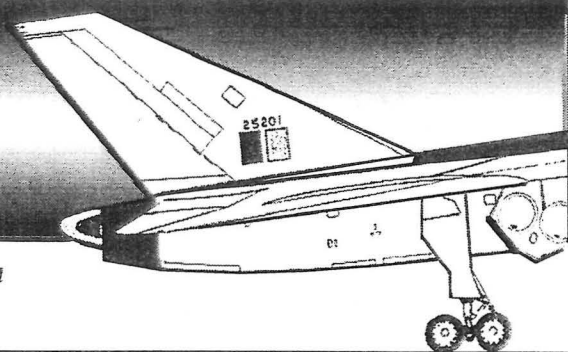


# Pre-Flight



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## AN AIRLINER HISTORIAN'S VIEW OF THE *Jetliner*

by

William F. Mellberg

The *Jetliner* story has been told and retold many times. But no one has told the story better than Jim Floyd in his wonderful book, *The Avro Canada C102 Jetliner*.

In Section 2 of that book, Jim answered several frequently asked questions about the *Jetliner* and, in particular, about why Canada failed to exploit its early lead in the jet transport field. I would like to expand upon Jim's comments by providing some additional historical perspective, as well as a few personal insights based upon my own experiences as an airliner salesman and aerospace historian. Over the years, I have learned a great deal about this fascinating industry. For one thing, I have learned that the old adage "Build a better mousetrap, and the world will beat a path to your door." is not always true. Sadly, it was not true in the case of the *Jetliner*. And make no mistake about it. Avro did, indeed, build a 'better mouse-trap', or in this case, a revolutionary airliner. To help explain why the *Jetliner* did not enjoy the success it so richly deserved in the marketplace, I have identified five market factors that influence airliner sales the most. Number One: Timing is everything. Number Two: It is not always what you

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## From the President

So far this year has been very exciting for the AHFC. First was Canadian Navy's assistance in our Arrow Model Recovery Plan at the beginning of July, which unfortunately did not result in the finding of any of the models. This was followed on August 7th with our Jetliner 55 anniversary dinner and reunion. Over 100 people attended to enjoy a great meal followed by speeches from Jim Floyd, Don Rogers and Bill Baker. The Keynote speaker was Bill Mellberg well known Airline Historian and writer of many articles on the Avro Jetliner. Bill's speech was followed by reminisces of working on the Jetliner by two members of the Jetliner team and Chris Cooper-Slipper and Brian Willer who spoke of their fathers' involvement.

The Hangar flying was very interactive with lots of old friends and workmates catching up with each other and bringing us all up to date on there history since the Jetliner days.

All in all a great evening was had by us all

*Frank*

## A Historian's View of the Jetliner, cont'd.

are selling; it is often who you know that counts! Number Three: Bias is hard to beat or overcome. Number Four: External factors can ruin you, and they are beyond your control. Number Five: Never underestimate the competition. And never forget that the tortoise beat the hare. I believe that each of these five market factors worked against the Jetliner to one degree or another -- some more than others. And I would like to answer the obvious question -- "How?" -- by citing a few comparative cases.

### **First ... Timing is everything.**

How many of you are familiar with the following "new" airliners which were flying at or about the same time as the Jetliner? The Armstrong-Whitworth Apollo, the Beech Model 34 "Twin Quad", the Bristol Brabazon, the Convair Model 37, the Convair Model 110, the Lockheed Constitution, the Lockheed Saturn, the Saunders-Roe Princess, and the Republic Rainbow. And how many of you are familiar with another airplane, the VFW 614? Probably not very many. In fact, the VFW 614, which Chris Cooper-Slipper and I were associated with, was the world's first regional jet to actually enter service (if only briefly). Some of the aforementioned airplanes arrived a little too late (e.g., the Princess flying boat). Others came a little too early, and the VFW 614 is a good case in point.

The German-built 614, which was noteworthy mainly for having its jet engines mounted above the wings, first flew in 1971. It was designed for commuter airlines which, at that time, were still flying Beech 99s, de Havilland Canada Twin Otters and Swearingen Metros. Germany's VFW (which was created from the wartime Heinkel, Focke-Wulf and Weserflug concerns) merged with Holland's Fokker in 1969; combining VFW's financial resources with Fokker's expertise in selling short-haul aircraft to airlines around the globe. Unfortunately, the airlines for which the 614 had been designed could not afford to buy (or operate) jet airplanes in 1975. Nineteen 614s were built. Thirteen were sold. Only three European commuter airlines flew the 614, starting with Denmark's Cimber Air in November 1975. They were withdrawn two years later (in 1977) when the programme was cancelled owing to VFW's lack of orders and to its growing losses on the 614 project. The 614s in airline service at that time were bought back by the company so that VFW would not have to provide product support for such tiny fleets.

I should mention that just like Avro Canada, Fokker-VFW's North American Division came close to selling several 614s to a Miami-based airline. In our case, it was Air Florida. Had that order come through in 1976, I am convinced VFW would



## A Historian's View, cont'd

have brought regional jets to regional air routes fifteen years ahead of Canadair. Furthermore, we might have skipped an entire generation of prop-jets, such as the ATR and Dash 8 series. But every commuter airline president with whom I spoke was absolutely convinced that prop-jets, not pure jets, were the next logical step in their development. Sounds familiar, does it not?

### Factor Number Two:

**It is not always what you are selling; it is often who you know that counts!**

One of the airline presidents with whom I spoke was Preston Wilbourne of Air Wisconsin. Mr. Wilbourne kindly let us bring the 614 to Air Wisconsin's home base in Appleton, Wisconsin. But he told me, quite frankly, that he had no interest in our airplane -- other than to enjoy a nice demonstration flight! We did not really expect Mr. Wilbourne to buy the 614. We simply wanted to get a foot in his door to sell F.27s to Air Wisconsin since we thought that airplane was perfect for their route system; and the numbers tended to prove it. However, the numbers could not overcome one basic fact of business life. Preston Wilbourne had a long-standing relationship with de Havilland Canada. That relationship went back to Air Wisconsin's beginning when it started operations with Twin Otters. And because of that relationship, Mr. Wilbourne bought Dash 7s instead of F.27s, even though our airplane might have been better-suited to his airline. I should add that ten years later, Air Wisconsin did buy F.27s. In fact, they received the very last F.27 built -- the last of 786 Friendships, which made it the world's best-selling prop-jet. However, it took Fokker an entire decade to overcome that special relationship which existed between Air Wisconsin and de Havilland Canada.

### Factor Number Three:

**Bias is hard to beat or overcome.**

And here is a good example. When Sir Giles Guthrie, a bank executive, took over as chairman of British Overseas Airways Corporation (BOAC) in 1965, he brought along his personal built-in bias against British-built airliners. That bias had a devastating impact on the magnificent Vickers VC10, which was (and is) an outstanding airplane.

As Vickers test pilot Brian Trubshaw wrote in his 1998 autobiography (Test Pilot):

*"I look back on the VC10 years with a combination of pride and disgust. Pride for being part of the development of a great airplane that managed to survive more trials and tribulations than it deserved. Disgust at the political jockeying and the interplay of extreme vacillations of the management, the politics of the airline itself, and national political factors far beyond Vickers' influence, let alone control."*

### Factor Number Four:

**"External factors can ruin you, and are completely beyond your control."**

That was certainly the case with the Jetliner and the Korean War. More recently, it applied to Boeing's Sonic Cruiser and the economic fallout from September 11, 2001. But getting back to bias and to Brian Trubshaw's comments about BOAC and the VC10, he added: "I shall never forget that Sir Giles Guthrie ... cut the order for thirty Super VC10s to seven. Then (he) cancelled the lot and bought Boeing 707-320Cs instead. At the same time, there was a well-orchestrated campaign against the VC10 in the media ... It is hard to sell an aircraft



under such circumstances, and (our) sales prospects were seriously harmed." Again I ask, "Sound familiar?" For the record, BOAC eventually accepted twelve Standard VC10s and seventeen Super VC10s.]

### Factor Number Five:

**Never underestimate the competition. And never forget, the tortoise beat the hare!**

In this case, the hare was the Jetliner. And the tortoise -- quite possibly -- was the Vickers Viscount prop-jet airliner. But before I explain that point, I would like to mention one other sidelight. At the same time Avro was developing the Jetliner during the late 1940s, Fokker engineers were designing their own regional jet in Holland. The Fokker F.26 Phantom was to have been a short-haul, twin-engine aircraft carrying seventeen passengers at 500 m.p.h. It would have been powered by Rolls-Royce Nene engines. KLM, the Dutch flag carrier, expressed a keen interest in the Phantom. But in October 1949, shortly after the Jetliner's first flight, work on the F.26 was abandoned in favour of the F.27 Friendship. KLM's management, as well as Fokker's, concluded that prop-jets -- not pure jets -- were the next logical step in the development of modern airliners. It was a conclusion shared by others.

As I mentioned earlier, each of the five factors that I described at the outset worked against the Jetliner. In my opinion, it was not any one person or any one factor which led to the Jetliner's inability to enjoy the success that it deserved. Rather, as is so often the case, it was a random combination of people, factors and events.

### First of all, Avro's timing was off.

The fabulous Jetliner was a good 10-15 years ahead of its time. The first airliner that was really in the Jetliner's class was the BAC One-Eleven which entered service in 1965, followed by the DC-9 later that year, and the 737 in 1968. Like I said, the Jetliner was head of its time. In fact, the Jetliner was so far ahead of the rest of the world, that the rest of the world simply was not ready for it. Just as the market was not ready in 1975 for the VFW 614, the market was not quite ready in 1949 for the Avro C102.

And unlike the visionary Howard Hughes at TWA, or Ted Baker at National Airlines in Miami, most airline presidents simply were not prepared to launch the Jet Age quite so soon. After all, the DC-6, Constellation, Stratocruiser, Convairliner and Martinliner were all new aircraft in 1949 ... and they all had piston engines! But had Avro succeeded in selling the Jetliner to just one airline (such as TWA) and getting it into service (as de Havilland did with the Comet at BOAC), there is no doubt in my mind that other airlines would have followed -- as was the case with the Comet. However ... "It is not always what you are selling. It is often who you know that counts!"





## An Historian's View, con'd

### Gordon McGregor

Mr. McGregor, who some people hold responsible for the Jetliner's fate, took the helm as president of Trans-Canada Airlines (TCA) in 1948. On April 21, 1949, three and a half months before the Jetliner's first flight, he spoke to the Empire Club of Canada. He talked about airliners of the future, comparing them to the development of ocean liners. And he said the following:

*"We do see such developments as turbo-propeller-driven commercial aircraft, which represents the same relationship as the turbine (ocean) liner does today ... and it is certain that either (turboprop) or (pure jet) transportation will be in (service) in a very short length of time."*

Note his emphasis on turboprops. That reflects the mindset of many -- if not most -- airline presidents in 1949. One month after the Jetliner's first flight, Gordon McGregor was at the 1949 Farnborough Air Show in England. While he was there, he was given an exclusive ride with George Edwards aboard the new Vickers Viscount, the world's first turboprop -- or prop-jet -- airliner. Edwards (later Sir George) was chief designer of the Viscount. He later became managing director of Vickers and, eventually, of British Aircraft Corporation. The Viscount was roughly the same size as the Jetliner; and it was designed to serve basically the same markets and the same routes. So in that sense, Avro and Vickers were competitors.

Gordon McGregor, as many of you probably know, flew Hurricanes during the Battle of Britain (as did Avro's Mike Cooper-Slipper). Unlike Sir Giles Guthrie of BOAC, McGregor had developed a very strong built-in bias in favour of British-built airplanes. He also developed a very close, lifelong friendship with George Edwards. And following his first flight in the Viscount prototype, McGregor told a colleague:

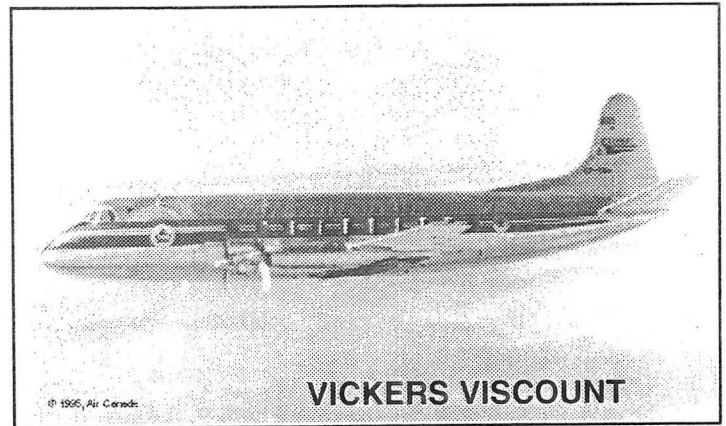
*"An airline might be well-advised to attain to the condition of operating (pure) jet aircraft by the stepping stone of turboprop power."*

At that time (1949), no orders had been placed for the Viscount, and things looked rather bleak for Vickers. Which is why George Edwards did all that he could to convince any airline president who would listen that economical prop-jets -- not fuel-thirsty pure jets (his point of view) -- made more sense on intercity, regional air routes. And many airline presidents agreed.

British European Airways (BEA) placed the first order for the Viscount in August 1950. This followed a series of demonstration flights that summer during which the Viscount prototype was flown on BEA's scheduled flights. Fare-paying passengers were ecstatic in their praise of the Viscount. What a pity that Avro was not given a similar opportunity to prove the Jetliner on TCA's routes -- or with an American carrier such as National or TWA.

### TCA and the Viscount

TCA bought an improved version of the Viscount in 1952, and inaugurated North America's first turbine-powered scheduled flights on April 1, 1955. As Brian Trubshaw wrote in his autobiography: "Much of the credit for the Trans-Canada order goes to George Edwards who personally convinced Gordon McGregor of the Viscount's virtues in the face of extreme pressure from American manufacturers." The Viscount was an overnight success. Passengers raved about its smooth



quiet, vibration-free ride (although it was not as smooth, quiet or vibration-free as the Jetliner) and its huge, panoramic windows. Having flown on the type myself, I can appreciate their enthusiasm. As I wrote in an AIRLINERS cover story four years ago, "For a few brief but glorious years in the mid-1950s, the Vickers Viscount was the world's greatest airliner." Of course, the Viscount was 100 m.p.h. slower than the Jetliner. But being a prop-jet, it was also inherently less expensive to operate -- just as Dash 8s are less expensive to fly than Regional Jets. However, direct operating costs do not tell the whole story because productivity also comes into play, and pure jets can be more productive on a given route system.

### R-R 'Dart' Turboprop

The fuel-efficient Rolls-Royce Dart turboprop that powered the Viscount was one of the greatest engines in aviation history. Between 1953 and 1986, Rolls-Royce sold and delivered over 7,000 Darts. And the Dart powered not only the best-selling British airliner of all time, the Vickers Viscount, but also the best-selling turboprop airliner of all time, the Fokker F.27 Friendship. It also powered several other successful aircraft, such as the Avro (Hawker Siddeley) 748, the Hawker Siddeley Argosy, the Convair 640, Japan's NAMC YS-11 and the original Grumman Gulfstream 1. Some historians have suggested (based solely on the numbers) that the Viscount-Dart combination just might have been the right airplane and the right engine at the right time.

A grand total of 444 Viscounts were built and sold to over 60 original operators in 38 countries worldwide. One-third went to airlines here in North America, including: TCA (Air Canada), Capital (later United), Continental and Northeast. And because of his special relationship with Sir George Edwards -- and his bias in favour of Vickers -- Gordon McGregor went on to order the Vickers Vanguard (the Viscount's bigger brother) in 1957. Only two airlines bought the Vanguard: BEA and TCA. Only 44 were built. Had it not been for Gordon McGregor, the Vanguard might not have been built. And, in my opinion, had the Jetliner gone into production, the Viscount might not have been built -- not, at least, in such large numbers. Nor would Lockheed's prop-jet Electra (the so-called "American Viscount") have entered service in 1959. But the fact remains that prop-jets held off pure jets on intercity, regional air routes for well over a decade. As I already mentioned, the Jetliner was truly ahead of its time!

### C. D. Howe and the Jetliner

As far as C.D. Howe's role in the Jetliner saga is concerned, I refer you back to the VC10 story and to BOAC. When Sir Giles Guthrie, the head of the British national airline, distanced himself from the VC10, many British politicians followed his lead and badmouthed the airplane.



## A Historians's View, cont'd

Apparently, they assumed that BOAC's chairman knew more about the VC10 than the people at Vickers who designed it! This, I believe, may have been the same trap into which C.D. Howe fell. He took the word of the person he knew best and trusted most -- the president of TCA. And Gordon McGregor had already distanced himself (and TCA) from the Jetliner. Connecting the dots, you find that C.D. Howe was influenced by Gordon McGregor. Gordon McGregor was influenced by George Edwards. And George Edwards was selling Viscounts! It was very unfortunate that C.D. Howe, a former engineering professor at Dalhousie University, failed to do his own, independent engineering analysis of the Jetliner -- or to sit down with Jim Floyd for an in-depth discussion of the airplane as Howard Hughes did. History might have been very different if he had. Like the VC10, the Jetliner suffered abroad because of the bad reputation it had undeservedly acquired at home. Incidentally, the VC10 was a financial disaster for Vickers. Only 54 were built. Thus, if George Edwards and Vickers did play a role in the Jetliner's demise, they fell victim to a similar set of circumstances fifteen years later. "Poetic justice?" you might ask. Not really. It is simply the way the airliner business works -- and fallible humans function. Just ask my good friends in Holland who were put out of work at Fokker by the good people in Downsview who designed and built the Dash 8.

There are many other examples I could cite of outstanding airliners which were either nipped in the bud or pipped at the post by the five market factors that I have talked about this evening ... from the 90% completed Vickers VC7 transatlantic jetliner, to the 100% completed (but never flown) Fairchild-Dornier 728 regional jet. But I would like to close with a few words about historical analysis.

### Historical Analysis

In today's culture, reality shows that have nothing to do with reality, and pseudo science that has nothing to do with real science, are, unfortunately, exceedingly popular. The same goes for revisionist history and conspiracy history versus real history. For example ... I was stunned a few months ago when the son of one of my good friends came home from his first year at a prestigious university and told me, "Mr. Mellberg, seventy percent of my classmates believe the Moon landings were faked and that the Apollo Programme was a hoax." He proceeded to recite the now familiar litany of the conspiracy buffs who ask why no stars appear in the photographs the astronauts took on the lunar surface, or why the flags appeared to be waving in the lunar vacuum ... all of which can be easily answered and totally dismissed. Sadly, reality shows, pseudo science and revisionist and conspiracy histories all sell to a gullible and ill-informed public. But they do not reflect reality. Real history is often more subtle and nuanced than the sensational accounts that we read in so many books, magazines and web sites -- and see in so many films.

I have tried to give you some real history and to cite some real facts -- some food for thought, so to speak. I have attempted to put the Jetliner story into a broader, historical perspective because the Jetliner was not the first great airplane not to reach production. Nor was it the last, as we all know all too well. The decision to terminate the Jetliner was made -- ultimately -- by C.D. Howe. And it was -- undoubtedly -- one of the biggest blunders in aviation history (not to mention Canadian history). At least, that is how I see it.

But we should not be obsessed with what went wrong or who was to blame. Because the Jetliner story is not about failure -- or villains. It's about a fantastic-looking, trendsetting, remarkable, technological achievement. It's about an aeroplane

which -- despite its unfulfilled promise -- dazzled the world at the time, pointed the way to the future and still looks fantastic even today! The Jetliner would look right at home and completely up-to-date parked at any gate, at any major airport, anywhere in the world today.

Most of all, the Jetliner story is about an extraordinary group of highly talented people who went on to make so many other contributions to aerospace history -- from the supersonic Concorde, to the Apollo Moon landings. The record shows that the incredible journey from the sand dunes of Kitty Hawk to the dust-laden surface of the Moon passed through Malton, Ontario. As my good friend, Jack Schmitt, the last man to set foot on the Moon (if we can believe him!), recently told me:

*"The Avro expatriates helped give (NASA's) Space Task Group the critical mass that it needed to get Apollo spacecraft and mission designs off to a fast start. We owe them a great deal."*

Indeed, we all owe them a great deal. Because they launched a revolution called the "Jet Age" fifty-five years ago -- a revolution that changed the world, and brought the people of the world closer together. That is what the Jetliner story is really all about. It's about innovation. It's about pioneers. It's about heroes. And that is why I am so proud to help pay tribute to those innovative pioneers -- and to those Avro heroes.

In the words of the old World War II song, "Bless 'em all." And to each of the Avro heroes I say "thank you." Thank you on behalf of the millions of people around the globe who cross continents and span oceans each and every day aboard ...jetliners!

That is the real legacy of the Jetliner.



**FAIRCHILD DORNIER 728**

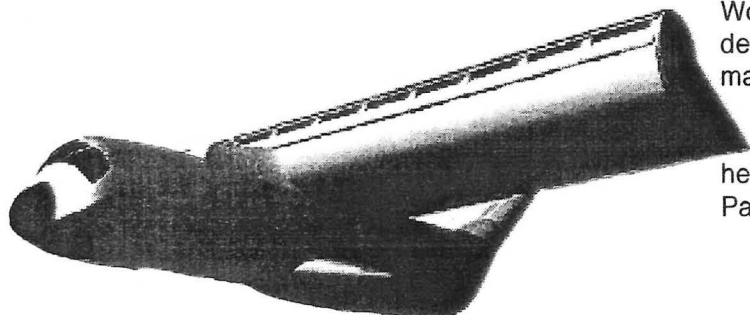


**VICKERS VC-10**



**VICKERS VANGUARD**

# Aeronews



## FAN WING

"What! Not another commuter jet!" However, odd though the above depiction of one of the alternative designs might be, it could well be one of the major innovations in the history of flight. For the present, it is called simply a 'fan wing'. And Pat Peebles is the one responsible for it.

Patrick Peebles is an American who was born in Washington, lived for a while in Britain, married there, resides in Rome and works in London. He is a self-taught inventor and tinkerer. Not overly enamoured with schooling, he admits to being very hard to teach. "I was in a daydream the whole time", he says. His inventing life is littered with many inventions, a few good, some plain bad and many questionable. Yet one worked out wonderfully, and for this Peebles was honoured at the World Technology Innovations Awards in San Francisco. Another honouree was Burt Rutan, a pioneer of unique homebuilt aircraft and cut-price space flight.

Peebles' invention, the fan wing, will give an aircraft vertical capabilities and enable it to carry heavy loads. It would fly anywhere from 600 to 1500 kmsph. Originally, the whole idea was to improve things. "It was to distribute the flow of air as far as possible over the aircraft. Air is sucked in through the front over a rather large area, the whole width of the fan. Air is then compressed and blown out at a very high speed across the wing's trailing edge." Which is what keeps aircraft flying, utilizing the Bernoulli principle. What is so innovative is how this is applied in the fan wing.

Peebles tested small medium sized models. They worked. With the help of a knowledgeable technological counsellor, David Nicholas, Peebles received grants and tested an impressive model with a wingspan of 15 feet in a wind tunnel in London. In flying tests, the performance was amazing. Besides ordinary flight, it had heavy lift capability. It could even hover like a helicopter, but super

quiet, without the noise and clatter of rotors. This last characteristic alone could assure the Fan Wing commercial and military success. Fan Wing could be used for transportation to airports with a noise ban. Or flying supplies with difficult landing facilities, such as in Third World countries and northern Canada. With proper development and financing, the Fan Wing could have many uses and applications.

David Nicholas lists four major historical aeronautical breakthroughs: the Wright brothers' Flyer, Sikorski's helicopter, Camm's jump jet and Peebles' Fan Wing. And Pat Peebles has the patent! ✓

## Members Matter

### Another Season

*One thing I like about Canada: it's difficult to become bored. There's always something new and exciting in the news, whether political, social, sports and even the latest tips on losing weight. If this is not enough, there is always the change of seasons. That's why I go down to Florida to visit relatives and catch some of the sun. But from now on, I will keep my fingers crossed and hope that those huge storms mind their manners.*

*Autumn has arrived in Ontario. The closing of the CNE is a signal that Autumn is here but not officially. We all know that cooler weather will come and the cold rain will fall more often. The Board of Directors will be sitting down as they do every month and plan the Fall program for AHFC. The Board will be looking into new ways to follow the guidelines of the mandate of our Foundation. All of the Board members look forward to working with Frank Harvey, the President. Look here for ongoing updates.*

### Artifacts

*AHFC artifacts are now safely stored in a secure location that is clean and warm in the winter and cool in the summer. AHFC Secretary Al Sablatnig is the one who organized this move, supervised it and did all of a dozen of things to make the move run smoothly and placed in their proper location.*

### The Dive and Other Things

*The underwater search was not unsuccessful. More information about those dive days in the summer and other items will be reported in the next issue of Pre-Flight. I hope all of us enjoy a decent Fall.*

Nicholas Doran, Membership