

CANARD PUSHER

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RUTAN AIRCRAFT FACTORY

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The Model 309 is the most recent addition to the Scaled Composites family. This Proof-of-Concept aircraft was built for Adam Aircraft Industries of Denver, Colorado. Their goal is to provide a very safe twin-engine aircraft that will give good performance and benign single engine handling qualities. Second, provide an aircraft that incorporates technology in the way of composite structure and modern avionics — a pilot-friendly cockpit that really brings the computer age to the instrument panel.

The centerline thrust configuration was chosen because it significantly reduces the hazards of the single-engine flying qualities and performance, compared to twins in the conventional arrangement. The cabin has been designed to carry a pilot and 5 passengers in pressurized comfort. There is an unpressurized baggage space in the nose, and the remainder of baggage will reside in the cabin aft of the rear seats. It is powered by 2 Continental TSIO-550-G engines that give good high-altitude performance and will be used for pressurization. The tricycle landing gear is retractable with the trailing-link mains folding into the booms.

Scaled Composites' Model 309 prepares for flight test

The immediate goal of this program is to develop the aircraft for aerodynamic refinement. However there are several features that are more representative of the production airplane than might be expected. For instance, there are several major structural components that have been produced as single cure parts. The outboard wings, horizontal tail, elevator, rudders, and flaperons have no secondary bonds in their primary structure. This allows lighter stronger and safer structure due to the significant elimination of fasteners and secondary bonds.

This project marks the most rapid manned-aircraft development program in Scaled's history. Concept design started in May of 1999, the first tool was cut late in August, and the first flight was on March 21st, 2000. The aircraft was unveiled to a small group of guests on April 5th. As of April 12, 2000 the airplane has flown 12 times with about 25 hours of total time. An aggressive flight test and refinement program is planned.

WEB SITES

National Transportation Safety Board Accident Reports

<http://www.nts.gov/aviation/Accident.htm>

Canard fliers website

<http://www.ez.org/>

RAF HOURS: Rutan Aircraft is officially open every Wednesday. Please call between 10 am - 2 pm (661) 824-2645 and give your name, serial number and nature of the problem. If you are not in an emergency situation, we ask that you write to Mike.

Note — Sometimes you can catch Tonya at RAF Monday thru Friday. She is in and out. Try and try again.

When writing to RAF, send along a stamped, self addressed envelope, if you have builder's questions that need to be answered. Please put your name and address on the back of any photos you send.

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RAF design, you must
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CP 1 to current

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Defiant

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A current
subscription of the
Canard Pusher is
mandatory for
builders, as it is the
only formal means
to distribute
mandatory changes.

Flying Into Our Future The Sun 'N Fun Air Show

By Ann McMahon

The stealthy, giant B2 bat of a bomber sweeps low over air show grounds, coming from behind the trees, surprising hundreds, who start running to follow. Like lemmings to the flightline they run. It vanishes to the north and their faces turn right and left searching the sky. It is the second and last pass. "In honor of April 15, your tax dollars at work," says the announcer. *As seen by one of the lemmings*

Two specks near the plane and at zenith in the sky, take the form of chutes and then stick figures. The Waco Taperwing puts on the smoke, circles, the Flag unfurls and the National Anthem begins. *It's Showtime.*

The Fokker Triplane and the Sopwith Camel dogfight. The Camel's engine restlessly grinds at full throttle, spinning itself inside the cowling at frightening speed in a dedicated effort to keep the static prop fixed to the front of it spinning. It is the pure definition of a rotary engine. Gallons of castor oil later, the relentless grind is replaced with short coughs as the pilot dead shorts the engine, his only way to slow it down to land. *Rhinebeck Aerodrome Museum World War I Aircraft Demo*

The Sukhoi SU-29 erupts from air show left in a never ending series of snap rolls past air show center and out of view to the right. How can his body take the punishment? *Nikolay Timofeev "The Amazing Russian"*

On counterpoint, the Stearman roars the basic maneuvers in slow mo, leaving the observer to savor the moment and the technique. *John Mohr Stearman PT-17*

Just like the first, old days of flying, the crowd gasps in unison as the Pitts Special fakes the landing, goes full throttle and hangs on the prop with its tail just feet off the runway. In the pouring rain, the thin crowd of dedicated fans sees their reward climb higher and higher until spent, it begins to fall back through its smoke. *Jim Leory "Bad To The Bone" Pitts*

"Look at that crazy fool! Pushing that rudder down and skidding around – he don't know how to fly, does he? Look at that thing flying sideways – going down the runway sideways. The wing tips down on the runway! You don't fly that way. Now he's getting some altitude. He's spinning that airplane and he's diving! *Marion Cole & Roscoe, Announcing For Charles Kulp, Sr. The Flying Farmer in the J-3 Cub*

He rolls to the right, rolls to the left, then straight up vertical with point rolls to hammerhead turn, to knife edge spin, to outside loop to tower spiral, tumble across the top into two rolls and dive, then pull vertical again to a torque roll concluding in a whip stall. A mind numbing display of talent and accomplishment made to look so easy. *Phil Knight, Extra 300-S Vietnam Helicopter Pilot Hero, multi-year member of the U.S. Aerobatic Team*

Demonstrating a perfect horizontal line of competition to the left, the Laser 200 abruptly flips head over tail like one of those remote control toy cars and then proceeds inverted in the opposite direction. *Debby Rihn-Harvey Aerobatic Pilot & Instructor, Airline Captain FAA Flight Examiner*

The Shrike Commander sits on the concrete apron in static display. The sign says it has been donated to the Smithsonian. It is Friday afternoon and its pilot has gone home. The Energy Conservation Series has come to an end. Thanks for years of thrills and the memories, Bob. You're the greatest. *Robert A. "Bob" Hoover The Pilot's Pilot*

Farewell to Friend Len Snellman

Leonard W. Snellman (1920 - 1999), a charter member of the NWA, passed away October 21, 1999 of congestive heart failure following a courageous battle with cancer. Len was highly respected throughout the weather community. He spent 39 years as a meteorologist for the U.S. government; 17 years as the Chief Scientist for the National Weather Service (NWS) Western Region. Born June 27, 1920 in Lansford Pennsylvania, he received a BA from Kenyon College in Ohio and obtained meteorological training as an aviation cadet at the University of Chicago. Upon graduation in 1943, he was retained as a laboratory instructor until the summer of 1944, when he was sent to Louisiana and Texas to teach meteorology to military navigators. He joined the Weather Bureau forecast staff in Chicago in the late 1940's and reached the rank of district forecaster before his Air National Guard unit was called to active duty in 1951, just a week after he passed his Master's Degree comprehensive exam. He was sent to the USAF Weather Central in London, England, for two years, then returned to the states and joined the Air Weather Service civilian consultant staff at Andrews AFB in Washington, D.C. During that time he represented the U.S. as a delegate to the WMO Commission on Synoptic Meteorology. He also had assignments to the USAF weather central in Japan, to Europe, Africa, Panama, Alaska, and Hawaii.

He rejoined the NWS in 1965 in Salt Lake City. Following his retirement from NWS, he taught synoptic courses at the University of Utah. In 1986, Len was the chief meteorologist for the Voyager around the world airplane flight. Len was an active member in the NWA and was the banquet speaker at the 1991 Annual Meeting in Salt Lake City. Aside from his passion for weather forecasting and teaching about it, he coached little league and girls softball teams as well as the youth choir of his church for many years. Among his many honors were the Department of Commerce (DOC) Gold and Silver Medals, the AMS Award for Outstanding Weather Forecaster, the DOC EEO Program Award and the NWA 1982 Research Achievement Award for outstanding contributions to operational meteorology. He is survived by his wife, Lynn, four children, six grandchildren, and five great-grandchildren. [Larry Burch, 1999]

"Len was a remarkable man. I have strong doubts that the Voyager project could have been a success without him on our team. Len was not only an outstanding weatherman, he was also an outstanding friend. *Dick Rutan*

"Len was truly a weather guru, from lacing the Voyager through the fingers of Typhoon Marge, to helping Dick and Jeana avoid deadly storms on the nine-day world record flight." *Kelly Hall*

"When it came to weather, Len Snellman had a sixth sense. Not only did he thread Voyager past the eye of the typhoon, but he was able to use the high winds to give Dick a tailwind. During the Voyager flight the rest of us stood back in awe of Len's ability. *Burt Rutan*

SOUTH ATLANTIC FLIGHT 1998

A Diary by Hans Georg Schmid

Part V

DAY 21, WE 25NOV98: Ushuaia/Argentina – Punta Arenas/Chile (02:02 H)

Before departure, of course, I first I had to deal with the local problems again. Yesterday I was assured that passing immigration and customs at the airport would be absolutely no problem. Wrong. I was sent back to an immigration office at a remote corner of town which supplied a form and asked for US\$ 16 which I wanted to pay straight away. This, however, was impossible and I was sent back to the airport to wait till eleven, when somebody would come to collect the money. The somebody was, of course, the same gentlemen who refused to accept the money at nine...

In the meantime I had my tire repaired and after having successfully passed immigration all that remained were customs and the flight planning office. I was lucky to still have GenDec forms as, naturally, customs wanted one. The flight plan was transmitted not by fax but by phone – character by slow character – and unfortunately there was no possibility of obtaining any weather as Chile was a foreign country and not looked upon as being very friendly. If I knew one thing, it was that the weather would be unpredictable up here. My destination could have been open or closed for days. As I could not call I just had to have enough fuel and a good plan of operations.

In the meantime it was past noon and when I was about to leave, a jeep with a nice young lady arrived, who asked another twenty dollars for services rendered (which?). But at long last I was airborne not long before the fast approaching overcast arrived overhead Ushuaia. Shortly before it would have been no problem to pass the mountains to the north and to fly directly to Punta Arenas. However, approaching the range, the clouds dropped so fast it was no longer possible to pass between two mountains, which had had an opening between them just minutes ago, to gain access to the Magellan Strait.

The only possibility I had was to follow the Beagle Channel to the Pacific and enter again via the Magellan Strait. This provided, however, the unique chance to see the most beautiful part of Tierra del Fuego with snow covered mountains in bright sunshine, glaciers flowing down to the sea, lakes and ponds in all shades of blue in absolutely breathtaking scenery such as I had never seen

before. As long as I was able to proceed to the west and to the south the weather was gorgeous, but as soon as I had to turn north and later to the east I hit the approaching front and had to go down to the grey and unfriendly sea. Every attempt to turn to the north and to cross even very low mountains was futile and so I had to turn back.

I finally had to fly over the open Pacific and enter the Magellan Strait from the west. I then followed the historic waterway to the east often at an altitude of 200 ft (60 m) and lower in heavy drizzle and low visibility. The only ship I saw was a small patrol boat of the Chilean navy. Again thanks to the GPS it was relatively easy but certainly not pleasant to navigate along the cold, dark channel below the very low overcast. About 50 miles from Punta Arenas I was, for the first time, in radio contact with the airport. My visibility was steady at or below one mile and I flew very low over the cold water, when Punta Arenas gave a visibility of more than ten kilometers, little wind and a cloud base of 1500 feet at the airport. Shortly before I reached my destination I was through the front, the visibility improved by the minute, the drizzle stopped and suddenly the town appeared to my left. I was happy to make a normal landing though I was prepared to make either an ILS approach or to continue to Rio Gallegos, my alternate, which I expected to be definitely behind the front. My fuel reserves would have allowed me to continue for many more hours which is one of the great advantages of the Long-Ez.

After landing it soon started to rain but many interested spectators arrived anyway. Nevertheless I was happy to have finally arrived in my hotel somewhere in the dirty and not very attractive center of town. An early and excellent dinner was my reward for a demanding and again most interesting day.

After today's trip I was even more impressed by the flights Gunther Pluschow made out of Punta Arenas some 70 years ago in this harsh and forbidding environment.

DAY 22, TH 26NOV98: Punta Arenas/Chile – Puerto Montt/Chile (08:02 H)

The taxi was at the hotel on time and as for formalities I had just to fill out my flight plan, and this was it. What a difference to the last few days...

Continued on Page 6

Letters

After several months of repair, the Defiant N976CS is back in the air. I have had three flights and it appears everything is OK again.

I finished repairing damage caused by a gear-up landing on Sunday, too late to fly. I went out on Monday but did not get to the airport until almost dark. I decided it was too late to fly but I would do a few taxi tests. I went down the runway, turned around and ran the Defiant up to about 65 knots before pulling the power and lifting the nose gear off the ground.

All was well until I started breaking to stop. I ruptured a brake line and managed to get turned at the end of the runway, barely avoiding a big ditch. But I could not stay on the taxiway and crossed a small ditch and went into the airport fence. The damage to the new prop and spinner had to be repaired again.

In the for what it is worth, the 15-year-old brake lines out of the polyurethane tubing ruptured down near the brakes. I made a fabric hose near the brakes and ran aluminum line up the gear leg and removed the polyurethane except down the console.

My suggestion would be to take a serious look at the polyurethane tubing next to the double pad brakes. They get really hot even with a break shield for the gear leg and brake hose.

So after two delays maybe we can fly. *Charlie Sims*

This is exactly what Dick was talking about (in CP99). Everyone should check and replace their nylon brake fluid lines with metal lines like Dick did or with Stratoflex lines like I did more than 15 years ago!! Mike

S. Atlantic Flight continued

The weather briefing was comprehensive and very well laid out. I would have to follow the Chilean west coast to Puerto Montt, as the weather was less than good. It was forbidden to fly over Argentinean territory without special permission, which I was unable to get at short notice; also the weather would have been much better in the East.

As I entered the runway, ready for take-off, the tower asked me to come back. The reason was a reporter who wanted to record one more interview. I was sorry to have to decline, but I knew I had a rather long and demanding flight in front of me. After take-off on runway 30 air traffic control told me to climb to FL 150 (15'000 ft / 4'500 m) which I refused to do as I was too heavy and as I would certainly encounter deadly icing climbing through the heavy clouds. So I stayed low, flying against a headwind of some 30 knots in light turbulence. In the beginning I cruised over a large expansive, wide open lake and I hoped to find an open passage to the Pacific which was not at all sure. For military reasons I was also unable to leave via the Magellan Strait, which would have been the safest course of action.

I found the small opening to the Pacific and I finally passed in moderate rain below low overcast beside a light blue shining glacier which went down to the grey sea. Even with GPS, the navigation was testing and as all the many thousands of islands were in clouds, it was imperative to know my position exactly. In the narrow fjords it often was impossible to turn. As soon as I picked up a northerly heading, the ground speed fell to 82 knots. Descending from 1500 to 1000 ft did not help and even at 500 ft it was little better. With loads of fuel this did not pose a problem, but with less...

Some 23 years ago, I had travelled on a small freighter from Puerto Montt to Punta Arenas and knew of the inside passage between all the many thousands of islands which avoided the open Pacific with the exception of the crossing of the treacherous Golfo de Peñas. I had studied the ONC maps at home for many hours to be sure to follow the correct path and so I was well prepared for the next five hours. It was a constant fight against heavy rain, turbulence, strong

S. Atlantic Flight continued

headwinds, sometimes up- and downdraughts and it took more than four hours until I had passed the first tiny fishing village with perhaps two dozen houses.

There was neither a ship nor a house nor anything else – just the rough sea below and narrow, dark fjords and passages between the islands. Sometimes I had to decide whether to round an island to the east or the west. I normally took the shipping channel even when it was at times just 100 to 200 m wide. I then, of course, had to be absolutely sure that I didn't have to turn back. I used both GPS as well as the maps at all times to be absolutely sure about my position. I also found out the Garmin database had a steady map shift of about 100 to 200 meters to the west in southern Chile, which made quite a difference in the small channels and fjords!

The Golfo de Peñas was a welcome sight and as the cloud base was at exactly 500 ft I had to fly at 300 ft. There was a choppy sea below but when I had passed the last time, it was stormy and the waves had been much higher. I decided to take the direct route across, as the clouds along the shore were even lower, and this route was longer than trying to maintain a northerly heading.

Arriving at the other side I realised I had taken the correct decision. It was impossible to fly inland as the clouds went down to the ground. So I followed the coast and at Cabo Gallegos, I passed the first lighthouse which seemed to be inhabited. The weather now changed rapidly. For a short while it was almost sunny and ten minutes later I was again in heavy rain, flying almost at wave height.

Six hours into the flight the weather definitely started to improve. Over the lovely island of Chiloe I still had to fight against heavy and widespread rain showers but there was civilization below, something I had dearly missed the last seven hours.

Puerto Montt soon had me identified on radar and after eight hours and two minutes I was safely on ground, tired but once more relieved to have made it.

At dinner I had ample time to let this very special flight pass in front of me again. It would not have been possible without thorough preparation well ahead. I knew exactly what I was doing and by which route I wanted to go where. It was a great adventure and as I was about to find out from the manager and two flight instructors of the Aero Club at Tobaraba, they were not aware of anybody having flown this route before at low level – something which I was more than a little proud of, as it had been rather demanding.

DAY 23, FR 27NOV98: Puerto Montt/Chile –
Santiago de Chile (03:50 H)

In the morning the weather could not have been better. The sun was shining, the temperature was cool but comfortable and there was no wind and good visibility.

When I asked for the weather I was told there was no problem at Santiago and nothing was mentioned of concerns in between. Maybe the reply would have been somewhat different had I asked half an hour later as everybody had just started work when I wanted to leave.

After take-off proceeding north, the fair weather changed rather rapidly to a grey overcast, which, as in a warm front, sunk lower with every mile I progressed towards Santiago. As I had really had enough of bad weather, I did not need this at all. Turning away from the Andes to the center of the wide valley, I still had to fly lower and lower, then it started to rain and finally I had to turn back as the visibility dropped too low to operate safely with possible obstacles around.

As I retraced my way south and then to the west to follow the coast, the visibility improved again and it was possible, in marginal but flyable conditions, to continue on course to Santiago. I was lucky as it was a weak frontal system which I had passed within an hour or so. It was interesting to see how the wealth started to increase the more I progressed towards the capital. First the farms and the fields were small, then the buildings started to improve and to get larger as did the fields. Passing Talca the weather rapidly improved again. It also became warmer and dryer very quickly. The hills slowly turned from green to brown and yellow, and soon artificial irrigation was necessary to keep the large fields green. Before arriving in Santiago I was overhead semi-desert, and soon I was in contact with Tobaraba tower. I was cleared for a low pass for the benefit of the cameras and then turned tightly to land on RW 19.

I was cleared to proceed to a parking position directly in front of tower and airport restaurant where I once again enjoyed a very warm welcome by Swiss Ambassador **Dr. Hans-Peter Erismann** and his wife **Freda**. In the background schoolchildren from the Swiss school were singing, from **SWISSAIR Eugenio Cox** and **Dieter Leisi** were present, as well as my friends **Gonzalo Serrano** and **Victor Jimenez** from **AERO SALFA SA**. Numerous spectators, two TV crews and many reporters asked a lot of questions before we had time to drink something and to get some sandwiches from the small buffet which had been organized for my reception.

During the rest of the afternoon I tanked and checked my aircraft and a small repair was made as the wire of cylinder head temperature sensor number 4 was broken. Since my 50 H check in Porto Alegre the engine had used only two quarts of oil which meant it was in good health.

For the next two days I was expected to stay in the residence as the personal guest of Ambassador Erismann and his charming wife. When I arrived I was given a room and after a shower and a first beer, we changed for this night's reception in celebration of my flight. Twenty guests had been invited, some of whom I had had the chance to select in advance. It was a very relaxed and pleasant evening with interesting people from very different walks of life. I was proud I had successfully completed both the anniversary flight in recognition of the achievements of the French Aéropostale (Toulouse - Dakar - Buenos Aires - Santiago de Chile) as well as the second part, commemorating the German aviator Gunther Pluschow who discovered Patagonia and Tierra del Fuego from the air some 70 years ago (Santiago - Cape Horn - Santiago). What remained for me to do was to complete the third part: the completion of the whole circumnavigation of the South American continent and the safe return home...

DAY 24, SA 28NOV98: Santiago de Chile

The Saturday was to be a relaxed day, and it was. The Erismanns had a group of managers from SGS (Société Generale de Surveillance) for brunch from whom I wanted to learn more about their business. As my flight was and remained a topic during the

whole brunch I had not learned as much as I had wished about the business of SGS and how it was conducted. Next time perhaps... It was a pleasant morning in the large and attractive garden of the residence and certainly one more of the guests had heard something entirely new.

During the afternoon I tried to catch up with personal work and for dinner we were invited to the home of the Brunner family who live about 15 miles from the center of Santiago. There were guests from the Embassy as well as other Swiss expatriates. During the evening I learned a lot about what it meant to live abroad and how it was to have lived in Chile during the last 25 years or so.

DAY 25, SU 29NOV98: Santiago de Chile

One more day to relax as guest of the Erismanns. In the afternoon we were invited to a birthday party in the house of Heinrich and Carmen Stauffer. There were many guests, lots of good food, the weather was right and it was an afternoon to perfectly unwind.

Back at the residence I learned from my wife that deepest winter with considerable snow and ice had arrived in Switzerland. What a contrast to the warm sunshine we had here in Chile. Those two days of relaxation were the only two consecutive days off which I had planned for the whole trip. They finally could not have been better chosen and it was a great pleasure to be a guest in the home of the Erismann family. Thank you again for the generous hospitality!

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TERF has a new phone number! (734) 477-8029
Check out the TERF website at <http://www.terf.com/rutan.htm>

Spin-On Oil Filter Adapter for Lycomings

B & C Specialty Products' latest product is the neatest idea I have seen in a long time. It is a 90-degree, spin-on oil filter adapter for Lycoming engines. It is beautifully made by CNC milling out of a solid aluminum billet and bolts onto the accessory case in place of your oil screen housing or AC spin on filter adaptor. It fits perfectly, does not interfere with the magnetos, the vacuum pump or even the mechanical tachometer drive. It also has plenty of clearance on your engine mount and firewall, important considerations when you operate an EZ!

I installed one on N26MS and now have a full flow, spin on champion oil filter, with no high pressure hoses to a remote mounted filter which could leak. It comes with everything you need to install it: a new gasket, new aluminum washer for the vernatherm, and new copper washer for the oil temperature sensor. They even send a small container of the proper sealant for the gaskets. Of course it comes with new Lycoming bolts to mount it.

It is fairly expensive at \$395 but is available to EZ flyers until the end of 1996 for \$350. I am extremely pleased with mine and I heartily recommend it for anyone running a Lycoming engine on an EZ. A fuel flow spin-on filter allows 50 hours between oil changes and prolongs the life of your engine.

Give B&C a call at (316) 283-8662 or fax (316) 283-8000. You'll be glad you did! *Mike*

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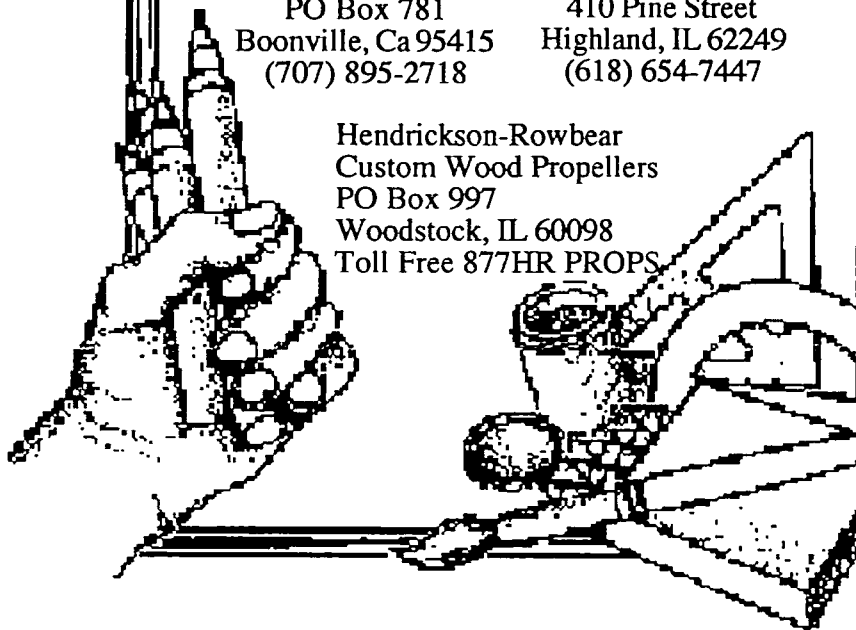
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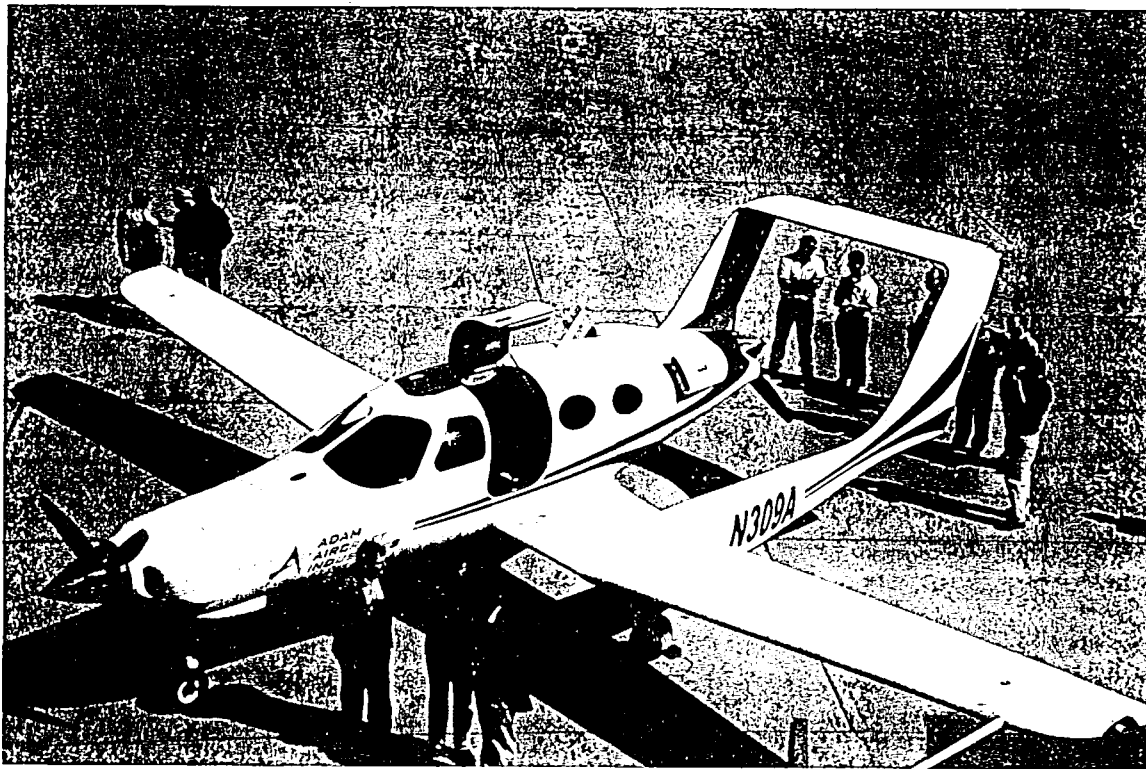


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VariEze builder/flyer Bill Butters has started a company to develop a full range of buried antennas. These are normally supplied with a BNC connector built into the actual antenna, but can be supplied without connectors to include enough length of co-ax cable to facilitate easy installation with minimum weight and bulk.

Call Bill Butters 800-758-8632 Advanced Aircraft Electronics, PO Box 4111, Florissant, MO 63032



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Inside

Model 309 makes debut	Pg 1
Sun & Fun Air Show	Pg 3
Mr. Len Snellman	Pg 4
S. Atlantic Flight V	Pg 5
Letters	Pg 6

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