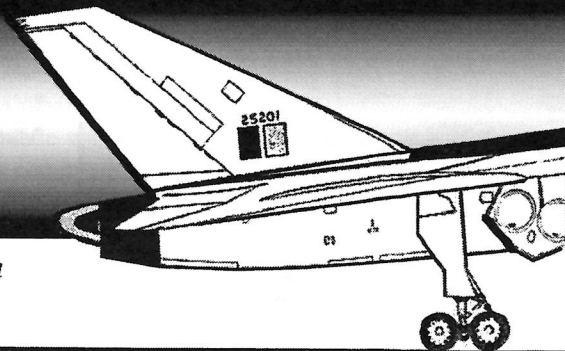


Pre-Flight

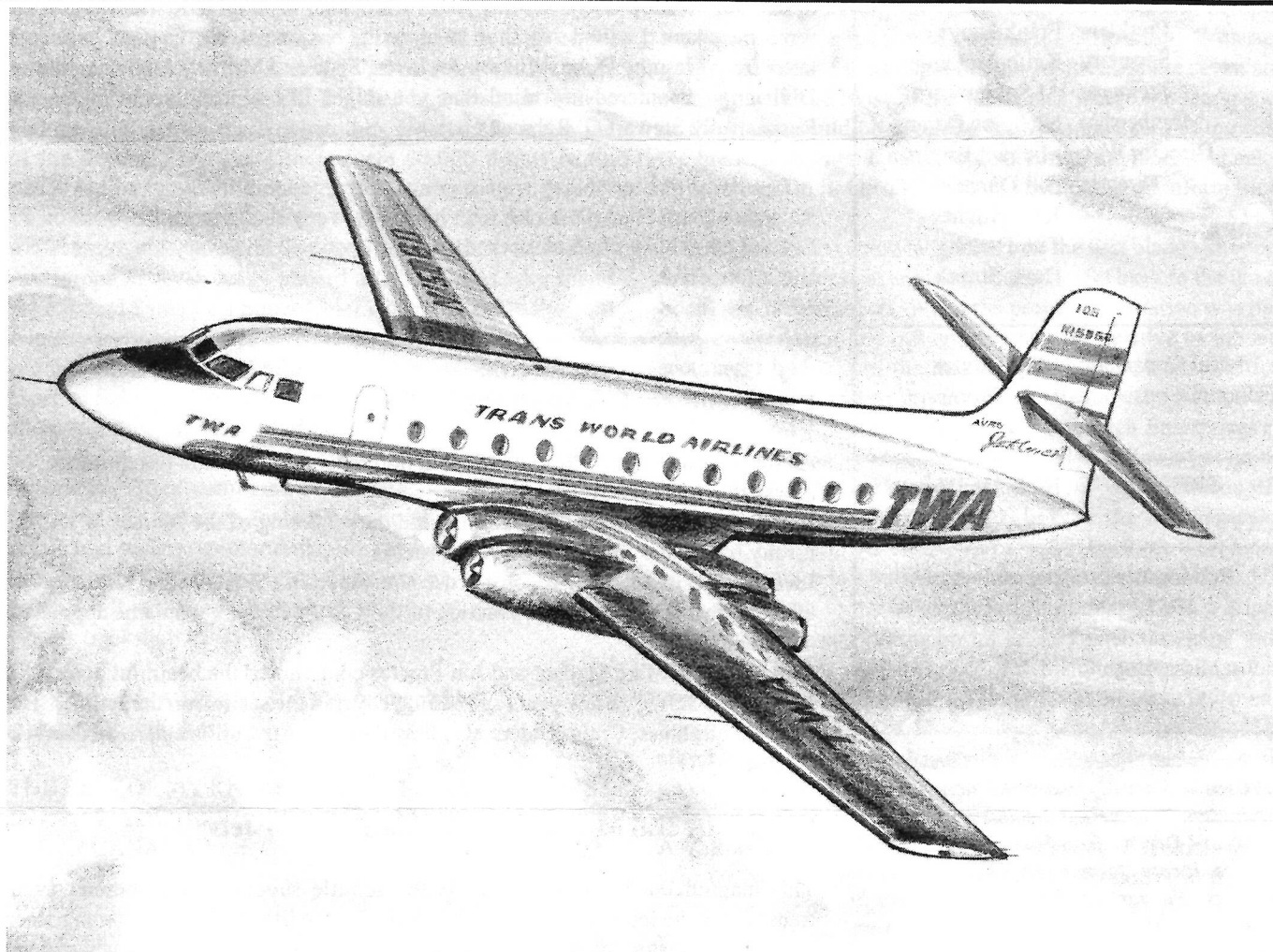
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“WHAT COULD HAVE BEEN”

Craig Koderá has given you his permission to publish his beautiful TWA Avro Canada C-102 Jetliner illustration in the AHFC newsletter.

Aviation Artist Craig Koderá created this illustration of the Avro Canada C102 Jetliner in TWA livery as a unique Christmas gift for fellow Aviation Historian Jon Proctor. Koderá wrote the Jetliner section of “From Props to Jets” -- the magnificent book he co-authored with Proctor and Mike Machat in 2010.

Koderá (courtesy of Jon Proctor)

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Editorial Consultant John Thompson

PRE-FLIGHT Nicholas Doran
Ted Harasymchuk

President's mailing address:
1951 Rathburn Rd., E.
Unit 199
Mississauga ON L4W 2N9
905-624-4909

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**Aerospace Heritage
Foundation of Canada
P.O. Box 246, Etobicoke D
Etobicoke ON M9A4X2
(416) 410-3350
www.ahfc.org**

From the President

As we enter the 25th year of publication of our newsletter, Pre-Flight I would like to extend my personal thanks as well as from the Board of Directors and you the Membership to Ted Harasymchuk and Nick Doran for a job well done.

I am proud to say we have received permission to reproduce the excellent line drawing, (on the front page,) of Trans World Airline's Jetliner. "What could have been" is correct, we could have been seeing Avro Jetliners in our skies of today.

As a tribute to the memory of member Stu Rahmer, I am reproducing Stu's note explaining how his shop diary came to be.

"I joined Turbo Research Ltd. in December of 1944 and after continuous employment with that firm, A.V. Roe Canada, and Orenda Engines for 30 years, retired from the Orenda Division, Hawker-Siddeley in December of 1974. During that time I kept in my desk a shop diary, making notes from time to time of items which I thought were important. I willed this Shop Diary to the National Archives (Ottawa acceptance letter from Timothy Dube, Military Archives, State and Military Archives, Manuscript Division). It entered my mind that you might like to copy some of the pages." Respectfully Stewart G. Rahmer

I am very pleased to say we are going to reproduce Stu's notes called "From Stu Rahmer's Shop Diary." Along with his Diary we will also print his work on Project L-4 and other blades he had worked on. I trust you will find everything very interesting and informative.

Frank

Comments by Bill Mellberg

As for your question ... "Can the Foundation receive permission to reproduce, in their newsletter, the TWA livery on the Jetliner?"

Aviation artist/historian Craig Kodera did the rendering of the Jetliner in TWA livery for my friend and former editor, Jon Proctor.

I will ask Jon to ask Craig if you can use it on the front of PRE-FLIGHT (the newsletter of the Aerospace Heritage Foundation of Canada). I know it would be appreciated by the Membership.

Craig Kodera, Mike Machat and Jon Proctor co-authored the beautiful book, "FROM PROPS TO JETS", a few years ago: Craig covered the section on the Jetliner. Besides painting airplanes, Craig Kodera also flew them for Air California, American Airlines and the USAF.

Review by Bill Mellberg of "From Props to Jets"

This magnificent book describes, as the subtitle suggests, "commercial aviation's transition to the Jet Age 1952-1962." It also brings to life what many veteran passengers and aviation historians regard as the Golden Age of air travel -- an era when men wore suits, women wore dresses and children wore "junior pilot" wings while flying aboard luxurious air transports such as Lockheed's triple-tailed Constellation and the stately Douglas DC-7. Long before Boeing dubbed its 787 the Dreamliner, carriers were branding their shiny new aircraft Mainliners, Starliners, Flagships, Clippers, Golden Falcons, Silver Darts, Speedbirds and Astrojets. As these names imply, there was nothing commonplace about air travel during that exciting decade. "From Props to Jets" fully captures the look and feel of this fabulous period with its authoritative text, vintage advertisements and plethora of dazzling illustrations and photographs -- many of which are published here for the first time.

Nine chapters take the reader from post-war Douglas DC-3s and DC-4s to the advent of the first fanjets in the early 1960s -- including Convair's sleek and rakish 990. Along the way, some "might have been" airliners are featured, including Avro

Canada's pioneering Jetliner, Bristol's giant Brabazon and Republic's exotic Rainbow. For many airlines, prop-jets provided the bridge between propliners and jetliners. The authors relate the remarkable impact of the Vickers Viscount on air travel during the mid-1950s, as well as describing Lockheed's Electra, Bristol's Britannia and Fokker's Friendship (which was also built under license by Fairchild as the F-27). They tell us about de Havilland's ill-fated Comet and Tupolev's surprising Tu-104. They introduce us to some of America's most famous airline executives (American's C.R. Smith, Pan Am's Juan Trippe and United's Pat Patterson). They show us some of the more futuristic air terminals that were being constructed in the United States at the dawn of the Jet Age. They give us first-hand accounts of what it was like to fly aboard Golden Age airliners. And they even take us aboard TWA's imaginary "Moonliner" -- one of the more popular attractions at the then-new Disneyland in California. This profusely illustrated book also gives us thorough accounts of the Boeing 707 and Douglas DC-8 -- the big jets which forever changed the way people travel when they entered service at the end of the decade. By 1960, there were 70,000 flights being made each year across the North Atlantic. Airliners were rapidly replacing ocean liners and passenger trains. Why spend four days aboard Cunard Line's Queen Mary when you could fly from New York to Europe in seven hours aboard a DC-8? And why spend two days aboard Santa Fe's Super Chief when you could fly from Los Angeles to Chicago in less than four hours on an 880? The tremendous passenger appeal of the Jet Age is lavishly portrayed in a "Special Salute to the 707" at the end of the book.

Authors Jon Proctor, Mike Machat and Craig Kodera are three of commercial aviation's finest and most prolific writers, artists and historians. They combined their talents and wide-ranging experience in the industry (as well as their large collections of aircraft and airline memorabilia) to produce a truly unique publication which is both highly informative and extremely entertaining. It will be a welcome addition to every airliner enthusiast's bookshelf.

© 2010, William F. Mellberg Bill can be reached at billmellberg@earthlink.net

"TO THE BEST OF MY KNOWLEDGE THIS WAS THE FIRST BLADE – MAYBE THE FIRST PART MADE FOR A JET ENGINE IN CANADA"....S.G.R.

Fifty Years ago this coming March 27th, 1946, I started making a 1st. stage rotor blade #L-00643-E, Project L-4 while working at Turbo Research in Leaside Ontario.

Ray Joyce and I had just come back from the Cold Test Station in Stevenson's Field in Winnipeg where Ray had been looking after the testing of English jet engines, namely Power Jets W2/700 and Rolls-Royce Derwents, I was Machine Shop Forman. Ray Holl was the Rolls-Royce representative. I have a picture taken outside the building of 34 of the staff (the boss Paul B. Dilworth was absent).

Returning to the making of the blade: the shop superintendent (without a shop), Harold Porter, handed me the blueprint of this blade and said Stew, can you make a blade from this print? Engineering want to know if all the required information is there. This would be more or less setting the pattern for blade prints in the future. The aerodynamics of the blade had been specified

by the chief aerodynamicist, Wally McBride an American from the United States. This was a much more complicated blade to make than any we ever used in our engines, Chinook, Orenda or Iroquois, as the airfoil shape required 7 sets of templates to plot out the airfoil shape and twist down the length of the blade. The root of the blade which held it in the disc was designed, not to fit an engine compressor disc, but a compressor test rig; disc. for testing the efficiency of the blade. I first made the seven sets of templates of the airfoil sections (front & back). This was not too difficult due to 11 years previous experience in pattern making. As I was told that it did not matter what material I could make it out of, I chose brass for easy working and ordered a piece of 2 x 2 brass bar of sufficient length to make a couple blades. As I said previously, we had no shop but did have a storage area where we were gathering together useful surplus tools and equipment for the time when we would be able to set up shop. With height gauge and surface plate I laid out the positions of the seven airfoil sections with the twist of the blade and where the leading edge of the blade would be, working from the tip down to the root of the blade. But when it came to positioning the tapered shank and threaded end to fit the test rig disc, I could find no information on the drawing.

To the best of my knowledge this was the first blade – maybe the first part made for a jet engine in Canada. So back to the drawing board and the engineers. When the proper information was put on the print and then laid out on the brass bar relative to the airfoil sections, I had one of the machinists who had been transferred from the Winnipeg Test Station to Leaside, turn the tapered shank and thread on one of the idle lathes in Research Enterprises right beside us. The tapered shank with threaded end was put on these blades so that the angle of the air foil relative to the axis of the centre shaft, could be changed to improve the aerodynamics if required. (As their war effort was being cut back, we were actually occupying space in a building no longer required by them). Using only a hacksaw to cut away the surplus material and a Kipp air grinder with a metal cutting burr, I then faired in the shape and the twist of the airfoil section checking all the time with the cardboard airfoil templates until Lloyd Wigle, one of the many returned Air Force men made a set of 14 aluminum templates for me. (Those aluminum templates and a replica of that original blade were given to the National Aviation Museum in Ottawa some 5 to 10 years ago). I finished the blade by April 30th, and it went out to A.V. Roe in Malton Ontario and was drawn out of stores that first year we were there, and never returned. Sometime in those first years Don Smith made an aluminum casting of that first blade and I have it here at Sandy Cove Acres. You may have it if you care to come and get it, and my shop diary, from which I sent you excerpts last May, is still available for copying, should you desire.

Enclosed copies of the first engine deliveries are from a note book given to Winn Boyd last spring. Also a copy of the Orenda News.

Signed -- Stewart G. Rahmer



FROM STEWART G. RAHMER'S SHOP DIARY

Feb.13/46	Visit from Top Brass. T.R.L. Winnipeg	Apr.18/50	Jetliner carries mail Malton to New York.
Mar.27/46	Start making 1st. stage comp. blade L-00643-E Project L4 in. brass W. McBide configuration (Leaside)	Jun.6/50	Orenda runs in F-86 in California - Ground Run only.
Apr.30/46	Finished above blade.	Jul.4/50	Work on cost estimate of Waconda. -Never made
May 4/46	Alter root of above blade	Jul.13/50	Lancaster flies for first time on 2 Orenda's - Nos 4 & 8.
May 16/46	Sign Separation Notice from Turbo Research Ltd.	Oct.5/50	F-86 Sabre flies for first time with Orenda No 11.
May 29/46	Move to A.V. Roe, Malton in Fred Staines car with Perc Watt, Bill Rigby and Albert Veale.	Nov.10/50	Winette Boyd resigns,
June 6/46	Start estimating; cost of TR-4 (I was working for Bill Hall, planning	Apr.27/51	F-86 Sabre with Orenda No.11 flies from Minneapolis to Toronto in 1 HR, 8 Man,
June 11/46	To see Mr. Cyra re machine shop lay out.	Apr.27/51	Members from the House of Commons visit the plant,
June 19/46	Estimate Material cost of Compressor Test Rig.	June 21/51	CF-100, No18103 flies with Orenda's No 15 & 16. 1st Canadian, craft to fly, powered with Canadian Engines.
June 25/46	List machines, required for Gas Turbine Manufacture for Mr. Cyra.	Sept,18/51	M.C. Nix becomes Exp. manufacturing manager, Gas Turbine Division (from R.R.)
June 26/46	Make process planning sheets for Oil Pump Gear Box.		E.K.Brownridge becomes Works manager, Production, reporting to Fred Smye
Sept. 6/46	Tudor Plane contract cancelled.		Crawford Gordon takes control.
Oct.24/46	Moved down to machine shop to organize a blade shop.	Oat,15/51	1st. Orenda powered CF-100 officially handed over to the R.C.A.F. (Larry Milberry's book "The AVRO CF-100" says it was a/c #18104)
Dec .4/46	Make form tools for cascade blade L-00859.	Oct.17/51	1st. Production Orenda ran for 10 min.
Dec.5/46	Started machining nimonic blade material shipped from Wiggins, England.	Dec.15/51	McRae's new Organization became effective. (from U.S. G.E.)
Dec.12/46	Len Baker & Ron Waller start making 1st. & 2nd stage comp. test rig master blades, L-00849 & L-00854, Harry Keast configuration	Feb. 1/52	P.B. Dilworth leaves the company.
Apr.10/47	Visit from Ken Tupper (N.R.C.)	June 27/52	Orenda X33 delivered to test. 1st. 2 stage turbine. I notice this clashes with an entry of May 15/53.
May 27/47	Jones and Lamson 30" Comparator installed. (Ordered Nov. /46).	Jul. 4/52	G.T. Production Plant formally opened by C.D. Howe.
Mar.12/48	First TR-4 (Chinook) completed in assembly and delivered to Test House,	Sapt.29/52	Type test completed on series 10 engine for F-86
Mar.17/48	First Chinook runs successfully on the first start; 1st. run 7 min. 2nd start made without blow off valves being used; starts in 30 seconds idles nicely at 1900 R.P.M.; accelerated to 5000 R.P.M.; run 50 min	Jan.25/53	Completed type test on R.E. blades.
Mar.22/48	Official Running of TR-4 at 11.30 A.M.	Feb.16/53	1st. Series 11 (2 stage turbine) No.X30 delivered to test, (see Jul.4/52)
Feb.10/49	TR-5 - Orenda No 1 runs on first start at 3500 R.P.M. about 2.20 P.M.	May 15/53	Doug Knowles leaves company
Apr.14/49	Mr. Hemmingway leaves the company,	Jun.30/53	Orenda no.17 build no.6 delivered to test with Annular combustion syst.
Apr.29/49	Appointed Prod. Controller, Experiment Shop.	Sept20/53	McRae leaves Orenda and Walter McLachlan takes control
May 1049	To Indiana Gear with Cec. Woods and Bill MacDonald.	Sept30/53	E.K.B. becomes General works manager with procurement & plant engineering reporting to him.
May 1349	Sir Roy Dobson visits the shops.	Oat.15/53	F.W. Luker resigns. (from U.S. G.E.).
Aug.10/49	AVRO Jetliner first flies successfully.	Nov.1/53	
Aug.16/49	Jetliner forced to crash land. Jimmy Orrell pilot; Undercarriage Trouble		
Nov.5/49	Can. Acme Screw & Gear deliver 11st. set of spiral bevel gears - part nos 3226 & 3272		
Jan.17/50	All-work on Chinook parts ordered stopped; parts to be gathered & Stored		
Jan18/50	CF-100 first flight -Wally Crouter on CFRB.		
Jan.19/50	CF-100 first flight - Larry Milberry in his book AVRO CF-100 page 16		

Information on Next Issue

November 1st, 1953 completes the first interesting portion of Stewart Rahmer's Shop Diary, in the next issue of Pre-Flight we will conclude the Shop Diary to March 26th 1983. Included in the next issue we will reproduce, from the Orenda News of June 1st, 1956, a tribute to Stu along with some names of "Those That Stayed"