of 3000 hp each. Wing span is 320 ft. 6 ins. Below is the XH-17 "flying crane", said to be designed to lift heavy weights short distances (tanks, etc.). Its 136 ft. span, two-blade rotor is turned by two General Electric J-35 turbo jets. It is the largest helicopter in the world, but is not yet quite ready for its first flight.



Squadron Leader W. Y. Martin, Group Captain R. D. Davis, and Squadron Leader R. R. Ingrams, also flew in the Neptune with Lockheed test pilots.

The Neptune has been in service with the USN since 1945, and recently Britain and Australia announced that they were to purchase fleets of the latest model of the aircraft.

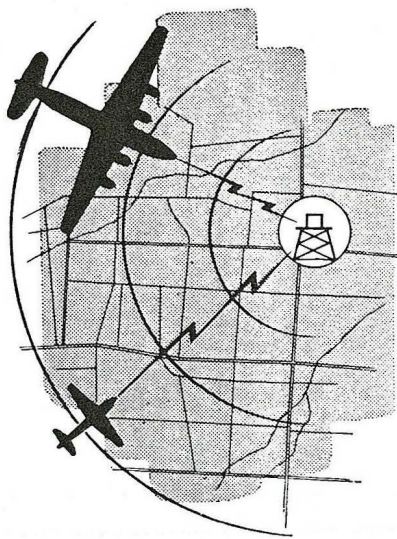
Confirmation

Confirmation of the selection of Canadair Limited by the U.S. government as joint producer of the new

adair marks the first time the USAF has placed an order of this size outside its borders. Canadair's initial share is reported to be 300 aircraft.

Canadair describes the T-36 as being basically an advanced twin-engine trainer, but readily convertible to cargo transport. The cabin has ten rearward facing seats, which can be folded away for quick conversion to cargo carrying. As a cargo aircraft it provides approximately 500 cu. ft. of space and can handle 4,000 pound loads.

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AIR LINE TRENDS

CPA Luxury Cansos

It has been revealed by officials of the Southern California Aircraft Corporation, Ontario, California, that CPA has placed orders for the reconversion of three of their Cansos to executive-type aircraft, similar to the fabulous Landseaire.

The Landseaire produced by the California firm represents the last thing in executive travel and boasts such luxuries as electric ranges, fridges, and television. One Canso is already undergoing alterations, two more are on their way.

Record Revenues

Operating revenues of Canadian air carriers in March rose to a new record total of \$3,970,891, according to the Dominion Bureau of Statistics. This represents a gain of \$768,678 or 24% over the same month last year. Expense items during the month were generally heavier at \$3,690,828, up \$269,392, or 8%. Net operating revenue was thus \$280,063 against a debit of \$219,223 in March last year. Revenues of scheduled carriers reduced their operating debit to \$35,983 from \$57,117.

TCA Aircraft Purchases

TCA has placed an order with the Lockheed Aircraft Corporation for the purchase of five Super Constellations, the first new equipment to be ordered by the air line since it bought its North

Stars following World War II. The Super Constellations involve an expenditure of \$1,500,000 each.

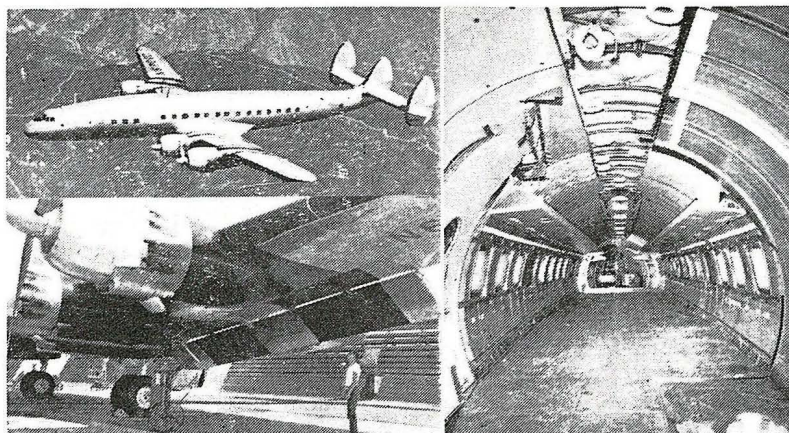
The announcement was made by TCA President Gordon R. McGregor, who simultaneously confirmed that three North Stars and parts were being purchased from CPA at an aggregate price of \$2,000,000.

The Super Constellations are scheduled for delivery late in 1953 and will be used on TCA's overseas routes, while the additional North Stars will enter service early in 1952, providing the expanded capacity needed for system traffic requirements in the immediate future.

These aircraft (see *Aircraft*, December, 1950) have a maximum take-off weight of 130,000 pounds and is powered by four Wright Turbo-Cyclones developing 3250 hp for take-off. With a maximum speed of 374 mph, they are expected to reduce present trans-Atlantic flight times by as much as four hours, offering non-stop service over the 3,280 mile distance between Montreal and London in 10½ hours. TCA has not specified what seating arrangement it plans to obtain, but the Super-Constellations can carry up to 93 passengers on this type of service.

Two-Fare System

World-wide air tourist services were commented on in London, England, by Sir. William Hildred, director general of the IATA, at the Seventh An-



NEW CANADIAN: Scheduled for service with TCA in 1953, the new Super Constellation is shown at top while on its first flight. At right is what Lockheed describes as the longest passenger cabin of any commercial transport (83 feet 2 ins.). Lockheed also claims the 16 by 18 in. windows are the largest on any major transport. At lower left, wing area behind engines is painted to protect skin from corrosive effect of concentrated exhaust gases from Wright Turbo-Cyclones and to hide smudges.



FIRST FLIGHT: Shown on its first flight is the new Martin 4-0-4, 103 of which are on order, including 60 for Eastern Air Lines and 40 for Trans World Airlines. The 4-0-4 is an enlarged and improved version of the 2-0-2. The aircraft carries forty passengers in a pressurized cabin and is powered by two Pratt & Whitney R-2800s.

turning by rail increased in numbers to 237,887 from 225,215; by bus to 250,780 from 235,794; by boat to 24,808 from 22,647; and by plane to 69,212 from 49,802.

It will be noted that the total gains registered by air travel exceeded those of rail travel by a considerable margin: 27,704 for air travel and 20,785 for rail travel.

Total number of visitors from the U.S. to Canada using the four modes of travel rose 4.5 per cent to 463,311 from 444,997 a year ago, while returning Canadians increased 9.2 per cent to 582,687 from 533,458.

Family Fares

Family fares were re-introduced on TCA's North American services on October 1 and will remain in effect throughout the winter, supplementing the year-round group travel fares now in effect on all North American services. Family fares provide for half-fare rates for family members up to the age of 21 years, with the purchase of one full-fare ticket, if travel is on a Monday, Tuesday or Wednesday. The group travel rate permits ten or more people originating and travelling to the same destination to save 10 per cent on the regular fare.

TCA Convention

TCA Western Region operations managers convened at Banff Springs Hotel recently. The theme of their discussions centered about the ways and means in which TCA service to the public could be improved. Reports were that due to limited space, emphasis is to be placed on service rather than sales.

Briefly

- Increased demands on American Airline's non-stop Toronto-New York service may result in the use of 52-passenger DC-6s in place of the 40-passenger Convairs, according to P. E. Priestman, American's Canadian sales manager.

- Approval has been given to the

applications of CPA to operate a Class I service between Montreal, Quebec, Chicoutimi, Forestville, Baie Comeau and Seven Islands; a Class I service between Montreal, Val d'Or, and Noranda/Rouyn; and Class 4 charter service from any point which the applicant is now or may be authorized to serve on a scheduled service.

- New flight portfolios are now being placed about TCA air liners. The new portfolios have been designed with an eye toward souvenir appeal and informational value. It is a briefcase type folder containing postcards, luggage tags, and stickers, schedules, advertising pamphlets, souvenir menus and coasters and general facts about the air line.

- Northwest Airlines has equipped its fleet of ten Boeing Stratocruisers with Sperry ignition analysers.

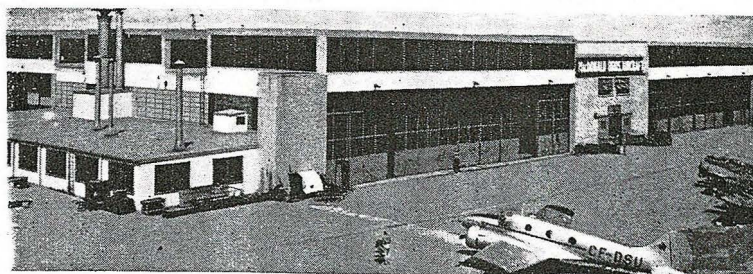
- The CAB's official airport-to-airport mileage statistics, and maps of individual air line routes, which the Board has previously published and distributed free, has been contracted to Air Traffic & Service Corp., Washington, D.C. for publication and sale.

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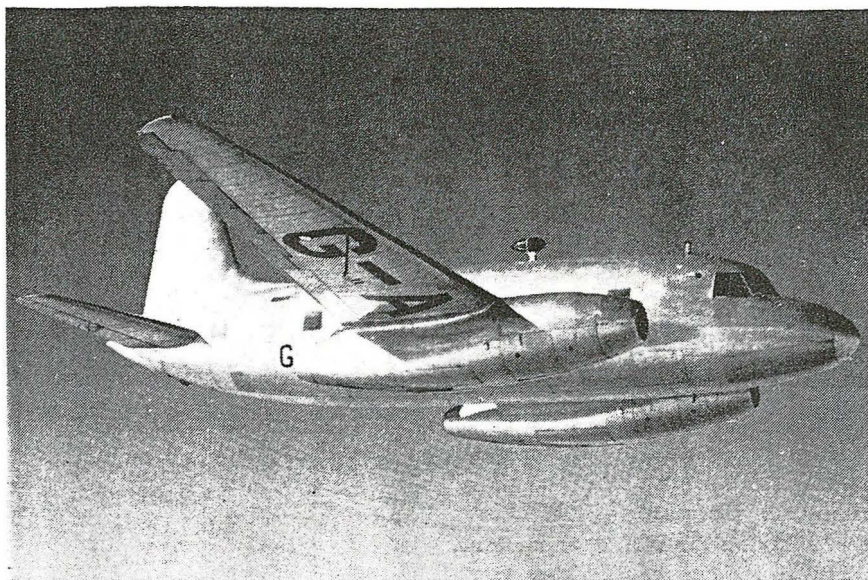


MACDONALD BROS. AIRCRAFT LIMITED

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VANCOUVER



The Vickers Nene Viking, Britain's first all-jet civil transport, which recently made routine test flights between London and Paris at speeds in the neighbourhood of 400 mph. First Viking had Bristol Hercules engines and apart from the fact that the jet version has Rolls Royce Nenes, there is little difference between the two types.

equipped with meteors and Vampires.

Air Lift To Berlin

Meanwhile the Air Lift to Berlin continues on an ever-increasing scale. Up to August 22, R.A.F. and British civil aircraft had delivered a total of 10,699 tons of food, coal, petrol and other supplies since the operation began. Altogether 11,640 sorties had been flown and British operations represented 45 per cent of the total of 113,944 tons delivered.

During its first week of operation the Civil air lift, organized by the Charter Section of British European Airways, flew in more than 500 tons of coal and 620,000 lb. of provisions. 15 civil aircraft, provided by nine British air charter companies, responsible for these operations put in a total of approximately 600 hours flying time and made 257 round trips between their bases in Western Germany and Berlin. Air Vice-Marshal Bennett has recently formed a new company, Airflight, to operate charter services and has bought two Tudors from the Ministry of Civil Aviation. The Tudor on the Berlin run is understood to have been granted a temporary C. of A. as a Freighter.

The Milk Run

Another interesting task being done by British charter firms is the milk run from Ulster to the North of England. Seven charter firms operating some 14 Liberator, Dakota and Hal-

ton aircraft, will be busy on this job for two months August 31 to October 31. The milk is flown in 10-gallon churns from Nutts Corner, Belfast to Blackpool and Liverpool. Fifty thousand gallons a day are to be brought in on a 24-hour service.

Brabazon I

Progress is also being made with the Brabazon I, which left its assembly hangar at Filton for the first time on August 16. It remained outside for five days during which time successful fuel flow and calibration tests were made and it is now again back in its

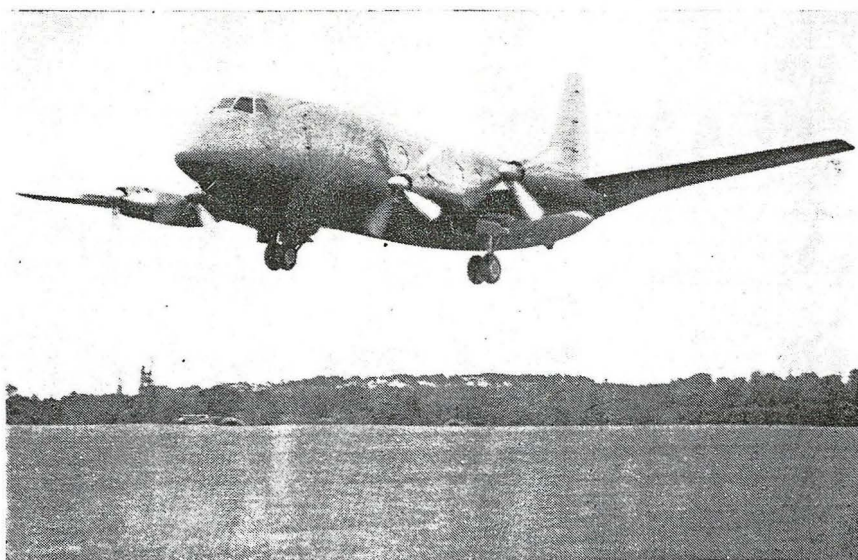
hangar. Although the eight engines have been fitted the Brabazon still lacks tail controls.

Incidentally, the Government has accepted the recommendation, made in the Report of the House of Commons Select Committee on Estimates for 1947/48 Session, that the Brabazon Saunders-Roe SR-45 should be completed as quickly as possible, and it is successful, that they should be put into immediate production.

Another report, the recommendation of which may not be so easily accepted is now being considered by the Government. This is the report of the Committee of business men under the chairmanship of T. Hanbury-Williams.

The Committee is understood to have recommended that the Corporation should be able to order prototype and production aircraft direct from the manufacturers instead of through the Ministry of Civil Aviation and the Ministry of Supply, as now. Also, that prototype types should continue to be the responsibility of the Ministry of Supply.

No quick decision can be expected from the Government on these recommendations, if only because of the difficulty of defining what aircraft come in to the experimental class. But the most difficult problem may be the attitude of the Ministry of Supply, which is understood to oppose the committee's recommendation. The recommendation is one that has been hoped for by most people in the industry.



The Vickers Viscount, which is the first civil transport in the world to fly which has been designed from the start to be powered by prop-jets. The first flight took place on June 16 and lasted about 20 minutes, according to reports. This airplane is powered by four Rolls Royce Darts and will carry 32 to 40 passengers. Cruising speed is expected to be 276 mph. and range at 20,000 feet, 1,725 miles.

BRITAIN CALLING



By JOAN BRADBROOKE

British Correspondent, Aircraft and Airport

Publication of the Reports and Accounts of the three State Airline Corporations showing a combined loss of £11,086,909 for 1947-48 caused little surprise as a loss of £11 million had been estimated. Losses for the year ended March 31, 1949, are expected to be high also and to exceed the £8 million subsidy provided under the Civil Aviation Act of 1946. The Government is known to be seriously concerned at these losses and many changes in BOAC and BEAC are expected early in 1949. Lord Pakenham has stated that "several thousand" employees might lose their jobs in the overhaul of the staffs of the two Corporations which is now being made at all levels.

BOAC has already announced that its Middle East staff is to be reduced by 500, that three senior officials in London have resigned—Group Captain Winterbotham, public relations director; D. S. S. MacDowall, secretary; and G. T. Mellor, administration director—and that the fees of four part-time directors are to be reduced, voluntarily, from £1,000 to £500 a year.

Main reasons given for their losses by the three Corporations are again the variety of types of aircraft used, and uneconomic types—particularly for BOAC—and high maintenance costs. BOAC has had eight main maintenance bases in operation, while 40 per cent of the gross revenue of B.E.A.C. went on maintaining and overhauling aircraft.

Once the Canadairs and Hermes IV's go into service, BOAC hopes to show considerable difference in its Accounts. The Corporation also expects to reduce its overhead, through its reorganization, by some 20 per cent.

One of the most interesting items

shown in the Accounts of the Corporations was given by BSAA under progress payments on aircraft under construction and showed £48,680 for DH Comets. BOAC also showed outstanding capital commitments for aircraft and engines which included 25 DH Comets. This is the first time that any indication has been given that BSAA was interested in the DH 106, although it is logical enough that a type specially intended for the North Atlantic might also be good for South Atlantic routes. Nevertheless it is surprising because BSAA has taken over the SR 45 flying-boats from BOAC and was understood to be concentrating its long-term plans on this type.

Meanwhile BOAC has ordered 25 Bristol 175's. Design of the 175 is based on the "Medium Range Empire" specification of BOAC which was first mentioned in 1947, but in its latest

form the 175 represents a great advance on the original specification.

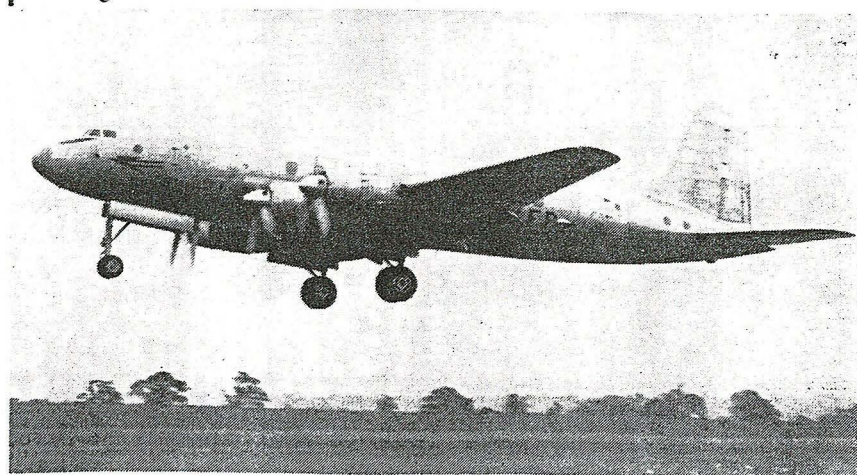
Incidentally, reports of the Vickers Viscount with four Rolls-Royce Dart propeller-turbines are highly complimentary. The Viscount, which made its first public appearance at the SBAC Display in September, has done much flying since then and much valuable information is being gained. The quietness in the cabin of the Viscount in flight is one outstanding feature of this first prop-jet civil air liner.

Some details of the Rolls-Royce Dart propeller-turbine which is doing so well with the Viscount, have now been released. One of the first of the small turbo-props to be built and flown, the Dart has a maximum power rating at sea level of 1,000 shaft h.p. and 310 lb. thrust. With water/methanol, maximum power rating is 1,300 shaft h.p. The Dart a two-stage centrifugal compressor and two-stage turbine, the two being connected together by a toothed coupling, as in the Rolls-Royce Nene and Derwent. The Dart has seven combustion chambers and a three or four-bladed reversible pitch airscrew driven by a double reduction gear, with a helical high-speed train and a final spur-gear drive. Without the airscrew, the Dart weighs only 850 lb., its length is 94.75 in. to the exhaust cone and the frontal area is 8.10 sq. ft.

An improved version of the Dart is expected to be announced soon.

Latest news of the Brabazon I is that it is structurally complete with control surfaces and engines installed. Inter-

THE HERMES IV.



The Handley Page Hermes IV comes in for one of its first landings. Flown just prior to the recent S.B.A.C. show, the Hermes cruises at 300 mph. and has a top speed of 357 mph. It is fully pressurized, seats up to 63 passengers and has a range of 3,500 miles. BOAC is to make use of these airplanes, but in a luxury version, seating just 40 passengers.

vice until the custom-built DC-4M2 was ready.

It was in the DC-4M2 that the change became most noticeable, as Canadian designers used principally the DC-6 structure for the fuselage and inner wing section, and turned out a pressurized version. In most respects this aircraft is almost identical structurally to the DC-6 except that it is actually 80 inches shorter in the fuselage.

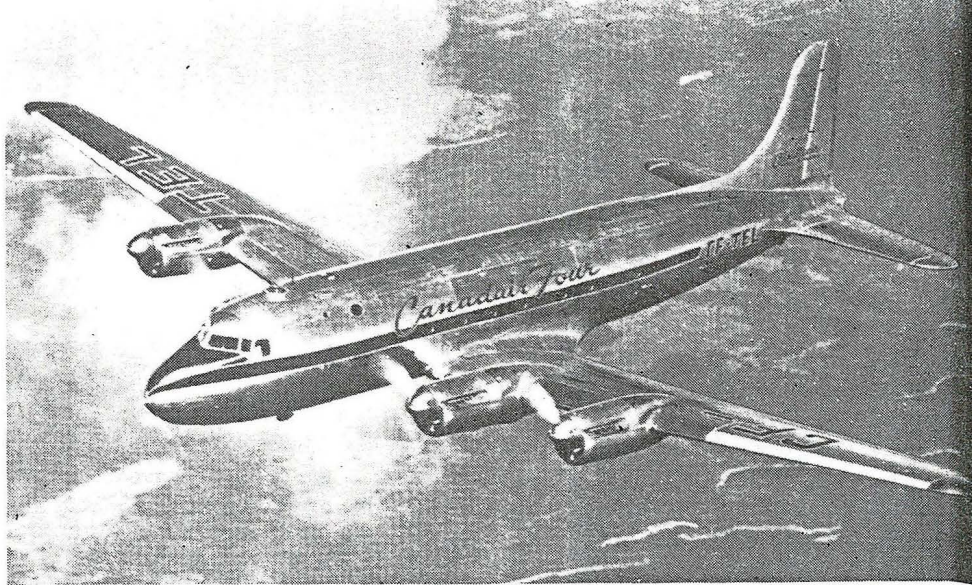
In this model, too, the more powerful Merlin 622 engines were installed and Hamilton Standard three-bladed propeller replaced the four-blade used on the DC-4M1, resulting in a gross weight increase to 80,200 lbs. with increased performance and load carrying ability and a considerable reduction in cabin noise level. Considerable development work is also being done with the three-bladed Curtiss electric propeller.

The Canadair Four

With the experience gained in construction of the three earlier models, Canadair engineers brought forth the Canadair Four, which is the ship now being offered to world buyers as Canada's answer to dependable and economical airline operation.

The C-4 incorporates most of the tried and proven basic features of the DC-6 design, and in addition includes many refinements inspired by study of airline operators' demands and known needs.

PILOT'S COMPARTMENT—Though it looks complicated, the instrumentation of the Canadair Four is simplified to the N'th degree.



BEAUTY A-WING—This flight photograph of the Canadair Four brings out its clean lines.

Performance

Take-off S/L	-----	2900 ft.
(80,200 lb.)		
Landing S/L	-----	2760 ft.
(68,000 lb.)		
Max. Cruise	-----	333 mph.
(crit. alt.)		
Top speed	-----	345 mph
(max auw, no flap)		
Stall	-----	124.3 mph.
Stall	-----	81.9 mph.
(60,000 lb., 40° flap)		

Powered by the more powerful, improved Rolls Royce Merlin 624 power plants (rated at 1760 hp for take-off, an advance of 35 hp as compared to the Merlin 620) and incorporating additional proven DC-6 airframe and operating system features, the C-4 offers decreased weight empty, increased payload, higher speed and further reduction in cabin noise level with resultant increased comfort.

This latter feature is accomplished by adoption as standard the three-bladed high activity factor propeller which brings about use of a .42 reduc-

tion gear ratio rather than the .47 reduction gears used with the four-bladed propeller. This changed propeller configuration also gives improved flight performance.

Another Canadair triumph is the design of a special exhaust manifold, which has not only drastically reduced the noise level, but has increased speed and performance by a clean-sided nacelle instead of the former multi exhaust stacks. This new type of exhaust system was worked out by Canadair engineers at Cartierville, and it is expected it will be applied not only to the Merlin 624, but to earlier Marks of the engine now in service.

Another feature to be found in the C-4, is a new system of ducting the cooling radiators, which cuts down the surface and cooling drag and, is anticipated, will increase the performance of the ship by at least three per cent.

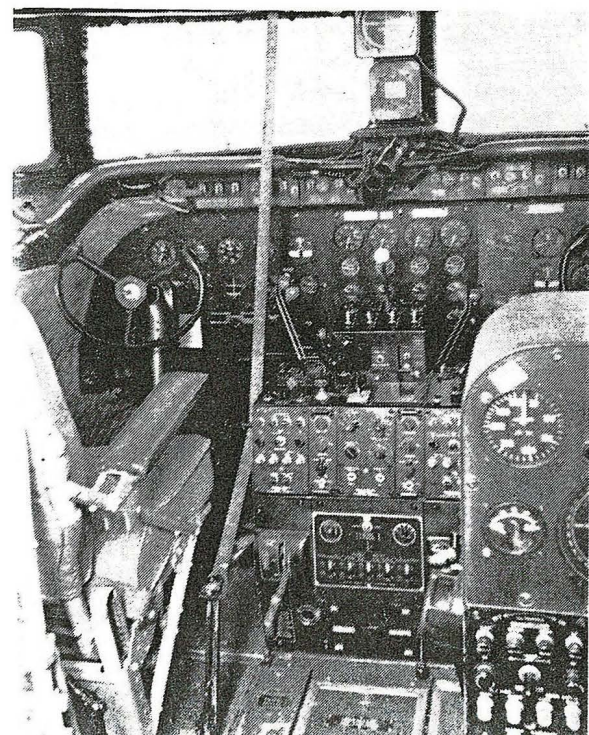
Three Models

The passenger version of the C-4 is being offered in three models. The newest of these, the sleeper version, has been added to the previously announced 40-passenger and 48-passenger types. All these models are rated at top speeds of 345 mph. and have a service ceiling of 30,000 ft.

With this selection of models, the proven performance figures, and (a price substantially lower than any competitive type) the Canadair Four Presents a very attractive picture to world airline operators. Not only is the price a particularly strong inducement, but the C-4 has a remarkably

Dimensions

Length	-----	93 ft. 5 in.
Span	-----	117 ft. 6 in.
Tread	-----	24 ft. 8 in.
Height	-----	27 ft. 6 in.
Wing area	-----	1457 sq. ft.
Wing loading	-----	55.04 lb./sq./ft.
(To gross weight)		
Power loading	-----	11.39 lb./sq./ft.
(To gross weight)		

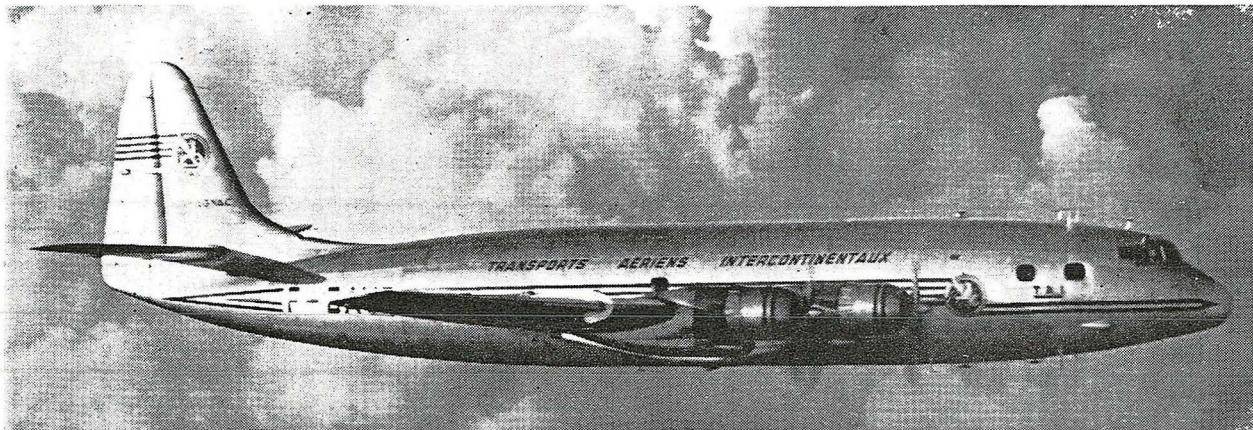


FRENCH AIRCRAFT

The prolific French Aircraft Industry has recovered from the War with startling speed and is now turning out new aircraft as unique in design as they are profuse in number.

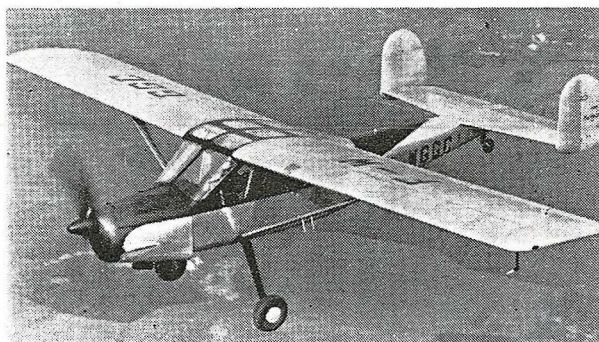
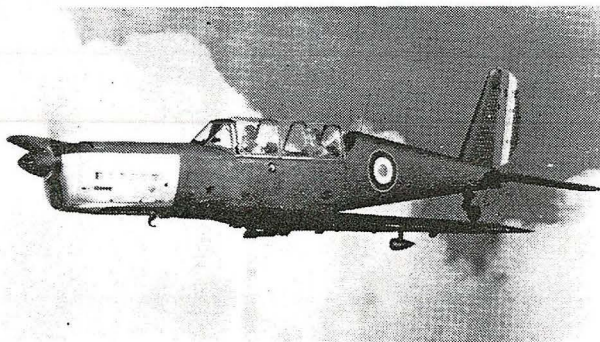


PICK-A-BACK: Since the War, France has produced an unusual variety of new airframe and engine designs. Above is the now well known Languedoc, widely used by Air France and French Air Force. This one is being used as a flying test bed for the new Snecma Atar 101 turbojet.

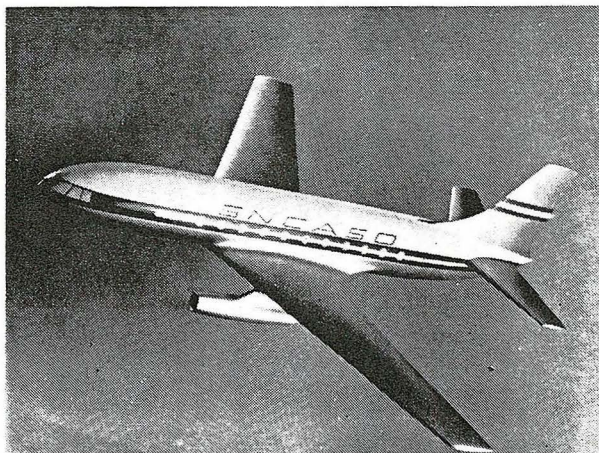


WORLD'S BIGGEST: A gross weight of 165,000 lbs. makes this SE-2010 Armagnac the world's largest civil transport. Just put into service by Transport Aeriens Intercontinentaux it can carry 100 passengers. Power is by four P & W

R-4360 engines. Aircraft at left, below, is a Sipa S.12 all-metal trainer, 50 of which are being built. At right is the Max Holste 152 artillery spotter. With full flaps it stalls at 28 mph; without flaps it is controllable at 41 mph.



LONG AND LEAN: Immediately above is the experimental Hurel-Dubois HD.10 aircraft with high aspect ratio wing. At right, a proposed SNASCO medium jetliner which would be powered by Avons, Sapphires, or Atars.





NEW VISTAS IN CANADIAN AIR TRANSPORT

The Super Constellation

This series of articles on TCA's new Super Constellations, the first of which follows, was prepared specially for Aircraft by the new airplane's designers and builders, Lockheed Aircraft Corporation of Burbank, California.

FORTHCOMING appearance of five Super Constellations with the familiar Maple Leaf insignia constitutes a renewed mark of leadership for Trans-Canada Air Lines in the highly competitive field of international air transportation. Already in a top position among world airlines, Trans-Canada looks forward to expanded service, greater capacity, and even more passenger comfort.

"The Super Constellations were selected after a careful study of current design trends," TCA President G. R. McGregor told members of the air line organization recently. These aircraft combine a proven design and highly advanced features, he said, while having the necessary requisites of speed and range.

"They will be capable of meeting all competition on the Atlantic route during the next few years and may well prove the ideal link with the development of fully turbine powered aircraft," he added.

Making Ready: Plans are going forward for utmost utilization of the the big new Lockheed transport. Traffic and operations personnel are studying the features of the plane for special application to TCA's diverse route pattern; training programs in virtually every section of the company are being projected; distinctive features applicable to TCA operations are being built into the planes on order; and continuing studies of shop, ground and office facilities are under way to bring the plane into operation with ease and celerity.

The new TCA transports will be the most luxurious anywhere in the world—and at the same time the greatest dollar earner, according to Lockheed engineers, who also say that the compound engine planes will have longer range, more seating capacity, and greater economy of operation than any commercial jet now apparent.

The Super Constellation represents an outgrowth from sound beginnings to its present state as one of the most renowned passenger transports in the world. TCA's Super Constellations will roll from Lockheed assembly lines in late 1953.

Lockheed Constellations have already established a record of more than 16

billion passenger miles to attain features incorporated into the present advanced version, model 1049C, on order by Trans-Canada Air Lines.

Vital Statistics: A capsule of figures can tell the story of today's plane: maximum takeoff weight, 130,000 pounds; maximum landing weight, 105,000 pounds; cargo volume 715 cu. ft.; power plant, 4 Wright R-3350 turbo compound engines (TC18DA1); fuselage length, 113 ft. 7in.; wingspan, 123 ft.; fuel capacity, 6570 U.S. gallons; passenger capacity, 43-99; cargo capacity, 13,860 pounds; cruising speed, 330-340 mph; maximum speed at landing weight, 376 mph; aspect ratio, 9.17; range, 4360 nautical miles at 10,000 ft. altitude non-stop without refueling.

Purchase of five of these aircraft climaxes a long-range relationship between Canada's aviation leader and Lockheed Aircraft Corporation, builders and developers of the Super Constellation.

Today the relationship extends to manufacturing as well as operation of Lockheed products. Canadair Ltd. is now tooling up to produce the Burbank, California, manufacturer's model T-33, a jet trainer which sprang from the Lockheed F-80, the first United States combat jet. (According to Lock-

Lockheed

DEVELOPS ADVANCED ELECTRONICS CENTER

Secret and advanced designs of virtually every electronics manufacturer in the U.S. are constantly studied, correlated and put to work at Lockheed Aircraft Corporation's electronics center in Burbank, Calif.

This center is one of the nation's largest clearinghouses for electronics intelligence. It was developed by Lockheed to provide the latest in this science of automatic controls for such Lockheed planes as the F-94, first U. S. All-Weather Interceptor; the WV-1 and WV-2, Navy Constellation radar sentinels; and deadly new models of the P2V Navy patrol bomber for anti-submarine warfare.

Such laboratories as Westinghouse, Hughes, General Electric, RCA, Raytheon, Western Electric, Hoffman and many others bring advanced electronic developments to Lockheed for practical application.

UNIQUE APPROACH

Lockheed's approach to electronics differs noticeably from many other aircraft manufacturers. At Lockheed the emphasis is on the application, not the manufacture, of electronics. That's because Lockheed begins the design of an advanced plane with the specific mission of the plane in mind. Knowing what the plane **MUST** do. Lockheed wants to be free to analyze *all* products of *all* manufacturers in order to obtain the most advanced electronic devices needed to accomplish this mission.

Lockheed does more than apply *existing* electronics. Often, no device is available to perform a specific job. At such a time, Lockheed scientists provide the all-important idea, frequently supplying the basic design, for a new product. Then they turn it over to an electronics company for manufacture.

TYPICAL EXAMPLE

America's first All-Weather Interceptor, the Lockheed F-94, is a current result of Lockheed's policy. Not being a manufacturer of electronics, noncompetitive Lockheed can work closely with companies who are, as well as the U.S. air services. As a result the F-94 was *electronically at least two years ahead* of competitive aircraft.

This leadership is a principal reason why Lockheed is attracting so many top experts in electronics.

ada or with other government agencies, and increases in order placed earlier—nor do orders classified as secret appear here.

(Names appearing in bold face are current *Aircraft* advertisers.)

Bristol Aeroplane Co. of Canada Limited, Montreal, \$109,940 for airframe and engine spares.

Bristol Aeroplane Engines (Eastern) Limited, Montreal, \$12,440,000 for repair and overhaul of aircraft engines.

Bristol Aeroplane Engines (Western) Limited, Vancouver, \$11,907 for spares.

Canadair Limited, Montreal, \$180,000 for technical publications.

Canadian Car & Foundry Co. Limited, Montreal, \$20,000 for repair of aircraft.

Canadian Pratt & Whitney Aircraft Co. Limited, Montreal, \$10,083 for aero engine spares.

The de Havilland Aircraft of Canada Limited, Toronto, \$99,726 for aircraft.

Godfrey Engineering Co. Limited, Montreal, \$192,027 for oxygen recharger equipment and aircraft pressurizing test equipment.

B. F. Goodrich Rubber Co. of Canada Limited, Kitchener, Ontario, \$219,719 for aviation boots.

Imperial Oil Limited, Ottawa, \$2,407,328 for aviation petroleum products.

Irvin Air Chute Limited, Fort Erie North, Ontario, \$17,874 for parachutes.

J. W. Lawrence (Canada) Ltd., Montreal, P.Q., \$12,396 for repairs to aircraft parts.

A. V. Roe Canada Limited, Toronto, \$585,000 for aircraft spares and overhaul.

Sperry Gyroscope Co. of Canada Limited, Montreal, \$24,304 for aircraft maintenance spares.

Alexander Construction Company, Edmonton, \$4,744,914 for construction of 21 RC AF buildings at Cold Lake, Alberta.

Baynes Manning, Limited, Vancouver, \$1,090,434 for construction of RCAF water treatment plant and storage reservoir at Wainwright, Alberta.

Bird Construction Company, Winnipeg, \$2,120,335 for two RCAF structural steel hangars at Winnipeg.

Carter Construction Company, Toronto, \$1,044,735 for a structural steel hangar at Trenton, Ontario.

Redfern Construction Company, Leaside, Ontario, \$3,088,873 for construction of 12 RCAF buildings at Downsview Airport.

Abercorn Aero Limited, Montreal, \$11,948 for aircraft spares and airborne equipment.

Aviation Electric Limited, Montreal, \$258,857 for electronic equipment and aircraft spares.

Bristol Aeroplane Engines (Eastern) Limited, Montreal, \$811,750 for maintenance and overhaul of aircraft spares.

Canadair Limited, Montreal, \$185,516 for airframe spares and training of service personnel.

Canadian Car & Foundry Co. Limited, Montreal, \$10,000 for electrical system for aircraft.

Canadian Pratt & Whitney Aircraft Co. Limited, Longueuil, P.Q., \$61,539 for helicopter spares.

Dowty Equipment of Canada Limited, Ajax, Ontario, \$29,974 for hydraulic equipment and spares.

Irvin Air Chute Limited, Fort Erie, Ontario, \$566,430 for parachutes.

Mount Royal Transportation Equipment Limited, Montreal, \$17,255 for aircraft seats.

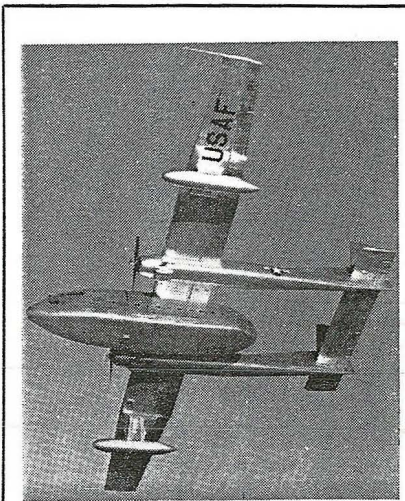
A. V. Roe (Canada) Limited, Toronto, \$198,000 for services of field representatives.

Ross-Smith Co. Limited, Montreal, \$85,000 for aircraft covers.

Stewart-Warner-Alemite Corp. of Canada Limited, Belleville, Ontario, \$11,592 for spare parts for heaters.

Terry Machinery Co. Limited, St. Laurent, P.Q., \$16,026 for aircraft power carts and service kits.

Poole Construction Company, Edmonton, \$2,356,551 for construction of RCAF steel hangar at Cold Lake, Alberta.



OUTSIDE FACILITIES: Most unique feature of the new Fairchild C-119H is the fact that all the fuel is carried in the two pods beneath the wings. Actually a much larger airplane than earlier "Flying Boxcars", the H has a wingspan of 148 ft. compared with 109 ft. for previous versions. Wing area has been increased by about 40%. Power is by 3,500 hp Wright R-3350-30W Turbo Cyclones.

W. C. Wells, Saskatoon, \$1,131,377 for construction of RCAF steel hangar at Cold Lake, Alberta.

A. F. Byers Construction Co. Limited, Montreal, \$24,000 for repairs to hangar.

Canadair Limited, Montreal, \$11,001 for aircraft spares.

Canadian Car & Foundry Co. Limited, St. Laurent, P.Q., for development of aircraft instructional assemblies.

Instruments Limited, Ottawa, \$320,000 for flight training equipment.

Irvin Air Chute Limited, Fort Erie, Ontario, \$12,132 for modification kits.

McConvry-Mudge Limited, Toronto, Ontario, \$114,604 for aircraft towing tractors.

Northern Electric Co. Limited, Ottawa, \$13,500,000 for aircraft radio compasses.

Alexander Construction Limited, Edmonton, \$690,364 for two RCAF officers' messes at Penhold, Alberta.

P. W. Graham & Sons Limited, Moose Jaw, Saskatchewan, \$1,452,611 for RCAF permanent barrack block at Edmonton.

R. Timms Construction & Engineering Co. Limited, Welland, Ontario, \$568,191 for two RCAF messes at Clinton, Ontario.

AIR LINE TRENDS

Comet Crash

Loss of CPA's first Comet 1A will mean an indefinite delay in the inauguration of jet airliner service on the Hawaii-Australia leg of the Canadian air line's South Pacific route. Apart from the destruction of the valuable aircraft on which the inception of the new service depended, CPA also has to find replacements for the five aircrew killed. Not only were these men among the company's most experienced personnel, they were also the only CPA aircrew with any commercial jet airliner training.

The Comet, CF-CUN, crashed and burned at Karachi, Pakistan, while making its take-off run on the third leg of its ferry flight from London to its operating base at Sydney, Australia. Killed in the crash were the five CPA aircrew, five de Havilland technical personnel, and Smiths Instruments' technical representative. (See "Names in the news".)

The aircraft left London on March 2 and flew directly to Beirut, Syria, a distance of 2,360 statute miles. After refueling at Beirut, it carried on to Karachi, 2,080 miles, where a normal landing was made at 3:25 pm local time. The Comet was then refuelled with some 7,000 gallons of turbo fuel, maximum capacity, and take-off on the Karachi-Djarkarta leg (1,615 miles) was scheduled for the pre-dawn hours of Tuesday, March 3. From Djarkarta, which is in Java, the flight was to continue on to Darwin in Northern Australia (1,730 miles) and thence to Sydney (1,840 miles).

The crew and passengers boarded the "Empress of Hawaii"—as it was to be christened at a formal ceremony in Honolulu on March 14—on Tuesday morning as planned and the pre-take-off operations were normal. Eyewitness reports say that the take-off also proceeded normally at first, but that the aircraft ostensibly failed to become airborne, running off the end of the runway through a fence, over a culvert, and finally into a ditch where it came to rest, bursting into flames. Because it was still dark, no witness was able to describe in detail what had taken place.

While there is some indication (marks on the runway where the tail-skid had apparently dragged) that this accident was similar to the non-fatal

BOAC Comet accident at Rome some months ago, it will be some time before the official investigation is complete and the accident's cause definitely known.

TCA Surplus

A net surplus of \$807,879 after payment of taxes was reported by TCA in its annual report for 1952. Unlike past years, the report does not separate overseas and North American services.

The report, signed by President G. R. McGregor, showed income tax payments of \$1,200,000 on gross earnings of \$2,007,879. This is the first year

says alone amounted to \$5,000,000. Due in great measure to "the loyalty and efficient efforts" of the company's 6,200 employees, the cost of providing each unit of air transportation continued to decrease, Mr. McGregor said.

The percentage rise in expenses was also affected in 1952 by exceptional items resulting from the fleet expansion program. Capital expenditure for which TCA is committed over the next two and a half years approximates \$35,000,000, against which progress payments of \$5,600,000 have already been made.

The statement showed also an increase of 20% in volume of passenger transportation while air cargo and air express volume increased by 30% and



VISCOUNT IN CANADA: Shown in Montreal and taking off for Winnipeg (via Toronto) is the Vickers Viscount 700 prototype, now undergoing cold weather trials in Western Canada. While in Canada, the Viscount is being operated by a Vickers crew, working in close collaboration with TCA technical and operational personnel. TCA has 15 Viscount 724's on order, a model almost identical to type shown here. Other Viscount 700 series aircraft are already in service with BEA and Air France.



that TCA has been required to pay income taxes. The 1952 surplus was down from \$3,890,957 in 1951, although operating revenues were 15% higher at \$55,057,708 than in the previous year.

On the other hand, operating expenses for the year were up by 22% to \$52,744,741 due primarily to the direct cost associated with the increased mileage flown, increased traffic carried, and increased payroll expenses, which TCA

mail volume by 8%. On system routes TCA carried 1,132,518 passengers—the first time it has carried more than 1,000,000 passengers in one year—flew 5,643,920 ton miles of air cargo, and 1,398,507 ton miles of air express. Mail ton miles increased to 4,843,052.

CPA All-Cargo Hearing

The ATB is expected to hand down a decision this month on CPA's application for a license to operate a Mon-

OPERATORS' NOTES

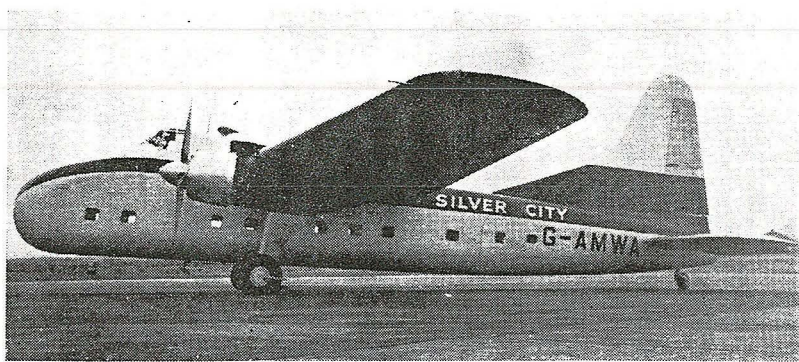
3105/3023.5 Compromise

DoT towers at certain major airports will continue to guard the old 3105 kc common air-to-ground frequency until March 15, 1954, in addition to the new 3023.5 kc frequency, it has been announced by the Department. The compromise arrangement was made as a result of representations which claimed that some difficulty might be experienced in getting all aircraft radios fitted with new crystals in time for the proposed August 15, 1953, deadline for the changeover to 3023.5 kc.

The control towers which will guard both frequencies during the transition period are as follows: Calgary, Cartierville, Edmonton, Gander, Lethbridge, London, Moncton, Montreal, North

Aeronautical Service Route (R) and Off-Route (OR) bands on a world-wide basis. These conferences adopted basic frequency allotment plans which provide for 3023.5 kc, which is near the edge of the junction of "R" and "OR" sub-bands, to be used as a common world-wide frequency and to replace 3105 kc, which is in a frequency band to be used by the military.

The primary reason for all these negotiations at international level has been to endeavor to reduce interference to aeronautical communications by the provision of exclusive high frequency bands for the Aeronautical Mobile Service, and the planned use of channels.



BIG NOSE FROM FILTON: The Bristol Mk. 32 Freighter was recently awarded a C of A after only ten hours flying time. The "long nose" Freighter has been ordered by Silver City Airways for its cross-Channel ferry services. Acquisition of six of the Mk. 32's will bring Silver City's fleet of Freighters to 15. During 1951, the air service ferried over 13,000 vehicles, mostly cars, over the channel. The Mk. 32 can carry three British cars and 20 passengers. Apart from the lengthened nose, the main physical change to the aircraft is the increased fin area.

Bay, Ottawa, Quebec, Regina, Saskatoon, Seven Islands, Sydney, Torbay, Toronto, Windsor, and Winnipeg. Pacific coast towers are not included because of a local situation causing additional complication in frequency allocation.

The events leading up to the adoption of the new common frequency started several years ago. The DoT explains that the decision to adopt the change from 3105 to 3023.5 kc is the result of the allocations made by the Atlantic City Radio Conference in 1947 of frequency bands exclusively to the Aeronautical Mobile Service.

In 1948 and 1949, international aeronautical frequency conferences were held for the purpose of preparing detailed frequency allotment plans for

The aeronautical conferences previously mentioned reached agreement on basic frequency allotment plans for international, regional, and domestic air routes. However, no action could be taken to implement these plans until the frequency bands allocated by the Atlantic City Conference to the Aeronautical Mobile Service could be cleared of other categories of radio services.

It was not until December, 1951, that international agreement was reached at a conference in Geneva to provide for the implementation on a gradual basis of the major changes in frequency allocations of the Atlantic City Radio Conference, including the Aeronautical, Maritime, Fixed, Broadcasting, and Amateur Services, etc.

According to the Department, frequency change in several of these services is already well advanced.

U.S. Grants Permits

The U.S. Civil Aeronautics Board has granted foreign air carrier permits to Laurentian Air Services Limited of Ottawa, and BNP Airways Limited of Vancouver.

Laurentian has been authorized to operate occasional charter flights from Ottawa to an area of the U.S., south as far as North Carolina and Tennessee, and west to western Iowa, and Minnesota. BNP can provide similar flights from Vancouver to anywhere in the U.S. Both companies are limited to the use of aircraft weighing less than 12,500 pounds.

Beech Distributor

Carl Millard Limited, Toronto, has been appointed the new Beechcraft distributor of Canada, it was announced recently by the export sales division of Beech Aircraft Corporation, Wichita, Kansas. Carl Millard has already completed one sale for Beech, a Beechcraft D-18 which has been bought by McFarland Construction Company of Toronto. Delivery was made in March.

Canoe Carriage

The AITA has requested a deferment of the DoT's proposed ruling that the external carriage of canoes on aircraft be restricted to airplanes meeting certain requirements laid down by the Department. According to the AITA, the only airplane which can meet these requirements as they are now set down is the Beaver, so that the information circular concerned should be delayed until it can be amended to make it more realistic.

ATB Orders

•Galvin Flying Service has been authorized to operate a Class 9-4 international charter service, with Group C aircraft only, from an area within 50 miles radius of its base at Boeing Field, Seattle, Washington, to such points as can be safely served south of Latitude 52°N. in the provinces of B.C. and Alberta, the principal points being Victoria, Vancouver, and Cranbrook, B.C., and Calgary, Alberta.

•The license of Bradley Air Services to operate Class 4 charter and Class 7 specialty recreational flying services from Pembroke, Ontario, have been transferred to Pembroke Air Service with the approval of the ATB.

•Lake of the Woods Flying Service has been authorized to operate a Class 9-4 inter-

effective April 14, while tourist services had been stepped up to five weekly by May 1. The increased flights are intended to meet anticipated Coronation traffic.

TCA Adds Flights

For the first time, TCA will operate six transcontinental North Star flights daily, according to the new summer schedules which became effective during April. During the winter months the air line has been operating four such flights; last summer there were five a day between Montreal and Vancouver.

Two flights will operate via Winnipeg, Saskatoon, and Edmonton; two via Winnipeg and Calgary; one via Winnipeg non-stop to Vancouver, and one via Winnipeg, Regina, Lethbridge, and Calgary. Previously Regina and Lethbridge were served by DC-3's.

PAA Plans Rate Slash

Pan American World Airways will establish its own low trans-Atlantic cargo rates—with a reduction in cost of bulk shipments of 45%—if other trans-Atlantic operators are unable to reach agreement on a program of lower rates, the air line announced recently.

According to Willis G. Lipscomb, vice-president traffic and sales, "The new low rates for bulk shipments are necessary to bring about a greater volume of air cargo on the North Atlantic. They will benefit shippers, the consuming public, and the profit and loss statement of any other air line which meets the new PAA competition with a similar service. The benefits of the low cargo rate are not just theoretical. The results have already been established in Latin America.

"We regret the general adoption of the low trans-Atlantic rates have been blocked by some air lines which have not had experience with low rates for bulk shipments and refuse to listen to those who have. We are therefore planning to go ahead on our own."

PAA's rate, effective November 15, would be 35 cents per ton mile for shipments of more than 500 kilos, as compared with the present rate of 64 cents per ton mile for shipments under 45 kilos and 48 cents for shipments of more than 45 kilos.

Air Travel Leads

More travellers now get their first look at the U.S. through the window

of an airliner than from the deck of a ship, according to a recent article in the official publication of the Aircraft Industries Association. The article says that in the short 25 years since Clarence Chamberlin piloted the first passenger-carrying aircraft across the Atlantic, the air line industry has forged strongly ahead of sea travel as the leading carrier of trans-oceanic passengers.

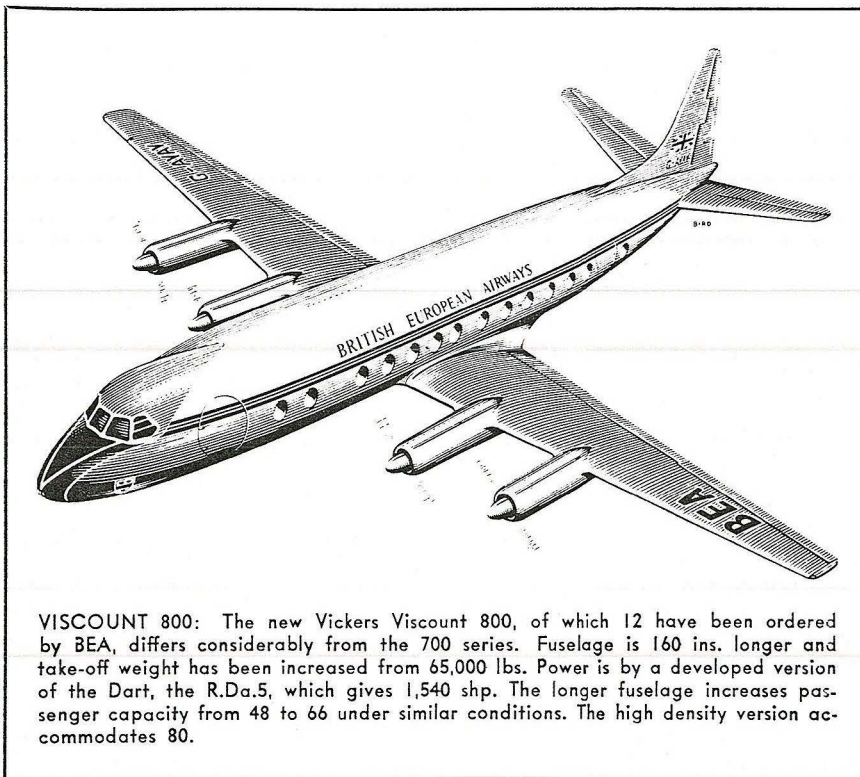
Last year, the U.S. Customs Bureau says, more than 1,300,000 passengers arrived at or departed from U.S. airports on international trips via commercial air lines. This reflects an increase of almost 150,000 over the

TCA Serves Gravenhurst

TCA has been authorized to provide Class 1 scheduled service to Gravenhurst, Ontario, between June 1 and September 15 each year. The Ontario resort area will be served by the flights from Toronto to North Bay, Porquiss, and Kapuskasing.

Briefly

• Western Air Lines has completed installation of the first completely automatic ticketing machines to be adopted by any air line. Regardless of the complexity of the ticket, it is said to be almost impossible to make an error, since the only information the agent



VISCOUNT 800: The new Vickers Viscount 800, of which 12 have been ordered by BEA, differs considerably from the 700 series. Fuselage is 160 ins. longer and take-off weight has been increased from 65,000 lbs. Power is by a developed version of the Dart, the R.Da.5, which gives 1,540 shp. The longer fuselage increases passenger capacity from 48 to 66 under similar conditions. The high density version accommodates 80.

previous year . . . and is over 300,000 more than were carried by the steamship lines.

CPA Profit Down

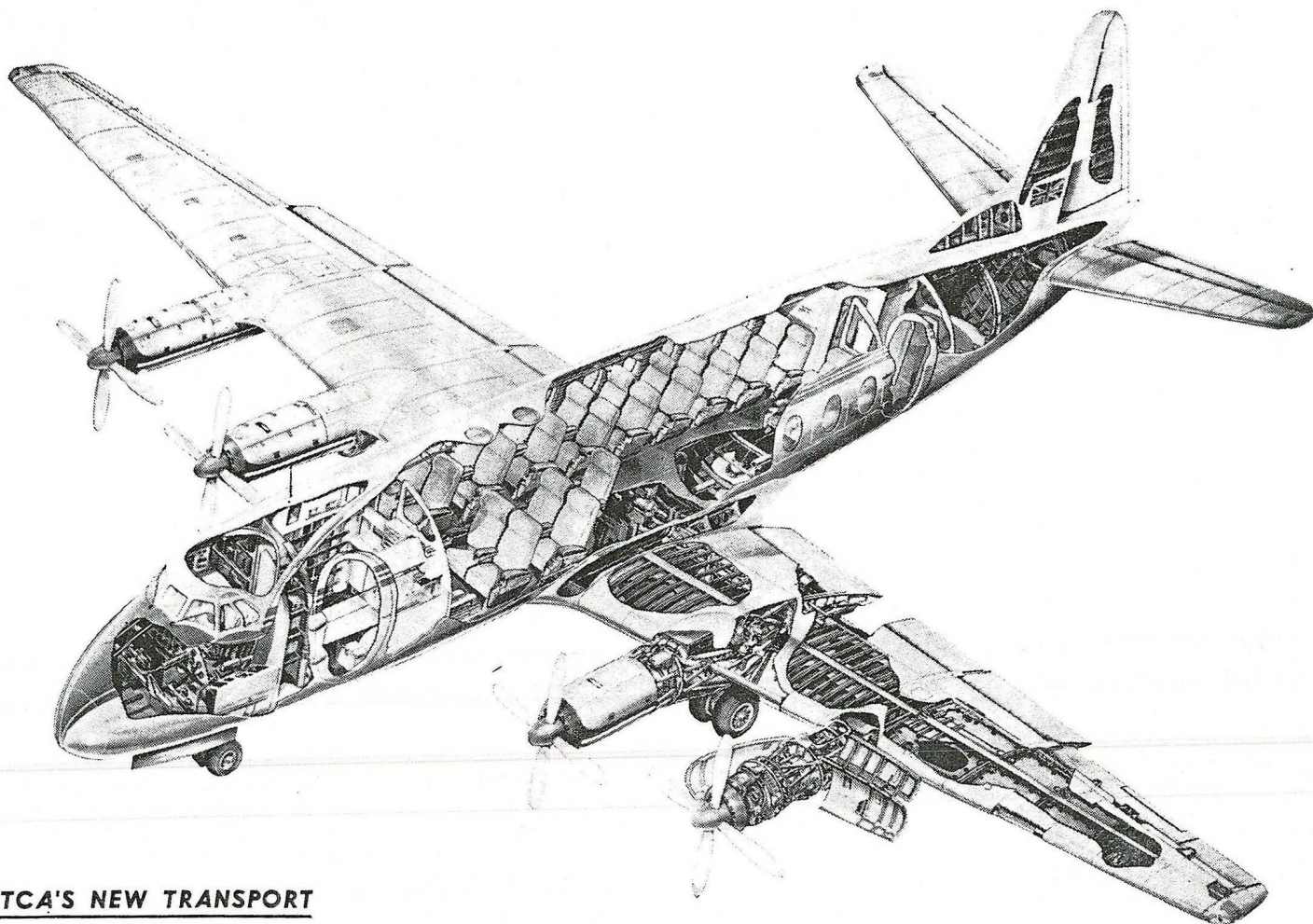
Canadian Pacific Air Lines had a net profit of \$364,000 during 1952, according to the annual report of the Canadian Pacific Railway Company. This compares with \$1,084,000 in 1951 and \$203,000 in 1950.

The report says that revenues were higher, although revenue derived from the Korean airlift charter flights was less. Expenses increased as a result of higher wage rates and material prices, and included costs incurred for development work and the familiarization of crews with the new types of aircraft now going into service.

feeds the machine is the final destination. Regardless of the number of coupons involved, the ticket is presented to the passenger in compact wallet size, measuring 2 by 2½ inches.

• BOAC's tourist services to the Middle East, Singapore, Hong Kong, and Central Africa are being operated with **Canadair Argonauts** (North Stars) seating 56.

• BOAC started its fourth Comet service on April 3 with the first passenger-carrying commercial jet airliner flight to Tokyo. The London-Tokyo Comet service slashes the flight time between the two points by 50 hours. The route has previously been flown by Argonauts, taking more than 80 hours. Flight time by Comet is 26¼ hours.



TCA'S NEW TRANSPORT

The Vickers Viscount

By JAMES HAY STEVENS

THE VICKERS-ARMSTRONGS Viscount 700 is today the most successful British airliner, if one considers the total number on order (84 as of mid-July) and the world-wide distribution of sales, yet it was very near extinction at one time.

It was in 1943-44 that the Brabazon Committee outlined a specification for a European medium-range airliner, a requirement eventually consolidated by the Ministry of Supply into the 8/46 specification. Meanwhile, in 1945, George R. Edwards and his team had started work on a successor to the Viking. At that time, general opinion was that the turboprop was the natural step between the piston engine and the pure jet and that it was most suited to medium stage lengths that is, up to 1,000 miles—today there is some conflict of opinions, but that is another story.

Four smallish turboprops were chosen in preference to two large ones in order to permit twin-engine let-down and stand-off. A high cabin differential was decided upon to allow cruising at 25,000-30,000 ft. The aeroplane, the Type 630, was rather smaller (32 seats) than the economical size because only 1,000 shp was anticipated from the available turboprops. When Vickers learned that British European Airways was buying the larger Ambassador, they asked Rolls-Royce if the Dart could be boosted to give 1,400 shp—and received this assurance. The Type 700 project was prepared, submitted to BEA, and rejected by them.

First Flight: On July 18, 1948, the prototype Viscount 630 flew and proved very successful. In January, 1950, BEA accepted the Type 700 specification and BOAC ordered it for British West Indian Airways, but cancelled in July

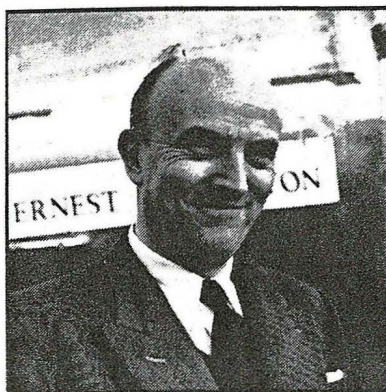
of the same year—only to re-order two-and-a-half years later. In August, 1950, BEA signed their first contract for Viscounts; they also used the prototype 630 on regular London-Paris and London-Edinburgh schedules—the first turbine-engined service in the World—and the 700 prototype flew on the 28th. At the end of 1952 the first production Viscounts were delivered to BEA and they went into regular service on April 18, 1953, from London to Cyprus, with stops at Rome and Athens.

BEA found their first months of operation very trouble-free and they were able to make a clear \$125,000 profit on the first 1,000 hours. Probably, those initial ordering delays have actually proved helpful in overcoming many teething troubles, since the prototype hours rose into four figures and BEA accumulated over 6,000 hours of

engine experience with their two Dart-Dakotas and on Viscount crew training. This experience was essential, for not only were a new airframe and engine going into service, but there was no background of turboprop knowledge. If one recalls the initial troubles which have beset most postwar airliners and their power plants—the latter with millions of hours of past experience to back them—the co-operative achievement of Vickers and Rolls-Royce stands in true perspective.

Although they have little in common as regards appearance, the Viscount was a logical development from the Viking—which was itself evolved from the Wellington bomber. Wing taper, general tail shape and something of the sweep of the rear fuselage are about the only common external features, yet the Wellington had a profound effect on the structural design of the Viscount. The Viking was originally intended to have Wellington geodetic wings, but universal air line opposition to fabric covering led to their being replaced by metal-covered ones. In the meantime, the fuselage had been designed to accept a main spar and two auxiliary spars. From this factor the new stressed-skin wings were designed with a single spar, a practice perpetuated in the Viscount.

Unique: The use of a main spar to take bending loads is almost unique among modern transports—wherein a torsion-box spar with integral fuel is usual. The Viscount's spar is at 40 per cent chord and is built up with a plate web, machined T-section booms and vertical channel-section shear members on the front face of the web. Auxiliary front and rear spars at 5 and 70 per cent of the chord combine with the skin to take torsion loads. In each half span there are only nine ribs. The skin, which is wrapped from the upper



GEORGE EDWARDS

flange of the rear spar to the lower flange of the front spar, is given its profile by closely-spaced chordwise stiffeners. This form of construction leaves the interior of the wing free from obstructions and gives a large volume for fuel. The skin stiffeners, too, lend themselves to covering with smooth plating to support crashproof bag tanks.

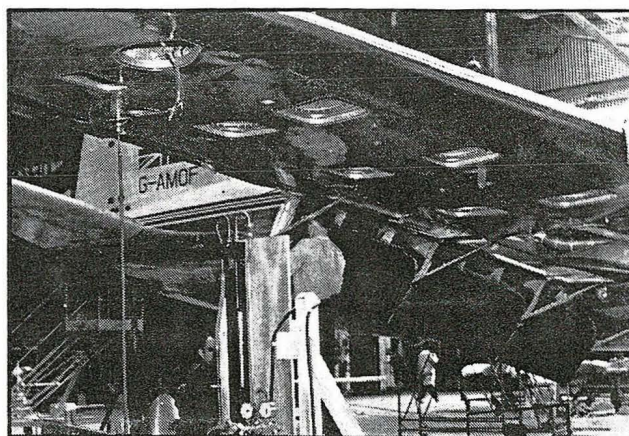
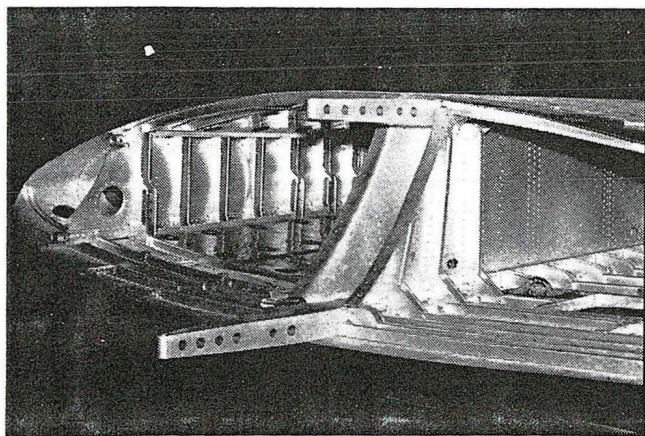
The wing is divided into inner planes, which are bolted to the fuselage and carry the nacelles, outer planes, and detachable wingtips. The fuselage/inner plane joint is an interesting and unusual piece of engineering (Fig. "A"). The T-section spar booms are allowed to develop into solid spigots, drilled to take six fore-and-aft bolts each, while the web is flared out into what the firm calls a "sheer cleat" which is attached to the fuselage skin by small bolts. The light auxiliary spars have similar attachments in miniature. The leading-edge space lends itself well to de-icing installations.

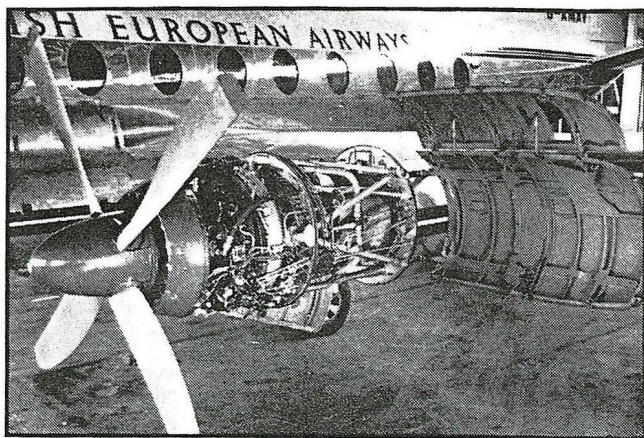
Left, Fig. A: Close-up of wing root, showing main spar booms and sheer cleats, together with internal structure. Right, Fig. B: Underwing view during fuel calibration tests. Note many inspection panels, bag tank installation doors, extended double slotted flaps. Opposite page shows Vickers cutaway drawing of 40-seat version.

Less Sensitive: This type of wing structure is rather less sensitive to openings than is a pure torsion box and the underwing is amply provided with inspection panels, as well as tank doors (Fig. "B"). Other features of the wing include aerodynamically and mass-balanced two-piece ailerons and three-piece, double-slotted flaps. The latter are remarkable for a very neat installation, without any external rails or fairings. Division of these units into several parts indicates a flexible wing structure designed to give a smooth ride in rough air.

The fuselage structure is conventional, its main interest lying in the simplicity and ruggedness of the design. The whole volume, save the nose-wheel bay and the tail, is pressurized, with the air conditioning equipment under the cabin floor aft of the wing. Particular features are the large oval windows that give an exceptionally good view. This shape is one that relieves pressurization stress concentrations and is used also for the doors; crew and freight at the front, and passenger at the rear on the port side, cargo at the rear starboard side. Originally designed to have ten rows of four seats with a very ample aisle, most operators are choosing to have 48 seats with five abreast, save in the front and rear rows, and a rather narrow aisle. There is freight stowage under the forward part of the floor, in the front fuselage and aft of the cabin.

Canadian Model: In the TCA version, the 724, a two-crew layout is to be adopted and the radio-operator's station is being eliminated so that two toilets can be fitted forward of the cabin. The pantry is to be at the rear, where the standard version has a single toilet. This re-arrangement allows the cabin to have 48 seats four abreast, and with 31.7 in. pitch. Twelve-G seat





fixtures and safety belts are stipulated.

The pressurization system is operated by three Godfrey engine-driven Rootes-type blowers and passes 66 lb./min. at 25,000 ft. There are refrigerators in the circuit, but normally no additional heaters—TCA is having a Janitrol combustion heater. Hatches in the floor give access to the pressurizing equipment in flight—and also to the hold. Doors are sealed by inflatable rubber tubes and the bolts can only be withdrawn after a locking button on the handle has been pressed. There are handles both inside and outside and the doors cannot be closed by slamming, only by turning one of the handles.

The undercarriage is a very attractive piece of engineering. Both nose and main wheels are mounted in pairs on cantilever oleo-pneumatic shock absorbers of Vickers design and manufacture. Dunlop wheels and tires, with Maxaret anti-skid brakes on the main wheels, are fitted. These brakes were part of the equipment on the prototype which, with George Edwards aboard, visited Canada last winter and proved to be completely satisfactory on icy runways. All three legs are hydraulically retracted forward so that air pressure helps their lowering.

UPPER left, Fig. C: Engine accessibility with cowling doors wide open; these clip on to wing to prevent closing in a wind. Right, Fig. D: Viscount production line at Weybridge in summer of 1953. Lower left, Fig. E: Vickers drawing comparing Viscount cabin with that of Convair 340. Right, Fig. F: Standard Viscount seating as originally planned and generally similar to that for TCA.

Engines: The Rolls-Royce Darts (Fig. C) are installed with their mountings as readily-detachable power plants—with or without propellers. There are four attachment points on the firewall and quick-release couplings for controls and pipelines. A feature of this power plant is that there is a second firewall, or rather a fireproof shroud, separating the combustion chambers from the front of the engine. In this "hot" bay all parts are of steel and fire-resisting materials, or else they are enclosed in steel conduits. The door-type cowlings, which open in two sections, with hinged top and bottom panels, are attached to the airframe and are not removed with the power plant. The jet pipe and its fireproof shroud also remain with the aircraft.

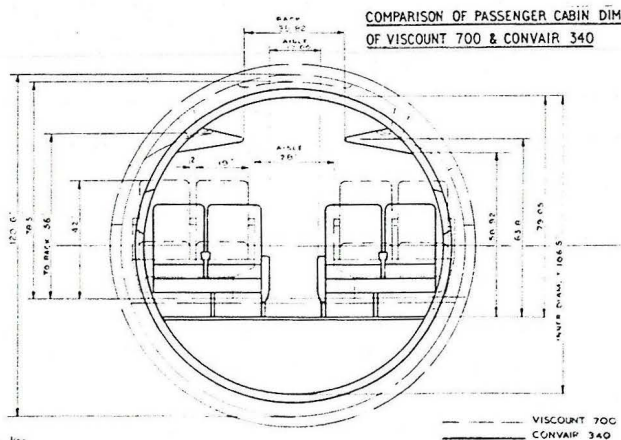
The Dart is a very simple engine, with a two-stage centrifugal compress-

or, two-stage turbine and seven combustion chambers. The most complicated part of the engine is, perhaps, the helical/spur gear drive for the propeller. Accessories are mounted on a gear-box driven from the main shaft.

The engine is controlled by a single lever, there being no separate throttle and pitch controls, which greatly simplifies life for the pilot. Maintenance adjustment of this lever, or rather the controls it operates, is however a fairly complicated business even though it is mechanical and is entirely devoid of electronics. Because of the wide fluctuation of engine rpm with changes in power it is necessary to reset the propeller governor datum, and this is the reason for the mechanical connection with the fuel control valve. The fuel supply is also barostatically controlled for altitude variation, but has to be corrected for temperature, to which turbine engines are very sensitive. A device called a fuel trimmer can be operated from the cockpit to set the fuel supply correctly for the outside air temperature before starting—or when descending into a hot aerodrome where full power might be required for an overshoot.

Power Maintained: For high-tem-

COMPARISON OF PASSENGER CABIN DIMENSIONS OF VISCOUNT 700 & CONVAIR 340



perature operation, that is above ICAN standard atmosphere, 59°F., water/methanol is used to restore power. This acts just as in a piston engine by the cooling effect of the latent heat of evaporation, but it is metered to restore full power, not to give a power boost. The system only comes into use when the "throzzles" are fully forward in the take-off position and it is not used on the subsequent climb. The actual drop in power is 1.2 per cent, for each 1.8°F. rise in temperature, and the range of the system allows it to restore full power up to 113°F.

From the operating point of view the turboprop is simplicity itself. Inspectors at BEA told me that it was strange to have an engine in which the cowlings were never opened. Inspection schedules prove that, apart from giving the engines a lookover for leaks, shining a torch up the tail pipe to check the turbine blades, and cleaning fuel and oil filters there is nothing to do between overhauls—that is 500 hours. So little trouble has occurred that BEA Development engineers think they may achieve 1,000 hours within a year.

Pilots find engine handling so simple that none I have met wishes to return to piston engines. Neither pilots nor ATC have found any difficulty in fitting their flight pattern, cruising at 20,000 ft. plus, climb and let-down at 1,000 ft./min., into the complex and busy London Control Zone. Flight planning differs mainly in the operating altitude and in the fact that fuel is usually saved by flying high into a headwind, rather than descending and avoiding it. Fuel consumption starts to rise sharply below 18,000 ft. and stacking or diversion is preferable above this height.

The Sound of It: The Viscount and its Darts make a curious noise; a combination of a deep drone and a high-pitched whistle that is quite unmistakable. From outside this noise is rather louder than most air liners make because, for one thing, the Viscount is usually heard at climbing power and, for another, rather high rpm (over 10,000) are required for taxiing. Inside, the passenger finds the Viscount much quieter and more comfortable than comparable piston-engined air liners. The lack of vibration at all powers is very noticeable, while the lightness and good view given by the

(Continued on page 55)



PENNY PINCHER

Wee Scotsman

A sprightly little low-wing single-seat personal aircraft, said to be the smallest airplane in production anywhere, is now available in Canada.

Mooney Aircraft, Incorporated, of Kerrville, Texas, designers and builders of the Mooney 18 "Wee Scotsman" and the four-place Mooney 20 "Scotsman", recently named Frank Ogden of Toronto exclusive Canadian distributor for Mooney airplanes. Mr. Ogden has already sold four of the Wee Scotsman models in Canada, including one which he will use as a demonstrator, and for business travel in connection with his work as advertising & sales manager for Ekco Products Co. (Canada) Limited.

Mr. Ogden's own airplane was ferried to Toronto's Island Airport by Dick Golembeski, chief inspector and test pilot for Mooney Aircraft, arriving early on the evening of August 12. Pilot Golembeski reported that the 1,400 mile trip from the company factory at Kerrville took a total flying time of 9 hrs. 20 mins., for an average ground speed of some 135 mph.

The diminutive M-18C captures the imagination. Here is an ultra-light aircraft (max. gross weight of 850 lbs.) with all the dashing appeal of a fighter—retractable undercarriage, low wing, sliding bubble canopy, trim lines, darting maneuverability, and a healthy turn of speed (130 mph @ 10,000 ft. asl) considering the power available (65 hp for take-off). Though the Wee Scotsman is approved only for normal category maneuvers, which do not include spins, most conventional aerobatics are feasible . . . including slow rolls.

However, Mooney is most interested in promoting the Wee Scotsman as a business machine, unlikely as this seems at first impression. For this reason, no attempt has apparently been made to certificate the Model 18 for aerobatics. Ostensibly, this course has been followed

lest an aerobatic approval give the Wee Scotsman a reputation of being a hot airplane, which it is not. Indeed, even the meekest and least experienced of private pilots should be able to cut a fine figure in this one. At the same time, it has plenty of scat to appeal to more advanced fliers.

It was noted previously that the use of the Wee Scotsman as a business machine seemed at first impression an unlikely proposition. A second glance reveals this to be not quite so impractical at that. Certainly the fact that Mooney has sold approximately 300 of the Series 18 (originally known as the "Mite") since production was started in 1946, testifies to the soundness of the company's sales line.

The airplane was, in fact, designed to give maximum economy to the person who usually travels alone on business trips . . . salesmen, etc. Thus, it is no accident that the direct operating cost of the Wee Scotsman is less than a cent a mile. Even more impressive, on the basis of 600 flying hours per year, Mooney figures the total operating cost per flying hour at a miserly \$2.06 per hour; per air mile, 1.7 cents. This figure would undoubtedly be somewhat higher in Canada, but still low enough to make bank accounts feel no pain.

Price of the standard Wee Scotsman in Canada is \$3,195, including Canadian federal duties, sales and excise taxes. Any provincial taxes are extra.

Technical Data: engine — Continental A65-8; max. speed, SL, 142 mph; optimum cruise, 10,000 ft. asl, 130 mph; landing speed, 45 mph; time to 10,000 ft. @ gross weight @ 100 mph IAS, 15 min.; ceiling, over 21,000 ft.; gross weight, 850 lbs.; empty weight, standard equipment, 540 lbs.; useful load, 310 lbs.; span, 25 ft. 10 in.; length, 17 ft. 8 in.; height, 6 ft. 3¼ in.

first free, controlled and sustained flight in 1903.

The replica now is on permanent exhibit in the IAS building in Los Angeles.

Some 24 companies participated in manufacturing the parts for this machine, and in due time these parts were sent to Northrop Aeronautical Institute in California where the complete aircraft was assembled during this past academic year as a student project. The blueprints followed in constructing the replica were obtained from England and are the same ones that were used during the 1920's in building what is believed to be the only other existing full-scale model in the world. This English counterpart is located in London's South Kensington Museum.

VICKERS VISCOUNT

(Continued from page 17)

large windows contributes a sense of well-being. Incidentally, each window is a full-size emergency exit, a unique feature in the Viking tradition.

Discussing the sales program for the Viscount with George Edwards, some interesting facts came to light, which are typical of the drive and initiative of this remarkable engineer, now chief executive and manager of the whole of the aviation activities of Vickers-Armstrongs Ltd.

Fast Talk: He learned that TCA were about to sign for Convair 340's, so he cabled that he was flying over with two technicians. The three put on such a good line in sales talk that TCA agreed to have a look at the Viscount and they sent over a team to try it. Thereafter, Edwards promised to incorporate certain winterization modifications on the prototype and to bring it to Canada. This he did last winter, arriving on the day he promised and with more mods. incorporated than agreed.

It transpired that Vickers-Armstrongs were prepared to meet TCA special requirements more completely than were the American rivals, as witness the complete re-arrangement of the interior and even changes in the engine installation and propellers. It is also true to say that TCA have learned to respect the quality of Rolls-Royce—not only for reliability, but also for after-sales service. After the deal, Ron Baker, Chief Pilot of TCA,

told George Edwards that the Viscount was the best "pilot's air liner" he had ever flown.

Upon the question of selling to the States, G.R.E. delivered himself of some very characteristic and pithily-phrased philosophy—not all quotable, alas. A direct attack would lead to direct opposition, criticism — possibly even obstruction. TCA operations, however, will provide a free system of comparison—a comparison that cannot be other than favourable. Meanwhile, in Europe BEA are already finding that passengers prefer the Viscount.

There is, however, in Europe the "Benesuisse" bloc, KLM, SABENA and Swissair, operating U.S. aircraft, and with approved overhaul facilities. Here everyone is watching Plessman, the tough boss of KLM—will he turn to the Viscount? Comparison will increase as Air France puts the Viscount into service — deliveries have started and are turnabout with BEA—followed by Aer Lingus. Worldwide coverage is already assured by orders from Trans-Australian Airlines, BWIA, Iraq Airways, and Hunting Air Transport, large charter operators. The last three are Viking operators and give a clue to Vickers first line of attack: satisfied customers.

U.S. Interest: George Edwards believes that the effect of Viscount competition will stir up U.S. interest. As he puts it, they will build up their own sales steam like a pressure-cooker. It will be interesting to see if this is prophetic or optimistic.

COMING EVENTS

September 7-13—SBAC display, Farnborough, England.

September 7-17—Fourth International Aeronautical Conference, London, England. Sponsored by the IAS and the RAcS.

September 14—AITA Customs Tariff Committee Meeting, Chateau Laurier Hotel, Ottawa, Salon A, 9:30 a.m.

September 19—Air Force Day.

September 19 — National Air Show, Toronto.

September 25—Webster Memorial Trophy Finals, Quebec City, P.Q.

October 5-9 — IATA General Meeting, Montreal.

October 12-13—British Columbia Aviation Council Annual Conference, Harrison Hot Springs, B.C.

October 26-28 — AITA Annual General Meeting, Seigniory Club, Montebello, P.Q.

November 3-4 — 1953 Transport Aircraft Hydraulic Conference, Park Shelton Hotel, Detroit, sponsored by Vickers Inc.

December 17—Seventeenth Wright Brothers Lecture, U.S. Chamber of Commerce Building Auditorium, Washington, D.C.

January 25-29, 1954—IAS 22nd Annual Meeting & Honors Night Dinner, Hotel Astor, New York City.



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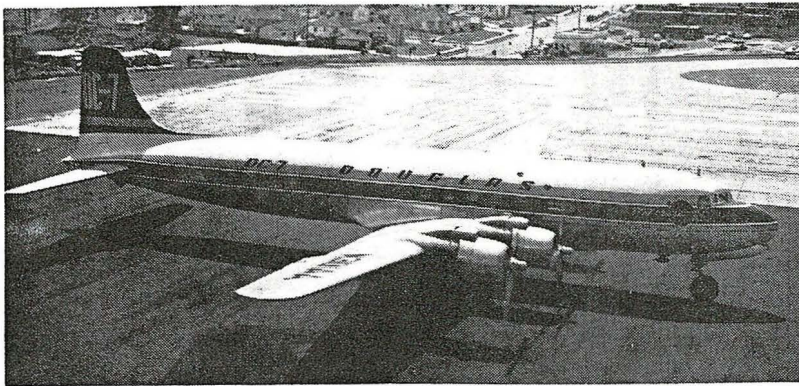
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Douglas DC-7 Flies

On May 18, the first prototype Douglas DC-7 made its maiden flight. Marking the ultimate in the development of the series of four engine Douglas airliners that started with the DC-4, the DC-7 bears a strong external resemblance to its immediate predecessor, the DC-6.

There are, however, extensive engineering changes in the DC-7 which make it a bigger, faster airplane with a far greater passenger capacity than the DC-6.

Most important feature of the new aircraft is its source of motive power. Four Wright R-3350 Turbo Compound engines developing 3,250 hp for take-off, coupled with Hamilton Standard 6921A-8 four-bladed propellers, give the DC-7 a cruising speed of 365 mph. This neat turn of speed together with an absolute range of 4,420 statute miles (for the domestic version—the overseas versions will have increased take-off weight and longer range), means that on many long domestic and international routes the DC-7 will make better terminus-to-terminus times than existing turbojet-powered airliners with much higher cruising speeds. However, this advantage will hold good only so long as turbojet airliners are handicapped by such comparatively short ranges that they must make, with one or more stops, journeys that the DC-7 can make non-stop.

With an overall length of 108 ft. 11 ins., the DC-7 is more than eight feet longer than the DC-6. It can carry as many as 96 passengers, though its luxury seating arrangement is for 69 passengers. The fuselage is divided into three principal compartments, permitting a variety of passenger or cargo arrangements. Normally, more than 700 cu. ft. of cargo space is available. A five-passenger lounge is located in the aft end.

An interesting innovation is the use of titanium, which comprises approximately 90% of the engine nacelles and for firewalls. This is the first appreciable use of this new,

comparatively light, high strength, heat resisting metal in a commercial aircraft.

Douglas has also designed the DC-7's undercarriage so that it may be used as a speed brake. The gear may be lowered at top flying speed when it is desirable or necessary to decelerate quickly, or if a steep descent without excessive speed is desirable.

Cabin pressurization maintains sea level atmosphere up to a flight altitude of 12,500 feet; the equivalent of 5,000 feet at 20,000 feet; and 8,000 feet at 25,000 feet. Air conditioning and pressurization are controlled automatically. Optional equipment includes a Freon cooling system to provide cleaned, cooled dry air to the cabin in flight or on the ground.

So far, 58 of the new aircraft have been ordered, all by U.S. air carriers. The first of these will go to American Airlines, which has 25 on order and scheduled to go into service by the end of this year. Other buyers are United Air Lines, Delta-C & S Airlines, and National Airlines.

Vital Statistics: Span, 117' 6"; Length overall, 108' 11"; Height overall, 28' 7"; Wing area (inc. aileron), 1,463 sq. ft.; Landing gear, fully retractable tricycle incorporating dual-main wheels and steerable nosewheel; max. take-off weight (domestic version), 122,200 lbs.; design landing weight, 97,000 lbs.; payload, 20,000 lbs.; cruising speed, 370 mph @ 24,500 ft. asl @ 95,000 lbs., with max. cruising power, high blower; max. rate of climb at sea level at max. gross and full power, 1,145 fpm; Service ceiling, 28,200 ft. asl @ 95,000 lbs.; T/O at max. weight @ sea level requires a field length of 6,380 ft.; Landing at 95,000 lbs. @ sea level requires a field length of 5,510 ft.; Stalling speed in landing configuration @ sea level, 99 mph; Absolute range @ 15,000 ft. with 5,512 gallons of fuel, 4,420 miles; at 23,500 ft., 3,900 miles; Crew, three (domestic), five (international), plus cabin attendants.

Comparatively Speaking: Here are a few comparative figures for the land-plane versions of both airplanes.

The Mark 2 has a maximum gross weight of 5,100 lbs. In this category, a confusing point arises . . . the Mark 1 is also now approved for a maximum gross of 5,100 lbs. However, because flying at this higher gross weight, would naturally cut down the Mark 1's performance somewhat, de Havilland continues to quote performance figures on the basis of the lighter weights, classifying the aircraft's ability to carry another 280 lbs. as a bonus to the customer and using it as an extra selling point. Thus, there is, at present, technically no difference in maximum gross weights.

In spite of the fact that the Alvis Leonides 502/4 is a heavier engine than the Wasp Jr., by some 108 lbs., the actual increase in tare weight of the Mark 2 over the Mark 1 is only about 80 lbs. This is because the additional weight of the engine is partially offset by the lighter weight of the de Havilland three-bladed constant speed propeller, as compared with the Hamilton Standard unit.

These weights, incidentally, are based on an airplane carrying 78 lbs. of radio and full military equipment, including bomb carriers, military seats, litters, etc. The Mark 2 also has wing-tip tanks, though these are not tip tanks in the usual sense. They are simply internal fuel tanks located inside the normal contour of the wing, only at the wing's extremities. These tanks carry a total of 36 Imperial gallons and replace the long range belly tank. Thus, in comparing the Mark 1 and the Mark 2, one should really think in terms of the L-20 military version (fitted with belly tank) as far as the Mark 1 is concerned.

Performances: Here are a few performance figures for the Mark 2 Leonides Beaver, based on a 1,000 lb. payload, which gives a gross weight at take-off of 4,950 lbs.

These figures are for performance under standard ICAN conditions, flat calm. In brackets are equivalent figures for the Mark 1, under comparable atmospheric and weight conditions; i.e., 1,000 lbs. payload.

Take-off distance over 50 ft. obstacle at sea level — 700 feet (890 feet).

Landing distance over 50 ft. obstacle at sea level — 760 (990 feet).

July/53 AIRCRAFT

AIR LINE TRENDS

TCA Air Coach

TCA plans to introduce domestic air coach service by February 1 of next year. A recent announcement from the air line said that, subject to ATB approval, fares will be reduced by approximately 20% on high-density services supplementing the existing first-class service on domestic main-line routes. North Stars will be used as coach airliners after being fitted with a high density seating arrangement. Delivery of the first Super Constellations will release North Stars for the proposed service.

DC-4's to Seven Islands

On September 1, CPA started operat-

ing DC-4 equipment on its flights between Montreal and Seven Islands, P.Q.

The new service is operated on a once daily basis except Sunday. Departure is from Montreal at 8:30 am, and stops are made at Quebec and Saguenay, with arrival at Seven Islands at 12:15 pm. The return flight leaves at 5:10 pm and makes the same stops before returning to Montreal at 9:00 pm.

Traffic on this particular route has been on the increase for some time, but no DC-4 equipment was available until this summer. The company has now received four new DC-6B's for Pacific service and this has released the four DC-4's which were formerly used

on the trans-Pacific services. In addition to the new service in Quebec, DC-4 equipment is now in use on the Edmonton-Yellowknife route and on the Vancouver-Sandspit portion of the service to Prince Rupert.

MCA Adds a DC-3

Maritime Central Airways recently acquired a 21-passenger DC-3 in Oslo, Norway, from Scandinavian Airlines System. The aircraft was purchased by Captain C. F. Burke, managing director of Maritime Central, while he was on a business tour of the U.K. and the Scandinavian countries.

The new airliner, which brings to a total of 18 the fleet of large aircraft operated by MCA, was flown to Canada via England, Iceland, and Newfoundland by MCA Captain J. S. Barton and First Officer H. E. Ford.

Mexico Bound

TCA will begin service to Mexico on October 31, while CPA will run its first flight five days earlier.

TCA will operate weekly flights emanating from Montreal and picking up passengers in Toronto. Terminal point is Mexico City. It is estimated that the flight from Montreal/Toronto to Mexico city will take 12½ hours elapsed time.

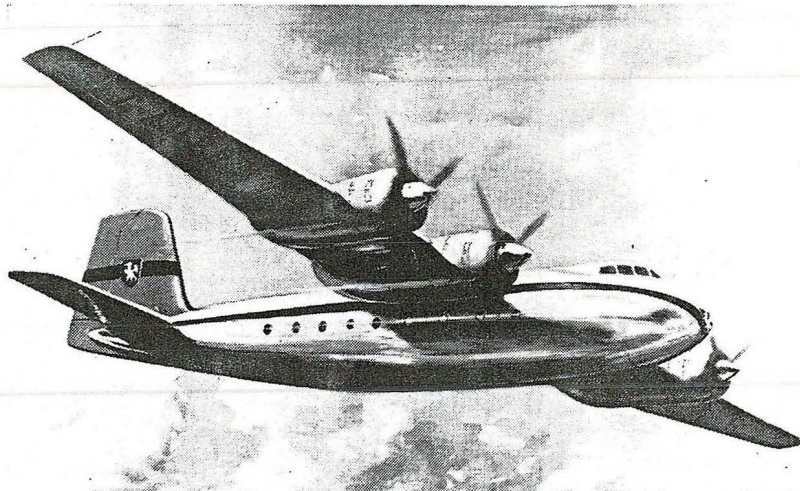
Meanwhile, CPA's first flight will head for Mexico City and Lima, Peru. Plans to terminate the service in Rio de Janeiro have been postponed for the time being, and traffic for Brazil will be turned over to other lines at Lima.

Great interest in the new CPA service is reportedly being shown in China and Japan. Many South American countries have no restriction on Oriental immigration and large numbers of Japanese and Chinese have been living in Central and South America for years.

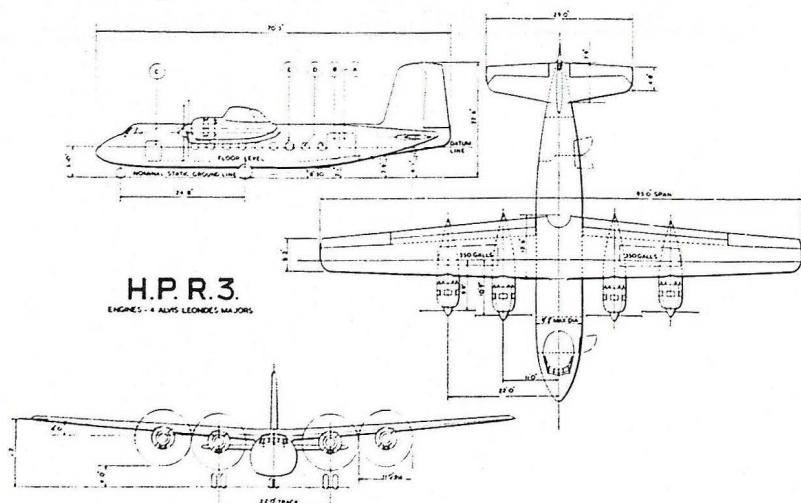
The new route connects with the present service between Vancouver, Tokyo, and Hong Kong and will provide DC-6B service between the Orient and South American points. Provision will be made for both tourist and first-class passengers and tentative fares have been filed covering both categories.

DC-6A Delivered to CPA

CPA accepted delivery of its first Douglas DC-6A Liftmaster early in September. The big airliner, which was demonstrated at Toronto's National Air Show, has a convertible feature



HANDLEY PAGE HPR-3: One of the most recent design proposals for a so-called DC-3 replacement is this product of the drawing boards of Handley Page Limited. Powered by four Alvis Leonides Majors, each developing 870 hp for take-off, the HPR-3 can carry 36-44 passengers. It will be able to cruise 1,500 miles at 220 mph with a payload of over 7,000 lbs. It is designed to be capable of operation from 3,000 ft. grass strips.



being built today. There are many backwood territories where 50 mph off the landing speed is of more value than 50 mph on the cruising speed, for it means the airplane can land at out-of-the-way places where the only alternative is days or weeks of jungle travel.

The Folland Utility Freighter is another approach to something in the same category as the Twin Pioneer. In his project, Teddy Petter has also elected to go for simplicity, fixed undercarriage, and well-tried piston engines. It is, however, a rather larger airplane and more nearly in the Dakota-replacement class. The design is for a high-wing monoplane of the box-car type with twin tail booms, rear doors, and four DH Gipsy Queen 30 engines. With a gross weight of 17,000 lbs., $2\frac{1}{2}$ tons of payload would be carried, consisting of 32 passengers and baggage, or two Land Rovers. The tropical market inspired the Utility Freighter and it is designed to maintain 7,000 ft. on three engines and to use 1,400 yard grass runways under tropical conditions — 900 yards in a temperate climate — with allowance for one engine failure. Cruising speed is estimated at 131-147 mph.

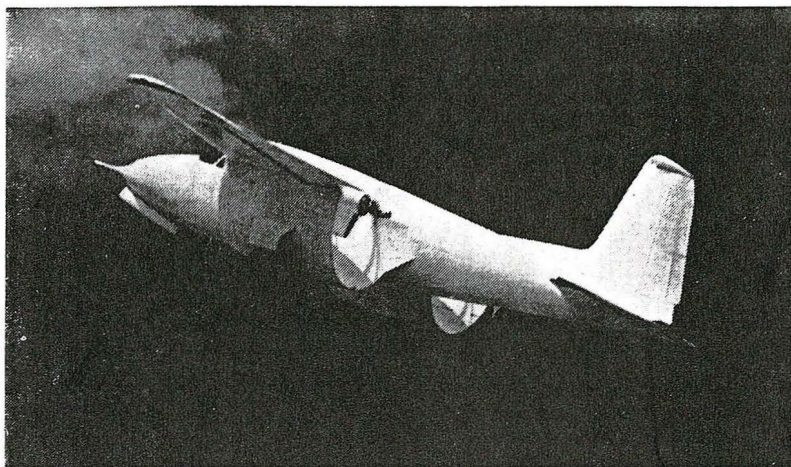
Engines

THE ARMSTRONG Siddeley Sapphire 7 was shown with its intake uncovered, revealing that even this 8,300 lbs./st./th. version operates without variable-incidence entry guide vanes. The Viper, installed in its Mark 101 (A.S.V. 5) form in the Jet Provost and the Midge, is an engine of considerable importance today. The latest mentionable version, the A.S.V.R. 7 is rated at 1,900 lbs./st./th. "dry" and 2,400 lbs./st./th. with afterburning-powers that could give the Midge an operational performance.

The Blackburn - Turbomeca Palas and Turmo engines are the first of the French designs upon which the British licensee has concentrated. The former is a pure jet of 390 lbs./st./th., the latter a shaft turbine in two ratings delivering either 335 or 450 hp. The original Turbomeca layout has been considerably modified by Blackburn and the front casing has been altered to constitute a bifurcated (instead of annular) intake upon which starter and accessories are mounted.

Promising Turboprop: The Bristol BE-25 constant-power turboprop was the company's main focus of interest this year—although it was no more than an announcement. The BE-25 is the logical development of the two-spool, or free-turbine, principle advocated by Bristols on all their designs. Two compressor/turbine systems are mounted on concentric shafts. The second, high-pressure, compressor is driven by the first-stage turbine and, with the combustion chamber, provides the engine's "boiler"—the power-fluid producer. Surplus gas energy, left after the boiler-compressor has been driven, passes through the second turbine, so driving the low-pressure, first-stage compressor, to which the airscrew is geared.

The BE-25 has an air capacity akin to that of the Olympus and if opened full out it would deliver some 9,000 shp at sea level. But the utilization of such a power would involve acute airscrew and reduction-gear problems, not least of which would be considerable weight. Therefore, it would not be advantageous to fit two 9,000 hp. engines to the Britannia in place of its four Proteus. What Dr. Hooker does with his BE-25 is



CUSTER CHANNEL WING: During recent demonstration flight of Custer Channel Wing-5, unique aircraft flew at indicated air speeds ranging from 180 mph down to just 11 mph. It also climbed 3,000 fpm from take-off after using less than 200 feet of runway. The channel wing is a development of Willard R. Custer of Custer Channel Wing Corp., Hagerstown, Maryland. Company has no production plans, but intends to license other manufacturers to make use of the channel wing idea.

to treat it as a 4,000 hp. engine and fit it with a torque limiter that restricts its output to this maximum all the way from sea level to the altitude at which power starts to fall off.

In this way an airliner such as the Britannia can always have full power at any airfield altitude or temperature, and it will maintain this power on the climb to its "rated" altitude, probably about 20,000 feet. Thereafter, the power will fall steadily as the airplane climbs, but at any height it will always be the equivalent of a sea level 9,000 hp. engine and not a 4,000 hp. engine. So there will be double the cruising power between 20,000 ft. and 40,000 ft., for the same installed weight as 4,000 hp. engine. The specific fuel consumption of the BE-25 is expected to be as low as .4 lb./ehp/hr.—or almost as small as a diesel.

Behind the Curtain: The de Havilland Gyron was not allowed to be shown, but a diagram illustrated the principle of its use with the Super Sprite in a supersonic interceptor—near-vertical climb to 50,000 ft. or more, then rapid supersonic acceleration, and then cruise back to base subsonically, and economically, on its Gyron. The Super Sprite is now made up in a jettisonable pack which can be dropped by parachute. Two of these units are estimated to give a jet transport or bomber 20 per cent shorter take-off or 10 per cent more gross weight.

The Napier Oryx gas generator is a curious little engine developed for the Hunting Percival P-74 jet-drive helicopter. It is something akin to the two-spool turbine, in that it has a "boiler" for driving it and a delivery unit. It is a small axial-compressor and turbine cycle providing power to drive

a second axial compressor, the air from which is mixed with the efflux from the "boiler" ready for ducting as fluid energy to where it is needed. In the case of the helicopter, the gases go to the rotor blade tips for propulsion, or in the P-87 transport it would have driven turbines to operate the airscrews. Such a fluid would be at very moderate pressure and temperature, so that it would be ideal for power augmentation by adding and burning fuel.

The new Rolls-Royce Avon RA28, even though it is a civil engine destined for the production DH Comet 3 and the SNCASE Caravelle, was infuriatingly blanked off at nose and tail. It proved to be similar in general form to the RA14, but with the addition of a large compressor bleed, presumably for cabin pressurization and/or de-icing. A placard gave an interesting note of current production Avons and their ratings: RA3, 6,500 lbs./st./th.; RA7, 7,500 lbs./st./th.; RA7R, 9,500 lbs./st./th.; RA14, 9,500 lbs./st./th.; RA21, 8,000 lbs./st./th.; RA26, 10,000 lbs./st./th.; RA28, 10,000 lbs./st./th.

The tiny "Soar", weighing 275 pounds installed and only 15.8 inches in diameter, looked like a ram-jet and, with 1,810 lbs./st./th., had the extraordinary power/weight ratio of 6.58. This engine is very simple and must have an axial compressor of unusual design giving a very high mass flow, since it is able to extract 1,326 pounds of thrust from each square foot of frontal area. No indication of the use of the engine was allowed, but one could guess at its possibly being expendable, for a long-range missile, perhaps for a target plane, or even, in multiple units, as auxiliary power for vertical take-off.

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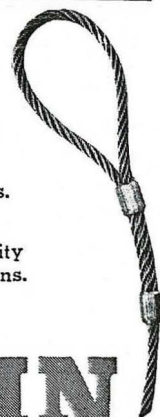
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Editorial

AVIATION HIS DEBTOR

With the death of J. A. Wilson last month, there leaves the Canadian scene a man who, more than any other individual, was responsible for guiding the aviation industry in this country through a most precarious childhood. Mr. Wilson was a true pioneer of civil aviation (he was also responsible for the organization of the first Canadian Naval Air Service, back in 1918). He was present at the birth of Canadian commercial aviation — so he came about the popular sobriquet, “the father of civil aviation”, honestly enough. Mr. Wilson saw his favored child grow and grow to the point where the year before he died it grossed more than one hundred million dollars. It is often said of a man that he “watched” something grow during his lifespan. J. A. Wilson did not watch the aviation industry grow; he *made* it grow.

AN EMERGENCY FLEET

The establishment of a pool of transport aircraft, available for use by the military services in time of emergency, was advocated recently by CPA President Grant McConachie. This is not a new idea, but we are encouraged to learn that an aviation leader of the stature of Mr. McConachie is publicly advocating it.

In advancing his arguments for the feasibility of such a pool of transports, Mr. McConachie pointed out that it had been estimated that the size of a standing army could be reduced by one-third, if it were air transportable. The ability to move troops anywhere in the world within 24 hours, instead of the several weeks required by surface transport means that no longer is it necessary to tie up substantial bodies of men in the “pipelines”. The possibilities of enormous savings in defence costs are self-evident.

Key Factor: The role of air transport in the Korean war is well known. It is doubtful if the United Nations would have been able to prevent the overrunning of Korea if it had not been for the rapid mobilization of the U.S. air transport fleet, comprising both civil and military aircraft, to move strengthening forces into the area. Within a week of the Korean War, 49 flights of heavy long-range transport aircraft were being made each day across the Pacific. The RCAF's 426 squadron alone, during its nearly four years on the Airlift, made approximately 600 round trips . . . enough to move 25,000 men from Canada to Asia.

In the U.S., there is a body known as the Defence Air Transportation Administration, which has at its disposal in a defence emergency, more than 300 heavy civil transports which would be made available to the military services on 24 hours notice. This fleet of aircraft alone is said to be capable of transporting more than an entire division of troops or nearly six million pounds of cargo from coast to coast in less than 12 hours.

Mind you, these 300 transports are only a reserve fleet; in fact, they represent only 40% of the U.S. civil transport fleet. They are intended only to support the considerable transport fleet operated by MATS.

No Reserve: In Canada, we do not have a substantial civil fleet to depend on in this way. In truth, none of the few long-range transports which the Canadian military might commandeer is readily adaptable to service of this type. The only reason that the 300 U.S. transports could be made available within 48 hours is that they already have been modified for installation of essential military equipment.

Obviously, it is not economically possible for the Canadian air transport industry to purchase any substantial numbers of heavy transports. It is just as impractical for the RCAF to purchase them and then put them in “mothballs” until needed. The best answer is the one that has been suggested many times. Let the Government finance the construction of a fleet of such aircraft, then make them pay their way by leasing them to commercial operators.

First Sabre 5 Off

The first production model of the Sabre 5, Avro Canada Orenda-powered version of the F-86, was flown for the first time on Thursday, July 30, from Montreal's Cartierville Airport, where the plant of the aircraft's builder, Canadair Limited, is located. Pilot for the initial flight was W. S. (Bill) Longhurst, Canadair's chief of flight operations. The Sabre 5 is powered by the Orenda 10.

The new version of the F-86 is gradually being phased into the production line at Canadair Limited and the completion of the first production model does not mean that the J-47 version is now completed. It will, indeed, be some time before production will be devoted exclusively to the Orenda version.

First Mk. 4 CF-100

First production Mark 4 CF-100 is now in the final assembly stage at Avro Canada's Malton plant and is expected to fly some time this month. Outwardly similar to earlier versions of the big all-weather fighter, the Mark 4 is greater in length by 26 inches and has a more bulbous nose . . . the extra length being necessary to accommodate the new automatic fire control radar unit.

The Mark 4 is also claimed to be the most heavily armed fighter in the world. It has three rocket-firing pods—one on each wingtip and the third in the ventral position—and these are reported to carry a total of 120 2.75 in. folding fin rockets. In addition, the Mark 4 is also fitted with the same type of ventral gun pack as is used on the Mark 3. This gun pack has eight .50 in. Browning machine guns.

This latest model of the CF-100 is powered by two Orenda 9's with an output of some 6,500 lbs. th. each, as compared to 6,000 lbs. th. for Orenda 2's and 8's used in the Mark 3.

This additional power should improve the aircraft's take-off and climb performance somewhat, though its effect will be offset slightly by the greater all-up weight of the Mark 4.

The advanced stage of the first production Mark 4 marks the near-completion of an immense task of retooling, and major relocation of many

departments at Avro Canada's plant. Harvey Smith, general works manager, estimates the change involved the building of some 15,000 new tools, jigs, fixtures, dies, templates, etc.

Otter Interests USAF

The USAF and the U.S. Army are reported to be displaying keen interest in the de Havilland Otter. The Otter has already attracted considerable attention; the RCAF, which now has six, has ordered an additional six. The Ontario Department of Lands and Forest has taken delivery of one and several are on order, or have been delivered, to a number of commercial operators in Canada.

DH Gyron

A new turbojet engine of the axial flow type, the Gyron, has been announced by The de Havilland Engine Company Limited, of

Edgware, England. De Havilland says that the Gyron has been giving on test, over a substantial running period, "a thrust greater than announced for any other jet engine."

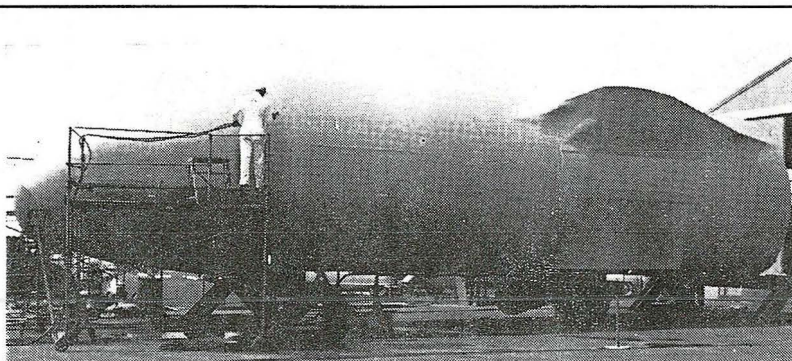
The Gyron has been under development secretly for three years and though started as a private venture, is now sponsored by the British Ministry of Supply.

De Havilland describes the new turbojet as being the first of the next generation of jet engines. It is intended for use in supersonic fighter aircraft. The Gyron is the first axial compressor type engine to be made public by de Havilland, all the company's earlier turbojet engine designs, mainly the Goblin and the Ghost, having been of the centrifugal type.

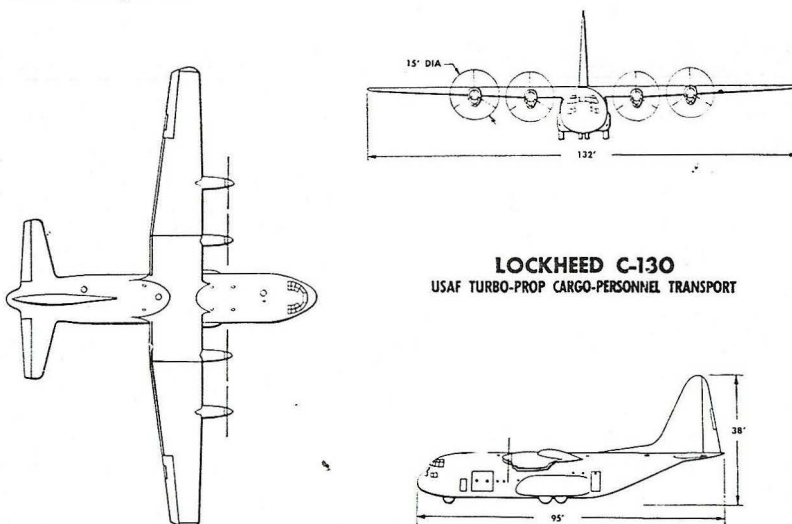
No further details are available at this time.

Aircraft Production

Canadian aircraft plants turned out aircraft with a production value of



C-130 CONTAINED: The nose and centre section of the wooden mockup of Lockheed's new C-130 turboprop cargo transport is shown being cocooned for shipment from California to Georgia. Prototype of the aircraft (three-view below) is being built at Burbank plant, but production models will be turned out from Marietta, Georgia facility of the company. Allison T-40 turboprops will be used. Note wheel arrangement.



LOCKHEED C-130
USAF TURBO-PROP CARGO-PERSONNEL TRANSPORT

NEWS ROUNDUP

BOAC Buys CPA Comet

CPA has sold its second Comet 1A to BOAC. The Canadian firm feels that it is not feasible to try to operate its proposed trans-Pacific jet service with one machine. The air line at present holds an option on four Comet 2's which is due to expire in October. Future plans are still being considered by company directors, CPA advises, and no decision has yet been made on whether or not the option will be taken up.

The Far North

A Spartan Air Services Canso, "The Arctic Queen", recently made the world's northernmost water landing ever performed by a civil aircraft. The Arctic Queen, captained by Weldy Phipps, was engaged in transporting an exploration expedition to the ice fields of Axel Heilberg Island in the Arctic.

The landing was made about 700 miles south of the North Pole in a fresh water lake which was unfrozen, though it was set in the middle of an area of ice fields and ice-capped mountains. Salt water in nearby bays, and

lakes in the territory as far as 300 miles south, were frozen solid. The crew were unable to explain this phenomenon.

Besides Captain Phipps, the other crew members were: Jim Murray, radio operator; Norman Hineson, engineer; Frank Pynn, first officer; Jock Buchanan, navigator.

New Record

The world's speed record has been broken once again in a North American F-86D Sabre, which averaged 715.697 mph over a three kilometre course at Salton Sea, California. Carrying a full operational load, the aircraft was flown by Lieutenant Colonel William F. Barns. Colonel Barns made four passes over the course, the fastest of these being 721.351 mph.

Sensitive Ears

The RCAF has been requested not to land its Comets at airfields in the New York metropolitan area, on the grounds that they make too much noise at a time when the National Air Transport Co-ordinating Committee is concentrating on a noise abatement program.

The NATCC is an organization formed by the U.S. air lines serving New York City, its chief objective being to cut down the noise made by airliners flying into and out of New York airports. With this in mind, the NATCC is emphatic that its request to the RCAF was for reasons of noise abatement only. Safety problems or the fact that the Comet is a foreign aircraft were not involved, it was said.

The RCAF has complied with the request and, following the suggestion of the NATCC, is using the USAF's Mitchel Air Force Base, about 25 miles east of New York, whenever it makes a flight into the New York area.

National Air Show

The National Air Show, to be held on September 19 at the Canadian National Exhibition site in Toronto, promises to be one of the best air displays to be held in Canada in many years. The show, sponsored annually by the Toronto Flying Club, will feature both flying and static displays. All flying will be done over the CNE waterfront, while the static exhibits will be in CNE buildings, or on the grounds.

Among the attractions will be the appearance of 12 CF-100's from 445 Squadron, which is now based at Up-lands. Flying displays will also be given by the Sabre, the Comet, and Avro's Jetliner, as well as a formation of T-33 trainers.

A feature of the show will be the annual handicap race, now known as the Governor General's Cup Race. This race offers cash prizes totalling \$950 and is open to any licensed Canadian pilot flying any Canadian registered aircraft with an all-up weight of not more than 3,858 pounds at time of take-off. The race is over a closed course of approximately 60 miles.

First prize is \$500; second prize, \$300; third prize, \$100; fourth prize, \$50.

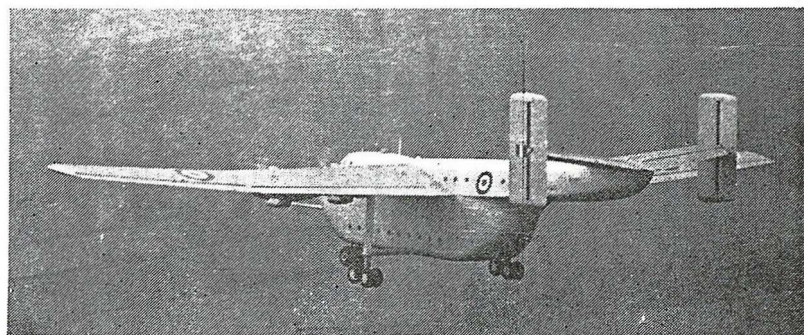
COPA Booms

The COPA reports that its initial membership drive has been so successful that the membership will be more than 2,000 by the end of this year.

As an additional attraction to membership, the organization has recently completed arrangements with Morgan, Nicholson, Limited, and their associa-



FRONT AND BACK: The Blackburn Beverly prototype is shown on its recent first flight. The aircraft is the forerunner of the Beverly C. Mk. I transport which is being produced in quantity for the RAF. The Beverly can carry, simultaneously, ten jeeps and 42 troops. Powered by four Bristol Centaurus engines, the aircraft has a span of 162 feet, a length of 99 feet, and a height of 38 feet.



did not have, though it was licensed to, and did serve these points

War Insurance

A bill enabling operators to have their aircraft and air cargoes insured against war risk was introduced to Commons on June 11 by Finance Minister Douglas Abbott. Mr. Abbott's bill provides that the Minister of Finance may enter into insurance and re-insurance agreements against any or all war risks of aircraft, vessels and cargo; and that there shall be established in the consolidated revenue fund an account to be known as the marine and aviation war risks insurance account.

This insurance, it is explained, will

to \$634,451 from \$596,726, and goods carried to \$291,401 from \$251,630. Among expense items, aircraft operation and maintenance decreased to \$2,572,529 from \$2,580,461 in December, 1950, and traffic to \$453,506 from \$498,910. Ground operation and maintenance rose from \$1,332,848 from \$1,014,989, and general administration to \$393,145 from \$271,714.

Aerial Hunters

The Manitoba Game & Fisheries Act has been amended to allow the carriage in, and discharge from aircraft of firearms, subject to the condition that the firearms are being used for the purpose of hunting wolves, coyotes, or foxes.



OLD SWEAT: The first Boeing Flying Fortress to be converted for commercial use in Canada gets a check at Oshawa Airport before carrying out aerial mapping assignments for Photographic Survey Corporation. The aircraft, a B-17G, has been leased from California-Atlantic Airways by PSC's aircraft operating company, Kenting Aviation Limited, Oshawa, with option to buy at a later date. While under lease to Kenting, the Fortress is being flown by California-Atlantic Pilot Ty Young.

actually be written by a group known as Canadian Shipowners Mutual Assurance Assoc., and then will be re-insured by the Government (Mr. Abbott's bill provides the necessary power). Administration will be by the Association, which is a voluntary, non-profit group receiving out of the premiums only enough to cover the costs of administration.

December Debit

Revenues and expenses of Canadian air carriers rose to peak levels for December, 1951, the Dominion Bureau of Statistics reports. Earnings rose to \$4,099,435 from \$3,632,772 in the same month of 1950, and expenses to \$4,774,906 from \$4,388,602. The debit on operations was \$675,471 compared with \$755,830 a year earlier.

Passenger fares advanced to \$2,613,133 from \$2,374,300; mail earnings

ATB Orders

- The license of **Lloyd Air Service** to operate Class 4 charter and Class 7 recreational flying from Lloydminster, Alberta, has been suspended until July 31 at the request of the licensee.

- The licenses of **Peninsular Air Service** to operate Class 4 charter and Class 7 flying training and recreational flying services from Hamilton, Ontario, have been suspended pending the transfer of the company's operations from Hamilton Municipal Airport to Mount Hope Airport.

- The licenses of **Owen Sound Airways** to operate Class 4 charter, Class 1 flying training and recreational flying, and Class 9-4 international charter from Owen Sound, Ontario, have been suspended until October 1, 1952, at the request of the licensees.

- The licenses of **Chukuni Airways Limited** to operate Class 4 charter and Class 9-4 international charter services from McKenzie Island and/or Red Lake, Ontario, have been reinstated.

- The licenses of **Faraway Airways** to operate Class 4 charter, Class 7 recreational flying, and Class 9-4 international charter services from Sarnia, Ontario, have been reinstated.

- The application of **McPhail Airways** to operate Class 4 charter and Class 7 flying training/recreational flying/aerial pest control services from North Battleford, Saskatchewan, has been approved subject to the restriction that the aircraft used have a disposable load not greater than 1,100 pounds.

- The license of the **Aero Club of B.C.** to operate a Class 6 flying club from Kelowna, B.C., has been cancelled at the request of the licensee.

- The licenses of **Sharon Airways** to operate Class 4 charter, Class 7 flying training, and Class 9-4 international charter services from North Battleford, Saskatchewan, have been suspended.

- The application of **Allen Airways** to operate a Class 4 charter service from Medicine Hat, Alberta, has been approved subject to the restriction that the aircraft used have a disposable load of not greater than 1,100 pounds.

- The application of **Central British Columbia Airways** to operate a Class 4 charter service from Nelson, B.C., has been approved.

- The license of **Associated Air Taxi** to operate a Class 2 regular specific point service serving Vancouver, Gun Lake, Shalalth and Lillooet, B.C., has been reinstated.

- The application of **Hawkins Air Transport** to discontinue operation of its Class 7 aerial pest control service from Weyburn, Saskatchewan, has been approved.

- The application of **Eastern Provincial Airways** for authority to serve Western Arm, White Bay, Newfoundland, under License ATB 466/50(NS), has been approved.

- The authority of **Jacklin Airways** to operate a Class 7 flying training service has been rescinded at the request of the licensee.

- The licenses of **The Pas Airways** to operate Class 4 charter, Class 7 specialty, and Class 9-4 charter services from The Pas, Manitoba, have been cancelled.

- The application of **Central B.C. Airways** to operate a Class 2 regular specific point service serving Terrace and Vancouver, B.C., has been denied.

- The application of **Queen Charlotte Airlines** to serve Terrace, B.C., has been denied.

- The license of **John M. Ross** to operate Class 7 specialty services from Penhold, Alberta, has been suspended until September 1, 1952.

- The application of **Mont-Laurier Aviation** to serve Burwash Lake, North Ring Lake and Fort Chimo, P.Q., has been approved.

- The authority for **Associated Air Taxi (Powell Lake)** to operate Class 7 flying training and recreational flying services from Powell River, B.C., has been rescinded.

- The license of **Skyway Air Services** to operate Class 4 charter and Class 7 flying training services from Burns Lake, B.C., has been suspended until April 1, 1953.

- The license of **Yarmouth Air Service** to operate Class 4 charter and Class 9-4 international charter service from Yarmouth, N.S., has been cancelled.

- The application of **Smith Airways** to operate a Class 7 aerial pest control service from Swift Current, Sask., has been approved.

AIR LINE TRENDS

Comets in Service

An event that was predestined with the first running of Sir Frank Whittle's first gas turbine will take place on May 2 when a BOAC de Havilland Comet takes off on its maiden scheduled passenger flight from London to Johannesburg. This flight will be the beginning of the world's first turbojet commercial air line service.

The Comet is due to leave London Airport at 2 p.m. on the 6,724 mile journey along the so-called "Springbok" route. First northbound Comet service will be on Monday, May 5.

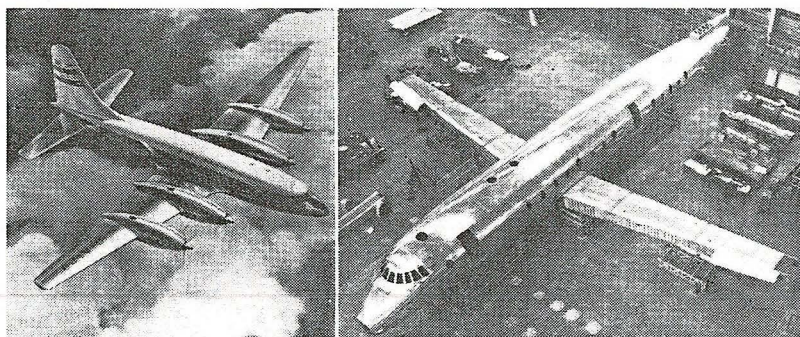
Stops will be made at Rome, Beirut (Lebanon), and these points in Africa: Khartoum (Anglo-Egyptian Sudan), Entebbe (Uganda), and Livingstone (Northern Rhodesia).

Entire elapsed time between London

withdrawn progressively as the Comet frequencies increase. South African Airways, BOAC's partner on the Springbok route, will continue to fly its London-Johannesburg services along Africa's east coast.

BOAC's Springbok Comet will be fitted to carry 36 passengers, along with cargo and mail. There will be four operational crew—pilot, co-pilot, navigator, and radio operator—plus a steward and a stewardess.

BOAC has a total of 20 Comets on order from the de Havilland Enterprise. Nine of these are powered by de Havilland Ghosts, while the final eleven will have Rolls-Royce Avons, which will increase the Comet's range considerably. The Avon Comets are planned for use on trans-Atlantic routes in about two years.



RULE BRITANNIA: First flight of the prototype Bristol 175 Britannia airliner is slated for this summer. Powered by four Bristol Proteus turboprops, it has an all-up weight of 140,000 lbs. and can carry a payload of 25,000 lbs. for a still air range of 4,000 miles at a mean cruising speed of 360 mph. at 30,000 ft. Max. still air range with standard tankage and 12,000 lb. payload is 5,600 miles.

and Johannesburg is scheduled at 23 hours, 40 minutes, but actual flying time will amount to only 18 hours, 40 mins. The return trip will require an additional 15 minutes. BOAC expects to speed up these times when formalities at transit points are accelerated. The Corporation also anticipates routing the Comet through Cairo, Egypt, instead of Beirut, thus reducing the total distance by 450 miles.

One Comet service per week will be operated through May, leaving London on Fridays and Johannesburg on Mondays. In June the frequency will be increased to three weekly, subject to delivery of new aircraft. BOAC's Hermes services, which now fly thrice weekly between London and Johannesburg on the west side of Africa, will be

TCA Adds Seats

The seating capacity of TCA's North Stars is to be increased from 40 seats to 48, following approval by the DoT of necessary modifications. The program on the entire domestic fleet of 17 North Stars will be carried out at TCA's maintenance base at Winnipeg during 1952. The aircraft will go into service as they are completed.

To make room for the extra seats without reduction in leg room, the cloakroom and washrooms are to be rearranged. It is understood that the men's lavatory will be moved from its present position just aft of the flight deck to the rear of the aircraft, opposite the ladies' lavatory. To make room for the men's lavatory, the ladies' powder room (or whatever you call it) will be

eliminated entirely. The men's wash-room, now opposite the men's lavatory in its present position aft of the flight deck, will also be eliminated.

Change of Plan

CPA, which recently applied to the ATB for a license to extend its Montreal-Rouyn/Noranda service to Sudbury and thence to Toronto, has now asked that its application be amended by deleting Sudbury and substituting Earlton, Ontario.

CPA apparently feels that the airport facilities now being built near Sudbury have not sufficiently advanced to indicate the nature of the service for which they will be suitable, and the time at which the airport will be available.

Earlton is a small field located about 100 miles almost directly north of North Bay, Ontario, and a near equal distance southwest of Rouyn. It is in the immediate vicinity of New Liskeard, Cobalt, and Haileybury. A hearing on CPA's amended application was scheduled for April 30.

Meanwhile TCA would like to fit Sudbury into a proposed service running between Montreal and Sault Ste. Marie via North Bay.

More Service

A 27% increase in scheduled air service over TCA routes from coast to coast became effective on April 27. The additional service includes a fifth trans-continental flight in each direction, and increased flight frequencies on many intercity routes. They will be operated during the heavy seasonal travel period.

TCA will also extend North Star service to the Maritimes and Newfoundland for the first time, supplementing present DC-3 services in that area. This extended service will emanate from Montreal, touching Moncton, and Sydney and terminating at Torbay. Halifax will not get North Star service because the airport at Eastern Passage cannot handle such large aircraft. However, surveys of other possible airport sites near Halifax are currently being made by the DoT, and it is probable that a suitable airport will be built within the foreseeable future.

Switcheroo

In a surprise move, Branch T. Dykes was recently elected president of Colonial Airlines, Inc. Mr. Dykes has been vice-president in charge of operations & maintenance for Colonial since 1941.

The election was a surprise because

AIR LINE TRENDS

Tax Happy

A landing tax is to be imposed on all fare paying passengers arriving at state-owned airports in the U.K., it was announced recently by the British Government. The new charges become effective on May 1 and amount to five shillings (approx. 70 cents) for passengers arriving from European destinations and seven and a half shillings (approx. \$1.05) for those from North America and the rest of the world. No charge will be made to passengers who are simply landing in Britain while on their way to some other destination (provided their journey is continued without a break).

It Adds Up

Last year was a big year for most of the major air lines of the world and scheduled air transportation as a whole is looking forward to completing an even better year in 1952. Typical of the financial results which are being reported by air lines are those appearing below.

- American Airlines, Inc., had total revenues of \$162,970,000, highest in its history. After providing for all expenses including provision of \$17,400,000 for taxes, the net income was approximately \$10,548,000. Last year, net income was \$10,400,000 on gross income of \$118,684,700. Increased taxes this year kept profits from increasing any great amount.

- Western Air Lines, Inc., reports net income after taxes of \$1,389,300 on a gross income of \$16,281,514. Comparative figures for the preceding year were \$750,200 profit on \$14,246,493 income.

- United Air Lines realized the highest net earnings in its history, amounting to \$8,563,097, after taxes. Operating revenues reached a peak of \$127,797,794, an increase of 23% over those for 1950. Operating expenses for 1951 were \$10,270,855. Net income in 1950 was \$6,429,723.

- Even BOAC, which in the nine month period ended December 31, 1950, had a whopping deficit of £3,157,000 (nearly \$9,000,000 at current rate of exchange) had a net surplus after deductions of £505,000 (nearly \$1,500,000) for the nine-month period ended December 31, 1951. While this is a spectacular recovery, the full fiscal

year, which ends March 31, 1952, is expected to result in a loss, because the months of January, February and March are always the worst on BOAC's routes.

Over the Waves

United States air carriers do as much flying over the North Atlantic as the carriers of all other countries combined, figures recently released by ICAO show. The figures are for the years 1949 and 1950, and though the numbers of flights over the North Atlantic has undoubtedly increased, the proportions carried by each country are thought to have remained fairly constant.

IACO reports that during 1950 there were a total of 9,850 scheduled flights by scheduled air lines on the northern route (this excludes flights through the Azores or Bermuda), of which 4,963 were carried out by American air lines. Next in line was the U.K. with 1,142 flights, The Netherlands with 888, France with 884, and Canada with 640. The remainder was divided almost equally between Belgium, Denmark,

Norway, Sweden, and Switzerland.

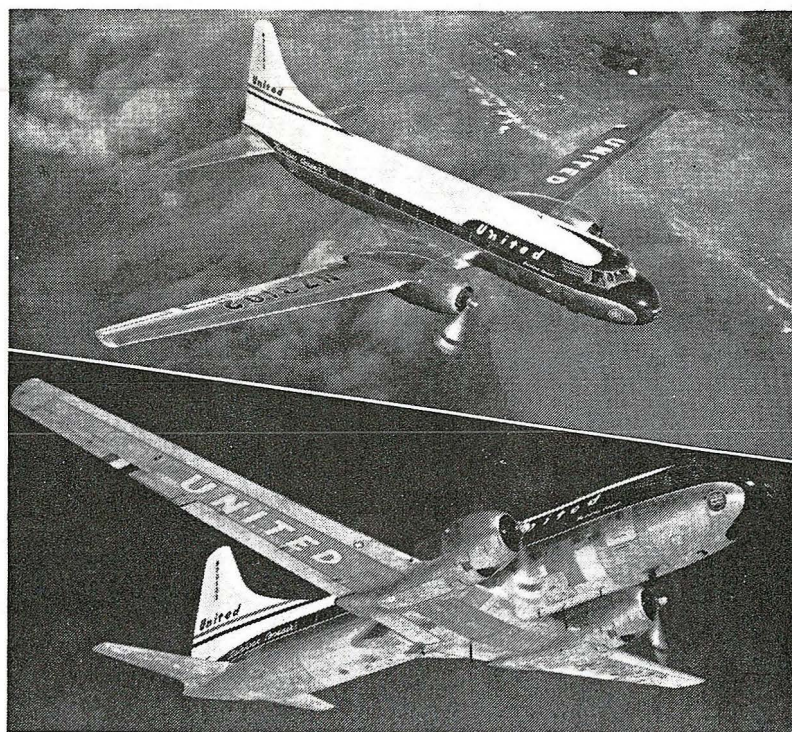
In addition, the scheduled air lines of some of these countries completed a total of 351 non-scheduled flights over the North Atlantic, 224 of these having been carried out by The Netherlands, 40 by the U.S., 33 by the U.K. The rest were flown by Sweden, Norway, Iceland, Denmark, and Canada (which completed 12).

Other than scheduled air lines completed 354 North Atlantic flights, practically all (286) of these being made by American companies. The remainder were carried out by Canadian (62) and British (6) firms.

The People's Choice

Air travel as a means of travelling between the U.S. and Canada continues to grow rapidly in popularity with both visiting Americans and returning Canadians. While air travel still falls short of bus and train in respect to total numbers of passengers brought into Canada, the monthly increases registered by the air carriers are proportionately far greater than those registered by the two longer established modes of travel, bus and train.

Comparing the first nine months of 1951 to a similar period in 1950, it is



ABOVE AND BELOW: Two views of United Air Lines' new Convair-Liner 340 aircraft, on which the company is now taking delivery from Consolidated Vultee. UAL has 40 of these 44-passenger aircraft on order. Successor to the popular Convair 240, the 340 is powered by two Pratt & Whitney CB-16 engines developing 2400 hp each for take-off. Cruising speed is approx. 300 mph while range with full load of passengers and 850 lbs. of cargo is over 1,000 miles (still air).



THE DC-7

Douglas Development

To many of the travelling public the name of Douglas is almost synonymous with air travel. This is not so surprising when one considers that not only has Douglas turned out a growing line of good honest airplanes, but through the circumstances of war, it has managed to saturate the world airways with at least two airplanes built to its designs. These two airplanes are, of course, the DC-3 (C-47) and the DC-4 (C-54). The numbers of the former type built went far over the 10,000 mark, while there were 1,163 of the four-engine aircraft turned out. Little wonder then that Douglas can quite truthfully boast that "More people fly Douglas".

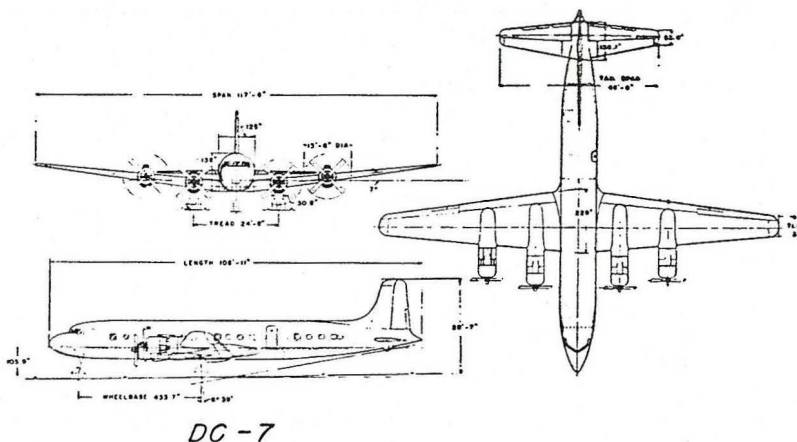
Continuing its apparent policy of conservative development of the type, Douglas followed up the DC-4 with the larger and more powerful DC-6 series, which have also proved popular with the air lines, though no more so than its major competitor, the Constellation series. Now Douglas has introduced the DC-7 as, undoubtedly, its answer to the Lockheed's Super Constellation.

To the naked eye, the DC-7 doesn't look too much different from its predecessor, the DC-6. With a length of some 108 ft. 11 in., it is more than eight feet longer than the DC-6. However, the wing dimensions are the same, so that it would appear that the really big difference between the two aircraft is to be found in their source of

power, which in turn has resulted in a decided increase in the maximum permissible gross take-off weight. The DC-7 is to be powered with four Wright R-3350 Turbo-Cyclone compound engines developing 3250 bhp each and driving Hamilton Standard four-bladed props. This is the same engine as is used in the Super Constellation.

The DC-7 is available in two versions, one for domestic use and the other for overseas. The former has a maximum take-off weight of 116,800 lbs., and the latter, 122,200. These weights are, respectively, 16,800 lbs. and 19,200 lbs. greater than those for the corresponding versions of the DC-6. Accommodation may be installed for from 60 to 95 passengers.

General performance has also been improved. For instance, at a gross weight of 105,000 lbs., Douglas is forecasting that the DC-7 will tool along at 358 mph at 24,200 ft., when the engines are turning out maximum cruising power. When landing, the aircraft stalls at 99 mph. The domestic version can carry 4,512 gallons of fuel to give it an absolute range at 10,000 ft. of 3,625 miles; the overseas version flying at the same altitude and with a fuel capacity of 6,600 gallons, can travel 5,350 miles without stopping. At gross weight 105,000 lbs., the DC-7's maximum rate of climb on four engines at sea level is 1,535 fpm, and 800 fpm at 20,000 ft.



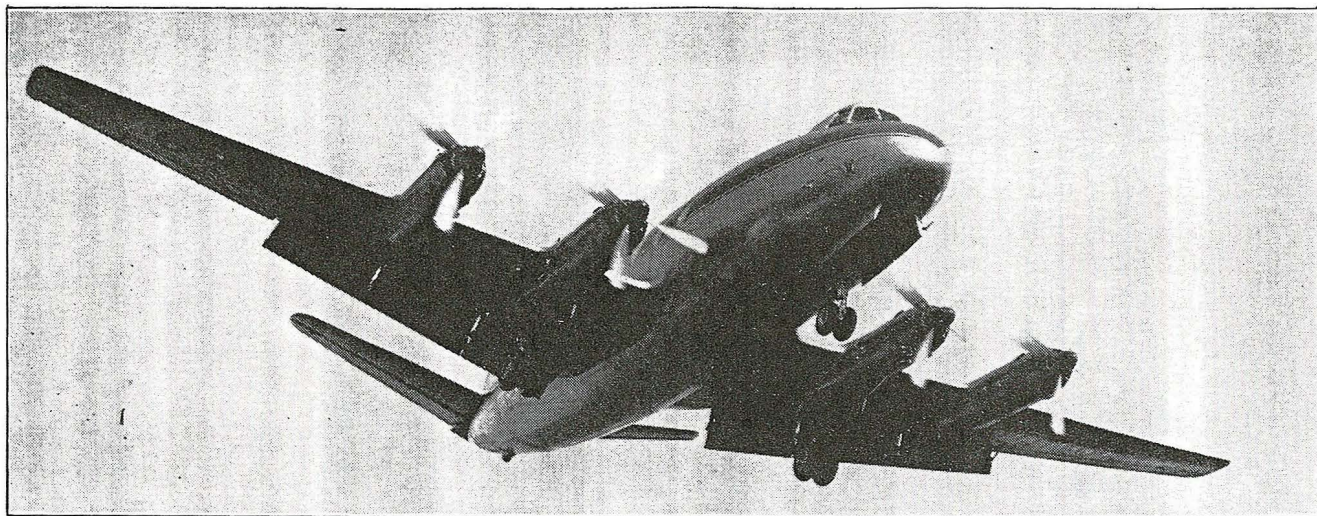
DC-7

tated one. It has been possible to eliminate the tail surfaces from the latest versions of this helicopter because of the stability gained through use of an autopilot installation adapted by Piasecki and Sperry. The HUP was designed principally for shipboard service and in this capacity is already being used extensively by the USN. To facilitate it being handled on the elevators of Navy cruisers, it is fitted with folding rotors. The overlapping rotor design permits the machine to go down the elevator of an aircraft carrier without folding the blades.

The biggest project currently underway at Piasecki is the XH-16. A greatly enlarged development of the HUP, it has a fuselage comparable in size to that of a DC-4. No detailed specifications are yet available (though construction of the prototype is well advanced). It is also to be built in a tall landing gear version which will feature a detachable capsule, almost doubling the normal capacity. This version will be used for short range, heavy lifting jobs, while a short undercarriage model will be used for long range rescue and troop transport work. The development of this machine is being sponsored jointly by the USAF and the USN.

First of its Kind: The Piasecki Helicopter Corporation claims to be the first company in the U.S. that was formed for and which has been devoted exclusively to the development and manufacture of helicopters. The company was originated in August, 1940, by a group of young engineers who met under the leadership of Frank N. Piasecki to discuss and experiment with rotary wing design. Known as the P-V Engineering Forum, this group incorporated in 1943. Three years later the company was refinanced, expanded, and renamed Piasecki Helicopter Corporation.

Starting with five engineers in a small Philadelphia store, Piasecki now employs over 3,200 in four plants, the main one of which is at Morton, Pennsylvania. Still leading the firm is youthful Frank Piasecki (in his mid-thirties) who is now chairman of the board. Before organizing the P-V Engineering Forum, Mr. Piasecki worked for Kellett Autogiro Co., Platt-LePage Aircraft Corporation, and in the airplane section of Edward G. Budd Manufacturing Co.



The Vickers Viscount

By being the first prop-jet engined passenger aircraft in the world, the Vickers Viscount takes an important place in aeronautical history. But its importance as a pioneer airliner, foreshadowing technical progress, is much greater. For the Viscount is the first of the thousands of commercial aircraft driven by gas turbines that must one day ply on the air routes; it is the first of an entirely new generation of air vehicles.

Four Reasons

There are four reasons why this kind of passenger aircraft is almost certain to be widely used in the future and, as will be shown, each of these four reasons is emphatically stated by the Viscount. They are: (1) improved mechanical economy; (2) greater passenger comfort; (3) increased safety; (4) higher speed.

The Vickers Viscount is powered by four Rolls-Royce Dart gas turbines driving airscrews and it is because of these engines that the first advantage of improved mechanical economy is obtained. For, in common with other gas turbines, the Dart obtains its power from rotary motion and not from reciprocating motion. The most striking thing about the Viscount for those who have been used to travelling in ordinary piston engined air liners, is the smoothness. There is none of the clatter which is present in even the best piston engined machines.

By Oliver Stewart,
Editor
"Aeronautics"

It follows that the mechanical wear and tear are reduced; and from that it follows that the maintenance work is also reduced and that flying time between overhauls is increased. Noise and clatter are both marks of mechanical inefficiency; every step towards smoother, quieter, running is a step towards greater mechanical efficiency. The Viscount is smoother and quieter than any other airliner of comparable power.

First Prop-Jet Airliner In the World Is Carrying Britain's Colors in What Is a Bid For Supremacy In the Field of Air Transport

The second advantage — passenger comfort — is linked with the first, for where there is less noise and vibration, there is more comfort. George Edwards, the designer of the Viscount, likes to demonstrate the lack of vibra-

tion when flying in this aircraft by balancing a pencil on its end on one of the tables. The pencil remains there just as it would if it were balanced on a desk in an office building.

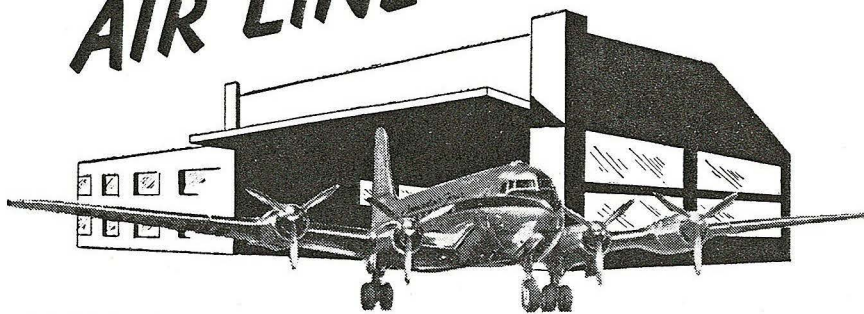
Third Advantage

The third advantage, increased safety, results from the use of kerosene instead of aviation spirit. Kerosene is less volatile than aviation spirit, and although there is a good deal of dispute about how aircraft fires usually start, it is established that, in some circumstances, the risks of fire are drastically reduced by the use of less volatile fuels. The fuel for the Viscount is carried in flexible containers in the wings.

The fourth advantage — increased speed — is again the consequence of the prop-jet power units. They are only a little over 32 inches in diameter, yet each engine delivers one thousand horsepower and, in addition provides a jet thrust of 325 pounds. Thus the total horsepower is 4,000 and the total jet thrust about 1,300 pounds, and all obtained from power units of great slimness, and therefore small drag.

Some of these points will now be developed more fully with further reference to the Viscount. Measurements have been made of the noise level inside the pressurized cabin of the aircraft and it is found that it is between 10 and 20 decibels quieter than the Vickers Viking, which has its

AIR LINE TRENDS



They Wuz Robbed

Like a lady wrestler accusing a ninety-year-old midget of being the father of her child, two United States senators, John Bricker and Homer Capehart, last month accused Canada of taking "undue advantage" of the United States.

What brought this on was that along with other Americans, the two senators thought that old meanie Canada had done them wrong in using Gander Airport as a lever to get long-sought-for air traffic concessions from the U.S. ATB Chairman John R. Baldwin and CAB Chairman Joseph J. O'Connell had scarcely finished signing the new bilateral air agreement in Ottawa, June 4, when a loud wail was heard from the south.

A Group of Mourners

Among the mourners were: Colonial Airlines, the two aforementioned senators, Senate Commerce Committee Chairman Edwin C. Johnson, Congressional Representative Carl Hinshaw, and ex-CAB Chairman James M. Landis.

As is only natural, the loudest protests came from the Colonial Airlines, which stands to lose the most under the new agreement. Colonial claims to have only one paying route, the New York-Montreal run. It has been operating this route for twenty years and at present uses DC-3's. Under the new agreement a Canadian carrier (TCA recently said coyly that it "hoped it would be us") will be able to operate a parallel service.

It is likely that TCA will put North Stars on the route in opposition to Colonial's DC-3's and consequently will get a large chunk of the business, perhaps even the bulk of it. This be-

cause TCA will be running a non-stop service with faster, more luxurious equipment, whereas Colonial has to make several intermediate stops where only a DC-3 can land and take-off. Colonial estimates that the disadvantageous position in which the air agreement has put it will result in the annual loss of \$1,000,000 worth of business.

A Loss of Business

In an effort to gain compensation for this potential loss of business, Colonial has filed application with the CAB for the rights to the New York-Toronto, New York-Buffalo, and New York-Washington routes. American Airlines already flies Toronto-New York via Buffalo and also has an application before the CAB for a non-stop Toronto-New York run.

In regard to the new agreement, Sigmund Janas, president of the Colonial, had some bitter words. He charged that the U.S. Senate had been

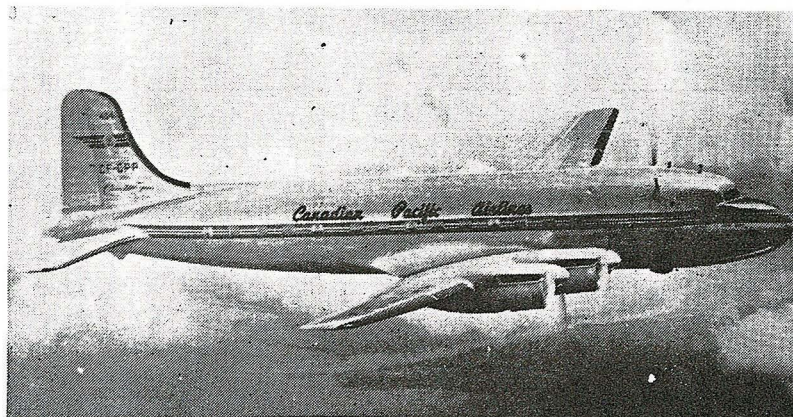
defied and that its treaty-making authority by-passed. Termining the pact "a complete sell-out," Mr. Janas went on to say, "In one swoop the agreement ignores the (U.S.) Congress and its written word, and at the same time presents a foreign Government with a bonanza at the expense of the established American air lines and the American taxpayers."

A Plea of Mercy

He managed to work in a plea for Colonial's applications now before the CAB: "Congress has shown an alertness to what has happened. It seems to be on the road to preventing a repetition of the blunder. Similar alert action on the part of the CAB in reviewing Colonial Airlines new route requirements would undo a lot of damage already done, and thus strengthen us at a time when we have received a most severe blow. Bear in mind that Colonial was the hardest hit of the air carriers by the Ottawa agreement."

An Eloquent Protest

Mr. Janas rightly took great umbrage at the secrecy with which the entire negotiations were carried out. "How despicable it is," he said eloquently, "to enshroud delicate and vital agreements that concern not only American property rights but our national defence and foreign commerce and most particularly the Constitutional prerogatives of the United States



DELIVERY COMPLETED: The last of four Canadair Fours built for CPA has now been delivered. Pictured above is CF-CPP, the Empress of Hong Kong. The regular scheduled flights to Australia have already started and the flights to the Orient are to get under way during August. New Zealand has been left off the Australian run.



Britain Calling

By JOAN BRADBROOKE,
A.R.Ae.S.

British Correspondent, Aircraft and Airport



Air exercises in which bombers and jet fighters of the USAF and units of Western Union Forces participated and the National Air Races which are to be held during the August Bank Holiday, are two of the main air topics in Great Britain just now. Exercise "Foil," in which there was a fighter bias and which was mainly a test of the air defences of Great Britain, has just finished.

Bomber and fighter units of the USAF took part as well as a Meteor Squadron of the Royal Netherlands Air Force, while controllers and observers from the French, Belgian, and Dutch forces were present.

Exercise "Verity," which has now begun, is a naval exercise, but jet fighters of the RAF and units of Bomber Command and Coastal Command) and French, Belgian, and Netherlands squadrons of fighters, bombers, and flying boats, are taking part.

In the National Air Races, to be held at Elmdon, Birmingham, between July 30 and August 1, interest is likely to centre largely on the SBAC. Challenge Trophy for which the DH Vampire, DH 108, Gloster Meteor, Hawker P. 1040 and P. 1052 and the Supermarine 510 have been entered.

Altogether over a 100 applications have been received by the Royal Aero Club for the Races, some 37 for the King's Cup. Entries for the latter include a DH Dove and Chipmunk, Miles Geminis and Messengers, a short Sealand, Percival Proctors and various prewar types such as the little Comper Swift, Miles Six, Hawk, Sparrowhawk and Falcon and two Mosscraft.

New Aircraft

Meanwhile although taxiing trials of the Bristol Brabazon I are about to begin there is no definite news of the date of the first flight. But some weeks before the taxiing trials were due to begin a twin Centaurus power unit completed its first ARB 150-hour type test and was officially approved for use in civil aircraft.

Rolls-Royce Tay gas turbines are to power the second Vickers Viscount prototype, construction of which is well advanced. The Tay-Viscount is being built for the Ministry of Supply solely for research and development purposes and flight trials may begin before the end of the year.

While Handley Limited has just celebrated its 40th anniversary, Handley Page (Reading) Ltd., is believed to have completed the first production model of the Miles M.-69 Marathon

and it is hoped that all 40 of the first order will be completed next year.

Meanwhile, the first three Percival Prince 8-12 seater aircraft have returned to their aerodrome at Luton after extensive trials. The prototype Prince has been undergoing ARB tests at Boscombe Down, including measured single and twin-engined take-off and landings. Seventy asymmetric take-offs and nearly 150 landings cross wind have been made by the Prince at Boscombe Down, many of them using only one engine.

A second Prince has completed a proving flight under operational conditions to India and a third has completed a 25,000-mile proving flight round Africa, during which it underwent ARB tests in various changes of climate and varying heights and temperatures. The Prince is powered with Alvis Leonides 9-cylinder air-cooled radial engines which are said to have behaved well. Single-engined performance with full load proved exceptional in tropical and high altitude conditions. This was the first time the Alvis Leonides had operated in flight under tropical conditions.

Altogether the Percival Prince has flown more than 500 hours on test and in proving flights during the past year.

While new aircraft make progress old types retire and the Bristol Beau-fighter, famous throughout the last war, is now being withdrawn from operational service after nine years of active service. The last RAF Beau-fighter squadron, No. 45, based at Kuala Lumpur, Malaya, is being re-equipped with the Bristol Brigand.

A New D.C. Amplifier

A new D.C. amplifier for strain recording and other applications has been developed by Savage and Parsons Ltd. It employs a conventional design having a self-balancing push-pull circuit which will accept both symmetrical and asymmetrical inputs. Gain control is provided in 10.6 db steps. The output is in push-pull and a maximum of 600 volts peak to peak is available for an input of 30 millivolts peak to peak. In practice the design has proved to have a zero drift.

Although the prototype is a single-channel unit both three and six-channel units have been designed and will be in production soon. Production models will also be smaller.

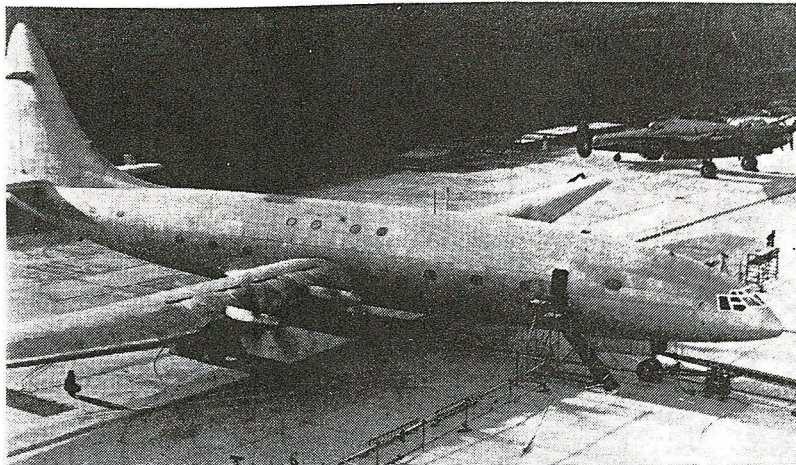


A.W.A. APOLLO: The Armstrong Whitworth Apollo recently flew for the first time in Britain. It is an all metal, low wing aircraft with a laden weight of approximately 39,500 pounds. It can accommodate a maximum of 31 passengers and 7,500 pounds of freight in its pressurized cabin. Power by four Armstrong-Siddeley Mamba II gas turbines driving fully feathering reversible pitch propellers.

(caused by other than weather) the transfer of passengers and personal luggage to air carriers entitled to pick up traffic at Gander will be permitted!—if the Collector of Customs says its okay; the selection of passengers to be transferred and the number involved will be decided by the air carriers and the Collector of Customs.

Time To Bargain

All landing rights at Gander Airport have been extended until June 30, it was recently announced by Transport Minister Lionel Chevrier. These rights involve eight air lines and six foreign countries. Meanwhile, arrangements have been made to hold discussions between Canada and the U.S. sometime in June on the subject of bilateral exchange of landing rights.



WHERE TO GO? Such aircraft as the Bristol Type 167 Brabazon pose a special problem for airports of the present and even the future. Now being readied for its first flights, the 126-ton giant has a wing span of 230 feet. The USAF's B-36 has the same span but its weight is given as 139 tons. Brabazon is slightly longer.

Briefly

•Consideration is being given to the cancellation of the agreement between the city of Victoria, B.C., and the Memorial Airpark Association. The agreement was based on the future development of a 57½ acre tract of land at Gordon Head as an airport,

but the project was voted down by residents of the area in which the field was to have been located.

•The Department of Transport plans to take over the North Star Restaurant at Gander and turn it into the main air immigration centre for

Canada, according to news reports from Newfoundland.

•The landing rates and charges in effect at Gander prior to Newfoundland's change of status are remaining in effect until further notice from the Department of transport.

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Operators' Notes

Prejudged

A sharp division of opinions on the relative merits of the government assisted pilot training program seems to have developed since its inception January 1.

Though all operators thought that the scheme looked like a hot one on paper, it is only those located in the heavily populated urban areas that are so far able to report any degree of success. Unfortunately, being located in an urban area is not necessarily the open sesame to a heavy enrolment of students so that even many of these operators are reporting poor success with the plan to date.

What seems to be holding the program back so far is the lengthy ground school course that is called for. From all parts of the country come reports that the many hours of ground school required is discouraging many prospective students. One well-known operator from British Columbia recently wrote *Aircraft and Airport*:

"I am rather worried about the ground training under the new training scheme. We are getting a lot of new students due to the grant, but are also losing a good many because it is just not possible for many of them to attend the required night school. Insofar as a good percentage of the

ground course does not have any practical use in private flying, it seems to me that the Department (of Transport) is going to stifle private flying by insisting on this training."

The AITA reports that six of its local committees in Moncton, Montreal, Toronto, Winnipeg, Edmonton, and Vancouver held meetings some time ago to discuss the ground syllabus and later forwarded their recommendations to the AITA Ottawa office.

"It was at once apparent that there were very pronounced views regarding the general planning of the syllabus and the time proposed to be allocated to ground school subjects. It was stated very definitely that as soon as the nature of the ground school syllabus became known there was a very noticeable falling off of interest in the training plan." R. N. Redmayne, manager of the AITA, has recently been conferring with Association members in western cities in order to get more knowledge of their views regarding the scheme.

Despite the apparent poor start of the plan, most of the operators feel that in its broad outlines and aims it is a good idea—but until some of its present kinks are worked out it will not be of too much value in promoting the training of pilots. Encouraging is

the admission by the Department of Transport that there are many flaws to be worked out. Recognition of this fact by the government body is felt to be half the battle in getting a pilot training plan that is workable to the satisfaction of the majority.

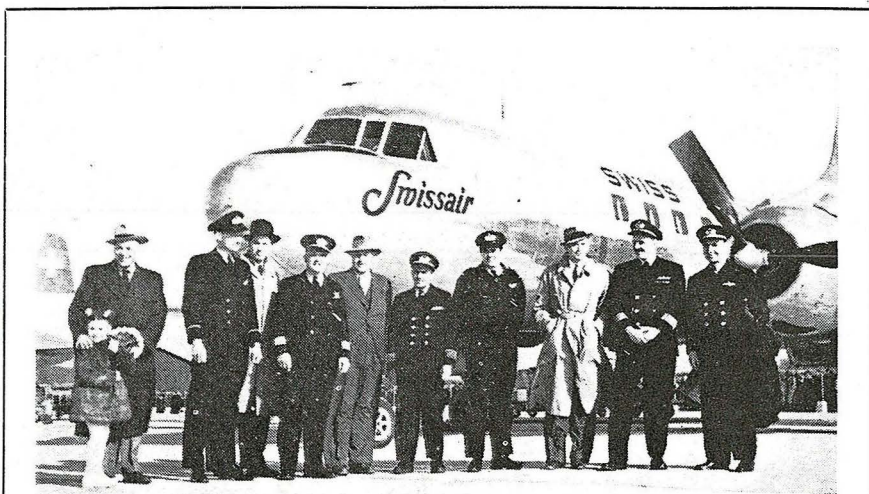
AITA Membership

Members in good standing of the AITA numbered 140 and March 1,



FIRST: C. S. Carew (right) of Toronto, ex-RCAF navigator, receives Private Pilot License No. 1 under new training plan. Making the presentation is Toronto Dist. Inspec. Air Regs. D. Saunders. Pilot Carew learned to fly at Leavens Bros.

1949. This compares with the figure of 91 on September 30, 1948. Of the latest total, 81 of the members are operators. The increase is attributed mainly to this group's natural interest in the pilot training plan.



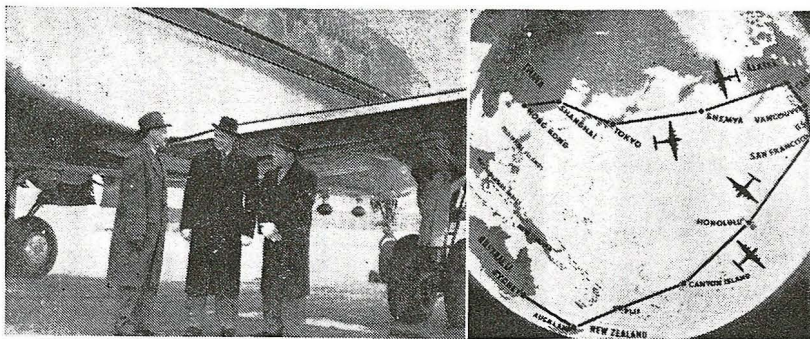
DELIVERY MEN: World Wide Aviation flight crews recently completed delivery of four new Convairs to Swissair of Switzerland. Pictured, after the Convairs were delivered are (left to right): Swissair Chief Inspec. Dutsch, WW Radio Nav. F. Birchall, Swissair Asst. to Tech. Director Westermann, WW Capt. W. MacLaren, Swissair Tech. Vice Director Lack, WW Capt. A. Elie, Flt. Eng. T. Colahan, Swissair Tech Director Dr. de Meiss, WW Capt. D. M. McVicar, and Radio Nav. R. N. Holmes.

The OPAS Last Year

Hot on the heels of the 1947 report of the Ontario Department of Lands and Forests (*Aircraft and Airport*, February, 1949) comes the compilation of events during the year ending March 31, 1948.

In this report, naturally, is the summary of the activities of the Ontario Provincial Service, which is part and parcel of Lands and Forest. Although the section of the report dealing with the Air Service states that "... the Department was able to interest a Canadian manufacturer in the design and development of a semi-suppression bush seaplane," at the time of the report only twelve Beavers had been ordered and none delivered.

The report also says that three new



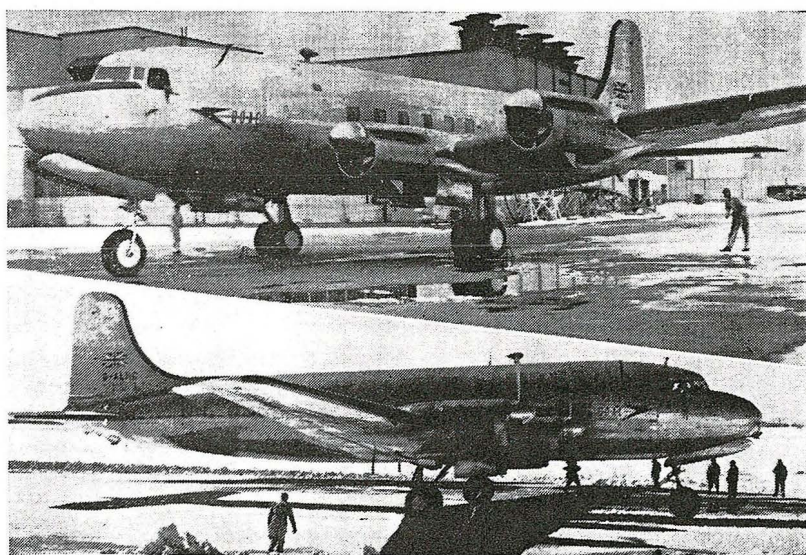
FAMILIARIZATION: Shown before one of the North Stars (RCAF) which CPA is using on Pacific familiarization flights are (l to r): Pacific Ops. Mgr. C. H. Pentland, Pres. G. McConachie, and Gen. Mgr. Ops. W. G. Townley. Map at right shows routes.

invested were a loss of \$1,509,733.76 in 1948 and a profit of \$136,303.31 in 1947.

Commenting on the general financial condition of TCA and its subsidiary services, Mr. McGregor had this to say: "In 1948, the Company again shared in the paradox of an air transport industry facing a high level of general prosperity, yet incurring financial losses. The air lines, for all their immense capacity for public services, are still comparatively young and particularly vulnerable to economic fluctuations over which they have no control." Higher costs for labor, supplies, and materials, were blamed in part for the continued inability of the air line to show a profit. Coupled with these were increases stemming from the use of a larger fleet with its greater maintenance require-

ments, gasoline consumption and insurance charges, as well as the conducting of an extensive promotional campaign.

Among other things, Mr. McGregor pointed out that: "There were 5,084 TCA employees assigned to the two Companies at the end of 1948, an increase of 691 during the year. The company was well satisfied with the performance of its new fleet of four-engined aircraft. The Canadian-built North Stars were subject to many of the usual difficulties that accompany the entry of a new type into commercial service, but they also demonstrated that they were among the finest aircraft flying today. TCA sees no immediate likelihood of large route extensions. A basic pattern of mainline air services, domestic and overseas, has now been established. A fleet of



TWO ANGLES: At top, Capt. Al. Lilly signals mechanics from the cockpit of BOAC No. 1 preparatory to its flight. The lower picture shows the same machine after it was passed as being ready for delivery, which was made in England, March 29.

modern aircraft has been provided to fly them. Flight equipment as of December 31, 1948, consisted of 20 North Star aircraft, 27 Douglas DC-3 aircraft. All of the 14 passenger Lockheed Lodestar aircraft were retired and the majority sold by the year-end."

Briefly

- CPAL has joined the International Air Transport Association as an active member. The IATA membership now comprises 62 active members and eight associate members from approximately 45 countries.

- Maritime Central Airways recently published new and increased local passenger tariffs.

- Sleepers accommodation at no extra cost is being offered by BCPA on its DC-6 service between San Francisco, Australia and New Zealand.

- Scandinavian Airlines plans to schedule nine trans-Atlantic round trips a week from New York to take care of the anticipated increased demand for space to Europe this spring and summer.

- Northwest Airlines recently flew a cargo of live toads to Winnipeg. The toads were for laboratory experiments.

- International air traffic transactions handled by the IATA Clearing House in London during January totalled \$11,910,000. The January, 1948, figure was \$5,853,000; the December, 1948, total was \$13,399,000. A record high, 87% of all the January transactions, was settled by offset of credit and debit balances. Cash payments of only \$772,000 were required to settle the remainder.

- When Northwest Airlines puts Boeing Stratocruisers into operation on its runs to the Orient, it is expected that Edmonton will be eliminated as a stop. The added range of the Stratocruisers will make it unnecessary to refuel in Canada.

- Included in the loads that passed through Montreal Airport during March as TCA air cargo shipments were two yellow-eyed wildcats, six rhesus monkeys, and a total of 165 birds, made up of 25 tiger finches, 25 canary cocks, and 115 African finches.

- Western Air Lines began operating all flights on its coastal division with Convairs, April 1.

AIR LINE TRENDS



Cross Country

TCA will inaugurate a third trans-continental service, May 1, touching at Toronto, Winnipeg, Saskatoon, Edmonton, and Vancouver. For Western Canada the new schedule will mean direct communication between Vancouver and Edmonton, instead of via Calgary.

On a thirteen hour schedule, the flight will leave Toronto at 9:45 a.m. EST, arriving Vancouver at 7:55 p.m. PST. New schedules leaving Montreal at 6:35 a.m. will connect. Returning, aircraft will leave Vancouver at 2:30 p.m. PST and arrive Toronto at 5:10 a.m. EST. Connecting flight will arrive Montreal at 9:10 a.m. EST.

Daily Except Sunday

Quebec Airways is to begin daily-except-Sunday air service between Montreal Val d'Or and Rouyn-Noranda on May 15. Initially, Cansos will be used, taking off from Montreal Airport at Dorval on wheels, and landing on Lake Blouin at Val d'Or, and on Lake Osisco at Rouyn-Noranda. The flights will leave Montreal in the mornings and return in the afternoons.

When landing strips have been constructed at the northern towns involved, DC-3's will be substituted for the Cansos. The sites for the strips are now being surveyed.

Tabled

If the gods are willing and the customers keep lining up for air transportation, TCA should make a profit in the next few years. That's more than most air lines can say. Each year TCA manages to show a smaller deficit than the year previous—smaller usually by an impressive amount. For 1948 the loss is about half a million less than for 1947. This fact was

brought out when the Hon. C. D. Howe, Minister of Trade and Commerce, tabled TCA's 1948 report in the House of Commons during March.

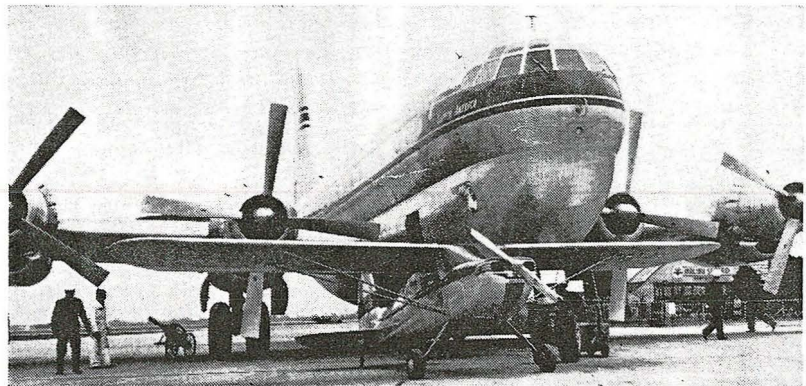
The report, signed by Gordon R. McGregor, president, on behalf of the directors, shows that North American operating revenues for 1948 were \$20,866,936, as compared with \$15,297,346 the previous year. The 1948 deficit was \$1,183,022 against the 1947 figure of \$1,761,043. Other 1948 income figures, with their 1947 counterparts in brackets,

are: passengers, \$3,623,019.48 (\$3,551,212.21); ground and indirect maintenance, \$2,566,751.24 (\$1,933,883.61); passenger service \$1,346,680.46 (\$1,070,666.20); traffic and sales, \$2,043,684.09 (\$1,799,852.67); advertising and publicity, \$416,194.28 (\$382,817.06); general and administrative, \$974,635.76 (\$869,225.94).

The surplus of revenues over operating expenses before depreciation and interest was \$1,616,965.65 (\$451,674.00); depreciation was \$2,374,085.64 (\$1,955,819.54). These figures resulted in operating deficits of \$757,119.99 (\$1,499,145.54).

In addition to the domestic operations, there is Trans-Canada Air Lines (Atlantic) Limited, which is operated as a TCA subsidiary. Some overall figures for 1947 and 1948 are given here, but it should be noted that the figures in brackets cover only the eight month period ending December 31, 1947. Prior to that the Atlantic services were operated by the Canadian Government Trans-Atlantic Air Service.

The total overseas operating revenues



AMERICAN VISITOR: On March 24, Pan American World Airways put one of their Boeing Stratocruisers on display at Vancouver International Airport. One of the first to be delivered to Pan American, this aircraft is to be used on the San Francisco-Honolulu run. The little fellow in front is a Vancouver's U-Fly Cessna.

kets, are: passengers, \$14,869,577.63 (\$10,450,523.53); mail, \$4,648,775.41 (\$3,808,197.01); express and cargo, \$764,175.18 (\$449,447.29); excess baggage, \$124,742.89 (\$84,912.12); charter and other, \$99,801.10 (\$81,905.29); incidental services, \$359,864.12 (\$422,361.17).

Opposed to the operating revenues are the operating expenses, excluding depreciation as follows: flight operations, \$5,596,608.14 (and 1947, \$3,955,603.04); flight equipment maintenance, \$2,694,508.91; ground oper-

were \$10,861,110.35 (\$5,483,298.22); operating expenses, excluding depreciation, \$11,126,437.01 (\$5,000,161.00). There was no surplus of revenues over operating expenses in 1948, but instead a deficit of \$265,326.66 was recorded, as compared with a surplus of \$483,137.22 in 1947 (eight months). Depreciation was set at \$1,244,407.10 (\$341,737.19), giving a deficit of \$1,509,733.76 in 1948, as against a profit of \$141,400.03 during the eight-month period of 1947. The final figures after allowing for interest on capital



CANADAIR LIMITED PRESENTS A PROGRESS REPORT

Because, at the time contracts were obtained for 26 Canadaair Four airplanes, doubt was expressed of Canadaair's ability to produce the aircraft within the period stipulated in those contracts, we believe it appropriate that a progress report should be made to the people of Canada.

The contracts called for delivery of the first airplane within eight months from September 30, 1948: that is, before May 30, 1949, completion of the 26th airplane being scheduled for November, 1949.

The first five of these airplanes now are on the final assembly line in our plant. The first of those five has its engines installed, and is expected to fly before the end of the present month. We anticipate that delivery of this aircraft will be made many weeks in advance of the date set by the contracts; and that all of the 26 airplanes will have been delivered months ahead of contract requirements.

It is necessary that we have additional orders for aircraft at an early date. We believe that our ahead-of-schedule performance will attract additional orders for the Canadaair Four. We are energetically endeavouring to obtain new orders and have our representatives in many parts of the world. Our production position today makes it possible for us to offer as many as twenty additional airplanes for delivery in 1949.

We think that this progress report will be of value to all those interested in Canada's post-war aviation industry; and, from time to time, we propose making further reports of this nature to the people of the Dominion.

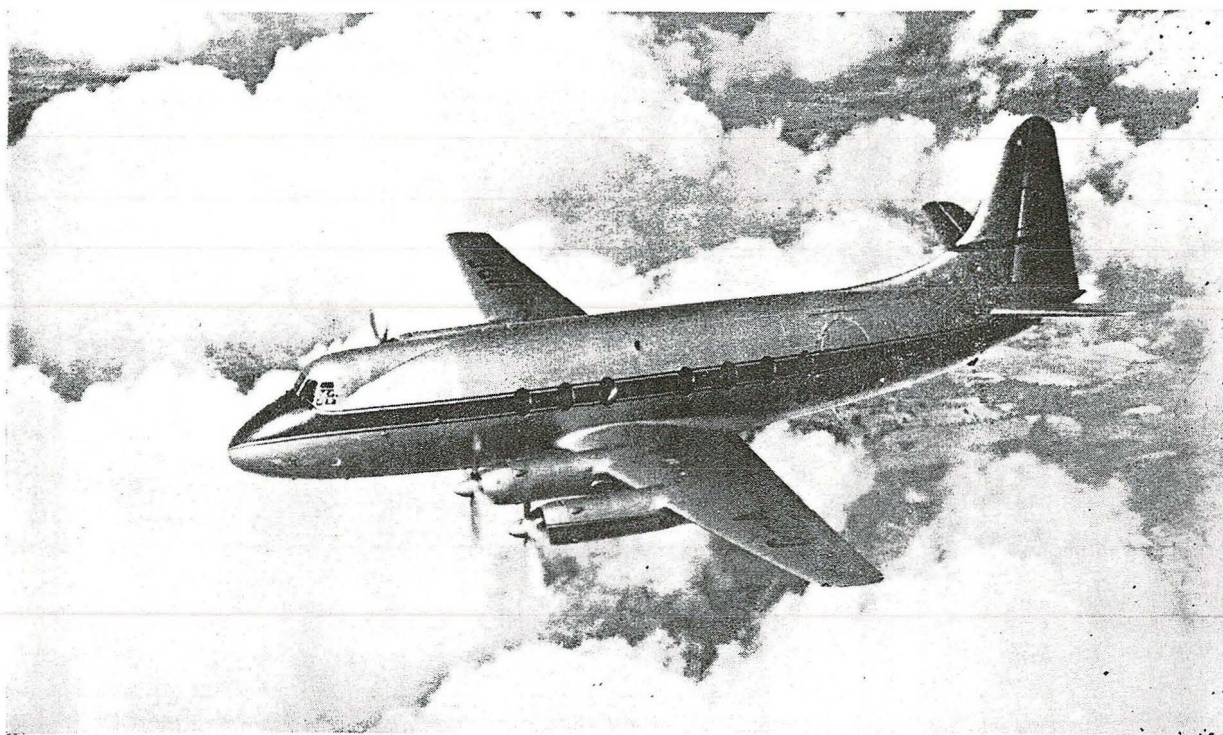
President

February 16, 1949



ACHIEVEMENT

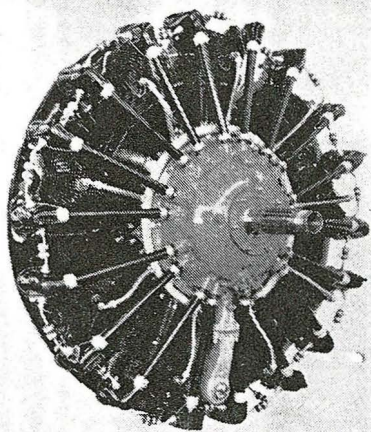
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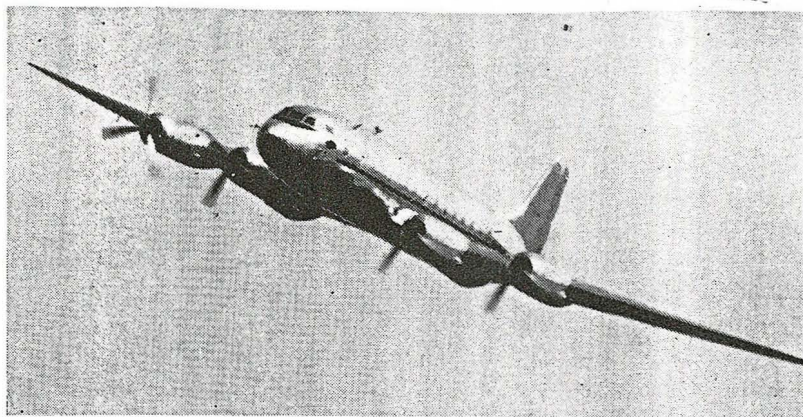
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BIG AND FAST: The Hendley Page Hermes V, powered by four Bristol Theseus engines, is claimed to be the biggest and fastest turbo-prop air liner in the world. The prototype, shown above, was first displayed publicly at the recent SBAC Show. The Hermes V cruises at 330 mph. in the sub-stratosphere over a range of 3,000 miles.

reach." He also described the down-trodden masses as "an incredible new market".

The United States especially was what attracted Sir William. He said somewhat optimistically that there were 20,000,000 families in the \$3,000-\$6,000 yearly income bracket in the U.S. Not only did 80% of organized labor get vacations with pay, but a great bulk of the American people had sentimental affiliations with overseas countries.

"This," he said, "is indeed a phenomenon which ought to make all your mouths water."

Open Season

Northwest Airlines is conducting a nation-wide educational program to familiarize hunters with the hunting attractions in Canada, as well as Alaska and the U.S. One of its tools in the campaign is a booklet called the "Hunting Guide", a sixteen page folder which describes the varieties of birds and animals to be found along the air line's routes, dates of seasons, and the bag limits. There are maps, showing the habitat of the various game.

Cash Deal

American Overseas Airlines and Pan American Airways have extended their contract covering the purchase of the assets of AOA by PAA to March 13, 1950. On that date either party may further extend the agreement for three months.

Under the revised and extended agreement PAA will pay \$17,450,000

for the assets of AOA, assuming in addition the latter's liabilities. Under the old agreement, payment was to be made in PAA common stock. Now however, full payment is to be made in cash with the completion of the deal depending on the success of PAA's bank financing program.

Briefly

•TCA has boosted fares from Canada to the sterling area by 10% and from the sterling area to Canada by 25%. Domestic fares have not been increased, even though the dollar has been devalued, thus having the effect of making it cheaper for Canadians to travel on Canadian transcontinental routes. Previously it was cheaper to travel by air through the U.S.

•CPA inaugurated its Orient flights last month. The flights are to be made once a week, leaving Vancouver at five minutes after midnight on Mondays and arriving in Tokyo Tuesday evening. After a stop of one and a half hours it will press on to Hong Kong, arriving Wednesday morning. Departures from Hong Kong are Thursday afternoons and arrival in Vancouver the morning of Friday. Time discrepancies are caused by crossing the international date line.

•BOAC cancelled its Montreal-Prestwick Liberator service at the end of last month. It will be resumed when the company takes delivery of its new Stratocruisers, which will relieve Constellations now on the New York run for use on the route to Canada.

That Invisible Line

There are not likely to be any purchases of de Havilland Beavers by the American armed services. A law commonly known as the "Buy America Act", passed in the tough early days of the depression to protect American manufacturers, has been dug up by the USAF to block Beaver sales. The law does not affect potential civilian customers however.

The "Buy America Act" states that all government departments and agencies shall buy for public use only those products made in the U.S. from American materials. In an emergency the Act provides a loophole. This was used to permit the purchase of Canadian made Douglas parts during the Berlin Airlift.

It's Cold Outside

It is a well known fact that the American aircraft manufacturers felt a sharp pain around their wallet pockets when the Avro C-102 and de Havilland Comet first flew some weeks ago. The whole situation fits in rather well with the old fable of the tortoise and the snail.

There is something just a bit wistful about a recent statement made by Wellwood E. Beall, Boeing vice-president for engineering and sales. Says Salesman Beall: "Recent flights of jet-powered experimental air liners in England and Canada point up one of the most serious problems facing American aircraft manufacturers and air lines. Perhaps it would be more to the point to add to this sentence 'aircraft manufacturers, air lines and the U.S. Government'."

"While Britain's subsidized aircraft industry has built and flown no less than six different jet-powered airliners, and is in production on some of these, we not only do not have a commercial prototype flying in this country but have not even begun construction of an experimental model.

"... Manufacturers in this country are for the moment stopped dead in their tracks. We at Boeing, for instance, are in a position of having on our drawing boards advanced type jet transports which are the next log-

ical step ahead of anything now flying abroad. Our studies show them to be not only economically feasible, but from the military standpoint absolutely essential to a well-rounded defence department.

"Our studies show that we could have a prototype 500 mile-and-hour jet transport flying within 18 months of receiving a contract. Such a transport would be admirably suited to all routes from 200 miles to 2,500 miles. Our studies are based on existing Civil Air Requirements, which in effect penalize the jet, because they were set up for wholly different categories of aircraft. For this reason our studies must be on the conservative side."

In effect, Salesman Beall thinks that Boeing would not have too much trouble doing the job, but he also feels that there isn't much use trying unless the CAA is prepared to revamp its regulations so that full use may be made of the jets.

He concludes by saying: "Government financial aid will be required if we are to overtake and pass the subsidized British aircraft industry in its bid for domination of the future jet transport field. As things stand today, it may be that we will lose not only

world markets to the British jets, but because of competition may find our own air lines forced into buying British for lack of such types in this country."

Prospect

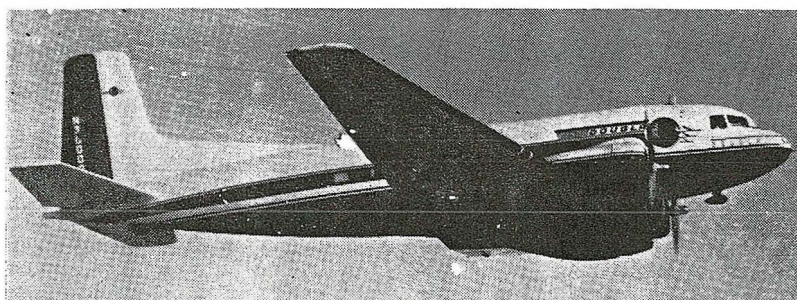
The government owned Trans-Australia Airlines has announced that it intends to buy either the Avro C-102 or the Vickers Viscount for use on internal Australian routes. During September, the chairman of the National Airlines Commission, and chief of TAA, A. W. Coles, together with TAA Superintendent of Technical Services J. L. Watkins, inspected the C-102.

According to a statement issued by an Australian government agency however, one of the questions likely to be involved in the choice of aircraft is whether the Avro Jetliner will be built in England and therefore be available for purchase without using dollars. The Australians hope to introduce straight jets or prop-jets to their internal runs by 1952.

A Reliable Source

Defence Minister Brooke Claxton announced last month that plans had been made to test the Avro Orenda in the North American F-86A jet fighter. Complete ground and flight tests are to be performed.

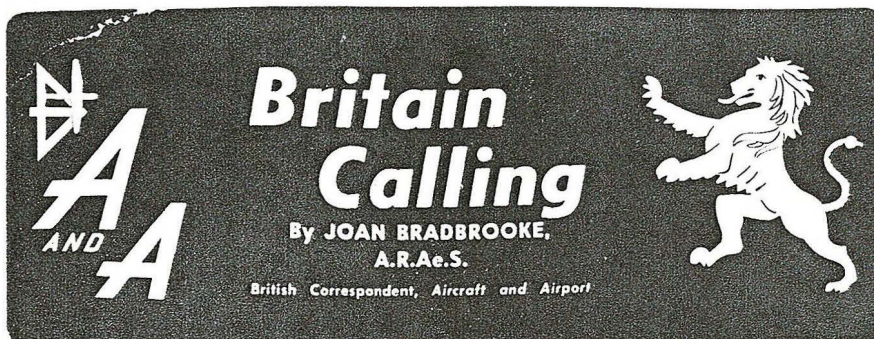
The announcement also said that the engine is definitely planned as the



The Prototype of the Douglas Super DC-3 made its Canadian debut on September 19 when it visited Montreal and Ottawa. The Super DC-3 was inspected by a host of prominent government, RCAF and industrial personages. On board the new aircraft was Donald W. Douglas himself, as well as his son and other top brass from Douglas Aircraft.

The visit to Canada was made under the auspices of Canadian Car & Foundry Company Limited, which would seem to bear out the rumors that the Canadian firm is to become licensee for the Super DC-3 in Canada.

Three of the revitalized DC-3's have already been ordered by one American air line.



Almost as many definite and diverging opinions are held about the respective possibilities of turbo-prop and turbo-jet air liners as used to be expressed (and still are at times) about the merits of landplanes and flying boats. Opinion generally in this country has been that the turbo-prop will be most suitable for the shorter and medium range routes and the turbo-jet for the longer ranges.

A little more uncertainty in the average person's mind has been added by the Fifth British Commonwealth and Empire Lecture of the Royal Aeronautical Society, which was given by E. H. Atkin, Chief Designer for Avro Canada. In his lecture entitled "Inter-City Transport Developments on the Commonwealth Routes", Mr. Atkin analyzed the application of turbo-jets to intercity routes in Europe, South Africa, India, Australia and Canada.

Not unnaturally, in view of his Avro C-102 Jetliner, Mr. Atkin is an advocate of the turbo-jet rather than the turbo-prop. However, had there been a discussion after the paper, the turbo-prop would have had many advocates.

Great Britain and Canada are the only two countries with turbo-jet transports flying; Great Britain also has the only turbo-prop transports flying and a selection of them, with the Hermes V, Mamba-Marathon, Apollo, and Viscount.

The Viscount has added to its laurels by being granted a normal British category C of A. It is the first turbine-engined airplane in the world to be granted such a certificate and in addition, is the first British transport to be granted a C of A under the new ICAO standards. It is also the second transport in the world to receive a certificate complying with the new ICAO regulations — the Constellation being the first.

Since its first flight on July 16, 1948,

the Viscount has flown for more than 290 hours, during which some 320 take-offs and landings have been made. Vickers now have orders for about 40 Viscount 700's, which should be coming off the production line in 1952. Range on the production model has been increased to 1,800 miles with a 4,000 pound payload, fuel reserves for 230 miles to an alternate aerodrome, and .45 minutes' stand-off. All-up weight has been increased from 48,000 pounds to 50,000 pounds.

The Armstrong Whitworth Apollo, with four Mamba turbo-props, has also aroused much interest among foreign air lines and since the SBAC Display a number of air line executives abroad have flown in the Apollo.

One of the most interesting applications of the turbo-prop, which has great possibilities, is the fitting of two Mambas in a Dakota. The Mambas

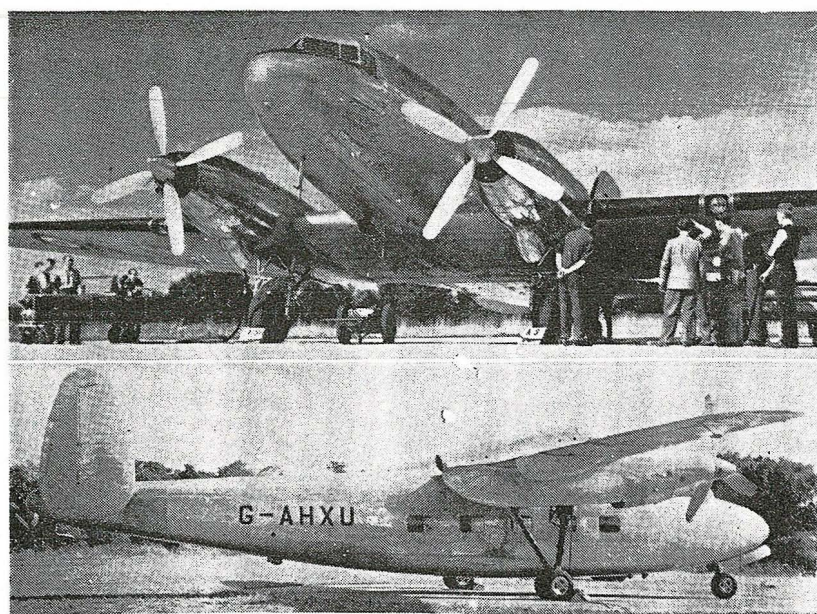
are installed with their longitudinal axes in the same position as the Twin Wasps, so as not to affect the thrust line. The planes of rotation of the propellers have been moved forward for C. G. reasons, which brings the propeller opposite the pilot's position, but this will be avoided in future conversions.

This application of the Mamba is particularly interesting because with the Mambas, the Dakotas would be able to meet the straight ICAO safety requirements which come into force in 1953. Cost of this conversion is considerably less than any new propeller-turbine transport, and less than the new Super DC-3.

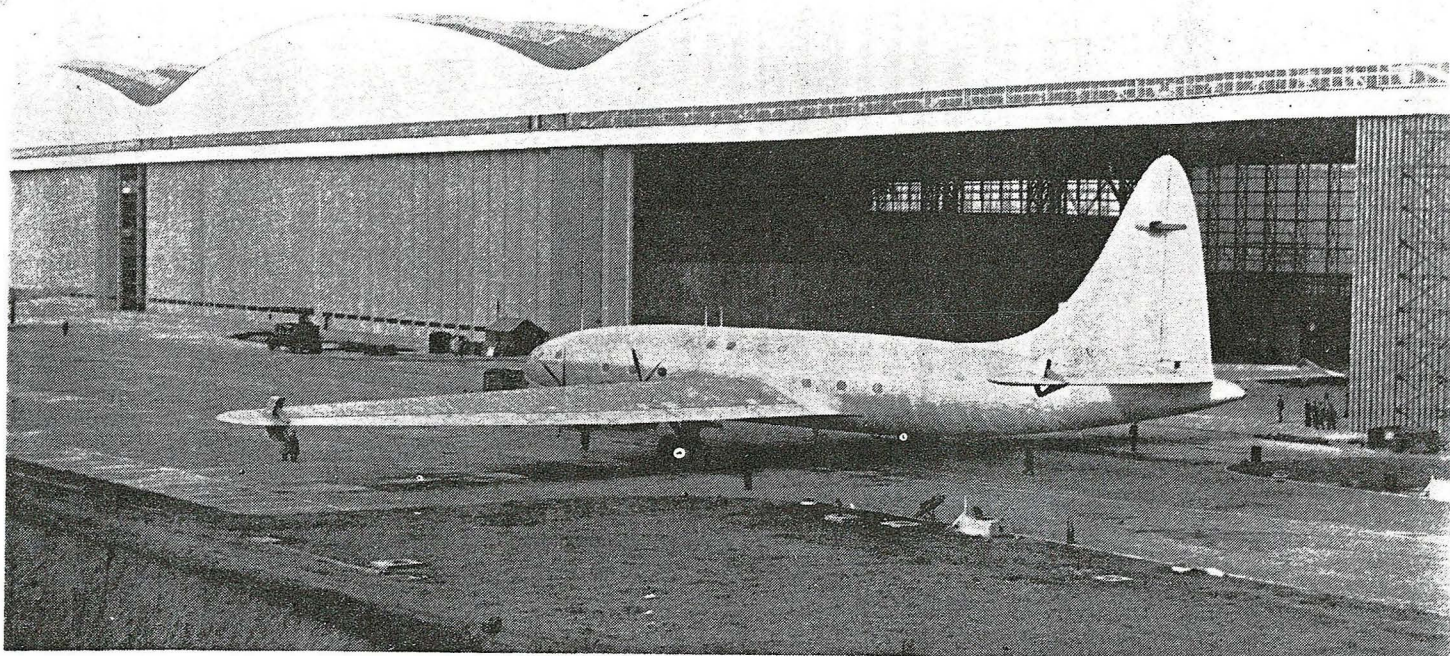
Rolls-Royce is understood to have a similar project using two Dart turbo-props in a Dakota.

The Mamba has a total of over 8,000 development running hours and two versions of it have passed the official 150-hour Civil and Military Type Test. One has also completed the 500 hour endurance test to the official schedule, with only fifteen man hours of maintenance throughout the test.

A new version of the Mamba has also been announced by Armstrong Siddeley. Known as the Adder, it is a 1,600 pound thrust turbo-jet version of the Mamba 2. It has a 10-stage axial flow compressor, six A.S. vaporizing combustion chambers and a sin-



MIGHTY MAMBA: At top is the Armstrong Siddeley conversion of a Douglas DC-3 powered by two Mamba turbo-props in place of its conventional engines. Power plants bring aircraft up to new ICAO minimum performance standards. The lower photo is of the Marathon II, described as the world's first turbo-prop feeder-line transport. It has a high cruising speed of 256 mph at 10,000 ft. and max. range of 900 miles.



A BRISTOL ACHIEVEMENT

The Brabazon

During September the Bristol Brabazon flew for the first time.

The Brabazon is unique in that it is the biggest civil landplane yet to fly. There are other aircraft of American design similar in size and consequently in design and production problems, but they are either military transports or bombers.

The Brabazon has an all-up weight of 290,000 lbs., a wingspan of 230 feet, and a length of 177 feet. The Consolidated Vultee B-36 bomber has an all-up weight of 278,000 lbs., a wingspan of 230 feet, and a length of 163 feet. Compared to these two aircraft, the Lockheed Constitution is a bit of a midget, having a gross weight of only 184,000 lbs.

The Brabazon goes back to December of 1942, when the U.K. government committee under the chairmanship of Lord Brabazon of Tara was set up to recommend specifications for civil aircraft to meet the requirements of British postwar civil aviation. Of the seven types recommended, the Brabazon, or Type 167, was the biggest.

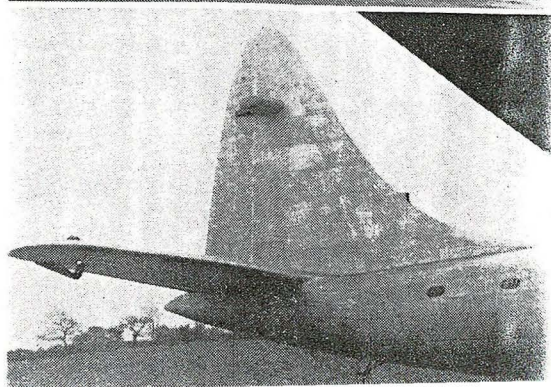
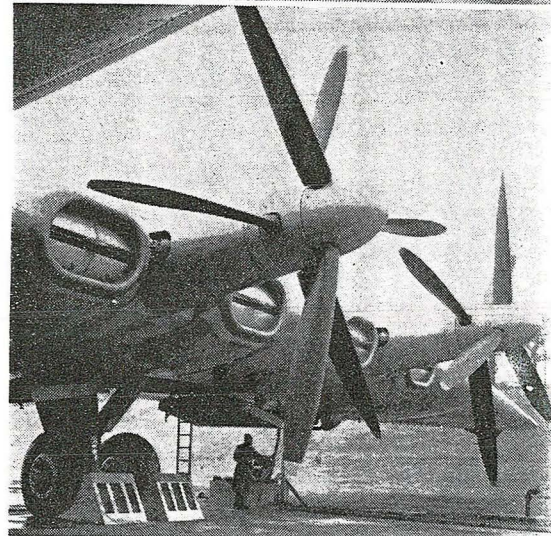
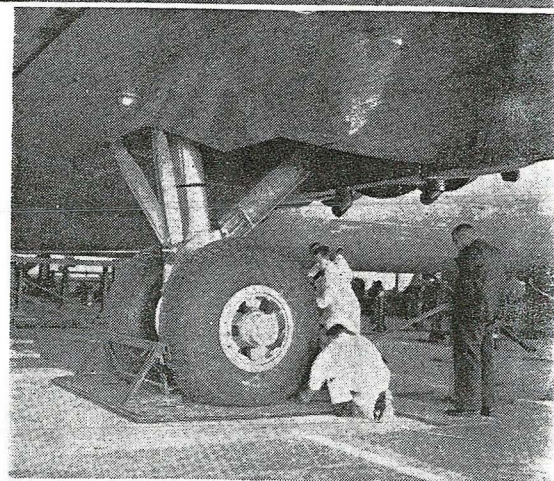
It is intended to be used as a long-distance, trans-ocean airliner in which the passengers will travel with a degree of comfort hitherto unknown in civil aviation. It will accommodate 70-100

sleeping passengers or 120 sitting passengers.

The prototype, which has just flown, is the Mark I, and is fitted with eight Bristol Centaurus powerplants rated at 2,500 bhp for take-off and driving four contra-rotating, co-axial, six-bladed Rotol propellers, which are each self-contained, every one having its own constant speed, feathering, and pitch reversing mechanism. These propellers are sixteen feet in diameter; each engine drives one of the two components of each propeller. The engines, which are buried completely in the wing, are mounted at an angle to the centre line of the propeller shafts (see cut). Power is transferred by means of shaft extensions from the engines to the propeller drive gear assemblies. Some idea of the size of the aircraft's wing can be had from the fact that the engines, 55.3 inches in diameter, are completely buried.

The engine installations are particularly unique and interesting because the 5,000 hp. twin Centaurus is the most powerful engine unit, and the first buried engine installation, ever type tested by the British Air Registration Board.

Each engine unit comprises two en-



The Biggest Civil Airliner in the World

engines separately housed in fireproof cells in the leading edge of the wing. Their centre lines converge at an included angle of 64° and the engines are supported on a box section structure which is an integral portion of the wing. At the forward extremity of this structure, a common bevel reduction gear box through which the propellers are driven is carried, while flexibly jointed primary drive shafts convey the power from the engines to the reduction gear.

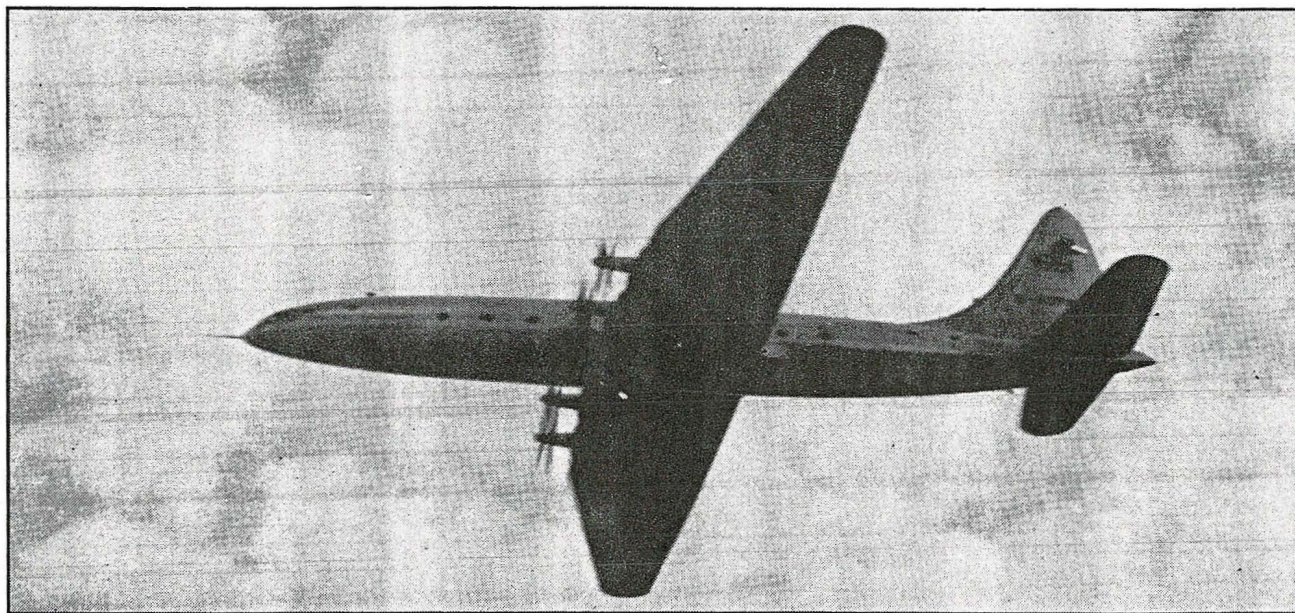
Access to the engines for purposes of servicing or engine changing, is obtained through full size openings in the upper and lower wing skins. These openings are closed by doors hinged

well aft of the front spar. This assembly is driven by means of long flexibly jointed shafts running at high speed from a power take-off shaft at rear of the dual reduction gear. This drive incorporates an ingenious device which ensures continuity of drive should one or other of the engines be closed down for any reason.

The exhaust discharge, as already mentioned, is directly rearwards through shrouded individual pipes which join in pairs to the bifurcated exhaust manifold. The two tapering curved units making up the manifold carry short discharge elbows at their lower extremities and are completely shrouded. The shroud is divided into

comparatively small aircraft were not so applicable to the Brabazon.

At the time that the Brabazon was first conceived, and now for that matter, the popular method of construction was to break an aircraft down into as many component parts as possible. These were completed as units, and then all the various parts joined into the whole airplane at the final assembly stage. This method has the advantage of speeding up construction by allowing more people to work on a single aircraft at one time. It has the disadvantage of adding extra weight because of the added strength required at each point where the component parts are joined during assembly. This is espe-



High and Mighty.

at the forward edges just aft of the extreme leading edge of the wing.

The propellers are carried on concentric forward extending shafts and lie some distance ahead of the wing leading edge. These shafts and the dual reduction gear are encased in a housing now known as the "Propeller Stalk".

Each engine, with its mounting, exhaust system and cowling, forms a complete unit which is readily removable from its fireproof cell, quickly detachable mounting pins being provided. The twin exhaust manifolds discharge the exhaust gases rearwards below the lower wing surface.

Accessories for aircraft services are grouped around and driven by a separate gear box secured within the wing

sections, each with a separate cool air intake and multiple discharge orifices. The lowest of these sections is contiguous with the outlet elbow shroud which in turn is extended beyond the exhaust elbow proper. This ensures that after leaving the manifold, the exhaust gas stream is encased in a "sleeve" of relatively cool air, thus reducing the heating effect on any portion of the wing or undercarriage with which the exhaust gas might come into contact during such times as take-off, etc.

The building of the Brabazon brought forth many new problems, since an aircraft of this size has never before been built by the British aircraft industry, and many of the methods which were followed in the building of

cially true in pressurized aircraft such as the Brabazon.

The result was that the Bristol decided to utilize the shipbuilding method of construction; that is, instead of breaking the aircraft down into many components, construct it in as few pieces as possible. For this reason the fuselage, wing center section, and tailplane center section were built as an integral unit. The spars of both the wing and tailplane pass right through the fuselage.

The fuselage is circular in cross section and has a maximum diameter of 16 feet 9 inches. Like the rest of the airframe, the detail of the fuselage construction is conventional. The windscreen is built in as part of the main

pressurized fuselage; its framing is entirely of steel, joined by welding. It is demagnetized after completion of fabrication and given a protective coating of aluminum spray. It is also bird proof.

The wing is in three sections: the inner section, which is an integral part of the fuselage structure, and the two outer panels. The center or inner section is 100 feet 6 inches in span, and the two outer panels, 64 feet 9 inches each. At the center line of the fuselage the wing section has a chord length of 31 feet; at the same point the maximum wing depth is 6 feet 6 inches, giving a thickness/chord ratio of 0.21.

In plan form the center section of the wing is almost rectangular, with a slight sweepback on the leading edge. The outer wing panels, on the other hand, sweep back sharply. The trailing edge makes a straight line through the entire span. Some unusually heavy skins are used in covering the center section of the wing, especially close to the fuselage; these range in thickness up to as much as 3/16 of an inch.

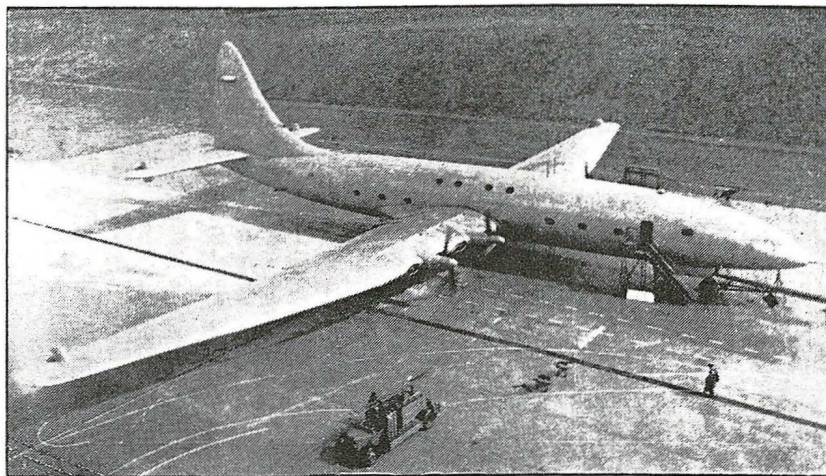
The span of the tailplane is 75 feet and the height over rudder, 50 feet.

A Crew of Twelve

The 143 foot long pressurized section accommodates, besides the passengers, a crew of twelve, of which five are stewards. The passenger and crew accommodation (in production models) is arranged mainly on one deck with a half-deck rise over the wing for a dining saloon, lounge bar, galley, etc. Space for baggage and mail is below the main cabin deck; dressing rooms and toilets are below the saloon. The crews' quarters, including sleeping space, rest room, toilet, and the bullion room and the astro station are between the passenger accommodation and the flight deck and segregated entirely from the former.

The Mark II Brabazon, which is the production model (already one is in the building stage), will be powered by eight Bristol Proteus prop jets (see *Aircraft and Airport*, September, 1948). These, like the Centaurus XX's, will also drive four six-blade contrarotating propellers, though they will be mounted parallel to the fore and aft datum line of the fuselage.

The undercarriage on the Mark II, by Dowty, is of the tricycle type with the nose leg (two wheels) retracting



Pride and Joy.

backwards, and the two main legs (four wheels each) retracting forwards. The nosewheels carry 38 inch by 11.75 inch tires, and the main wheels have 62 inch by 35 inch tires. As can be seen by the picture on the previous page, the Mark I wheel arrangement differs from the Mark II.

In the nose of the Brabazon is a gust detector, something of an innovation in aircraft. The detector indicates the presence of up or down gusts by electrical impulse which automatically adjusts the position of the ailerons to meet the gust, thus reducing the sudden variations in wing loading.

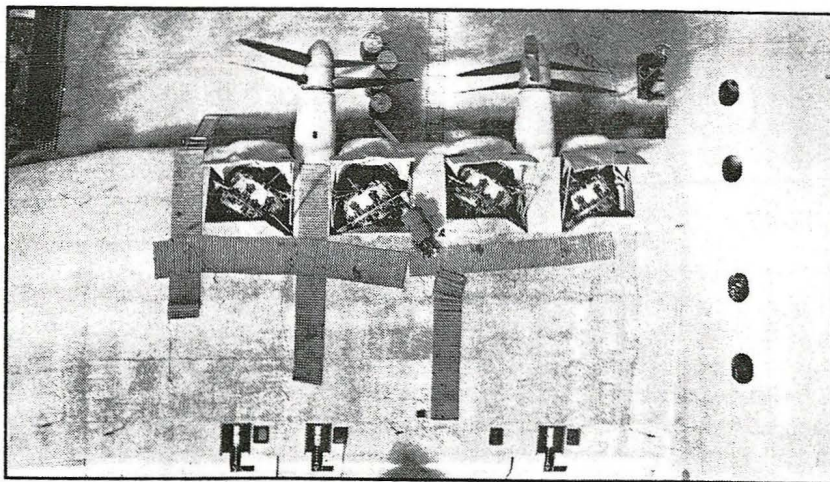
A one-and-a-half mile runway has been built at Filton for the testing of the Brabazon I and this has brought about the erroneous impression that the aircraft will be inoperable from any runway which does not come up to the Filton runway's standards of length, width, and strength.

Not so, says Bristol. The Brabazon II (the production model) will have two

main undercarriage groups of multi-wheel bogies which considerably reduce the severity of load effect on runways, and a preliminary survey of the world's airfields shows that the aircraft will be able to operate to and from many existing runways. As a matter of fact, on its initial flight September 4, the Brabazon I was off in about 500 yards. However, it was probably considerably below its maximum all-up weight at the time.

Of 23 fields on the North Atlantic and Empire routes, only nine are believed to be below the standards required by the Brabazon II. Of these latter, five are scheduled for improvement to Brabazon standards within the next few years.

In view of the present loads that many trans-Atlantic carriers are flying, there has been much argument concerning the practicability of the Brabazon. But then, too, it is not so very long ago that many people thought that no flying machine was practical.



Power Under Cover

Six Down

DoT findings on six aircraft accidents dating back to May 9 were released last month.

The first involved a float-equipped Fleet Canuck near Forbes Bay, B.C. and resulted in the death of a passenger and serious injury to the pilot. The aircraft evidently flew into a down draft caused by a ridge which had just been crossed and the pilot was unable to fly out of it. The DoT reported that it was not definitely determined whether the aircraft was inadvertently stalled, or the pilot was not able to prevent the aircraft from losing height as a result of entering a down draft while flying too close to the ground over rugged terrain with rapidly changing elevations. The actual crash was caused when the pilot attempted to making a forced landing in a small burned-out clearing.

Second

The second accident took place near Moosomin, Sask. The aircraft was a Fairchild Cornell which crashed during a time of heavy mist, visibility practically nil, and with the tops of the tallest trees in the mist. The pilot, who was enroute to Regina from Winnipeg, evidently flew the aircraft into the ground in a gliding attitude while intentionally losing height in an attempt to regain visual contact with the ground. He had logged approximately 275 hours flying time.

The third accident involved an Aeronca aircraft flown by a student pilot who had approximately 38 hours flying time. The accident took place near London, Ontario, when the pilot was buzzing a farm house and apparently stalled the aircraft just after completing a climbing turn to the left. The pilot was killed.

The fourth accident took place near Nakina, Ontario, and resulted in the death of the pilot and two passengers when the Fairchild 24 in which they were flying crashed. The aircraft was float-equipped and following take-off climbed to about 300 feet before making a one eighty to the right. On completion of this the aircraft had attained an altitude of about 500 feet. At this

point it was stalled and dove into the ground at an angle of about 70°.

Fifth

The fifth accident occurred when an attempt was made to take a Tiger Moth off an unlicensed strip near Peace River, Alberta. There was a passenger on board. Before the aircraft was actually airborne it ran off the end of the strip and over the bank of the river which at this point was roughly 60 or 70 feet above the water. After dropping about 50 feet, the aircraft appeared to have gained flying speed, but soon after it began a gradual descent in a level attitude with full power on until the wheels touched the water and it nosed in.

The aircraft did not sink immediately and the pilot and passenger stood in the rear cockpit for a few moments to discuss what to do. It was decided that the only thing to do was to try and swim, so both men dived into the river and started for shore. The passenger was successful, but the pilot has not been found to date. He held a public transport license and had about 4,000 hours flying time.

A pilot and his passenger were burned to death when their Piper Cub hit a tree and crashed in the sixth accident. Apparently the pilot was buzzing the town of Wallaceburg, Ontario, and the surrounding countryside. During the course of his manoeuvres he circled

a barn then hit the top of a tree in a hedge row, so that the aircraft plunged into the ground. DoT recommendation: that all efforts be continued, through every means available, to convince pilots of the foolhardiness of deliberate low flying.

Job Done

Aeromagnetic Surveys Limited of Toronto recently announced that flying operations had been completed on a survey with the airborne magnetometer of 18,000,000 acres of Saskatchewan territory. The survey is being conducted on behalf of a group of American oil interests, represented by Tide-water Associated Oil Company.

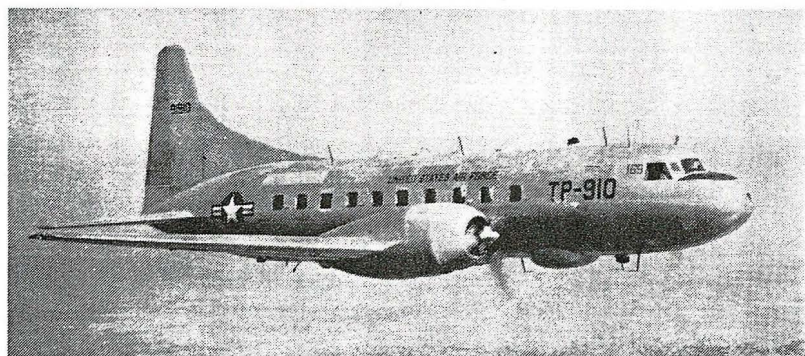
Aeromagnetic Surveys, who will produce magnetic contour maps of the area, is an associate company of Photographic Survey Corporation, and a Canadian affiliate of the Geotechnical Corporation of Dallas, Texas.

The work was performed with a Canso and involved coverage of 14,000 line miles. It was completed in less than two months. The aircraft was based at Regina and Saskatoon. This project represents the largest area covered by an aeromagnetic survey to date in Canada. The contract is valued at approximately \$100,000.

Getting Better

The modern private pilot who has only 35 hours of flight training is equivalent or superior to the 200 hour commercial pilot of 20 years ago, according to Dr. L. A. Bryan, director of the University of Illinois Institute of Aviation.

He also says that 95% of American



TRAINER: Designated the T-29, and built by Consolidated Vultee, this military version of the Convair is the USAF's new navigational trainer. Thirty-six of these flying classrooms have been ordered. Four astrodomes on top of the fuselage are to provide for fourteen students and instructors. The large bulge beneath the fuselage forward of the wing is a radome for use with radar equipment. There are 18 antennas.

AIR LINE TRENDS



Green Light

No more obstacles stand in the way of the complete implementation of the Canada-U.S. Air Agreement of June, 1949, now that Colonial Airlines has withdrawn its appeal to the Supreme Court of the United States that the agreement was invalid. The motion of withdrawal was granted on February 6. It is expected that as a result the Air Transport Board's show-cause order will be cancelled out.

Colonial was reported to have said that the action was dropped because it felt that the President's right to make executive agreements should not be challenged at this time.

Aircoach Plug

A plug for aircoach travel, which has become so popular in the U.S., was recently voiced by Captain G. F. Campbell of TCA's trans-Atlantic service. Captain Campbell voiced his opinions on this subject in a recent issue of *The Canadian Air Line Pilot* in an article entitled "Deficit".

Says Captain Campbell: "Deficit—a dreaded word in any business enterprise but one that has plagued TCA for a long time. We were not alone a few years ago—nearly every air line in North America had the same trouble. However, 1949 was one of the greatest years for air line travel and experience south of the border proved that it is now possible for air lines to operate at a profit. On the other hand, TCA with a 25% passenger and 83.6% cargo increase in its western area, will probably have its greatest loss to date.

"... It is my belief that instead of concentrating entirely on faster aircraft, we should look to air coach travel to increase revenue by providing a larger passenger capacity. Our M2's have sufficient space to accommodate

52 passengers in reasonable comfort and have the high gross landing and take-off weights necessary to handle this load.

"Air coach services inaugurated some time ago in the U.S. have helped put American air carriers on the black side of the ledger because they have made it possible for the 'many', not just the 'exclusive few', to enjoy the speed, comfort, and cleanliness of air line travel. American carriers utilize first-class equipment and standard air line procedures, but savings in weight and expenses have been effected by cutting down the frills".

The Captain takes time to make a comparison of the cost of air travel in the U.S. and Canada. He points out that Northwest Airlines, which has a route roughly paralleling TCA's trans-continental run, will fly a passenger from Seattle to New York in about fifteen hours for \$97 aircoach, or

\$157.85 regular fare. By rail this trip, including Pullman, but not meals or tips, would cost \$138 and take 62 hours. Vancouver-Montreal by TCA, on the other hand, though only a few hours less than Seattle-New York, is "at a shocking price, by comparison, of \$181.40.

"... by increasing passenger capacity by 30%, that is to 52 on M2's and 28 on DC3's, it is possible to reduce fares by 20% with a resultant increase in revenue of 4%. Vancouver-Montreal would be \$145.12 against a rail fare of \$123.55 Pullman without meals or tips."

Supplementary

Northwest Airlines is inaugurating a new type of local air service to supplement its transcontinental through service. This new service directly affects eighteen western stations, among them, Winnipeg, on the air line's domestic system between Minneapolis-St. Paul and Seattle-Tacoma.

To accomplish the improved service, Northwest is operating "localized" flights between Seattle-Tacoma and Spokane; between Spokane and Billings; and between Billings and the Twin Cities. Martin 2-0-2's are being used on these runs.

Local passengers, if their travels extend beyond the area of the western stations, may make connections with other Martin 2-0-2 flights or with Stratocruiser flights to or from more distant points. Schedules for each area have been drawn up in order to meet



PACKAGED GOODS: The new Fairchild C-119 Packet is shown. The Packet has been designed as a replacement for the C-82. The C-119 has greater speed, payload and range than the older type aircraft and can carry 42 fully armed paratroopers, as well as twenty 500-pound containers of supplies. Alternatively it can carry ten tons of cargo. USAF and USN orders for C-119's at present total 143.

AIR LINE TRENDS



Stratocruisers

On April 2, BOAC put Boeing Stratocruisers into service on its Montreal-London route. The Stratocruisers are being operated between Canada and the U.K. with a frequency of two round trips a week. In addition BOAC is operating two round trips with Constellations each week. Eventually BOAC plans to operate all of its Montreal-London services with Stratocruisers. Constellation aircraft are being assigned to BOAC's mid-Atlantic route from the U.K. to Nassau by way of Lisbon, the Azores, and Bermuda.

A total of ten Stratocruiser Speedbirds were ordered by BOAC from Boeing, seven of which have already been delivered. The aircraft are also being used on BOAC's route between New York and London.

The aircraft have all been named after famous British flying boats which pioneered many of the routes that BOAC flies today. Flagship of the fleet has been named "Caledonia" after the Imperial Airways' flying boat of the same name which made the first commercial survey flights between England and North America in 1937.

Aircargo Up

TCA carried 34% more cargo during 1949 than during the year previous, according to a recent announcement. Total poundage of TCA air express, domestic, and international aircargo reached a peak level of 5,913,069 pounds in 1949 as compared with 4,414,806 in 1948, an increase of 1,498,263 pounds.

The greatest gain was made on TCA's North Atlantic service where aircargo increased 64%. A total of 1,159,700 pounds were carried last year and 704,065 pounds the year

previous. According to the announcement, more cargo originating from the U.K. in recent months has been carried westbound over the Atlantic by TCA than by any other airline. Aircargo carried on domestic routes also increased sharply with the poundage going up from 1,869,944 in 1948 to 2,573,419 in 1949. Air express last year totalled 2,179,950 pounds, nearly 400,000 more than in 1948.

World Directory

The CAB has issued a report entitled "World Directory of Scheduled Common Carrier Airlines". The report is compiled from statistics con-

all foreign air lines are performed with American made aircraft. Including U.S. air carriers, 81% of the world's scheduled air line operations are conducted with American aircraft.

Copies of the Directory may be obtained from the Publications Section, Civil Aeronautics Board, Washington 25, D.C.

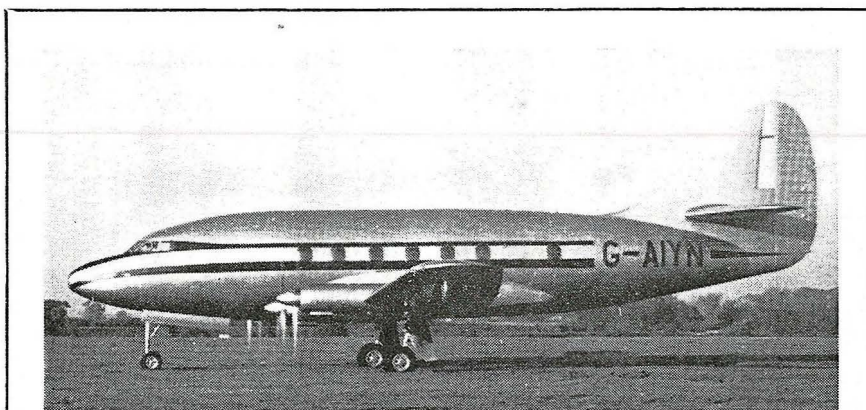
Briefly

•Douglas I. Grant, K.C., has been appointed secretary for TCA. Mr. Grant is also secretary for the CNR. He succeeds W. H. Hobbs.

•Reminiscing recently, TCA house organ "Between Ourselves" muses about the past . . . "February, 1938 . . . an experimental mail service was started between Winnipeg and Vancouver . . . company personnel totalled 110 . . . existing equipment was one Stearman and five Electras.

•R. O. Bullwinkel, vice-president in charge of traffic for Northwest Airlines since 1947, has resigned.

•United Air Lines reports increases in all air cargo categories during January of this year as compared with the same month of 1949. These increases include 11½% for air freight, 8% for air mail, and 16% for air express. Estimated totals for this January are 1,637,000 air freight ton miles,



APOLLO: Made by Sir W. G. Armstrong Whitworth Aircraft Ltd., the Apollo is designed to carry from 24 to 31 passengers, with correspondingly varied amounts of freight. Power is by four Armstrong Siddeley Mambas, which have a maximum static take-off power of 1,270 hp plus 384 lb. of jet thrust. Maximum normal gross take-off weight is 37,000 lb. Economical cruising speed is 276 mph; max. range 1,500 miles.

tained in U.S. air carriers' reports to the Board as of September, 1949, and from data based on the timetables of foreign carriers believed to be in effect up to October 1, 1949.

The Directory lists 233 air carrier companies, of which 55 are U.S. certificated air lines. A route-by-route analysis of air line operations shows that 62% of the miles scheduled by

903,000 air mail ton miles and 628,000 air express ton miles.

•The license of Northeast Airlines Inc., to operate a scheduled service between Moncton, N.B., and Boston, Mass., has been suspended indefinitely at the licensee's request, subject to the right that Northeast may apply for reinstatement if and when such action is justified.



A NEW BIRD

Question: What's bigger than a Dove, has more power, and can carry more? To most people the answer could be anything from a crow to an eagle, but as far as The de Havilland Aircraft Company is concerned, it's a Heron. The de Havilland Heron is a four-engined, fourteen-seventeen seater transport designed to replace the pre-war DH-86.

The first aircraft is already in an advanced state of construction and the company intends to put the model into immediate production on a straight commercial basis with a price of approximately \$108,000 in Canadian funds, plus the cost of radio (not necessarily the price in Canada).

The Heron, which is really a large Dove and in fact uses many Dove components (wings, cockpit, main fuselage, empenage units, control surfaces and many internal parts) is intended for use by feeder

services . . . particularly those which must operate in and out of small airfields with primitive facilities. To meet this requirement the Heron has been designed to give a take-off capability comparable with the Dragon Rapide, and a greater degree of simplicity has been afforded than in the Dove. The Heron has a fixed undercarriage, unsupercharged and ungeared engines (Gipsy Queen 30), non-feathering propellers and no hydraulics. For use on longer stage lengths a version with retractable undercarriage is offered.

The fixed undercart Heron can fly fourteen passengers plus baggage (all-up weight of 12,500 lbs., capacity payload 3,240 lbs.) about 400 miles under still air conditions. This gives a practical stage length of 150 miles. Recommended cruising speed on this version is 160 mph (60% take-off power at 8,000 feet).



intake, though they may be obtained with bifurcated intake such as is used with the Goblin in the Vampire installation. The Ghost, like the Goblin, is a centrifugal compressor type engine with a single sided impeller. De Havilland expects that with a little more development the Ghost will give a longer overhaul period than piston engines, with much less and simpler daily maintenance. Since the Comet has the short undercarriage that is typical of jets, practically all engine servicing can be made at shoulder height without the use of steps or platforms. De Havilland claims that a Ghost has been changed in an hour with no difficulty whatever.

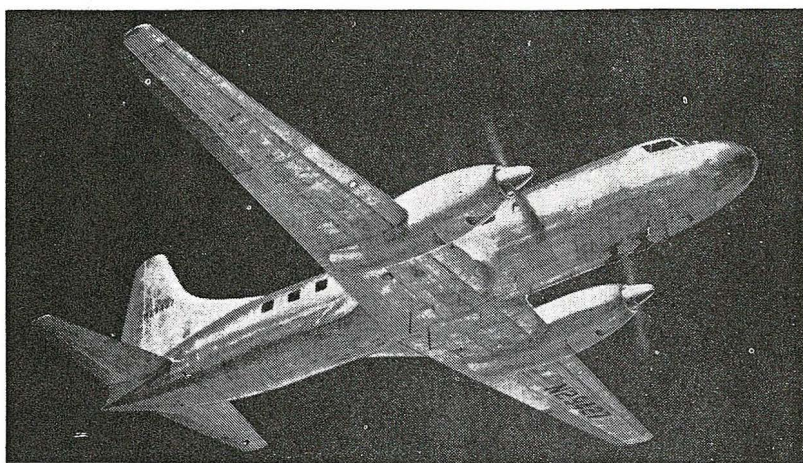
The engines are almost completely buried within the relatively thin wing of the Comet, naturally adding much to the aircraft's general cleanness of line. The direct entry of air to the compressor, already mentioned, results in good fire prevention and anti-icing of the engine bay, an absence of pressurized cowling, and a simple and light installation.

Provision for the installation of two de Havilland Sprite rockets (one on each wing, between the engine nacelles, see photos) has also been made because jet aircraft are sensitive to air temperature and pressure and the rockets will do much to maintain the airplane's capabilities in severe tropical conditions.

The Sprite is what is known as the "cold" variety of rocket. This type has the advantages of great simplicity and safety. It had a considerable background of successful operational use with the Luftwaffe in the war, notably on the long range flying boats and land planes co-operating with subs.

Each Sprite gives a total impulse of 55,000 lb./sec. The thrust "die away" (arbitrarily quoted as from 5,000 lb. at nine seconds to 3,000 lb. at twelve seconds) is adjustable. That is, the firing of the rockets is almost completely controlled, and for the passenger the result is an additional acceleration of only 0.1g.

According to CPA, Grant McConachie flew the Comet for four hours and was mightily impressed. Pilots of the Canadian air line are to be trained to fly the new airliners in England, so that they may be put into service as soon as they are delivered. There'll be a lot of interested and jealous air line eyes on CPA when that day comes.



Turbo-Prop Convair

AN AMERICAN ENTRY

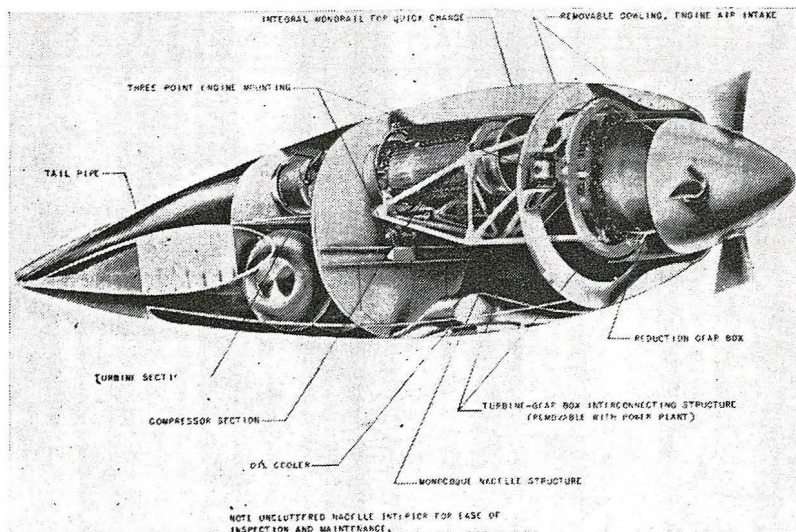
While American airframe manufacturers are crying that it is impossible to develop a turbo-jet or turbo-prop transport without government assistance, the Allison Division of General Motors is going ahead with a project to develop its own turbo-prop transport. Allison's plans are to install two of its new T-38 turbo-props in a Convair-Liner which it is purchasing from Consolidated Vultee.

Because Convair incorporated certain features in the original Convair-Liner design, only minor modifications to the production type nacelles are necessary for installation of the T-38 engines. These modifications and preliminary flight tests will be accomplished

at the Convair plant in California.

Allison's T-38 turbo-prop develops 2,750 hp and weighs less than half a pound per hp. Only recently unveiled, it also is used in coupled form, in which it is known as the T-40. American sources claim that this engine wipes out the lead that Britain has hitherto held in the field of prop-jets.

The aircraft (pictures show how it will look in the air and also the engine installation) will be equipped with Aeroprop propellers made by the Aeroproducts Division of General Motors. Delivery of the airplane with its turbo-prop engines and propellers is expected this summer.



Reduced Fares

Reduced fares on TCA flights emanating from Western Ontario went into effect on April 1. The new fares are designed to compensate Western Ontario air travellers for the fact that they must first travel to Toronto to make connections with trans-continental flights to the east or the west. It will also enable TCA to compete with American air carriers, who, because they are able to offer more direct routes to Western Ontario travellers, are consequently able to offer considerably lower fares.

The new fares are as follows: Round trip, Windsor to Winnipeg, reduced from \$167.20 to \$139.75; round trip, Windsor to Vancouver-Victoria, reduced from \$316 to \$288.55; round trip from Windsor to New York, via Toronto, reduced from \$67.05 to \$54.20; round trip from Windsor to Cleveland via London, Ont., reduced from \$30.50 to \$21.50; round trip from Windsor to Gander, Newfoundland, reduced from \$288.25 to \$205.55.

Briefly

•American Overseas Airlines has announced reduced European fares during April, May, and June. The fares permit savings of up to 13% over last year's tariff. The savings are available to travelers returning to the U.S. before July 1.

•The ATB has approved the application of Scandinavian Airlines System for a license to operate an international scheduled service serving Stockholm (Sweden), Oslo (Norway), Copenhagen (Denmark), Hamburg (Germany), Prestwick (Scotland), Gander, (Newfoundland), New York.

•The ATB has approved the application of CPA to serve the points Kamloops and Williams Lake, both in B.C. on its scheduled service between Vancouver, Quesnel, Prince George, and Fort St. John, B.C.

•The ATB has amended the license of AOA serving New York, Philadelphia, Gander, Reykjavik (Iceland), Shannon (Ireland), Glasgow (Scotland), London (England), Amsterdam (Netherlands), Frankfurt and Berlin (Germany), Oslo (Norway), Copenhagen (Denmark), Stockholm (Sweden), and Helsinki (Finland), so that the licensee may serve the additional points Hamburg, Bremen, and Dusseldorf/Cologne.



News Roundup

Beavers Galore

A total of 80 de Havilland Beavers have now been built and delivered by The de Havilland Aircraft of Canada. These remarkably successful and popular aircraft are still being produced at the rate of two a month and present orders are sufficient to keep production going until the fall of this year at least.

Though the "Buy America Act" has cramped promotion of the Beaver in the U.S., Americans who have flown it have been highly impressed.

Skylac Dealers

Dealers from whom the Monsanto Chemical Company's new fabric dope, "Skylac" may be obtained, have been announced by The Babb Company (Canada) Limited, exclusive Canadian distributors. The dealers are: Ontario Central Airlines Ltd., Kenora, Ont., who will cover Northwestern Ontario; Western Airmotive Limited, Edmonton, who will cover the prairie provinces; Associated Air Taxi Limited, Vancouver, who will cover British Columbia.

Four to One

Parks College of Aeronautical Technology of St. Louis University has announced a CAA approved experimental flight training program. Under the new flight instruction program, three students may receive flight instruction at the same time instead of just one.

The new program will be put into effect by using a four place airplane in such a way that two students can watch from the back seat while the instructor and the third student are in front at the dual controls. According to Parks, some of the advantages of the system are:

- The students see each others' mistakes providing wider flight experience.
- While in the back seat, the student can analyze each maneuver objectively, under conditions which do not require that his total attention be devoted to manipulating the controls.
- It provides the repetition so helpful in driving the lesson home.
- The student can achieve the re-

quired proficiency in less time at the controls, resulting in lower cost to himself.

- It gives the student a chance to see how he is doing as compared to others.

Army Helicopters

The Army Survey Establishment plans to make use of helicopters this year in connection with its work in the Yukon and surrounding territory. Last summer the commanding officer of the Establishment, Lt. Col. C. H. Smith, experimented with a helicopter in the Northwest. The experiment was so successful that this summer the Establishment hopes to equip two or three parties with this type of aircraft.

The surveyors, working from aerial photographs supplied by the RCAF

Smallwood of Newfoundland and Squadron Leader Chester Holmes was held May 8 by the Toronto Flying Club. During the reception a plaque was presented to S/L Holmes, who has been largely responsible for the organization of the Newfoundland Flying Club, the first in Canada's newest province. The plaque was inscribed "From the Oldest Flying Club to the Newest" and the presentation was made by President Olin Sellars of the Toronto Flying Club.

The plaque will be presented in turn to the president of the Newfoundland club, as yet not elected, on June 24, Newfoundland Day. Prior to the reception, Premier Smallwood, S/L Holmes, officers of the Toronto Flying Club, and several civic officials were taken on a North Star flight over to Niagara Falls.

Women's Race

Plans for a 1,500 mile handicap air race, beginning at Montreal and ending at West Palm Beach, Florida, for



BOAC DOUBLE-DECKER: On April 24 BOAC began operation of its Strato-cruiser service between Montreal and London. The 60-passenger, Boeing-built aircraft are operating two of the four trans-Atlantic round-trip services between Montreal and London. Constellations are used on the other two services, but it is expected that these, too, will be switched to Stratocruisers about August. Lower deck is used as a lounge.

carry out controlled survey operations for topographical mapping. This summer they will work in the Eastern Yukon along the Canol line toward Fort Norman; along a twenty-mile strip on either side of the Alaska Highway in the Whitehorse area; in the general area of Telegraph Creek, B.C.; in the Rocky Mountains west of Fort St. John; along the highway between Fort St. John and Grande Prairie; and in the Wainwright area. The first parties began work during May.

New Flying Club

A reception for Premier Joseph

women only, have been announced by the Florida Ninety Nine organization. The race will be flown June 15-16 and there will be \$2,000 in prizes for the winners. Take-off will be from Montreal Airport at Dorval, with stops at Burlington, Vt., for pilots to clear customs, White Plains, N.Y., and Jacksonville, Florida.

Aircraft at Work

Although in Canada the possibilities of the personal plane have not yet been fully or generally realized, in the U.S. this class of aircraft is more and more becoming accepted as a neces-

New School at London

Last month a new University Reserve Flight Cadets Indoctrination School was opened at RCAF Station, London, Ontario. The school opened on May 11 with the arrival of the first course of Flight Cadets from nine Canadian universities. In all 260 first year students will attend the two courses which are to be held this summer.

The Indoctrination School, which is only one phase of the RCAF's extensive Reserve Training Program, will train University students interested in RCAF technical and non-flying trades, such as aeronautical engineering, armament, signals, administration, and so on.

RCAF Station, London, which also administers the London auxiliary squadron, is commanded by Wing Commander F. R. Sharp, DFC. W/C Sharp, a graduate of RMC, has been a member of the RCAF since 1938. He trained as a pilot and served overseas with No. 6 Group of Bomber Command. Officer commanding the training wing at the station is Squadron Leader L. P. Dupuis, DFC, who has been in the RCAF since 1939. He served overseas as a pilot during World War II.

Search and Rescue

Search & Rescue, probably the RCAF's biggest single job, last year handled 213 operations and flew more than 3,600 hours. Forty-two of the year's operations were connected with aircraft in distress, and 35 with marine craft requiring assistance. There were 116 mercy flights, while 20 incidents were searches for missing persons and operations of varying types. In addition to this work, the RCAF Search & Rescue co-ordinated many other operations which were carried out by other agencies.

Under the 1950-51 estimates, Search & Rescue facilities are being maintained at five Rescue Co-ordination Centres located at Maritime Group HQ, Halifax, N.S., Training Command HQ, Trenton, Ont., Tactical Group HQ, Winnipeg, Man., North West Air Command HQ, Edmonton,

Alberta, and 12 Group HQ, Vancouver, B.C. To carry out the flying commitments of this branch of the RCAF, the aircraft required are seven Cansos, four Lancasters, seven Dakotas, eleven Norseman, and five Sikorski S-51 helicopters. In addition there are 28 specially trained Para Rescue personnel and twelve ground search parties. The men who make up these latter parties are tradesmen normally employed on other duties.

Complete pools of Search & Rescue equipment are maintained at Greenwood, N.S.; Goose Bay, Labrador; Trenton, Ontario; Winnipeg, Manitoba; Edmonton, Alberta; Whitehorse, Yukon; Fort Nelson, B.C.; Sea Island, B.C.

Search & Rescue also maintains special communications facilities, in-

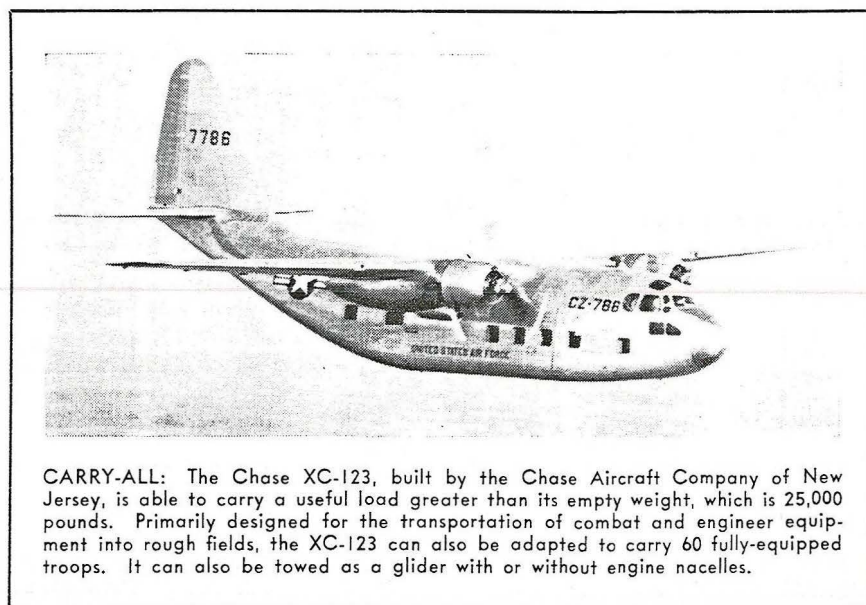
cluding W/T, specialized equipment such as portable packsets, and "Handi-Talkies". Direct telephone lines are set up where necessary and direct tele-types for Search & Rescue communications only are to be maintained between: Maritime Group to USCG (Com. East Area), New York; Maritime Group to Moncton ATC; Maritime Group to Coverdale, N.B. (RCN HF/ D/F); 12 Group to USCG, Seattle, Washington.

something of a rarity, but recently Chief Petty Officer R. J. McDonald became the second member of the RCN to wear the wings of a parachutist when he completed a parachute instructor's course at the Rivers, Manitoba, Joint Air Training Centre. The first RCN member to qualify was Lieut. (P) George Marlow, an instructor at Rivers, who went through an Army conducted course there in the spring of 1949.

CPO McDonald had previously completed a parachute course in October of 1949 in the U.K. The most recent course covered the technique of instructing aircrews in "bailing out" procedure. A safety equipment technician, he is at present serving in HMCS Shearwater at Dartmouth, N.S.

Briefly

•Major-General Roger M. Ramey, Commanding General, Eighth Air Force, USAF, Fort Worth, Texas, recently expressed appreciation for the parts played by the RCAF, the RCN,



CARRY-ALL: The Chase XC-123, built by the Chase Aircraft Company of New Jersey, is able to carry a useful load greater than its empty weight, which is 25,000 pounds. Primarily designed for the transportation of combat and engineer equipment into rough fields, the XC-123 can also be adapted to carry 60 fully-equipped troops. It can also be towed as a glider with or without engine nacelles.

cluding W/T, specialized equipment such as portable packsets, and "Handi-Talkies". Direct telephone lines are set up where necessary and direct tele-types for Search & Rescue communications only are to be maintained between: Maritime Group to USCG (Com. East Area), New York; Maritime Group to Moncton ATC; Maritime Group to Coverdale, N.B. (RCN HF/ D/F); 12 Group to USCG, Seattle, Washington.

Bail Out

To be a naval parachute jumper is

and Canadian civilians in the search for crew members of the USAF B-36 lost off the north coast of British Columbia during February of this year.

•The United States Legion of Merit, Degree of Commander, has been awarded to Air Vice Marshal A. L. Morfee, CBE. The award is for A/V/M Morfee's "exceptionally meritorious conduct in the performance of outstanding services" during the war years, and for his postwar work as a member of the Permanent Joint Board of Defence. He retired from the RCAF in 1948 after serving since 1924.



The Airborne Services

Airborne Army

More and more the Canadian Army is becoming air conscious. While the Reserve Army is not yet officially airborne, this year many units, especially in eastern Canada, are taking to the air to speed up training and cut down the time lag in getting to and from training areas.

In recent weeks at least three units have arranged RCAF flights for their men. On one, fourteen officer-cadets of the 4th Princess Louise Dragoon Guards, Ottawa, flew 200 miles to Camp Borden for a day's special training on equipment not available at their local headquarters. Another Ottawa unit, the 3rd Field Squadron, RCE, travelled by air for a training exercise at North Bay, Ontario. Still another, the 51st Heavy Anti-Aircraft Regiment, Montreal, this month is airlifting almost 100 officers and men to Picton, Ontario, for summer training.

RCN Appointments

New appointments for 13 aircrew officers of the RCN, involving changes in command of the 18th Carrier Air Group and 883, 826, and 825 Squadrons, were recently announced.

- Lt.-Cdr. Richard E. Bartlett has been named commanding officer of the 18th Carrier Air Group, succeeding Lt.-Cdr. (O) R. I. W. Goddard, DSC, who has been appointed to the RCN Air Station, Dartmouth, as Lieutenant-Commander (Operations) and Chief Ground Instructor.

Other appointments include: Lt. (P) William D. Munro, as commanding officer of 883 Squadron of the 19th Carrier Air Group, succeeding Lt.-Cdr. (P) R. A. B. Creery who has taken up an appointment on the staff of the Director of Naval Aviation, at Headquarters; Lt.-Cdr. (P) John N. Donaldson, as commanding officer of 826 Squadron of the 18th Carrier Air Group, succeeding Lt.-Cdr. (P) John W. Roberts, who has been appointed to HQ as Staff Officer Air Personnel; Lt.-Cdr. (P) D. W. Knox, as commanding officer of 825 Squadron of the 18th Carrier Air Group, succeeding Lt.-Cdr. (O) J. A. Stokes, who has

been sent to the HMCS Magnificent as Lt.-Cdr. (Operations); Lt.-Cdr. (P) I. P. Godfrey, OBE, as Deputy Director of Air Logistics at HQ, succeeding Lt.-Cdr. (P) F. W. Bradley, who has become Lieutenant-Commander (Flying) on the Magnificent; succeeding Lt.-Cdr. Godfrey as Lieutenant-Commander (Flying) at the Air Station is Lt.-Cdr. D. P. Ryan, whose former post of Air Weapons Officer at the Station has been taken by Lt. (P) W. J. Walton; Lt. (P) J. B. Fotheringham, formerly Staff Officer Air Personnel at HQ, has been appointed to the destroyer HMCS Sioux.

Anti-Aircraft

Headquarters Anti-Aircraft Command, Army component of the joint

and ground training this summer for periods ranging from two to 20 weeks. Included will be about 1,500 officers and men from the ten auxiliary squadrons, and almost 1,000 university undergraduates. The program also includes up to 700 high school youths, who will be offered ground training with the auxiliaries. This will be an extension of a scheme carried out experimentally on a limited basis last year.

Summer camps for the auxiliary squadrons are being held at Chatham, N.B.; Gravenhurst, Ont., and Gimli, Manitoba, and each squadron has been allotted a two-week period. Training at Chatham commenced May 27 and will run until July 7. This camp was, or is being, attended by 400 Squadron, Toronto, 401 and 438 Squadrons, Montreal, and No. 1 Radar & Communication Unit, Montreal.

Officers and men of 420 Squadron, London, and 424 Squadron, Hamilton,



ICE WAGON: Known as the Rockcliffe Ice Wagon, this RCAF North Star type aircraft is used by the National Research Council to test de-icing and anti-icing equipment as well as to observe icing characteristics. The big vertical airfoil section evident is said to have no noticeable effect on the flying characteristics of the aircraft. Transparent bubbles on either side of this section enable NRC observers to keep close watch on it while aircraft flies through icing conditions.

service organization for the command, control, and planning of the air defence of Canada, was recently established at St. Hubert, P.Q. The unit was approved last year and is under the command of Lt.-Col. H. E. Brown, OBE, ED, of the RCA. It works in close co-operation with Headquarters Air Defence Group, also at St. Hubert. Air Defence is a combined effort of several components which include fighters, anti-aircraft guns, and radar, all of which have to be co-ordinated in an overall plan.

Summer in Reserve

More than 3,300 Reserve members of the RCAF are to take active flying

are attending camp at Gravenhurst between June 24 and July 22. The five western auxiliary squadrons will attend camp together at Gimli from July 2 to July 15. These squadrons are 402, Winnipeg; 406, Saskatoon; 403, Calgary; 418, Edmonton; 442, Vancouver.

Refresher Training

Details of the plan to give refresher flying training to 600 Reserve RCAF pilots, have been announced by Defence Minister Brooke Claxton. Training is to start this summer at a number of RCFCAs clubs. The target is for a total of 600 to receive training each year; however, because delivery of the Chipmunks which are to be used



Operators' Notes

Public Convenience

The requirement that the ATB make a finding of public convenience and necessity in regard to the establishment of any scheduled air service may be deleted from the Aeronautics Act if a proposed amendment* is passed by the House of Commons. According to Transport Minister Lionel Chevrier in Hansard, May 11: "One of the proposed amendments will permit the board to waive this requirement in the case of foreign scheduled air services since provision for these services is made on the basis of a government decision through bilateral agreements between Canada and other nations."

"The additional requirement that the ATB subsequently find public convenience and necessity before granting a license to such foreign carrier is inconsistent with the carrying out of the obligations assumed by the government in these bilateral agreements."

Canadian Operators

Commercial operators in Canada now number about 200, according to a recent statement made to the House of Commons by Transport Minister Lionel Chevrier. Said Mr. Chevrier: "Some of these operators have more than one license. About half of those are small charter operators and the assets of those 100 operators were valued in 1948 at \$6,300,000 as compared to 1945 when the value was placed at \$434,000. That in itself shows a considerable development in this division of the air transport industry."

"The development of this group is also reflected in the number of employees, which increased from 128 in 1945 to 648 in 1949. Payrolls for salaries and wages increased in even greater proportion, from \$200,000 in 1945 to \$1,630,000 in 1949. Total passenger miles increased from 774,000 in 1945 to 7,866,000 in 1949. The carriage of goods to places otherwise difficult of access is reflected in an increased ton mileage, from 31,000 in 1945 to 754,000 in 1949. Mail services to remote areas also show substantial advances, from less than 2,000 ton miles in 1945 to over 12,000 ton miles

*The amendment was passed.

in 1949. Total mileage flown in 1949 by 304 aircraft was 12,194,000 as compared with 841,000 in 1945 by only 26 aircraft. . .

"Private operators other than CPA had gross revenues of less than \$1,000,000 in 1945 and today they have gross revenues of from \$7,000,000 to \$8,000,000, which is a rate of increase far greater than that of TCA."

Alberta Survey

A large scale airborne magnetometer survey of the Peace River area in north-west Alberta has been started for four major oil companies by Canadian Aero Service Ltd. The survey is being undertaken on a co-operative basis by Socony Vacuum Exploration Co., Stanolind Oil & Gas Co., Imperial Oil Ltd., and Canadian Gulf Oil Co. It is believed that there may be a fifth and possibly a sixth company sharing in the exploration in the near future.

According to Thomas M. O'Malley, president of Canadian Aero Service, one or two Ansons will be used in the survey. The planes have been outfitted with aerial mapping cameras, the Scenne continuous strip camera, and several electronic recording devices. The new Gulf magnetometer will be used for the survey.

Over 16,000,000 acres are to be mapped and it is expected that flying operations will be completed by the

early fall. Project engineer for the survey is Jack C. Webster. Canadian Aero Service will draw on its affiliate companies, Aero Service Corporation of Philadelphia and Spartan Air Services of Ottawa, for technical assistance and for plane and flight personnel.

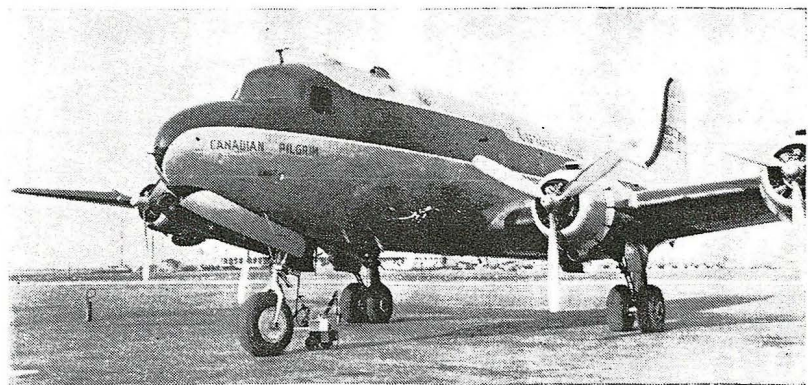
Law and Order

The powers of the ATB with regard to investigation of possible violations of the law and its powers to take corrective action, are to be changed under a recent amendment to the Aeronautics Act. At present the ATB must receive a formal complaint before it can act, but under the proposed amendment it could take action in any case in which it possessed evidence of illegal operations.

No Poaching

Aerial patrols along the St. Lawrence River on the U.S.-Canada border, in Ontario, aimed at putting a stop to fish and game poaching, are being made by the Ontario Department of Lands and Forests. The aerial check-up was started following complaints by residents of the Canadian side of the St. Lawrence, east of the Quebec boundary, that invasions of their territory were being made by fishermen and hunters from the adjoining state of New York who, it was claimed, were without licenses and had been operating almost at will.

Meanwhile, allocation of the Department's aircraft for this summer was recently made public. Of the total of 33 machines, 22 will be de Havilland



THE PIONEER PILGRIM: Curtiss-Reid Flying Service of Montreal recently became the first Canadian Class 3 operator to make overseas charter flights, using the DC-4 pictured above. The flights so far have been between Montreal and Rome, providing transportation for Canadians wishing to visit the latter city during Holy Year. The DC-4, CF-EDM, carries fifty passengers. Curtiss-Reid is located at Cartierville Airport and is headed by W. R. J. Oliver. Aircraft is named the "Canadian Pilgrim."

to permit further extension of conveyer operations.

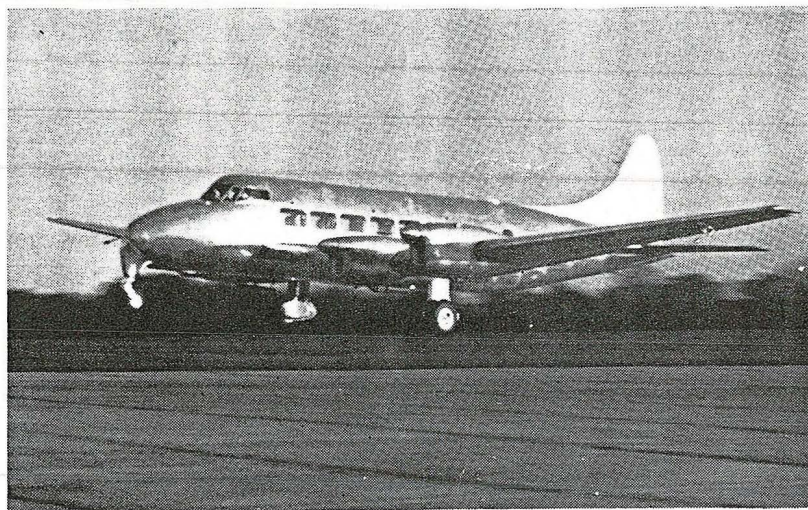
Mal d'Air

For those unfortunates who suffer from motion sickness, Dr. Kenneth L. Stratton, director of American Airlines' medical division, has a few words of advice.

Dr. Stratton says that alcohol taken before a trip disposes one toward motion sickness in any of its forms. People who think they will not be sick if they have empty stomachs when embarking on a flight, a rail trip, an automobile jaunt or a steamship voyage use false logic. A light meal of easily digestible food is preferable to no food at all.

physical condition is perhaps more important at any given time. Alcohol, greasy foods, apprehension, and morbid physical condition predisposes the traveller toward illness.

Last year the doctor made a survey to find the effectiveness of dramamine, the motion sickness drug which American Airlines uses. The drug was tried on 719 cases of persons with motion sickness, ranging in age from five years on up. Better than 80 per cent received complete or partial relief. A catch was, however, that about a tenth of these had mild side reactions, mostly drowsiness. The dosage was halved, and though it retained its curative power, lost all but a fraction of its side effects.



FLEDGLING WINGS: The de Havilland Heron is shown taking off on its recent first flight. Designed for economy and extreme simplicity of operation, the Heron has a fixed undercarriage. It can carry from 14 to 17 passengers and has an all-up weight of 12,500 pounds, of which 3,420 pounds is payload. The Heron incorporates many components of the smaller Dove and is powered by four DH Gipsy Queen 30 engines.

"Motion sickness," he says, "is the general term for the nausea that afflicts some travellers no matter what kind of transportation they use. It goes under the name of air sickness for air travellers and sea sickness for steamship passengers and various terms for other modes of locomotion. But it is all the same thing."

Some authorities believe motion sickness results from confusion between the eyes and the body's stabilization mechanism. Others believe that abnormal motion, such as the swaying of an automobile or the pitching of a ship at sea, affects the organs of balance.

There is no question, according to Dr. Stratton, that apprehension plays a large part in many cases. But one's

Big advantage of dramamine is that it cures active cases of motion sickness either wholly or partially, whereas other drugs were useful only as preventatives.

Briefly

- TCA has increased its trans-Atlantic flights to seven per week for the summer months.

- BOAC is now using Boeing Stratocruisers exclusively between Montreal and London. No extra charge is made for this service, which is operating four round trips weekly.

- The volume of international air traffic transactions put through the IATA Clearing House in London amounted to \$14,184,000 during March.

- Northwest Airlines has published

a booklet entitled "Guide to Good Fishing". The booklet covers fishing areas all along the Northwest System in Canada, the U.S., Alaska, and Hawaii.

- United Air Lines reports a net loss of \$1,993,681 for the first quarter of 1950, as compared with a net loss of \$3,323,136 for the same period last year.

- Volume of international air traffic transactions put through the IATA Clearing House in London amounted to \$10,512,410 during February.

- An operating profit of \$16,240 for the first quarter of the current year has been reported by Western Air Lines. Net loss was \$37,707, contrasted with \$128,529 net loss in the first quarter of 1949.

- The first of five new DC-6s has been delivered to United Air Lines by the Douglas.

- Pan American World Airways reports estimated net earnings for 1949 of \$2,489,000. Estimated net income as reported for 1948 was \$4,591,000.

- Northwest Airlines reports a net loss of \$3,612,000 for the first quarter of 1950.

- The license of American Airlines to stop with the right to take on and put down passengers, goods, and mail at Windsor, Ontario, has been cancelled by the ATB, subject to the right of the licensee to apply for re-instatement when it proposes to exercise traffic rights at that point.

- The application of Canadian Pacific Air Lines to include Dawson Creek, B.C., as a point of call on its Class 1 scheduled air service serving Prince George, B.C. Grande Prairie, Peace River, Fort Vermillion, Alta., Hay River, and Yellowknife, N.W.T., and also as a point of call on its Class 1 scheduled service serving Edmonton, Grande Prairie, Alta., Fort St. John, Fort Nelson, B.C., Watson Lake, Whitehorse, Mayo, and Dawson City, Y.T., has been approved.

- The application of Canadian Pacific Air Lines to include Pine Point, N.W.T., as a point of call on its scheduled services serving Prince George, B.C., Grande Prairie, Peace River, Fort Vermilion, Alta., Hay River, Yellowknife, N.W.T., Edmonton, Fort McMurray, Alta., Fort Smith, Resolution, and Yellowknife, N.W.T., has been approved.

BRISTOL'S BRITANNIA

LONG-HAUL TURBOPROP AIRLINER

SINCE the prototype first flew at Filton on August 16, 1952, piloted by Mr. A. J. Pegg, then Bristol's chief test pilot, the Britannia has undergone steady development. Extensive trials have been made, in all conditions and many climates, to provide international air operators with a long-haul turboprop airliner, the comfort and reliability of which will reach the peak in contemporary commercial air transport.

Production proceeds at two United Kingdom factories—at Filton and Belfast—and a maritime reconnaissance version is to be produced in Canada. The British Overseas Airways Corporation has ordered, to date, 33 Britannias and regular services begin on February 1 with the 15 Mark 102s. Other versions are on order for foreign airlines; a military transport version is in production.

