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T.W.I.T.T. NEWSLETTER



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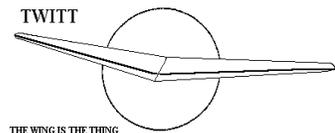
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T.W.I.T.T.

The Wing Is The Thing
P.O. Box 20430
El Cajon, CA 92021



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**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.

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

President: Andy Kecskes (619) 980-9831
Treasurer:
Editor: Andy Kecskes
Archivist: Gavin Slater

The **T.W.I.T.T.** office is located at:
 Hanger A-4, Gillespie Field, El Cajon, California.
 Mailing address: P.O. Box 20430
 El Cajon, CA 92021

E-Mail: twitt@pobox.com
Internet: <http://www.twitt.org>
 Members only section: ID – 20issues10
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Gatherings are held on the third Saturday of every odd numbered month, at 1:30 PM, at Hanger A-4, Gillespie Field, El Cajon, California (first row of hangars on the south end of Joe Crosson Drive (#1720), east side of Gillespie or Skid Row for those flying in).

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PRESIDENT'S CORNER

My thanks to Jason Wentworth, Larry Nicholson and Takashi Hoshizaki for their contributions for this month's issue.

If you would like an electronic version of this issue so you can use the links in Jason's letter, please let me know and I will e-mail you one.

I do want to note that the Jetstar photos are not a flying wing but are of an aircraft that has wings and engines, just not arranged in the TWITT fashion. Sorry about that.

I really enjoyed seeing the old photos of the Jetstar prototype that forced me to do some research into the more modern ones. It also made me recall that one airplane I flew in Germany was now on display the air museum in Tucson, AZ

That's it for this month.



LETTERS TO THE EDITOR

Hello Andy,

I am too familiar with Fibber McGee's tightly-packed closet to try opening and unpacking the following (see:

<https://www.pinterest.com/pin/299911656412549701/?p=true> :-)) website all at once. I happened to come across a website with the name, "Tiny Tailless Glider – plan thumbnail," which turned out to be loaded with tailless (and some non-tailless) model plans, many of which are from other countries. There are also other tailless designs **here** (see: https://www.google.com/search?source=hp&ei=VrtsXbLJG4Ps9APlyr6oBA&q=tailless+rc+gliders&oq=tailless+RC&gs_l=psy-ab.1.1.0j0i22i30i4.3882831.3888124..3894372...0.0..0.128.1206.0j11.....0....1..gws-wiz.....0i131j35i39j0i10j0i3.kPlvLdqJVvs4), including rocket-powered ones.



Also, Andy, **here** (see: <https://www.google.com/search?q=tailless+rc+gliders&tbm=isch&source=hp&sa=X&ved=2ahUKEwjUksKt1LHkAhWSFzQIHsnPApoQsAR6BAqIEAE&biw=1440&bih=789#imgrc=e4qKjq-CD6NQJM>) is more material (photographs and drawings) on tailless models and full-scale tailless aircraft.



In addition to the "hammock-like," non-rigid Paragliders (which also fly with engines: https://www.google.com/search?sxsrf=ACYBGNQlaFLRjMCTImdLmcp-XS3hKTXqOA%3A1567906607325&ei=L1t0XY6-E8rq-gTb47jADq&q=paragliding&oq=paragligs_l=psy-ab.1.0.0i10.223402.226265..228713...1.1..0.123.787.0j7....2..0....1..gws-wiz.....10..0i71j35i362i39j35i39j0i67j0i131.txRMn9tbV1M) and the traditional hang gliders, there is also a new type of glider (which requires ^no^ medical examination)—the foot-launched sailplane (see: https://www.google.com/search?sxsrf=ACYBGNRD5BXvIwZ_RFI-1zxCC99HX1957q%3A1567917185899&ei=qYR0XcDENs399AOA0KaoAw&q=foot+launched+sailplane&oq=foot-launched&gs_l=psy-ab.1.5.0j0i30i9.2430.7397..11165...1.1..0.149.1554.0j13....2..0....1..gws-wiz.....10..0i71j35i362i39j35i39j0i131j0i67j0i131i67j0i10j0i10i30.YwyaHxh4wvA). Foot-launched sailplanes are available in both flying wing (usually swept) and wings/pod fuselage/tail boom/regular tail assembly configurations. Also:



Foot-launched sailplanes (see: https://www.youtube.com/results?search_query=foot+launched+sailplane), such as the Archaeopteryx (**see**: <https://www.youtube.com/watch?v=-jPARWogsms>), can be launched in all of the ways that a regular sailplane can, and more. The above-linked YouTube video shows the Swiss-made Archaeopteryx being launched by running down a shallow incline, from a moderate drop-off, by a runner pulling it, by an automobile tow, a conventional light plane aero-tow, and a powered ultralight aero-tow. Landing—on grass and on paved runways—is made on landing wheels, and a foot-landing, on the pilot's legs, was also made; being conducted into the wind, the pilot simply started walking, carrying the Archaeopteryx. The Archaeopteryx (see: https://en.wikipedia.org/wiki/Ruppert_Archaeopteryx)

), which has a Lift/Drag ratio of 28:1, is also available in multiple versions, including an electric-powered one. Is there any chance that Jim Marske might produce a plank-type foot-launched tailless sailplane of equal or better performance? With today's new composite materials and software design tools, such aircraft are likely within reach.

Here is something that you and your grandchildren could share (see: <https://www.youtube.com/watch?v=mgkk0Hdwmo8&list=PLC0843492D7F3C746&index=1>). I found the film adaptation of Richard Bach's classic book, "Jonathan Livingston Seagull" (and here https://www.youtube.com/results?search_query=jonathan+livingston+seagull+full+movie are other related clips, such as a trailer). Also:

Because they couldn't get the trained seagulls to perform all of the desired maneuvers in the movie, they hired Mark Smith from California (the 1972 R/C—radio control—soaring champion) to fly an R/C model seagull (see: https://www.google.com/search?source=hp&ei=VZ1rXfcENPt-gTl-LngAg&q=Mark+Smith+with+R%2FC+seagulls&oq=Mark+Smith+with+R%2FC+seagulls&gs_l=psy-ab.12...1003.18002..19170...0.0..0.140.3265.0j28.....0...1..gws-wiz.....0i131j0i35i39j0i3j0i22i30j0i22i10i30j33i22i29i30j33i160j33i10i160.zY3nzmyWHJA&ved=0ahUKEwi329mLta_kAhXTtp4KHUh8DiwQ4dUDCA). Several duplicate R/C seagulls were built, so that if one crashed, the shooting could continue without any significant delay. (Incidentally, an expanded version of the novel was published in 2014: <https://www.revolvy.com/page/Jonathan-Livingston-Seagull> , "Jonathan Livingston Seagull: The Complete Edition" [AbeBooks.com www.abebooks.com has it cheap].)



Here is another classic film that you and your grandchildren could watch. A few days ago, I found—and watched, *52 years* after having first seen it—this Disney movie about sailplane soaring (it's not too long, just 48:49), called "The Boy Who Flew With Condors" (see: <https://www.youtube.com/watch?v=OqHXiaMhSlo> [Schweizer 1-26s figure prominently in it]). "The Boy Who Flew With Condors" is also available on DVD: <https://www.ebay.co.uk/sch/i.html?from=R40&trksid=m570.l1313&nkw=Disney+%22The+Boy+who+Flew+with+Condors%22+DVD&acat=0> . I was almost exactly five months old when I saw it; it was shown on NBC on Feb.19, 1967, as part of "Walt Disney's Wonderful World of Color" (Season 13 [1966-1967], Episode 20). Walt Disney actually appeared at the opening and conclusion of it (he died on December 15, 1966, so this movie was already "in the can" before 2/19/67—it might have been his last TV appearance). NASA test pilot Milt Thompson also appears in it, as do the plywood M2-F1 lifting body (the metal M2-F2 was made famous by its crash footage in "The Six Million Dollar Man"—Bruce Peterson flew it that day...), the Lunar Landing Research Vehicle, and one of the three X-15s (tail number 66671). Also:

I remember much of it (the sailplane lake landing, the M2-F1 lifting body test flight, the sailplane's contingency takeoff tow behind an old prospector's jalopy, etc.), even though I was so very young at the time. The "experts" say that it's impossible for such young children to remember anything, but I also recall my mother holding me as an infant, at a firemen's ball (I was attracted by the rounded-cornered square light fixture bezels on the ceiling, which I also saw some years later, at the same dance hall in Miami). That 1967 TV movie ignited my passion for gliding, which I got to do twice (at the age of nine) in the summer of 1975, and I enjoyed it as much as the boy in the movie! I'm contacting our local CAP (Civil Air Patrol) unit to see if it might be possible to open a gliderport here in Fairbanks, as we have all of the types of soaring conditions (thermal, ridge, and mountain wave lift), plus beautiful aerial vistas, here in our valley and over the surrounding mountains, for tourist and competition soaring.

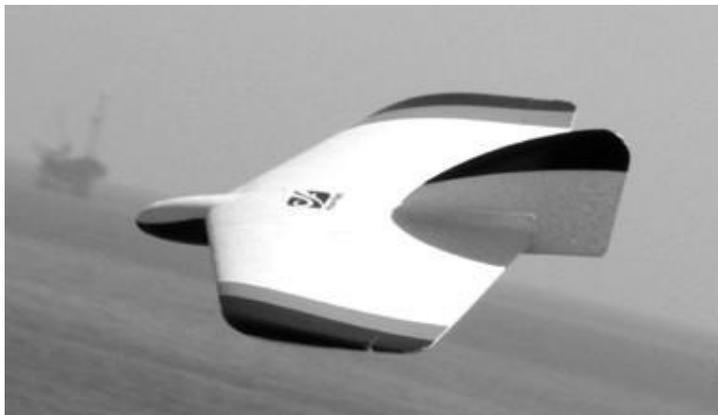
I wanted to pass along some happy news. Dream-Flight in Goleta, California (see: <https://www.dream-flight.com/>), manufacturer of the Alula-TREK and the Weasel-TREK flying wing R/C gliders (they also produce an aerobatic conventional-configuration glider called the Ahi, and a DLG—Discus Launch Glider—called the Libelle), will have their popular Alula-TREK

back in stock in November/December. (Their website contains several videos of their gliders in flight, and *here*

https://www.youtube.com/results?search_query=alula+trek+glider

and *here*

https://www.youtube.com/results?search_query=weasel+trek+glider are owners' videos of their Alula-TREK and Weasel-TREK gliders in action [the Weasel-TREK is a slope soarer, while the Alula-TREK is a thermal and slope soarer].)



Here (see: <https://www.vintagemodelcompany.com/>) is the Vintage Model Company's website. They produce replicas of classic flying model kits (Frog, Keil-Kraft, Skyleada, Veron, etc.), as well as a few new kits that "fit" into those lines. A significant number of the kits they offer are tailless ones (their Jetex kit line, in particular, includes several). Jetex kits are by no means outmoded today:

Not only is Chris Sorenson (see:

<https://www.youtube.com/channel/UCZpFaleBefitInbZVzItV90Q> and <https://jetxus.wordpress.com/>) now

testing a Rapier-like, "drop-in replacement" for the Czech-made Rapier single-use model jet motors, called "Jet-x" (which "Dr. Z"—Dr. Jan Zigmund—had developed [see:

<https://archivesite.jetex.org/motors/motors-rapier.html>]

as a replacement for the British Jetex motors; Rapier became defunct in 2010:

https://www.hippocketaeronautics.com/hpa_forum/index.php?topic=4299.0), but micro-EDF units are now

available (here is just one such source, see:

<http://www.samsmodels.com/electric-flight-ducted-fan>

), and:

These tiny—from 32 mm to just 18 mm in diameter—EDFs (electric ducted fans) are used in F/F (Free-Flight) and R/C model jets, including for indoor as well as outdoor flying (looking them up on YouTube

www.youtube.com will bring up numerous intriguing videos of them flying, indoors and outside). To give an example of the possibilities, even with the old kits, the Vintage Model Company's replica of the Veron scale Fouga Cyclone jet sailplane kit (a popular Jetex F/F model in the heyday of Jetex, see:

<https://www.vintagemodelcompany.com/fouga-cyclone.html>) has been successfully converted to micro-EDF power and to R/C (using the new micro-R/C receiver and servo equipment). Also:

The Vintage Model Company's replica tailless Jetex kits (see:

<https://www.vintagemodelcompany.com/jetex-powered-models.html>) that could also be so converted include

their Keil-Kraft Avro 707A, Skyleada Vought F7U Cutlass, Skyleada Avro Vulcan (the early, pure-delta winged prototype), Steve Bage Blohm & Voss BV-215, and Steve Bage De Havilland DH-108 "Swallow"

(Steve Bage's model designs are new, but "mesh well" with the old kit lines such as those of Keil-Kraft,

Skyleada, and so on). The original Skyleada Avro Vulcan kit (a 20" wing span, scale model of the British delta-winged, four-jet long-range bomber) used a

single Jetex motor, which was mounted in a "trough" in the underside of the fuselage. The Vintage Model

Company's replica of the Skyleada kit (see:

<https://www.vintagemodelcompany.com/vulcan.html>) doesn't have the (obviously) non-scale underside Jetex

motor mounting trough, apparently being configured as a scale glider—possibly for catapult launching—model

of the Avro Vulcan (with micro-R/C equipment, it *would* make a good PSS—Power Scale Soaring—

slope-soaring glider, as much larger Avro Vulcan PSS R/C slope gliders fly, and very well!). However:

Their Avro Vulcan kit description does say that "we are working on an electric ducted fan solution for the future." With appropriately area-ruled ducting—made

of molded card stock or 1/64" sheet balsa (wetted and pressed into molds, with the kit builder gluing the

halves together), or vacu-formed thin sheet styrene (also molded in upper and lower halves, which the kit

builder would cement together)—a single, small EDF unit mounted inside the model's fuselage could use the

two scale wing root jet engine intakes and the four scale Olympus jet engine exhaust nozzles (with

additional, inconspicuous air intake/exhaust "slots," in the event they proved necessary; they might not be

needed at all) to draw in air and exhaust it rearward, through the four scale convergent exhaust nozzles. A

simple hinged (or removable) fuselage hatch would provide easy access to the inside-fuselage-mounted

electric ducted fan unit.

I hope this material will be useful.

Jason Wentworth

Thought this might be of interest from the Japanese periodical Rafu Shimpo, Los Angeles , August 2019 (date unknown). Seems more anime than reality pictured in TWITT.

Takashi Hoshizaki

Spotlight: From Anime to Reality



“Make It Real: Flying Out of Miyazaki Animation” will be presented on Saturday, Aug. 10, at 2 p.m. at the Japan Foundation Los Angeles, 5700 Wilshire Blvd., Suite 100, Los Angeles. Mōve (Mehve) is an imaginary aircraft that appears in the animated film “Nausicaä of the Valley of the Wind.” Director Hayao Miyazaki drafted the Mehve as a “non-flying airplane.” In 2003, artist Kazuhiko Hachiya, due to his continuous obsession with Mehve, began creating a real airplane that utilizes a micro-jet engine. After years of trial and error, his airplane finally had a successful maiden flight in 2013. In this lecture, Hachiya will talk about his airplane project that was based on the concept of Miyazaki’s animation and maneuvering the airplane. His experimental work challenges the notion between animation and reality and making the impossible possible. Free but registration required. For more information, call (323) 761-7510 or visit www.jflalc.org.

I have a correction on your Kasperwing ultralight entry. The correct designation is Kasperwing 180 not I-80, ie. 180-B.

Additionally, 333 Kasperwings were produced by Steve Grossruck’s company Cascade Ultralights. Several websites have incorrect information on the Kasperwing including Dan Johnson stating that “the Kasperwing never reached serial production”. As a close friend of Steve I would like to see his achievements accurately presented. As a reference, check out the videos I have created on YouTube, olsonspeed .

Thanks,

Jack Olson

AVAILABLE PLANS & REFERENCE MATERIAL



VIDEOS AND AUDIO TAPES



(ed. – These videos are also now available on DVD, at the buyer’s choice.)

VHS tape of Al Bowers’ September 19, 1998 presentation on “The Horten H X Series: Ultra Light Flying Wing Sailplanes.” The package includes Al’s 20 pages of slides so you won’t have to squint at the TV screen trying to read what he is explaining. This was an excellent presentation covering Horten history and an analysis of bell and elliptical lift distributions.

Cost: \$10.00 postage paid
Add: \$ 2.00 for foreign postage

An Overview of Composite Design Properties, by Alex Kozloff, as presented at the TWITT Meeting 3/19/94. Includes pamphlet of charts and graphs on composite characteristics, and audio cassette tape of Alex’s presentation explaining the material.

Cost: \$5.00 postage paid
Add: \$1.50 for foreign postage

VHS of Robert Hoey’s presentation on November 20, 1999, covering his group’s experimentation with radio controlled bird models being used to explore the control and performance parameters of birds. Tape comes with a complete set of the overhead slides used in the presentation.

Cost : \$10.00 postage paid in US
\$15.00 foreign orders

FLYING WING SALES

BLUEPRINTS – Available for the Mitchell Wing Model U-2 Superwing Experimental motor glider and the B-10 Ultralight motor glider. These two aircraft were designed by Don Mitchell and are considered by many to be the finest flying wing airplanes available. The complete drawings, which include instructions, constructions photos and a flight manual cost \$140, postage paid. Add \$15 for foreign shipping.

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(ed. - Here are some photos of Lockheed's Prototype Jetstar sent along by Larry Nicholson so I would have some filler for this month's issue. There are some other shots I got off the net to show what the airplane morphed into over the years with the addition of two more engines then upgrading from turbo-jets to turbo-fans.

Larry asked that I add a personal touch to this since I flew Jetstars throughout the European area for several years when in the Air Force. So below is a little of what I experienced.)

I was stationed at Ramstein AB, Germany, flying the VC-140A airlifting VIPs from areas like north Africa to north of the Arctic Circle. The photo below of the special mission aircraft was one I actually flew when it was transferred from Andrews AFB to Ramstein.

When going through initial training with Flight Safety one of the instructors commented that after the conversion to four engines he used to shut down the outboard ones on final descent to save fuel. After all, the aircraft was originally designed for only two engines so no problem. Obviously the Air Force frowned on such a practice.

The crew was comprised of two pilots, a flight engineer and a steward. The FE sat in a drop down seat in the cockpit entry door and the steward sat on the seat over the rest room at the very back of the cabin. The steward provided full meal services as requested by the passengers so the crew also ate well during these trips.

Most trips were done in the same day but some missions required over nights at some of the more desirable destinations in Europe. Warsaw was one of the more memorable ones since it was still behind the wall. We also were responsible to transporting the German President into and out of Templehoff airport famous as part of the Berlin airlift.



This is a good comparison of a clean wing prototype (below) and the 4-engine version with the bullet fuel tank located at mid-wing. There was no pressurized refueling system so the two wing tanks and bullet had to be manually filled.



Below is a color shot of the prototype.



Previous page has the prototype instrument panel that looks rather simple when compared to the 4-engine version. When pushing the mach limit to make up time for a late VIP you could actually see the fuel quantity gage going down as the turbo-jets sucked the gas. This is a Jetstar II panel so has a little more electronics the military version.



This is a Jetstar II version. Note the larger air intakes on the engines for the turbo-fans and the relocation of the bullet tank to below the wing and made more streamlined. The quirk was its lack of performance at high altitudes and shorter runways meant this version couldn't takeoff where as the turbo-jet could make it.

