No. 129 MARCH 1997

T.W.I.T.T. NEWSLETTER

BMW Strahlbomber I

A pair of interesting bomber projects was produced by BMW under the designation *Strahlbomber* (Jet Bomber). Both were tailless and powered by the company's own engines. The *Strahlbomber* I was to be powered by six BMW 003A engines and had an apparently conventional fuselage and fin but no tailplane. The engines were located in pairs, one pair buried in each wing at about one-third span and the third on the nose, with one engine hung on either side of the lower fuselage.

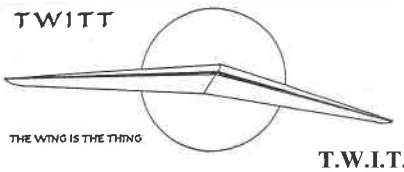
BMW Strahlbomber I data

Role	Two-seat jet bomber
Ultimate status	Design
Powerplant	Six BMW 003A turbojets, 1,764lb (800kg) st each
Maximum speed	532mph at 21,000ft (855km/hr at 6,400m)
Range	1,678 miles (2,700km)
Weight	55,115lb (25,000kg) loaded
Span	85ft (25.90m)
Length	60ft (18.30m)
Wing area	1,076.4ft² (100.0m²)
Armament	8,800lb (4,000kg) of bombs

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., **9703** means this is your last issue unless renewed.

Next TWITT meeting: Saturday, March 15, 1997, beginning at 1330 hrs at hanger A-4, Gillespie Field, El Cajon, CA (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 tailless aircraft by providing a forum for the exchange of ideas and experiences on an international basis. T.W.I.T.T. is affiliated with The Hunsaker Foundation which is dedicated to furthering education and research in a variety of disciplines.

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Subscription Rates: $18 per year (US)
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Foreign mailings: $0.75 each plus postage

Wt/#Issues	FRG	AUSTRALIA	AFRICA
1oz/1	1.00	1.00	1.00
12oz/12	5.00	6.75	5.00
24oz/24	9.00	12.25	9.00
36oz/36	14.00	19.50	14.00
48oz/48	16.75	23.00	16.75
60oz/60	21.75	30.25	21.75

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

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PRESIDENT'S CORNER

I have been trying to produce a membership roster for inclusion in the last couple of newsletters but seem to run out of enough room. But this month the material from the members will make it work just right so the back pages will contain a current roster of our membership. It is sorted alphabetically so you will have to scan the addresses to find other members in your area of the country. I thought about doing it by ZIP code and country, but felt it would make it harder to locate people by name if you didn't know what state they lived in.

On a sader note, we send our very belated condolences to Bernie Gross whose wife Eva passed away on January 20th. Bernie has been a long-time member and Eva used to accompany him to the meetings before her medical difficulties confined her to a convalescant hospital.

I know some of you are wondering where the much promised library bibliography project is at this time, and unfortunately I must say it is not as far along as I believed it to be. I now have the TWITT computer and a lot of the material in my family room and am going to try and work on it a little each night and see if I can make some significant progress. After looking at the volumn of material, I can really symphasize with what Serge Krauss has been going through all these years with his bibliography project.

I hope that all of you who had red borders around your membership expiration dates on the front of your newsletters got your next year's subscription sent in so you won't miss an issue. We generally carry everyone for 1-2 months waiting for them to renew, but by the third month I pull them off the mailing list since it is too costly to send more issues in anticipation of a renewal. Take a minute to look at the date on this issues label and mark you calendar for the month prior to the expiration so you can get your renewal in before you miss an issue.

Although we don't have a website yet, we are still seeing some new members come in by virtue of other sister organizations carrying our advertisement in their homepage classified sections. We appreciate this and will certainly reciprocate when we get our own site up, hopefully sometime later this year.

Andy

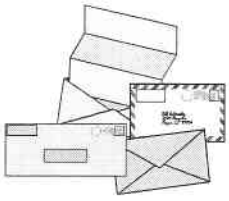
MARCH 15, 1997 PROGRAM

We are pleased to announce that our speaker for March will be none other than **Jack Lambie** who is going to tell us about his experience as an owner of a FAUVEL flying wing. For those of you who have heard Jack speak at one of our meetings a few years ago, or on other occassions, you know this will be a treat. Jack owned his FAUVEL in the mid-1950s, so it tells you what type of forward thinking person he is, having recognized at that early point the advantages of a low drag flying wing over more conventional aircraft.

The word conventional also doesn't apply to Jack. Over the years he has ventured into areas most of us only dream about. Once, his quest for drag reduction even led to the streamlining of a Chevrolet Corvair mini-van with the addition of many farings in an effort, I imagine, to control the boundary layer flow over the vehicle. It was a strange looking automobile, but it proved his point.

So set aside a few hours of your Saturday and come join us at the hanger and enjoy Jack's antedotes and tales of adventure, not to mention a delicious snack provided by our hospitality chairpersons Chris and Connie Tuffli.

See ya there.



LETTERS TO THE EDITOR

2/19/97

TWITT:

I enclose a check for renewal of my one year subscription and for the 35 page booklet of the Phil Barnes September 1995 presentation.

Last year there was mention of a paper the rights of which Phil Barnes assigned to SAE. I would like a copy of that, unfortunately TWITT did not give any address for SAE! Can you help? Thanks.

Sincerely,

William Heijn

(ed. - I have already sent William the information he requested along with the booklet, but I thought there might be someone else who might want the SAE address for this paper or another they had heard about. The information is:

SAE
400 Commonwealth Drive
Warrendale, PA 15096
(412) 776-4841
(412) 776-5760 (fax)

Phil advised me that he has since discovered an error in the velocity computation which he is correcting and sending the appropriate information to SAE. He suggests waiting until late March to order the paper since by that time the correction should be added to it.)

2/27/97

TWITT:

Thanks for your prompt response. Enclosed is a check for $18. Please accept my membership to your organization.

I first heard about TWITT doing research for my senior design project at Parks College. I am presently doing my thesis and was searching the Web when I came across a Usenet posting regarding TWITT. I thought the fastest way to check for the accuracy of the information was to send an e-mail to you.

I've got about 60 or so works/books on Horten, Lippisch, Northrop, and the different flying wings out there, but I am always on the lookout for more information.

Some background on myself, I am presently working as a network analyst for Saint Louis U. while attending the Masters program in Aerospace Engineering. I've worked for Bede Aircraft, Lancair and the Windex 1200. I am also building a LONG-EZ, and hold a commercial instrument pilot.

I'd like to know if there's a contact list for the members, and or a forum, Usenet group where information, ideas and experiences are shared. I am also looking for a good thesis research project. I know it's going to be regarding flying wings, but I am open to ideas. Any suggestions??.

I've been contemplating a paper by the University of Pretoria on "Static Margin Control for Tailless Flight" presented on XXIV OSTIV conference. It basically relates to the characteristics of stability on flying wings by changing the relation between center of pressure and C.G., by having variable sweep. I think that some people on the ultra light side have been playing with this concept. Thesis material??

One last question, do you know whatever happened to the Davis wing, (not the ultra light, but the 4 seater Northrop style flying wing)??.

Please feel free to contact me any time if I can be of your assistance. I hope to fly to San Diego once my LONG-EZ is finished and meet some fellow members.

Sincerely,
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Saint Louis, MO, 63108

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(ed. - I would like to take this opportunity to welcome you to TWITT and hope you enjoy the newsletters. It sounds like you are really into flying wings and will have a good technical background when you finally "finish" with school. We would enjoy hearing from you whenever you find anything of interest on the subject or just feel you have to comment on something you read in the newsletter.

Since he sent me an advance copy of the letter via e-mail, I have sent him back Barney Vincelette's number for checking on the Davis project and provided him with Dean Rosenlof's vitals in case he might be interested in the Formula One type project. I also told him about Serge Krauss' bibligraphy which might give him some ideas for the flying wing thesis project.

Does anyone have more information on the subject of static margin control that might be of interest to him in deciding if this is a good subject area? Also, would any of our ultralight members like to comment on the subject for the newsletter?

For the rest of you interested in a list of members, you are getting it in this issue. I hope it helps you find fellow TWITT members in your geographic area.)

(ed. - First I want to apologize to Robert for misplacing his e-mail file for so long and not publishing this earlier so his question could be answered and Bruce could sell another book. But I found the file and here is his letter.)

11/11/96

TWITT:

I have now been a member of TWITT for nearly 6 months, it has been great to recieve the newsletter as it shows that I'm not alone in my obsession with flying wings! My particular area of interest is with foot launchable, weight shift controlled and portable soaring machines - hang gliders! Hang gliding is both a sport which takes me out to the Scottish mountains at weekends (weather permitting) and a area of engineering which facinates me.

In my spare time I have done a fair amount of research into the various aspects of hang glider design, and spend a couple of weeks a year working as design consultant for Airwave Gliders Ltd, based on the Isle of Wight, just off the south of England. I am currently submitting an article, on the development of Airwave's new competion hang glider, to hang gliding magazines around the world. I have attached a HTML version of this article to this e-mail, in hope that you might be able to read it. It might be too long to publish, and possibly it requires too much of an understanding of hang glider jargon - but it might just be of interest to TWITT.

I am interested in buying a copy of `Personal Aircraft Drag Reduction', however in the TWITT newsletter their is no mention for cost of foriegn postage. Would sending $30 be sufficient? Does Bruce Carmicheal have an e-mail address I can check this with?

Thanks for your assistance.

Robert Osborn
Midland Valley Exploration Ltd.
14 Park Circus
Glasgow G3 6AX
Scotland.

email: robert@mvel.demon.co.uk
Phone: +44 (0)141 332 2681
Fax: +44 (0)141 332 6792

(ed. - Thanks for the letter and the article accompanying it. At the present time I haven't figured out how to get the graphics out of it, but I did get the text material cleaned up and found it was too long for this month's newsletter along with the membership roster. I will play with the file a little and see if there is some way to recover the figures the go with the article. If not I will at least publish the text next month. We have a number of hang glider pilots within the organization, so I am sure they will be interested in what you have to say.

If you haven't already contacted Bruce about the book, I am sure that if you sent $30 US and it was not enough to cover the overseas postage, he would send the book along with a note letting you know how much more you owe him. It can be expensive if it goes first class, but if you can wait for it to go by ship the cost would be much less. You need to let Bruce know that also.

Again, I apologize for the delay in processing your letter and article. I am trying to get in the habit of answering all e-mail messages the same night I receive them so they don't get lost, and will be setting up a cross reference system so the files don't get forgotten at newsletter publishing time.)

2/19/97

TWITT:

In the last TWITT Newsletter, No. 128, the tailless sailplane Flair 30 of Günther Rochelt has been mentioned. Unfortunately, no full reference was given to the source of the printed information. The drawings, technical data and the photo have been taken from the book:

Tailless Aircraft in Theory and Practice
Karl Nickel/Michael Wohlfart
Translated by Capt. Eric Brown, RN
ISBN 0 340 61402 1
Edward Arnold, London Melbourne Auckland 1994

Published in the USA by American Institute of Aeronautics and Astronautics, Inc.
L'Enfant Promenade SW
Washington DC 20024-2518

The 3-view, statistics and photo are on pages 469-472 with the photo having been taken by Gerhard Marzinzik.
The book can be ordered at any bookstore.

Sincerely,

Karl Nickel

(ed. - The information provided by Al Backstrom didn't carry the complete reference for the source of the Flair 30 and I missed the connection between the shortened title and Karl's book. We are glad to publish the full credit for this material.

For those of you who do not have Karl's English version of the book, it is well worth the time and effort to obtain a copy. It is 474 pages of photos, graphs, illustrations, 3-views, specifications and text material on flying wing and tailless aircraft. It is fully indexed and contains an extensive bibliography.)

2/16/97

TWITT:

Please tell me where I may get the drawings of the Flair 30. Backstrom, you, or Günther Rochelt, and if the latter, at what address?

Looks like the best yet of the foot take-off types, though I'd prefer it to have a sit-up office, since its performance indicates some long flights and maps enter the picture. Such a small change can easily be made.

I am more and more vexed with the poorly thought-out bird I am now building and it is clear that as the end of life approached the concept was rushed to conclusion, partially thought-out but better than nothing, I guess. I hope the next one is better.

Thank you for the fine job you are doing, and especially Phil Barnes' series (though I must confess this last one is over my head).

Sincerely,

Syd Hall

(ed. - First of all I would like to let you know we got your membership renewal and the date on your label should reflect the update.

Secondly, at this time we have no idea of how you might get a hold of plans for the Flair 30. Perhaps Karl Nickel would know if any are available, although there was no mention of plans in his book. It would be nice if someone has an address where more information on this design could be obtained so we could publish it, since I'm sure we will be hearing from more members wanting it after seeing the article from last month's newsletter.

I am sure Phil is pleased to hear that his material is being well received. We have gotten numerous requests for his two audio tapes and booklets, so we must assume members are finding the information useful in developing plans for future projects. Alex Kozloff's composite material items have also done well and hopefully have been a help in planning which types of cloth and resin to use in producing the ultimate flying machine.)

AVAILABLE PLANS & REFERENCE MATERIAL

Coming Soon: Tailless Aircraft Bibliography 5th Edition

Well over 4300 annotated tailless aircraft and related listings: reports, papers, books, articles, patents, etc., of 1867-1996 listed chronologically and cross-referenced by designer and topic. Historical perspective. Core material. Information on sources, location and acquisition of material. Alphabetical listing of over 290 designers including dates and configurations of their aircraft. 250-300 pages.

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Serge Krauss, Jr.
3114 Edgehill Road
Cleveland Hts., OH 44118
(216) 321-5743

Tailless Tale, by Dr. Ing. Ferdinando Gale'

Consists of 268 pages filled with line drawings, tables and a corresponding English text. It is directed towards modelers, but contains information suitable for amateur full size builders. Price is $38, postage and handling included (also applies to Canada and Mexico).

You might also want to purchase his new book **Structural Dimensioning of Radioguided Aeromodels**, priced at $18.00.

On The Wing...the book, by Bill and Bunny Kuhlman

(B^2) is a compilation of their monthly column that appears in RCSD. Many of the areas have been expanded and it includes coding for several computer programs to determine twist and stability. Priced at US$28.00.

All these are available from B^2 Streamlines, P.O. Box 976, Olalla, WA 98359-0976, or (206) 857-7249 after 4pm Pacific Time. Orders shipped elsewhere will be sent surface mail unless an additional $10 is included to cover air mail postage. Washington residents must add 7.5% sales tax.

Personal Aircraft Drag Reduction, by Bruce Carmichael. This 207 page, soft cover, 8½ x 11" book starts with a chronological history of experimental verification of large theoretically predicted drag reductions on aircraft components having extensive laminar boundary layers. Practical problems which could limit attainment of these large drag reductions are discussed and methods to

A NEW TWITT CONCEPT AIRPLANE

This just came in from Alain MIROUZE of France, and will probably create some stir in its radical concept.

We have here a mix between a circular planform total wing and a trike or gyro system. The trike is tractor due to the propeller clearance.

The wing is attached and swings the same way as deltas over trikes. It is swung by the pilot through a vertical stick directly attached to the wing. It must be possible to move the fuselage-wing junction aft or forwards to help the pilot (slow and no-reverse operation, electrically or mechanically driven). It seems that the thinner the wing, the best.

Engine is supposed to be strong enough: this wing has not very good efficiency (L/D around 7 or 8 for the whole). However, the speed range is very high (5 to 8) for the formula.

Two other particularities seem to emerge from it:

Roadability either behind a car (in light colors on the drawings) or by itself by dropping the outer wing panels.

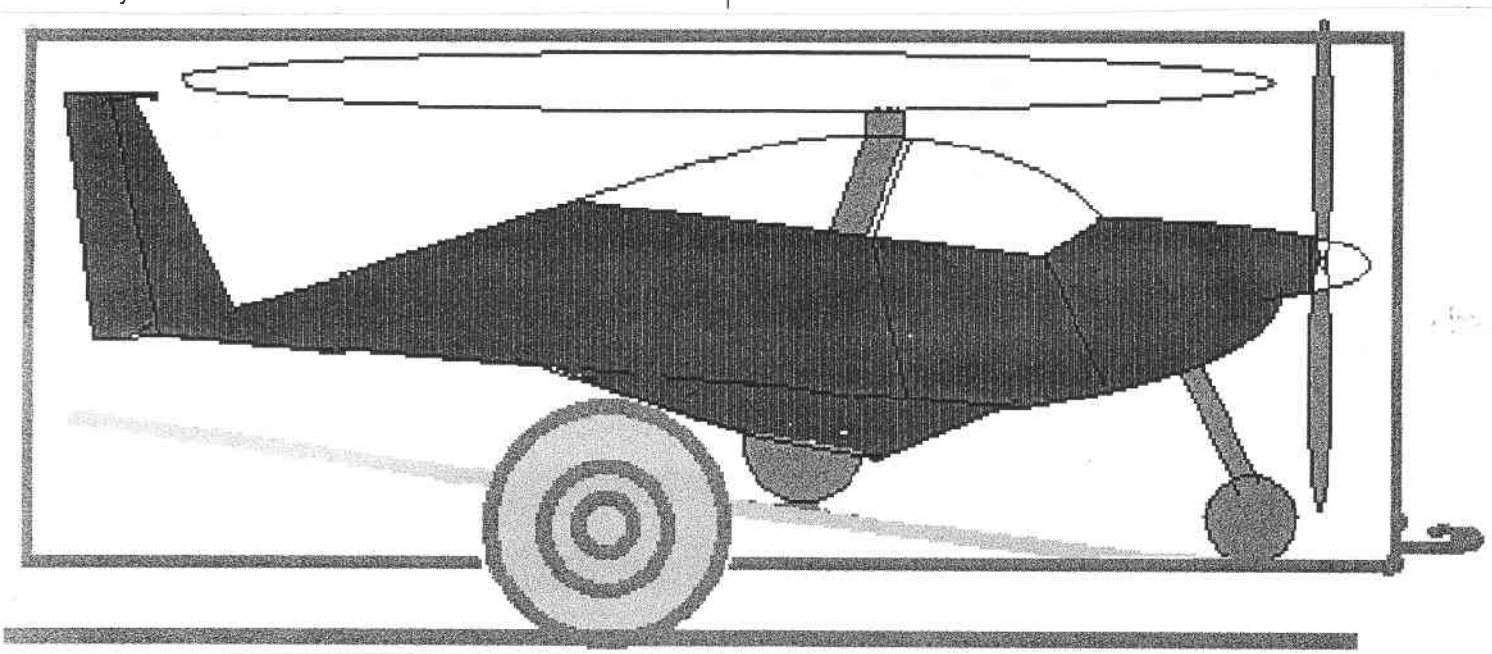
IFR flight, as is usually done by hang gliders: autostability of the formula.

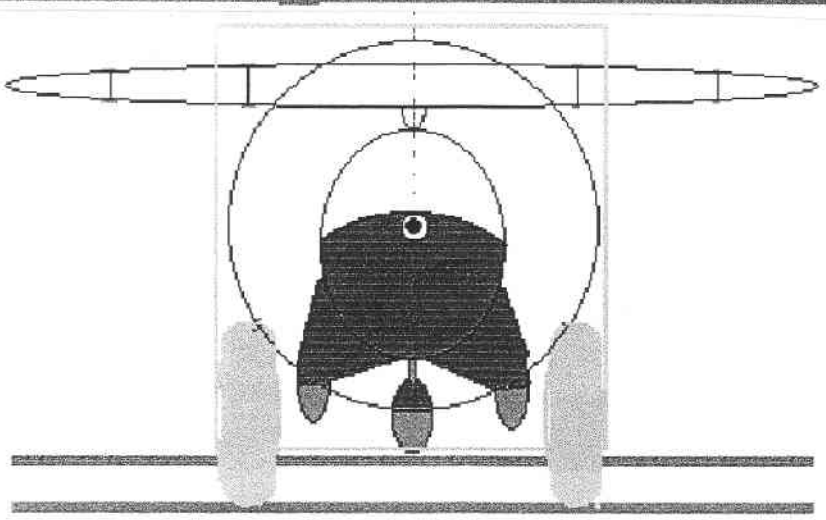
Performance: Calculations give, for 2 on board, 25 sq m, 370 Kg in flight, T/S Rotax 64 hp: Vmin 45 Km/h; Vmax 180 Km/h; T-O & L 80 m; Ceiling 2500 m; Range 400 Km.

Bugs & Drawbacks: This concept may suffer from a serious danger discovered both about gyros and hang gliders: weight shift as only way of longitudinal handling is not always efficient enough to prevent stabilized lethal dives due to a higher drag of the fuselage than that of the wing. The only escape (except chute) is a small reflex on the aft part of the wing, either fixed or as flettner.

Testst are beginning.

(ed. - Alain included the computer generated drawings with his letter. They originally were in color, but obviously we can't reproduce that in the newsletter so I have done the best could to differentiate the parts he has referred to in the letter. Unfortunately, there was no convenient way to breakup the pages to keep everything together so the top view in included on the bottom half of page 11 which is the last page of the 1997 roster information.)





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