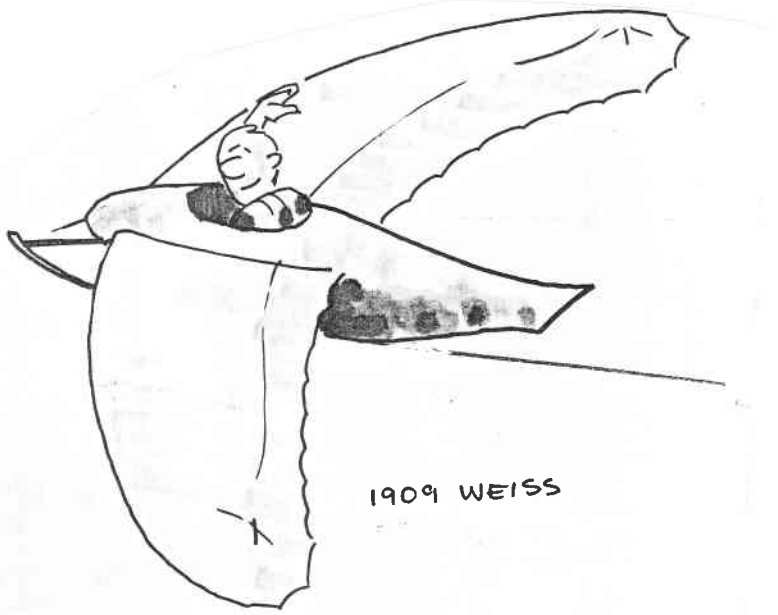
NUMBER 21, MARCH 1988

TWITT NEWSLETTER



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

NEXT MEETING: 19 March 1988, 1330 hours at hangar A-4, Gillespie Field, El Cajon, California.

NUMBER 21, MARCH 1988

MINUTES OF TWITT MEETING, 20 FEBRUARY 1988

The TWITTs assembled at 1330 in Hangar A-4, Gillespie Field, and Bob Fronius rose to address them. He reminded them that this was the 21st meeting of TWITT and the 26th anniversary of Colonel John Glenn's orbital flight, the first achieved by the United States. Bob felt a special kinship with Col. Glenn, having tested the retro-rockets for the Mercury program while working at General Dynamics/Convair. A reminder: there will be more flying wings at the Sailplane Homebuilders' Association meeting at Tehachapi, California. Don Mitchell's new wing will fly in from the Fresno area. Mr. Peter Selinger of Stuttgart, Germany, has kindly sent TWITT an account of the sixth Nurfluegel-Symposium that took place in October 1987 in Scheidegg. Heinz Scheidhauer, test pilot and Horten collaborator, was there. Bob then summoned Marc de Piolenc to introduce the featured speaker. Your Editor, not expecting this honor, had left his notes at home, but recited as best he could the introduction he had written for Newsletter number 20.

Professor Katz then took the floor, explaining that the work in which he is now engaged concerns the application of machine computation to low-speed aerodynamics, including the aerodynamics of unsteady motions in which he takes a special interest. The point of his work is to allow much of the low speed behavior of an airplane to be predicted before it is built. Two sets of methods are available for this purpose:

- Wind tunnels, traditional computational fluid dynamics codes and various lower-order prediction methods
- Panel methods as implemented for instance in the computer code VSAERO.

Work is in progress to transfer some tasks performed by VSAERO to a Macintosh II [unlike the early Macintoshes, the Mac II has a full 32-bit data buss—Ed.]. Large mainframes have not been needed for some time; the version of VSAERO running at San Diego State University is running on a DEC VAX minicomputer. The codes themselves have been fairly mature since 1982, and can now do limited modeling of separation vortices interacting with airfoil surfaces. Three-dimensional geometries are now practical computation tasks. Potential-flow codes, which neglect viscous effects, predict induced drag fairly well, but patched-in boundary layer models tend to underestimate viscous drag. In the course of his talk, Professor Katz showed examples of computations carried out with VSAERO. The majority were studies of the low-speed behavior of high-performance airplanes. One which caused particular comment was a study of canard/wing interaction in an advanced fighter design. Prof. Katz' conclusion from the study was that it is better to have the canard placed higher than the main wing so that the trailing vortices from the canard will always pass over the upper surface of the wing. If the trailing vortices are allowed to move from one surface to the other (say, in the transition from low speed flight to cruise), potentially dangerous trim changes result. A fairly wide range of phenomena can be predicted with fairly simple inviscid codes. For instance, a Beech Musketeer owned by NASA was modified with a sharp leading edge over part of each wing panel to induce vortex shedding and delay the stall on the rest of the wing. The computed results agreed quite well with the actual airplane's behavior. One study for which an unsteady flow model was needed concerned a "tailsitter." Other studies successfully carried out with an unsteady flow code included helicopter rotors and Deltas with leading edge separation. The time-dependent "rocking" motion of a Delta at high angles of attack has been successfully modeled, and is not due to vortex instability. Prof. Katz' presentation generated a number of questions, both during and after his talk.

MEETING ANNOUNCEMENT

Our next meeting will take place on Saturday 19 March 1988 at 1330 hours in hangar A-4, Gillespie Field, El Cajon, California, USA. Our speaker will be Tasso Proppe, a long-time member of EAA Chapter 14 and occasional TWITT. Tasso was born in Germany in August 1910, was a member of the Stuttgart Akaflieg from 1932 to 1937, serving as President in 1935. During that time he obtained an MS in Aeronautical Science, obtained his power and chief gliding instructor tickets and flew the "Wuertemberg" in the 1934 international glider meet. In 1939 he became the chief instructor at the German Engineering Test Pilot School, a division of DVL, the aeronautical research center. In 1942 he becaume chief of the flight test department. In 1946, when German aeronautical activity ceased, he was Technical Manager and Gliding Instructor with a British occupation forces recreational gliding school at Oerlinghausen. 1953 found him working for the US Air Force Missile Test Center on instrumentation systems engineering, and in 1956 he went to work for General Dynamics/Convair, where he worked in systems engineering, systems safety and maintenance engineering on missiles, spacecraft and aircraft. From 1937 on he has been involved in the development of motorgliders and is an enthusiastic advocate of cheap self-launching sailplanes. His topic will be "The Pitfalls of Designing Bright Ideas into New Airplane Concepts."

VI. NURFLUEGEL-SYMPOSIUM DER OSKAR-URSINUS-VEREINIGUNG, OCTOBER 3RD AND 4TH, 1987

by Peter P. Selinger, Diplom-Ingenieur

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Landschreiberstrasse 21
D-7000 Stuttgart 75 (Sillenbuch)
Telephone: 0711/47 98 48

First you must know that the German EAA has the name OUV, for Oskar-Ursinus-Vereinigung, and has now existed for 20 years. In the late 70's some "TWITT"-fans in the OUV arranged a "Flying Wing Symposium," which has met six times, most recently in October 1987 in Scheidegg near the German Alps.

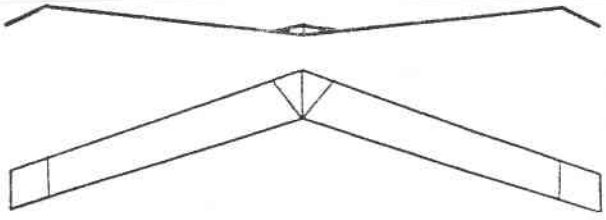
As in the past, the programme of this Symposium, put together by Ing. Walter Stoppel, was very interesting. I will try to give you an impression of what I felt was most important:

VISIT TO ARGENTINA

Dipl. Ing. Werner Kindler visited Dr. Reimar Horten in Argentina in December 1986 and January 1987. Although they had never met before, he lived there like an old friend. Some of the old flying wings, designed by Dr. Horten 30 years ago and more, that he was able to see:

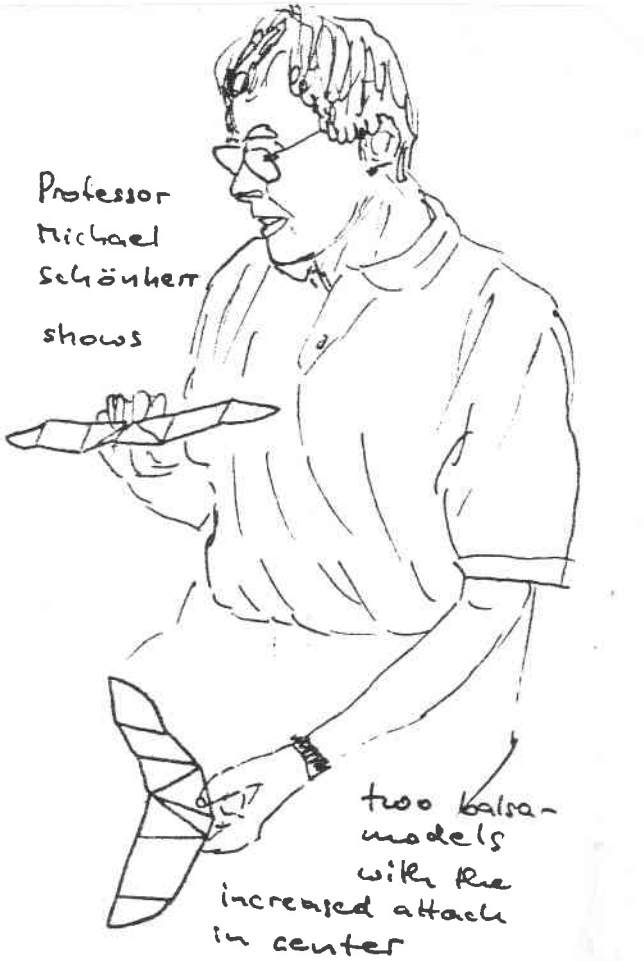
- Horten Xb in a garage, uncovered as Scheidhauer had left it in its filigree structure, with no hope of bringing it to flyable condition again.
- I.Ae.34m in Cordoba, in very bad condition.
- I.Ae.41 "Urubu," No. 2, in which Heinz Scheidhauer crossed the Andes, still in quite good condition.
- Horten Ib well preserved, but due to damage sustained on the ground forever unable to fly.

Now, with the help of Jan Scott, there is a chance to revive the Horten Era in building the Horten Ic, as published in *Bungee Cord* and the TWITT news.



CENTER-EFFECT

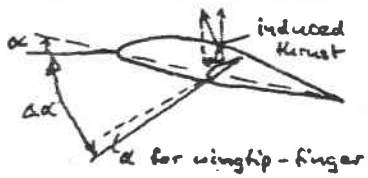
Prof. Michael Schoenherr, well known worldwide for his research in hang-glider safety, is developing a flying wing with a cranked outer panel, first as a model with 5 meters span, swept, root chord 400 mm, tip chord 300 mm. With models (far smaller) made of balsa wood, he proved his idea of compensating for the center-effect (lowered lift) [documented by Horten and



caused by the interference of vortex segments meeting at an angle other than 180 degrees, hence common to all swept-wing airplanes—Ed.] with increased angle of attack in the center-section.

TIP-FINGERS

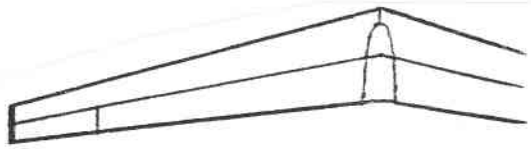
Dipl. Ing. Hans-Joachim Riedelsheimer (Lufthansa captain) presented his "finger-system" designed to reduce induced drag with five separately movable (angle of attack) little wings at the tip. He found out that these have to be placed at definite distances from each other. During a DFVLR (German NASA) symposium on sailplane development organized 6 weeks later his ideas were discussed controversially. Now his well-performing model

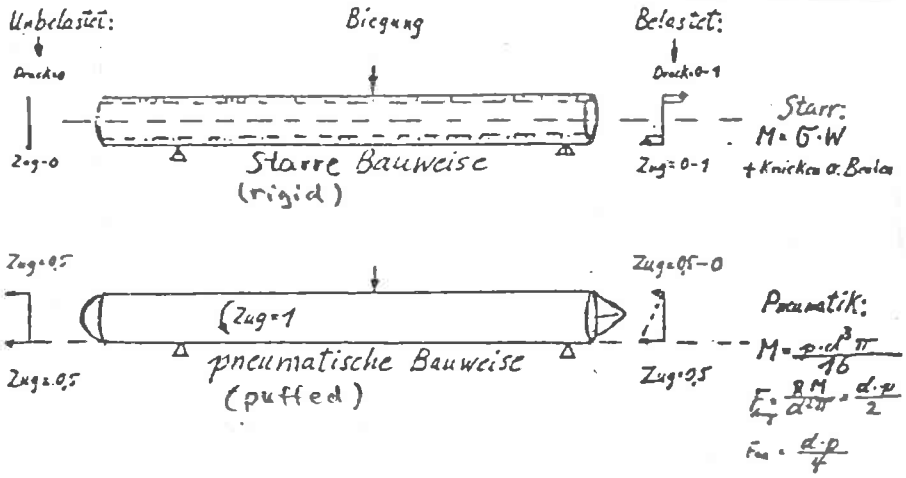


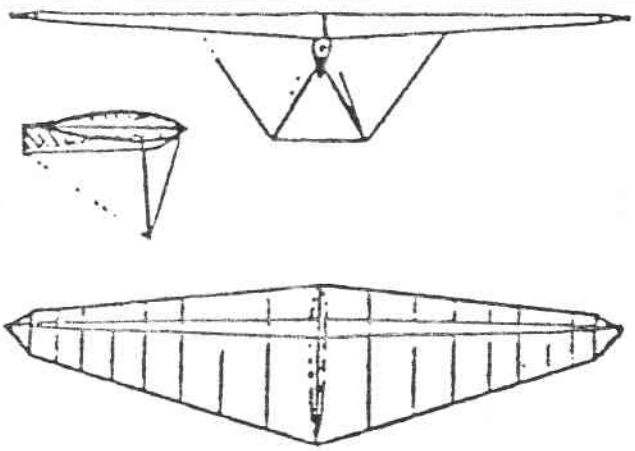
needs to be tested in a wind tunnel to prove the idea.

RIGID WING

Guenter Rochelt, a recently appointed professor of design in Hamburg, reported on his latest rigid wing hang glider developments. His "FLAIR" will have winglets, ailerons and flaps in series configuration and shall be transportable on a car's top, too. The pilot will lie in the wing level to reduce drag. In the prototype, the pilot flies under the wing in the same way as with a conventional hang glider and trims by weight balance. But the high aerodynamic value of the wing led to instability at higher speed. The pilot therefore has to lie within the wing in the new version (as the Horten brothers showed more than 50 years ago).







TWITT PNEUMATIC

Dipl. Ing. Herbert Weissert gave us an impression of his ideas to build a "pneumatic" flying wing hang glider. What you then use is the Kevlar-PVC tube structure covered with a sail and equipped with an air-pump for filling, all packed in a rucksack. Since the spar and ribs work well, he now has to construct a complete unit. He presented us this in the form of a dreamt fairy-tale which could soon be reality: You go to fly with a rigid hang-glider the same way as do today's parachute-glider pilots. Preliminary technical data of a "puffed up" wing:

Span	*10 meters*
Area	*15 square meters*
Airfoil Section	*~22%, symmetrical or reflexed*
Yaw stabilizer	*~0.5 square meters*
Weight	*~9 kg*
Load Factor	*8/6 g*
Glide Ratio	*= 21*
Minimum Sink	*= 0.61 m/s*
Materials	*Kevlar, Polyurethane, Polyester, Aluminium tubing, hardware a. s. o.*

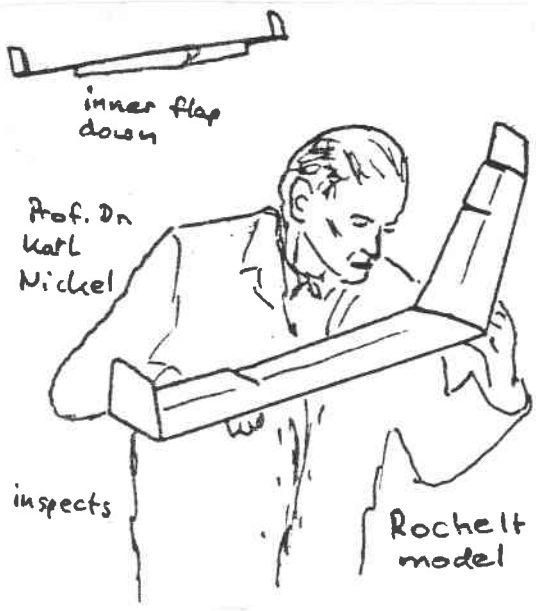
SUPER-SAFETY

A remarkable improvement in safety for low-level jumping from light aeroplanes, gliders, ultralights and hang-gliders will result from Dipl. Ing. Burghardt Krebber's research in parachute technology. In tests with a complete "kite" with ballast, this special parachute was fully opened after a 15 meter fall. He also tested it on himself with obvious success, since he was able to tell about it afterwards! His idea is to

help the common parachute to open faster without the use of aerodynamic forces. The parachute therefore does not need high speed to work; after release, the 'chute will open by itself far faster than conventional ones. In the latest proven tests, they threw it from a Cessna flying at 30 meters altitude: it was fully deployed 10 meters above the ground.

BRAUNSCHWEIG-TWITT

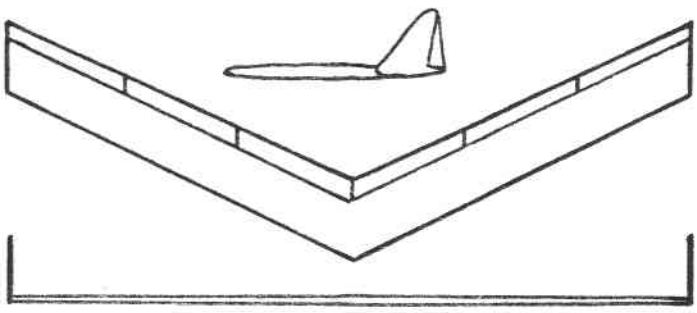
The most important step in tailless aircraft development in the past 20 years or more is being completed by the Akaflieg Braunschweig in the form of the high performance standard class sailplane SB 13. Due to the danger and high risk of aeroelastic flutter (typical in swept wings) the spar is the most complicated part. Additional troubles arose because the spar is bent, and not straight as usual. To get the high stiffness required for the wing to certificate a maximum true air speed of 210 km/h, necessary for today's soaring competitions, they couldn't build it the normal way. They had to integrate the rovings with the torsion shell weaver (both in high modulus carbon fibers) in ten well-coordinated steps. The spar has to bear further load because three controls have to cross it within the structure (aileron, elevator and air-brake). The dihedral angle was chosen to be 4 degrees to get a ground clearance of 1.3 meters, enough for landings at maximum lift coefficient. A special safety system was developed for the SB 13, similar to those often used in ultralights. Plane and pilot will come down together under the same parachute. For the SB 13, this is a 3-canopy chute designed for a maximum sink rate of 5.5 meters/s at a maximum load of 400 kg. The opening shock will be less than 14 g for less than 50 milliseconds.

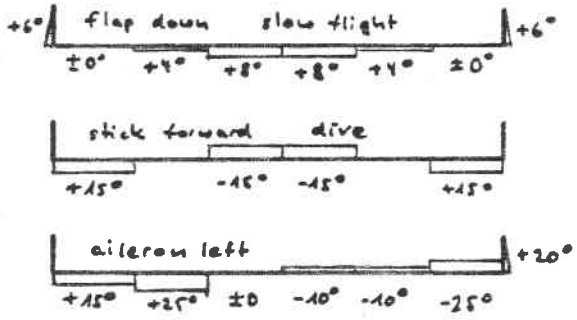


This vacuum-packed parachute system will have a mass of only 20 kg and packs in only 40 liters volume, behind the SB-13's pilot, above the main wheel in the "fuselage" tail. All these and more details of construction Stefan Seidel gave us in his slide show of pictures taken during construction. This winter, the first flight should finally take place.

8-FLAP "BUMERANG"

A student of Professor Nickel [TWITT and former Horten co- worker—Ed], Dipl. Math. Michael Wohlfarth of the University of Freiburg Institute for Applied Mathematics, gave the final lecture, based on his highly sophisticated mathematical developments in the calculation of lift distributions, not only for a fixed airfoil with twist but also for variable flap and aileron angles. This experience he put into the design of a flying wing model: Bumerang III. The Roman numeral 3 stands for three capabilities: slow, fast and good controllability with minimum induced drag. He achieved this with eight control surfaces: three flap/ailerons in each wing panel and one in each winglet. With his flap configuration—and with the help of winglets—he is able to





maintain an elliptical lift distribution at all speeds, in contrast to most flying wings which have their ideal elliptical lift distribution at one speed only. The model will have an Eppler E 226 airfoil at the center-section and E 229 at the tip.

PROMINENT PARTICIPANTS

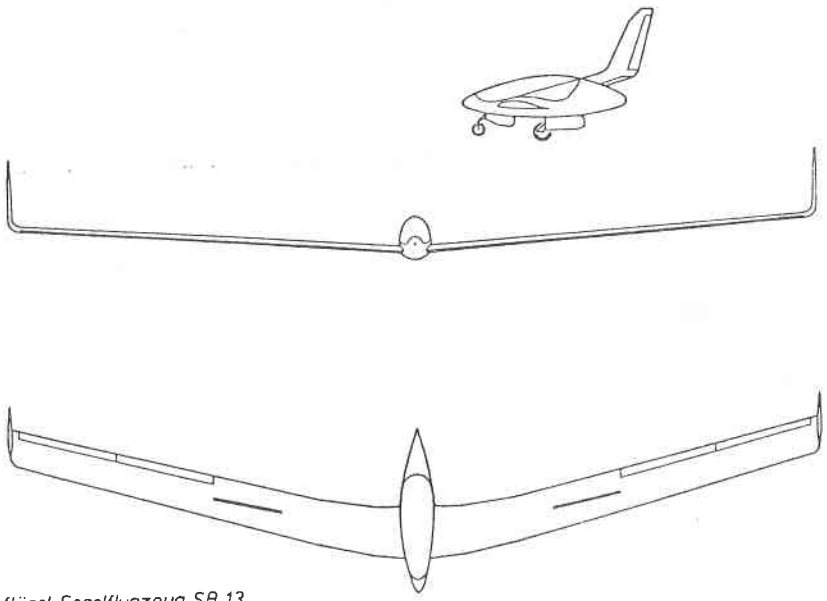
The most prominent of the more than 70 participants were Walter Horten, Prof. Dr. Karl Nickel and Heinz Scheidhauer, involved in flying wing development for more than 50 years. Monsieur Mercier (Fauvel owner and fan), from Montpellier, France—he had the longest way to travel—was honored by the Lord Mayor of Scheidegg for his continuous support of the flying wing symposium from its beginning. Next year the meeting should again include more practical subjects, and will therefore be held again at Tannheim airfield, between Ulm and Lake Constance, a center for ultralight flying.

Peter F. Selinger

Peter F.Selinger

IS THIS YOUR LAST ISSUE?

Beginning with Newsletter Number 21, mailing labels will have on them a four-digit code for the year and month of the last newsletter the subscriber will receive under his current subscription. If your label reads '8805,' for example, your last Newsletter will be May 1988. For obvious reasons of cost, we cannot send separate renewal notices to our subscribers, so this is all the warning you get that we are about to lose you. Please check your label now, and take the time to renew if your subscription is nearly expired. While we're at it, let us remind you that all back issues are still available at $.75 apiece. Subscriptions still cost $ 15.00 per year. Payment must be in US Dollars.



Nurflügel-Segelflugzeug SB 13

DATEN DER SB 13

Flügel

Spannweite	15 m
Fläche	11,6 m²
Streckung	19,4
V-Form	+4°
Schränkung	-1,5° Außenteil
Profil	HQ 34N/ 14.83 innen HQ 36N/ 15.12 außen

Winglets

Höhe	1,25 m
Fläche	0.675 m²
Streckung	2,31
Profil	FX-71-L150/ 30

Rumpf

Länge	3,02 m
Breite	0.66 m
Höhe	0.84 m
Fahrwerk	2-Rad, einziehbar, gefedert

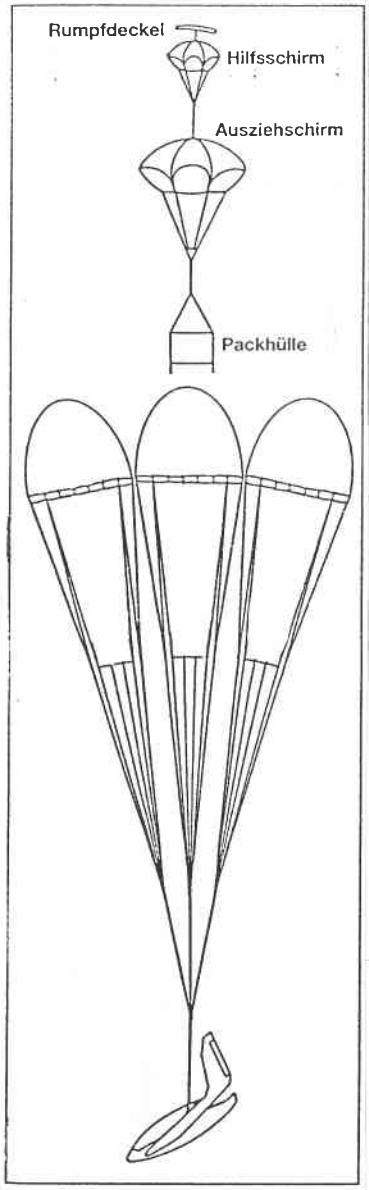
Gewichte

Rüstgewicht	2240 N
Zuladung	700 - 1100 N
Wasserbalast	max. 1330 N
Fluggewicht	2940 - 4270 N
Flächenbelastung	248 - 360 N/m²

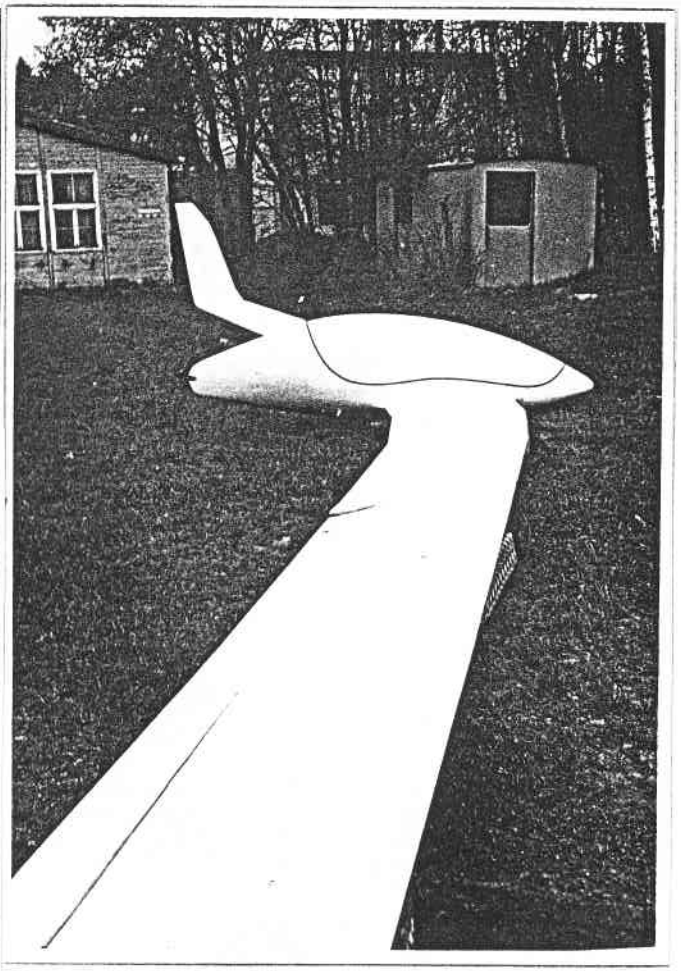
Flugleistungen

V min	70 km/h
V max	210 km/h

SB-13 Technical Data



SB-13 Safety System



Full-Scale Model for Female Molds

The following article appeared in the journal of the Sailplane Homebuilders' Association (SHA), an affiliate of the Soaring Society of America.

THE MITCHELL VICTORY "V" WING

by Don Mitchell

The "V" Wing is an outgrowth of the U-2. It is, however, an entirely new design, both structurally and aerodynamically.

It is not difficult to design a cheap ship that is simple to construct or cheap to build or easy to transport and store in your clothes closet or aerodynamically good. But try to do all of this in one design and you have one great big Excedrin headache. The demands are monumental, and at this point I am not sure that it can be done, but I believe the "V" wing will come close.

Structurally, it has a single spar fabricated of spruce caps and birch plywood web. The spar has 12 degrees of sweep starting 4 feet outboard of the center line. This is necessary in order to get the spar in back of the pilot and through the pod. Why is it that spars are always where the people have to be?

Bonded to the front and rear of the sppar is 1 pound foam hot wired to contour and hollowed out inside. To save material and labor the leading edge and trailing edge of the outboard sections were made from the hollowed-out center sections.

The wing skin is 6 ounce glass applied at 45 degrees with multiple plies added as required. Epoxy adhesive is used throughout.

The 19 foot, 6 inch center section includes the integral pod, hinged canopy, engine, controls and 2-wheel tandem gear. The 7 foot, 6 inch outboard wings carry integral fins and split rudders, and on the trailing edge the stabilators that function as elevators and ailerons. Outboard secures to inboard with pins at the spar and a drag and anti-drag fitting front and rear. Three and a half degrees twist is built into the outboard section, and to prevent tip stall the leading edge has a built-in "C" slot. During flight test the slot will be sealed off in increments from the root out until minimum slot length is obtained, probably 4 feet. The outboard sections fold up and over the center section for transportation and the 18 inch nose cone is removable to keep the overall length front-to-rear to 8 feet.

The pod is all foam skinned with glass. It is roomy and very comfortable, with the pilot's back agains the spar and a 6 inch cushion under him. In back of the spar is the 5-gallon gas tank with sight gauge for quantity. Visibility is exceptional due to the low nose profile and large hinged Lexan wrap-around canopy and the 9 by 18 inch window in the lower surface of the wing next to the pod. The sides of the pod are cut out to allow storage in the wing and vision down through the lower window.

On the left side of the cockpit are throttle, choke, rear wheel retraction and key switch for ignition and starting. The control column has elevator trim and brake lever with provisions for a radio switch if desired. Rudder pedal are ground adjustable a total of 4 1/2 inches. The pedals steer the nose wheel. The nose wheel retraction is right in front of the control column. Push-pull tubes are used for stabilators and cable for rudder, throttle, choke and steering. The landing gear is 2-wheel tandem with drum brake on the rear. The 2 tiered instrument panel is adequate for all soaring instruments and radio if required.

The KFM 107E [replaced by a Zenoa (sic) 18 hp--see letter elsewhere in this issue and specifications below] engine with electric start is mounted on the back bulkhead and directly drives the 2-blade wood propeller. Direct drive is far from ideal but considering cost, simplicity and drag it appears to be a good compromise. [Current installation includes a reduction gear--see letter elsewhere in this issue.] A folding propeller is being developed, but here again you reduce drag but boost cost and complications. The exhaust pipe, muffler, carbureter and much of the engine are enclosed in the aft fairing. A ballistic parachute is installed behind the pilot.

The "V" Wing with the correct propeller, gear locked down and aft fairing removed will meet all requirements for the ultra-light aircraft. It also should provide the soaring enthusiast a ship that is affordable and self-launching, with good performance ideally suited to light soaring conditions.

This is my 30th homebuilt and my 48 years of soaring experience are in the design. If it turns out to be a success, that will be good. If not, there will always be the 31st, 32nd, etc., etc.

MITCHELL "V" WING SPECIFICATIONS

Span	*34 feet, 6 inches*
Area	*136 square feet*
Aspect Ratio	*8.8*
Weight Empty	*253 pounds*
Payload	*273 pounds*
Gross Weight	*528 pounds*
Engine	*Zenoa 18 hp with reduction gear*
Propeller	*Wood, 2-blade, 50 inch diameter, 30 inch pitch*

Max r.p.m. Engine: 6000, Propeller: 2800

The following piece of Horten IV history comes to us through the courtesy of Bill Hannan. It first appeared in Flying November 1952.

ALL-WING SAILPLANE

A glider that is all wing and no tail, designed and built in Germany in 1941, is causing a furore in U.S. gliding circles in 1952.

Reimar Horten, in 1940-41 a technical officer at the Luftwaffe Cargo Glider School, designed the all-wing, high performance sailplane, which was built by a group of students at the School during their spare time. When completed it was christened the Horten IV and was flight tested in 1941.

Among the builders of the unorthodox craft was Rudolf Opitz, chief flight instructor at the Luftwaffe School. In 1941 Opitz was assigned as test pilot for the world's first manned rocket airplane, the Me-163, and later he took charge of flight training for this rocket interceptor.

After the war, Opitz came to the U.S. and was employed by the Air Force for technical duties at Wright Field, Dayton, O. He learned that the Horten IV had meanwhile been purchased by Hollis Button of Valley City, N.D., and that the plane had been damaged in its first flight in the U.S.

By arrangement with Button, Opitz transferred the damaged craft to Dayton, where he converted a chicken coop into a repair shop and spent 1,500 spare time hours getting the glider back into airworthy shape.

Last May Opitz entered the Horten IV in the Wright Memorial Glider Meet and made three notable flights--a seven hour, 24 minute endurance flight, a cross-country flight of 88 miles, and an altitude flight to 5,480 feet. The three events won him the meet's Grand Champion title.

LETTERS

Don Mitchell writes:

Dear Bob and June,

The past few weeeks I have been trying to sort out all of the pictures and negatives of gliding that I have gathered in the past 50 years—and it's not a small job.

Enclosed are four pictures of the "Baby" that you picked up. They are not very good but something—for your pile of pictures and you must have hordes of them.

Also there are a few shots of the "Mitchell wing hang gliders." Enclosed also is the write-up for the Victory wing. This ran in the SITA publication, I have been told. I have installed a Zenoa engine with reduction gear and have 6 hours on it [letter is dated February 2, 1988—Ed.]. It has super performance and is so easy to fly. I intend to fly it down to Tehachapi next September.

I have decided to make plans for it—no kits—just plans. They should be ready about April.

I have started a two-place wing—the wing hang glider that I sent you pictures of sometime back is ready for flight as soon as the pilot is ready—we expect 400 mile [640 km] flights this Summer in the Owens Valley.

Good luck and thanks for everything you've done for me.

Don

Bob Fronius (gosh that name sounds familiar) writes:

TWITT (The Wing Is The Thing) invites all who believe in Flying Wings to come to the annual Sailplane Homebuilders Association meeting at Tehachapi, California over the 1988 Labor Day weekend.

You will be able to attend lectures, watch and touch vintage sailplanes and talk with their owners and restorers. You will also be able to see and photograph home-built sailplanes, see them fly and talk to their designers and builders.

TWITT is sponsoring flying wing participation. Flying Wing enthusiasts have met in Europe for many years. Come over Labor Day Weekend for a visit with great people; their interest is the same as yours.

Bob Fronius

We have two letters from Bill and Bunny Kuhlman of Olalla, Washington, dated 11 February and 4 March, which your lazy Editor has taken the liberty of abridging:

...Our interest is in radio controlled tailless sailplanes. We are currently halfway through a 1/4 scale Marske Pioneer II-D (and looking for documentation to complete it as a reproduction of an actual aircraft—can we contact Bernie Gross?).

We correspond with other modelers in Germany and England; we are finding a lot of interest in flying wings in Europe, and there is a definite move toward scale models worldwide.

Our personal library is not extensive, but we have accumulated quite a bit of information on low Reynolds number flying wings—design, flying characteristics, etc. We have also done some com-

puter programming to assist us in laying out wing ribs, fuselage bulkheads, foam templates, etc.

We would be most happy to share information, provide Xerox copies of articles and plans we have, or perform research. We appreciate the opportunity of subscribing to the TWITT Newsletter, but would like to see data and information flow both ways.

...We have just received all twenty issues of the TWITT Newsletter as back issues, and to say that we are impressed with the accomplishments of the TWITT group is surely an understatement. While our primary interests lie in flying wing and tailless models, we have found that nearly every article presented has information of interest to us. One of our goals is the design and construction of a high performance flying wing for contest work (F3B), but we are currently constructing a 1/4 size model of the Marske Pioneer II-D. The wings are nearly completed; the fuselage will be a three piece fiberglass layup, just like the original. The 3-views in the newsletter are mouthwatering! They, along with the wonderful data, make it hard to decide what to build next—another scale model or an F3B type. At this point we have a small number of requests which you may be able to fulfill:

[There follows a list of misprints and omissions in the NL reprints, which we are laboring to correct.]

The printing quality of issue #20 is a great improvement over previous issues; much more clear and hence easier to read. We are eagerly anticipating #21!

We have some articles which may be of use in the TWITT library. Hopefully we will be able to get a list of these printed up in the near future. When we do, we will pass it on to TWITT.

Bill

We have also two letters from Reg Todhunter of Tewantin, Queensland, Australia, whose Twin Plank will be featured in a forthcoming issue. These, too, are abridged:

...I am intrigued by the Lippisch (what a marvelous man he was) DFS 42. I have not seen the machine before, other than as a drawing in TWITT magazine, but I thought it was just a "doodle." As Bruce will have told you, I have a design on paper (since 1975) for a high performance swept forward wing sailplane, and have fairly recently been considering the real benefits of fitting a small tailplane to the design, and the result looks very much like the Lippisch machine. I would very much like to pursue the idea further, but it will have to wait until the Blue Wren is brought to some form of conclusion. At the moment our "Baby" is getting very close to flying. The new motor appears to be the one to do it. You will certainly know as soon as we fly.

Reg Todhunter

High praise for the Original TWITT from Ed Lockhart of Lakeside, California:

Dear Bob—

I absolutely marvel at your tenacity. Tackling a tailless target to begin with takes guts, and a whole lot more to keep it going. Thanks to you it isn't just going, it's gaining.

The February issue of TWITT is a prize example of outstanding articles exceedingly well edited. Marc de Piolenc deserves much of the credit for that, of course [OF COURSE—Ed.], but without your strong aims, purposes and DRIVE, he'd have nothing to edit.

TWITT is earning widespread recognition and a place in the sun, because one man won't quit when the going gets tough. TWITT has already outdistanced and outlasted several similar endeavours having more popular appeal to begin with.

So many of us benefit greatly from TWITT, in sometimes intangible ways. "Fallout" can collectively be as beneficial as the main effort.

Bringing TWITT from an obscure thought to present popularity and vigor is a minor miracle, deserving appreciation from every last one of us.

Sincerely,
Ed Lockhart

Peter Selinger of Stuttgart, whose report on the Nurfluegel Symposium appears elsewhere in this issue, writes:

Dear friends of flying wings,

In October past year I could participate in the VI. Nurfluegel- Symposium in Scheidegg. It was very enlightening to be there and to hear the lectures, and sometimes also to understand them. Therefore I thought it would be of interest to the TWITT-friends to get some information on it. The small illustrations should give you an impression, too, better than hard reproducible photographs.

Please give me feed back, whether these contributions would be welcome or not, perhaps shorter or more detailed; the latter would be difficult, in general. But perhaps I could get original papers then for you.

With best wishes to all "flying wings" and their fans for a lucky, secure, successful and satisfying New Year 1988

Cordially
Peter

[Peter, our very prompt publication of your report should give you some idea of its great value to TWITT. Yes, we would like very much to receive

the original papers from the conference, and from prior conferences if they are available. Many thanks!

Marc de Piolenc]

A lineup of Mitchell Wings

Karl Sanders and Marc de Piolenc