

NO.38

AUGUST 1989

# TWITT NEWSLETTER



TWITT  
(The Wing Is The Thing)  
PO Box 20430  
El Cajon, CA 92021

The numbers to the right of your name indicate the last issue of your current subscription, e.g. 8907 means this is your last issue.

**NEXT TWITT MEETING:** Saturday, August 19, 1989 beginning at 1330 hours. The location is hangar A-4, Gillespie field, El Cajon, Calif., in the first row of hangars on Joe Crosson Drive.

MINUTES OF TWITT MEETING, 15 JULY 1989

by Phillip Burgers.

David Pio opened the meeting presenting the raffle prize: a beautiful aerial photograph of San Diego County taken by a russian satellite which was purchased with TWITT funds (the photograph wa purchased, not the satellite, but we would happily accept donations of any kind...) from Aero-Tech. Jack Green was the fortunate guy to win this prize, which he donated it to the TWITT for re-raffle...(as you can probably note, the person who is replacing our editor and trying to do a good job of writing this article does not have such an ample command of the english language as Marc had, and to aggaravate things, when he talks he has an awful accent which he feels gives him the right to invent some words, or misspell others, which he would blame it to his word processor anyway...WE MISS YOU, MARC...!!!). As the re-raffle was performed, Bob Fronius won the photograph and guess what..! he donated it back to TWITT to be dispalyed in the hangar behind glass. Thanks Jack for the donation and to Bob for the redonation....

Talking about donations, Tim Rosauer donated some little green apples, nice gesture, thanks Tim... TWITTERS made good use of them.

Doug Fronius began his talk and slide show by answering the question that sooner or later would come from the audience: Did you see the crash of the Mig 29 during the Paris Air Show?... No he didn't. He was working that day inside the pavilion but the day before he had the possibility of seeing the flight demonstration of the same Mig 29 which he said was impressive. Doug described the routine it made were he dives and levels at about 300 feet, trading his kinetic energy for lift coefficient which he steadily increases slowing his flight speed considerably and bringing the nose up...up...and up until he reaches 45 degrees nose high and flies at around 120 knots and the engines are at idle. Then he turns on the afterburner in both engines and he goes straight up. That was the planned maneuver for the day off the accident. Once he turned the afterburners, one engine went into afterburner and the other quit and at that time, he was well below single engine control speed. He had the experience in other flights were the elgine would cough for a split second and then the engine would pick up again but that was not the case in this flight, so possibly this unusual engine behaviour delayed his ejection from the airplane. Once the airplane was pointing at the ground and flying sideways, he ejected horizontally. The reports at the time of the accident were that he was killed but Doug found out during the evening TV news that he was at the hospital under observation. Two days later he was giving a news conference about his experience. I wonder how many lives do russian cats have ???

The September raffle prize will be a ride in Bill Speer's P-51. All income from the raffle will go to Bill to help pay his expenses. If the P-51 is not available Bill will use his AT-6. Tickets can only be purchased at the September 16th meeting and will not be sold in advance or by mail or phone.

After giving some insights of the location and size of the Paris Air Show and telling us that when landing in France he found that his luggage had arrived safely...in England, he began showing us very interesting slides of the latest aircraft at the show. The slides were cleverly mixed with some beautiful photos of Paris and its classic scenes like the Concord Plaza and the Opera.

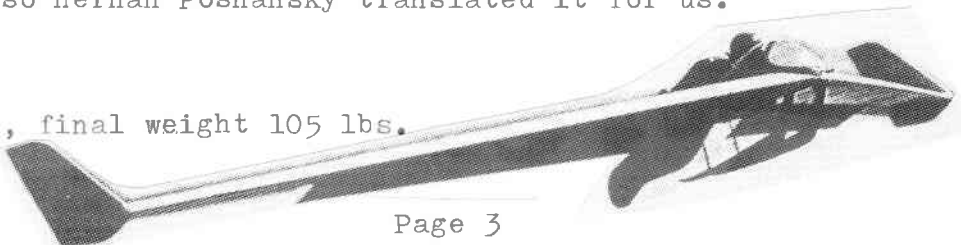
The Teledyne exhibit, a very impressive booth with the real proof of concept Model 350 (built in 58 days and with EAA like technology) hanging from the ceiling...!!!. In the RPV slide section photos of the Impact were shown (he didn't like that name for an airplane and definitely he has a point there!). The Northrop Tacit Rainbouw, a lethal antiradiation loiter RPV. The Boeing display showed the PaveTiger and the Brave RPV which is designed to be stored in its canister for a maximum of 10 years and after all this time, still be capable of being launched from its canister...!!!. An Italian company that made a piston engine that runs on diesel, kerosene or JP-4 and can replace the Lycoming engines. It comes in three sizes: four, six and eight cylinders. They are going for certification and it is already flying on a twin-engined Partenavia...They are shooting for the same weight as the Lycoming and ten percent more power.

After some more nice pictures of Paris and some observations from Doug about difficulties in trying to find north and south in the somewhat desorganized streets of Paris, we are back into the trainers. The Shorts Tucano turboprop, the Swiss Pilatus PC7 and PC9, the Chilean T-35 Pillan, mostly done by Piper parts (wings, aft fuselage, landing gears). Chile receives the parts, builds the forward fuselage and assembles the airplane and sells it as a trainer. The French Epsilon and the Belgian Squalus, economic jet trainer side by side. Italian Augusta S-211 (teamed with Grumman), the Argentinian aircraft industry teamed with Dornier which resulted in the IA-63 Pampa trainer. Spanish Casa 101 advanced trainer and light attack aircraft. The Alphajet from Dornier marks the end of the trainers section of the slide show. We switch back to beautiful pictures of the Notre Dame cathedral and outskirts. Coming back to the Paris Air Show, Doug tells us he saw the Lockheed SR-71 land in the rain and showing huge vortices coming off the wingtip. It is the first time the SR-71 was presented in a static display at the show and it is commented that they will be retired very soon. The Dornier Seastar, the largest wet layup fiberglass airplane with two PT6 turboprops and are going for type certification. Light aircraft were well represented...the European ones, not many American ones except the Porsche powered Mooney. The Aerospatiale Trinidad and the Tobago, the Swedish Windex with a German three cylinder radial engine that weighs approximately 25 pounds and located in the middle of the vertical empennage, facing forward.

Our cover aircraft picture was sent to TWITT by Dr. Karl Nickel of Germany. The article was in German so Hernan Posnansky translated it for us.

Span 12 M  
Area 119 ft. sq.  
A/R 14

Design empty weight 66 lbs, final weight 105 lbs.  
Sweep angle 20° each side  
Washout 6 degrees  
Speed range 19 to 94 mph  
Foot launched.



Now we are going to the Russian airplanes: the Su 27, ready for a flight demonstration which, by the way, performed the most spectacular flight show at the Paris Air Show: the Russians called it the Fougachev's Cobra and it is simply (simply...?) a low pass, similar to the one performed by the Mig 29 but this time the airplane is pitched ...are you ready for this ? .... pitched up about 120 degrees from the horizon while it is still flying horizontally, although decelerating quite rapidly. While the pitch attitude is being changed, there is no gain or loss of appreciable altitude and after the maneuver, the aircraft begins to accelerate from a minimum speed of 70 - 80 miles per hour. The Mig 19, like the type that crashed, Mil 28 helicopters equivalent to the Apache. (By the way, we found out that Doug is not fond of helicopters, and the editor frankly does not see anything wrong with shaking machines, except that they do fly). Every time one of the fighters would fly over the end of the runway, the parking lot was, after the sound of the jets would disappear, he could hear at least a dozen car alarms being activated by the vibration.

The huge An-225 with its Buran "Shuttleovich" on his back were obviously the vedettes of the show. The An-225 flew two different days with its fat companion Buran attached to it and the demonstration flight included sharp turns, thirty degrees steep take offs and low passes over the runway. At the end of the slides of the Airshow, Doug shared with us some fun times when he had the opportunity to go out to the Paris outskirts and fly with some of his French friends. THANKS, DOUG...!!! FOR SHARING YOUR GREAT EXPERIENCE WITH US and by the way... if you saw some of the spectators turn green while you were describing your French adventure...don't worry, it's just envy...not contagious.

#### Doug Reports--

On a weekday evening around 8:30 p.m. (it stays light til 10:00p.m.) I flew a Robin 211 light aircraft with Dominique Gatard and his wife Isabelle. The flight was from Chavenay airfield, about 30 km west of Paris.

On a Sunday I took the train to Chartres, about 75 km southwest of Paris, to fly gliders with Phillip Nonin. There we flew a Grob Twin III for an hour plus flight and then toured the French countryside in a Grob 109 motorglider. The club we were flying with had 2 tow-planes, 28 gliders, a motorglider, club house and hangar.

Many of the airfields in France are for gliders only, in fact some are winch tow only. Almost all flying is via clubs, private ownership is rare. Power flying, very rare in the past, is becoming more common.

The Schapel Wing molds are full span, the span of the wing being 34 ft. There is an upper and lower half. The approximate weight is more than one thousand lbs. The length is more than 13 feet. The molds are longer and wider than the finished wing.



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PRESIDENT'S MESSAGE

I must apologize for not being at the July meeting, it being the first for our newly elected officers, but the family vacation was already planned. I want to thank Dave Pio to stepping right in a running a good meeting, which is one of the benefits of having a little more formal structure.

On the subject of meetings, the August 19th gathering will be used for a panel discussion of a design concept submitted for evaluation by Syd Hall. The panel will be comprised of members present at the meeting and the results will be published in the September Newsletter. I hope we can have a good turnout, even though it is vacation time, so we can have a lively discussion.

As I mentioned in last month's message, the time has come to begin serious evaluation of various design concepts that are directed toward meeting TWITT's stated goals. It is my hope that sub-groups of TWITT members will form in those areas outside our immediate area and then send in a consolidated design effort. For those TWITTers on their own, please give us your best effort, too, so we have the widest range of design options to choose from in coming up with the final prototype concept. The Newsletter will be used to provide the entire membership with the outcome of each evaluation to allow for input by those unable to attend meetings.

We are also interested in obtaining the names, addresses and phone numbers of anyone who could or would be willing to speak at future meetings. Of course, the main subject matter should be flying wing related. Our speaker committeeman, Bob Fronius, has just about exhausted his vast list of contacts, so any help from the general membership would be greatly appreciated. If any members have a particular subject they would like to see treated at a meeting, please let us know, and if possible, please try to provide a speaker's name or sufficient written material to allow the members present to adequately address the subject.

The membership list has been growing quite rapidly thanks to exposure by Jim Gray in his "R/D Soaring Digest" Newsletter. We are now mailing 97 TWITT Newsletters, and a majority of the membership is now outside the southern California region. For all those new members, please keep us informed of your activities and any progress you may be making in flying wing development, whether it is model oriented or the full size version.

One last item for this month. We still have not received the final word on our non-profit incorporation. Hopefully, this will be resolved by next month. We will keep you informed of TWITT's legal status as it changes.

Thanks for your support,  
Andy

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Tom Harper renewed and donated  
\$5 to the TWITT library

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LETTERS

Dear Bob & June,

May 1, 89

Last Saturday I attended the Northrop Historical meeting at Los Alamos. Spent the day with Harold Buettner and also had lunch with Marc. Todd Hodges was staying with us and went to the meeting also. Portions of the meeting were quite good and all of it was interesting.

Find enclosed a program with check marks on two of the talks. (Design Features of the Flying Wing by Gerry Blazer & Flight Testing the Flying Wing by Charles Tucker) You might be interested in getting these guys down for a TWITT or EAA chapter meeting or both. I don't know their addresses but perhaps you can reach them through the enclosed AIAA address or perhaps through Northrop Aircraft. Charlie Tucker the old test pilot and racing pilot is sure an interesting speaker and the other guy had a lot of info on the flying wings with respect to design features.

I also enclose a pin for you very own. (A flying wing of course.) Sorry I couldn't get a bigger one. Harold mentioned that Barnaby Wainfan is helping him get some good airfoils for his flying wing design. Tony Lavier asked Tucker this question: In a conventional airplane the maneuver is called a tail spin. What is it called in a flying wing? Tucker came right back, A wing spin!

Will close for now.

Bruce (Carmichael)

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Dear Bob:

Apr 10, 89

After withdrawing from soaring some time ago, I found the virus was still there. A year ago I picked up an issue of "Hang Glider" and began to compare the rag wing, wire encumbered, strutted, poorly controlled, and disastereously placed pilots (do you call them that, or are they victims, waiting to happen?) and thought that it might be a good idea to produce a safe plane with the same major features - fold-up for car-top, garage storage. I took off a lot of dimensions and got a lot of literature for things that I'd never consider risking my legs in, and then got out the slide rule (calculator, it is called now, by TI).

The end of many doodles is enclosed, and the main thing is that it joints twice about 7' off CL, so that there are three pieces to the wing, with a fish-rod, slip joint, secured by Phillips head stainless steel screws, into nuts, embedded in the epoxy kevlar matrix of the joint, with access for bolting through the drag brake door.

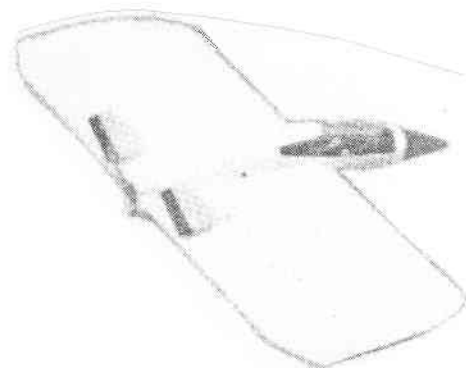
A near progenitor, and one that will be offered, is the use of an open (aluminum tube skid) version for the fresh-air freaks, but realizing what this bird can do, and with my old-age circulation I opted for an enclosed cockpit. For obvious reasons, mostly safety, I go for a wing - no spin and self land by a panicked novice pilot, who can just haul back on the stick and close his eyes. The bird will do it all, but may be bent by trees, etc. My intent is to offer as safe a bird as can be conceived.

I have recently recieved information on an exceptionally interesting but unfortunately short lived Australian Ultralight flying wing known as the Facet Opal. This little machine was designed by Scott Winton who also designed of the Sapphire Ultralight and he was the son of Col Winton who designed the Grasshopper. The machine is pictured in this issue. I have not been able to obtain enough information for a three view drawing at this time.

The Opal was a low aspect ratio flying plank that had a modern glass sailplane looking nose, Rotax engine rated at 40 HP driving a pusher prop located at the trailing edge of the wing, and retractable tricycle gear. The control system was apparently by elevons for pitch and roll, yaw control was provided by a pair of small rudders mounted to fins at the inboard ends of the elevons. My guess to the basic dimensions are a wing span of about 20' with a 6' chord. Construction was all composite materials using a sandwich type arrangement. This was said to have an "overload" factor of 7. I assume that this refers to the ultimate load factor.

With the beautifully clean layout and reportedly laminar flow wing the Opal offered outstanding performance. The estimated top speed was a 150 Kts which seems reasonable, The aircraft has claimed an FAI altitude record for aircraft less than 200 Kg gross wt. This record is 30,100' which apparently did not include wave soaring. It is quite an accomplishment to keep a two cycle engine running at 30,000' let alone having power to sustain flight. The Opal also set a Microlight record for time to climb to 3000 meters of 6 minutes and 47 seconds. These records are pending homologation at this time.

Unfortunately both Scott Winton and the prototype Opal were lost due to a structural failure or flutter at low altitude. A report from Mr. Alan Lewis indicates that previous damage could have been part of the cause. I hope that sufficient information can be recieved to allow publication of a three view and additional technical information on this very promising design or better yet that others in Australia can continue the development. Any additional information will be appreciated.



We are exchanging newsletters with Radio Control Soaring Digest (RCSG). Jim Gray, the Editor, has sent all the back issues for the TWITT library. TWITT will publish some of the pertinent articles as space allows.

I'd enjoy your (TWITT's) evaluation of the enclosed. Wish I could be there.

Sincerely,  
Syd Hall

P.S. Construction is conventional of wood for the prototype and of aluminum if it were to be repeated. In both cases, the control surfaces would be of foam, FRP covered (Epoxy-Kevlar) doubled to suit stress. I'm evaluating the use of epoxy-kevlar for the tips, too, since the radius of the leading edge is a bit sharp for plywood, though it will work for metal.

This should fit the Ultralight regulations, and I intend to make it fit, if I can, but the problem seems to be that of proving that it will not go very fast, and I'm sure that it will. Maybe a limit to the forward motion of the stick?

(Ed. note: Syd's drawings and concept will be the subject of a panel type discussion during the August 89 meeting. See President's message for further details.)



Waldo Waterman designed, built and flew a hane glider on this spot in San Diego on July 1, 1909. Waldo later designed a number of flying wings and flew them at early exhibitions--more later.



Dear Marc, Bob & TWITT folks

June 14 89

Thanks for keeping me on even though I am late to renew and owe you back dues. Lots going on right now.

In reference to Newsletter #34 and Don Mitchell's comments about the Schapel Wing, I agree. My wife Marybelle and I were a small part of that project for a couple of months and always understood it to be a proof of concept exercise. Rod Schapel does do some great work and we expect to see some very good things from him in the future. I frankly have more confidence in Rod than I do in his computer.

Newsletter #36 carried some reference to a Backstrom Plank type simple sailplane (bottom of page 8). As soon as I can I will dig out some sketches I did some years ago on that and send them along for your perusal.

We have been trying to sell our very nice Duster sailplane for a really low price, to liberate some money for our wing projects, but next to no response so far. Is there still some soaring activity out there other than "Megabucks Superglass Sailplanes?"

We are working on modified Mitchell Wings at present.

Best regards,  
Gil & Marybelle (Metcalf)



## ARTICLE 5. DIRECTORS

### SECTION 1. NUMBER

The corporation shall have four (4) Directors and collectively they shall be known as the Board of Directors. The number may be changed by amendment of this Bylaw, or by repeal of this Bylaw and adoption of a new Bylaw, as provided in these Bylaws.

### SECTION 2. POWERS

Subject to the provisions of the California Nonprofit Public Benefit Corporation Law and any limitations in the Articles of Incorporation and Bylaws relating to action required or permitted to be taken or approved by the members of this corporation, the activities and affairs of this corporation shall be conducted and all corporate powers shall be exercised by or under the direction of the Board of Directors.

### SECTION 3. DUTIES

It shall be the duty of the Directors to:

(a) Perform any and all duties imposed on them collectively or individually by law, by the Articles of Incorporation or this corporation, or by these Bylaws.

(b) Appoint and remove, employ and discharge, and, except as otherwise provided in these Bylaws, prescribe the duties and fix the compensation, if any of all officers, agents and employees of the corporation.

(c) Supervise all officers, agents and employees of the corporation to assure that their duties are performed properly.

(d) Meet at such times and places required by these Bylaws.

(e) Register their addresses with the Secretary of the corporation, and notices of meetings mailed or telegraphed to them at such addresses shall be valid notices thereof.

### SECTION 4. TERMS OF OFFICE

Each Director shall hold office until the next annual meeting for election of the Board of Directors as specified in these Bylaws, and until his/her successor is elected and qualifies.

### SECTION 5. COMPENSATION

Directors shall serve without compensation except that they shall be allowed and paid their actual and necessary expenses incurred in the performance of their regular duties, and expenses incurred in carrying out the business of the corporation.

## SECTION 8. TERMINATION OF MEMBERSHIP

(a) Grounds for Termination. The membership of a member shall terminate upon the occurrence of any of the following events:

(1) Upon his/her notice of such termination delivered to the President or Secretary of the corporation personally or by mail, such membership to terminate upon the date of delivery of the notice or date of deposit in the mail. All rights of membership also cease upon the member's death.

(2) Unless determined otherwise by the Board of Directors, persons will continue to be members until having taken action as prescribed under subparagraph (a)(1) of this section, however, failure to renew the annual dues on or before the due date will result in removal from the corporation's mailing list. This termination will be effective the month following that published on the members mailing label. A member may restore his/her membership by paying the amount delinquent and specifying the desire for any previous publications. If not specified in the request for renewal of a delinquent membership, the month of receipt by the Secretary will determine the new membership period.

(3) Any member terminated from the corporation shall receive a refund of membership fees already paid, upon submission of a written request. The refund shall be prorated to return only the unaccrued balance remaining for the period of the remaining membership.

## ARTICLE 4. MEETINGS OF MEMBERS

### SECTION 1. PLACE OF MEETINGS

Meetings of members shall be held at the principal office of the corporation or at such other place or places within or without the State of California as may be designated from time to time by resolution of the Board of Directors.

### SECTION 2. ANNUAL AND OTHER REGULAR MEETINGS

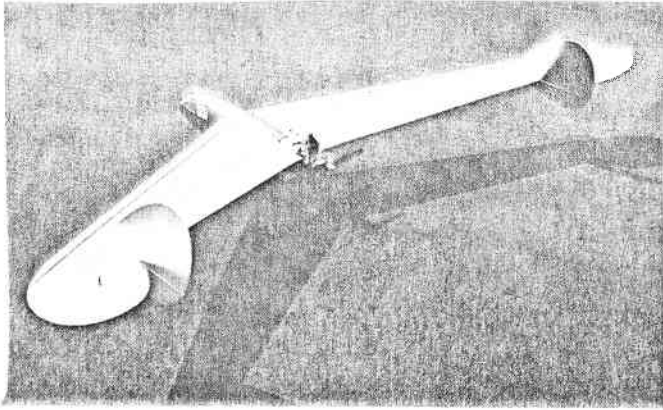
The members shall meet annually on the third Saturday of June each year, at 1:30 P.M., for the purpose of electing Directors and transacting other business as may come before the meeting. Cumulative voting for the election of Directors shall not be permitted. The candidates receiving the highest number of votes up to the number of Directors to be elected shall be elected. Each voting member shall cast one vote, with voting being by ballot only. The annual meeting of members for the purpose of electing Directors shall be deemed a regular meeting and any reference in these bylaws to regular meetings of members can also refer to this annual meeting.

Other regular meetings of the members shall be held on the third Saturday of each month at 1:30 P.M.

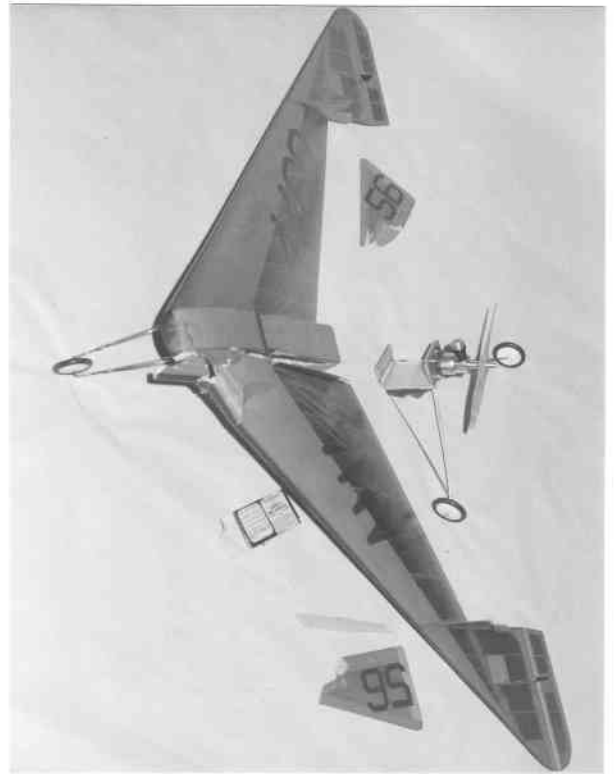
## TWITT TALENT

Klaus Savier won the CAFE 400 competition this year. Klaus's Varieze showed enormous improvement over last year. The combination of pilot, dedicated development and drag reduction garnered four awards. ( I quote a competitor).

Klaus is a TWITT and has been a guest speaker for us. Congratulations Klaus!



Tailless design by Bernard Gross from 1941 Airtrails, built and flown by Ute Tileston, SAM 51, Carmichael, California. Power is Enya 46 four-stroke.



This shot could be called: AFTER  
The carnage looks worse than it is. Am busy fixing it now. Radio has been sent back for repair. OOPS!

From TWITT number one to my fellow TWITTS:

We have been an active group for almost two years now. We send the newsletter to Switzerland, Germany and Australia. We are corresponding with Flying Wing believers in other foreign countries. We have in our group aircraft engineers, designers, airline pilots, others whose background in language help translate the letters in German, composite experts, model builders and willing workers.

We will soon be organized as an entity with officers and by-laws. We will continue to operate on a non-profit level.

We will conduct a raffle at each TWITT meeting and offer an attractive prize. Profits, if any, will be used to benefit TWITT.

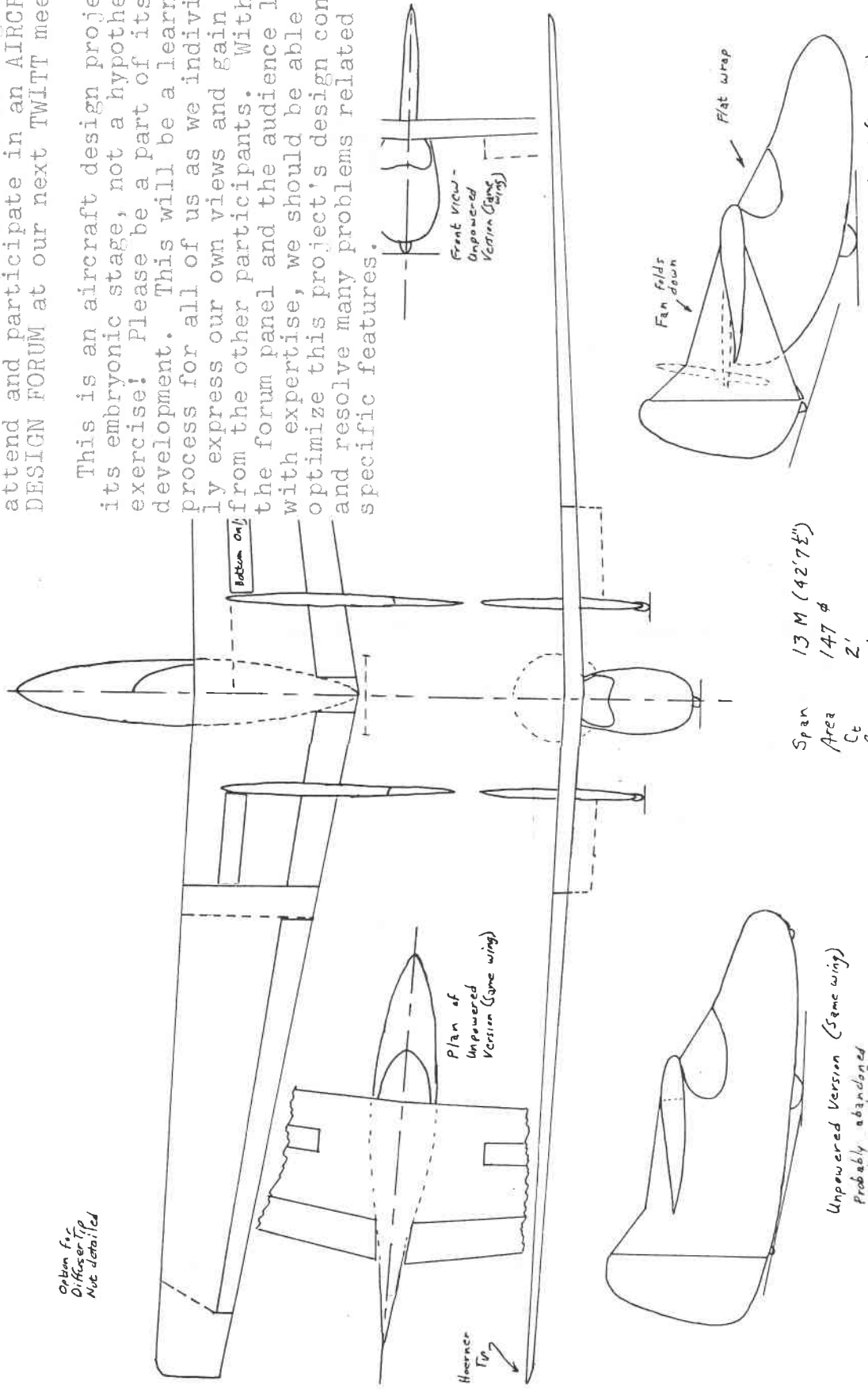
The position of Editor of the newsletter is important enough to make him a voting member of the board of directors.

I do not want to be an officer, but I will serve on the board of directors.

*Bob Frenius*

You are hereby invited and urged to attend and participate in an AIRCRAFT DESIGN FORUM at our next TWITT meeting.

This is an aircraft design project in its embryonic stage, not a hypothetical exercise! Please be a part of its development. This will be a learning process for all of us as we individually express our own views and gain input from the other participants. With both the forum panel and the audience loaded with expertise, we should be able to optimize this project's design concept and resolve many problems related to specific features.



Option for Diffuser Tip Not detailed

Plan of Unpowered Version (Same wing)

Hawner Tip

Front View - Unpowered Version (Same wing)

Bottom Only

Fan folds down

Flat wrap

Unpowered Version (Same wing)

Probably abandoned why be complex? Simplify - Delete - { Tow plane, Tow line, Tow release, Wing tip runner, Inter-com, etc.

Span 13 M (42'7")

Area 147 sq

Ct 2'

Cr 5'

Sink 24 PS @ 30 MPH

L/D 32 @ 55 MPH

Concept: To replace full-up ray covered hang glider as a car-usable piece 15'4" x 5' x 3' package - But don't drive to the top for foot launch. Save your legs for skiing. Power launch from the valley bottom, & power home, too.

1/6 HP - Self-Launch (Kawazaki)

Power package cost almost as little as tow rope. to say nothing of tow plane, cave and feeding of tow-pilot etc. Safety is throtle in left hand, instead of 300 ft away. A-1 now can power home.

The accompanying unfinished, preliminary, general arrangement layout/sketch and specifications depict the present concept and should only be considered a proposal. This design forum will develop the machine's form.