The Flightline

Volume 32,Issue 12 Newsletter of the Propstoppers RC Club AMA 1042 December 2002

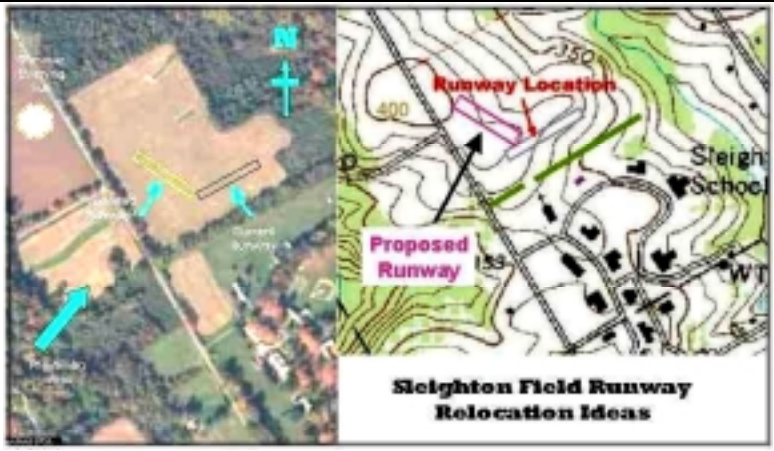
Editorial: Sleighton and Field Matters

Chris Catania continues to work his magic for us, quietly, in the background.

He reported in last months meeting that Elwyn Institute, who are still engaged in negotiations with buyers and developers of the Sleighton School site, have ended their lease with farmer Slossberg. Although this makes our current field lease null and void, since it was with the farmer, Elwyn have willingly agreed to execute another lease directly with us.

Furthermore, we will probably have a wider access to the field that may allow us to make the necessary improvements in runway location, level and surface finish. This good news is tempered by the necessity of making the lease month to month, allowing Elwyn to terminate with only 30 days notice.

Chris has also suggested that when the whole development is planned there may be a piece of un-usable land that we may consider buying or leasing. He suggests that an area near the current quarry may fit the bill. However, if I have it right, the area around the quarry is heavily wooded and very close to existing houses. See the aerial photos and maps on the right.



All this will require a good deal of work and, for it to mature for the spring, we need to start soon. A fieldwork day in early December has been suggested. We will probably plan this at the next meeting.

Meanwhile, Mike Black had a chance meeting with Randy Bates (Arasapha Farms), who may be interested in hosting the club on his land.

We still need a new field folks! And new President John Zebuski will be knocking on your door looking for help in finding one.

Dave Harding

Agenda for December 3rd Meeting at Marple Library 7:30 pm

- Approval of November meeting minutes
- Finance report
- Membership report
- Field Search Committee report
- New business
- Fieldwork day plans
- Indoor flying plans
- Show and Tell.

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Calendar of Events

Club Meetings

Regular Meting 7:30 pm
Tuesday 3rd December
At Marple Newtown Library

Regular Meting 7:30 pm
Tuesday 7th January 2003
At Marple Newtown Library

Flying Events

Indoor flying at Tinicum School
Friday December 13, 2002
Friday January 10, 2003
Friday February 7, 2003
Friday March 7, 2003

Regular Club Flying

At Moore and Sleighton Fields

Daily	**10 am til Dusk**
Saturday	**10 am til Dusk**
Sunday	**12 p.m. till Dusk**

Propstoppers RC Club of Delaware County, Pennsylvania.
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Propstopper's Web Site; www.propstoppers.org

Check the web site for back issues of the newsletter, pictures of club events and the calendar of future events.
Pictures courtesy of Bob Kuhn and Dave Harding

The President's Message

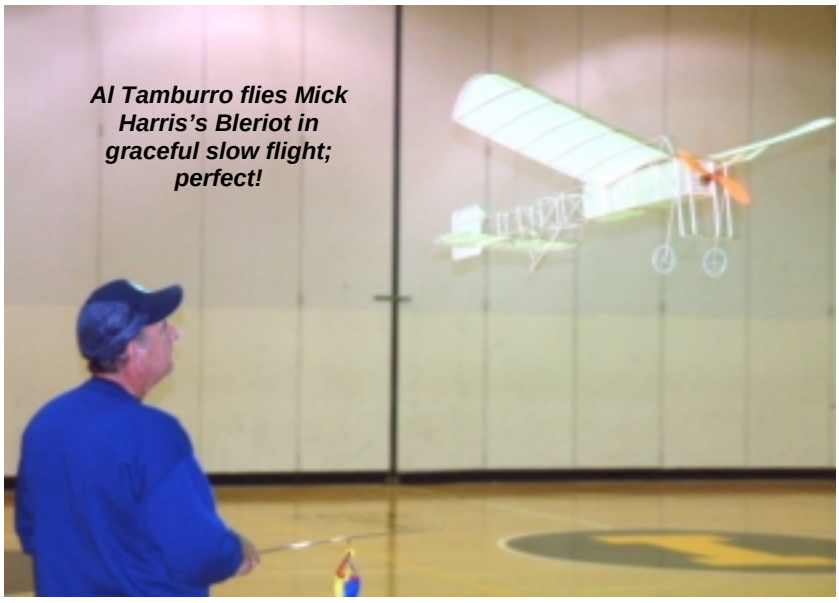
Dear Fellow Propstoppers,

This coming year will present some challenges for our club. I know everybody has a lot going on outside of the club, but I will ask in advance for volunteers to help with our club functions. The first one of the year will be in February, our club auction. Please consider organizing or just lending a helping hand, it doesn't require a lot of time and I see it as one of the easiest ways to support our club. If you are interested please let me know at the December meeting. This would be a great opportunity for new members to become active and meet other members. I appreciate your vote of confidence and look forward to the new year.

John Zebuski

Interboro High School Indoor Flight Demonstrations

A group of Propstoppers including Mike Black, Ray Wopatek, Al Tamburro, Mick Harris, Dave Harding and new members Gary and Jared Marks and Joseph Dearie supported the indoor flight demonstrations and model displays for the Interboro High School Evening Class program. The picture below shows Mick Harris explaining his Bleriot to one of the attendees. In the foreground your editor's Corsair free flight and Lancaster, now with four motors and RC, await their turn to fly. Mike Black explains his Corsair larger size out door model.



Al Tamburro flies Mick Harris's Bleriot in graceful slow flight; perfect!

Dave Harding

November 5th Meeting Minutes

President **Mike Black** called the meeting to order at 7:30, at the Marple Library. There were 22 members and two guests present**.**

The previous meeting's minutes were approved as printed in the November 2002 newsletter.

Treasurer's Report – Treasurer **Al Gurewicz** reported an income of $38.35 and expenses of $160.00. Our total available funds are $2821.28

Old Business

Field Search – As previously mentioned, volunteers to form a committee are needed.

One of our members had difficulty getting into the Sleighton field area last week. The reason is a change in security practices at Sleighton.

When **Chris Catania** met with John Cramp (Elwyn), it was discovered that Sleighton has ended the farmer's (Rick Slossberg's) lease. However, they intend to continue our use of the field and requested that we draw up a new lease, directly with Sleighton.

For next year, since we will have access to the whole field we will probably relocate the runway to a more suitable location on the upper field.

Plans are underway to sell the property to a developer who will build retirement housing in the area where the cottages are located. It is possible that there will be left over, undevelopable land near the quarry that we could rent/purchase for a field. This possibility will be followed as the situation develops.

On another front, **Mike Black** ran into Randy Bates (Arasapha Farms), who may be interested in hosting the club on his land.

SAM (Society of Antique Modellers) – Mick Harris has succeeded in creating SAM Chapter 76, the Propstoppers. SAM offers a free trial newsletter and brochure – see their website. Membership is now $25 per year.

By-law Committee Report – The new bylaws, as well as the new field rules, have been submitted to AMA for approval. In the meantime, the membership voted to approve the new bylaws and field rules, as they have appeared several recent newsletters.

Year 2003 Budget – Treasurer **Al Gurewicz** read the proposed year 2003 budget, summarized as follows:

Total income (based on $55 dues)	$3962
Total Expenses	$5025

In order to balance this budget, a dues increase to $80 was voted and approved.

2003 Club Officer Nominations and Elections:

Dick Bartkowski was nominated for the position of secretary and accepted nomination.

Since there was only one candidate for each board position, in accordance with the bylaws, a vote was taken and the selection of the new 2003 board members was approved, as follows:

President	**John Zebuski**
Vice President	**Dick Siewell**
Treasurer	**Al Gurewicz**
Secretary	**Dick Bartkowski**

Interboro High School Demo – Scheduled for Wednesday evening, November 6, at 7:00 PM. Plan to arrive by about 6:30. We will have all three sections of the gym for indoor flying.

Indoor Flying – At the Tinicum School Gym, is scheduled for the following dates:

Friday, December 13, 2002
Friday, January 10, 2003
Friday, February 7, 2003
Friday, March 7, 2003

Dave Harding is still working on setting up additional indoor flying dates at the Salvation Army building in Chester.

New Business

Club Auction: - Last year, there was some discussion regarding holding the auction during the January meeting, instead of the February meeting as has been done in the past. The membership was polled and it was decided to again hold the auction during the February meeting.

Break

The 50-50 winner was **Del Glennon**

Show & Tell

Sam Nevins showed his kit-built Great Planes Electric Cub.

Power is the direct drive Astro Cobalt 15 brushed on 7, 1100 mah NiCad cells, turning an 8-4 prop. Current draw in bench tests is too high yielding only 2-minute runs. May be overpowered in flight.

Bob Crowell showed his Deltran Battery Tender Jr., available from Hughes RC (and Pep Boys, locally). This unit is ideal for charging and maintaining 12 V lead acid flight box batteries, (and car and lawn equipment batteries).

Al Tamburro showed his Magic ARF 3D fun fly. Power is an OS 46FX 2 stroke. The $99.95 model is well built, light and strong, with real iron on covering.

Al also showed a radio/power system consisting of a transmitter, receiver and two drive motors, scavenged from a $10.00 RC toy boat, which has possibilities for aircraft use. Control consists of throttle and differential speed controls.

Dave Harding showed examples of past and newly emerging technology in brushless electric motors. Past technology was in the form of the Aveox system, consisting of a motor with position sensors ($170.00), gearbox ($100.00) and speed control ($170.00). The newer technologies are lighter and less expensive and they eliminate the position sensors, such as the AXI sold by Hobby Lobby ($75.00 motor with $80.00 speed control). This motor is an "inside out" design and operates at low speed/high torque, thus does not require a gearbox to turn the same large props as the Aveox system. Also shown was the MEGA system, similar in cost and weight to the AXI, but it does require a gearbox for use with large props.

The meeting was adjourned at 9:00 PM.

The next meeting is scheduled for December 3, 7:30 PM, at the Marple Library.

Rusty Neithammer, Secretary

Tech Note - Heat Engines Part II

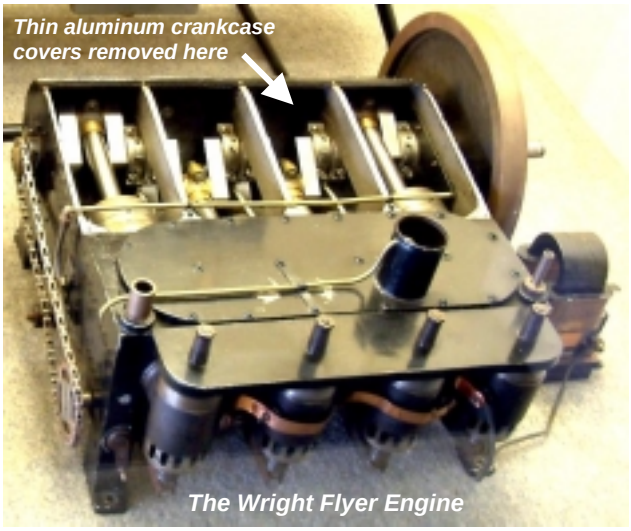
One of the fun things to do in a museum is to see how inventors coped with specific design problems over the ages. So, since I was once again in London (bringing our Pasadena daughter back home again) I took the opportunity to revisit the Science Museum and to visit the Imperial War Museum's Duxford annex, but more of that for a future time.

Anyway, at Duxford, in the American Air Museum, I stumbled upon Curtis CX5, Liberty and Merlin engines as fitted to various American airplanes. Further on there were many other engines from different eras so I decided to go back to the Science Museum and start with the Wrights.

Just thirty years after Nicolas Otto invented the four stroke internal combustion engine the Wright brothers thought that the last of their problems would be acquiring a lightweight engine for their Flyer. Wrong! So, being the Wright brothers, they just designed and built one…..in a couple of months!

The primary concern in designing an aero engine is to provide sufficient strength to contain the "explosion" (very rapid burning actually) that takes place in the cylinder between the piston and the combustion chamber. The force developed is, naturally, what we are looking for to turn the crank, but the crank support, crankcase, and the cylinder head must react these forces. There are many different ways of attaching these parts to achieve this end.

The Wrights approach was novel for the time; in fact it has been rarely copied. They cast a single piece engine block in aluminum. This part contained the crank supports and cylinders, which were pressed-in steel liners, as well as the cylinder head. The loads were therefore taken totally within this casting, which also provided the liquid cooling jackets around the cylinders like in a modern car. Differing from modern car practice was the actual combustion chamber and valve gear. The Wrights designed a single piece part for each cylinder comprising the combustion chamber, a cam, pushrod and rocker actuated exhaust valve and an automatic inlet valve



The Wright Flyer Engine

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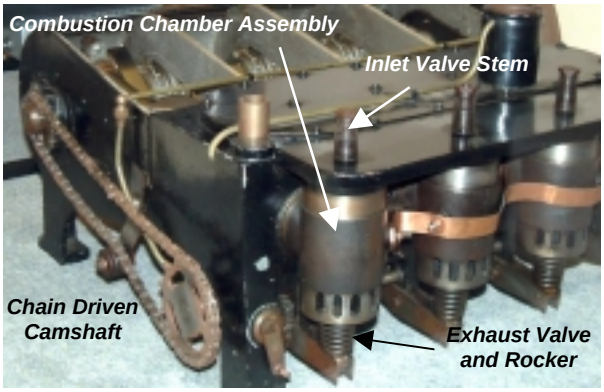
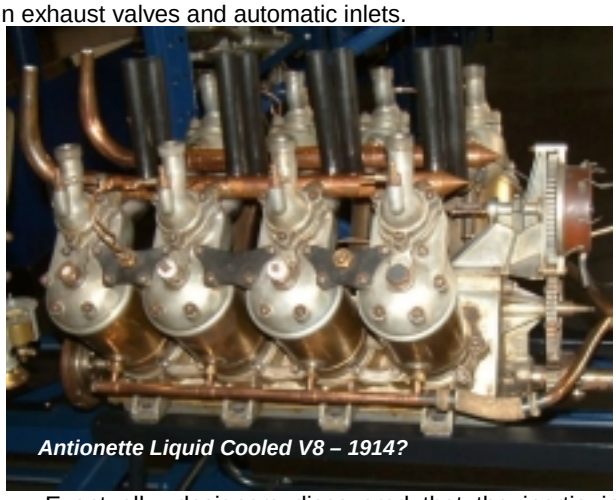
The automatic inlet valve was common in early days. It operated by the vacuum in the cylinder opening the valve against a soft spring. Closing was also by the internal cylinder gas pressure.



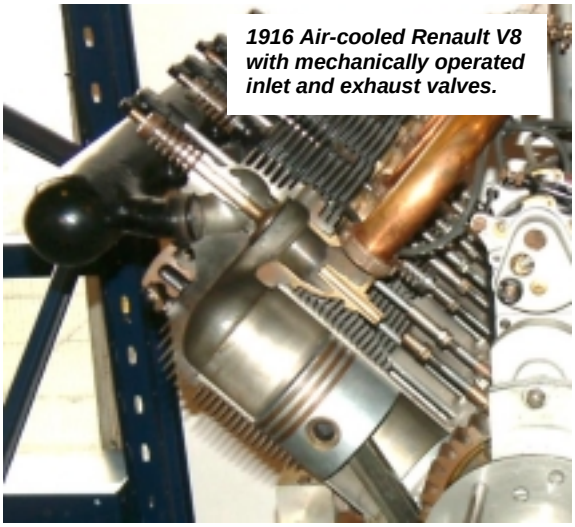
Notice, the Wrights used chain-driven high mounted camshaft acting directly on the rocker arms. Spark ignition was continuous, not timed, allowing the plugs to be gang-fed by a copper strip.

Many early designers realized that the V cylinder arrangement allowed you to put about twice as many cylinders on the same length crankshaft thereby saving weight.

Here is a V8 Antoinette engine that also features cam driven exhaust valves and automatic inlets.



Eventually, designers discovered that the inertia in the gas, which has to very quickly enter and exhaust from the cylinder, needed to be encouraged to leave early. So mechanical control of both inlet and exhaust valves incorporating early opening was required.



1916 Air-cooled Renault V8 with mechanically operated inlet and exhaust valves.

This close-up of one bank of cylinders on an air-cooled 1916 Renault 80hp V8 shows the cam driven inlet over exhaust, IOE, arrangement. It allows control over the opening timing of both valves but the combustion chamber shape is poor, limiting the compression ratio and thereby power.

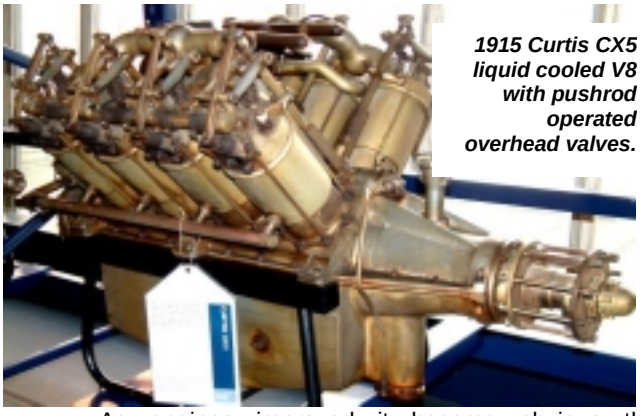
Another great problem for early engines was the sealing of the high-pressure exhaust gasses in the cylinder. This seal had to be maintained when the engine was cold and hot so expansion of the mechanical parts was a big consideration, particularly in engines that used full-length studs to hold separate cylinder and head assemblies like the Renault. Leaks would readily occur at the joint between the cylinder and cylinder head.

The Wright's design minimized these problems by using a one-piece cylinder/block and head assembly. Their sealing surface was the threaded joint between the block and integrated combustion chamber assembly.

The Antoinette engine features short studs to connect the cylinder to the crankcase and another set to attach the head to the cylinders, like a Harley Davidson. The problem with this approach is that the cylinder takes all the loads from combustion. Many are the broken cylinders I have seen at the bike drags when too much nitro is used.

Many engines, then and now, use an integral cylinder and head design. The modern (?) Lycoming engines use a cylinder head that is screwed to the top of the cylinder. Those designs with a truly integral cylinder head suffer from limitations in design of the combustion chamber and valve design. You must be able to make and assemble it.

Curtis's early engines were exceptionally efficient; indeed this was probably his great contribution to early aviation.



1915 Curtis CX5 liquid cooled V8 with pushrod operated overhead valves.

As engines improved it became obvious that aerodynamic and thermodynamic efficiency was important to lightweight fuel-efficient engines. Make them efficient and they will be smaller and lighter for the same output.

The Curtis OX5 of 1915 featured an efficient combustion chamber and good placement and control of valves. It has two inclined valves in a hemispherical combustion chamber driven by pushrods and rockers from a single camshaft. The cylinder is attached by long through studs and an additional set of short cylinder base studs.

Most of these early engines had exposed valve gear so lubrication of the valves and rockers was poor. They also mostly used welded-on water jackets. This was light but subject to cracking and corrosion. It was one of the shortcomings of the US Liberty V12 engine of 1918 that featured integral heads and cylinder base studs. Much of the valve gear was enclosed for better lubrication and cleanliness and an overhead camshaft was used which allowed for a much more rigid valve train impervious to thermal expansion problems.

1918 liquid cooled Liberty V12 cylinder assembly

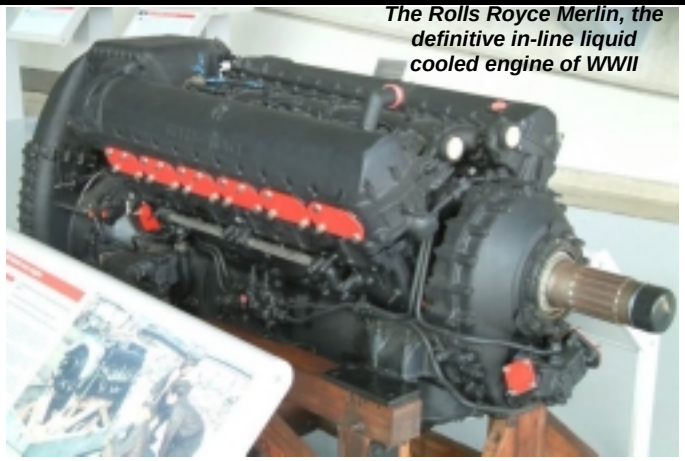
Development of this basic architecture proceeded through the 1920's and 30's. In Rolls Royce's case much augmented by participation in the Schneider Trophy races.

Cast cylinder assemblies with pressed-steel liners eliminated the problems of the welded steel sheet water jackets.

As materials and fuels improved the output of these engines soared. Supercharging in various forms enhanced the power levels and maintained it to higher altitudes.

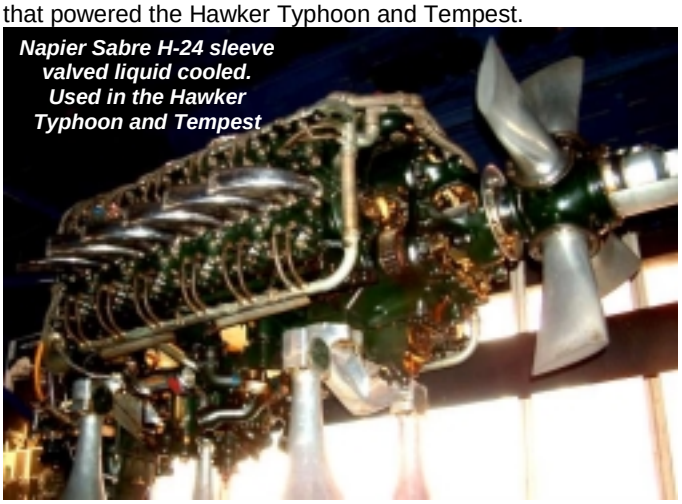
The Merlin cylinder / piston / combustion chamber and fully enclosed four valve overhead cam valve gear shown here was the standard at the beginning of WWII.

1935 Rolls Royce Merlin cylinder and head arrangement



The Rolls Royce Merlin, the definitive in-line liquid cooled engine of WWII

Perhaps the height of wretched excess in this line of development was the H-24 arrangement of the Napier Saber that powered the Hawker Typhoon and Tempest.

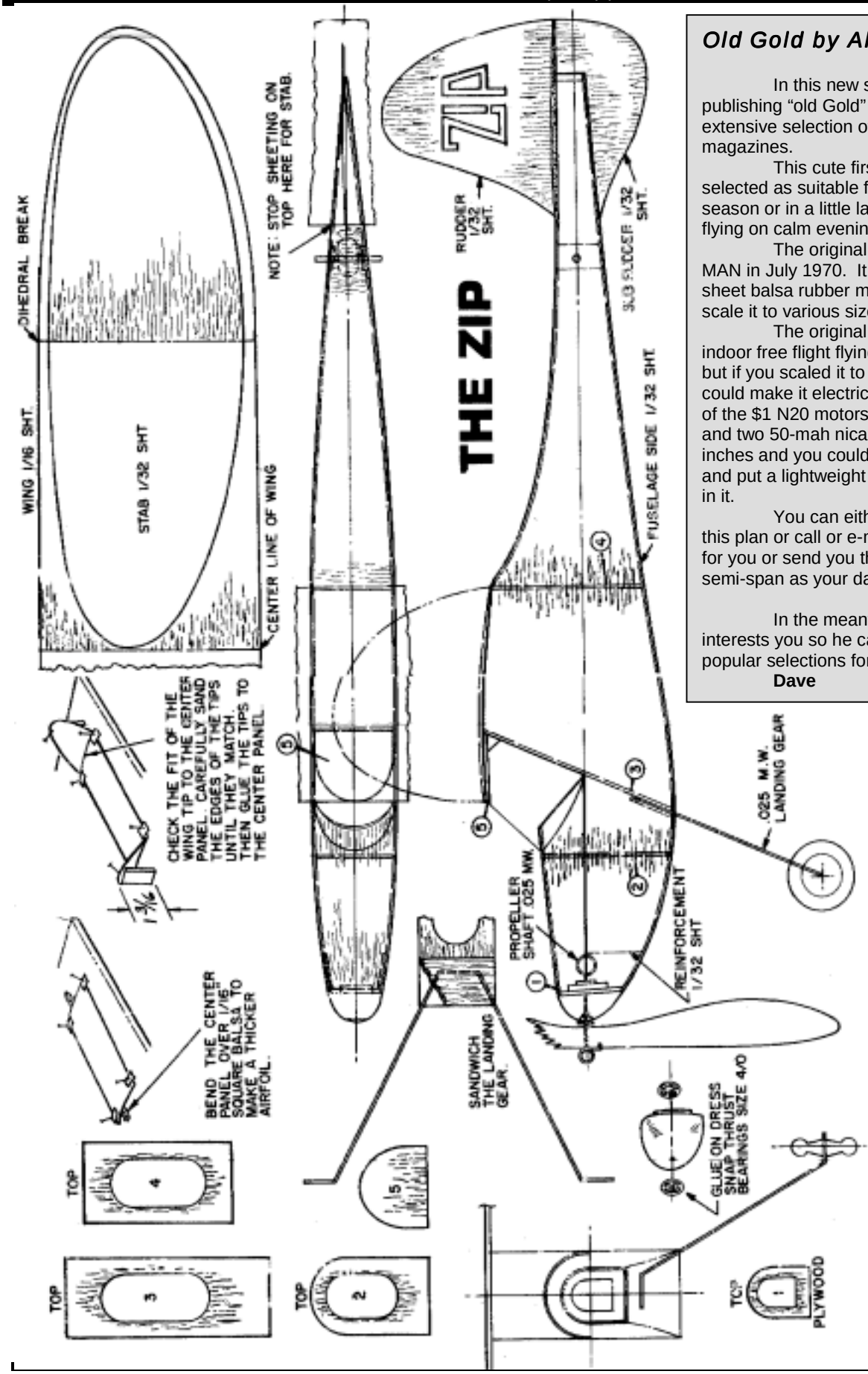


Napier Sabre H-24 sleeve valved liquid cooled. Used in the Hawker Typhoon and Tempest

Of course there were engines of different configuration! But that is another story for another time.

A 50 HP Gnome rotary air-cooled engine of 1913.

Dave Harding



Old Gold by Al Tamburro

In this new series Al will be publishing "old Gold" selected from his extensive selection of model airplane magazines.

This cute first model has been selected as suitable for the current indoor season or in a little larger size for outdoor flying on calm evenings.

The original was published in MAN in July 1970. It is a 12-inch span all - sheet balsa rubber model but you could scale it to various sizes.

The original would be ideal for indoor free flight flying in the Tinicum gym but if you scaled it to 16-inch span you could make it electric powered using one of the $1 N20 motors with a 3-inch prop and two 50-mah nicads. Scale it to 24 inches and you could use the GWS motor and put a lightweight radio and two servos in it.

You can either copy and enlarge this plan or call or e-mail me and I can do it for you or send you the file. Use the wing semi-span as your datum for scaling.

In the meantime tell Al what interests you so he can make the most popular selections for this series.

Dave

Stop Press. Sleighton Field Security Changes

The Security force at Sleighton has been changed. There are now only one or two guards present and they lock the access gates when not in the area. If you cannot immediately get access try to search for the guard on duty and request access. We are working to sort this problem so stay tuned and report your experiences to the board

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Propstoppers R.C. M.A.C

The American Air Museum in Britain – Duxford
Dedicated to the 30,000 US Airman who lost their lives flying from Britain during WWII

Membership Renewal For 2003

Membership renewal for 2003 is now due.
You can renew by mail or at the club meeting in December.

Dues are $80.

Please send a check to;

Ray Wopatek
1004 Green Lane
Secane, PA. 9018
Please enclose a copy of your current A. M. A. Membership card,
And Please, Please enclose a Stamped self- addressed envelope.
Ray Wopatek Membership Chairman

New Magazine Exchange Program

Here is a new fund raiser. Bring any old (or new) copies of model airplane magazines to the club meeting. We will put them on a desk for members' perusal.

Magazines may be purchased for $0.50 each or 3 for $1. You may keep them or bring them back and recycle them. All proceeds will go to the club.

Please don't bring the common magazines that we all get, just the more unusual ones. After all someone (me right now) will have to carry them home again. Any volunteers for this program?

Dave