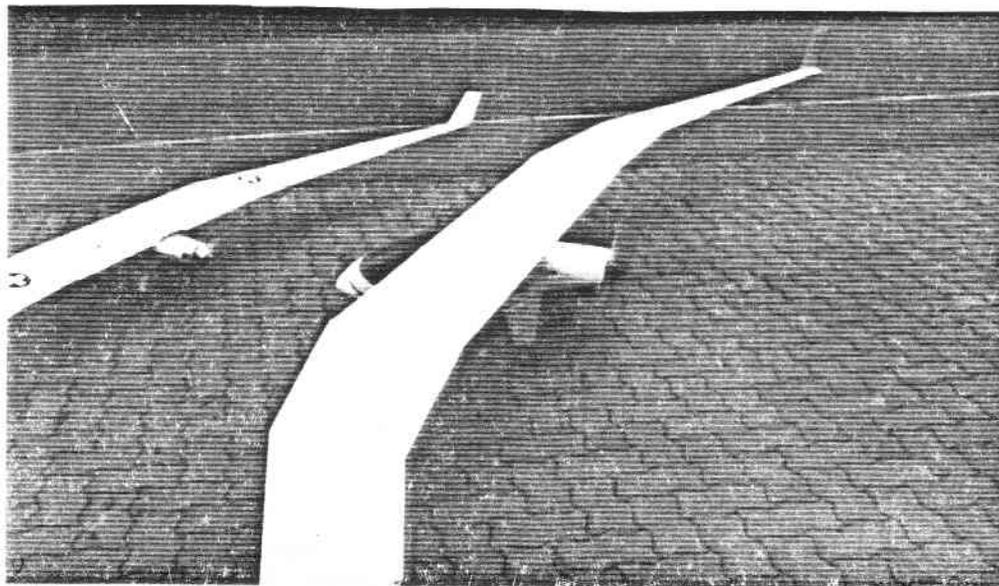


NO.37

JULY 1989

TWITT NEWSLETTER



TWITT
(THE WING IS THE THING,
PO BOX 20430
EL CAJON, CA 92021
USA

The numbers to the right of your name indicate the last issue of your current subscription, e.g. 3906 means this is your last issue.

NEXT TWITT MEETING: Saturday, July 15, 1989
beginning at 1330 hours. The location is Hangar A-4,
Gillespie Field, El Cajon, Calif, in the first row
of hangars on Joe Crosson Drive.

PRESIDENT'S MESSAGE

First, I would like to thank all those who attended the June 15th anniversary meeting and party. Second, I would like to thank them for the vote of confidence in electing me President for the coming year. I know the Officers/Board members will be working to make TWITT even better throughout the next year.

Briefly, I would like to let you know what I anticipate for the 1989-90 period as we move to become a non-profit, public benefit corporation. As you can see from the meeting's minutes, which follow this message, we will be able to solicit tax deductible contributions. If this becomes reality, it will enable us to begin an actual construction program. However, as you are all aware we first need to decide on a final design concept. I see this design decision as the number one priority in the near future.

During the first year of TWITT we had a profusion of design possibilities from the members. Over the past several years we then concentrated on theory and aerodynamic concepts that perhaps should be included in the design. Now it is time to get back to basics with the formation of several design concept groups. These should be voluntary groups of people who share the same basic idea of configuration, control systems, etc., or are geographically located where it is convenient to work together. These designs then should be presented to the group at meetings during the later part of 1989. Each one will be published in the Newsletter so the entire membership can help decide which will best achieve the objectives of TWITT. Hopefully, by early next year we can have a definitive design upon which to begin preliminary fabrication.

All of this may sound rather ambitious, but I am sure if everyone keeps the goals of TWITT in mind and contributes their special skills and talents to the project an airframe will eventually result.

Again, I want to thank all those that have made the first three years of TWITT possible, and I hope the next year will be just as good.

MINUTES OF JUNE 17, 1989 MEETING

Bob Fronius opened the meeting with some announcements for the day's events. The next TWITT meeting will be July 15th, and any articles or letters to be published should be in our hands no later than July 5th. An overhead fan has been donated to TWITT, but we need some help installing it in the hanger. We still have not made a decision on the Schapel wing molds. Is there anyone in northern California or Nevada who can help pick them up and perhaps store them for a while? The raffle prizes are a mounted Norman Rockwell reproduction, and a "Pistachio and Peanuts" model building book which was donated by TWITT Bill Hannan.

Raffle proceeds will go to defray the costs of the birthday party. Jorge and Helen Paullada brought a cake and brownies for the party. Thanks alot. Dave Pio flew in Harold Pio's (his father) PL-2 and was parked outside the hanger for viewing.

Bob reminded everyone that there was a set of Bylaws for TWITT which would be voted on today, along with the election of officers and Board members. He then turned the meeting over to Andy Kecskes to run the voting for the Bylaws and the elections. Since there was a small turn-out for this meeting Andy delayed the voting until about 3:00PM hoping more members would arrive. At that time he opened the floor for motions on the Bylaws. Ed Lockhart made a motion to accept the Bylaws as currently published, which was seconded by Davie Pio. The vote was unaniamous to accept the Bylaws. The floor was opened for nominations of Officers and Board members. He pointed out that the Board members could also be the Officers. Dave Pio was nominated for Vice President, Andy Kecskes for President, Bob Fronius for Treasurer, who accepted on a temporary basis, and Andy Kecskes for Secretary. A motion was made and seconded to also have this slate act as both Officer and Board members. Nominations were closed and ballots were then handed out, in accordance with the new Bylaws, so the vote could take place. The ballots were then counted by June Wiberg, and the slate as nominated was elected. (Ed. note: subsequent to the meeting, Phil Burgers volunteered and was accepted by the Board to take the office of Secretary.) So your Officers and Board members are: Andy Kecskes, President; David Pio, Vice-President; Philip Burgers, Secretary; and, Bob Fronius, Treasurer.

Andy pointed out that in the future if anyone wants to add officers or have a vote on some issue they should let the Board know so they can notify the membership in the Newsletter. He also noted that a system for proxy voting was established by the Bylaws so the general membership can vote on important issues in the future. This gives everyone a voice in the directions taken by TWITT even though they cannot make it to a meeting that is scheduled to have an election or other type of vote. Proxy voting will stretch the voting process out to at least a couple of months to allow for proper notifications and receipt of proxy votes.

Bob mentioned that Bill Otto donated a FAX machine, which Harold will bring down from LA in the near future. As soon as it is hooked up and we have a telephone number we will publish it in the Newsletter with instructions.

The raffle was then held, with Jim Neiswonger winning the Rockwell plaque, and Dave Pio taking the "Pistachio and Peanuts" book.

Tim Rosauer asked Bob if he would like to become the TWITT historian or librarian. Bob said he would take that position once a permanent Treasurer was elected. He would then start going through the files and organizing them.

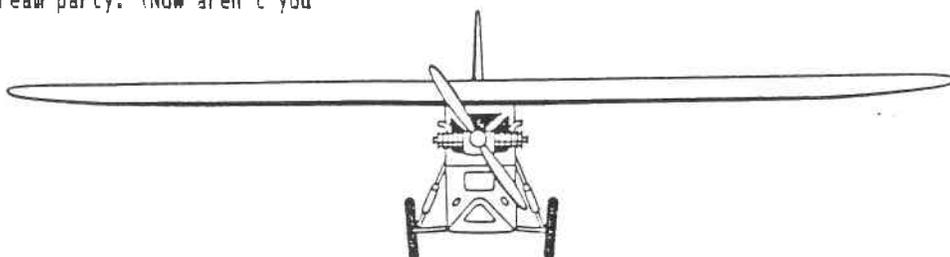
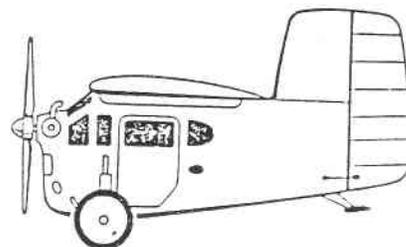
Bob mentioned that sometime in the future we will be publishing a list of the members so other members can identify fellow TWITTies in there area.

Andy explained that the Bylaws would now be turned over to Don Hunsaker to see if they can be placed under the umbrella of his non-profit corporation. Once this is done and TWITT

becomes a non-profit, public benefit corporation, we can begin soliciting tax deductible donations of supplies, equipment, storage space, money, etc., to help keep TWITT going. He asked the members to keep this in mind, and if they come across anyone who can contribute something to further the cause of TWITT to please follow through and let the Board know.

Andy and Bob explained some of the costs that go into publishing the Newsletter each month. We are sending out 97 Newsletters each month, along with back issues as requested by new members. Postage is running \$25-40 a month, printing \$55 or more if back issues are printed, so it takes about \$100 a month to keep TWITT running. The current cost for a complete set of back issues is about \$27 plus \$7 in postage for those who read this and are interested in joining and want to see what the last three years have been all about.

There was then a motion and second to adjourn the meeting and take part in the cake and ice cream party. (Now aren't you sorry you didn't attend.)



The FILIP MIHAIL STABILOPLAN (1933)

Light sport and touring aircraft

Span 9.00 m, length 3.70 m, height 2.00 m, empty weight 241 kg, total weight 381 kg, 35-HP Scorpion ABC II engine, maximum speed on the ground 147 km/h, speed at 2,000 m 108 km/h, minimum speed 73 km/h, maximum ceiling 4,000 m, climb to 1,000 m 9 min. 25 sec.

This plane, conceived by *Filip Mihail* and called by him *Stabiloplan* because of its stability in flight, was an original construction. Filip Mihail approached the idea of this plane as far back as 1924, when he started a series of studies on various types of aeroplane models.

The Stabiloplan had no horizontal tail piece, wherefor it was surnamed "the small tailless plane." During flight, the pilot could change the position and the angle of incidence of the wing.

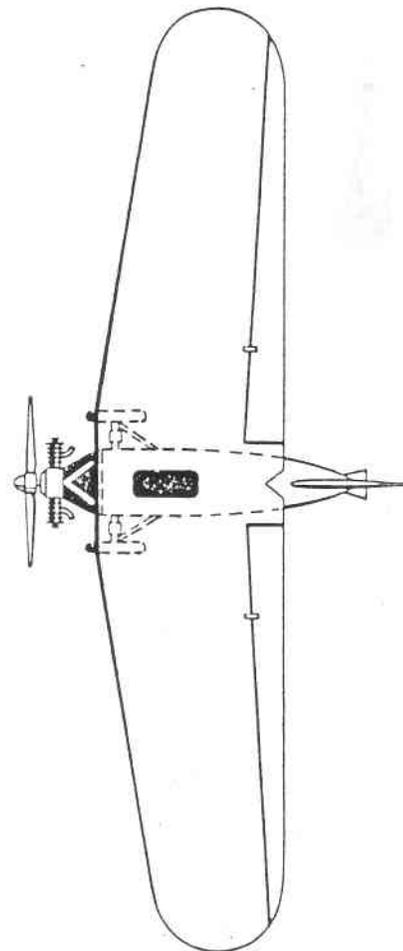
After landing, the wings could be folded to the fuselage and the plane could be put into an ordinary car garage.

The Stabiloplan made its first flight on November 22, 1933, taking off from Băneasa Airport with *Ion Culluri* at the controls. Filip Mihail's plane participated in very many aviation meetings. In June 1934, it made a non-stop flight from Bucharest to Braşov and back to Bucharest, crossing the Carpathian mountains at a height of 3,000 m.

Ever since 1927 Air Force Captain Constantin Mincu (B.Sc., Eng.) published an article in the review *Aeronautica*, Nos. 11-12, about the prospects of the tests Filip Mihail was carrying out at that time with a view to building his Stabiloplan, in which he wrote:

"In order to simplify the control system and especially in order not to change lateral stability in any way, Filip Mihail uses an autostable profile wing of the kind recently produced by the aerodynamic laboratories; and in order to reach various flying positions he uses a very simple and ingenious device with an endless screw, giving the entire wing the possibility of moving and hence the variation of the angle of incidence..."

"It should be added that the system of longitudinal balance, adopted by the utilization of the autostable profile, is a very early application after the emergence of this type of profiles..."



THOMAS BIRCHER

DIPL. ING. ETH.
PILOT SWISSAIR
TEL. 01/813 32 44

8302 AUGWIL/KLOTEN
BUCKSTRASSE 23

jan.89

3
The "Bircher"-Principles.

Three kinds of Aircraft exist:

"Normal"- Aircraft:

The surfaces for Control of axes y and z are at the rear End of the Aircraft.

"Canards"

The surface for controlling y-axis are at FRONT of A/C.

"Flying Wings or TWITTS"

Controlling surfaces are at the Wingtips.

Bircher - Wings have following 3 Principles:

1. They consist of two parts with aerodynamically different purposes.:

Inner-Part, high - Lift device, Basically square, high aspect Ratio, laminar-flow Profile.
(As for normal high-performance Aircraft)

X. Outer Part:

Main purpose to control A/C in all 3 axes,
Second purpose to increase aspect Ratio of "Innerwing"

2.

The wing-Profiles vary with span, in the outer part.
The purpose is to equilibrate all moments ~~sums~~ in flight, to give a smooth easy handoff Stability in all manoeuvres.

3. : Adjustable "cabin" ^{along} in the X-Axis, so as to always fly at optimum Center of Gravity./

The cover picture is two of Thomas Bircher's model flying wings, span is over 20 feet.

Al Backstrom, designer of the Plank Wing, was a guest of ours recently. Al is retired from FAA Engineering but stays active as a consultant. Soon Al will contribute an article on Waldo Waterman and the Flying Car.

June 3, 1989



Dear Marc:

For a number of years I was involved in the Patent "Game" and managed to collect copies of U.S. Patents in the sailplane, flying wing, and disc-shaped aircraft fields. I have an accumulation of several dozens of these and wish to donate those of interest to your "library".

I enclose herewith some that deal with laminar flow, wing tip vortex minimization and the like, which represent only a few of the many available.

You may find them of interest, and - who knows - perhaps something useful will turn up that could be of great help to TWITT's own efforts to achieve the "ideal" flight article...or, at worst, a practical embodiment.

It has been my experience that many engineers have little, if any, access to the patent literature and will find some surprises in it. For example, even if general principles are known, specific embodiments as set forth in the patent copies themselves may be particularly useful -- or may trigger some thinking that leads to practical solutions to difficult problems.

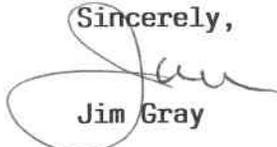
Although I am still registered to practice patent law, I have not been active in the field for many years. However, I have noticed that some of the really basic inventions still apply in today's environment. Enclosed, you will find two patents issued to Wittold Kaspar, and in them may uncover some information that is not general knowledge. You may also find that the Coanda patents have lots of ore still available for mining.

Both investigators have shown extreme interest in trapped vortices, and in Coanda's case have shown how to achieve flow fields that literally "turn corners."

Should you find the enclosed patents of interest, I shall send all relevant ones in my possession. They are for the use of TWITT members on the same basis that all of your library documents enjoy.

Sincerely,

OFFICE: 214/347-2022
RESIDENCE: 214/292-1210


Jim Gray

AL BACKSTROM
Aircraft Design, Engineering & Certification

Abstracts on some selected patents:

Lets go through some of the above mentioned ideas:

"The vertically asymmetric diffuser system for reducing aircraft induced drag", idea that belongs to S. C. Rethorst consists of ribs on one or both surfaces of a wing, each rib being formed with a concave cavity on one side to face the spanwise flow over the respective wing surface. The cavity increases in cross section towards the aft end of the wing to form diffusers. Preferably the vertical cross section of the cavity is asymmetrical. The diffusers are aligned with respect to the flow so as to generate a vortex flow on the underside of the wing providing positive pressure or lift as well as thrust, and a turned flow on the upper side of the wing providing, in one region, reduced pressure or suction lift, and in another region, positive pressure or thrust.

R. P. Holland, Jr. explains his idea of an "Aircraft having energy-conserving means" in the abstract of his patent: An airplane accomplishes very high speed- power- weight efficiency by capturing the viscous wake and using it for propulsion. Air admitted through distributed rear stagnation inlets is ducted internally, through a buried powerplant, reducing propulsive kinetic energy lost to the atmosphere, reducing engine power demands, and fuel consumption.

An ingenious is given by E. B. Jones in his patent entitled "Swept wing variable pitch sailplane" where a sailplane is provided in which the line of lift of the wing is swept back from the longitudinal elastic axis to give an automatic wing twist with change of lifting force. In operation, a reduction in the angle of incidence from an updraught wing results in trade of lift for greater forward thrust. An increase in angle of incidence from a downdraught wing results in a trade of forward momentum for greater lift. He finally states that this idea is most effective under turbulolent air conditions.

Here we go to a technique for preventing or controlling the occurrence of flow separation from the surface of an airfoil such as an aircraft wing. The idea came from J. J. Cornish III and is based on a jet of fluid that is blown across the airfoil surface in a spanwise direction to entrain air adjacent the path of the jet. The movement of the blown fluid and entrained air in combination with the oncoming airflow establishes a vortex which is locked in position along the spanwise dimension of the airfoil. The oncoming airflow flows over the locked vortex and then becomes reattached to the airfoil surface, thereby preventing or delaying the occurrence of flow separation.

We cannot end going through this interesting idea jungle without mentioning Mr Charles H. Zimmerman's idea (person who got much off our attention in recent TWITT newsletters) on "Slotted airplane wing tip". His invention relates to airplane slots in

LIBRARY CONTRIBUTIONS

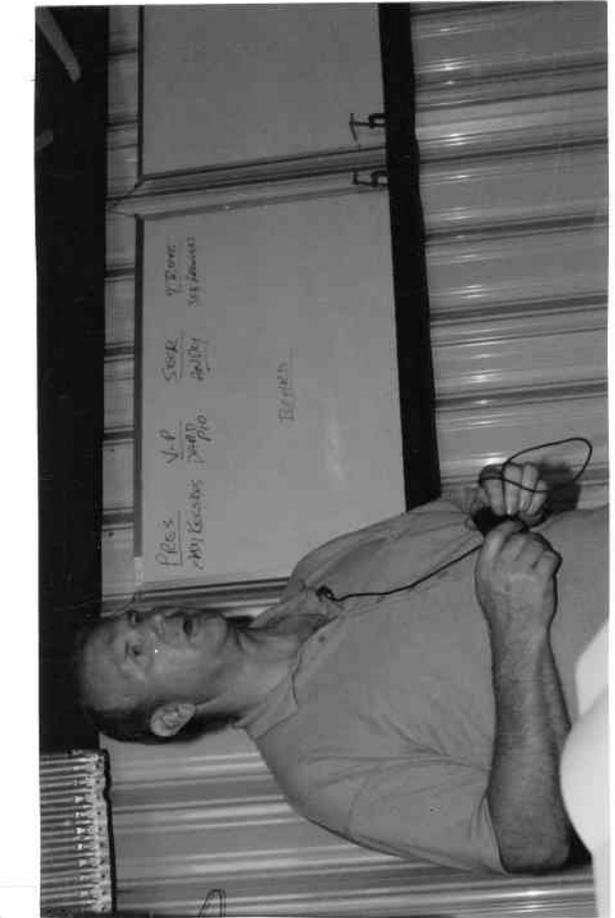
TWITT is very grateful to Mr. Jim Gray for donating several patent publications which we will list here and highlight the most interesting ideas.

- * P. M. Lemoigne: Members subjected to an airflow. Filed Nov 13 1967.
- * H. Papst: Boundary layer control. Filed Dec. 23, 1963.
- * H. Papst: Airfoil. Filed June 30, 1967.
- * S. C. Rethorst: Vertically asymmetric diffuser system for reducing aircraft induced drag. Filed Feb. 19, 1968.
- * R. P. Holland, Jr.: Aircraft having energy-conserving means. Filed Oct. 5, 1966.
- * E. B. Jones: Integral control system for sailplanes. Filed June 29, 1972.
- * B. Jones: Swept wing variable pitch sailplane. Filed Nov. 1, 1971.
- * W. A. Kasper: Aircraft wing with vortex generation. Filed July 11, 1972.
- * W. A. Kasper: Aircraft. Filed April 3, 1967.
- * H. Coanda et al: Jet exhauster. Filed Sept. 1, 1959.
- * H. Coanda: Jet propelled aircraft. Filed July 21, 1954.
- * L. J. Ashton et al: Light weight contoured load carrying structure. Filed Apr. 19, 1971.
- * J. J. Cornish III: Method and apparatus for modifying airfoil fluid flow. Filed Aug. 18, 1967.
- * R. M. Williams: Minimum drag circulation profile. Filed Aug. 6, 1971.
- * C. H. Zimmerman: Slotted airplane wing tip. Filed April 2, 1938.
- * W. R. Haney, Jr.: Vortex generator for airfoil structures. Filed June 9, 1969.
- * W. C. Brown: Airfoil design. Filed May 18, 1970.

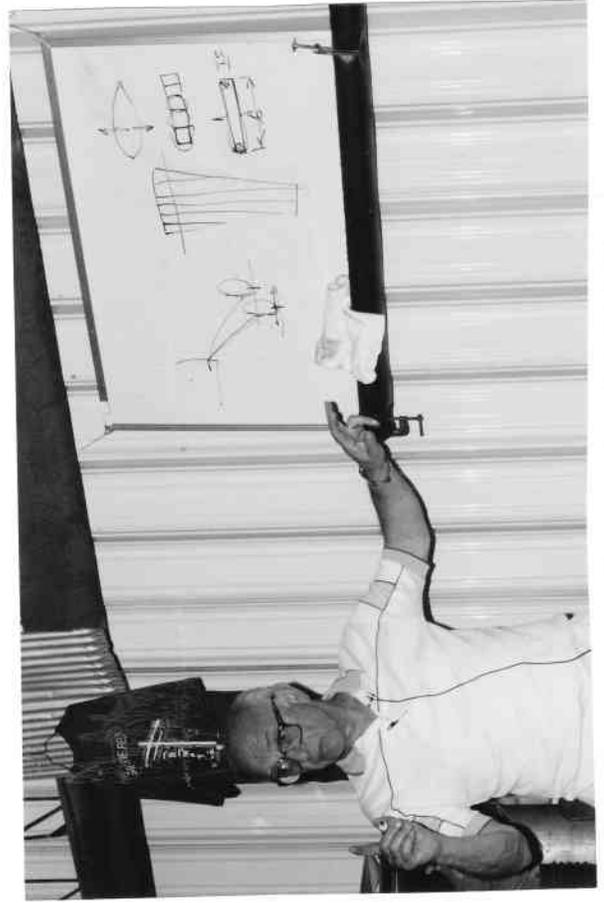
Doug Fronius, a Teledyne Ryan engineer, will give a description of the recent Paris Air Show with an excellent slide show. In addition we will have a slide show on very early gliding from the Joe Stasneck collection.



Lewis Dewart's flying wing prototype.



Andy Kecskes, TWITT'S first president



Pazmany talks on landing gear.

RYAN AIRLINES, INC.

San Diego, Calif.

Date Feb 25

Gentlemen:

Please deliver to me, or us

One

RYAN M

MONOPLANE on or about

April 25,

on the following basis:

Price each with

Weight of 5
(Type)

Motor

Installed \$

Total \$ 10,580

Part payment with this order

1,000

2nd payment

March 1st 1927
(Date)

6,500

Payment upon completion

3,000

Net C. O. D. Charges

TOTAL

\$ 10,580

It is understood that the above terms are based upon delivery at the Ryan Airlines factory and any special conditions, shipping, crating, services, or extras not herein above set forth, will be paid for by the purchaser upon delivery. This order is not binding upon the factory until signed by an officer of the company.

Detailed Instructions

Gasoline Capacity

410 Gals

Cruising radius 3,500 miles
1550 revolutions per minute
Instruments, oil tanks, etc., all in one
~~mounting~~ primer

Name

Charles A. Lindbergh
(Print Name Here)

Signature

Char a Lindbergh

Office Address

Phone

Field Address

Phone

Factory Representative

A J Edwards

Accepted by Ryan Airlines

2-25-27
(Date)

By

B. Shamsey
(Pres. or Sec.)

TWITT BYLAWS are 14 pages. We will print all the ByLaws on a space available basis.

BYLAWS OF

THE WING IS THE THING (TWITT)

a California Nonprofit Benefit Coporation

ARTICLE 1. OFFICES

SECTION 1. PRINCIPAL OFFICE

The principal office of the corporation for the transaction of its business is located in San Diego County, California.

SECTION 2. CHANGE OF ADDRESS

The Board of Directors may change the principal office from one location to another within the named county by noting the changed address and effective date below, and such changes of address shall not be deemed an amendment of these Bylaws:

----- Dated: _____, 19__

----- Dated: _____, 19__

SECTION 3. OTHER OFFICES

The corporation may also have offices at such other places, within or without the State of California, where it is qualified to do business, as its business may require and as the Board of Directors may, from time to time, designate.

ARTICLE 2. PURPOSES

SECTION 1. OBJECTIVES AND PURPOSES

The primary objectives and purposes of this corporation shall be:

(a) to promote the research and development of a high-performance, self-launching flying wing sailplane.

(b) to gather available public domain materials, in written, picture, diagram, or physical form, for use in research and to provide a central repository of this material for public uses.

(c) to make available to the public domain all results of the research and development to promote the further design and construction of flying wing aircraft.

(d) to provide a public forum for the exchange of ideas between professional, private, experienced and novice persons who agree or disagree with the concepts of flying wing development.

ARTICLE 3. MEMBERS

SECTION 1. DETERMINATION AND RIGHTS OF MEMBERS

The corporation shall have only one class of members. No member shall hold more than one membership in the corporation. Except as expressly provided in or authorized by the Articles of Incorporation or Bylaws of this corporation, all memberships shall have the same rights, privileges, restrictions and conditions.

SECTION 2. QUALIFICATIONS OF MEMBERS

Any person is qualified to become a member of this corporation as long as they have an interest in the purposes of the corporation.

SECTION 3. ADMISSION OF MEMBERS

Applicants shall be admitted to membership upon stating the desire to join and providing payment of the first year's membership dues, as specified in the following sections of these Bylaws.

SECTION 4. FEES, DUES AND ASSESSMENTS

(a) No initiation or entry fee shall be charged for becoming a member of the corporation.

(b) The annual dues payable to the corporation by members shall be in such amounts as may be determined from time to time by resolution of the Board of Directors.

(c) Memberships shall be nonassessable.

SECTION 5. NUMBER OF MEMBERS

There is no limit on the number of members the corporation may admit.

SECTION 6. MEMBERSHIP RECORD

The corporation shall keep a membership record containing the name and address of each member. Termination of the membership of any member shall be recorded in the record, together with the date of termination of such membership. Such book shall be kept at the corporation's principal office and shall be available for inspection by any Director or member of the corporation during regular business hours.

The record of names and addresses of the members of this corporation shall constitute the membership list of this corporation and shall not be used, in whole or part, by any person for any purpose not reasonably related to a member's interest as a member.

SECTION 7. NONLIABILITY OF MEMBERS

A member of this corporation is not, as such, personally liable for the debts, liabilities, or obligations of the corporation.