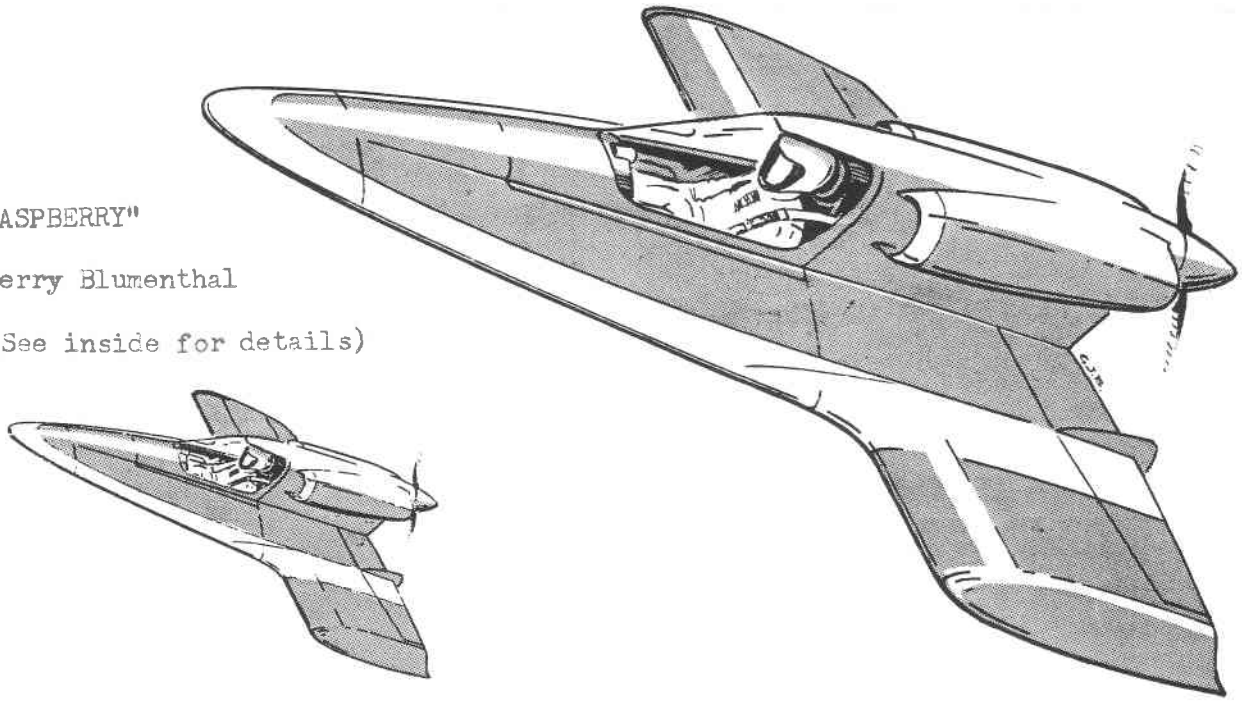
No. 61 JULY 1991

T.W.I.T.T. NEWSLETTER

The "RASPBERRY"

by Jerry Blumenthal

(See inside for details)



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., 9107 means this is your last issue unless renewed.

Next TWITT meeting: Saturday, July 20, 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.

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

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El Cajon, CA 92Ø21
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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).

JULY COVER: This is an effort by Jerry Blumenthal to see if the Polen Special could be improved upon. Dennis Polen's homebuilt masterpiece is the epitome of the state of the art. All that could be done was to remove the propeller slipstream and make the entire airframe a lifting body or flying wing. There are standard elevators but the ailerons are split a la Northrop to give yaw control. If carefully executed, this version should hit 35Ø mph and have a lighter wing loading. Jerry calls his latest creation "RASPBERRY."

PRESIDENT'S CORNER

I would like to start this month's column saying thanks to Bill Hinote of San Luis Obispo who has graciously donated a VHS VCR to TWITT. It will be a needed addition to our assets, since just about every meeting has had some type of video, and I know Bob is tired of bringing his from home each month. Again, thanks Bill for the donation; it is greatly appreciated.

We were sorry there wasn't a bigger turn-out for the birthday party, but those of us there sure enjoyed the cake and ice cream. You should have seen Bruce Carmichael out there trying to fly some of the FLYWITCH models that Burt Quackenbush left behind.

As of publication time we had not received very much mail concerning the logos printed in last month's newsletter. The party goers had some opinions on several of them, but I will reserve which ones until we have a little more input.

Along with the logo, which would replace the wording on the current TWITT hats, we are also trying to come up with some type of unique name tag that the members could wear when they attended other aviation oriented gatherings. This has seemed to work well for the local EAA chapter, and it is easy to spot the true aviation enthusiast. We will let you know what is decided in a later newsletter.

Next month we will either publish the entire TWITT membership roster or a portion of it with the rest to follow in coming months. This hasn't been done for some time, so I am sure it will be helpful to you in locating other TWITTers in your area. Hopefully, I will be able to compress it enough to get the whole thing into one issue.

We received a nice letter from R/C Soaring Digest indicating they would begin publishing

our advertisement with their August issue. We will run their ad in this newsletter each month as part of an exchange program. They have over 1500 subscribers, with a recent survey showing that 36% expressed an interest in flying wings. They send copies to Mexico, Denmark, Japan, Pakistan, Spain, and Finland, in addition to the countries we send the TWITT Newsletter. Jerry and Judy Slates, the Editor and Publisher, respectively, said they would also publish our flyer, which will help explain a little more about TWITT. Our thanks to Jerry and Judy for their fine efforts in providing a quality publication for the soaring enthusiast, including monthly articles on flying wing developments.

That's about it for this month. Please let us hear from you about your projects or ideas so we can better serve you, the member.

Andy

JULY PROGRAM

At the time of publication there was no definite program put together for this month. Bob was still calling around trying to find someone with an interesting concept or something concerning flying wings that would be of interest. For those of you who live out of town, you might want to call one of the officers before coming to San Diego on Saturday to determine if the drive will be worth your time. Please remember that some of our best meetings have been those that started out with no formal program, but ended up building on what members showed up with to contribute.

MINUTES OF THE MAY 18, 1991 MEETING

Andy opened the meeting by welcoming everyone to the fifth annual birthday party (what other kind of birthday can you have but an annual one?). He announced the program schedule for the day, which unfortunately did not include Philip Burgers since he had to meet a contractual agreement with the local university where he teaches. The program would include Burt Quackenbush of FLYWITCH Company to show us his model line, Jerry Blumenthal describing his latest creation (see cover), and Tim Rosauer who would explain a little about his model sailplane winch. The raffle prizes were to be a five outlet surge protector and a trouble light and cord.

Bernie Gross had brought along one of his original designs (forgot to ask him which one) that has been in many magazine articles over the years. It was a little worse for wear, but looks as if it could be restored with a little tender loving care.

Bruce Carmichael updated us on what was in the works for the Labor Day gathering at Tehachapi. Ingel Methos, from Florida, will be bringing his pre-production model of the Sierra, as well as be one of the primary speakers. Ingel will be one of the new editors for S.H.A.pTalk in the coming year. He mentioned that Stan Hall would be the banquet speaker. Bruce also mentioned there have been some very good entries to the homebuilders contest, the winner of which will be announced at Tehachapi.

Budd Love offered to loan TWITT an extra 19" TV he has at home, which would temporarily solve our viewing problem. This will go well with the VCR that Bill Hinote is sending us. While we were on the subject of donations, Bob put in his wish list of an air conditioned hanger and meeting room, a kitchen, etc., etc.

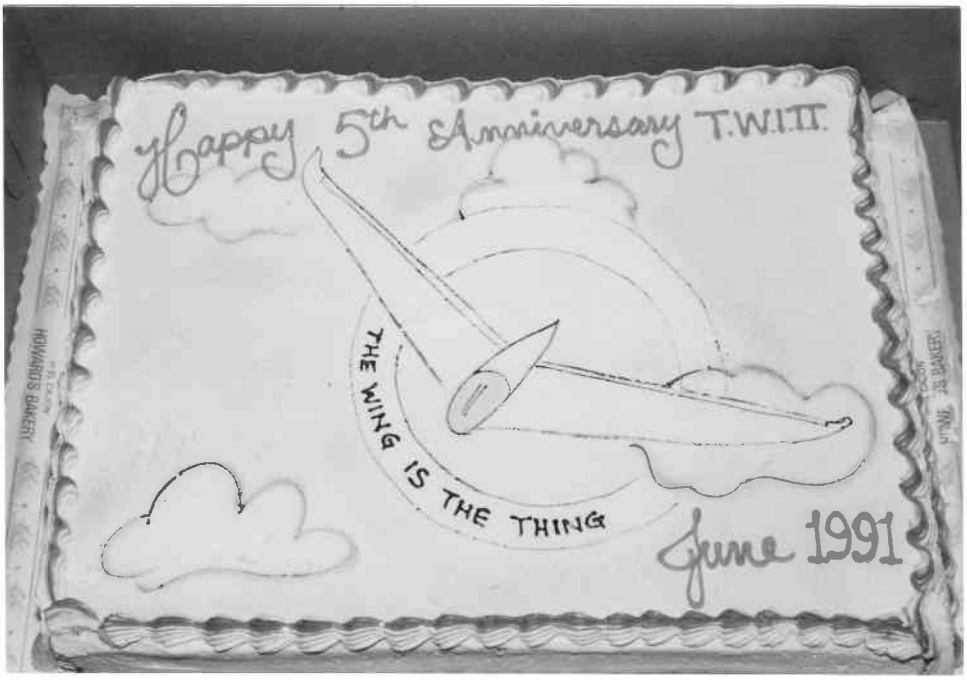
Burt Quackenbush showed a demonstration video of his FLYWITCH aircraft, and then explained a little bit about the program he is trying to build here in the U.S. He ran across this particular line of airplanes in 1986 and wrote to the factory in Taiwan. Last year they contacted him about marketing these new types of models to help them over a grave financial crisis.

Burt has started a youth program with membership in a national organization that recognizes their efforts in achieving certain flight goals. He holds contests using the windup versions of the models, since they are not currently on sale in the U.S., as are the catapult launched versions.

The airplanes are very easy to assemble since everything is locked together with little plastic twist cams. KMart stores handle the catapult versions along with some other major merchandisers.

Burt left a number of the models behind at the hanger. The party goers had some fun playing with them in between the hangers, doing some of the same dumb things kids do when they first start to fly models. If you are in the area stop by the hanger a take a look at them. You kids or grandchildren might like to try them. They range in price from $2 for the smaller catapult versions to around $10 for the propeller models.

The floor was then turned over to Jerry Blumenthal, who described his latest



modifications to a Dennis Pollen Special. Pollen's aircraft was a modification of the old Bushby Midget Mustang, that included retracts, a Commanche engine nose cowling and spinner, and a completely faired fuselage. The engine developed over 200 hp using supercharging and fuel injection, and produced speeds of 327 mph at altitudes of 22,000.'

Jerry began looking at ways to improve an already excellent plane. First he took the propeller slipstream off of the fuselage by making it a pusher. This resulted in the canard type flying wing or blended wing shown in the accompanying picture. He used fixed gear versus retracts in order to get more directional stability using the fairings. Jerry called his new design "Raspberry."

There was some general discussion about other improvements might be made to gain a little more speed, but Jerry thought some of them would be more complicated than he wanted to get.

Andy then asked Tim Rosauer to talk a little about the electric winch used for launching model sailplanes. Tim also brought along his model called the Paragon, which he had modified slightly to gain better penetration. It is a three servo aircraft running elevator, rudder, and spoilers.

The winch is made out of an old Ford starter motor with a long shaft that can be used to mount the takeup drum. His drum was a bolt together version versus a welded assembly. The electric circuit is basically a starter motor wiring using a foot pedal instead of a turn key. The current goes through an on/off switch and high amperage switch, which provide safety features, and then to a pair of Ford starter solenoids hooked up in series for additional safety.

The line runs off the drum to a turn around device made out of a bicycle hub and then back to the pilot. He uses 115# test fishing line, and achieves altitudes of about 300+'. The launch is accomplished by pressing the foot pedal to start the motor pulling in the line. Once there is some tension the model is released and the motor is pulsed to maintain a fairly constant speed to the top. At the top, the model over flies the line and the open end hook falls off. A small parachute maintains tension on the line as it descends back down so there is no backlash on the drum.

Andy conducted the raffle, which was won by Budd Love, who took the trouble light, and Bernie Gross, who selected the surge protector strip. Upon that note, the meeting was closed so everyone could enjoy the cake and ice cream, and go out to fly the models.

SHA WORKSHOP

Bob has indicated that fellow TWITTers Don Mitchell and Harald Buettner will be the Saturday night speakers for the SHA Tehachapi gathering over Labor Day weekend. This will be a TWITT sponsored meeting, so it seems appropriate to have a flying wing designer and builder provide some of the evening's entertainment. Harald will cover the thoughts behind his Flying Surfboard that was featured on the June newsletter cover.

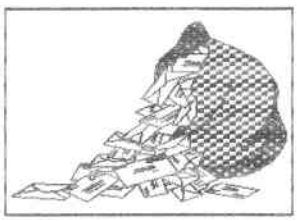
From what I have seen of the proposed agenda, it is shaping up to be another good weekend of speakers and demonstrations. Please make plans to be there at least through Saturday evening and meet with fellow TWITT members.

In the June issue, Philip Burgers writes that he 'offered Dr. Horten the use of my vortex lattice program' etc. I have the computer programs from Hollman's "Modern Aircraft Design' Volume 1 which accept entries for sweep, taper and twist, but do not handle wing planforms with several panels varying in those characteristics or in camber. I use a 386 IBM clone. Is there any chance the Mr. Burgers' program could become available for IBM type machines (MS-DOS). It seems that most of the wing planforms we are interested in have at least three varying elements per half-span.

William Heijn

(Ed. Note: Thanks for your subscription renewal and comments, Bill. Hopefully, TWITT can meet the needs of almost everyone by publishing both old and new ideas as they become known to us. As for Philip's program, I checked with him and he said it is written in Turbo BASIC on an IBM compatible, and will handle two different planforms. Philip will get in touch with you directly to see what his program can do for you. He is still making refinements to it and performing reliability tests, so does not want to just mail it to anyone for actual use at this time. I am sure we will hear more about this program once he has assured himself of its performance.)

LETTERS TO THE EDITOR



June 10, 1991

TWITT:

I have enclosed my annual renewal for the newsletter. I have received all but the May 1991 issue; please send a copy.

One comment. Someone wrote a few months back something to the effect that we should stop going back to old ideas and push for new ones. New ones are fine and we need them. We also need more work on swept-back wing planforms with pointed tips; how and where to apply riblets; etc. However, I think much of what you have already published show clearly that there is an enormous amount of useful and fundamental information in the 'old ideas' such as the Weyl articles which you published several years ago, in the articles on Horten, Zimmerman, etc., and it is a real service to some of us at least when you dig these up. For one, I would like to know more, if possible, about the results of the 50 year old experimentation by Northrop with turned-down tips. Weyl and Culver recommended diffuser tips. Northrop tried them and finally straightened them out, which leaves me wondering whether they are more useful for small aircraft only.

May 4, 1991

TWITT:

Enclosed is a check for a subscription and information package.

I am afraid I can't offer anything but moral support. My interest is in free flight and R/C flying wing models.

Also enclosed is some information that is probably "old hat" to TWITT, but just in case! The article is from Flying Models magazine and Dr. Pankin's program may be the same thing Keith Shaw uses in his very successful electric powered flying wing R/C models.

Yours Truly,
Henry G. Lelong
5430 Durant Drive
Port Orange FL 32127-5309

(Ed. Note: First of all, welcome to TWITT Henry. We didn't get you letter in last month which is a shame, since the information you provided included a program that might be of help to Bill. I will include some of excerpts from the article elsewhere in this issue so Bill and others can take advantage of the service offered by Flying Models. It seems that just about everyone who is a member of TWITT has something to offer the other members, no matter how big or small. This is the beauty of it all, since everyone learns more each month. Thanks for the contribution.)

June 3, 1991

TWITT:

Gosh, half the year almost gone and it seems like I have done nothing. Time goes so fast.

Thank you for your kind words on my Hall of Fame deal. It's kind of nice to be so honored. The museum is super and all of the people there and in Elmira are so nice. I had a good time. Harris Hill looks just the same as it did in '38 and it would be good to live close to it. But I'm to old to move that far.

I think our property up here is sold - not completely yet - but it looks pretty good. So, I hope to be down in Tehachapi soon and then I will be able to come to TWITT meetings. I would like to give some talks.

See You Soon,

Don Mitchell

(Ed. Note: The fact that you will be living in the southern California area and able to make more meetings in the near future is good news. I know Bob will be pleased to have some ready made programs in the months to come, since he has about exhausted his many, many contacts putting together programs for the last five years. Hopefully, some other members will be able to come up with a speaker now and then to help the cause. What do ya say guys?)

June 26, 1991

TWITT

I am sending you a photocopy of an illustration which appears in my forthcoming book TAILESS TALES (to be published in the US). It shows also the seed of the Zanonia Macrocarpa, a tree of the Java island (not Zona, as mentioned in TWITT Newsletter #6Ø, page 9).

Early in the century the Zononia seed was taken as a planform example by the Austrian pioneer Ego Etrich, who built a very stable craft.

If we look around us, we find many other seed-leaves which have a very shallow glide, although they are not as popular as the Zanonia Marrocarpa.

Keep going with your excellent newsletter!!

Sincerely,

Gale'

(Ed. Note: Thanks for the illustrations and especially the info on the Zanonia seed. I looked through several gardening books before publishing the newsletter, but couldn't find any details, so went with what I thought was close. It's good that the members keep us straight.)

PANKIN: FLYING WING TWIST & STABILITY

(The following information was extracted from an article by Herk Stokely, published in the June 1991 issue of Flying Models, pages 64-64. Alan Hallux and Bill Kuhlman are both long-time members of TWITT.)

"In the January 1991 issue of FM, my column discussed airfoils for flying wings. In that article, I stated that I wasn't aware of any analytical tool for determining the right amount of washout to build into a swept flying wing."

"Fortunately, two of our readers were quick to respond and share. Bill Kuhlman of "B^2 Streamlines" in Washington, had attended the M.A.R.C.S. Symposium and heard Walter Pankin's presentation. I heard first from Alan Hallux in Oregon who had worked with Bill in developing his own flying wing ideas further. Alan sent me a computer program that Bill had developed from Mr. Pankin's formulas, and later Bill wrote to tell me about it himself."

"Mr. Pankin's "Flying Rainbows" paper contained all of the formulas necessary to do what appears to be an excellent and accurate analysis of the swept flying wing design. ...but it does allow analysis of a swept flying wing aircraft with multiple airfoils and straight taper, to determine the amount of washout that must be built in to get the correct trim and stability margin on the first

try."

"If you want the program, Bill and Dr. Pankin have authorized us *(Flying Models)* to give it out. Send a self-addressed stamped envelope to me at 1504 N. Horseshoe Circle, Virginia Beach VA 23451; or if you'd rather, a formatted IBM compatible 3.5 or 5.25 disk with a stamped return mailer will save having to type in its 120 or so lines of code. *(It is written in Microsoft BASIC.)* Alan also has it running on a HP-41 handheld computer and the code is available, but not the magnetic cards."

(Ed. Note: Hopefully, this information will be useful to a number of you out there like Bill who are looking for some type of analysis tool to make your models perform better. If you order the program and have success with it, please let us know so others will know it is worth the effort.)

BOOK REVIEW

(The following review was sent to us Karl Nickel, as it appeared in the March 1991 issue of WINGSPAN - The Magazine For The Aviation Enthusiast, No. 73. The review was written by Ian Tunstall)

Tailless Aircraft - Their Conception and Characteristics, by Karl Nickel and Michael Wohlfahrt. Published in German by Birkhauser Verlag A.G., Basel, Switzerland. SIBN No. 3-7643-2502-X. Price sFr.68/DM 78.

'Without question the reason why tailless aircraft, glider or powered, are the subject of so much ill informed comment is because few flyers are able to discuss them from first hand experience. Not so with the authors of this book. Karl Nickel worked with the Horten brothers in Germany and with Reimar Horten in Argentina and flew the Horten gliders. Michael Wohlfahrt has a diploma in aeronautics and has made a study of their characteristics through the medium of radio controlled models.

Both authors are enthusiasts who are fascinated by the fact that "a wing alone suffices" and they are fully aware of the difficulties to be overcome in order to achieve stable flight without a tail unit. The whole subject has been presented in an impartial and factual manner which adds considerably to the value of this treatise.

Feasibility of all types of aircraft in flying wing form is reviewed - flying models, hang gliders, ultra lights, light aircraft, gliders, military aircraft, airliners and supersonic aircraft. Other chapters over stability, flying characteristics, controls and several myths are exploded in the chapter entitled "Fairy Tales."

The band of flying wint enthusiasts will soon regard this book as their "bible" since everything worthy of note is presented within its 616 pages which are illustrated with 83 photos and 228 sketches and diagrams. I understand that publication of an English language version is planned for 1993.'

(Ed. Note: Just a reminder that a group from within TWITT is assisting Dr. Nickel in the English translation. This is being done under the guidance of Marc dePiolenc, but I am not sure how far along they have managed to get since beginning it a number of months ago.)

AVAILABLE PLANS/REFERENCE MATERIAL

Tailless Aircraft Bibliography
by Serge Krauss
Cost: $20
Order from: Serge Krauss
3114 Edgehill Road
Cleveland Hts., OH 44118

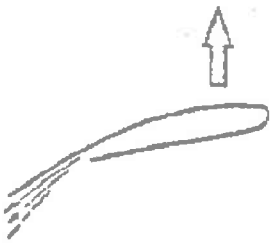
Horten H1c construction drawings with full size airfoil layout. 30 sheets 24" x 36" with specification manual. Price: $115.

Horten Newsletter
Cost: $5 per year for US/$7.50 foreign
Order from:
Flight Engineering and Developments
2453 Liberty Church Road
Temple, GA 30179
(404) 562-3512

FLYING WING SAILPLANE PLANS AND KITS: Two time-proven, 13m homebuilt designs suitable for the novice pilot. Build either the MONARCH "F" ULTRALIGHT (19 to 1), or the PIONEER II-D (35 to 1) sailplane.

Info packs $8 each, or $15 for both.

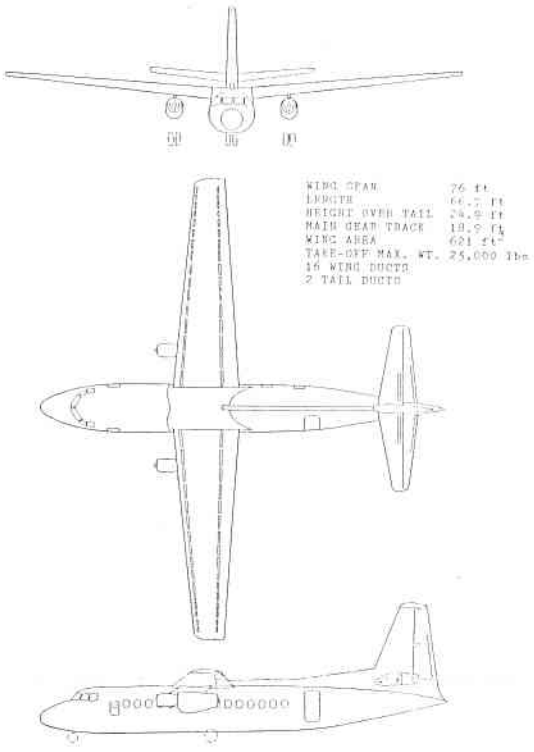
Marske Aircraft Corp.
130 Crestwood Drive
Michigan City, IN 46360



THE HIAM AIRPLANE
NEEDS YOUR HELP

For those of you who would be interested in assisting Budd Love with some aspect of his High Internal Air Mass (HIAM) project, he would be glad to hear from you. This concept has great potential for the future of air transportation.

Contact: AIRLOVE, LTD.
6423 Campina Place
La Jolla CA 92037
(619) 459-1489



HIAM AIRPLANE 3-VIEW

MODEL WINGS

The cover of the July 1991 issue of RCModeler features a flying wing called the "Stealthbat" offered by Wing Manufacturer. There was no price listed, but they can be contacted at:

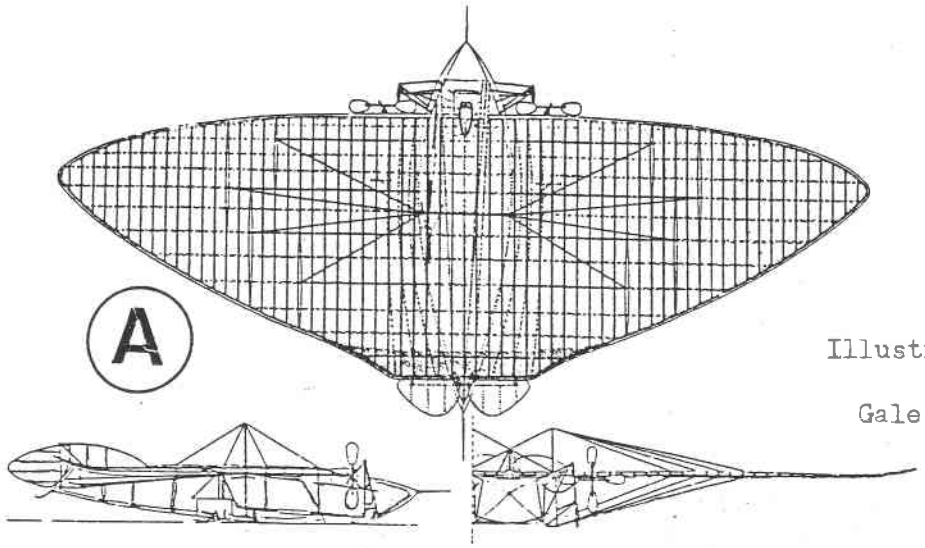
306 E. Simmons
Galesburg IL 61401
(309) 342-3009
Catalog: $4.00

Omni Models carries the Future Flight Klingberg Wing kit for $39.99 (item #FTF4000). They can be contacted at:

P.O. Box 1601
Bloomington IL 61702
1-800-747-6664 or (309) 663-5798
Shipping: $5.00

JOINT MEETINGS

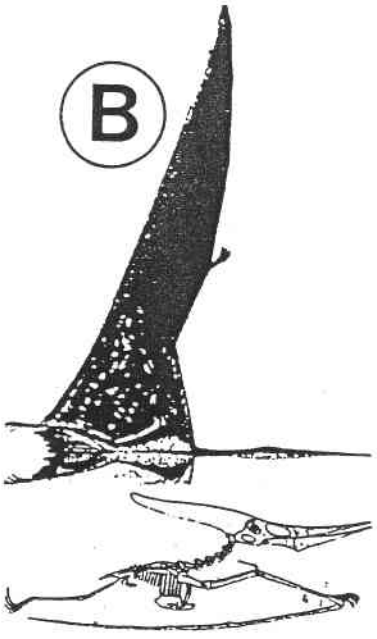
On July 2nd, Bob hosted a meeting of the Torrey Pines Scale Soaring Society radio control model builders, and on July 3rd the First Weekwacker Aero Sqdn. radiod control flyers. This exposed about 40 people to TWITT along with much of the other nostalgia Bob has in the hanger. They were told of the upcoming SHA Workshop at Techachapi and invited to join us on Labor Day. Bob also explained about his pending Screaming Siener/Li'l Dogie scale contest (more in a later newsletter), and Andy gave a introductory talk about TWITT and its goals for the future.

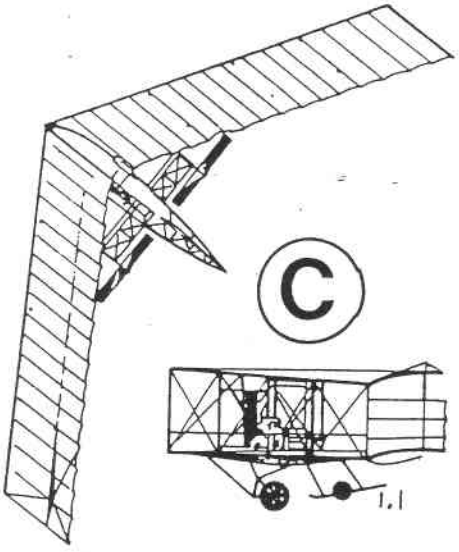


Illustrations by

Gale' Ferdinando

(A) Penaud-Gauchot, 1876
(B) Quetzalcoatlus Northropi, a flying reptile of a few million years ago
(C) Dunne D.5, a very stable biplane of 1910
(D) Seed of Zanonia Macrocarpa, a Javanese tree





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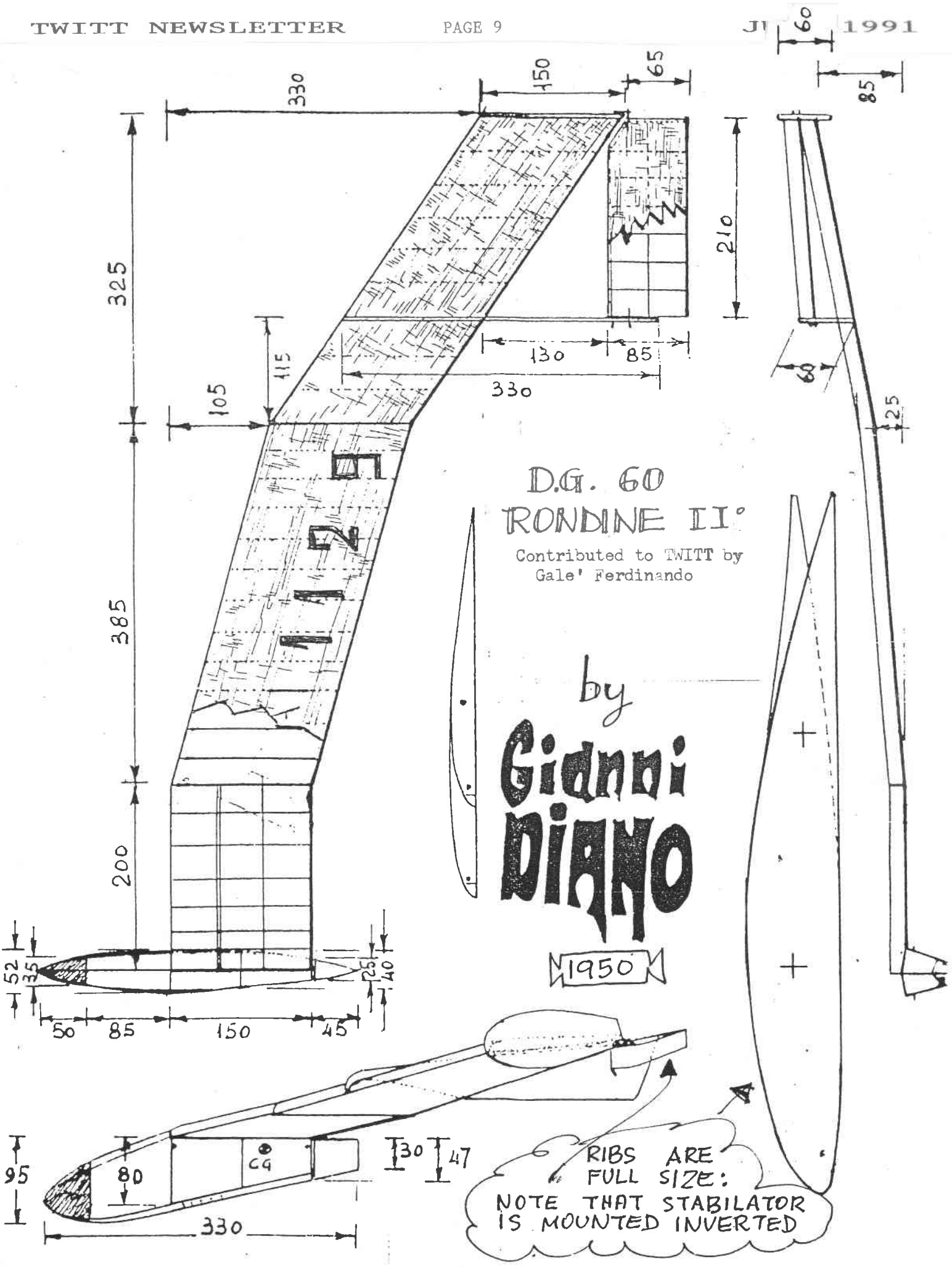
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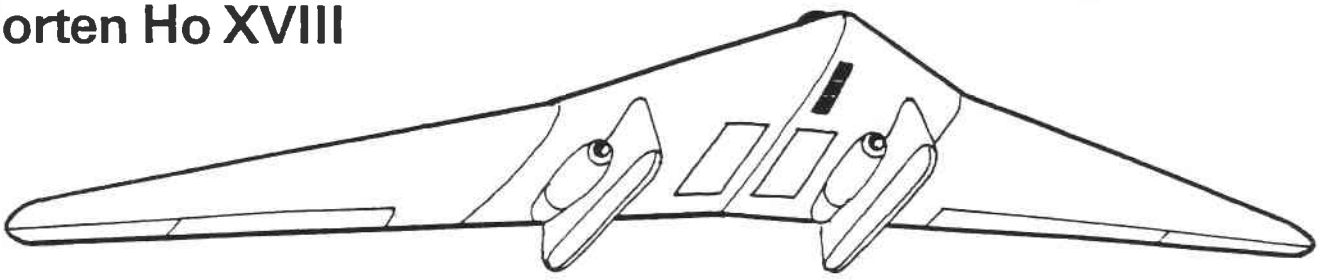
NOTE THAT STABILATOR
IS MOUNTED INVERTED

Horten Ho XVIII



Horten Ho XVIIIA

Late in the war the Hortens produced two sketch designs of flying wings in response to an RLM specification for a fast bomber with a range of nearly 5,000 miles (8,000km), payload of 8,000lb (3,600kg) and minimum cruising speed of 500mph (800km/hr). Service-entry date was to be 1946-47. A maximum landing speed of 100mph (160km/h) and a 3,000ft (900m) take-off distance with rocket-assisted take-off gear were also specified.

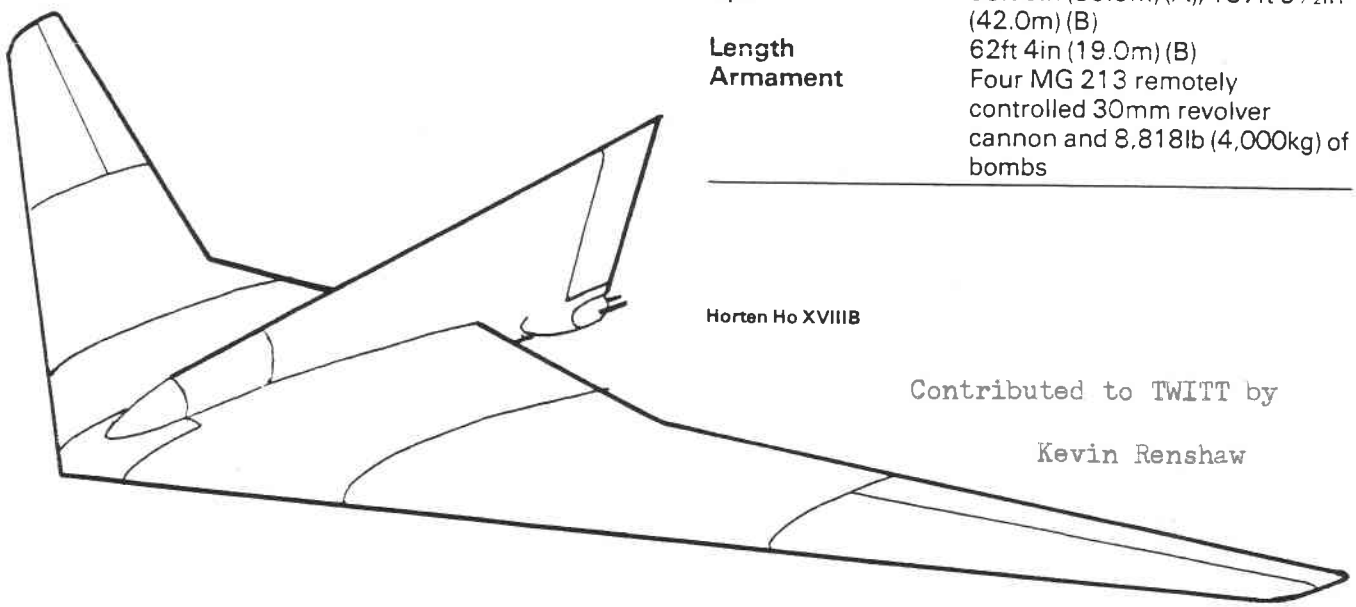
The Ho XVIIIA had an arrowhead planform, with no vertical control surfaces. A bubble canopy covered the pilot's station and all four crew were enclosed in a pressure cabin. Four HeS 011A turbojets were mounted in pairs on either side of the fixed, eight-wheeled undercarriage legs, the bogies of which were faired over during flight. The outer wings were to be made of wood and with a shallow dihedral, the centre section of wood or steel and light alloy. The main and auxiliary spars were of box section.

The significantly larger Ho XVIIIB had a large central fin and rudder, with the crew accommodated at its base behind a glazed leading edge. Located at the base of the fin trailing edge was a twin-cannon barbette which was operated remotely and sighted by periscope; two more cannon were fixed in the nose. Power was to be supplied by six Jumo 004H turbojets slung beneath the wing in a single housing.

The Ho XVIII design was prepared to the same specification that resulted in the Junkers EF.130 (see page 99) and Messerschmitt P.1107 (see page 129) jet bomber projects.

Horten Ho XVIII data

Role	Four/six-seat long-range jet bomber
Ultimate status	Design
Powerplant	Four HeS 011A turbojets (2,866lb, 1,300kg st each) (A), six Jumo 004H turbojets (2,426lb 1,100kg st each) (B)
Maximum speed	534mph at 22,960ft (860km/hr at 7,000m) (A), 560mph at 19,680ft (900km/hr at 6,000m) (B)
Range	3,356 miles (5,400km) (A), 5,593 miles (9,000km) (B)
Weight	73,000lb (33,100kg) (A), 97,000lb (44,000kg) (B) (both loaded)
Span	98ft 6in (30.0m) (A), 137ft 9½in (42.0m) (B)
Length	62ft 4in (19.0m) (B)
Armament	Four MG 213 remotely controlled 30mm revolver cannon and 8,818lb (4,000kg) of bombs



Horten Ho XVIIIB

Contributed to TWITT by

Kevin Renshaw