Link trainers in wartime Gander

(v3)

(by Robert G Pelley 2017-09-06) http://bobsganderhistory.com

Before the 2nd World War, civilian flyers in North America could be divided, so to speak, into roughly three broad categories:

- o bush pilots who were pretty good with a compass and a map, could follow ground features and smart enough not to fly in bad weather or failing light unless it was absolutely necessary.
- o barnstormers who liked going from town to town to show off their dare-devil skills and make a few dollars giving rides. They too were wise enough to stay on the ground when conditions weren't to their liking.
- ° commercial pilots, especially in the US, who flew mail, cargo and passengers all around the country. These guys didn't need to read a map or follow the features on the ground they basically used special radio towers that sent out a signal, so all that the pilot had to do was to "ride the beam". If there was a thunderstorm along the way, you better like turbulence because the beams and the planes didn't go around corners.

The problem was that these folks, be they dare-devil, well versed in map reading or experienced in cross-country flying, were as useless as a soccer bat out over the Atlantic where there were no ground features, where a large part of the flying was done when most smart people would be asleep and where there was certainly no radio beam to play Mom.

When the ferry operation started at the beginning of the war, a major problem therefore was finding pilots with any navigation skills at all – while proper navigators were worth a king's ransom. The start of these ferry operations can be seen here:

http://bobsganderhistory.com/cpr.html

The chief of flying operations was Douglas CT Bennett who had flown all over the world with the RAF and Imperial Airways. He was, among other things, a consummate navigator and had even flown a seaplane across the Atlantic on 21 July 1938. (See here for this magnificent story):

https://www.youtube.com/watch?v=bYtazEBQ1K8

He knew that planes crossing the Atlantic needed pin point accuracy. One of the most challenging periods is when, due to weather or darkness, you can't see outside the cockpit, meaning you operate your aircraft by relying only on your instruments. Ocean navigating is done in minutes and seconds and for celestial navigation, the time must be correct to the second. He understood the critical importance of a pilot's or navigator's knowledge of techniques such as dead reckoning, radio bearings, conversion angles and the use of a sextant to "shoot the stars". He undertook to teach them personally.

Over and above the usual classroom drills, he was able to make use of a "Link trainer" to give hands-on practice, without the danger of crashing a valuable airplane or killing the crew.

In 1928, an American by the name of Edwin Link, a beginning pilot himself, left his father's organ building business to begin work on a "pilot trainer." Link envisioned a device that would allow pilots to take their early flight training while staying safely on the ground. With his organ-building experience, he used air pump valves and bellows to make his trainer move in response to its controls.

The first use of his trainer was in arcades, fairs and circuses, seemingly with little practical application. However, in 1934, the US Army Air Corps was ordered to take over the US Airmail. Unfortunately these USAAC pilots had little experience in flying "on instruments" at night or in inclement weather - five pilots were killed in the first few days.

The Link trainer saved more than lives and planes – it also saved money. Wartime flight practice in a real Harvard elementary trainer cost about 10\$ an hour. The Link trainer was well under 10 cents.

Here is a photo of Ed Link in one of his early units:



Ed Link also had a Canadian connection. The US had neutral status until December 1941 and Britain had restrictions on war goods from non-Commonwealth countries. Link realized that having a plant in Canada would make things much easier. He owned an island east of Gananoque, Ontario, and in 1938, the first of 5000 Link Trainers was built there.

The most prolific version of the Link Trainer was the ANT-18 (Army Navy Trainer model 18). This model was produced in Canada for both the Royal Canadian Air Force and the Royal Air Force, with a somewhat modified instrument panel, where its model designation was D2. Many countries used it for pilot training, especially in the British Commonwealth Air Training Plan.

A Link cockpit was fairly similar to that of any single engine plane:



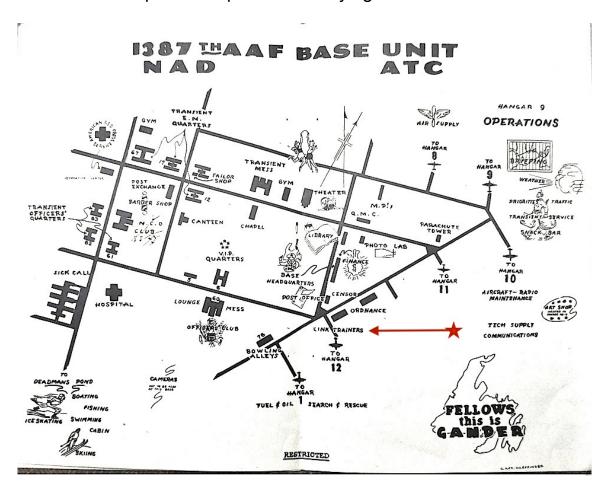
The following is the typical British Royal Air Force Link Trainer syllabus for early World War 2 basic training:

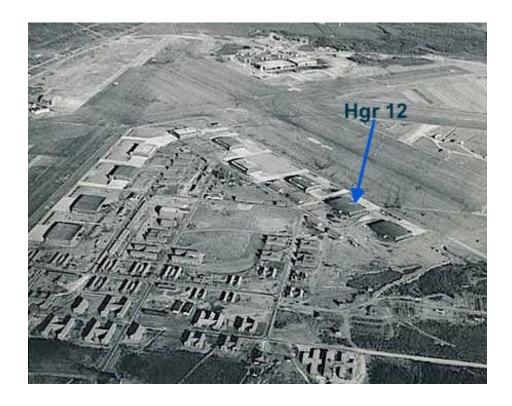
Instr	267786	nt Lecture		9900							1.
Ex.	1.	20 mins. hood open,	(0 min	s. hoo	ded, on	microp	hone,	no cha	rt		0.
Ex.	2.	Flying straight and le	evel or	Card	inal poi	nts long	g cours	ses, Ra	ate 1 t	urns	
		only, with chart		0.202	5050		15.5 (8)				0.
Ex.	3.	As 2, with various air	speeds	on qu	adranta	l points		• •			0.
Ex.	4.	As 3, with climb and	glide	**							0.
Ex.	5.	As 4, with rate 1 turns	, pupi	to tu	rn short	est way	, witho	out ins	tructio	n on	
		to new course									0.
Ex.	6.	As 5, with rate 1 and	2 turn	S			*				0.
Ex.	7.	As 6, with rate 11 and	1 2 tur	ns			205	1000			0.
Ex.	8.	Rate 11 and 2 turns in	rapid	succes	sion onl	y allow	ing tin	ie afte	r each	turn	
		for accurate checking									0.
Ex.	9.	As 5, with rough air									0.
Ex.	10.	Revision including an	y of pr	evious	exercis	es. Ro	ugh A	ir			0.
Ex.	11.	"T" Test	**	355		**		100.00			0.
Ex.	12.	"U" Test			* * *				**		0.
Ex.	13.	Spinning									0.

During the war, Link trainers were set up in three different areas in Gander, being used by CP / ATFERO / RAF, by the RCAF and by the United States Army Air Force.

In the case of the USAAF, on the "American side", their Link trainers were set up in hangar 12 (or possibly but unlikely in a small shack just next to it). This, by the way, later became Gander's first "indoor" hockey rink where kids learned to "navigate" on skates.

The Americans who came through Gander on B-17s, B-24s and the like had in principle already had their elementary navigation training. The Link trainers in Hangar 12 served therefore two basic purposes. Crews used it firstly to brush up on their general skills. The second main use was to practise blind approaches to specific airports. For example, Link instructors had already set up a standard approach package for Lagens in the Azores, which enabled pilots to better understand the particular problems of flying into that field.





With respect to the Royal Canadian Air Force, Link trainers were in general use in the early years, but less as time went on. The RCAF daily diary of 28 June 1944 gives the following information:

The Link Trainer unit at this station, which is presently supernumerary, has been carrying out a very important training program for squadrons here. Of the three trainers installed there are only two serviceable--these two being equipped for Radio Range instruction, and one for BABS instruction. (NdIr - Blind Approach Beacon System)

Since there is no regular provision for servicing the BABS equipment, this is available for instruction purposes only part of the time. The staff comprises four Senior NCOs and two maintenance men on loan to the Section - both LACs. The time distribution during the current month is as follows:

^{° 10} Squadron - 130 hours

^{° 11} Squadron - 30 hours

^{° 129} Squadron - 40 hours.

Other instruction is as follows:

- ° Radio range instruction is given to No. 10 squadron, 11 squadron and occasionally to 129 squadron;
- ° BABS instruction to 10 Squadron (when serviceable);
- ° Runway procedure to 10 Squadron
- ° Instrument practice to 129 Squadron

It is surmised that this equipment was set up in hangar 5 near the fire hall-hospital area.

The ATFERO group was set on the mainland in St Hubert, Dorval and Montreal. The headquarters/head office was first set up in the Windsor Station Hotel in Montreal and then moved to Craig Street, near the present day Court House. It is not entirely certain if a Link trainer was used either in St Hubert or Windsor but one has been confirmed at the Craig Street address.

It would appear that a Link trainer was set up in Gander in the very earliest stages of the ferry operations. The North Atlantic Aviation Museum in Gander has a Link trainer related to this early period:



But the photo of the other side is quite remarkable! As can be seen, it is clearly identified with "Canadian Pacific".



This would therefore be a Link trainer used at the very earliest stages of the trans-Atlantic ferry service. Since the contract with CP started in July 1940, this Link trainer would have owned by them until ATFERO took over on 10 May 1941.

It is curious to note that the North Atlantic Aviation Museum has no documentation on the history of this Link trainer. It would appear that it arrived about the time the Museum opened and office files were being set up. Since then the staff has been renewed.

However research with residents of Gander has shed some light on the subject. For example, Mr Peter Blackie remembers seeing it in hangar 20 (the first hangar in Gander, used by CPR / ATFERO) in the early 1950s. This was also the hangar used by Eastern Provincial Airways when it moved permanently from St John's to Gander in 1953. He also remembers it from hangar 22 when EPA moved to that location. Mr Keith Lacey, a former EPA pilot also remembers it from the same hangar, having seen it next to the office of Mr Marsh Jones, VP Flight Operations.

It would therefore appear that the Link Trainer at Gander's Aviation Museum dates indeed from the start of the first trans-Atlantic ferry flights. Luckily EPA chose to keep it as an important relic of Gander's history.

Two short videos, one British and the other American can be seen here:

https://www.youtube.com/watch?v=5kmmKj7fbnl

https://www.youtube.com/watch?v=MEKkVg9NgGM

(There may be a short ad at start of the video.)