

The Flightline

Volume 30, Issue 5

Newsletter of the Propstoppers RC Club

AMA 1042

May 2000

Dallett Field Fix-up Day

Tote that barge, lift that bale!

On Saturday morning, April 29, at 9:00 AM, we will have a field work day at Dallett/Squire Cheyney, to get the field in shape for the upcoming flying season.

Work planned includes;

- weather proofing and staining the shelter
- , installation of additional benches in the shelter (to be pre-fabbed by Dick Seiwell),
- general clean up and removal of unused and/or broken items,
- rolling and seeding of runway (weather/soil conditions permitting – Chris Cantania will evaluate and make the call).

Although this does not sound like much, having many hands will make light work for all, and we easily can finish the tasks needed to be done and get on with the day's flying and barbecue lunch. Plus, it's a great opportunity for everyone to get to know each other a little better.

Please bring garden tools such as shovels, rakes, hoes, wheelbarrows, etc. as these will be needed. Also, some of us should bring cordless drill/screwguns, maybe some old paintbrushes, and trash bags would probably be a good thing.

See you at the field - 9:00 AM on April 29th. ✈

INSIDE THIS ISSUE

- 1 Dallett Field Fix-up Day
- 2 April Meeting Minutes
- 2 Calendar
- 4 Tech Note - Lift
- 5 Field Safety Regulations
- 6 Club 2000 Membership Roster
- 7 Microsoft / Pitts Special
- 7 Washington Smithsonian Trip

My Work Day Checklist:

1. Make arrangements with the Boss for time off.
2. Call a buddy to get more people out.
3. Arrange a car pool (big enough to bring tools)
4. Bring tools;
5. Rake
6. Shovel
7. Hoe
8. Hammer
9. Wheelbarrow (or get buddy to bring one)
10. Other tools you know you need for the job you coordinated with Mike, Dick, Al, Bud, Chris, etc.
11. Sunscreen
12. Drink
13. An airplane, so you have something to do when the clean up is done.
14. Take the new digital camera so you can take pictures for the newsletter article you plan to write.

Bring this list with you so you can check it off.

Calendar of Events

Field Maintenance Day

Saturday 29 April 2000

Place Dallett Field

Time 9:00 a.m.

Field maintenance followed by regular flying

Club Meeting

Tuesday 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 till Noon Electric and
Gliders only!

Sunday 12 p.m. till Dusk

Propstoppers RC Club of

Delaware County, Pennsylvania.

Club Officers

http://members.xoom.com/_XOOM/propstoppers

President Mike Black

(610) 521-4692 MikeB10027@aol.com

Vice President Dick Seiwel (610) 566-2698

Secretary Russell Neithammer

(610) 565-9549 neithammer@aol.com

Treasurer Al Gurewicz (610)-494-8759

Membership Chairman Bud McClellan

(610)-532-8099 rcbud@bellatlantic.net

Field Marshall Al Tamburro (610) 449-4102

Newsletter Editor Dave Harding

(610)-872-1457 davejean@erols.com

Meeting Minutes

April 4, 2000

Russell Neithammer.

Vice President Dick Seiwel called the meeting to order at the Marple Library. Well wishes were given to members **Bud McClellan** and **Jesse Davis**, who could not be present at the meeting.

President **Mike Black** read the roll call - there were 32 members and several guests present. The minutes of the March 2000 meeting were approved as published in the April newsletter, by the membership.

Treasurer **Al Gurewicz** gave the treasurer's report with income of \$844.00, expenses of \$144.48 and a new balance of \$4210.56 reported. Al explained that the expenditure for the 50-50 is the amount given to the winner, which is offset by the income amount collected by the club (double the amount given to the winner).

Old Business

A fieldwork day at Dallett/Squire Cheyney is scheduled for Saturday April 29, at 9:00 AM. Work planned includes weatherproofing/staining the shelter, installation of additional benches in the shelter (to be pre-fabbed by **Dick Seiwel**), general clean up and removal of unused and/or broken items, rolling and seeding of runway (weather/soil conditions permitting - **Chris Cantania** will evaluate and make the call).

Dick Seiwel will do a general clean up at Moore, although he could use some help in removal of a log left behind under the shelter by partying teenagers.

Club picnic: Mike and **Kathy DiDomenico** have again volunteered to chair this event (this is the 7th year they have taken this on). The date is Saturday, June 24 (rain date: Sunday, June 25). A sign-up sheet was passed around for members to sign up to bring food contributions.

Thornbury Township Summer Day: Tentatively scheduled for Saturday, July 15. They are planning a larger event this year, which will start out at Squire Cheyney Park (Dallett Field) with airplane events as last year, and will continue at another Thornbury Township field (the soccer field at Rt. 926 and Shiloh Road) with an ice cream social and antique car show. A Propstoppers volunteer coordinator is needed. Besides being a fun time, this event is very important to our continued good relations with the Township.

Electric Fun Fly: Dave **Harding** will again

coordinate this event. Outside AMA member participants will be invited, as was done last year. The date is to be set for some time in September.

Night Fly: We need to check when the occurrence of the first new moon after the end of Daylight Saving Time is forecast, in order to schedule this event, to occur some time in October.

Summer Club Meetings at Dallett/Squire Cheyney Field;

- June 6
- July 11
- August 1

Rain dates for the above meetings will be the following Wednesday.

Recently one of the newly elected township commissioners paid a visit to the Squire Cheyney field on a Saturday. He listened and walked around the site, including over by the Walker property. Mrs. Walker apparently had no complaints about noise that day. Another resident expressed his appreciation and enjoyment of the RC flying to the commissioner. So far, so good, it would appear. Nevertheless, all members are urged to pay attention to their noise levels, and, if in doubt, don't fly until the model is checked and known to comply with our 95 ± 1 dBA (at 3 meters) noise limit.

The windsock, which had been missing, was found under a rock (probably put there to keep it from blowing away). **Mike DiDomenico** will make a new arm and re-install it on the post.

New Business

The Marple Library is organizing a bus trip to the Smithsonian Air and Space Museum – see the April newsletter for details (and in this issue Ed.). We are invited due to our use of the library facilities and our involvement in aviation.

Larch Lane Hobbies is sponsoring a giant scale event in Frederick Maryland, in August.

The Pine Barren Modelers Flea Market is scheduled for Saturday, April 15, in Forked River, NJ.

The Eagles All Electric Fly-In is scheduled for Saturday, May 13, in Hope, NJ.

See **Mike Black** for details of any of the above events.

The 50-50 winner was **Mike Black**.

Show and Tell

Mike DiDomenico showed his Goldberg Chipmunk, born again after last year's tangle with the large tree by the Dallett house. Mike had to climb 60 feet and use a 20-ft pole, to retrieve it. Leftover wood from the original kit was used to repair the structure, along with some pine for leading edge repair on the wing. The covering was patched, cowl repaired and it looks as good as new.

Jeff Neithammer showed his Cox .020 powered free flight foam glider, a replacement for the last one, which succumbed to a tree and subsequent recovery efforts. Jeff added reinforcements to the wing mounts, and some nails in the rear for balance.

Vice President Dick Seiwell adjourned the meeting at 8:45 P.M. ✈

Tech Note - Lift - Part Two

Dave Harding

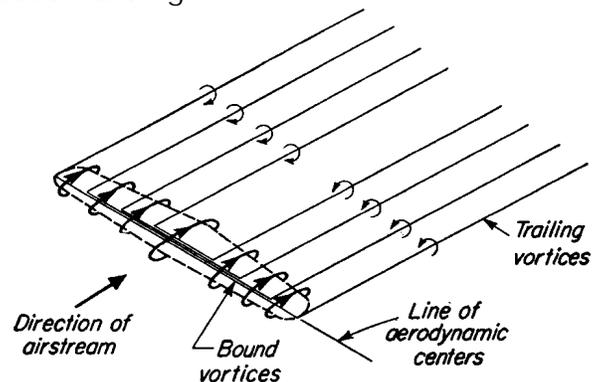


FIG. 6. Vortex pattern representing a lifting wing.

Abbot and VonDoenhoff "Theory of Wing Sections"

OK, so lift comes from the air motion caused by the presence of a wing.

Air velocities, pressures and vortices cause the wing to lift and the wake to swirl and depress, but what is it about the shape of the wing that causes some to work while others fail?

It must be the airfoil but why?

Well, in the first instance, the amount of lift we get as we increase angle of attack, at modest angles, is the same for all airfoils including simple flat plates.

So why do we use fancy airfoils?
It's because of what we want our models to do.

Continued on page 4

Lift Tech Note

continued from page 3.

Depending on our specific interests, we want to take off and land at slow speeds. We want to perform tight loops, perhaps inside and out. We might want to do violent 3D aerobatics where we fly in-control at crazy angles. We might want to race as fast as we can on the engine we have. Or we might like to soar for hours in a light thermal.

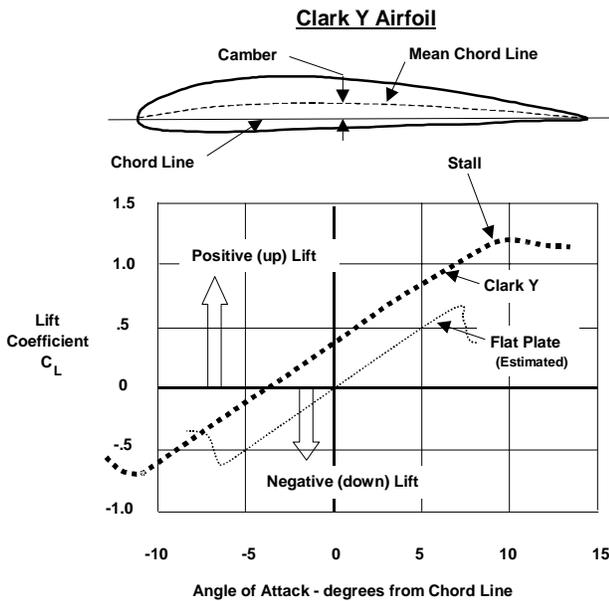
All of these attributes require a particular feature in the airfoil and since we usually like to do more than one of these in one airplane the selection of the airfoil is a compromise.

High Lift

We frequently like to have the *most* lift we can get from a wing of a given size.

Why is that? Well it can be to have a modest takeoff and landing speed or the ability to perform tight turns or maybe a combination of the two so we can make a decent downwind turn to final approach.

The maximum lift on a wing is achieved just into the stall region as shown in the data for the venerable Clark Y, a pretty decent airfoil from the 20's.



Flat-Plate and even very thin un-cambered airfoils stall at much lower angle of attack than thick airfoils with generous leading edge radii, cambered airfoils or airfoils with trailing edge flaps.

The chart above plots the lift (in terms of a Lift Coefficient, a useful term for comparisons) versus the angle of attack; that is the angle between the airfoil camber line and the free air stream.

The data for the positive lift portion of the Clark Y curve is real data, the extension of that line to the

negative lift region and the notional Flat-Plate line is my imagination. (But I do have a very competent staff!).

Notice that the slope of the Clark Y and Flat-Plate lines are the same in the middle region. The increase in lift for a degree of angle of attack is the same.

But look at the maximum lift coefficient at positive lift. The Clark Y gets about 1.2 and the Flat-Plate only about 0.7. The maximum positive lift on the Clark Y is almost double. This means that the airplane with the Clark Y would land much slower and turn much tighter than the one with the Flat-Plate.

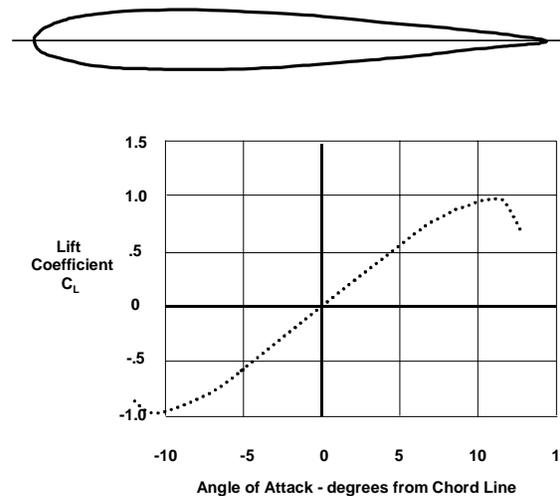
The second thing to note at this stall condition is how sharply the lift drops with small increases in angle of attack beyond stall. The Clark Y only drops slightly for a fairly large increase while the Flat-Plate drops very rapidly.

You wouldn't want your Fun Fly or Trainer to have these characteristics, actually for different reasons. The Fun Fly needs to be controlled at all attitudes while the Trainer needs to maintain some control in inadvertent maneuvers.

The third thing to note is what happens at the negative lift side of the curve. The Clark Y doesn't work nearly as well upside down, which is where this part of the curve plays. It behaves much more like the Flat-Plate, but that shouldn't surprise you if you consider what it would look like as an airfoil mounted upside down.

So this gives us another clue, if we want to fly just as well inverted as upright, then we need an airfoil which works just as well in both directions..... A symmetrical one!

NACA 0012 12% Symmetrical Airfoil



The lift performance for a symmetrical airfoil is ...er ...symmetrical! It works just as well upside down. But it is not as good as a cambered airfoil in absolute lift!

Dave

To be continued 

Field Activities

As we begin the 2000 flying season members are reminded that safety and control of our field operations are paramount in keeping our club successful and enjoyable.

For this reason we include here the club safety regulations and guest policy as the basis for field operations in the new season.

PROPSTOPPERS SAFETY REGULATIONS & GUEST POLICY

1. It is the duty of all members to obey and enforce the rules of the Propstoppers and the AMA.
2. new members who claim to be pilots will be checked out by an instructor or board member. New flyers are required to seek help from instructors until they solo.
3. Keep your aircraft and equipment in the designated pit area.
4. All transmitters must have the proper channel numbers and frequency flags displayed.
5. Turn on the transmitter only after obtaining the correct frequency pin.
6. When frequencies are being shared by several pilots, no one shall make use of the frequency for more than 10 minutes without the permission of the others on the same frequency.
7. Taxing from the Runway/Pit areas shall be limited to the designated taxiways only. Taxing into the Pit area from runways is prohibited
8. Aircraft on landing approach have priority over all others.
9. Aircraft experiencing control or engine difficulty have the right of way for landing. Call out when in trouble.
10. Do not fly over flight lines or spectator area.
11. Retrieve aircraft from runway as soon as possible. People doing this have the right of way.

12. Engines run up or being broken in for extended periods of time must be taken to an isolated portion of the field away from the pit area.

13. All club members are responsible to see that spectators remain in proper areas all the time.

14. All engines are required to have a muffler and pass 95DB at 9 feet on a DE noise meter.

15. Takeoffs are permitted only from the runways.

16. Pilots will stand in designated areas only.

17. Transmitter Impound

A transmitter impound area will be set up at the field. All transmitters are to be turned off and placed in the impound area when not in use. No transmitter shall be in use unless the correct frequency pin has been obtained.

18. Park cars in designated area behind flight lines.

19. No more than 4 aircraft in the air at one time.

20. Identification membership cards are to be worn at all times.

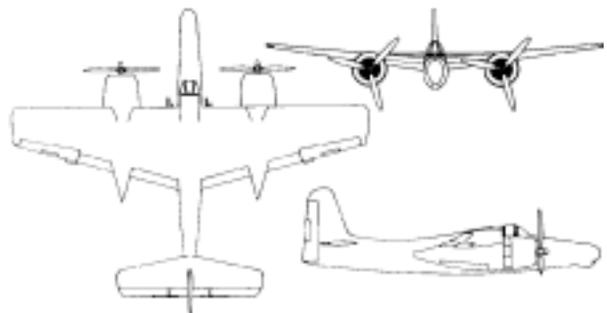
21. Gate policy; first in, unlock: last out, lock up.

22. Flying times are as follows;

Weekdays and Saturdays	10 A.M. till dusk
Sundays... . .	12 P.M. till dusk
Gliders and electrics are excluded.	

23. Guest Policy;

Guests will be permitted to accompany a member to our fields. Guests are permitted to fly only at Dallett field when accompanied by a club member.



First Name	M I	Sumame	Address	Town	State	Zip	Phone	e-mail
Stanley		Alexander	800 Ganett Rd	Upper Darby	PA	19082	(610) 352-3758	
David		Andraos	139 Station Road	Cheyney	PA	19319	(610) 399-9688	
Marin		Bakabiz	1248 Center Rd.	Havertown	PA	19083	(610) 284-2816	bakabiz@hotmail.com
Alan	G.	Baker	39 Longpoint La.	Rose Valley	PA	19063	(610) 566-6188	
Richard		Barkowski	408 Rogers La.	Wallingford	PA	19086	(610) 566-3950	Rbarkowski@craftech.com
Richard		Bates	732 West Croft Place	West Chester	PA	19382	(610) 399-6832	
Mike		Black	110 PoplarWak	Ridley Park	PA	19078	(610) 521-4692	MikeB10027@aol.com
Steven		Boyanjan	313 Sissinghurst Dr.	West Chester	PA	19382	(610) 399-6709	store009@intemamp.com
Robert		Bransen	39 1/2 Ellis Road.	Wilmington	DE	19810	(302) 475-8973	
John		Brink	7215 Hazel Ave	Upper Darby	PA	19082	(610) 352-4175	
Earle		Broomall	801 Yale Ave. Apt 6	Swarthmore	PA	19081	(610) 604-0359	
Walter		Bryan	Box 136 Thornton Rd.	Thornton	PA	19373	(610) 459-1196	
Anthony		Carbone	395 Highland Ave.	Media	PA	19063	(610) 891-0253	
Christopher		Catania	P O Box 2101	Media	PA	19063	(610) 358-2107	
Tom		Carthy	P O Box 192	Thornton	PA	19373	(610) 358-0371	
Robert		Crowell	506 Amosland Rd.	Morton	PA	19070	(610) 461-5557	rc101@home.com
Charles		Crowell	1024 N. Providence Road	Newtown Sq.	PA	19073	(610) 353-2620	
Philip		Davis	462 Woodcrest Lane	Media	PA	19063	(610) 565-3581	
Jess		Davis	408 Virginia Lane	Aston	PA	19014	(610) 494-5070	
Michael	J.	DDomenico	1530 Woodland Ave.	West Chester	PA	19382	(610) 399-1752	
Gregory		Dugan	506 Old Fernhill Road	West Chester	PA	19380	(610) 429-3296	
Reg		Edmonds	Box 326, 97 Gladville Rd.	Glenn Mills	PA	19342	(610) 358-3526	
Don		Ewing	1274 Sharon Dr.	Boothwyn	PA	19061	(610) 358-5865	
James	H.	Foster	231 Dickinson Ave.	Swarthmore	PA	19081	(610) 544-6450	
Ed. and Mark		Gatfeller	1302 College Hill Drive	Cheyney	PA	19319	(610) 399-3245	
Del		Gennon	1150 West Chester Pike	West Chester	PA	19382	(610) 696-2596	glende@gateway.net
Edward	C.	Goretzka	812 Kinberly Lane	West Chester	PA	19382	(610) 436-6559	
Albert		Gurwicz	2600 West Rd.	Aston	PA	19014	(610) 494-8759	
Dave		Harding	4948 Jefferson Drive	Brookhaven	PA	19015	(610) 872-1457	dave@an@erols.com
Jacob		Harper	40 Scarlet Ave.	Aston	PA	19014	(610) 859-8256	
James and Scott		Harris	3515 Runnymede Drive	Newtown Sq.	PA	19073	(610) 325-4331	
Marin		Heiter	215 Nassau Blvd.	Prospect Park	PA	19076	(610) 586-2155	
Matt		Kauffman	512 E. Ridley Ave.	Ridley Park	PA	19342	(610) 461-1324	
Raymond		Kiker	926 Maple Ave.	Glenn Glen	PA	19036	(610) 534-2790	
Chuck		Kluzynski	2810 Elm St.	Philadelphia	PA	19145	(215) 336-8203	
Adam		Kraut	903 Shady Grove Way	West Chester	PA	19383	(610) 399-9594	
Robert		Kuhn	1606 E. Fox Bush Way	Glenn Mills	PA	19342	(610) 361-0999	kuhnr@home.com
Jonathan		Lenard	2224 Overbok Dr.	Aston	PA	19014	(610) 494-2497	Sail@psu.edu
Alan		Lomp	608 S. Elmwood Ave.	Glenn Glen	PA	19036	(610) 583-8827	
Samuel (Bud)		McClellan	3132 Logan Ave.	Glenn Glen	PA	19036	(610) 532-8099	rcbud@bellatlantic.net
Joe		Medica	199 Hawthatha Lane	Drexel Hill	PA	19026	(610) 446-2613	
Thomas		Morse	6 Brandywine Dr.	Media	PA	19063	(610) 566-8138	
JD		Mulliken	114 Riverside Ave	Prospect Park	PA	19076	(610) 461-4974	
Herman		Nade	258 Richards Ave.	Lansdowne	PA	19050	(610) 622-0484	
Russ		Neithamer	415 S. Jackson St.	Media	PA	19063	(610) 565-9549	neithamer@mea.com
Sam		Nevins	847 Eaton Rd.	Drexel Hill	PA	19026	(610) 789-6031	
August	M.	Pagel	314 Harrison Ave.	Clifton Heights	PA	19018	(610) 622-5909	
William		Pague	11 Cottage Lane	Glenn Mills	PA	19342	(610) 459-4726	
Adam		Popiel	7 Patriot Lane	Thornton	PA	19373	(610) 358-4835	
William		Pottejer	28 N. Chester Pike	Glenn Glen	PA	19036	(610) 586-8345	
Leonard	S.	Quigley	4277 School Lane	Brookhaven	PA	19015	(610) 874-6368	
Bill		Ross	604 Cricklewood Rd.	West Chester	PA	19382	(610) 399-6882	
Joseph		Scavito	7020 Grays Ave.	Philadelphia	PA	19142	(215) 492-9792	
Fred		Schaefer	717 Church Lane	Yeadon	PA	19050	(610) 284-1869	
Ed.		Schumacher	2518 Huey Ave	Drexel Hill	PA	19026	(610) 622-2518	
Phil		Sears	1116 Butternut Rd.	Glenn Mills	PA	19342	(610) 399-1321	phsears@dplus.net
Richard	E.	Seiwel	559 S. Old Middleton Rd.	Media	PA	19063	(610) 566-2698	
Bill		Shelbese	730 Taylor Dr.	Folcroft	PA	19032	(610) 583-2919	
Charles	H.	Stom	912 Ridley Creek Dr.	Media	PA	19063	(610) 566-8658	
Fred		Statman	3840 Gladville Rd.	Newtown Square	PA	19073	(610) 325-0737	fstat@statman.com
Albert		Tambuzo	520 N. Manoa Rd.	Havertown	PA	19083	(610) 449-4102	
Richard		Tate Jr.	1004 Green Lane	Secane	PA	19018	(610) 626-0732	
Chad		Thomas	405 W. Deer Pointe Rd.	West Chester	PA	19382	(610) 399-9005	
Thomas		Trednick	460 E. Lafayette Dr.	West Chester	PA	19382	(610) 793-1099	
John		Tulla	624 Jaeger Circle	West Chester	PA	19382	(610) 399-1182	
Mark		Weibel	84 Dillworthtown Rd.	Thornton	PA	19373	(610) 399-1764	mweibel@protechgolf.com
Ray	W.	Wopatek	1004 Green Lane	Secane	PA	19018	(610) 626-0732	
Diamond		Xenos	264 N. Central Blvd.	Broomall	PA	19008	(610) 356-2887	
Louis	K.	Yadevia	601 Church Lane	Upper Darby	PA	19082	(610) 622-2573	
Albert	P.	Yoncha	242 Fox Rd.	Media	PA	19063	(610) 566-2817	
John	J.	Zebuski	601 Crescent Drive	Glenn Glen	PA	19036	(610) 237-1696	
Elias		Zoras	1100 West Chester Pike	West Chester	PA	19382	(610) 692-8821	

What would happen if Microsoft started making Pitts Specials?

1. Every year a new model would be introduced that would have twice the speed & vertical penetration.
2. Sun Microsystems would come out with a composite model that would have twice the performance, but would only be able to land on 10% of the runways.
3. Every 10Hrs. Flight time, the engine would quit. We would dead-stick the aircraft and inspect the power plant, only to have it start with no problems. We would come to accept this as normal.
4. If you ever crashed, you would have no idea why!!
5. Rolls to the right would require MS control stick 2.0
6. If you were to eject the canopy, it would ask, "Are you Sure?"
7. Calls to the technical service dept. would not produce results; they would blame all the airframe problems on the company that manufactures the tires.
8. There would be at least ten different ways to start the engine.
9. A geek meter would replace the G meter.
10. The battery compartment would be labeled as an UPS.
11. We would be required to buy Microsoft gas.
12. Intel would supply engines that would run so hard we would have to buy fans to cool them, & we would have stickers on the cowling that read "Intel inside"
13. The Microsoft Pitts would come complete w/ a M.S.GPS, M.S. Nav/Comm, & M.S. Transponder. Our government would consider this an unfair trade practice & file suit.

14. Every time touchdown markers were repainted, you'd have to buy a new airplane.
15. You could only have one person in the airplane at a time, unless you bought a Pitts98 or a PittsNT.
16. The oil pressure, oil temperature, CHT, & manifold pressure gauges would be replaced w/ a single "General Aircraft Fault" warning light.
17. New seats would force everyone to have the same-size butt.
18. Apple would start to manufacture Cap10's aimed toward the anal-retentive pilot. company profits would be small but consistent.

Sean www.strictlyscale.com

Washington DC and the Paul Garber - Smithsonian Restoration Facility

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.**

Saturday 6th May 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
 4948 Jefferson Drive
 Brookhaven, Pa. 19015
 610-872-1457

Propstoppers R.C. M.A.C

Field Fix Up Day
Saturday 29th April
9 a.m. Dallett Field
Be There!

Homework for next months Tech Tips.

Dave.

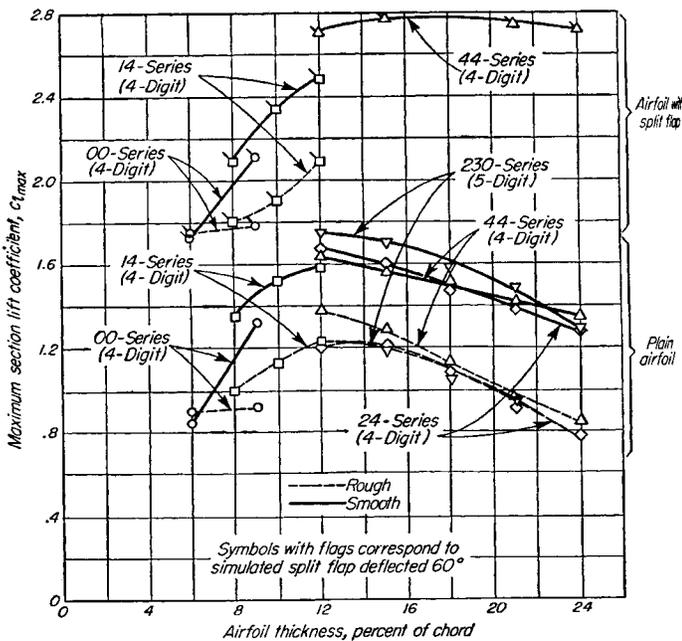


Fig. 58. Variation of maximum section lift coefficient with airfoil thickness ratio and camber for several NACA airfoil sections with and without simulated split flaps and standard roughness. $R, 6 \times 10^6$.

Abbott and VonDoenhoff "Theory of Wing Sections", Dover

Hobbytown USA

Where Hobbies Begin!

Your RC Headquarters

Top Flight # O.S # Goldberg # Futaba # J.R. # Airtronics
 Du-Bro # Many other top Brands! # Parts and Accessories
 We can Special Order!

RC Cars & Boats*Trains*Plastic Models*Games
 Kites & Rockets*Collectable Cards*Tools & Paints

Marketplace at Westtown*
 1502 West Chester Pike
 (610) 696-9049

Brandywine Hobby

We Carry over 9000 Airplane Items in Stock

Discounted Sales Prices / No Sales Tax

Mon, Tue, Thu 9am–7pm Fri, Sat 9 am–1pm Wed, Sun Closed	1918 Zebley Road Wilmington, De Call for Directions (302)475-8812
---	--