

The Flightline

Volume 30, Issue 4

Newsletter of the Propstoppers RC Club

AMA 1042

April 2000

What's In a Name?

Editorial

What *is* in a name? I have been told that your name is pretty close to your sole. So when someone gets it wrong you are particularly wounded. Well, when I volunteered as editor I was prepared for deadlines and the monthly pressure to compose an interesting and informative work but I was not prepared to be a reporter!

I thought about a theme or direction for the newsletter and it seemed to me that it should reflect the thoughts and ideas of the members. It should be a forum for discussion of those ideas. But as a new member I don't know who you all are, much less what you think about the club and its activities. So I began to ask some of you at the field and at the club meetings. So far so good but you know what? I don't know most of you and I certainly don't know your names so I have already wounded a few of you!

First, I misspelled Sam Nevin's name. Then, worse, I said that Ray Wopatek was "Mike" in the caption that accompanied his picture with his Armadillo trainer in the last newsletter.

I really don't want to make these mistakes again so I will be carrying a notebook and pencil, just like the real reporters we see in the movies. But you must also help me.

The next time you see me step up and introduce yourself but make sure I write down your name.

Dave Harding. ✈

Washington DC and the Paul Garber - Smithsonian Restoration Facility

*Bus Trip
Saturday 6th May*

A patriarch of flight, Paul Garber devoted his Smithsonian career to the preservation of historic aircraft

There is nothing fancy or imposing about the National Air and Space Museum's Paul E. Garber Preservation, Restoration and Storage Facility. A collection of windowless, corrugated-metal buildings barely visible behind a tall chain-link fence in the Washington, D.C. suburb of Suitland, Maryland, the place resembles a down-at-the-heels rental storage facility or a low-budget industrial park.

But looks can be deceiving. The Garber Facility is the behind-the-scenes heart and soul of the world's most visited museum. More than a hundred treasures of the age of flight are on view in these nondescript buildings.

Visitors who sign up for a docent-led tour of the no-frills Garber displays will see a Curtiss JN-4D "Jenny" essentially untouched since the day in 1918 when U.S. Army Air Service officials turned it over to the Smithsonian; a Sikorsky JRS-1 flying boat that survived the attack on Pearl Harbor; *Caroline*, the Convair 240 that Sen. John F. Kennedy traveled in during his 1960 Presidential campaign, and a score of other aircraft and space vehicles that cannot be seen anywhere else in the world.

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Paul Garber

Continued on page 4

Calendar of Events

Club Meeting - Annual Auction

4th April 2000

Place Marple library

Time 7:30 p.m.

Regular Meeting

Club Meeting

2nd May 2000

Place Marple library

Time 7:30 p.m.

Regular Meeting

The 4th Eagles All Electric Fly-In

Saturday 13th May 2000

Hope, New Jersey, near Delaware Water Gap

A nice meet and a beautiful drive up the Delaware

Regular Club Flying at Dallett Field

Every Saturday and Sunday weather permitting

Daily 10 am til Dusk

Saturday 10 am til Dusk

Sunday Dawn til Noon Electric only!

Sunday 12 pm til Dusk

President's Message

Mike Black

Dear Fellow Propstoppers,

The March 7 meeting was very lengthy, but productive. Please bring your calendars to the April 4 meeting, as we have many events to plan for the coming flying season.

First, we will schedule a field work day. At the meeting we planned to spruce up the structure at Dallett with some weatherproofing stain, a couple of new benches, rolling and leveling the runway and installing a new message board.

Second, we need to choose a date in late June for our Annual Picnic.

Third, we need to plan to participate in the Thornbury Township Summer Day on July 15 (tentative) or July 22.

Lastly, we need to set a date and discuss plans for the Annual Propstoppers Electric Fun Fly.


As you can imagine we need you, the membership, to volunteer to get involved in the planning, work, and running of each of these events. A small group working together can make each of these events exciting and enjoyable for all with little toil. Please plan to volunteer where possible. This is a fantastic way to make friends with fellow members and get involved. It is a great way for new members to show their interest and commitment to the club.

We need each and every one of you to make the club a viable organization. Please pitch in. (That is not an intended airplane pun)

We will also be drawing about ten winners for our annual Show and Tell awards. Al Gurewicz tells me that he purchased some interesting articles.

I had a very nice conversation with the Parks and Recreation Committee Chairperson for the Twp., Mrs. DJ Tindall and the gentleman in charge of the Summer Day activity, Mr. Jeff Sherman. They love our use of the park and welcome our presence in the Twp. and are committed to keeping us there.

We are looking for those winter building projects to show up as Show and Tell. The electric that Sam Nevins showed last month is a great flying machine adapted from an Eagle II kit. Lets see who can top that one. We have had some great flying weather. Hope to see you at the field, soon.

Mike. 

Propstoppers RC Club of

Delaware County, Pennsylvania.

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Meeting Minutes 7th March 24, 2000

The meeting was called to order at the Marple Library by Vice President **Dick Seiwel**.

President **Mike Black** read the roll call - there were 25 members and 7 guests present. The minutes of the February 2000 meeting were read by secretary **Rusty Neithammer** and approved by the membership. Treasurer **Al Gurewicz** gave the treasurer's report with income of \$1135.54, expenses of \$150.40 and a new balance of \$3569.49 reported.

Secretary **Rusty Neithammer** read two letters sent to the club, one from **Al Haftel** regarding accepting additional members, the other from the Interboro School District special education class who were the recipients of delta dart kits purchased by the club.

Membership report:	Drop outs:	16
	New members:	17
	Total:	69
Prospective:		1

Old Business

7 more tickets were available for the Brightstar ARF raffle.

The Central Penn Aeromodeller's Auction is scheduled for March 11. As has been the case in previous years, a carpool will be arranged. Directions were given and carpool arrangements (Granite Run Mall/Boston Chicken/7:00 AM) were made.

New Business

Mike Black advised that Mahlon Rossiter, Thornbury Township Manager, has resigned. Although Mahlon was our biggest advocate, it appears that the Township Parks and recreation Board is still behind us, as are 3 of the 5 commissioners. The status of the two newly elected commissioners is unknown, but they campaigned to township dissidents and it appears that they are in favor of curtailing activities at the soccer fields at the other end of the township.

A volunteer is needed to publicize upcoming events and deal with the RCHTA to try to get reimbursement for club expenses as has been done in the past. **Chris Catania** volunteered.

Members are advised to bring their calendars to the next (i.e., April) meeting to help plan the club activities for the upcoming flying season. This includes the picnic, field work days, field meeting days, etc.

Flying surface: Due to the situation with the township, it is felt that the club needs to maintain a low profile. Therefore, this year, we plan to roll and fill only - no blading. **Chris Catania** will check into a roller and a load of fill dirt.

Shelter: The structure needs a coat of stain. We will add

additional benches to the front posts, facing the field. A general clean up, removal of the old grill and other old items will be done. **Dick Seiwel** will head up the benches and stain effort.

Pits: Extend cut area downhill toward heli area.

Notice board: A volunteer is needed to construct this. See the suggested layout in the February newsletter.

Membership Question: In response to the letter sent by **Al Haftel**, the issue of creating special membership categories such as a weekday flying only membership was discussed. Any change to the current membership limits requires a change to the club's bylaws. As the club's bylaws are incorporated into the lease with Thornbury Township, a bylaw change thus requires a change to our agreement with them. The township desires a membership limit to keep the number of cars at the field down. Given the current situation with the township, it is felt by the Propstoppers Board that such a change is not in line with keeping a low profile.

Shirts/Hats. Anyone desiring to purchase a shirt or hat should advise **Mike Black**. A new order form will be published in the next newsletter. Once at least a dozen orders for each item are received, an order can be placed.

Sound levels: Based on recent communication with the AMA, a trial target sound level of 94 dbA, ± 1 dbA, at 3 meters, was adopted by the membership, applicable to the upcoming flying season. This is a 21% reduction in sound power level ($10^{-1/10}$). Logs need to be kept, to document our ability to achieve and maintain this level.

The 50-50 winner was **Rusty Neithammer**.

Coffee and Donuts.

The Brightstar ARF was raffled - Winner: **Ray Wopatek** The kit was graciously donated to the club by **Bill** and **Monica Shellhase**.

Show and Tell

Sam Nevins showed his Eagle 2, modified for twin Astro 15 geared electric power, and a 12 inch wing extension. The plane weighs about 7.5 lb, takes off in 15 to 25 feet and uses Master Airscrew 12-8 electric props. Battery weight is about 2 lb. with the current present battery configuration. Covering is Towercoat.

Rusty Neithammer showed the drawing for his current project, Don Incoll's Sirex Wasp. Rusty made the drawing using AutoCad, copied from the original hand-drawn plans made by Don Incoll. The plane is a .46 powered, profile fun-fly type.

The meeting was adjourned by President **Mike Black** at 8:30 PM.

Russel Neithammer. 

*Paul Garber Tour**continued from page 1*

Paul Edward Garber (1899-1992) collected more than half of the 352 Smithsonian-owned aircraft on display at the facility named in his honor, at the National Air and Space Museum (NASM) on the Mall and, on loan, at other museums around the world. He fell under the spell of both aviation and the Smithsonian while growing up in Washington, D.C. As a 10-year-old, he took a streetcar across the Potomac to watch Orville Wright fly the world's first military airplane at Fort Myer, Virginia. Alexander Graham Bell, a Smithsonian regent, taught young Paul how to bridle his kite. At the age of 15, Garber built a full-scale biplane glider based on a model he had seen at the Smithsonian. His mother helped him cover the wings with red chintz, after which a group of friends towed him into the air with a clothesline.

Garber joined the Army in 1918, and was about to begin flight training at College Park, Maryland, when the war ended. He took a job as a ground crewman and messenger with the Postal Air Mail Service. But Garber, a talented craftsman and model maker who frequented Smithsonian museums, decided that he could best contribute to the future of aviation by preserving its past.

In 1920, he began working at the Institution, building models and preparing exhibitions. For the next 72 years he dedicated himself to the preservation of the nation's aeronautical heritage and to sharing his boundless enthusiasm for flight with Smithsonian visitors. He played a key role in the creation of the National Air Museum in 1946, and was indispensable in the effort to construct the present National Air and Space Museum building, which opened in 1976. Most important, Garber, as curator and devotee, assembled the most impressive collection of historic aircraft in the world for the Institution.

The storage of that collection had not been much of a problem prior to World War II -- virtually everything that Garber collected was on display at the Arts and Industries Building or on loan to another museum. But when he returned from service as a naval officer, he faced an entirely new set of problems. Gen. Henry H. "Hap" Arnold, commander of the U.S. Army Air Forces, presented the Smithsonian with a collection of U.S. aircraft that had fought and won the war in the air, along with captured examples of enemy aircraft. When Paul Garber accepted responsibility for this vast collection, it was stored in an abandoned airplane factory in suburban Chicago, now the site of O'Hare Airport.

The U.S. Navy had a similar collection of historic aircraft in storage for the Smithsonian at Norfolk, Virginia. The crisis came with the Korean War, when the U.S. Air Force needed the factory and began to force the Smithsonian out the door.

Determined to safely relocate the treasures to the Washington area, Garber searched in vain for empty warehouse space in the neighborhood of the nation's capital. He then persuaded a pilot friend to assist him in conducting an aerial survey of the Maryland and Virginia suburbs from the cockpit of a Piper J-3 Cub. His search revealed 21 acres of woodland in Suitland.

The National Park and Planning Commission, which controlled the land, was more than pleased to turn it over to the Smithsonian in 1952. "When I first went out there and walked around," Garber later commented, "the tree-filled 'wilderness' was just about as the Indians had known it, and my only companions were the bullfrogs and mockingbirds."

There was no budget for this project. "I had to scrounge," he recalled with pride.

His powers of persuasion were legendary. Army engineers at nearby Fort Belvoir provided a bulldozer to clear trees and brush from the site. Garber persuaded a local contractor to donate any excess cement remaining aboard his trucks at the end of the workday. Navy officials agreed to provide, at cost, the first of the prefabricated buildings that would soon dot the site.

Paul Garber continued for the rest of his career to "scrounge" for the funds with which to support the preservation and display of the collection, and eventually bequeathed the task to his successors.



Heinkel 162A in restoration at the Garber Facility

If all goes well, the new NASM Dulles Center will open its doors in 2001. Although the process will take time, the Dulles Center will eventually replace the Garber Facility, providing much better conditions in which to preserve, store and display the world's finest collection of aeronautical artifacts. You can rest assured, however, that the spirit of Paul Garber will accompany the collection to its new home.

By I. Michael Heyman

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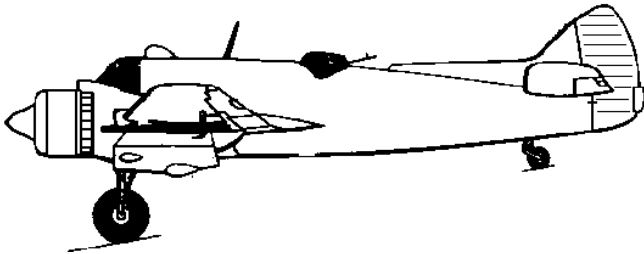
The Trip

This day bus trip is being organized by **the Friends of Marple Public Library** and includes a box lunch from Mrs. Marty's Deli – Choice of soda, sandwich (turkey, roast beef or tuna), chips and cookies.

7:00 am Departure from the Marple Library
 10:30 FDR Memorial
 11:45 Drop off at the Smithsonian Museums
 12:15 Leave for Optional Garber Facility tour
 6:00 Approx. Departure from Washington

There will be rest stops on the trips up and down.
 Note; Fees for cancellations are returned **ONLY** if seats are re-sold. **All proceeds benefit the Marple Public Library.**

Please see the coupon on the last page.



Tech Note - Lift

Dave Harding

Well, what is it? Is it the suction above the wing? Is it the pressure below the wing? Maybe it's the circulation around the wing, but something causes the wing to lift. Advanced question, on a delta, is it the leading edge vortex?

In pondering these heavy questions it is probably best if we start with some basics. In the region of interest to us, moderate temperatures and speeds, air is a stable, slightly viscous gas.

What does that mean? It means that if we push, pull or heat it we get the response we expect. If we remove the input it will return to its original state. And, oh yes, it's a bit sticky, it clings to surfaces.

As a gas, the state of one chunk is communicated to the adjacent chunk freely. Pressure changes move at the speed of sound, temperature changes much slower. OK so far?

Next I have to reveal the "secret" of engineering school.

There are only two relationships and they apply to everything;

- ***The sum of the forces must be zero***
- ***Energy cannot be created or destroyed.***

Now you have it, every one of you is now an engineer. What were we doing for all those years at school you ask? Well setting aside the obvious, we were learning to apply those two relationships to what ever we were studying, mechanical, electrical, civil, aeronautical etc.

For example,

Energy can take many forms; some of them of interest to us are;

- Potential energy is when a mass is raised to a height, a spring is depressed or a mass of gas is compressed.
- Kinetic energy is when a mass is moving.
- Thermal energy is when a mass is heated
- Chemical energy is more complicated, for us it is the energy that is stored in our fuel or batteries.

All right, ready now?

Let's take an example of energy conversion. You have your trusty 40 trainer at the field; you put 5 oz of the best joy juice (100,000 Btu/LB) and fire her up.

Take off is nice and easy; you climb to altitude and fool around. Time for a high-speed pass of the field, 100mph on the button but the engine quits. What to do, you are headed downwind and it is kind of windy.

Well, its time for energy conversion, you take that puppy and go vertical to 500 ft and do a real nice stall turn to base. First step in energy conversion, kinetic to potential.

But wait, the problem that caused the engine to quit was interference (or more likely, that old receiver battery you scrounged at the swap). You have lost it,. Sliding out of the stall turn Old Faithful heads vertically, rapidly gathering speed until just before auguring in, she is doing 95mph. The sound of impact is heard all over the field. You reach the spot and find a hole six inched deep and filled with balsa sticks.

Continued on page 6

What have we learned (apart from checking the batteries)? Well, you learned that chemical energy can be converted to kinetic energy (you did burn some fuel before it quit).

Kinetic energy can be converted to potential energy by trading speed for altitude and the final lesson; energy can be converted to noise and heat (the balsa would have been warm at the breaks, as would the mud in the hole).

This thermal energy bit is the same as the way you stop your car. The brakes get hot.

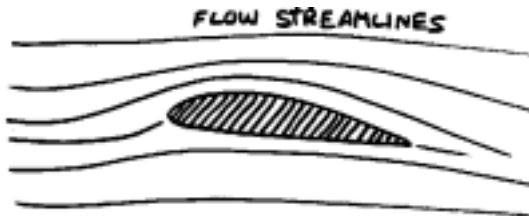
Notice with the model example, you did not create or destroy the energy, you only converted it.

OK, now for air, it works the same way, but the interesting bit is that the energy and forces must balance throughout. Each chunk of air must be in harmony with its neighbor.

In the case of a wing moving through an air mass, the air ahead of the wing can "feel" the approach of the wing and reacts to its influence. The air flows over and under the wing and if the wing is lifting there is some form of angle of attack, which makes this happen.

The angle of attack can be just that on a flat sheet or symmetrical airfoil or it can be an airfoil, which by its shape has, and "angle of attack".

The effect is that the air moving over the top of the wing has further to travel than that over the bottom so it must move faster. If the air chunk moves faster it has more kinetic energy but, as we now know, unless we somehow add energy to the chunk the net energy must remain the same.



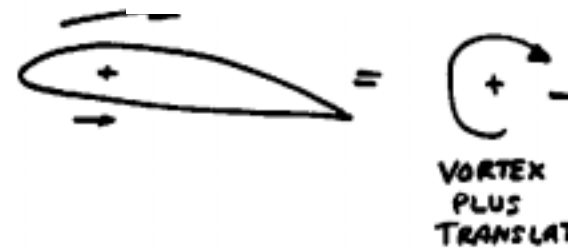
How does this happen,? By reducing the potential energy. The pressure is reduced so that the increase in kinetic energy is offset by the reduction in potential energy.

In some airfoils, the flow on parts of the lower surface slows with respect to the free stream and the pressure increases.

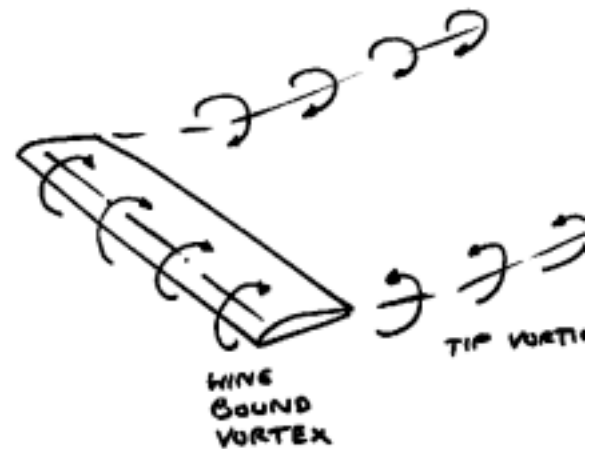


Now if we are sitting on the wing tip looking in, the increase in flow speed on the top surface and the reduction in flow speed on the bottom looks like a rotation or vortex centered on the wing.

Vortex plus translation = lift



Some describe the flow phenomenon in these terms. One of the reasons is that if we also look at the total flow around a whole rectangular wing we see that not only is there a vortex along the axis of the wing there is a vortex which is attached to the wing tip and streams in its wake.



What causes this? Remember what I said about each chunk having to be in harmony with its neighbor? Well, the air at the wing tip "feels" the low pressure on the top surface and the higher pressure on the bottom and so moves towards the top. Viewed from the front this also looks like a vortex, which it is. As the wing moves through the air it "leaves" this tip vortex "in its wake".

This vortex view of lift has definite similarity to smoke rings except that the wing bound vortex is moving through the air mass to produce lift. Like the smoke ring, and according to our rules about chunks being in harmony, the air mass must "close the ring".

Does this really happen? Sure does, the tip vortex trails all the way back to the point where the wing first developed the lift. When the airplane rotated it formed its first vortex. This is the one that closed the ring.

These vortices slowly dissipate because of the viscosity I mentioned in the beginning. As we know, this phenomenon causes the FAA to establish minimum separation between airliners to give these vortices a chance to dissipate. Flying in the tip vortex of a 747 can turn you on your back in a heartbeat. Why is that you ask? Its because the vortex which produces 700,000 LB of lift is huge.

OK, so why does a wing produce lift? Is it the suction above the wing? Is it the pressure below the wing? Is it the circulation around the wing?

Well, now we know its all those things, they are different ways of explaining the same thing. The air doesn't know it but it does obey the laws of physics.

Oh, yes, the leading edge vortex on a delta. You can figure it out yourselves now. Same phenomenon, when the air moves

towards the leading edge it not only senses the lower pressure on the top surface, it also knows that the leading edge is swept. So, in addition to moving up it also moves outboard.

This forms a vortex similar to the straight wing but it moves outboard as well. At the sweep normal for deltas, this vortex wraps round the leading edge and as with a normal wings its size and strength increases with lift.

In the delta, this vortex produces an unusual effect, it delays the stall because it wraps around the leading edge and "nails" the flow to the aft top surface. This is why deltas can fly at such high angle of attack.



Well, till next time, think of balancing forces and energy conservation and watch those vortexes.

Dave. ✈️

Oh, yes, one last thing, there will be a written test at the meeting on the 4th.

Washington DC Bus Trip Application Form

To Register; Make checks payable to Friends of Marple Public Library, Mail to Friends of Marple Public Library . c/o Treasurer, Sproul & Springfield Roads, Broomall, PA, 19008 or leave at the Circulation Desk in the Library. For additional information please phone 610-356-3975.

Name _____ **Phone Number** _____

Address _____

Members _____ **@\$35** _____ **Non-Members** _____ **@\$40** _____

Total Check _____

Number of people taking the optional tour of the Garber Facility _____

After payment is received you will be given a sheet to fill out for you box lunch.

Dave Harding – Editor
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