

TWITT

**TWITT**

(The Wing Is The Thing)

P.O. Box 20430

El Cajon, CA 92021

The number to the right of your name indicates the last issue of your current subscription, e.g. 9001 means this is your last issue.

Next TWITT meeting: Saturday, March 17, 1990,
beginning at 1330 hrs. The location is Hanger A-4,
Gillespie Field, El Cajon, CA, in the first row
of hangers on Joe Crosson Drive.

PRESIDENT'S CORNER

First of all this month, I would like to thank Dr. Don Hunsaker, President of The Hunsaker Foundation, for stopping by the meeting last month and giving us a few words about the Foundation's future support for TWITT.

Bob and I met with Dr. Hunsaker earlier in the month on worked out the details of our arrangement and signed the final agreement contract. The Foundation will do what it can to obtain some of the administrative support equipment we need, like a computer, audio tapes, better video equipment, etc., along with whatever financial aid can be solicited from various contributors.

In the above vane, I will make another pitch to you, the members, asking for whatever support you may be able to give with either equipment or funds. TWITT is not a profit making organization, so the funds currently in the bank account are only enough to cover expenses in mailing the monthly newsletter and supplying information packets or back issues on a cost basis.

What does this all mean to TWITT? It means that in order to move toward our eventual goal of building a full-scale aircraft we need some of the things mentioned above along with a substantial amount of working capital to cover construction costs and liability insurance (required by the Foundation once actual construction begins). We have been fortunate receiving some equipment donations which have allowed us to meet the needs of our speakers and show slides or video tapes, but so far only very limited amounts of construction material or tools are on hand.

Please keep all of this in mind as you decide to get rid of old equipment, etc., and let us know what may be available if pickup or delivery can be arranged. For those of you involved with manufacturing firms or the aerospace industry, please look into whether your company has any foundation or grant programs that would be interested in donating funds in return for the public domain information that would result from our project.

Another reminder of a financial nature is that of being aware of when your subscription becomes due for renewal. The four numbers behind your name represent the year and month your subscription ends. You will receive only two issues beyond that date if we do not receive your renewal. If your re-

newal is within the two month grace period we will add a year to your current date.

One last thing for this month. I would appreciate it if everyone could be at the hanger and ready for the meeting by the 1330 start time. In the past the meeting has started up to forty-five minutes late waiting for people to drift in. For the March meeting we will be **STARTING ON TIME** with the announcements, any short videos, and then bring on the main speaker. Please be prompt.

Andy

MARCH PROGRAM

Jack Lambie

Jack came to the attention of the soaring world when as a student he made the famous storm front flight in the open cockpit of a 1-19 across the Chicago skyscrapers. This was to be indicative of the continue serial of Jack's life where each episode puts him in dire peril and then through rapid analysis and skillfull action he once more extricates himself safely.

The early 50s found Jack at Elsinore, southern California where he built my 1-26 from a kit using the local school children as helpers. Jack taught himself first and then the kids, many of whom became A&E mechanics. After many adventures in the 1-26 including winning at Torrey Pines, he graduated to a BG-12 and took up serious contest flying. Always inventive, Jack had modified the 1-26 turtledeck for improved visibility and increased the vertical tail on the BG greatly improving the handling characteristics. Along the way, Jack flew the tailless Fauvel and today flies a huge span, glass, imported high performance sailplane.

He has been a State Juvenile officer, a teacher, a museum director, a prolific writer, aircraft builder, pilot, and inventor. In the 50s he encountered the shear line on a motorcycle. Went back up in the 1-26 and explored it further. Without formal training in meteorology he proceeded to write the first and internationally recognized paper on the subject. Jack has built and flown historic planes for the movies including Wright and Curtiss Flyers. Crash injuries in the Wright cause Jack to think for 10 minutes that perhaps he didn't want to fly any more but after taping his

(cont. on page 11)

MINUTES OF THE
FEBRUARY 1990 MEETING

The meeting was called to order at 1345 hours by President Andy Kecske, who took this opportunity to introduce Dr. Don Hunsaker, President of The Hunsaker Foundation, Inc. Dr. Hunsaker came forward and gave the group a short overview of the foundation and what he expected its roll to be for TWITT. Basically he felt the foundation could help in acquiring funds and donations of some equipment which would assist in carrying out our business. He is very enthusiastic about the flying wing concept and our particular project.

Andy then introduced Don Westergren, a Sr. Project Engineer with General Dynamics Space Systems Division, who brought his quarter scale Voyager radio control model. The group adjourned to outside the hanger where he had set up the model for viewing. He then gave us a complete rundown on how he went about gathering the necessary pictures and technical data required for the construction and documentation for scale model competitions.

Don went on to explain many of the oddities in the Voyager's construction layout to include: the different shapes of the two outer booms (one has a radar unit in the nose); the stagger of the wings due to the spars being overlapped versus butt jointed; the rudder being installed only on the right side; the satellite antennae on the right boom; the offcenter nose wheel; and, the small bubble canopy which allowed only a head from the nose up to see over the boom's upper surface.

Don described how he had rigged the scale landing gear to simulate the real thing. The Voyager had a mechanical gear system which required using cables to activate each gear separately, which meant no quick gear down emergency returns if anything should happen. For the model, he rigged micro-switches and servos to sequentially raise the gear one at a time, but still be able to simultaneously put them all down together if the need every arose.

When asked if it had been test flown, Don said yes and no. No, in that the entire plane has not been airborne. Yes, in that while performing high-speed taxi tests without the outer wing panels (everything outboard of the booms) the "aircraft" became airborne at about 45 mph and proceeded to do a loop in front of the chase vehicle. Al-

though it did some damage (about two months to repair) it did prove to Don that he had enough horse power to get the thing in the air, which had become a concern since the model was coming out heavier than expected.

Don, and his partner, do all of their own machining of parts and make all the male/female molds for the fiberglass layup work. The landing gear struts and actuating mechanisms are very well made, with air loaded shock absorbing. Making these types of parts takes a tremendous amount of time, and Don indicated they have been working on this model for over two years. If your into scale modeling you obviously need a great deal of patience and determination.

Since there were no further questions for Don, the group returned to the hanger for a presentation by Bob Peck of Peck Polymers. Bob showed a video of indoor radio controlled blimps that his company makes for advertising displays at expositions. The blimps come in several sizes, up to about 15', and can have a lighted sign on their sides just like the real things. They have a neutral buoyancy and are flown via a series of small electrically driven propellers on the gondola and rudder. The gondola units rotate to push the blimp forward, up, or down, while the rudder unit gives airflow over the surface for directional control.

Not only do the sizes vary, but the shapes can be made into anything appropriate for the occasion. One portion of the video showed a shark cruising around a basketball game (a new way to intimidate the opponent). The gondolas can also be designed to meet the occasion.

After the video, Bob asked the aerodynamicists in the hanger why they thought the "Stringless Wonder" flew as well as it did? The general answer seemed to revolve around the fact that all the surfaces are flat and the outer portions have a high degree of dihedral. However, this does not explain what affect, if any, the big square hole in the middle of all this flat surface has on its good performance. Unfortunately, the flying conditions around the hanger were not ideal, and no really good demonstration flights could be conducted.

Bob then gave a short briefing on the Genesis flying wing model that his firm is currently producing. With a 59" wing span it is designed for hand launching and is radio controlled using 2-3 micro servos and a 225 mah battery pack. Experimentation has also produced a means of launching it by

COVER:

ED LOCKHART, BRUCE CARMICHAEL
and HERNAN POSNANSKY

high-start. He says it flies very well, and he has had some lengthy flights just by hand launching it into thermal areas.

A products sheet and order blank can be obtained from: Peck-Polymers, P.O. Box 710399, Santee, CA 92072, (619) 448-1818, FAX (619) 448-1833. The Genesis is priced at \$34.95 plus postage and handling.

Andy then introduced Marcus and Stewart, who took the floor and began their presentation on the growing sport of Paragliding. As you can see from the accompanying diagrams, the Paraglider is a sophisticated version of a high performance parachute. They showed a video and slides which graphically demonstrated why this sport could very well give the hang gliders a run for their money.

The following was extracted from their promotional brochure: On June 27th 1978, Frenchman Jean-Claude Betemps launched a self-designed paraglider from a mountain near the village of Mieussy in France. Having based his design on the NASA developed Delta-shaped parachute, his flight signified the start of paragliding as a sport. The sport of para-skiing was soon to follow whereby ski enthusiasts would launch from ski slopes, fly with the greatest of ease, then land to continue skiing. Paragliders took on many shapes and sizes as the sport spread from France to the rest of the European countries. In 1985 the first international competition was held in Kossen, Austria. This competition was a major point in Paragliding, for the first time the world was shown high performance flying.

Using high performance gliders competitors demonstrated controlled launches and pinpoint landing accuracy. They also showed the ability to soar in the same way as hang gliders using thermals and ridge-lift and flights of several hours have been recorded.

PARAGLIDING: THE SPORT

Foot launched paragliders do not require a tow-line, tow-vehicle or winch. At its simplest the pilot inflates the paraglider and runs forward into the wind. As the glider attains flying speed it lifts the pilot clear of the ground. Once airborne, the experienced pilot may then attempt to remain aloft by utilizing the rising air from wind on the face of the hill and from thermals.

In Europe the sport has to date reached competition level, attracting pilots from all over the world to compete in an annual

world Paragliding championship. Still brand new in the US, the sport is rapidly growing and gaining immense popularity.

Clearly the foot launching pilot requires skills and techniques which differ from parasailing or skydiving. This means that attention must be paid to the following:

- Site Discipline
- The Country Code
- Mountain knowledge
- First aid
- Launch site selection
- Landing site selection
- Weather conditions
- Equipment selection
- Launch techniques
- Flying techniques
- Landing techniques
- Traffic convention

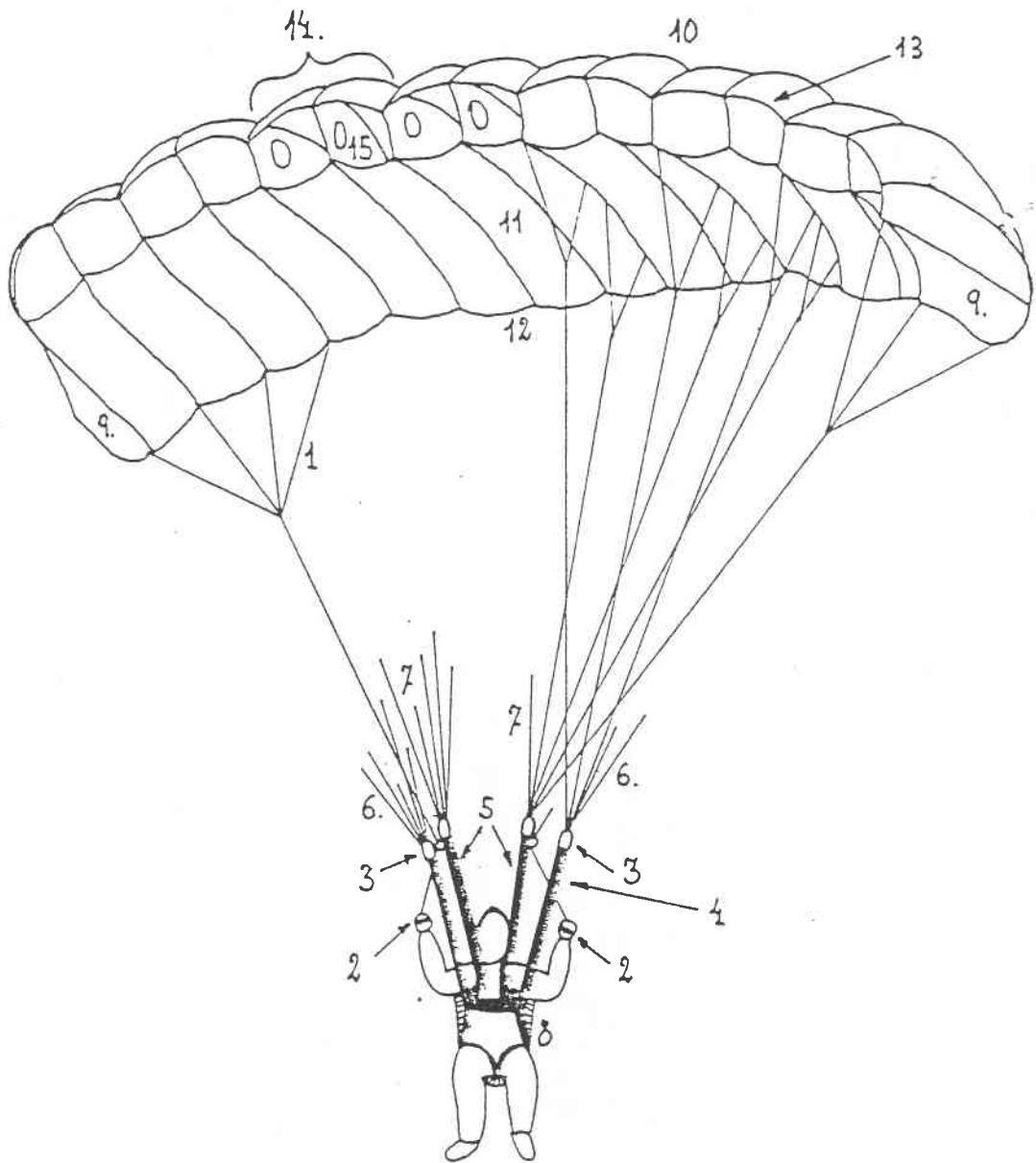
Marcus proceeded to give the group a demonstration of how the paraglider is inflated and some of the launch techniques necessary to keep from getting injured. Even though he was on flat ground the wind was enough to lift him off the ground several times, showing the good lifting power of these wings.

Marcus explained that if the paraglider is properly designed it will act like a parachute if it should happen to collapse during turbulence. Of course, this is predicated on the pilot having sufficient altitude (500-700') for the wing to re-inflate and begin flying again. The trailing edge is sealed so once air enters the leading edge the cells inflate. There are cross transfer holes in the cell sides to allow air to flow between cells to speed inflation as well as force air into the wingtip pockets. Control is achieved through movement of control lines to the wingtips and trailing edge. Marcus' demonstration showed that even in the limited area he had to work with he could keep relatively good control.

For those of you in the local area that are interested in more information and possible flight lessons, contact Airtek Parapente School, c/o Marcus Salvemini, P.O. Box 8552, La Jolla, CA 92038, (619) 454-0598, FAX (619) 551-9355.

The Genesis model from Peck-Polymers was won by Craig Roberts, and Stringless Wonders were won by Marcus Salvemini (Airtek Parapente School) and Dennis Erdman (a guest of Bruce Carmichael's). After the raffle the meeting was adjourned.

DESCRIPTION



- 1. Brakes
- 2. Toggles
- 3. Rapid link
- 4. Front risers
- 5. Rear risers
- 6. Front suspension lines
- 7. Rear suspension lines
- 8. Harness seat

- 9. Stabilizers
- 10. Upper camber
- 11. Under camber
- 12. Trailing edge
- 13. Leading edge
- 14. Cell
- 15. Cross-ports

LETTERS TO THE EDITOR

2/9/90

TWITT:

Sorry I haven't written you sooner, but I've been traveling. I obviously missed the February 5 deadline for the newsletter, but I am willing to write something on the Komet.

I have a lot of photos of the construction, (including the false starts and scrapped parts) and am willing to share these with all the TWITTS. I can have the photos shot into black and white halftones so they will reproduce better. (Let me know if you would rather have the originals.) I will also put together an article describing the evolution of the project. I have some three-view drawings that should copy.

Good Flying,
Kevin Renshaw

(*Ed. Note: Thank you Kevin for the offers, and we sure would like to see and hear about your project. For the newsletter we could use the halftones, but the originals would be good for display at the meetings and inclusion in the library. The three-views would also be quite welcome, since they will add appreciably to any published article by you. We are looking forward to more on the Komet.*)

Also from Kevin is the "winning" reply to what the mystery ship was on last month's cover. He says it only appeared in one year of Jane's All World Aircraft Directory, 1981-82, and he didn't know if the project was ever completed. There is an address in the write-up he enclosed, and perhaps Al Lewis could followup on this since its somewhat in his backyard?

John Buchanan
c/o Murraycraft Fiberglass
David Muir Street
Mackay, Queensland 4740

BUCHANAN RICOCHET

Mr. Buchanan is building the prototype of this sailplane, which he describes as "just a pod big enough to fit the pilot, with a wing attached." The wing, constructed of carbonfibre and glassfibre, is of swept configuration, with a 15 metre span (49' 2

1/2"), narrow chord and very high aspect ratio. It is mid-mounted on the small, streamline fuselage pod, at the rear of which is a small sweptback fin; there are no horizontal tail surfaces. A flush-fitting one-piece cockpit transparency encloses the pilot. Fuselage length is 3.70 m (12' 1 3/4").

Mr. Buchanan, who is a graduate aeronautical engineer from the Cranfield Institute of Technology in England and a former RAAF pilot, is building the Ricochet under a \$A10,000 grant from the Australian government. (*Ed Note: The following letter was received last year and somehow got buried in the shuffle of paperwork. We apologize to Chuck for the delay, and publish it not due to the interesting comments.*)

May 8, '89

Dear Mr. Fronius:

Thanks for sending me issue #33. Please start my subscription with issue #34.

I don't think there's much I can do for TWITT. I'm not an engineer, just an A&P mechanic who wants to build a foot launched rigid wing. Don Mitchell showed me a copy of TWITT and I thought it might be useful. It has - the comments on the 8-H-12 were interesting in that I didn't know I'd have adverse hinge moments on the elevons. (*Ed. Note: The NACA 8-H-12 is a zero-pitching-moment, laminar-flow airfoil used as rotor blades on several gyros. It has all its reflex right near the extreme trailing edge, causing the elevons to have unpredictable and difficult to handle hinge moments, producing unacceptable stick force reversals with angle of attack.*)

Oddly enough, you'd be surprised how much my ship resembles the drawing on the cover of #33. (*An artist's conception of the SB-13.*) My winglets are a little different and the pod is larger in relation to the illustration, but the similarity is there. Don Mitchell gave me the impression I'm on the right track and it was a pleasure to be able to visit him and his wife in Mariposa.

Thanks,
Chuck McGill

Don Mitchell

Dear Bob, June & TWITT:

I trust all of you got through to the new year in good order. TWITT is super - keep up the good work. Everything here is just fine. I am trying to sell my property so I can move to Tehachepi. Enclosed are a few picture for the TWITT library. They are:

#1 "Victory Wing" during construction. I have flown it with KFM direct drive - KFM reduction drive and Zenoa reduction drive - I like the KFM reduction because of the electric start. I have drawings for it but do not know if I want to sell them at this time.

#2 Flight shots of a U-2 I built 9 years ago with 3 wheel retractable gear. It is still flying.

#3 Shot of a 16' radio control flying wing I designed and built a few months ago. It has twist the way Irv Culver told me how to do it. 32 sq.ft., 57 lbs gross, 15 lbs empty - used carbon and wood in structure.

The flights are something you have to see to believe. I have a video tape of four flights and will get a copy for the TWITT library. Stability and control are outstanding, and is better than any model we have ever seen. Maneuvers are tight and fast - stalls, wing overs, tight spirals, loops, and vertical banks are all done without any strange or unusual characteristics. We clocked it at 85 mph with a little over 3/4 throttle. We are installing a Camcorder in it and will get more flight tapes. I am thinking of converting a modified B-10 into a radio control drone.

Don

(Ed. Note: Don has also contributed the following information on the B-10 in reply to Richard Briar's letter in TWITT #40 (Oct '89))

We sent out 54 pages of instructions plus 16 pages of pictures, 6 pictures to a page, on how to assemble the kit. One problem with kits is that Owner #1 buys it, starts to assemble it, then sells it to Owner #2 but fails to include all the parts, instructions, drawings, etc. What's even worse is #2 never finds out if #1 did any of the work correctly.

My advice to Richard is if he doesn't know how to bend a piece of plywood he better not start redesigning someone's airplane.

I will be more than glad to help him anyway I can except I will not help him to redesign the ship.

The B-10 is an outstanding flying wing, hang glider and ultra-light. It has won more awards, contests, get togethers, and set more records than any other, and even today, 15 years after its first flight, it is still a leader in the field. (Obvious pride in design and ownership.)

Tasso Proppe's reply was very good except in a few areas. The spar did not need to be beefed up. It was done unbeknownst to me and even then it was done in the wrong place and simply added weight and cost with no overall increase in strength.

The mixer never seemed to be a problem to anyone that we knew of.

The modification of the U-2 airfoil was nothing strange. The airfoil was reflexed at the T.E. Adding weights here and there in an airplane is nothing new or strange. I know of an FAA certified helicopter that moves the battery fore and aft to get balance.

The scaffolding hardware that he refers to are aluminum extrusions that are used on thousands of hang gliders and ultra-lights. The bolts, nuts, etc., were satisfactory for the job and in most cases were A.N. material even though hardware store parts would be more than strong enough.

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Craig Dean
286 Wolverleigh Blvd.
Toronto, Ontario
Canada M4C 1S4

Dear TWITT:

I am a builder of many kinds of aircraft, mostly soaring craft but also a few power planes. Of late I have built a few flying wings, RCM's little plank design from years ago, a slope master, and am beginning the Schwemmer "Genisis" kit from Peck Polymers 4 (one of the February meeting speakers). As a result of your ad in RC Soaring Digest, I'm interested in your newsletter. I have included \$3 U.S. for the full information package. The extra dollar is for Canadian mailing costs. I would also like to know what a Canadian subscription for one year would be.

Thank you,
Craig Dean

(Ed Note: The cost of foreign subscriptions is \$19 U.S. dollars to cover the extra postage fees.)

Dec 2, '89

TWITT

I am enclosing my subscription renew.
Sorry it was late. Wasn't paying attention
(to the date behind your address label
name). Have recently flown delta RC wing
about 5 sqft, 44" span, 30" long, off slopes
around here (Buffalo, NY). They are fast
and goosey.

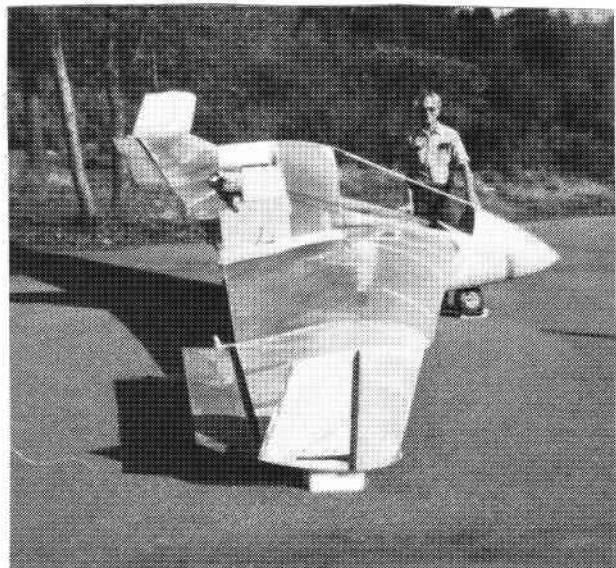
Fred Maier

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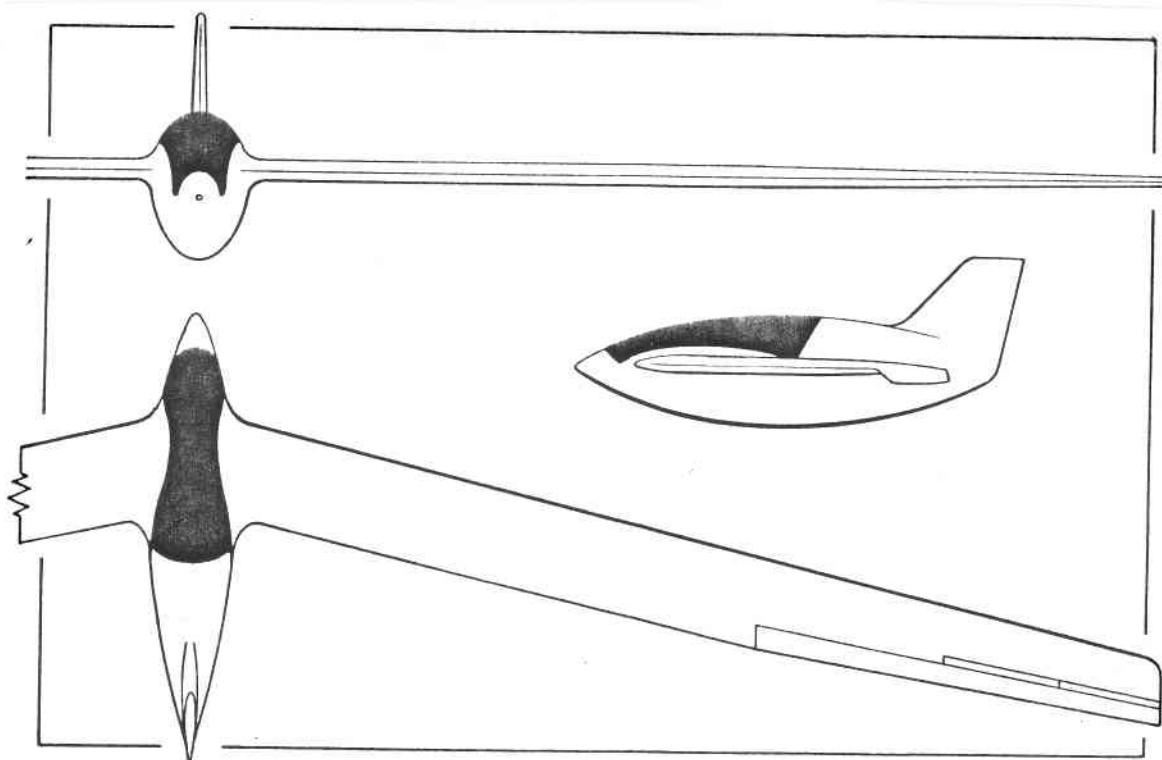
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1



3



Buchanan Ricochet single-seat homebuilt sailplane (Michael A. Badrocke)

Feb 6, '90

TWITT

I have enclosed my 90s membership.

My little AV-60 (Fauvell) is in the hanger rafters, untouched. George Iacnuemin (sp.) has not so far produced new drawings. The Wortmann airfoil is questionable, but I still remember Charles Fauvell telling me that Wortmann supplied this airfoil especially for the AV machines.

I also remember Fauvell saying that load the CG forward and the machine falls forward before the wing can drop and spin, so his wings had no twist or different airfoils. I have no reports of AV machines spinning; undershooting sure; spinning or wing drop no. Now hang gliders have a good deal of wing twist, however, the CG is not forward at all; possibly rather aft and they use reflex. Add a tail and two people to a hang glider; stalls faster, but still very good. The Wortmann airfoil is poor in performance, so not worth completing the aircraft.

Now the Stits Playboy, two seater has NACA 23012 airfoil. Poor stall and doesn't lift much. Flies okay and Cessna 150-172s use it. I built the Playboy and love it, despite the advice. Professor Horten told me to try maximum twist (which is one of his theories). Four knots increase with safe flying at 40 with that improvement. Theory or not, you use it. The AV-60 is only the HP1 with front prop and rudder. Boy what a mess.

I hope this is of some value.

Yours sincerely,
Al Lewis

(Also from Al Lewis is the following information from Down Under.)

Feb 18, '90

Dear TWITT:

Thank you for including the excess money to my 1991 membership. Glad to hear that Reg Todhunter is a member. I have known him for many years. He is one of our most unsuccessful Flying Wing builders in existence.

Reg built Little Splinter for Fred Horniville and from this design he developed a two seater Flying Wing; both flew but he had no luck. Fred Horniville was killed and the Australian Habit of using Known Pilots

who knew nothing about the machine and made no attempt to find out before testing was used in full.

Little Splinter, a Backstrom Plank, could go fast and almost beat the tug to the ground. It still exists but I have heard of no genuine flight testing. The two seater flew apparently okay with the above test again (even the Hutter 17 could beat the tug down if its pilot tried). With two up on final, a fitting on the cables bent and the pilots lost all control. The machine inverted and landed upside down so all the people saw that a Flying Wing could be? The fitting should have been 4130 but was mild steel. Naturally Flying Wings became very unpopular in Australia.

Two Fauvell AV-36s have flown in Australia but both are gone; one to dry rot and one failed to make the Drome. A Marske flies here and a B10 although a U2 lost its outer spar (the spar was condemned and passed from one U2 to another and wrote the machine off).

Reg built the Blue Wren, a motor glider. Design okay but Reg and his mates knew little about 2 stroke motors. Reg took the Blue Wren to the USA and at an altitude of 4500' the motor beat everyone and really ruined the Blue Wren. Scott Winton built a similar fiberglass machine which is sold in quantity here and a special aerobatic version is made and sold in the USA. To really upset poor Reg, Scott Winton went to 30,000' with a 2 stroke.

I myself went to the EAA Convention with Col. Winton and a 2 stroke Grasshopper. A Flying Wing from South Australia came with us. The Flying Wing called the Hornet was good and really was the most advance Flying Wing available even today. With a large government subsidy it had the EAA competition except for two things.

The Grasshopper was built, flown, and sold. We all flew it. The Hornet was confined to one pilot (I never got a flight in it). We knew what the Grasshopper could handle, cost us some Grasshopper damage sure, but we knew what it could do. A heavy wind at Oshkosh grounded many so we flew the Grasshopper in it and won an EAA Trophy. The Hornet had no hope of competing simply because there were no flight experienced crew. Grasshoppers were built and sold. Hornets used government money on one machine and today nothing remains.

Reg Todhunter will have spent plenty of time and money on Blue Wren and anyone who wants to build a motor glider could do so

from these drawings. I could assure them that Blue Wren is a good machine within its design parameters. It is not a Flying Wing. Personnally the RF4 Sperber is a better machine but more complex. The Hornet was not a home built type of machine. The crew's knowledge of 2 strokes was not good enough and this alone ruined a good Wing. Flight wise I believe it was good.

I have written a good deal here and I would have much information on the above. I leave it to TWITT to sort it out and ask for what you want.

Last EAA I saw a salesman state that no Flying Wing has flown for 1+ years. I asked who had seen the Hornet and several had. Come on TWITT, just use what we have, well had, even the cover is a model of several flying wing models and I have many photos of this research. That was 12 years ago at least and who did it?

I think I have said enough for now.

Cheerio

Alan Lewis EAA 1634

(Also from Al is the following.)

Building an AV-60 Motor Glider
by Alan Lewis

Charles Fauvell designed a motor glider very complex and only one was built in Texas; a very unusual machine; stall proof. I visited California and saw a movie of the machine in flight. With a 40 hp VW and many faults, no real world beater.

I obtained the drawings and Charles Fauvells help. The machine had a two spar wing similar to the Jodel but far more complex. Charles designed a monospar wing with a combined leading edge. I crashed a VP-2 and was able to build the spar and leading edge while convalesing. Covered the wing with 1mm ply fiberglassed inside, which went together very well. Fauvell had his F2 airfoil but used a laminar Wortmann airfoil which Wortmann designed for him. Charles Fauvell died and his son tried to remove all his father's designs.

I visted the USA and purchased AV-222 drawings and sold them to Alaska. I suggested the Wortmann airfoil. It failed in a Model F2. Scott Winton built a similar machine and got world records, but warned me that the airfoils were useless.

The American designer offered to redraw the AV-60, but so far nothing.

(*Ed. Note: The following information was extracted from Serge Krauss' Tailless Aircraft Bibliography as an example of the type of material available. It can be ordered from Serge Krauss, 3114 Edgehill Rd., Cleveland Hts, OH 44118, Cost \$20)*

PREFACE: The allure of the tailless aircraft persists even today, much as it has throughout the history of manned flight. Despite having narrowly missed its own "golden age" through wartime design expediency, the tailless aircraft survives not only in the minds of its adherents, but in the sky as well. This work reflects a fondness for an aircraft type whose merit exceeds the bounds of mere utility, and since you have read even this far, you probably share this affection for tailless aircraft. This bibliography lists research and design efforts involved in the development of tailless and related aircraft. Its material also chronicles the lives and adventures of the special people - ranging from naively enthusiastic amateurs to some of the most able and resourceful aeronautical researchers ever - who carried the tailless idea forward against heavy resistance.

REFERENCE MATERIAL

Northrup, J.K.; "The Flying Wing," Western Flying, 3/30, pp. 46-49 (twin boomed predecessor to tailless)

MIT Rept No. 590; "Report of Wind Tunnel Tests on the Kaiser Company, Inc., Flying Wing;" Markham, J., Bicknell, J.; and Ober, S.; 5/43 (MIT Aero.Lab wind tunnel; 71 pp., illus., app.6/43; NASA accession No. 86H20035; also cited: Markham, 1/11/44-app., 5 pp., illus.)

Thomas, H.A.; "Tailless Trainer;" Air Trails Pictorial, 2/45, pp. 42-43,102 (FF Rubber Model intended to teach features of 'flying wings for the future'; aerod.twist; principles disc.; 1 ph, 3 drwgs, full-p.plans)

Another addition to the TWITT library came from William Frederick Heijn of San Francisco, CA. William indicated wrote the author at the time of publication, but got no reply.

Reba, Imants, "Applications of the Coanda Effect," Scientific American; June 1966, Vol 214, No. 6, pp. 84-92. (When a liquid or gas flows along a solid surface, it tends to stick to the surface. This effect, named for a Romanian aircraft pioneer, has potential uses in such devices as burners and hovering vehicles.)

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HORTEN NEWSLETTER

We have just received the initial copy of Henry Cherry's *Horten Newsletter*. In his introductory paragraph he says: "Hello Folks! Welcome to the first Horten flying wing newsletter. My name is Henry Cherry and I plan to publish this newsletter four times a year if enough information can be made available. The intent of the newsletter will be to unite builders and to serve as an information exchange for th H1c sailplane."

The newsletter can be ordered for a cost of \$5 per year for U.S. or \$7.50 for foreign subscriptions from:

Henry H. Cherry
2453 Liberty Church Road
Temple, GA 30179

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AVAILABLE PLANS

Horten H1c construction drawings with full size airfoil layout. 30 sheets 24" x 36" with specification manual. Price: \$115. Inquiries to:

Flight Engineering and Developments
2453 Liberty Church Road
Temple, GA 30179
(404) 562-3512

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WANTED

MITCHELL WING or other powered glider or truely soarable ultra-light, perferable with trailer.

Have cash or will trade for high performance (L/D 34:1) sailplane with enclosed trailer, oxygen, and instruments

Call Chuck at (619) 447-2519 (San Diego)

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The following Synopsis of the Seventh Nurflugel-Symposium der Oskar-Ursinus-Vereinigung (7th Symposium of Flying Wings), October 7 & 8, 1989, was translated by Tasso Proppe from an article in Der Adler, October 1989. This will supplement the information provided by Peter F. Selinger on pages 3-5 of the January '90 TWITT Newsletter.

Attended by 100 plus people from 7 countries.

Eight papers were presented.

Some emphasis on model type research. Of concern were: adverse yaw; yawa/roll coupling; and pitch stability. The rules of the game:

- Wing wash-out begins at the wing root already.
- Constant airfoil across the wingspan.
- Relatively low aspect ratio.
- Only little sweep-back.
- Large stability factor.

These will cause the airflow (boundary layer) to separate at the wing center first. The winglets are correcting the lift distribution in a way to increase efficiency (performance) but also to contribute to better flight characteristics (controllability). The sensitivity to gusts still requires improvements, compared with conventional empennage design.

Prof. Nickel discussed aspects regarding other effects of tailless concepts.

- Wing flutter problems are no different than with conventionals. A function of structure stiffness.
- Rudder reversal (I think that means elevator) occurs only on none-swept planks under very specific conditions.
- There seems to be a danger of getting stuck in the down and prop wash behind a tow plane. This could be overcome by pilot and tow pilot training.
- The "bell shaped" lift distribution was considered to secure good flight characteristics - at a time when computations were difficult and cumbersome. Today (computer age) it can be defined more precisely.

A restoration project of a Horten IV is underway at the Deutsche Museum in Munich. The center-section and cockpit with landing gear and control unit are missing, but an effort is being made to reconstruct the details from existing sketches and fragments

of drawings.

Airborne measurements are being taken from flex wings (hang gliders) by attaching 30 pressure sensors on upper and lower surfaces with photo recording methods.

Flair 30 actual flight tests (reported by Bruce Carmichael at the Feb '90 meeting) resulted in considerable improvements to handling characteristics, but also to performance (L/D some 25).

An extensive report was given about the Braunschweig SB 13. After 1 1/2 years of step-by-step modifications and careful flight tests, it is now a flyable performer (flown by 4 pilots, so far). The Alpha sensitivity (I don't know what that is) still presents a problem to be investigated more.

The symposium concluded with a presentation by Hans Zacher with a summary of the Nur-flugel development. In humorous and serious, warning and worrying, explaining and remembering sentences, he quoted people and history.

(I asked Zacher to mail me a copy of the manuscript. If we do not run into copyright problems, I will translate it - from knowing him, I expect it to be similar in tone to my "Pitfalls of Bright Ideas."

THE PASSING OF A FELLOW PILOT/DESIGNER

We were sad to learn that Walt Mooney passed away on Thursday, March 1, 1990, while working in his office at General Dynamics in San Diego, California. As of publication time we had not been able to obtain a biographical history of Walt's many accomplishments, so Bob Fronius has provided the following information:

Walt was a nationally known model builder and designer with many excellent aircraft to his credit. Many will remember his Peanut Scale efforts over the years.

He competed in numerous Schweizer 1-26 National Soaring Contests. Walt was a member of the Associated Glider Clubs of Southern California and held many offices within the club as well as provided many novice pilots with their initial training flight. He was an FAA designated glider flight examiner. Along with owning a 1-26 he also had a Piper Vagabond he maintained through the years.

Walt authored many articles for a variety of aviation magazines which reflected his diversity of interests within the aviation community. He had been a member of local EAA Chapter 14 and of the Orbiters, a local modelling club. He was a past member of the Sailplane Homebuilders Association and an ultra-lite pilot.

Walt built the one of a kind aircraft, Honey Bee, a small, single-place, V-tail monoplane, powered by a 65 hp engine. After flying it back to Oshkosh he donated it to the EAA museum.

Walt test flew many different aircraft including the Pasmany PL-4, and the Volksplane. He was part of the Rohr Aircraft project team which developed a delta-winged, ducted-fan, composite aircraft which never went beyond the development and test flight phases.

His passing is a great loss to all within the aviation community, especially San Diego, and he will be missed by one and all.

There will be a memorial service 3/10/90 at 5:30 pm at the Aerospace Museum.

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face back together with masking tape decided to continue. He spun a Pratt Read above the Sierra Nevada for a movie in an aft c.g. condition. When it refused to recover, Jack calmly unstrapped, crawled up under the instrument panel to get the c.g. forward, reached behind him for the stick and made a standard spin recovery. His adventures in delivering motorgliders to Paraguay and to Edmonton Alberta are each worthy of a book.

Jack has experimented with streamlining, starting with a van in which he compared his power off running distance out of the Cajon Pass with and without modifications. Paul McCready had Jack help him with his studies of truck streamlining. Together with Chet Kyle of Long Beach Univ. he instigated streamlining bicycle races which have led to speeds of over 60 mph. He also created and manufactured streamlined helmets for bike racers. Even watercraft have not escaped his attention. He has written books on ultra light flight, model aircraft, composite aircraft, and motorcycle streamlining.

Many of us consider Jack the last renascence man and the first since DaVinci able to do a credible job of anything he puts his mind to. One keeps wondering what he will do next. He has added wonder, interest, and joy to all our lives.

(Intro provided by Bruce Carmichael)