



Skywriter



Monthly Newsletter of the Calgary Ultralight Flying Club

August 1997

President's Msg

by Ed D'Antoni

Negotiations with the Calgary Aerospace Museum have been finalized. We have reserved the second Thursday of every month and the first fall meeting will occur **Thursday, September 11 at 7:30 PM.** In order to use the facility, two CUFC members must join the Museum Society. I have purchased a membership. It would help if any CUFC members that are already Museum Society members would let me know who they are (I really don't want to purchase 2 memberships). Individual memberships are \$35.00 and family memberships \$50.00.

For those of you interested in the construction of a flying AVRO ARROW replica, a club/society has been formed with organization well underway. The outfit is called the ARROW 2000 Project. They have a website and are looking for members/volunteers for management, design, construction, computer programming, and anything else. If interested contact Doug Hyslip at 236-8717. Also see Stu Simpson's article elsewhere in this issue.

When attending functions at other airports, ultralights seem to get more than their share of attention. This attention can leave a good or bad impression with the observers.

Over the past few years Barry Halliwell, co-owner of our S-12, and I have been trying to visit every airport within 120 miles of Calgary. Invariably every uninformed conventional flyer met along the way has treated our arrival with skepticism, if not disdain. They all become more interested or even eager after a show and tell and a ride (I can give rides in the RANS since it's an AULA, and I have a conventional licence). Unfortunately, it's not possible to give everyone who sees an ultralight a ride and explain ultralighting to them. For this reason we should set an example by demonstrating proper airmanship at all times.

I was recently at the end of a line of aircraft departing Vulcan's runway 23. The wind was such that either runways 16 or 23 could be used. Since runway 23 was grass, paved runway 16 was the runway of choice for the conventional crowd.

Circuits at all Vulcan runways are to the left. Four of the five aircraft that took off before me turned, or were

blown to a heading of about 300 degrees (the direction of Calgary) as soon as they left the ground. The proper procedure when departing an aerodrome is to fly above the runway and stay on that track until reaching an altitude of 500 feet AGL. It is the pilot's duty to account for any crosswind by adjusting the aircraft heading to ensure its track is in line with the runway. When you're at 500 feet turn left to stay in the circuit until you reach 1000 feet. If you haven't already done so, announce your intentions to depart straight out or whatever.

The reason for this is safety. When flying past, or entering an aerodrome area, we look for aircraft in the circuit or departing straight out. Since we are looking for, and expecting to see aircraft in line with the runway, aircraft that are flying askew to the runway are not likely to be seen and they become a serious hazard. Once you are 5 miles from the airport, announce you are clear of the aerodrome area.

Cheers!



Glenn Bishell and his Beaver on the Bishell strip near Carstairs.
Photo by Stu Simpson

Around The Patch

by Stu Simpson

The Arrow 2000 Project

This article first appeared in the July/August 1997 issue of West Coast Aviator magazine - Ed.

Doug Hyslip balks if you call him a dreamer. His wife, Donette, says he's a mover and a shaker, a "do-er". And she's right. Hyslip is the impetus and the inspiration behind a remarkable enterprise to design, build, and fly a half-scale replica of the Avro CF-105 Arrow.

Creating a manned version of Avro's most controversial aircraft seems to be a natural course of events for Hyslip. He's already built one flying model of the Arrow, and most readers have likely seen it. He produced a 1/8 scale radio-controlled model of the CF-105 for CBC's presentation of 'The Arrow', which aired on television earlier this year. Hyslip took actual Arrow drawings and scaled them down to make the model.

Most of the flying scenes in 'The Arrow' depicted the jet in majestic solo flight over the Canadian Shield. In truth, Hyslip was controlling the miniature from the seat of a movie helicopter above the prairie near Calgary while a camera operator got the required footage. Hyslip estimates his mini-Arrow travelled as fast as 150 mph. But he admits he can't be certain of that number since the helicopter just couldn't keep up to it.

The movie model gave Hyslip much valuable experience to get the Arrow 2000 Project underway. The model was

composed primarily of fiberglass and was powered by a pair of ducted fans, which are very popular in the RC model world. As we'll see, the remotely controlled miniature has a lot in common with its incubating big brother.

"I've Always Been Intrigued By This Airplane"

I interviewed Hyslip in his well-kept RC-model supply store in east Calgary. His shop isn't exactly what one might expect for the headquarters of a project that's sure to eventually attract world-wide attention.

Hyslip seems to be the epitome of easy-going; calm and soft-spoken. Until you get to know him, you don't really notice what a truly driven and determined man he is. Doug Hyslip loves to do things no else has done. "If it isn't a challenge, I don't get involved," he says.

As we talked about the Arrow 2000, Hyslip became increasingly excited. His eyes lit up as he proudly displayed the reams of research data acquired so far. It became abundantly clear that Hyslip loves the Arrow. "I've always been intrigued by this airplane," he stated.

Much as he loves a challenge, Hyslip is smart enough to know that he can't undertake something like the Arrow 2000 on his own. So he's formed a charitable non-profit society and has assembled a band of talented volunteers to manage the various specialty areas the project requires.

Twelve people are currently active and working on the project. Each is an established professional in his or her specialty. There are design engineers, as well as advisers for things like



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Meetings of the Calgary Ultralight Flying Club are held on the second Thursday of every month at 7:30pm at:

Museum of the Regiments
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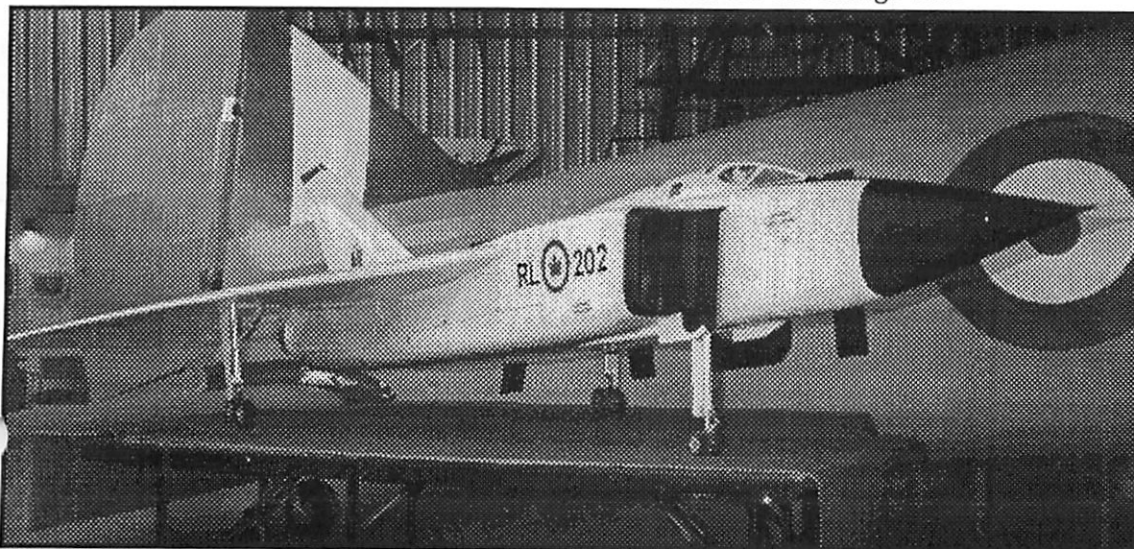
insurance, legal issues, and accounting. Hyslip also has about 60 resume's on hand for other volunteers who want to get on-board. The entire enterprise carries an air of well-planned professionalism all about it.

Where Do You Start?

So, where would someone start gathering material for something like this? Hyslip answered that question by leading me to a stack of duotangs and binders more than a foot high. Each was a photocopy of an Avro technical report on some aspect of the original

Arrow's performance or specs. Flipping through the stack, I saw titles such as, "CF-105 Flying Control System, Volume 1", and "CF-105 Structural Integrity Flight Test Program". Some of the reports were so large as to require two volumes.

Hyslip and his volunteers have accessed the original service manual, as well as the research and engineering data for the Arrow, including structural drawings. There's certainly no
(continued on page 3)



Hyslip's 1/8 scale movie miniature at the Calgary Aerospace Museum. It's 8ft long and 6.5ft in span.

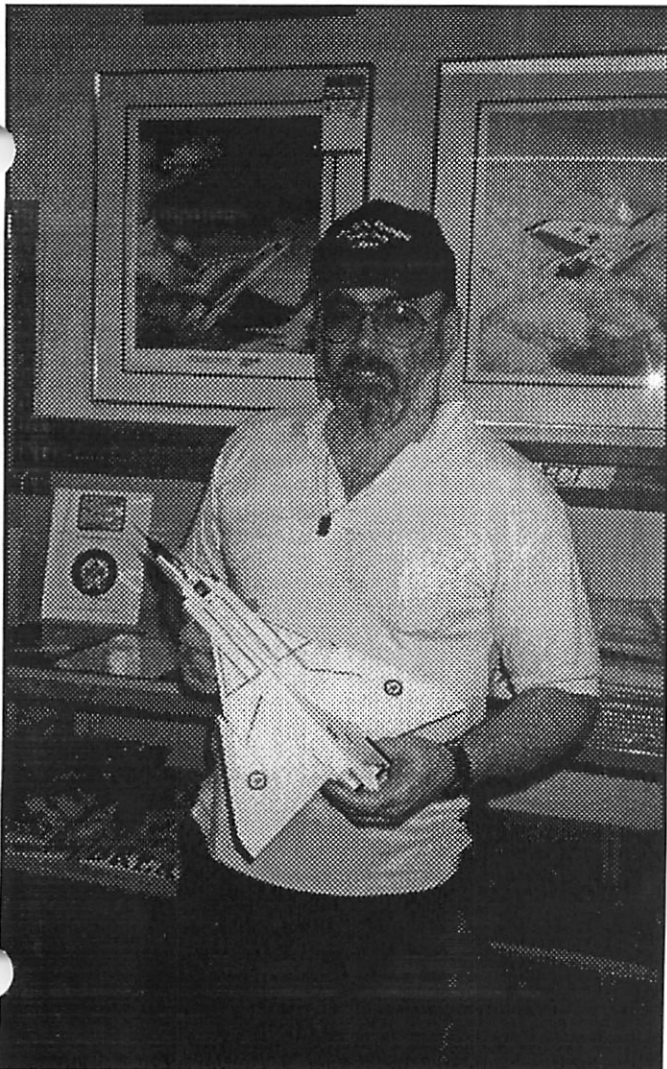
(Arrow - continued from page 2)

shortage of research material, all of which has been incredibly helpful to the engineering staff.

"According to our design people," Hyslip says, "this stuff is exceptional." He refers to both the quality of the reports, as well as the quality of the data. "In fact," he adds, "the original Arrow's navigation system would still be acceptable today." It's amazing to think that Avro's people achieved so much with the primitive computers of the 1950's.

Technical Difficulties

Like any endeavour of this type, there are hordes of engineering problems to overcome. The first one Hyslip encountered was the design constraints that he'd be forced to work within. See, when you boil it all down, the Arrow 2000, despite its unique nature, will still be a homebuilt aircraft. And that means it has to



Doug Hyslip, the man behind the Arrow 2000 project.



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conform to the requirements of Chapter 549.

Chapter 549 of the air regs lays out the limits, the standards, the minimums, and the maximums for amateur-built planes in Canada. Most homebuilders can recite it chapter (pun intended) and verse.

Upon studying Chapter 549 Hyslip realized two things right off the bat. First, the Arrow 2000 would have to weigh less than 3968 lbs at gross. That rule immediately limited the plane to about 1/2 scale. Secondly, the powerplant had to be of a displacement type. In other words, Hyslip's Arrow must have piston engines, no jets allowed. Right away he started thinking ducted fans (simply put, a ducted fan is an engine and small-diameter propeller buried inside a plane. The fan ingests air through ducting similar to a jet's intake, then blows it through an outlet at the rear of the plane, similar to a jet exhaust, thereby providing forward thrust).

There were other things to consider,

too. For instance, the wing loading had to be less than 13.3 pounds per square foot. And how could he fit a full size pilot into a half-scale airplane?

Fortunately, technology came to the rescue.

Hyslip's engineers tell him that the Arrow 2000 will come in at around three thousand pounds gross, which gives nearly a thousand-pound margin for error. The secret here is that the designers will use composite materials for the airplane's primary structure (remember the movie model?).

Composites offer the best strength-to-weight-ratio. "We'll be researching a lot of the Rutan technologies," Hyslip adds. One has to wonder what Avro's engineers could have done with such materials.

Composites will help keep the weight down, but things will still be tight with the wing loading. It's projected to be just shy of thirteen pounds per square foot at gross weight. As for the cockpit, Hyslip concedes it'll have to be a bit larger than 1/2 scale if anyone other than a midget is to fly his Arrow.

Without a doubt the single biggest challenge Hyslip and his team face is finding a suitable set of engines. Initially the design team looked at installing a pair of 280 hp Mazda rotaries in a ducted fan configuration. Then Hyslip heard Pratt & Whitney has had a ducted fan engine in development for quite a while. He's currently investigating this angle.

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(continued on page 4)

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Calling All Air-Heads

The search continues for the people who know the answers to the questions most others could care less about.

1) This CUFC member is examining an airplane at the Vulcan fly-in Breakfast. What is the member's name, and more importantly, what airplane is he examining?

2) Club President Ed D'Antoni recently travelled to Quebec and spotted this airplane at a rural airport. Just what the heck is this airplane and in which country does its manufacturer originate?

3) When filling the Rotax "B" gear box with oil, to what level do you fill it? What weight of oil do you use?

4) Which behemoth of the skies is known as the "21st century jet"?



5) The General Dynamics F-16 has the pilot's seat in a configuration different from other fighter jets. What is the difference and why is it built this way?



(Arrow - continued from page 4)

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If engineering estimates are anything to go on the Arrow 2000 could post some sparkling performance figures. The project's technical staff expect the the home-made Arrow to challenge Chapter 549's 250 mph speed limit. Limit load factors will be in the neighborhood of +6/-3.5 Gs. And if they designers can come up with something like 500 horsepower, it ought to climb like a home-sick angel. "The airframe will certainly be capable of it," says Hyslip. "Our biggest limitation will be the powerplants."

Hyslip's group is planning, at this stage anyway, for an endurance of only about two hours. That's because the replica will only be flown during airshows. Right now, Hyslip can't see a need for anymore fuel.

Putting It To The Test

The research and testing phases of the project sound particularly interesting. For example, project personnel are planning to build yet another radio-controlled model of the Arrow. This one will be twice the size of the movie version, or about 1/4-scale. That means it'll be twenty feet long with a span of thirteen feet. The model will carry a sophisticated telemetry system


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to transmit flight test data to ground crews.

Then the designers want to build a full scale structural mock-up of the plane. They'll test that one to destruction to see if the numbers add up like they should.

With the data gleaned from the first two test programs, they'll finally be able to build the real thing, hopefully beginning in the year 2000. Hyslip says project staff have allowed themselves a total of eleven years to complete their task. "It took 30,000 people five years to build the first Arrow," he adds, "it'll take us a bit longer to build this one."

Why Bother?

With more than ten years of hard, hard work ahead of him, I just had to ask Hyslip why he was doing this. One of the reasons is that he and his group of volunteers want to collect and preserve any and all artifacts relating to the CF-105.

"But mostly," he said, "we want to acknowledge and honor the incredible achievements of the people who designed and built Canada's Avro Arrow."

If you can think of a better reason, let Doug Hyslip know.

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Tie-downs - Unused aircraft tie-downs, \$40. Cliff Wingate 246-6154. (5/97)

Chinook II - 1987, Rotax 503, 160 hours since rebuild, skis, tarps, excellent condition. \$7500. Don Leonzio 250-427-2046. (2/97)

Wanted - Rotax 277 free air, gear up, good condition, reasonable price. Paul Pontois 819-228-3159. (2/97)

Flight Jacket - MA1 USAF, navy blue, orange reverse, never used, size M, \$75 or trade for flight computer or headset. Ed Wawzonek 286-2664. (2/97)

Classified ads are free to CUFC members. Call Bob Kirkby, 569-9541 to place your ad.

Air-heads Answers

1) Wilf Stark is examining a Hello Courier STOL utility plane.

2) D'Antoni photographed a Pilatus P-3, a Swiss military trainer. If you didn't know this plane, don't feel bad, neither did D'Antoni.

3) The "B" box is filled to the lower of the two indicator holes on the side of the box. One uses 50W gear oil.

4) Boeing's latest creation, the 777.

5) The F-16's seat is canted 30 degrees rearward to help the pilot handle increased G-loads during air combat.

Destinations

by Andy Gustafsson

In previous months our Destinations have kept us close to home. This time we venture out a little further when we visit Glenn and Alice Bishell's picturesque hideaway north of Calgary.

Located on a quarter-section northeast of the little town of Carstairs, their airstrip can be found right between highways 2 and 2A about a mile north of the Carstairs turn-off. The distance from the Wildrose Aerodrome, at Kirkby's, to the Bishell strip is about 40 miles.

It is an interesting trip as you fly past several towns, and by following highway 2 north, the navigation is a breeze. As you approach Carstairs, the landmark to look for is a square, bright orange grain elevator. About a mile north of it is the Bishell place. The runway runs north and south, measures 2300' long, 50' wide, and is very well groomed. Elevation is 3350'. Glenn is working on a new 2700' runway that runs parallel to the existing strip. It is usable, though the grass has not established its growth yet.

The grounds around his abode are impeccable, with waterfalls, a fishpond, a baseball diamond and a private seven-hole golf course. The hangar at the north end of the strip houses his Beaver RX-550, an airplane that has been to more places than I can remember.

I highly recommend a visit to this oasis on the prairie. Happy landings.



Part of the line-up at the 5th annual Kirkby Fly-in.

One Pilot's Opinion

by Bob Kirkby

Banff and Busted?

Some of us are planning a group flight to Banff on Saturday, August 23. This is to lend moral support to our fellow aviators at the Banff flying club who are fighting the closure of the Banff airstrip by Parks Canada. It is also to give us an opportunity to fly there at least once more just in case it does get closed for good.

I spoke with Bernie Schiesser of the Banff Flying Club for an update on the situation. He advises that legally the airport is still open since a Federal Judge put a hold on the closure pending a court review of the action scheduled for October 6. However, Parks Canada is bent on making life difficult for pilots who use the strip. According to Bernie, any time an airplane lands there the park rangers race out to the strip and demand to see

the pilot's paperwork. Apparently they are looking for an excuse to call in the RCMP to charge the pilot with whatever they can.

So if you are planning on joining the flight, make sure you are completely legal. For an ultralight this means you must be carrying the following paperwork: Pilot License, Medical Certificate, Aircraft Registration, Proof of Insurance, Radio Station License and Radio Operator License if you're using a radio, plus a copy of the infamous Intercept Orders. Don't forget any of these or you might end up with a fine.

Those of you who would like to join the flight, or if you are interested in driving up to provide ground support, please contact me at 569-9541 or 291-5560 for details.

Annual Kirkby Fly-in Successful

The 5th annual Kirkby fly-in breakfast on July 19 was a great success. 13 aircraft flew in and numerous people drove in. The weather was absolutely perfect. In total over 30 people feasted



Louise looks amazed as Dave Bolton uncoils himself from the tiny cockpit of his Quickie.

on pancakes and sausages expertly prepared by my brother-in-law Ken Mitchell.

The pilot flying the furthest was Glen Bishell from his strip near Carstairs. Glen was the first to arrive and surprised us by flying over centre field and dropping a small container suspended from a tiny parachute. Stu Simpson ran out and nabbed the chuter at the intersection and discovered a note inside which read, "Permission to land"? By the time we read the note, however, Glen was already on his rollout.

I would like to thank everyone who helped out and all those that came. The gathering was a success.

Arlington '97 and Oshkosh '97

by Wilf Stark

I had the opportunity to attend both Arlington and Oshkosh this year, so I'll share some observations.

Arlington '97 was my third visit. It is getting steadily bigger, but still only a small shadow of Oshkosh. Lots of commercial vendor activity, and both the Glasair and the NSI folks were busy shuttling people to their respective facilities situated near the airport. I took neither factory tour. The airshows were fun to watch as always. Bob Hoover did his Shrike Commander routine every other day. I never tire of watching it. A young lady did a mildly aerobatic routine in a Cessna 152, pulling only positive G's for the entire act. It was imaginative and fun to watch. Wish I could remember her name. She's new on the airshow circuit.

On the way home, Lynn and I took U.S. Hwy. 20 through the Cascade range. It is considerably slower than US#2 or the Interstate, but the scenery is worth it. Over 250 km. of this road is closed in the winter, because of the heavy annual snowfalls. We stayed in the small town of Republic, WA (roughly 160 kms. south of Kelowna) and went for supper in a small Mexican Restaurant, recently opened, that featured the best Mexican food we've ever eaten. The spices were subtle instead of in-your-face-MEXICAN, the music was from cassettes that actually came from Mexico (can CDs be far behind?), and all the tables and beams were

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handcarved from the tall yellow pines that grow near this logging town.

Oshkosh was an adventure and a half. Jim Creasser was kind enough to permit me to shoehorn my little 1-seat UL into the trailer that he had built for his Easy Flyer. It was a tight fit, resulting in some rash to both planes. I'm sure that Jim hadn't counted on that, but he took it like a trooper, and spent several hours of Day 1 touching up road damage. Lots of folks milled around his plane throughout the week, and expressed their appreciation of both the workmanship and the easily apparent ruggedness of the design itself. The fact that the EAA Breezy, which looks very similar, was constantly flying and providing rides didn't hurt one bit either. Also, an aggressive price for a complete kit, that was decidedly lower than much of the over-priced wares being shown.

helped as well.

My little prototype drew interest as well. The intent will be to get a minimax-like 1-seater onto the US market in their FAR103 category, at a price under \$5000 including engine, pre-painted aluminum skins, and a 2-weekend assembly time. The price and fast assembly time touched quite a nerve, especially among older UL pilots, many of whom felt discouraged at the steadily upward creep of pricing for UL machines. Many of the models being featured in the UL area by the various manufacturers, ranged in price from \$20K up to FIFTY K! Why they were hanging around the UL area is beyond me.

The Airshows featured the typical EAA annual extravaganza, which included some of the US Air Force special iron, both vintage (P51s, Corsairs, flying boats, P38s, etc.) and recent stuff like the stealth fighter and stealth bombers doing fly-bys. The U2 spyplane from the 50s and the SR71 blackbird flew by as well, and the Harriers once again did their annual psych-out number, where they come screaming in at a good clip, stop dead in the air, rotate 180 degrees in both directions over the middle of the runway, rise vertically, and pull off again at high acceleration. The noise of the jet downwash is absolutely deafening, and when that plane is slowly rotating yet not moving over the runway, you can almost feel the on-board artillery taking aim at the exact spot where you're standing and wishing you were invisible.

There was also a very interesting aerial troupe called the Northern Lights that used the German-made Extra 300s (low-wing aerobatic monoplanes with 300 hp. Lycomings). Folks, if you've

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(Arlington - continued from page 7)

Canada's Snow Birds, you've seen the Northern Lights. Their routine was exciting, just as the Snow Birds always are, and the show was an exact duplicate (at prop instead of jet speeds) of Snow Birds. You can sure tell where these performers got their training. The 5 pilots come from Quebec, Ontario, Calgary, Minnesota (?), and Lausanne, Switzerland (??). Don't ask me how an American and a Swiss Pilot ended up on a Canadian-inspired aerobatic team. For all I know, their daddies brought money to the party.

Oskosh as a whole once again overwhelmed the senses. When over 15,000 airplanes come to visit a small town of 50,000 people, and 3/4 million people pass thru the gates over the course of one week, it becomes a bit hard to describe. It had been 8 years since I last visited. The major change that I noticed, was that you are now allowed to drink on the flightline, provided it is a drink bought at an EAA-approved concession featuring Coca-Cola products, available for only \$5 including a VERY NICE drink-holder that snaps to your belt. Relax, folks, refills were only \$1.50 each, and they were often available cold. I also noticed that everything past the gate is now considered flightline, available for your viewing pleasure for only \$16 per day. Folks, if you want to see the wonderful things that the annual EAA show has to offer, feel welcome but bring money.

Would I do it all again soon? Of course. It's an affliction with no known cure.

News... ...from the Blue

Homebuilt Sets Altitude Record

A specially modified Rutan Long-EZ set an altitude record earlier this year by climbing to 35,027 feet. Builder/pilot Jim Price stayed at that height for a full ninety seconds over Minden, Nevada. Price's Long-EZ was specially equipped with vortex generators on the wings that dropped the stall speed by nine knots and allowed the plane to fly at increased angles of attack. A normally aspirated 160hp Lycoming powered the plane, but at the top of the run it was only producing about 30 hp.

Excuse Me, We'd Like To Blow Up Your Jumbo

British and American aviation researchers recently blew up a Boeing 747 at an airport in England. It was all part of a project to investigate how to protect airliners from bombs. Researchers placed charges in different baggage containers in the plane, pressurized the plane to simulate an altitude of 30,000 feet, and lit the fuzes. The explosion was spectacular and gave the scientists plenty of data to work with. The project was inspired by the Pan Am/Lockerbie disaster.

Old Wind Tunnel Dismantled

The wind tunnel at Caltech's Guggenheim Aeronautical Laboratory in Pasadena, California has been dismantled. The wind tunnel, one of the world's oldest, was first used 68 years ago. It was heavily used during World War II testing scale models of

the Liberator, Mustang, and other combat aircraft. It was rendered unusable after an earthquake in 1987. At it's peak, the wind tunnel could generate a wind speed of only 160 mph using a fifteen foot prop and a motor taken from a prototype World War I submarine. When dismantling began, the wind tunnel still had it's original motor.

Could You Help Us Find Our Airport, Please?

We told you last year of a Northwest Airlines crew who landed their DC-10 in Brussels instead of their original destination of Frankfurt. Well, seems a similar type thing has happened again. A Continental Airlines crew landed their Boeing 737 at a military airfield outside of Corpus Christi, Texas in May. The pilots thought they were landing at the city's international airport. The crew has been grounded pending an investigation. Oddly enough, Continental was named the top U.S. long-haul carrier in a passenger satisfaction survey.

Rotax, Meet Cessna

A German company has mounted a Rotax 912 in a Cessna. Nickel and Sperrl GmbH put the Austrian mill in with a constant speed prop and claims the 912 gives similar performance with better economy than the Lycoming powerplant.

Danger, Garbage Dump Below

A Cessna 172 was at 2,500 feet on approach to California's Santa Paula Airport when a seagull made an unexpected entrance to the plane - via the windshield. No one was hurt in the collision, except the somewhat disfigured seagull. The pilot blames the local landfill for the collision, saying that the dump is located too close to the airport and the gulls are a constant hazard to aircraft in the area.



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Summer Flying Events

August 16-17 - Lethbridge Airshow.

August 23 - Flight to Banff. A group flight of ultralights to the Banff airstrip and back is being planned for this day. Contact Bob Kirkby 569-9541.

September 1 - Stettler Flying Club annual fly-in breakfast, 0730 to 1130. Contact Don Moxham 403-742-2770.

September 14 - Medicine Hat airport RAA fly-in breakfast, 0800 to 1100. Contact Lynn Allen 403-526-6448.