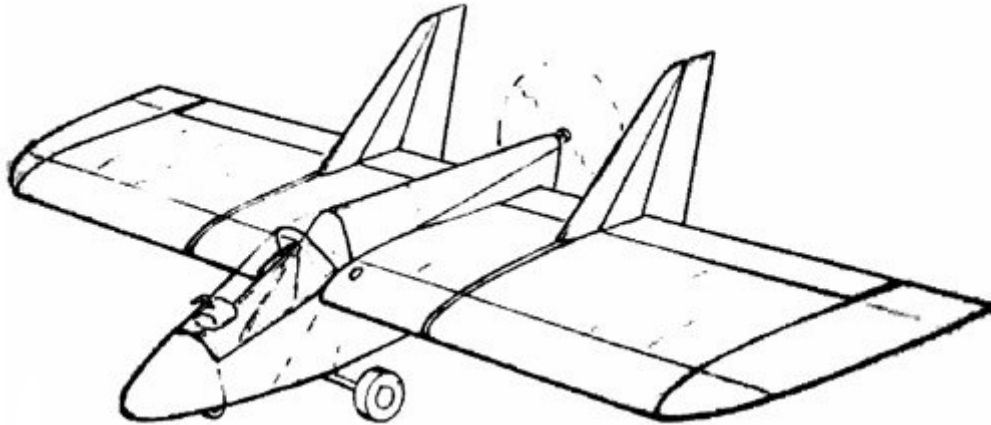


No. 200

FEBRUARY 2003

T.W.I.T.T. NEWSLETTER



Here is another of those "who dunit" pictures. It also came out of the Sailplane Homebuilders Association archives with nothing attached to it explaining who designed it, the year, etc. Do any of you know what this was supposed to be and who drew it?

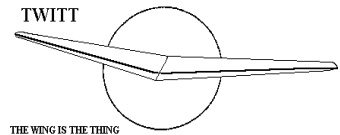
T.W.I.T.T.

The Wing Is The Thing
P.O. Box 20430
El Cajon, CA 92021



The number after your name indicates the ending year and month of your current subscription, i.e., 0302 means this is your last issue unless renewed.

Next TWITT meeting: Saturday, March 15, 2003, beginning at 1:30 pm at hanger A-4, Gillespie Field, El Cajon, CA (first hanger row on Joe Crosson Drive - Southeast side of Gillespie).



**THE WING IS
THE THING
(T.W.I.T.T.)**

T.W.I.T.T. is a non-profit organization whose membership seeks to promote the research and development of flying wings and other tailless aircraft by providing a forum for the exchange of ideas and experiences on an international basis. T.W.I.T.T. is affiliated with The Hunsaker Foundation which is dedicated to furthering education and research in a variety of disciplines.

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Meetings are held on the third Saturday of every other month (beginning with January), at 1:30 PM, at Hanger A-4, Gillespie Field, El Cajon, California (first row of hangers on the south end of Joe Crosson Drive (#1720), east side of Gillespie or Skid Row for those flying in).

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PRESIDENT'S CORNER

I must apologize to those who showed up for the January meeting in that the program did not materialize. The students and professor at UCSD that I attempted to make contact with never returned my attempts to contact them. This was either because the students were no longer in the program or at the university, or they were not interested in learning more about flying wings. I don't understand the lack of response from the professor, since I would have thought he would have seen the benefits of interfacing with the aviation community in the San Diego area. Live and learn, I guess.

Congratulations to Bruce Carmichael for his induction to the Soaring Hall of fame. I believe it is well overdue based on his many contributions to the soaring world over the years.

As I note in the program announcement, we have some overlap with another aviation-related event in San Diego on March 15th. We had no way of knowing this would occur when we approached Dr. MacCready to make a March presentation. However, since our meeting isn't until 1:30 p.m., it should be possible for those interested to attend both events by leaving home a little earlier than usual. For those of you in the immediate area, the Torrey Pines event is also on Sunday. If you have never been to Torrey Pines, this would be an excellent opportunity to see the variety of aviation activities that go on at this historical site.

As I noted last month, I felt there would be some synergies to being editor of two newsletters and this month is a good example. The Don Mitchell Stealth photos came out of the SHA archives turned over to me by Jan Armstrong. These were taken by Don during the construction of this particular model, so are a little more historic than usual. The cover shot came out of the archives and, there is some Alexander Lippisch material that was given to Bob Fronius by his son Floyd after he found it in a local shop.



**MARCH 15, 2003
PROGRAM**

We are very pleased to have **Dr. Paul MacCready** as our speaker for March. The presentation, titled **“Flying Wings From the 247’ Helios to 1 oz Toy Fliers”** covers the lack of fins/rudders and stabilizers/elevators on efficient natural fliers, from spans of 1 mm to 10 m, suggesting that often stability and control can be achieved by other methods or compromises. This is explored with our *(Aerovironment)* 247’ span Helios, which has maintained level flight two miles higher than any other airplane, a tiny tailless R/C model weighing just over an ounce, and various vehicles in between.”

It is very important that we start the meeting right on time, 1:30 P.M., in March. This will allow Paul to make his presentation and leave enough time for him and others to make a trip out to Torrey Pines for the regatta commented on below. So please leave for the meeting a little earlier than normal so you don’t miss any part of Paul’s talk.

Also occurring on March 15 & 16 is The Classic Mid-Winter Torrey Pines Vintage Sailplane Regatta at the historic cliffs of Torrey Pines. So far they have at least seven vintage gliders lined up for the regatta and more will probably be there as word spreads through the vintage ranks. You can learn more on preparing for the regatta at the link below.

<http://www.ssaregion12.org/Torrey.htm>

You could also plan on coming down to San Diego early on March 15th to stop by the Torrey Pines event before coming on to the meeting.

**JANUARY 18, 2003
MEETING RECAP**

Well, the UCSD students never responded to our messages asking them to make a presentation on their AIAA project from the 2002 competition. So a small group gathered to hear Bruce Carmichael do a test run of his speech accepting induction into the Soaring Hall of Fame. He will give it for real at the SSA Convention in Dayton, Ohio later next week. Since this will be published

after the ceremony, Bruce has kindly provided us with a copy of his text so you can enjoy with us in congratulating him on this prestigious honor. *(ed. – I need to thank Al McCarty of the SHA for sending me these photos of the awards ceremony.)*

INTRODUCTION

I wish to thank the SSA Board of Directors and the staff of the National Soaring Museum for this honor. I particularly wish to thank my old friends Howie Burr and Jack Laister for their persistent efforts in achieving my nomination.

**MY FORTUNATE INTRODUCTION
TO THE WORLD OF SOARING**

Prior to the Second World War I had read a few soaring articles in popular flying magazines of the time and had built and flown a few simple balsa sailplane models. At the University of Michigan, fellow student George Lambros took me to Triangle Airport where I saw a sailplane climb in a thermal. That year I caught hell when my “Sinbad the Sailor” sailplane model caught a thermal and landed on the roof of the local Hoover ball bearing plant. I received my B.S. in Aero Engineering prior to Naval induction.

After wartime Naval service, while an aerodynamic engineer with Chance Vought Aircraft, George Lambros introduced me to Dr. August Raspert and his mentor, Dr. Alexander Lippisch at the 1949 Southwest Soaring Meet. I was captivated by his newly established flight research station and plans for soaring advancement at a time when he was recruiting engineers to join him in the effort. Having moved on to Goodyear Aircraft in Akron Ohio, we began exchanging letters on both evolutionary and revolutionary plans.



ABOVE: Bruce accepting his US Soaring Hall of Fame Award from Larry Sanderson, SSA President.

IN CASE YOU ARE WONDERING

Those of you who attended my lecture earlier today and, heard how Gus had sent me a collection of the finest papers on sailplane technology written to that time, may well ask why with such a start I have not developed a super sailplane. My soaring heroes are those few who have designed, built, proof loaded and refined through flight test a unique sailplane. I am not among their number, but we cannot all be heroes. If you will permit a gamblers analogy, I will explain. Some of us must play the game of life with a partial deck of one sort or another. While not triumphant, you play the game with what you are dealt, do the best you can, try to find an area where you can do a little good and, in most cases it beats the hell out of cashing in.



ABOVE: Lyle Maxey (left) and Bruce getting ready for a group photo with other honorees of the Hall of Fame.

I have tried to extend one helpful activity begun by Oscar Ursinus, the old man in the battered hat on the Wassercoupe who, in the 1920's and 30's through written and verbal inputs to the technical students, helped bring about the rapid advances in soaring development. His gauntlet was picked up by Dr. August Raspet in the 40's and 50's and, following his death in 1960 I have tried to continue that role by writing, telephoning and lecturing.

SPORT SOARING

Thanks to the magnificent Schweizer Brothers, I owned and sport soared a 1-26A in the 50's and 60's having first flown a car towed Schweizer 1-19. My flying career was distinguished by saving myself and 1-26 from the classical spiral dive in a cloud using a previous tip from my old friend Ray Parker. This was followed by surviving a mid air collision in which I almost learned to fly a tailless sailplane. In 1965, I made a significant, if I was not so modest I would say major, contribution to flight safety in America and grounded myself

IN SEARCH OF LAMINAR FLOW

My work in industry was involved in research and development to establish the limits of performance improvement through extensive laminar flow. I conducted experiments in flight, in low turbulence wind tunnels, towing basins, a deep lake and in the ocean. All these results were applicable to sailplane and airplane development. At my retirement party I summarized by modifying the lines of a 1960's folk song, "Clouds". "I've looked at flow from both sides now, It's mostly turbulent but still somehow, It's the laminar cases that I recall, And the quest for them has been a ball." I published much of this data in a book." Personal Aircraft Drag Reduction."



ABOVE: Bruce sharing the limelight with Margie after the awards ceremony.

REMEMBERING THE GALLANT BAND OF THE FABULOUS FIFTIES

Looking back over a half century, I see them now in memory as when first we met. The dreamers and the doers, the brilliant theoreticians, the meticulous experimenters, the talented designers, the patient patient builders and, the bold exploring flyers with whom contact added so much joy and interest to my life. Bless them all for "Time like a raging river carries all her Sons away, they pass forgotten like a dream at the breaking of the day." But you and I do not forget and we pass the legends of these great and good people on to those who follow.

Since we didn't have a formal program, Andy brought in some videotapes to entertain the small audience for at least

a little while, as they ate their donuts. The first was a promotion tape done by Lloyd Watson for Jim Marske's Pioneer and Monarch series gliders. Until it abruptly ended, it went through Marske's early experiences with planks that finally led him to the Pioneer design with a central vertical fin and rudder. The Pioneer has been developed over the years into the Pioneer III, which was just being covered when that part of the video ended. The last part contained some footage from the old Speedvision network doing a documentary on the building of composite, high performance sailplanes in Germany.

Andy then put on a video of Bob Hoey's bird models being test flown. Some of this footage hadn't been seen before and all of it was enjoyed by the group.

So that was it for the January 2003 meeting. We did do a little hanger flying before and after with some discussions on what might be on the horizon for flying wings, but of course we weren't able to solve the problem of wing supply to meet the wing demand. Andy reminded everyone that the March meeting would feature Dr. Paul MacCready.

**SOARING SOCIETY OF AMERICA
2003 CONVENTION & AIR SPORTS EXPO
January 23-25, Dayton, Ohio**

By Bruce Carmichael

The interests of the SHA were enhanced on the convention floor by Greg Cole's Sparrowhawk, the Robert Mudd imported Apis and, the Leo Bennetti imported Italian Silent. Danny Howell was there with flight photos of the Light Hawk (*ed. – there are pictures of these gliders later in the newsletter, with the exception of the Silent*). Jim Marske also made an appearance. Also in the light category was a sport canopy Schweizer 1-26 (right) and, hang gliders from two manufacturers.

David Raspet introduced Bruce Carmichael for installation in the Soaring Hall of Fame for the year 2002. A. J. Smith introduced fellow record holder and champion soaring pilot Lyle Maxey for installation. Bruce and Lyle each gave an acceptance speech and received huge beautiful plaques commemorating the event.

Bruce Carmichael officiated at the SHA breakfast introducing Robert Mudd of Apis Sailplanes (*picture later*) and George Applebay who provided information of the 2003 Central SHA workshop to be held concurrent with a Vintage Sailplane Rally at Moriarity N.M. at the time of the Albuquerque Balloon Festival.

Several SHA members also attended the Old Timers breakfast where those who had flown primary gliders were singled out. SHA members also attended the Vintage Sailplane Lunch where we were treated to a wonderful color slide show of pre WW2 sailplanes.

This writer had his education advanced by lectures by Paul Siegel on giant R/C model sailplanes for long range flights and dynamic soaring. The level of technology of the models is every bit as advanced as our full-scale sailplanes. Mark Maughmer gave his delightful talk, "Aerodynamics For Dummies" and joshed famous sailplane pilots with his guitar

afterwards. Don Gurnett gave one of the most informative talks on thermal convection it has been this writer's luck to encounter.



At the higher performance and cost end, the European sailplane builders had their latest products on the floor. Lectures were given by Rafal Mikke of PZL, Tilo Holighaus of Schemp Hirth and Gerhard Waibel of Schleicher who described the line of minimum induced drag propellers and a new Simons book, "75 Years of Schleicher". Gerhard autographed copies for those who purchased them from Jan



LEFT: New and previous Hall of Fame honorees. Back row, left to right, Benald Smith, Edgar Seymore , (Unkwn), A. J. Smith, (Unkwn) . Front Row left to right, Al Leffler, Lyle Maxey, Bruce Carmichael, Sterling Starr. (Photos courtesy of Al McCarty)

Scott. Out on the floor, Gerhard explained to this writer the need for a boundary layer trip ahead of the NASA flush inlet feeding the flow to the row of holes near the lower surface trailing edge to remove the laminar bubble. Gerhard, who is about to retire, also gave a talk about the Wright Brothers at the banquet. Following the presentation of the Soaring Top Gun to Ron Tabery, this writer had the joy of telling Ron how

his father George and I had worked together for Dr. Raspet at his Aerophysics department at Mississippi State College in '52 to '54. On the flight home out of Dayton I had the pleasure of talking with Mike Riggs of the early Sea Gull hang glider company, who is working on a streamlined wheeled pod with and without power for mounting below kites and hang gliders. These Conventions get better every year.



LETTERS TO THE EDITOR

December 5, 2002

Re: Diamond planform flying wing

Can anybody out there direct where I can research (airfoil selection, CG, control setup, pro-con, etc) on diamond planform flying wings? I remember seeing one in Soar Tech about 10 years ago, just wondering how well it flew. In a book titled Unconventional Aircraft, there's a full scale Dyke Delta 4 seater, that was suppose to perform extremely well, 190 mph. Thought it might make a cool looking plane with a little futuristic updating. A friend of mine had a hobby shack diamond shaped sailplane, he said it never did fly well. Perhaps it was incorrectly setup?

Please email me back or to the exchange if you want to start a thread. Thanks in Advance for any information!

Bob
Rhokita@aol.com

(ed. – If anyone knows of any other diamond shaped wings that would give something to work with, please let him know. I have added his question to the website, so hopefully between there and the newsletter we can come up with some information. If you do e-mail him, I would appreciate you also including us as an addressee so we can share with others – twitt@pobox.com.)

January 8, 2003

TWITT:

Chuck Sisto died on November 27, 2002. He had a wife, son and two daughters, a hanger in Arizona and one in Oxnard, California.

He is one of the test pilots that flew Mr. Waldo Waterman's Aerocars, the flying wing cars of the 1935-1937 era. He was a professional pilot almost all of his life and was about 90 years old when he passed away.

I am a distant friend of his family. He was a good man to all who knew him.

He was at a TWITT meeting a few years back, but he was not prepared for the questions that he was asked.

Submitted by: Eugene Turner

(ed. – As someone told me a few years ago, we are approaching the time in our lives when those we admired in our youth are reaching the end of theirs. We are sorry to hear of Mr. Sisto's passing. We have lost another piece of history related to flying wings whether they be Waterman or Horten.)

(ed. – The first part of this was in response to Bob's inquiry about whether or not the Fauvel AV 36 flown by Jack Lambie was built by Syd Hall.)

December 16, 2002

Dear TWITT (meaning Bob Fronius & Bruce Carmichael)

In 1952 & 1953 Fred Jukick and I flew a Pratt Read out of Warm Springs Glider Port (home of the San Francisco area types like Harry Pezh, Earl Menafee, Don Mitchell, Ted Nelson and others). Hanger flying often revolved around my contention tails contributed to drag. When Soaring ran the AV 36 article, I suggested to Fred that we build one. I did all the wood work and Fred did the metal work. We both flew it for a time before we took it to Elsinore in 1954 (when we had a falling out). So I went south with George Congdon and Fred later went to Hawaii where I understand he is a farmer on Oahu.

The nationals were in 1954 at Elsinore. Neither Fred nor I had "sorted out" the Fauvel by then and he did not do as well as we had hoped.

Yes, it was a bitch on the ground, but having no wheel it stopped rather soon so not much sweat was exuded. Marske's Pioneer was a better solution. (Fauvel used too much reflex so the AV 36 always wanted to fly at design speed so you had to fight for other speeds – depending on pilot weight which translates to CG/CL, I think. (To land it successfully you brought it close to the airport and then held it off as long as you could. It had airbrakes which helped.) Marske used less reflex, so the Pioneer would stay, uncomplainingly, where you put it – fast or slow – docile. Fred J. sold it to Jack Lambie and that is the answer to Bob's question.

Now to Bruce, who I spoke with in Truckee. Last (and first) meeting I talked of using Culver's wing from the Dragon and hanging a pod below it with struts and cables such that the CG could be shifted by pulling the appropriate cable. I had deleted Maupin's tail and put rudders on the wing tips and substituted the elevator/stabilizer with a Geishas' fan, which folded to simple folded tail feathers, stacked as a streamlined cone most of the time. On landing, the fan was deployed and depressed down because the CG moved aft. (The cables being shortened appropriately.) At the time I told him (Bruce) I planned to have one blade of the two-bladed propeller in the cockpit when soaring.

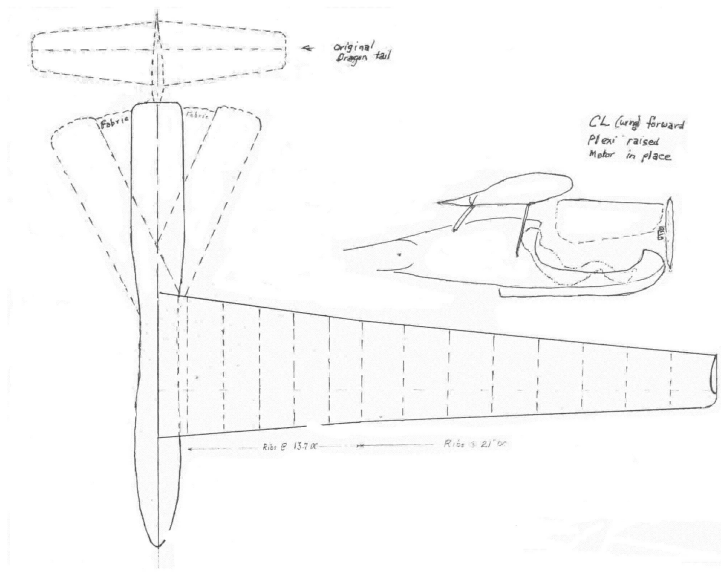
Wrong. I now plan a 5 h.p. 4-cycle 50 lb. industrial B&S motor in the wing center section just behind the spar. The wing joins at rib 5 and all the center trailing edge is flap. Except for my centerline 3-fee of flap is divided with a split trailing edge such that the top can lift a bit, the bottom can depress a bit and, the motor, torque tube and prop can be slid aft for use. To retract, there is a notch in the fly wheel

that has to mate with a track rail when the prop is horizontal. Then you can winch it all forwards and close the trailing edge.

I still recognize that sorting out the CG shift versus usual elevator may take a bit of "doing" and I'd be well advised to have motor aboard rather than have to find a thermal at the last second. Having not soared in this area, I do not know where thermals hang out, but I suspect a lot live on the west side of Sutter Buttes – all that dry grass should produce a lot of instability.

Syd Hall
Nevada City, CA

(ed. – Syd's original idea was published in the June 2002 newsletter for those of you with back copies and, one view is presented below. It is an interesting variation starting with the basics of a Carbon Dragon and, it sounds like Syd has been giving it much more thought. We hope to hear more about as he progresses.)



January 19, 2003

TWITT:

Subject: Control Mixing

I am currently designing a small single-place tailless aircraft that I intend to begin building in the next couple of years, but I have been unable to find any diagrams that clearly illustrate how to do mixed flight controls. Specifically, my design uses elevons due to the short wingspan. I'd appreciate any assistance you could provide me.

Josh Vaillancourt
jdvallancourt@hotmail.com

(ed. – I wrote back to Josh providing him the following information. If anyone has something more up to date that

they thing would be of value in helping him put together something simple, but effective.

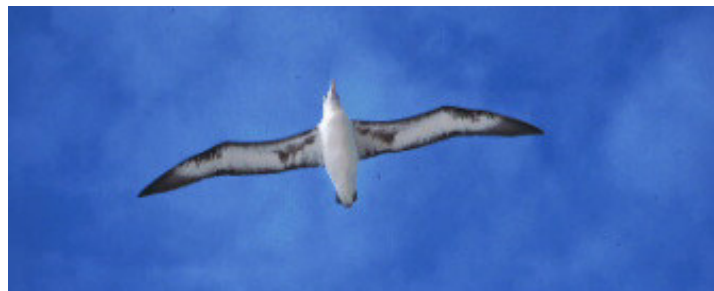
"Although these are somewhat dated, they may give you some initial ideas on how to put something together that meets your needs. The more modern versions are relatively simple compared to some of these. I will see what else I can dig up in the weeks ahead and get back to you if I find anything more up to date.

[http://www.twitt.org/Patents.html#top.](http://www.twitt.org/Patents.html#top)")

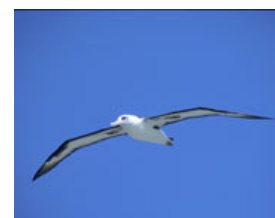
January 21, 2003

TWITT:

I just recently returned from a cruise around New Zealand and saw, for the first time, Albatross soaring on the open sea without flapping. The first day there were 6-foot swells and a brisk wind. The flight paths seemed to be consistent with the theories of dynamic soaring in wind shear. Sharp pull-ups into the wind to gain energy, followed by dives and wave-skimming flight in any direction. (I have seen several papers and math models describing this type of flight.)



The second day, however, there were 6-foot swells, but little or no wind. The birds flew effortlessly swooping in and out of the swells without flapping. They appeared to be sustaining flight using the vertical pumping action of the swells. With a period of about 3 seconds, and a vertical motion of 6 feet, the average vertical rate of the water (and the air immediately above it) would be +-4 fps, or 240 fpm. (That's an L/D of 13 at 30 knots) If the bird started in a trough and flew toward the nearest rising surface of the sea (avoiding the descending surface), I figure that it should be able to easily sustain flight without flapping, and with no wind. (Notice that this is different than a pelican soaring on a breaker which is translating toward the shore.)



Are you aware of anyone who has attempted to define, or model, this type of dynamic soaring? I think it would be

interesting to try to model (mathematically) a vertically-oscillating, quilt-like surface like the sea and see if a bird, with a reasonably high L/D, could chose a flight path through that pattern that would allow continuous, non-flapping flight. I don't want to reinvent the wheel if someone has already done it.

Incidentally, their tail is almost NOT THERE! As close as you can get to a true flying wing.

January 23, 2003

After further thought and some discussion with my buddies, another possible source of sustaining energy in a sea of swells, but no wind, comes to mind. The air immediately above the surface of the sea will, of course, not remain fixed with the surface. It will tend to flow away from the ascending node of the swell, and toward the descending node. This means that every trough will have a shear line immediately above it as the down-flow from adjacent swells meet. That could allow a bird to simply fly in the shear line in the trough. Easier for the bird, but harder for the math-model analyst!

Bob Hoey
bobh@patprojects.org

(ed. – First off, I have to say I am jealous that he made such a trip, but I have had the opportunity to observe the Albatross slope soaring the dunes at Midway Island. However, this was well before I had an interest in flying wings, so was just amazed at the beauty of it and not really studying them.

I passed these messages on to Taras Kiceniuk who has been one of the leaders in promoting dynamic soaring and, to Gary Osoba, President of the Sailplane Homebuilders Association, who has dabbled in microlift flight. Bob also addressed his messages to Paul MacCready who has always had an interest in low energy flight.

The following came from Gary Osoba.)

Hi Bob et al:

I have also noticed this phenomenon in the film clips of Albatrosses, which I've been able to study. During a lunch meeting of several of us, which was arranged by Paul MacCready during the 2000 SHA Western gathering, I brought it up for discussion. However, I am not aware that anyone has vigorously analyzed or modeled it.

I am particularly interested in your friend's shear line supposition. Albatrosses frequently appear to perform straight-line, uncoordinated flight with one wing tip planted nearly on the trough surface, thereby effectively extending their span and dramatically reducing the tip vortex, and the other wing extended upward into a higher energy atmospheric field (and possibly shear line according to your comments). At our lunch meeting I spent some time sharing this as a very fascinating aspect of the bird's flight behavior. There is no reason why a relative shear line effect as postulated could not be working at low levels in both windless and windy conditions- it might be reinforced by rotors from the upwind cycle operating at resonant frequencies curling first down and then upward near the maximum point of

flexure for the postulated shear cycle, or it would be canceled out or interfered with phase shifting.

Here's a link to a film industry programming group who have done a good job of modeling complex wave phenomena. You might be able to use some of their algorithms if you pursue the idea.

<http://www.tweakfilms.com/software.html>

I find all of your work with bird flight absolutely fascinating, Bob. I have included Bruce Carmichael in the copied list as he was also at the above referenced meeting and always has wonderful insights into these sorts of things.

Best Regards,

Gary Osoba

(ed. – I know, here we go with the bird stuff again. However, I include it for two reasons. One, I think it has relevance to the entire spectrum of flight and, flying wings should have the ability for dynamic soaring, especially since they have less drag than a conventional design. Two, Bob alluded to it when he said there essentially was no tail on the birds he observed, so we have a flying wing engaging in dynamic soaring.

We still have a lot to learn from the flight performance of all types of birds. Evolution has made them very efficient in order to survive and, it would seem flying wing development has the most to gain from this research based on the configuration of most birds – they don't have a distinct vertical and horizontal tail section.)

January 28, 2003

TWITT:

Subject: Some Elipstik clarification

Just saw your "hodgepodge" page. The Elipstik was designed by a fellow at Grumman named Tom Hunt and is available in three sizes (the one you have from Titanic Airlines is the middle sized, or 460 square inch version).

All three (and many other more conventional airplanes of similar construction) are here:

<http://www.modelairtech.com/stik.html>

Here's another for your models page and/or your commercial page. I have two of these and enjoy them immensely.

<http://www.toddsmodels.com/winge.htm>

Bernard Cawley, Jr.
737/757 Configurations
(425) 237-3729 M/C 74-07
Fax (425) 234-4904
bernard.e.cawley@boeing.com

February 1, 2003

TWITT:

A ndy I noted that my email address in the TWITT newsletter and on the Stabiloplan link show the wrong email address. This should be albackstrom@attglobal.net

Al Backstrom

(ed. – My apologizes to Al for not updating his e-mail address before publishing the roster in last month's issue. Please make this change to your rosters and e-mail address books if you anticipate contacting Al in the future. I have also updated the website reference to make sure others can contact him if there is any interest in this plane.)

(ed. – The following came from the Nurflugel discussion board from the pen of Al Bowers. You have to read to the end to find any relevant flying wing references, but I thought it was humorous and I needed some filler for the newsletter. I don't know that I believe the Murphy's Law story, thinking that this law has been around much longer than the 1960's. Anyone else have a theory or know the true story?)

January 31, 2003

Subject: Murphy's Law...

To: Nurflugel:

I ran into Edwin Saltzman today. Ed is our resident "old timer" and resource. His repository of stories is amazing. Ed arrived when Yeager was still flying the X-1 (Ed's first report was a drag comparison between two of the X-1 aircraft). He related three short stories today...

1) He handed me an old report. The third author was the highly regarded and respected Dr Werner Pfenninger. The report is from a briefing at Wright-Pat on joint NASA/Boeing research. The topic is drag reduction in subsonic cruise transports. Of course there is a lot of information on laminar flow control. One of the smaller pieces mentioned is "wing tip fins" with a small diagram. What is being shown is obviously what we call winglets, but this appears to be pre-winglet. And Dr Richard Whitcomb is not referenced anywhere in here. An interesting snapshot of history.

2) Ed reminded me of an old story about Professor Max Munk (a student of Professor Ludwig Prandtl's). Dr Munk was the Chief Scientist at NACA Langley research Laboratory from 1920 through 1926. The story is that Dr Munk was a very technical and fastidious man. When he arrived at Langley, he did not have a car nor did he know how to drive. But Lanlgey gave him a house to live in, and it was a couple of miles from the lab. So Dr Munk proceeded to buy a car and have it delivered to his house. In the next few days, Dr Munk calculated the ratio of the steering wheel angle to the angle of the turning of the front wheels. From this, and the wheelbase and track dimensions of the car, Dr Munk calculated the radius of the turn that car would

describe as it would negotiate a corner. Then Dr Munk proceeded to survey all the corners between his house and the Lab at work. Finally, Dr Munk calculated what angle to turn the steering wheel of the car at every corner between his residence and the parking lot at the lab. The punch line to the story is that the towns people of Hampton Virginia (where the Langley lab was) was a bit of a remote village in the country. And to have a very precise and strange foreigner measuring the roads and calculating things to drive his car caused a considerable amount of amusement amongst the towns people about the NACA workers...

3) Murphy's Law: everyone knows Murphy's Law. "Whatever can go wrong, will go wrong." Ed related the story of Murphy's Law to me. Ed thought it was about 1956, and Dick Day was a senior engineer here at Dryden (then called the "Flight Research Center"). Apparently, Day was an avowed atheist. NACA hired a new guy, an engineer from the Air Force just down the road here, named Ed Murphy. He started in the aeronautics branch, which was later split into two branches propulsion and aerodynamics (!). Murphy was also an avowed atheist and Murphy and Dick would eat lunch together in the cafeteria and compare notes on their respective views on atheism. Dick's wife would, on occasion, drag Dick to church on Sundays, and Dick would reluctantly go. About the second time this happened after Murphy had been hired, Murphy found out about it. Saltzman reported that Murphy called Dick a "blankety-blank backslider!" at lunch the next day. Saltzman says that Murphy was a bit on the dumpy side, with a whiney slightly nasal voice. Murphy spent a lot of time complaining that things were never good for him. Murphy left in about 1964. In the late 1960s, the Murphy's Law stories started to circulate in aerospace engineering circles. Everyone here would have their own Murphy's Law stories, but none had ever made a connection between "Murphy's Law" and Ed Murphy. But a few months after the Murphy's Law stories started around, Ed Saltzman discovered that Murphy's Law was started by a guy named Ed Murphy who used to work here at Edwards...

Earlier this week I had lunch with Dr Peter Jakab. Dr Jakab is a historian working on Wright Brother's research. We had a very good talk and I related the similarities I saw between the Hortens and the Wrights in their personal lives. It was very good, and we got to share a few insights with each other.

Al Bowers

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"It is my belief that flight is possible." -Wilbur Wright,
03 Sep 1900

(ed. – Here are the rest of the pictures of our cover shot from last month. So far we have received one response from someone who thinks it was called "The Bomb" or something like that. He remembers seeing it fly several times at El Mirage in the mid- to late 60's (aero tows behind Gus's PT-23's). The pilot laid prone in the fuselage. It had a pretty marginal glide and was almost immediately equipped with wing tip extensions that were rectangular in planform, about 1/2 of the chord of the main wing and about 6 feet long. It

could have been a test bed for an in-flight, variable geometry wing (extendable tips). It was easy to identify the airplane in the air! He didn't ever know who the designer or builder was and suggested we contact Ross Breigleb.

Another respondent thought this was linked to the drop tank gliders being built by George Tweed, Gene Wigham and Walt Mooney during the 1950's, although not built by any of them. He also commented that the results were "scary".)



(ed. – The SHA archives yielded the following set of pictures of Don Mitchell's work. Unfortunately, Don passed away before the Stealth design could be fully realized and, I believe there is only the one aircraft still in existence now owned by Norm Castagneto of Temecula, CA.)



ABOVE: As a comparison, this is the Mitchell B-10 owned and flown by Chuck Rhodes while at the 1994 SHA Western Workshop. This particular aircraft was built by Don and flown to several world records by George Worthington.

BELOW: A similar shot of the Stealth being flown by Les King on aerotow behind a Dragonfly ultralight at the 1994 workshop.



BELOW: These are shots that Don took of his Stealth motorglider he was working on that never got beyond this stage.





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