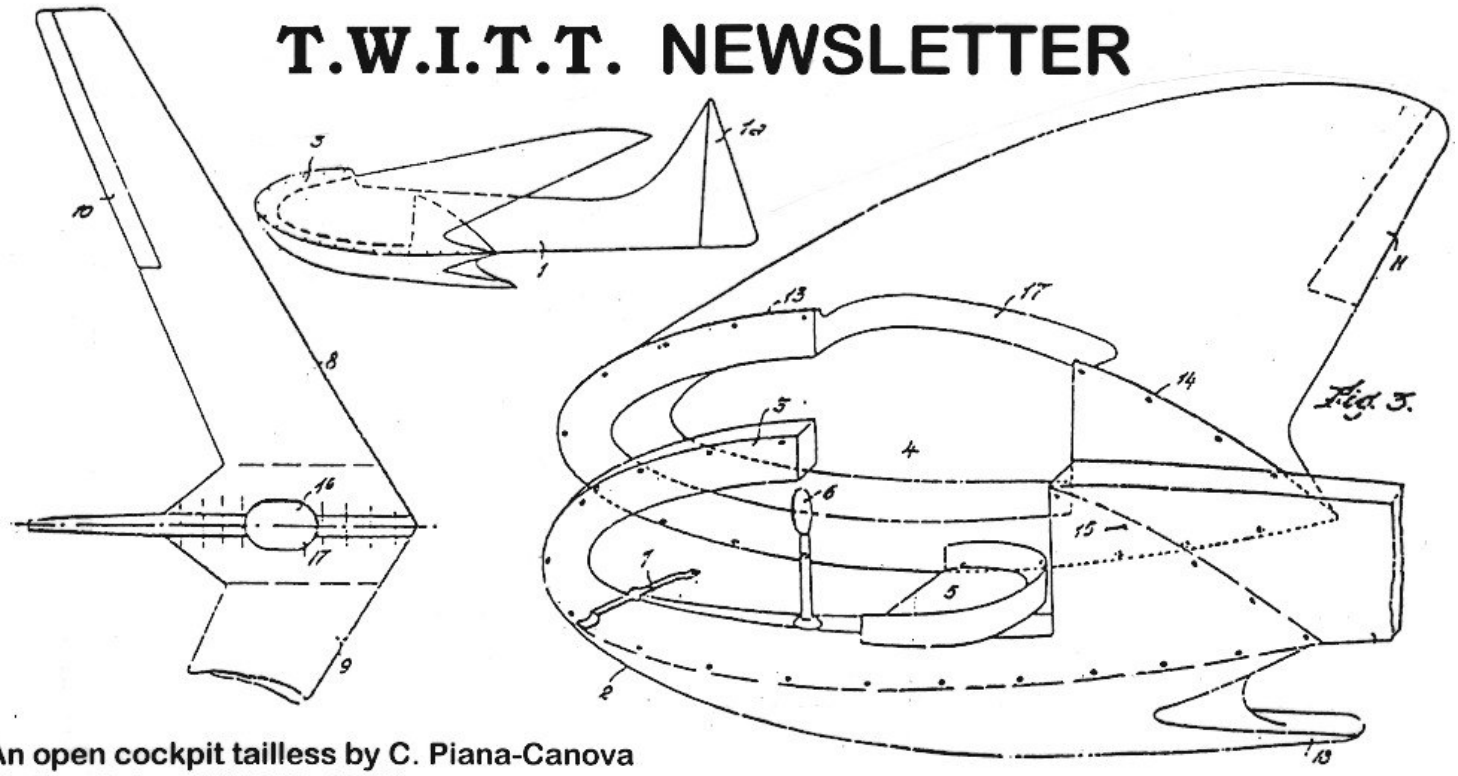
No. 144 **JUNE 1998**

T.W.I.T.T. NEWSLETTER

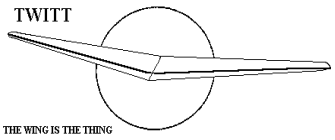


An open cockpit tailless by C. Piana-Canova
(Italian Patent 318053, 1934)

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., **9806** means this is your last issue unless renewed.

Next TWITT meeting: Saturday, July 18, 1998, 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, east side of Gillespie).

TABLE OF CONTENTS

PRESIDENT'S CORNER

For those of you who enjoy historical looks (often a little tongue-in-cheek), you missed an enjoyable program last month. Bob entertained us with his view of the first manned flights and then his involvement in San Diego aviation over the past 70 or so years.

For those of you who don't get Aviation Week & Space Technology, there is a great article in the May 4, 1998 issue on the Pathfinder and Centurion flying wings. If you get a chance, pick up a copy at your local magazine rack and enjoy the reading. Thanks to Doug Bradford for bringing this to our attention and providing several copies for the group to take with them.

If anyone has been wanting a copy of Nurflugel, the book by Horten and Selinger, there are some copies now available through Doug Bullard who runs the Nurflugel website on the internet. He was taking orders through the mailing list and had planned on placing one large order through his source (perhaps Schiffer Publishing). For those with access to the internet, you can find out more by looking at www.nurflugel.com and sending him an e-mail (dbullard@nurflugel.com) to determine if it is possible to get a copy of the book. Cost is $55 postage paid in the US.

I heard from Serge Krauss the other day and I am happy to report he is back working on putting out an interim edition of his expanded bibliography. It may not have all the cross-referencing he would like, but those of you who don't have an original version may well want this edition as a good starting point. Write him (see classifieds) or send him an e-mail (skrauss@earthlink.net) with your questions and/or desires about ordering this excellent document.

Andy

JULY 18, 1998 PROGRAM

We think you will enjoy the July program. Taras Kiceniuk is going to give us a presentation on some of his and his father's designs, along with other tailless hang gliders, both rigid and non-rigid wing types. This should be an exciting program, especially for those of you who are dyed in the wool hang glider lovers or even "want-ta-be's". Taras will be using a combination of slides and video to show us some of the history behind these interesting and popular aircraft.

For the future, the September program is not quite yet confirmed, but it is shaping up to be focused around the Kasper Bekas aircraft and some of his other designs. We also may have the possibility of having an actual Kasper hangglider on hand for everyone to look at. Bob is still working on the details, but you should mark your September calendar now so you don't plan something else and miss an unusual opportunity.

MINUTES OF THE MAY 16, 1998 MEETING

Not to seem redundant, but Andy opened the meeting with the usual housekeeping items covering magazines, drinks and rest stop facilities. Since there were a few new faces in the group he asked everyone to introduce themselves.

Gene Larrabee said he had just returned from an MIT conference where he learned some interesting information on new uses for GPS. The GPS signal is routed through a special computer along with information from a vertical gyro and presents a roll attitude display for the pilot. It also will show the pilot rate of climb. Gene said he would be finding out more about how it all works the next time he was back east.

Bruce Carmichael indicated he was now working 6th - 8th graders teaching them how to read blue prints, build model airplanes and then adjust them for proper flying. He was getting a lot of enjoyment out of seeing the kids finally seeing their glider really flying and knowing they did it themselves.

Bruce was slightly confused, thinking this was Bob Fronius' birthday (it's really in July), so he had brought along a card. It had an eagle on it in flight and the eagle does appear to have a tail on it, although it wasn't being used for much. He was also a retarded eagle since he was flapping rather than soaring. The card had a short poem on the back that went like this:

We gather to honor our founder
A truly amazing young bounder
Claims aircraft tails are erroneous
None other than beloved Bob Fronius

In the early decades of man's flying
When from stalls in droves flyers were dying
Bob said "Leave off the tail, and you'll see without fail,
That the wing is the thing, I ain't lying."

Ed Lockhart was also somewhat confused about Bob's birthday and had a present for him that needed to be unwrapped today. After Bob went through several layers of the usual Lockhart wrap until you drop syndrome, he finally got to the meat of the thing which was a beautiful ink rendition of the Northrop XB-35 wing in flight.

Pat Oliver showed us a small flying wing model he had built from foam egg carton material. It flew very well with about a penny in the nose for balance. He also commented the semi-scale Northrop N9M he had built several years ago and had Bob Cardenas sign at one of our prior meetings, had now been signed by Ron Hackworth who is the current pilot from the Planes of Fame museum at Chino. Of course, he has retired the model from any further flights now that it has become a piece of "history".

Pat is also involved with helping young students learn about aviation, but he is doing it through small blimps. He and a partner are building kits of blimps made from a mylar balloon and a small balsa wood pod with a rubberband power unit. It teaches the kids about air density, buoyancy and other mathematical things while having a little fun.

Ed Lockhart had prepared an introduction piece on Bob Fronius with a lot about the man many of us probably never knew. Andy read this intro. to the group and, there are small pieces of it included below.

When Bob was 10 years old, his father financed a flight in a Standard that launched his somewhat convoluted career in aviation. He became the typical airport kid cleaning hangers, packing parachutes, getting a ride whenever he could, and eventually soloing in an Aeronca C2. Since then he has flown sailplanes, hanggliders, hot air balloons and made over 200 parachute jumps.

Most of his parachute jumping was done during tours of duty on the USS Lexington and USS Saratoga and were made for exhibition purposes. (At one point in the program Bob related his story about landing in San Diego Bay and causing a massive search which shut down all air activity in the area for the day, but that never found him since he had been picked up by a small Navy craft and taken ashore without any fanfare. Talk about one mad squadron skipper the next day.)

Bob founded the San Diego Parachute Co., based at Lindbergh Field until moving it to Gillespie in 1946 when the field was turned over to local government by the military. He maintained his operation there until 1957, doing many experiments with parachutes including emergency recovery of aircraft like gliders and light planes.

ABOVE: The real and no-so-real versions of the N9M on the ramp at Gillespie during a recent airshow. That's Pat Oliver with his semi-scale version standing in front of the real thing.

He bought Johnny Robinson's Robin and was the first to convert a standard tail into an all flying V-tailed glider. He did all the test flying himself and went on to fly many other types of gliders and power planes. At one time he was the owner of an AT-6 when they were relatively "inexpensive" (ed. - boy does he wished he still had it today).

In 1944, Bob and Ray Parker formed the California Soaring School operating out of San Diego and Twenty-Nine Palms with 6 gliders, 2 tow planes and 2 instructors. It was also about this time Bob started his aerobatic glider routine for airshows and kept jumping.

In 1973, Bob founded the Ultralight Flyers Organization (UFO) which was later re-named the San Diego Hanggliding Association due to the conflicts between many different types of powered and unpowered ultralights. He was the President for 3 years and his two sons, Doug and Floyd, were also active members and hangglider pilots.

Then in 1974, T. Claude Ryan called on Bob to help him with the construction of the 2-place Cloudster motorglider. He then participated in the flight test program run by air racing great Ray Cote. The aircraft is now undergoing renovation at another hanger on Skid Row by Bob and some other helpers.

Over all these years, Bob worked at various times for Ryan Aeronautical, Consolidated Vultee and Rohr Aircraft and was involved in many of their more interesting aircraft projects. While at Rohr, he, Walt Mooney and a few others constructed the Two-175 delta winged, ducted fan light aircraft that was supposed to be an alternative to the Cessna line of aircraft. Its' unusual characteristic was that the wings folded on hinges so it could be towed on the highway and fit in a typical 1-car garage. Unfortunately, the project was eventually canceled and the aircraft dismantled (ed. - sounds just like what happened to the Northrop aircraft).

With that introduction, Bob took the microphone and began his (convoluted) historical look into flight.

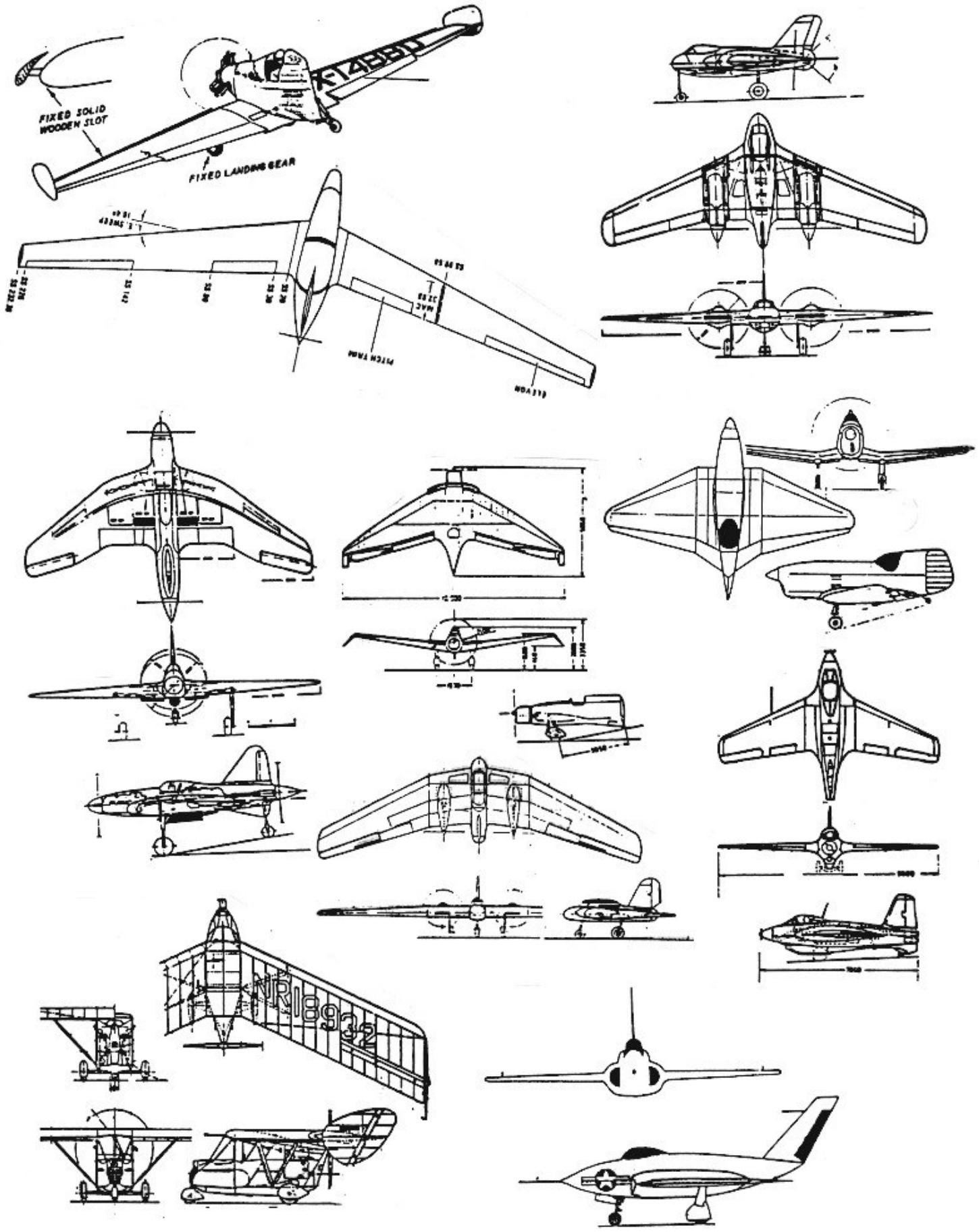
Bob made the claim that a distant relative, Phineas Pinkham Fronius discovered a new mode of transportation through the use of differential pressure. According to Bob, Phineas came up with a machine in 1882, and launched it from Coronado Island. Over a period of several days he drifted toward the area where the Montgomery Brothers were experimenting and he eventually sold his first set of plans to the brothers. Since then, no one has been able to duplicate the Montgomery's feat even using a set of similar plans developed by qualified engineers. Bob's son Floyd had tried unsuccessfully to build a like machine and found it was impossible to make it fly the Montgomery's claimed distance.

According to Bob, Phineas continued his travels across the US with this machine, eventually meeting up with the Wright Brothers, where he sold another set of plans (the results here are another story). Leaving Illinois, he passed through Elmira, New York, met some guys interested in flying, explained his theories of differential pressure and eventually got these guys to start flying thermals.

Bob decided to deviate from the "truth" at this point and had Bruce Carmichael come up and go through a series of overhead viewgraphs on various versions of tailless aircraft. (ed. - Many of these have been published at one time or another in the newsletter, but I have decided to make sort of a collage of them for inclusion in this newsletter to show what Bob was covering during this part of the meeting.)

One of the aircraft Bruce covered was the Short Brothers aeroisoclinic wing that had an unusual construction method for controlling twist as the wing bent. It compensated for the changes in angle of attack during bending and reduced the effects on pitching moments associated with flying wings.

The X-4 experimental jet powered flying wing came up on one of the slides. Bruce commented that it was still at Muroc (now Edwards AFB) when he arrived and that one of its problems was lack of space for instrumentation for the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test flights. It also had a high frequency pitching oscillation problem that he heard about when Muroc called Chance-Vought (where Bruce was at the time) asking if the Cutlass also had the problem. It did not, and Bruce surmized that it may have been due to the higher angle of leading edge sweep on the X-4 than on the Cutlass.

The Schapel flying wing prototype came up and there was some discussion about what really happened to stop its further development. Some mentioned the molds had been destroyed in a fire, and that the aircraft nose wheel had gotten caught in a runway crack at Stead AFB causing the aircraft some damage. Apparently, it is now hanging up in the Planes of Fame museum at Chino CA airport.

Another design that came up was Kevin Renshaw's Komet which had been entered in the SHA design contest some years ago. Bruce thought Kevin had gotten most of the way through building it, but hadn't heard any more about it. Perhaps Kevin will write us a short article on his project and why it was (or was not) completed. (ed. - I recall seeing a picture of it at one time with Kevin standing next to it.)

Bruce commented that the Mitchell B-10, U-2 and Victory Wing plans were now available again through Richard Avalon. Bruce has purchased a set of B-10 plans and said the plans and instruction booklet were very well done and would make it easy for the homebuilder to complete the project.

At this point Bob took the program back over and covered some of his experiences with parachute design. He went through a long list of people he had known and/or worked with during his long career, like Floyd Smith (parachute designer), T. Claude Ryan, Waldo Waterman, Burt Raines (Rohr Aircraft), Col. E.F. Hoffman and, Les Irving.

Bob talked about his experiences with Harry Crosby who used to do air show exhibitions with him. Crosby eventually went to work for Northrop, flying most of their flying wing aircraft including the version that was used to ram enemy aircraft.

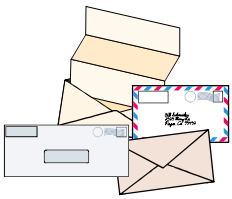
He and Pete Girard (Ryan Vertijet test pilot) and Bob Arnold spent many weekends building an auto gyro with a drone engine (later upgraded to a Continental) but it never flew. During an initial taxi test it began oscillating on the landing gear which eventually failed (Bob's design) scattering plywood, nuts and bolts all over the taxiway.

At this point Bob transitioned to showing a video of various flying wings that have been flown over the years. This video was basically a collage of pieces from currently available (as shown on TV) footage or snippets of the July '97 Flying Wing Symposium at Harris Hill.

ABOVE: Ron Hackworth (facing camera) autographing Pat Oliver's semi-scale version of the Northrop N9M. This model has now been signed by a present and past pilot of the aircraft (the other being Bob Cardenas).

One of the more interesting projects Bob participated in over the years was testing scale rockets for the space program. He used a test stand with load monitors for these 1000 lb thrust, 1 second burst motors that were eventually used as the retro rockets for spacecraft re-entry slowdown, such as that on John Glenn's capsule during the first US earth orbit mission. Glenn's comment after returning was that the rocket firing "kicked me back to Hawaii". After 12 years of this activity it took its' toll on Bob's hearing (OSHA wasn't a big factor in those days making sure work environments safer).

Bob used that story to wrap up his presentation and the group broke up for coffee and cookies and the usual hanger flying exchanging tales of past lives.



LETTERS TO THE EDITOR

May 1998

TWITT:

With the new computer radios (elevon mix) available, I believe R/C tailless models can be a valuable tool in testing new designs in models for full scale use.

I was able to attend the tailless symposium at Harris Hill Soaring Museum. What an experience!

Also, two books I find are a must for tailless people:

Tailless Aircraft in Theory & Practice by Karl Nickel and Michael Wohlfahrt.

Tailless Tale by Dr. Ing. Ferdinando Gale.

Yes they cost money, but what an investment in knowledge!

Also, how about some information on Ken Striplin's FLAC?

Keep it up,

Fred Maier

(ed. - Thanks for the letter. I agree that the new radio equipment has opened new doors in the modeling world and the cost of it keeps coming down. I may have to get back into R/C flying again since I won't have to figure out how to use two thumbs for flying coordinated turns.

I'm sure the authors of the two books appreciate the kind words about their work. Most everyone who has both books feels the same way you do about them.

The information we included in the March newsletter is all we have on the FLAC. If anyone out there has more about its flying capabilities, plans, etc., please let us know.)

May 1998

TWITT:

I would like to thank you for covering my late subscription payment with the May issue of the TWITT newsletter. I am very impressed with the level of information both in quality and quantity. I hope to avail myself of most, if not all, of the reference material you are offering in the near future starting now with the two audio tapes by Don Mitchell, the video and booklet of Phil Barnes' 9/16/95 presentation and his 6/16/96 audio tapes as well as the paper on Performance Analysis of the Horten IV Flying Wing. This is like being set free in a candy store. I had better save some for later. This will take some time to digest so I don't want to over stuff myself all at once.

We are currently building a Mitchell B-10 serial #367 with an A-10 cage and modified A-10 style tip rudders. This and quarter scale prototype for a design I have been working on for several years will create the basis for the full size SE2a all wing motor glider. I will send you pictures as they become available and keep you informed as to our progress.

Again, thank you for the terrific newsletter and I hope to one day be able to attend a meeting in person.

Sincerely yours,

Joseph R. Semeraro
jrsemearo@snet.net

(ed. - Thanks for the kind words about the newsletter. I try to keep finding new material and including things that will appeal to a wide range of member interests. Sometimes I hit the mark and then there are months where I feel like I was just lucky to find enough "stuff" to fill the pages. We try to give every member a month or two of leeway on getting their annual dues into us so they don't have a break in the newsletters.

I am looking forward to seeing and hearing more about your Mitchell and SE2a projects over the coming months. You are one of the few members who is currently building something, as best we can tell, so keep us informed. I have included your e-mail address in case there is anyone out there who would like more information on your Mitchell modifications.)

May 13, 1998

TWITT:

Thank you very much for sending the December '97 issue. It was important for me to see the presentation of EVSM, because I've found there were some concepts of which I was convinced of, on my own. I'll soon contact Phil Barnes for the charts.

I have some questions that originated from reading the newsletter. I would be very grateful if you would consider them:

1. I've read the advertisement of Tailless Aircraft in Theory and Practice by Karl Nickel and Michael Wolhfahrt, and I'm very interested in it, but the address specified for ordering (Europe) seemed imcomplete. Could you help? Is it available at the "nice price" for European TWITT members too?
2. Some issues ago I've noticed (how couldn't I?) the sketches of early German jets in the forefront of the newsletter, and it was shown the source was David Master's German Jet Genesis contributed by Kevin Renshaw. I receive regularly the Zenith Books catalog, but there is nothing with that title. Do you have more information on this work by Masters or should I contact Kevin Renshaw? I have his address as a member of TWITT. Do you know if it contains three views?
3. I'm curious to know if TWITT has a source for tailless/flying wing plans, designs, 3-views, history and information, except from back issues of the newsletter.

These days I'm having problems with the e-mail address. Herewith please find two international response coupons for your answer.

Hope to hear from you soon.

Yours truly,

Giorgio Cavallo
Via Vespucci 3
56124 Pisa Italy

(ed. - To answer your questions, I have the following information at this time:

1. The fastest way I know for you to receive the full address for European ordering of Dr. Nickel's book, is for him to send that information to you directly, so I have included you full mailing address. The address in the newsletter is what was provided for the advertisement, I don't know of another quicker way to find the full address. I also noticed that I had mistakenly put in Reston, WA instead of Reston, VA for the US address. The membership the ad refers to is for AIAA (not TWITT), so if your are not a member of that organization you will have to pay the higher of the two prices.

2. I am asking here for Kevin to drop you a line with whatever additional information he has on how to obtain a copy of Master's book and/or let you know what else is in it, like 3-views. The information we have isn't sufficient to give you a complete address.

3. TWITT doesn't carry any tailless/flying wing designs for sale. There are several vendors in the classified section who provide these and we provide them free space as a service to the members. We do have lots of information in the library, but as yet have not found a reliable method of getting someone to complete the immense project of putting together a bibliography of this material.

Please let us know, via e-mail if you wish, what you would like done with the postage coupons you sent since we really don't have anything to send you at this time in answer to your questions. Would you like it applied to purchasing and mailing some particular back issues up to the total value of the coupons?

Finally, thanks for the letter and the questions. It is this sort of thing that keeps us on our toes in providing the most accurate information possible on tailless/flying wing aircraft.

May 19, 1998

TWITT:

Hi! For the enclosed cash of $18, please send me the following:

MacCready's presentation video $6pp
VHS tape of flying wings $8pp
Don Mitchell March '92 $4pp

I have flown sailplanes since 1963 (but not in the past 3-4 years). I built a Kasper BKB-1A after visiting him in Washington state and buying his plans. What a design! But, by pilot error on the first test it was destroyed (and nearly me!).

I built a Windrose also, then an TEAM Hi-Max from plans that I sold Thanksgiving - and got a Mitchell A-10.

Just before Christmas, broke a hip and handicapped since. The A-10 is about ready to fly (and I hope me too).

I have saved a nose section and a trailing edge section to show the detailed design of Kasper and my execution of it. If TWITT would like to have these two pieces, I guess I could finally part with them - just let me know.

Yours truly,

R.W. Long

(ed. - Thanks for the tape orders. They will be on their way to you in the next week or so. I am a little behind on production right now due to the demand for the MacCready presentation tape. This program has been very well received and I am pleased to make the tapes and get the word out to our members, but it just takes time I don't always have.

Sorry to hear that you are physically limited at the present time and it is slowing down your work on the A-10. It seems there are a number of Mitchell aircraft under construction right now, which I am sure would please Don.

As for the Kasper wing pieces, could you let me know how big they are since storage space at the TWITT/Fronius hanger is getting to be at a premium. Also, who would be responsible for the shipping charges? If they are not very big, it is probably beneficial for us to take them for historical preservation as a physical part of our library. Thanks for asking us about keeping them.)

May 22, 1998

TWITT:

Thank you for printing my letter and photo of the Baker Delta Kitten.

According to the NTSB file3-3002, the Kitten crashed on July 29, 1976 because "the elevator horn to the elevator attach rivets sheared", so the crash was not the result of pilot error. The Kitten had a total of about 240 flight hours and according to people who new Marion, the plane did not have any bad habits.

The plane is shown in Janes All The World's Aircraft for 1960-61 and 1962-63. It had ailerons and elevators, used the NACA 0012 airfoil and was powered by an 85hp Continental.

I have already purchased some old parts for the two passenger version called the Tiger and am looking hard for some plans for the Tiger. If you have any information, please pass it on to TWITT and myself.

Sincerely,

Bob Bigelow
9005 Talisman Drive
Sacramento, CA 95826
(916) 364-8309

(ed. - Thanks for the update on why the Kitten crashed. It is always good to have the straight word on what happened to cause a crash rather than relying on rumors or guesses.

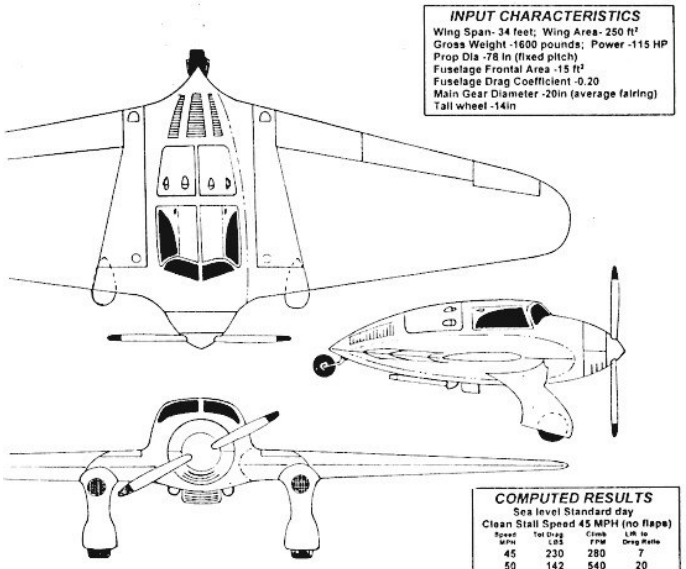
Hopefully, one of our members will have some information on the Tiger and pass it along.)

15P FLYING WING

Source: CONTACT!, Issue #44 (about May 1998), pages 6-9. This is an Experimental Aircraft and Powerplant Newsforum for Designers and Builders. This exerpted article originally appeared in the July 1944 issue of Skyways magazine entitled, "Ford Small Experimental Aircraft 1927-1936". A copy of this more recent article was contributed by Bruce Carmichael.

The first part of the total article was written by Tim O'Callaghan who worked for Ford for 40 years, including five years organizing the records and photographs of the Ford Airplane Division.

The Ford 15P Flying Wing or "Flivver Pane" as it was called in one public article, was appartently built about 1935-36 by the Ford Airplane Division. Originally conceived as a single place, it was finally constructed as a two-place, side-by-side flying wing, also called a "bat-wing".



COMPUTED RESULTS
Sea level Standard day
Clean Stall Speed 45 MPH (no flaps)

Speed MPH	Tot Drag Lbs	Climb FPM	Lift to Drag Ratio
45	230	280	7
50	142	540	20
60	124	670	24
70	126	740	25
80	140	740	24
90	160	680	22
100	170	560	19
110	221	360	17
120	260	50	14

The plane was designed by Henry Karcher, an MIT graduate and was constructed of metal tubing with the fuselage covered in aluminum and the wings with fabric (ed. - the article doesn't mention is the wings were also metal or made of wood). It was powered by 115 hp Ford flat-head V8 with a cast aluminum alloy block. It was mounted behind the pilots position with a 2:1 reduction gear and drive shaft transferring power forward to a 6 1/2' wooden propeller. Cooling was by a standard auto radiator that could also be retracted into the fuselage.

Like other Ford products of the past, the engine was chosen so that a pilot could stop anywhere in the US and be able to readily find parts for repairs and be on his way again. Crusing range was about 500 miles on 30 gallons of gas.

Pitch control in the original design was by shifting the pilot's weight fore and aft, even though the pictures seem to show a more sophisticated elevator and aileron system. Roll control was with standard ailerons and yaw control was accomplished with split rudders attached to the trailing edge adjacent to the wing tips.

Controlling the aircraft was difficult with this control surface arrangement and the strong torque of the large propeller. It made several short flights, but was involved in an accident that grounded the plane until about 1941. At that time, Henry Ford asked Emile Zoerlin to make a combination helicopter and standard airplane out of the basic aircract. After much experimentation, this idea was abandoned. It was Charles Lindbergh who finally convinced Henry Ford that the project was not feasible.

The second part of the article was written by Vance W. Jaqua, a member of EAA Chapter 40, with assistance by Jim Ewen, and ex-GM designer, who provided photo interpretation of the airplane. This second part was entitled, "An Analysis of Ford's Auto Powered 15P Flying Wing".

He said, "Seating the occupants at the center of gravity sounds quite admirable, but pitch control by shifting weight sounds like a recipe for disaster. Looking at the pictures would suggest that this was not the system employed in the final prototype. The general layout and description suggests to me that the CG, as configured, would have been enough back to be frightening. The apparent lack of any reflex in the airfoil would seem to predict that pitch stability would be nearly nonexistent.

The use of 'split flaps' in the outer section of the wing for yaw control, without even a moderating fixed vertical section would seem to be a dicey proposition. The short coupled masses with the mid engine would also contribute to sensivity in yaw. Even if there was a vertical (with or without a movable rudder section), I would still be reluctant to use a 'split flap' system near the tip. Ailerons with a large amount of differential (a lot more up travel than down travel) would combine favorable yaw input with the banking control."

(See the next page for a front and rear view of the prototype sitting in seclusion at the Dearborn works.)