No. 59 MAY 1991

T.W.I.T.T. NEWSLETTER

THE FLYING 'SURFBOARD'
Amphibious glider design suggested by Paul A. Cheney. Pilot in prone position; lateral control by spoilers at tips which are perforated to reduce stick loads. Span - 19'

The Bee Aviation Assoc.'s Wee Bee, prone position aircraft. Considered the world's smallest aircraft.

T.W.I.T.T.
(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., 9105 means this is your last issue unless renewed.

Next TWITT meeting: Saturday, MAY 18, 1991 beginning at 1330 hrs at hanger A-4, Gillespie Field, El Cajon, Calif. (First hanger row on Joe Crosson Drive - East 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 types of tailless aircraft by providing a forum for the exchange of ideas and experiences on an international basis. T.W.I.T.T. is an affiliate of The Hunsaker Foundation which is dedicated to furthering education and research in a variety of disciplines.

T.W.I.T.T. Officers:

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Vice Pres.,	Dave Pio	(619) 789-165Ø
Secretary,	Phillip Burgers	(619) 563-5465
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Editor (Acting), Andy Kecskes

The T.W.I.T.T. office is located at Hanger A-4, Gillespie Field, El Cajon, California.

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Wt/#Issues	FRG	AUSTRALIA	AFRICA
1oz/1	1.ØØ	1.ØØ	1.ØØ
12oz/12	5.ØØ	6.75	5.ØØ
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36oz/36	14.ØØ	19.5Ø	14.ØØ
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Meetings are held on the third Saturday of each month, at 1:3Ø 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).

PRESIDENT'S CORNER

Well, another month has come and gone, and I am behind on getting everything together for this month. I have been busy trying to obtain some much needed equipment for use during the meetings, but all the commercial dealers are so depressed from the recession that they don't have any televisions or VCRs to spare. I tried DOW, Silo, Cousins, and ANA Appliances here in San Diego, all to no avail.

Don Hunsaker donated a 25" television some time ago, however, it has not been operable. All we can get is single bright line horizontally across the middle of the screen. If any of you locals happen to be into TV repair, and have any idea of what the problem is or how to fix it, please let us know. That would solve Bob's problem of bringing his TV from home each meeting.

If anyone has a VCR they would like to donate, since they are getting a new one at all these "sales" that have been going on, we would sure appreciate it.

It now looks like we might have a team of three to four people to assist Dr. Karl Nickel in translating his book, Schwanzlose Flugzeuge, into English. Marc de Piolenc has agreed to pull the team together here in San Diego using the galley proofs and one hard bound book we received last year from Dr. Nickel. Dr. Nickel has also forwarded a second bound copy, which should arrive sometime soon. We hope this collaborative effort will speed this work into an English publication that will be of interest to all our TWITT members and many more aeronautical types here in the U.S.

Hopefully, you are all planning ahead for the June meeting, which is always our anniversary party. This year we will be having Philip Burgers provide commentary to supplement his article covering a recent visit with Dr. Horten in Argentina. There will also be the usual cake and ice cream, a model building contest, and just lots of good old fun.

For you Southern Californians, don't forget the SHA/Vintage meet at Hemet/Ryan airport over Memorial Day weekend. This is usually an interesting gathering of the old and new, with various kinds of local area contest events being held so spectators can see the action. Plan on coming out for one of the three days.

We would like to thank Howie Burr, a long time member of the SHA and Vintage groups, for offering to donate his cab-over motorhome to TWITT. Unfortunately, we are not in a position to take advantage of this gift, since it would

create an unwanted cash drain on our limited treasury for the amount of time it could actually be effectively used.

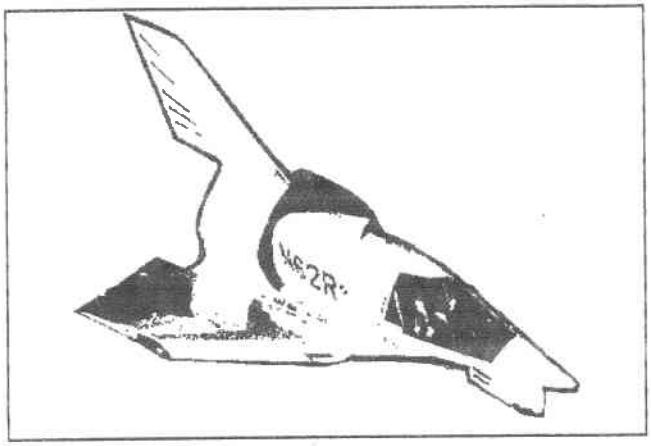
As you will see from the letter column, we have received a number of new members as the result of an article in the Sailplane Homebuilders newsletter. This points out the need for TWITT to get the word out more, so we will be looking into swapping advertisements with other similar publications, or placing some ads in those we know will reach people who would appreciate the services and information available from TWITT.

I guess that's about it for this month. It looks like we are finally moving along on some of the projects the Board decided on for this year. We now have the computer in place so should be able to start cataloging the library, which will be published just as soon as its finished.

Andy

APRIL PROGRAM

The program for this month will be presented by Bill Chana, a design engineer and contributor to TWITT over the past years. Bill worked for Convair throughout WW II and into the early seventies in a variety of roles. He has been involved with such programs as, the XB-24, XC-99, XF-92 (first delta wing aircraft), POGO XFY-1 (vertical takeoff), and the Turboliner. He joined Rohr Industries in 1973 as Deputy Program Manager on an advanced state of the art proprietary Research and Development general aviation program.



It was during this time that Rohr began development of the Two-175, a low wing delta of stressed skin, fiber-reinforced plastic (FRP) construction, propelled by a buried pusher engine driving a shrouded propeller.

Bill went on to become President of Bee Aviation Associates, which was responsible for design, construction and testing of the Wee Bee (accredited as the world's smallest airplane). These were followed by the Honey Bee and Queen Bee, which are now on display in the San Diego Aerospace Museum.

Bill's presentation this month will cover both the Two-175 and the Wee Bee. The Two-175 was essentially a delta shaped flying wing with a vertical stablizer on top of the shroud. The Wee Bee was a unique aircraft for its day and it should be very interesting to hear how it all came into being.

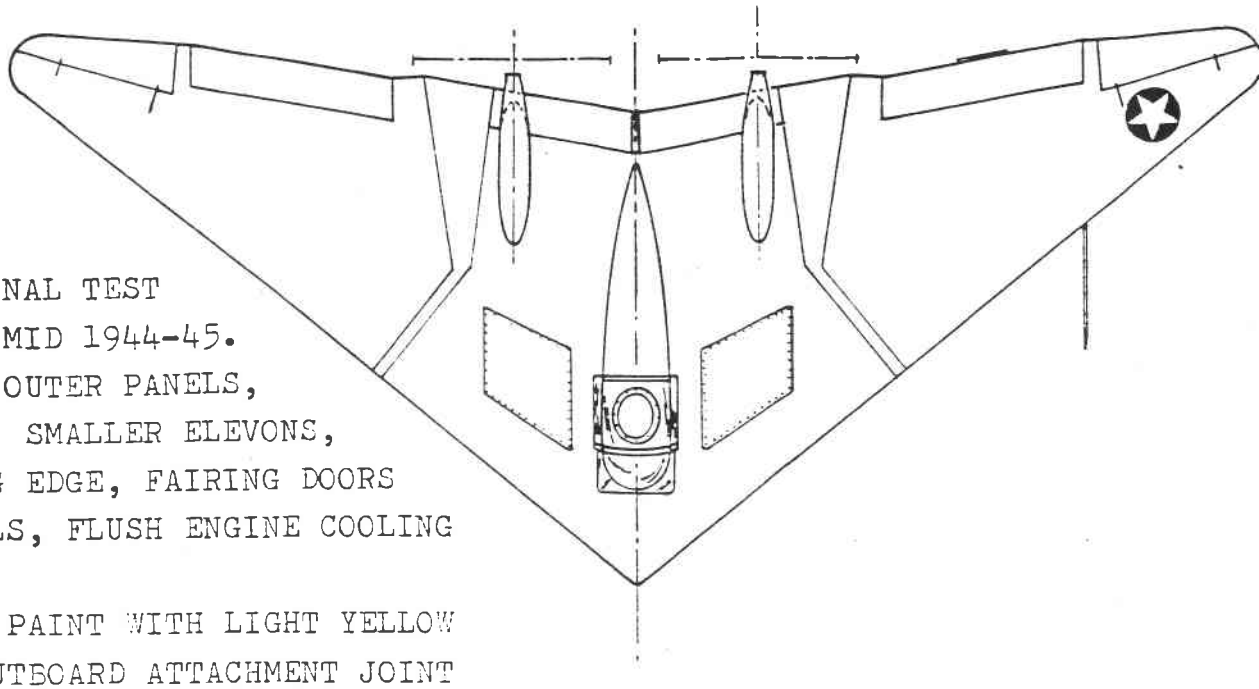
MEMBER OF NOTE

Congratulations are in order for TWITT member **Don Mitchell**. Don, who has been active in the flying wing area for a number of years, has been inducted into the United States Soaring Hall of Fame. The official ceremonies will be held on Saturday, May 11, 1991, at the National Soaring Museum, in Elmira, New York. (The other inductee was Douglas L. Jacobs.)

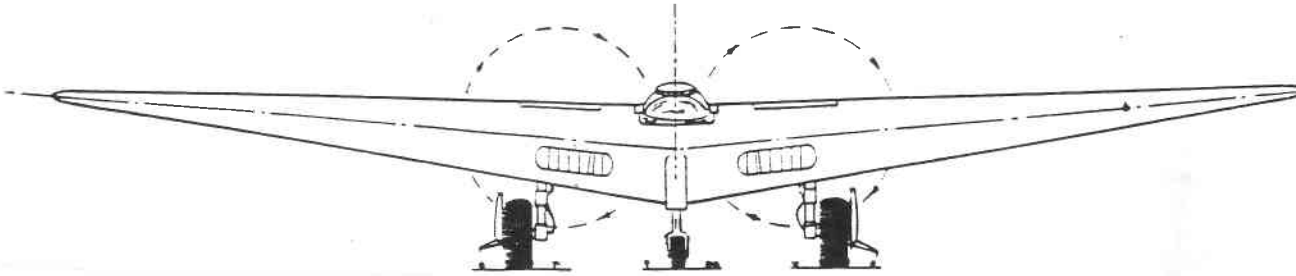
DON MITCHELL'S FLYING WINGS

MINUTES OF THE MARCH 16, 1991 MEETING

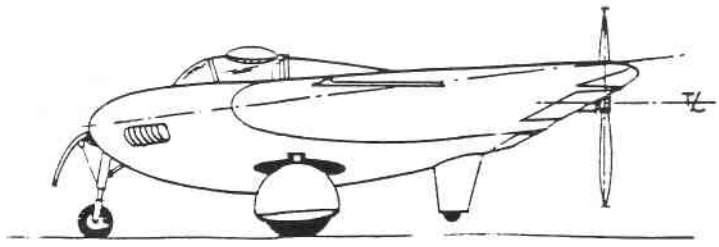
The meeting was opened by Andy asking if we had any new visitors for the day. Jerry Blumenthal introduced Bob Murphy, who used to manage Convair's low speed wind tunnel model



FINAL TEST
CONFIGURATION MID 1944-45.
NO "CRANK" IN OUTER PANELS, STRAIGHT TIPS, SMALLER ELEVONS, ADDED TRAILING EDGE, FAIRING DOORS FOR MAIN WHEELS, FLUSH ENGINE COOLING INTAKES.
YELLOW-ORANGE PAINT WITH LIGHT YELLOW TRIM AT THE OUTBOARD ATTACHMENT JOINT LINES AND LEFT HAND PITOT TUBE.
NATIONAL INSIGNIA AS SHOWN.



DRAWINGS COURTESY OF
KEVIN RENSHAW



shop in San Diego. Ed Lockhart introduced Len Buckel, who is the oracle for the Gillespie Airport and a great many other aviation type things. Harold Faucett from West Virginia introduced himself. He is an old San Diegan who has migrated to the east. Other vistors included Evan Stover and Jack Davis.

The program was started with a video of Ryan Aeronautics pilotless drone testing called "Nobody's Perfect." It is a humorous look at the problems that can be encountered during initial testing of any type of new weapons system.

Andy then introduced Kathy Williams from California Foto Shirts, who explained a little about the process she would be using to print raffle prize winners photographs on T-shirts. Larry Nicholson and Bob Fronius both were living models of what can be done with any photograph on a white T-shirt. She can use up to 8 1/2 by 11 photos or enlarge smaller prints. They can't use slides or negatives at this time but hope that will come in the future. The best shirt is a blend of cotton and polyester, and the prints are extremely durable in the washing machine. Apparently this is a relatively new process and she is still learning about all its capabilities. If you desire more information she can be reached at (619) 596-9122, or stop by at 1740 Joe Crosson Drive. She is open Monday through Saturday.

Andy then introduced Budd Love who had some new information concerning progress on his HIAM wing project. Budd has been in contact with Richard Alverson, of Allison Gas Turbines, who has come up with an engine that will provide the necessary volume of jet pump airflow to make the HIAM wing work. It is the GMA 2100 axial flow turbine driving an additional GMA 2100 compressor section which will provide the propulsion airflow.

Budd has also progressed with cruise performance and specific fuel consumption data. His calculations now show that cruise performance for a 15,000# airplane will be 400 mph at sea level, and up to 400 kts at 20,000'. Fuel consumption apparently is not bad at these speeds, and keeps it in contention for the type of short-haul, short runway work it is intended for.

He has also developed a computer program that helps in designing the wing ducts for the mass of air that must flow to power the jet pumps. He is now writing a book called "A Conceptual Design of Tomorrow's Airplane" distributed for critical evaluation. Budd is looking for people who would be interested reviewing the material and offering any constructive criticism or help in continuing the development of the HIAM wing.

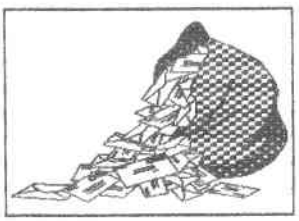
Andy then introduced the main speaker for the day, Ed Leiser, Curator of the San Diego Aerospace Museum. His topic for today was airports that have come and gone throughout the years in San Diego County (he also included some that are still around) since the early 1900s.

Ed put on an excellent slide show, which is difficult to recreate in these minutes. There were enough old timers in the audience who knew just about as much about the airports as Ed. Harald Buettner video taped the presentation for the TWITT library, so if you weren't there and want to listen to or see some of San Diego's early aviation history, please let us know and we will arrange to get the tape, or a copy, to you. There is also the audio tape if you are just interested in listening to how aviation developed in San Diego.

The raffle prizes were two shirts with one photo put on it by California Foto Shirts, and an additional shirt with the PRECOMTEC Composite Tooling & Fabrication logo donated by owner Harald Buettner. Evan Stover won the PRECOMTEC shirt, with Bob Fronius and Randy Bergum taking the honors on the other two shirts. *(Ed. Note: It will be interesting to see what types of "aircraft" photos these guys select. Hopefully, we will see them modeled at this month's meeting.)*

The meeting was adjourned after awarding the prizes.

LETTERS TO THE EDITOR



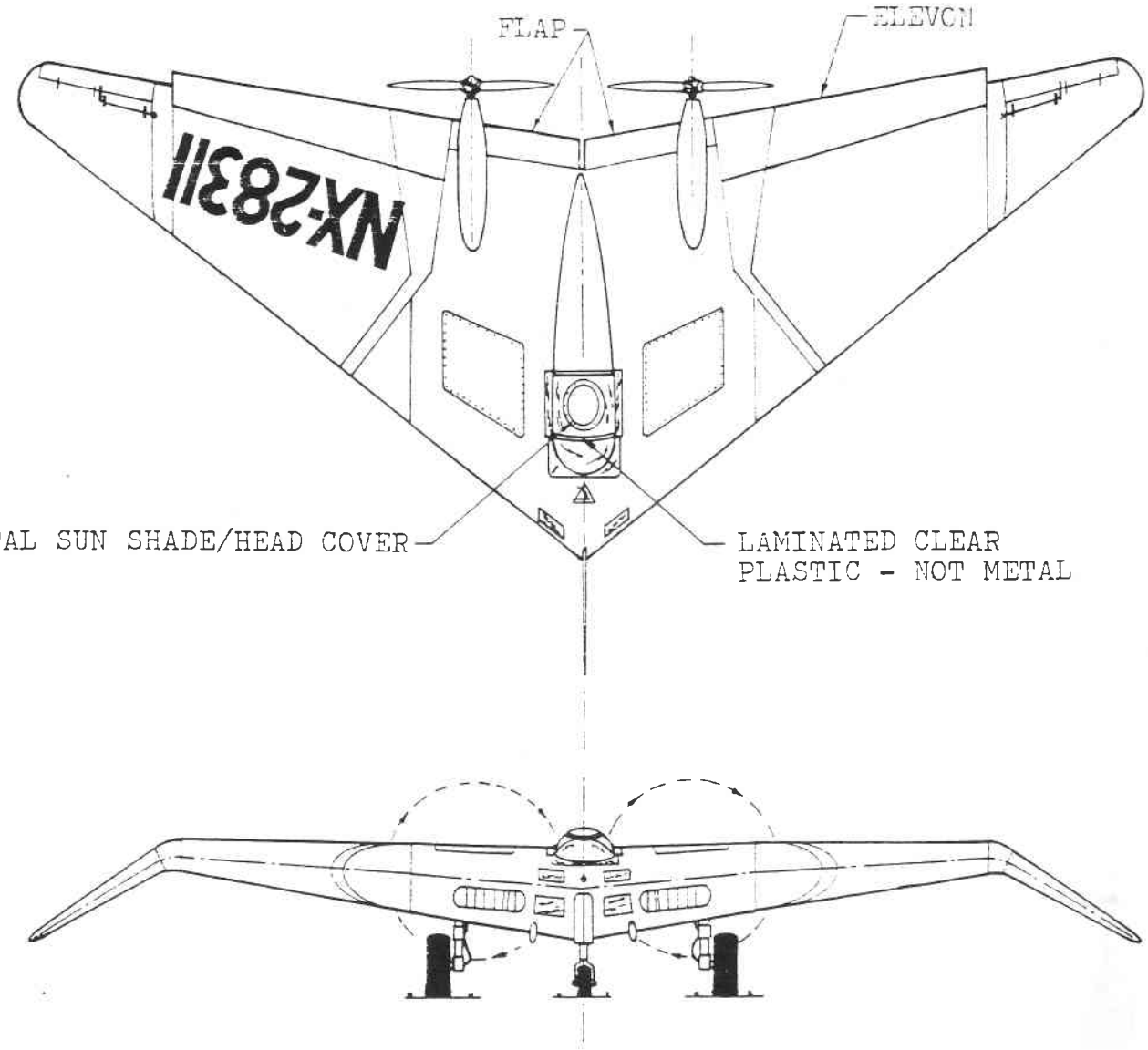
April 12, 1991

TWITT

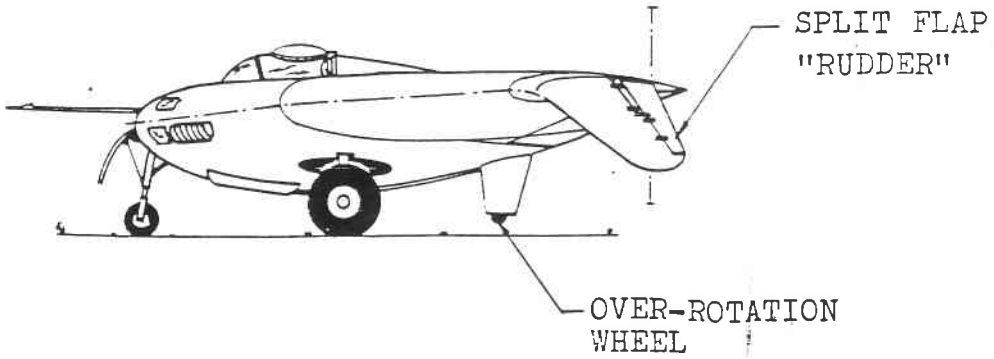
I'd like to renew my membership in TWITT and my subscription to the TWITT Newsletter at this time. My check is enclosed herewith.

I hoped that you would tell me the dates and location of the next Northrop Flying Wing Classic and anything you know about the schedule. Many thanks.

Cordially,
Wally Hanson



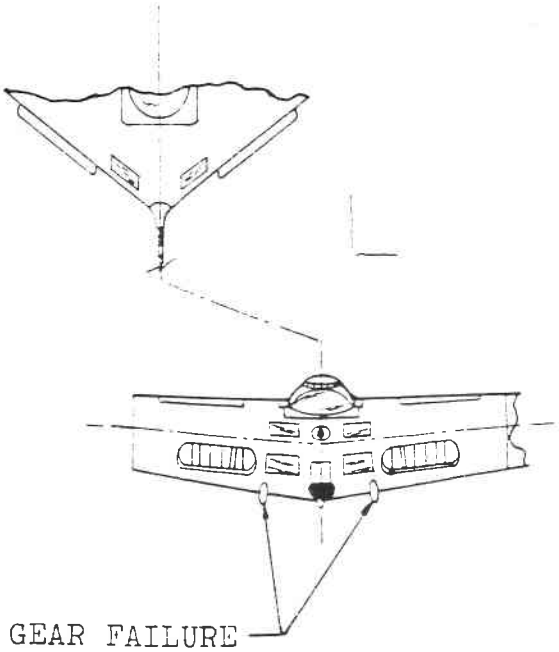
ORIGINAL FIRST FLIGHT CONFIGURATION JULY 3, 1940.
COLOR ALL YELLOW WITH CREAM STRIP AT TIP BREAK
AND JUST AT OUTBOARD ATTACHMENT JOINT LINES.



NORTHROP N1M "Flying Wing"

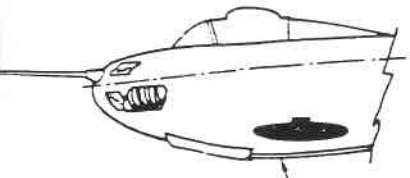
NORTHROP

DRAWINGS COURTESY OF
KEVIN RENSHAW



GEAR FAILURE
LANDING SKID

SMALL VIEWS DEPICT AUGUST 1940 ADDITIONS OF SHEET METAL LOWER LIPS TO THE ENGINE AIR COOLING INTAKES AND A FAIRING GLOVE FILLET AROUND THE CENTER PITOT BOOM.



CENTER SKID
SPLINE

MOLDS BY MICHAEL HERRILL, MATTHEW HERRILL, AND JOHN DAFFER.
PLANS BY MICHAEL HERRILL.

(Ed. Note: I think Wally missed his April Newsletter which contained a letter from Carl Hatrak announcing the contest. Here's the basics Wally: held on Monday, October 7, 1991, from 8 AM to 4 PM, at Jean, Nevada in conjunction with the "SAM CHAMPS." AMA license is required and the entry fee is $4. Events include rubber power, glider, scale, gas and electric. Contact Carl at 3825 W. 144 Street, Hawthorne, CA 90250. We will publish the entire flier in the August Newsletter as a reminder.)

April 16, 1991

TWITT

My replica project of a 1929 Primary Glider has reached the stage for flight testing. Will send you a snapshot and brief test results in a couple of weeks.

I continue to work on restoration of my WW-II, OQ-3 target drone. Wings and fuselage are ready to go, but I have not found tail feathers. Last year I sent a request out to you to have folks look around in their barns and hangars to see if anyone could find the original tail parts. Have built a wooden tail for flight tests but would like to find the originals.

Back to the flying wing in the fall. Fuselage has received a new engine; smaller but more powerful than the original. Wings will be two piece instead of the one long piece I had before. Hope it flies as well as the original version.

Yours truly,
Lewis (Dewart)

(Ed. Note: I must assume that no one was able to find any of the OQ-3 drone parts Lewis asked about in his request last year. If you have seen any strange aircraft parts laying around your local airport ask what they are, since they could be just the things he is looking for. We are looking forward to hearing about the test results of all your aircraft, but especially any improvements in the flying wing.)

April 23, 1991

TWITT

I read the article on TWITT in the March 1991 issue of S.H.A.p Talk, newsletter of the Sailplane Homebuilders Association. I would like to join your organization and I'm enclosing a check for dues.

Thank you,
David W. Olsen
1334 Robsheal Drive
San Jose, CA 95125

(Ed. Note: We would like to welcome Dave to TWITT and hope that we will be able to provide him with the type of information he seeks with regards to flying wings or other aspects of the aeronautical world. Dave, if you are an active builder and are currently working on, or plan on starting in the future, a flying wing project, please let us hear from you so we can be of service in helping you overcome any difficulties.)

April 18, 1991

TWITT

Per your request in the April issue of the TWITT Newsletter, you wanted input from the new members for a logo. As you said, "let your creative juices flow."

"TWITT." As a group of doctors, professors, engineers, designers, etc., why would you use mono syllables like The Wing Is The Thing? How about just "The Wing," or "Wings," or the old standby "Flying Wings"? Another idea - "Wings of the Future," "Flying Wings Past, Present and Tomorrow." The list is endless.

Now for the design. One would like to have a design using their country's wing. Being a multi-national organization, whose nation will be chosen, or maybe you would like to go by dates - the first wing, the first powered wing, the first water type flying wing, etc.?

Then there are the people - Lippisch, Horten, Northrop, etc. You see there is no end. So I have a solution: nature. There is the tree in the Amazon that has the seed that flies. That is what started all this in the first place. I do not remember the correct name - "zona seed" or something like that. This seed and its flying characteristics were copied by the early pioneers of flight. This design with an artist's touch to make it appealing should be the design of the logo of this or any flying wing organization.

Eugene Turner

(Ed. Note: Well Gene, you are the only one so far that even tried to come up with a logo.

GENERAL DESCRIPTION - NORTHROP N1M

Type: First known American example of a successful 'flying wing,' eliminating fuselage, booms, nacelles, and any non-contributing surfaces. This was initially a private venture effort.

Description: Single seat, moderately swept, all-wing configuration with indigenous Northrop semi-symmetrical airfoil section. Internal basic structure built to permit ground adjustments to change both wing root to tip washout, sweep, and dihedral. Fully retractable tricycle landing gear with aft tail bumper to prevent over-rotation.

Basic flight controls consist of elevator and aileron in one movable surface in each wing trailing edge. Patented as Northrop "elevon," while directional control occurred through use of "split flap" style surfaces, which were in a down-turned section of the wing tip. These tips were ground-adjustable and were gradually blended into a final straight configuration for the balance of the flight test program.

Structure: Center section housing engines, landing gear, and pilot's enclosure of welded steel tubing having attach points for fixing the outboard wing panels and the internal mechanism to allow for ground adjustment of washout, sweep, and dihedral. The exterior covering is of plywood with metal engine hatches and air intake ducts. Landing gear is electrohydraulic while flight controls use a mechanical mixer to cable actuated control surfaces.

Engines: Originally two Lycoming 65 H.P. with two-bladed propellers. These were replaced with 117 H.P. Franklins with three-bladed propellers to complete the test program. First flight was 3 July 1940 and test data was acquired by the Army Air Corp in September 1943. Northrop turned this machine over to AAF in 1945 and they in turn transferred it to the Smithsonian.

Dimensions: Span 38'0"
Length 17'0"
Maximum chord @ root 168" tapering to 34' at the tip.
Chord thickness is 36".
Wing tip in angled configuration 30°.

Performance: Maximum speed: 195 MPH
Cruise speed: 166 MPH
Stall speed: 87 MPH

Design Team: LEADER: John K. Northrop
Walter Cerny
Ray Gaskell
Francis Johnson
Thomas Quayle

This aircraft is held in preparation for restoration by the Paul Garber Facility of the National Air & Space Museum at Suitland, Maryland.

I have tried to redraw it so everyone can get an idea of your design. You have some interesting thoughts, all of which are welcome, since if no one speaks out we don't know how well or bad we are doing in meeting the desires of the membership. I challenge the rest of you out there to try and come up with a suitable logo so we have more choices than the two so far. If you all are designing flying wings, certainly a logo shouldn't be too hard. How about it guys?)

April 22, 1991

TWITT

Please include me as a member of TWITT and send me a list of the back issues of your newsletter.

Thanks,
Jim Loyd
1829 Mohawk Road
Pueblo, CO 81001
(719) 543-1145

(Ed. Note: Welcome to TWITT, Jim. We don't really have a list of back issues of the newsletter. They have been published since the inception of TWITT in June of 1986, in one form or another. We have copies of most of them available at $.75 each for U.S. mailing. Let us know which ones you want, enclose a check, and we will get them off to you just as soon as we can.)

April 29, 1991

TWITT

I saw your article in the March issue of S.H.A.pTalk newsletter. I've always been interested in the flying wing, especially hi performance sailplane flying wings.

Enclosed is the $15 for your newsletter, and $9 for back issues.

Thank you,
William L. Welch
3211 7th Street
Lewiston ID 83501

(Ed. Note: Welcome, Bill. I believe you are our first member from Idaho. We will be sending you the May 1990 through April 1991 back issues of the newsletters since you didn't specify any particular issues in your letter. Let us know if you want more.)

April 23, 1991

Dear Friends:

After reading your letter in S.H.A.p Talk newsletter of March 1991, I decided to join your TWITT, because I always liked flying wings.

Last year I had the chance to see a PUL 9 (Horten) in a flight demonstration by a German disciple of Dr. Horten. It was on the French Convention (European) of any light flying machines presented by their homebuilders at Moulin, France. If you like, it's the little "Oshkosh" in Europe.

The PUL 9 is a little one seater pushed by a Rotax 447 and it's wings are all glass fiber made by this German who worked with Dr. Horten in Argentina. Now he has changed his Rotax 447 for a Rotax 468, a bit stronger. This prototype, with the 447, flew very well and very quickly, and he is associated with the Italian "Aeronautica." You have to know, that all the Horten planes fly without any vertical surfaces, but the "Fauvel" or "Marske" have too.

Please help me with the following addresses: SSA and Kitplanes.

Thanks for all,
Mr. G. H. Rudat
Sennecay (LeParc)
F- 18340 Levet
FRANCE

(Ed. Note: Welcome to TWITT as our first member from France. The Sailplane Homebuilders article has sure produced some good membership results for us this month as we have seen from several letters. Please keep us informed of the flying wing happenings in France, or elsewhere as you travel. The addresses you wanted are:

SSA
P.O. Box E
Hobbs, NM 88241 USA
(505) 392-1177
FAX (505) 392-8154

Kit Planes
P.O. Box 6050
Mission Viejo, CA 92690 USA
(714) 855-8822

April 5, 1991

TWITT

Dear friends, let me please tell you of my activities during the last two and a half years.

In the first days of 1989 a coworker of mine, Dr. Wohlfahrt, and I listened to the lectures at the Airplane Conference in Karlsruhe. There, several people spoke on tailless airplanes (all wing aircraft). There were so many mistakes, misinformation, wrong ideas and silly remarks in those papers and during the discussion that we decided spontaneously to write a book on this subject. In the next one and a half years we worked on it and finished the manuscript in July of 199Ø. I contains 628 pages, 228 drawings (made mostly by me) and some 76 photos.

The book is in German and has the title "Schwanzlose Flugzeuge." It appeared in the "Birkhauser Verlag" in Basel in Switzerland in August of 199Ø and cost 78 German Mark. It can be ordered from any bookshop. It was not easy to find a publisher and I had to subsidize the book heavily! Enclosed is an advertisement which appeared in a German airplane journal. Also enclosed is a copy of the content of the book (in German).

The idea of the book is to have a certain completeness and to become "the bible" of the allwing enthusiasts. Dr. Wohlfahrt and I have a certain predetermination to write such a monography. He is a well known constructor and pilot of tailless flying models. He is in touch with most European aeromodellers and can draw from their experience. I myself did fly many tailless airplanes together with Dr. Horten, a famous constructor of such allwing aircraft.

Also part of my mathematical papers were concerned with the problems of these special airplanes. Finally I even designed, constructed, built and flew a tailless ultralight airplane. Hence, it was our opinion that not many people knew so much in this field and that it was our duty to write such a book. It is a synopsis and condensation of practical and theoretical experience which (in my case) has been gained during much more than 5Ø years.

Now there remains to be seen how the aerodynamicist, the constructors and the pilots react to our work. To my great surprise, the beginning was rather promising. Birkhauser just told me that they already sold 1ØØØ copies during the first 8 months!

I never worked that hard on anything in my whole life. Even the ultralight flying came off badly. After finishing the book I was exhausted and did need some rest. Me wife and I, therefore, went to Western Australia where we enjoyed the low population density, the friendliness of the "natives" and the wonderful nature "down under."

As soon as I had finished the manuscript I sent one copy to Marc de Piolenc. In a previous letter he had informed me that it could be possible to work together toward a second edition of the book in the English language. I am - naturally - very happy about that possibility and I am very thankful to Marc for it. As soon as the first copy of the book was in my hands I sent it to TWITT for the TWITT library together with a letter containing the above information.

When we came back from Australia there was a large pile of papers and letters on my desk. One of my first tasks was to read all the back copies of the TWITT Newsletters. To my utter astonishment the book was not mentioned. A phone call revealed that it had never arrived. On the title there is a photo of a B2 bomber. Did they sent it, therefore, to the Gulf War??? Also the accompanying letter was lost. Some days from now I will send you a second copy of the book and hope that it will reach you.

The next thing I plan to do is to translate our book. Not into good English - that is too difficult for me - but into "bad English." I do hope that this makes it easier for people like Marc to iron out the kinks and, therefore, to produce a good manuscript. After all, to translate the whole 628 pages of the book from scratch is an awful lot of work and I do not want to burden anybody with it.

By the way, which computer system to you use? I could write the "raw" translation in Word 5.Ø or in Work Perfect 5.1 and send over the floppies. What do you prefer?

I sincerely do hope that this letter does not get lost, too. Best greetings to all of you.

Karl Nickel

(Ed. Note: First, we would like to apologize to you for the confusion surrounding the location of the manuscript and book you sent some time ago. I was unaware that Marc had them when you called that morning, although I knew he was working on a translation from some document. I am also sorry that you got Marc's answering machine several times. I did not know he was still on active military duty in Arizona.

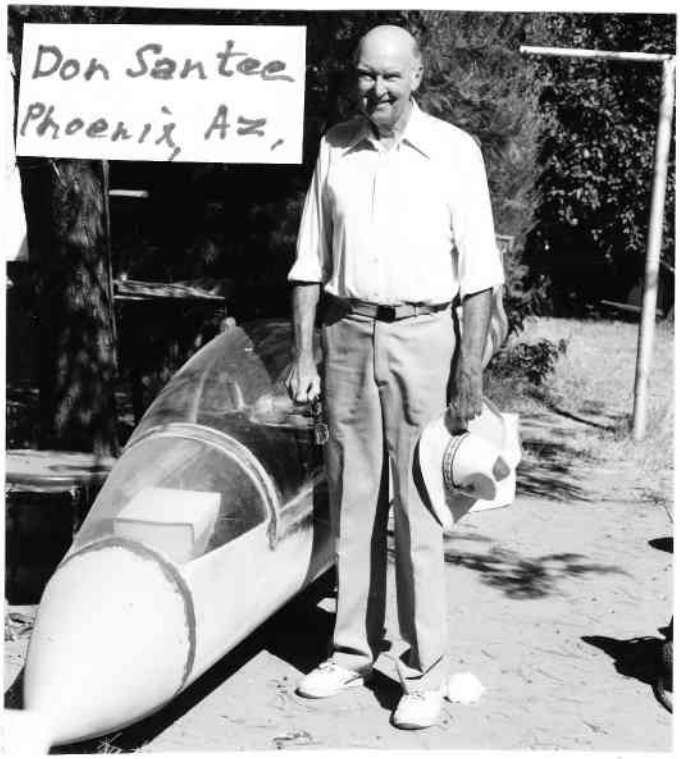
As you have already seen from the President's Corner, Marc is working on putting a team together for the translation. I am sure that your providing a rough English version will bring some others forward who would not have been able to help due to the German. As for the computer compatibility, most everyone involved is using MS-DOS based systems on IBM type machines. The newsletter is published using Word Perfect 5.1, but I also have Wordstar 5.0 which could be used. If you want to send it on high density 3 1/2" disks, I can transfer them to low density 5 1/4" for those who can't handle the smaller disks. I am certain that this form would be far superior to anything hand or type written. In fact, Karl Sanders just volunteered his services the other day and was wondering about these same problems. Hopefully, once the English version is published you will see it sell quickly, at least to most TWITT members anyway!)

ADDITIONS TO THE LIBRARY

Bruce Carmichael has contributed a number of documents covering Dave Marsden's Spectre design that Marsden described at the February meeting.

Included in the material was two pages of Sigma dimensional data.

And lastly, there is an article titled "Gemini - A Variable Geometry Sailplane," as published in Canadian Aeronautics and Space Journal, Vol. 21, No. 3, March 1975, pages 99 - 105.



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The following was found in the "Los Angeles Times" newspaper on about May 4, 199Ø. Hopefully someone from TWITT will be able to provide some help.

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