# The Thermaleer

SAM 600 of Australia Newsletter, Issue No.135 October-December, 2015.


*Texaco winner at Cohuna in September (L to R) 2nd Steve Gullock, 1st Brian Stebbing and 3rd Kevin Fryer.*

## NEXT COMPETITONS

**January 23rd & 24th** **P&DARCS Cardinia** **50th Birthday Bash !**
**Saturday:** Classic Aerobatics, Foam Glider Mass Launch, Classic Kit Models. **Sunday:** Vintage Glider, Texaco, Duration.

**March 5th & 6th** **Shepparton** **SAMS Oldtimer**
**Saturday:** 1/2A Texaco, Burford, Duration. **Sunday:** Texaco, 38 Antique, Climb & Glide

**March 24th to 28th (Easter)** **Canowindra** **SAM Champs Down Under** SAM 1788 Competition

**April 16th & 17th** **Echuca** **Saturday:** 1/2A Texaco, Burford, Duration.
**Sunday:** General Meeting 9am. Texaco, '38 Antique, Climb & Glide.

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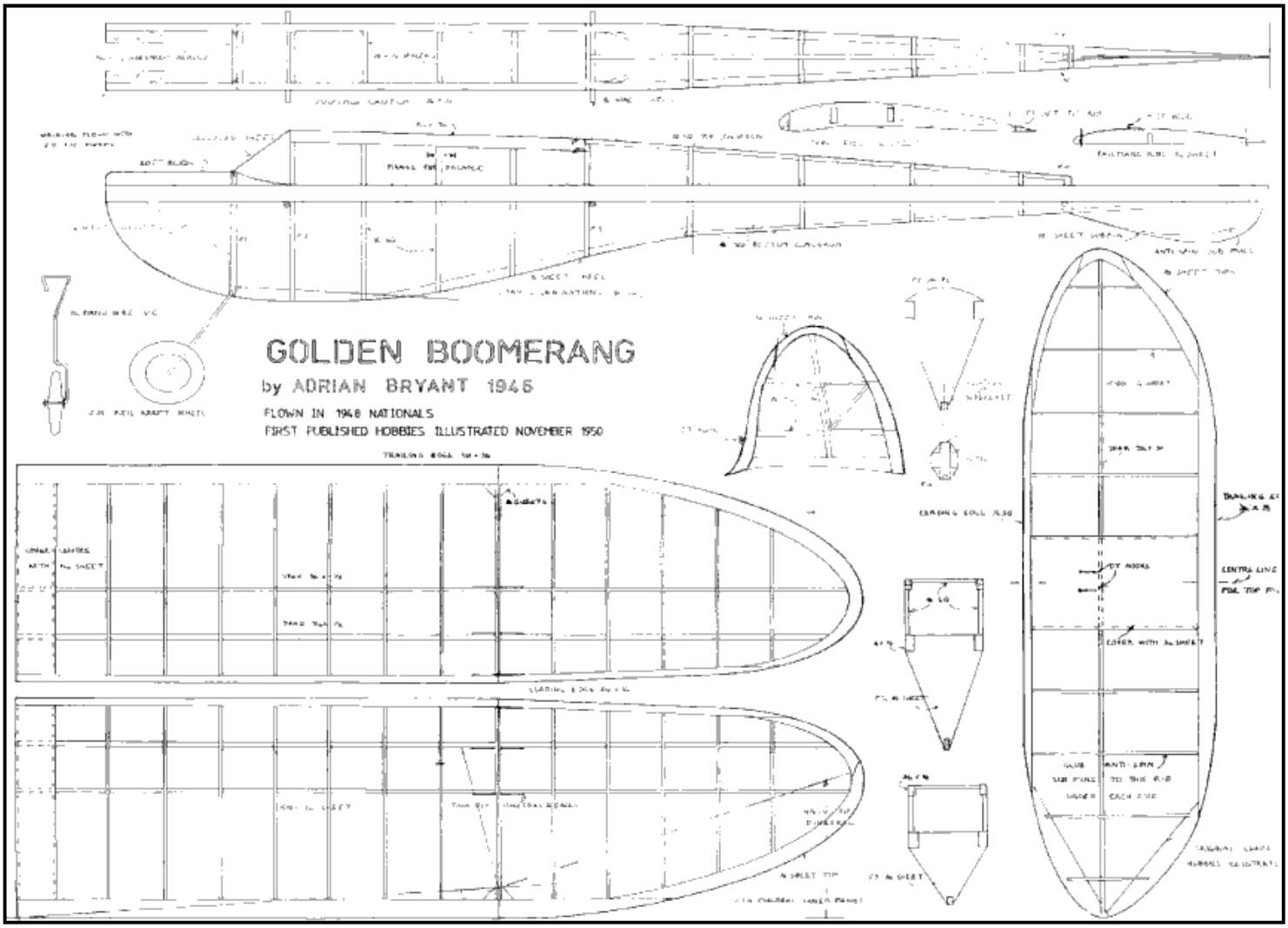
*"The Thermaleer" is the official newsletter of SAM 600 of Australia, Victorian R/C Old Timers Association (SAM600) Inc.*




*Full size PDF plan from Outerzone: http://www.outerzone.co.uk/download_this_plan.asp?ID=4613*

## FROM THE PRESIDENT

**Kevin Fryer.**

The other night I got a phone call from Stewart Sinclair to tell me his Dad Graham had passed away, I have known Graham for over 50 years he was a master builder, the best flyer and fiercest competitor I have known.

There was a gap of twenty-five years till one day I went to a SAM 600 event at P&Darcs. I was hooked when I saw Graham's Play Boy with a McCoy 60 in it.

Graham took me under his wing and got me to build a Red Zephyr and a 110% Play Boy. He would be rapped to know that I will be flying my first free-flight model at Canowindra at Easter.

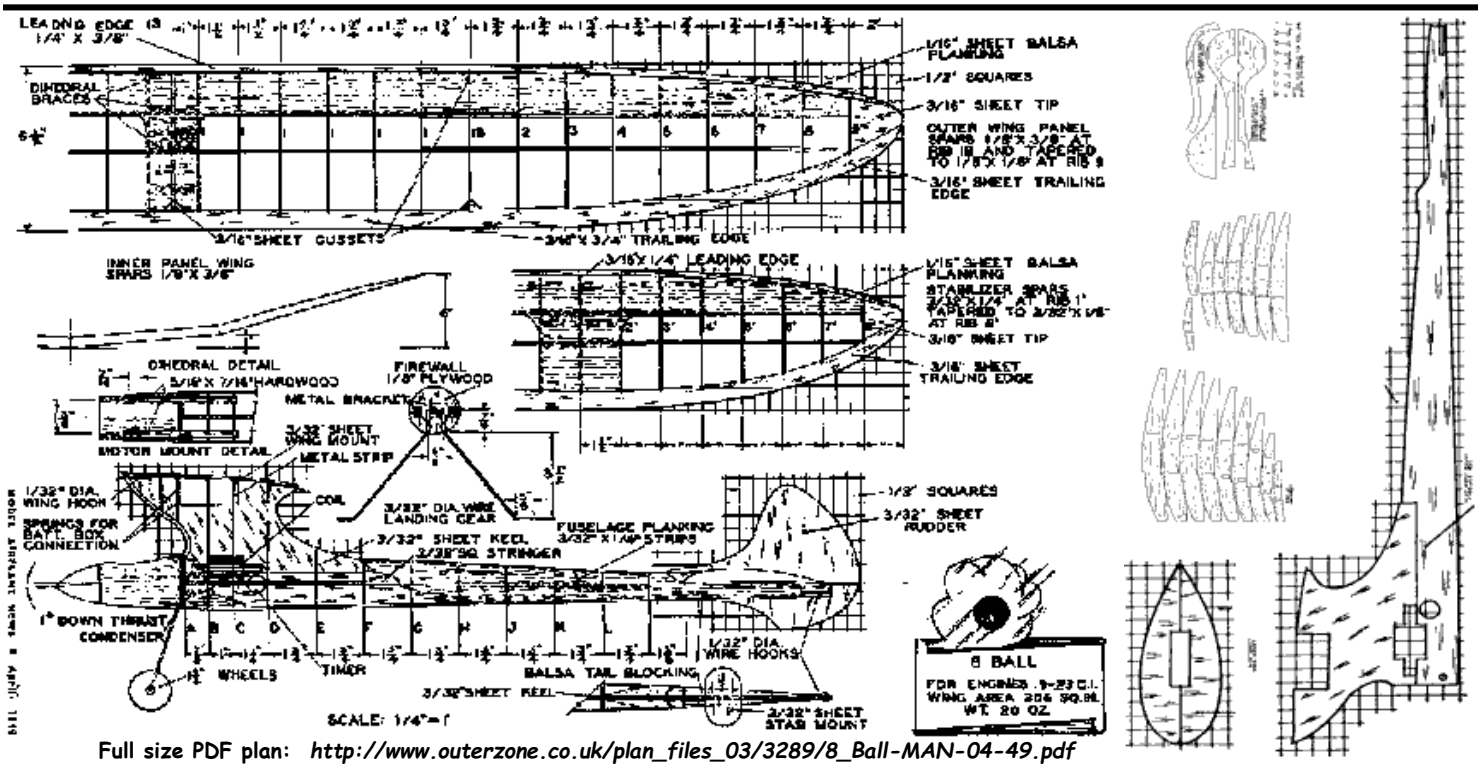
Graham will be sadly missed by his wife, Helen, family and friends.

Twelve months have gone very quickly. The Fed Stebbing Memorial Trophy has been won by the Clubman of the Year, the old fox Brian Laughton. Brian had a challenging year but to come home in grand style with perfect models perfectly flown.

2016 is going to be a big year. Starting off with the P&DARCS 50th year Birthday Bash (incorporating the Roy Robertson Trophy) Jan 23/24. The SAMS Nationals March 4th 5th and 6th at Shepparton will follow - VMAA will be sending out a bulletin shortly. Then the SAM Champs at Canowindra over Easter, March 25th to the 28th, hosted by SAM 1788. I would like to see these events well attended by all SAMS Members

Many thanks to all the members who help run our competitions and news letters over this past year.

Have a Safe and Merry Christmas. Good flying, Kevin Fryer.




**Full size PDF plan:** ***http://www.outerzone.co.uk/plan_files_03/3289/8_Ball-MAN-04-49.pdf***

## CONTEST CO-ORDINATOR'S REPORT

**Report from Brian Laughton.**

It is with a sad heart I am writing this report as I am about to go to the funeral of one of my best friends that I have known since the early 1950's, Graeme Sinclair. We have always been good friends and I don't think we ever had a cross word and he was responsible for me entering old timer flying back in the 1990's.

I have always considered him to be one of the best builders and flyers I have ever known and one of only two people to be given a special trophy for getting a hat trick of wins in the Roy Robinson Trophy. I will be sad to say goodbye to him and I will miss my trips to his home for a pie and a beer for lunch and to chat over old times. Vale Graeme.

Anyhow on with the report. We have had two comps since the last Thermaleer newsletter, both of them very pleasant with some fine flying and good weather and both clubs made us feel very welcome.

The new year will bring the 50th anniversary for the P&DARCS club and they are holding a two-day event for the Roy Robinson trophy in late January, 2016, to celebrate (see the flyer in this Thermaleer). Also we have scheduled a competition in early March, 2016, at Shepparton, but the VMAA are hoping to use this weekend at Shepparton to hold the 2015 old timer Nats, so our comps maybe cancelled. We will let you know as soon as the VMAA notify us.

To all members and their families have a happy and safe Christmas and see you all at the Roy Robinson in 2016.

Cheers, Brian L

## Reports - COHUNA OLDTIMER - 7th & 8th November 2015

**Report from Brian Laughton:** Mr. Weather gave us a very ordinary weekend forecast, with 15–20 kph winds on Saturday and light winds on Sunday and he was right.

We started flying at 10am on Saturday with 1/2A Cox and ½A Electric at the same time. With very gusty winds it was not easy to control your model and subsequently we had lots of out landings. In the second round of electric ½A I landed my model and Roger Mitchell started to walk with me telling me how happy he was that he had landed in. Then I asked him where his model was and he pointed to mine - he had been flying my model and had lost his only to be found in an adjacent paddock not too damaged. Anyhow we pushed on until 11. 30 and then the flyers decided to take a break and have lunch and see what the weather was like after lunch.

As usual the Cohuna club put on their magnificent lunch with hamburgers and sausages and fruit salad for afters, bloody terrific!!

It was 1.30pm when it was decided to fly the fly-offs for the two events from the morning. It was still quite windy and it was a struggle to keep the models up wind particularly at lower levels as the wind was not too bad up high.

We finished the ½A events with more models landing out so it was decided amongst the flyers to cancel the rest of the day's flying at 3.15 and try squeezing them in with shorter rounds on Sunday.

Unfortunately that was the end of the weekend for me as I had to go home for a family event on Sunday.

**Report from Kevin Fryer:** Unlike Saturday, Sunday was a perfect day, light winds and sunny. It was decided on Saturday that we would run two out of three rounds and try to get all five remaining events finished by the end of the day.

We managed to get both of Saturday's competitions finished by lunch time. In Burford we had a new member to SAM 600 come in 1st - good on you Steve Jenkinson and welcome aboard.

After lunch we finished the day with Texaco and '38 Antique but didn't have enough time for Climb & Glide. There had been some discussion both days about the shorter runs as some flyers were not happy with them so we ran '38 Antique to the old longer runs and we don't know if it made any difference to the results. We have given the shorter runs a twelve months trial and there are mixed feelings so we will be reverting to the longer runs in all our future competitions.

It was good to see Norm Campbell make the trip and fly with us again. He came out in '38 Antique with a full size Red Ripper which I helped him fly and I must be honest it is one of the best models I have flown, good on you Norm. A new chum flying in the electric events was Brett Peace, welcome aboard to the two new people.

I would like to thank Brian Dowie for being contest director for the two days and the Cohuna club for doing all they do for us.

### COHUNA 7th-8th November 2015
### Results from the Contest Director for Electric Power

**1/2A ELECTRIC TEXACO**

| | Name | Model | Engine | Sec/cc | Rd 1 | Rd 2 | Rd 3 | Rd 4 | F/O | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | B Laughton | Albatross | | | 600 | 600 | | | 752 | 1952 |
| 2 | M Heap | Stardust | | | 600 | 600 | | | 705 | 1905 |
| 3 | G Gulbin | Stardust | | | 600 | 600 | | | L/O | 1200 |
| 3 | S Gullock | Stardust | | | L/O | 600 | 600 | | L/O | 1200 |
| 3 | P Miller | M G 2 | | | 600 | 600 | | | DNF | 1200 |
| 4 | B Peace | Bomber | | | 35 | L/O | 54 | | | 89 |
| 5 | R Mitchell | Red Ripper | | | 9 | L/O | | | | 9 |
| 6 | K Fryer | Atomiser | | | L/O | | | | | |

**ELECTRIC TEXACO**

| | Name | Model | Engine | CC/sec | Rd 1 | Rd 2 | Rd 3 | Rd 4 | F/O | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | M Heap | Bomber | | | 600 | 600 | | | 941 | 2141 |
| 2 | R Mitchell | Bomber | | | 600 | 600 | | | 882 | 2082 |
| 3 | B Peace | Bomber | | | 600 | 600 | | | 409 | 1609 |

**ELECTRIC DURATION**

| | Name | Model | Engine | CC/Sec | Rd 1 | Rd 2 | Rd 3 | Rd 4 | F/O | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | S Gullock | Lil Diamond | | | 600 | L/O | 600 | | | 1200 |
| 2 | R Mitchell | Bomber | | | 443 | L/O | 600 | | | 1043 |
| 3 | M Heap | Kerswap | | | 473 | 334 | 524 | | | 997 |

# COHUNA 7th-8th November 2015
## Results from the Contest Director for IC Engines

### 1/2A TEXACO

| | Name | Model | Engine | CC/sec | Rd 1 | Rd 2 | Rd 3 | Rd 4 | F/O | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | B Laughton | Albatross | cox | | 382 | 395 | 420 | | | 1197 |
| 2 | L Clifford | Stardust | cox | | 110 | 420 | 307 | 420 | | 1147 |
| 3 | K Fryer | Cumulus | cox | | 265 | 420 | 291 | 414 | | 1125 |
| 4 | P Keely | Stardust | cox | | 238 | 321 | 404 | 352 | | 1077 |
| 5 | B Stebbing | Stardust | cox | | 332 | 330 | L/O | | | 662 |
| 6 | N Campbell | Stardust | cox | | 197 | L/O | 20 | | | 217 |

### BURFORD

| | Name | Model | Engine | CC/sec | Rd 1 | Rd 2 | Rd 3 | Rd 4 | F/O | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | S Jenkinson | Dixielander | B B | 26 | 300 | 300 | | | 259 | 859 |
| 2 | M Heap | Dixielander | P B | 28 | 300 | 291 | 300 | | 240 | 840 |
| 3 | K Fryer | Dixielander | B B | 26 | 286 | 249 | 244 | | | 535 |
| 4 | N Campbell | | B B | 26 | 300 | 144 | L/O | | | 444 |
| 5 | L Clifford | Crescendo | P B | 28 | 300 | | | | | 300 |
| 6 | B Stebbing | Swiss Miss | B B | 26 | Out | | | | | |

### DURATION

| | Name | Model | Engine | CC/Sec | Rd 1 | Rd 2 | Rd 3 | Rd 4 | F/O | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | K Fryer | Playboy | McCoy 60 spk | 28 | 300 | 300 | | | 459 | 1059 |
| 2 | B Stebbing | Stardust | Dubjett 35 | 18 | 300 | 300 | | | 399 | 999 |
| 3 | P Keely | Bomber | O S 56 f/s | 23 | 300 | 274 | 300 | | 371 | 971 |
| 4 | L Clifford | Racer | Y S 63 | 20 | 300 | 300 | | | 319 | 919 |
| 5 | N Campbell | Playboy | Y S 63 | 20 | 230 | 201 | 300 | | | 530 |
| 6 | G Gulbin | Playboy | O S 56 f/s | 23 | 212 | 285 | | | | 497 |
| 7 | R Taylor | Playboy | Y S 63 | 20 | 300 | | | | | 300 |
| 8 | S Gullock | Playboy | O S 52 f/s | 23 | Out | | | | | |

### TEXACO

| | Name | Model | Engine | CC/Sec | Rd 1 | Rd 2 | Rd 3 | Rd 4 | F/O | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | B Stebbing | Rambler | O S 40 d | 6 | 420 | 420 | | | 774 | 1614 |
| 2 | S Gullock | Bomber | Enya 53 | 10 | 420 | 349 | 420 | | 650 | 1490 |
| 3 | K Fryer | Cumulus | Foster 99 | 17 | 420 | 420 | | | 591 | 1431 |
| 4 | L Clifford | Racer | Enya 46 | 8 | 420 | 420 | | | 295 | 1135 |
| 5 | G Gulbin | Bomber | O S 60 | 12 | 420 | 420 | | | L/O | 840 |
| 6 | R Taylor | Airborne | O S 61 | 10 | 420 | 321 | 348 | | | 768 |
| 7 | P Keely | Airborne | O S 61 | 10 | 321 | 285 | | | | 606 |
| 8 | N Campbell | Bomber | O S 60 | 10 | Out | | | | | |

### '38 ANTIQUE

| | Name | Model | Engine | CC/sec | Rd 1 | Rd 2 | Rd 3 | Rd 4 | F/O | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | K Fryer | Cumulus | Foster 99 | 190 | 600 | 600 | | | 1036 | 2236 |
| 2 | B Stebbing | R C 1 | O K Super 60 | 120 | 559 | 600 | 600 | | 965 | 2165 |
| 3 | M Heap | Californian Chief | E D Hunter | 180 | 494 | 598 | 600 | | | 1198 |
| 4 | L Clifford | Record Breaker | Atwood | 114 | 444 | 599 | | | | 1043 |
| 5 | R Taylor | M G 2 | Super Cyclone | 95 | 432 | 433 | 259 | | | 865 |
| 6 | N Campbell | Red Ripper | Super Cyclone | 95 | 600 | | | | | 600 |

½ A Texaco IC placings L to R: 3rd Kevin Fryer, 1st Brian Laughton and 2ndd Lyn Clifford.

½A Texaco electric winners L to R: =3rd Peter Miller, 2nd Max Heap, 1st Brian Laughton, =3rd Graeme Gulbin. (=3rd Steve Gullock absent)

Norm Campbell and S Gullock preparing for next flight.

Burford Event winners L to R: 1st Steve Jenkinson, 3rd Kevin Fryer and 2nd Max Heap.


Electric Duration winners L to R: 3rd Max Heap, 1st Steve Gullock and 3rd Roger Mitchell

"I reckon the lift is all over there and that's where I would go."
"Do you think so? That's where I fell out of the sky in my last flight".

**All Photos from Graeme Gulbin. Thanks Graeme.**

Duration Winners L to R: 3rd Pat Keely, 1st Kevin Fryer and 2nd Brian Stebbing

'38 Antique winners L to R: 3rd Max Heap, 1st Kevin Fryer and 2nd Brian Stebbing.

Norn Campbell with his Red Ripper, - but Norm, it's yellow!

Lyn Clifford and Pat Keely with a bit of a problem.

And here is the problem!

Brian Stebbing, assisted by Pat Keely, preparing his RC-1 for the '38 Antique competition at Cohuna.

Max Heap's electric Kerswap gets away on another flight in Electric Duration.

# "Fred Stebbing Memorial" Champ of Champs - 2015

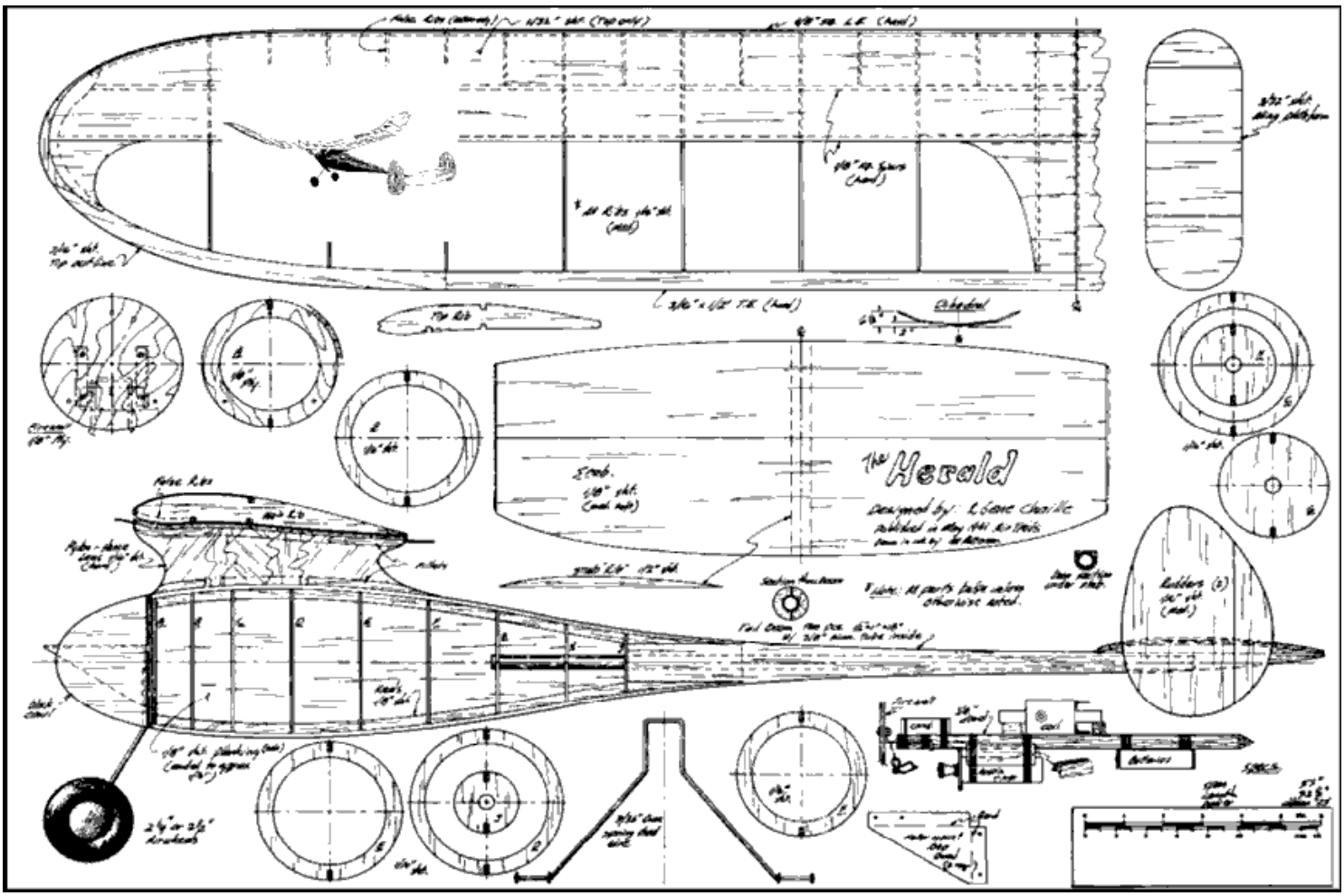
| Event | 1st Place | 2nd Place | 3rd Place | No. in F/O |
|---|---|---|---|---|
| **ROY ROBINSON 11th October, 2015** | | | | |
| Texaco | D Grant | K Fryer | P Keely | 4 |
| Duration | R Taylor | P Keely | K Fryer | 6 |
| Texaco Elec | L Baldwin | | | 1 |
| Duration Elec | S Gullock | L Baldwin | | 1 |
| **BENDIGO 22nd FEBRUARY, 2015** | | | | |
| Duration | R Taylor | D Grant | L Clifford | 6 |
| Duration Elec | R Mitchell | G Ryan | L Baldwin | 1 |
| 1/2A Texaco | K Fryer | P Keely | L Clifford | 4 |
| 1/2A Tex Elec | M Heap | L Baldwin | R Mitchell | 3 |
| Texaco | B Stebbing | L Clifford | P Keely | 8 |
| Texaco Elec | R Mitchell | L Baldwin | G Ryan | 1 |
| | | | | |
| **HADDON - CANCELLED DUE TO BAD WEATHER** | | | | |
| | | | | |
| **VIC / SA STATE CHAMPS { SAM 600 Members placings }** | | | | |
| Texaco | B Laughton | P Keely | R Taylor | 5 |
| Texaco Elec | R Mitchell | G Ryan | S Gullock | 3 |
| Duration | R Taylor | L Clifford | P Keely | 5 |
| Duration Elec | R Mitchell | L Baldwin | | 2 |
| 1/2A Texaco | B Laughton | P Keely | L Clifford | 3 |
| 1/2A E Texaco | M Heap | B Laughton | C Collyer | 6 |
| Burford | B Laughton | M Heap | S Gullock | 2 |
| 38 Antique | B Laughton | L Clifford | R Taylor | 3 |
| **COHUNA 19th-20th September 2015** | | | | |
| 1/2A Texaco | L Clifford | B Laughton | K Fryer | 0 |
| 1/2A Electric | M Heap | B Laughton | R Mitchell | 7 |
| Duration | B Laughton | L Clifford | K Fryer | 7 |
| Duration Elec | S Gullock | M Heap | G Ryan | 0 |
| Burford | B Laughton | M Heap | L Clifford | 1 |
| Texaco | B Laughton | K Fryer | C Collyer | 5 |
| Texaco Elec | L Ballwin | R Mitchell | G Ryan | 3 |
| 38 Antique | K Fryer | B Laughton | L Clifford | 4 |
| Climb & Glide | S Gullock | G Ryan | C Collyer | 0 |

| PROGRESSIVE POINTS I/C | | |
|---|---|---|
| B Laughton | 48 | 1st |
| K Fryer | 43 | 2nd |
| L Clifford | 34 | 3rd |
| P Keely | 24 | 4th |
| R Taylor | 21 | 5th |
| B Stebbing | 15 | 6th |
| M Heap | 10 | 7th |
| D Grant | 10 | 7th |
| S Gullock | 6 | 8th |
| C Collyer | 4 | 9th |
| S Jenkinson | 4 | 9th |
| G Gulbin | 3 | 10th |
| R Yates | 1 | 11th |
| T Boundy | 1 | 11th |
| N Campbell | 1 | 11th |
| R Hicks | 1 | 11th |

| PROGRESSIVE POINTS ELECTRIC | | |
|---|---|---|
| R Mitchell | 36 | 1st |
| L Baldwin | 29 | 2nd |
| M Heap | 25 | 3rd |
| S Gullock | 20 | 4th |
| G Ryan | 12 | 5th |
| B Laughton | 10 | 6th |
| C Collyer | 3 | 7th |
| G Gulbin | 3 | 7th |
| K Fryer | 1 | 8th |

# "Fred Stebbing Memorial" Champ of Champs - 2015 *continued*

| COHUNA 7th-8th NOVEMBER 2015 | | | | |
|---|---|---|---|---|
| 1/2A Texaco | B Laughton | L Clifford | K Fryer | nil |
| 1/2A E Texaco | B Laughton | M Heap | G Gullock | 5 |
| Ditto | | | G Gulbin | |
| Duration | K Fryer | B Stebbing | P Keely | 4 |
| Duration Elec | S Gullock | R Mitchell | M Heap | 1 |
| Texaco | B Stebbing | S Gullock | K Fryer | 5 |
| Texaco Elec | M Heap | R Mitchell | | 2 |
| Burford | S Jenkinson | M Heap | K Fryer | 2 |
| 38 Antique | K Fryer | B Stebbing | M Heap | 2 |
| **ECHUCA 29th NOVEMBER 2015** | | | | |
| Duration | B Laughton | K Fryer | L Clifford | 5 |
| Duration Elec | L Baldwin | R Mitchell | M Heap | 2 |
| Texaco | B Laughton | P Keely | K Fryer | 4 |
| Texaco Elec | R Mitchell | M Heap | | 2 |
| 38 Antique | K Fryer | L Clifford | B Laughton | 3 |
| 1/2A Elec | M Heap | L Baldwin | R Mitchell | 3 |




Fullsize PDF Plan from Outerzone: http://www.outerzone.co.uk/plan_files_02/2594/Herald_MB-06-82.pdf

## Use of Carbon Fibre in Wing Spars.

**From Dave Harding davejean1@comcast.com**

I too sandwich carbon between layers of balsa to provide stability to the carbon for the compressive loading cases. The strength of composite spars using two different materials must be calculated on their relative stiffness and ultimate strain levels.

Stuff breaks by stretching. Here are the loads for a series of spars for a 110 inch span wing;

| *Tensile Strength of Graphite Reiforced Wing Spar Element (from above)* | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| *Spar Dimensions* | *Wood* | *Density ~ pcf* | *Un-reinforced weed* | *Strength with layer/s of graphite uni fiber at same strain. For number of fiber layers. i.e. wood fails. * assumes fiber layer 50% effective* | | | | | |
| *Width ~ in.* | | | Layers | 1 | 2 | 3 | 4 | 5 | 6 |
| *0.375* | *Balsa* | *6* | 66 | 188 | 311 | 433 | 556 | 678 | 801 |
| *Depth ~ in.* | *Balsa* | *11* | 141 | 272 | 403 | 534 | 666 | 797 | 928 |
| *0.125* | *Spruce* | *25* | 314 | 424 | 534 | 644 | 754 | 864 | 974 |
| | *Hickory* | *45* | 938 | 1,200 | 1,463 | 1,725 | 1,988 | 2,250 | 2,513 |
| | | | | *Tensile Strength of Graphite Spar Element Alone* | | | | | |
| | | | | 525 | 1050 | 1575 | 2100 | 2625 | 3150 |

I "harvested" most of my stash of graphite during a spell when I took a team to Burt Rutan's Scaled Composites in the mid 90s.

One day there was a note on the bathroom door that "old Fred" was having a hanger sale. Indeed he was, a vast collection of junk with a few gems.

I noticed a bunch of graphite and glass in various forms. They were all pre-pregnated format. This is/was the common way high quality and high strength composites were used. The fibres were infused with exactly the right amount of epoxy which was then "B Staged", that is partially cured to a consistency of chewing gum. They are then stored in a freezer until used. They also have a shelf life.

When used the material is laid up on a form then bagged and cured at temperature in an autoclave or oven where the B staged epoxy flows then cures.

Well, the materials in the hanger had been out of the freezer for years and this resulted in a partial cure for the epoxy. But I have used them ever since by gluing them in layers or to wood with more epoxy. This has worked perfectly, indeed I have tested the strength of multi-layered wing joiner blades to the 160k psi bending strength level.

The picture above is one item from my stash, a very long roll of 12 inch wide .007 inch uni-layup graphite/carbon.

## Another Way to Colour Polyspan

An Article by Mike Myers, Editor of the Southern California Ignition Flyers "Flight Plug," April 2003 Laurie Barr and Peter Michel in England have been working on a different approach to colouring Polyspan. I've been experimenting with it as well, and here's a synthesis of the approaches. The colouring ingredient is Daler-Rowney's FW Acrylic Artists Ink. It's available in a wide range of colours at most artists or graphic supply stores. I got mine at Swain's in Glendale.

Aside from the ink, you need a sheet of glass or some clear plastic sheeting to tape on your building board.

You apply the ink directly to the rough side of the Polyspan (which will be on the inside of the model as covered). It's easiest if you first cut the Polyspan panels oversize (since you're going to hang them up to dry for half an hour or so after you put the ink on). You can either tape the top edge of the panel directly to the glass - or glue a 1/8" square balsa stick to the top to use as a "hanger" when you're done. You pour the ink out in a small tin or glass pan. You can use either a 3/4" brush or a small foam roller to put the ink on the Polyspan. It flows through the Polyspan and forms a meniscus on the glass or plastic sheet which helps pull more ink through when you lay the next piece down. After you've "inked" the piece of Polyspan, take it off the glass or plastic surface and hang it up to let it dry.

Once it's dry, you can apply it (rough side down) to your model using whatever adhesive process you normally use (dope and thinner - covering adhesive and thinner etc.). Peter Michel likes to use Balsaloc and a Monokote iron on the compound curved parts of his planes. I've used two different colours of ink in this process, a brilliant Process Yellow and Flame Scarlet. I found that the Scarlet would bleed easily when the solvent in either nitrate dope, nitrate thinners or Aerodyne Covering Adhesive hit it. The Process Yellow didn't seem to dissolve or bleed in anything. However, once the Scarlet was sealed with a coat of dope or two, the bleeding stopped on subsequent coats. So if you're going to do a colour scheme with two adjacent colours, you might want to be careful with your initial coats of dope or adhesive to avoid the "bleeding" problem.

These inks do give you a choice of some brilliant colour's for Polyspan and the results are well worth the effort.

## ECHUCA 29th November 2015
### Results from the Contest Director for IC Engines

**TEXACO**

| | Name | Model | Engine | CC/sec | Rd 1 | Rd 2 | Rd 3 | Rd 4 | F/O | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | B Laughton | Bomber | O S 60 | 15 | 600 | 600 | | | 1489 | 2689 |
| 2 | P Keely | Airborne | O S 61 | 15 | 600 | 600 | | | 1461 | 2661 |
| 3 | K Fryer | Cumulus | Foster 99 | 24 | 600 | 600 | | | 1224 | 2424 |
| 4 | L Clifford | Racer | Enya 46 | 12 | 600 | 435 | 600 | | 1167 | 2367 |
| 5 | B McLean | Bomber | Saito 50 | 15 | 463 | 515 | 331 | | | 978 |
| 6 | R Taylor | Airborne | O S 61 | 15 | L/O | 600 | 253 | | | 853 |

**DURATION**

| | Name | Model | Engine | CC/Sec | Rd 1 | Rd 2 | Rd 3 | Rd 4 | F/O | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | B Laughton | Playboy | ThunTiger 36 | 25 | 420 | 420 | | | 1446 | 2286 |
| 2 | K Fryer | Playboy | McCoy 60 spk | 40 | 420 | 420 | | | 1361 | 2201 |
| 3 | L Clifford | Racer | Y S 63 | 28 | 420 | 420 | | | 481 | 1321 |
| 4 | B Taylor | Playboy | Y S 63 | 28 | 420 | 420 | | | 461 | 1301 |
| 5 | P Keely | Bomber | O S 56 f/s | 32 | 420 | 420 | | | 412 | 1252 |
| 6 | R Taylor | Playboy | Y S 63 | 28 | 420 | | | | | 420 |
| 7 | B McLean | Playboy | O S 61 f/s | 32 | 231 | L/O | | | | 231 |

**'38 ANTIQUE**

| | Name | Model | Engine | CC/sec | Rd 1 | Rd 2 | Rd 3 | Rd 4 | F/O | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | K Fryer | Cumulus | Foster 99 | 192 | 771 | | | | | 771 |
| 2 | L Clifford | Record Breaker | Attwood Champ | 114 | L/O | | | | | |
| 3 | B Laughton | R C 1 | O K Super 60 | 120 | DNF | | | | | |

## ECHUCA OLDTIMER 29th November 2015 One Day Event
### Report from Brian Laughton.

This is the first event we have held at Echuca for many years. The weather forecast was for 28 degrees and light winds. When we arrived it was a little windy and this kept up all day although it wasn't a nasty wind and flying was very pleasant. It was a bit overcast and rained a little but this soon cleared.

We were a bit disappointed at the turn up and if it hadn't been for the very good contingent from Cohuna, there wouldn't have been enough flyers for a comp. No flyers from the Ballarat area.

The first event was Duration and this had the largest field with 7 entries. We flew two out of three rounds as we had four comps to get through in one day and we also flew to the longer flight times. There seemed to be plenty of soft thermals around and five flyers got in the flyoff. Kevin Fryer and I were stuck in the same thermal for 24 minutes but Kevin landed first.

Electric Duration saw 3 flyers participate, 2 from Cohuna and 1 from Melbourne and Laurie Baldwin was the eventual winner.

Next was Texaco with 6 entries in I/C and 3 entries in Electric. Again lift was good but light with 4 flyers getting into the flyoff. This time I had a tussle with Pat Keely and after nearly 25 minutes in the air only 8 seconds separated us in the end. In Electric Texaco we had a new chum, Trevor Close who is a friend of Laurie Baldwin, fly in this event and he came in second to Roger Mitchell.

After the first round of Texaco we stopped and had lunch which was put on by the Echuca club and it was a very good lunch with hot dogs, sausage in bread, steamed dim sims and fruit salad with cream plus tea or coffee and soft drinks. I don't think anybody left the lunch table hungry! Thanks Echuca, it was terrific and we felt very welcome.

Then it was '38 Antique and having only 3 entries we decided to consider our first round as a flyoff. Unfortunately the only person to get in the air was Kevin Fryer with his Foster 99 powered Cumulus. Lyn Clifford caused quite a stir in the pits when his model didn't respond on release and he tried to stop it by putting his leg in front of the wing tip. In doing so he didn't stop it but it ripped the wing tip off and the model proceeded to do ground loops at full revs with everybody chasing it and throwing rags at the prop. Eventually the prop caught a rag but it didn't stop the motor it just shed the prop and did a shaft run until Trevor Taylor buried the nose in the ground to stop it. Obviously Kevin being the only person to get airborne won this event.

Electric 1/2A Texaco was run in conjunction with this event and also had 3 entries with Mr. 1/2A Electric himself Max Heap coming in 1st.

The next event was Climb & Glide and with only 2 people prepared to fly in this event it was called off.

All in all the meeting was a great success and the chaps at the Echuca club couldn't have been more welcoming. I am looking forward to our comps there in 2016 and hope we get better support from our members.

I would like on behalf of SAM 600 to thank the Echuca Club, and also thank the boys from Cohuna for making the trip. And thanks to our under appreciated member Brian Dowie for running the comps and lightning my load and allowing me to fly.

## ECHUCA 29th November 2015
### Results from the Contest Director for Electric Power

**ELECTRIC TEXACO**

| | Name | Model | Engine | Sec/cc | Rd 1 | Rd 2 | Rd 3 | Rd 4 | F/O | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | R Mitchell | Bomber | | | 600 | 600 | | | 1050 | 2250 |
| 2 | T Close | Bomber | | | 600 | 600 | | | 990 | 2190 |
| 3 | M Heap | Bomber | | | 600 | 600 | | | 448 | 1668 |

**ELECTRIC DURATION**

| | Name | Model | Engine | CC/sec | Rd 1 | Rd 2 | Rd 3 | Rd 4 | F/O | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | L Baldwin | Playboy | | | 405 | 600 | 600 | | 420 | 1620 |
| 2 | R Mitchell | Bomber | | | L/O | 600 | 600 | | 374 | 1574 |
| 3 | M Heap | Playboy | | | 100 | L/O | | | | 100 |

**ELECTRIC 1/2A TEXACO**

| | Name | Model | Engine | CC/Sec | Rd 1 | Rd 2 | Rd 3 | Rd 4 | F/O | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | M Heap | Stardust | | | 1144 | | | | | 1144 |
| 2 | L Baldwin | Stardust | | | 725 | | | | | 725 |
| 3 | R Mitchell | Red Ripper | | | L/O | | | | | |

**Above:** *The flight line at Echuca, note the great landing strips.*

**Right:** *Rob Taylor waiting to fly in the Duration event.*

**Above:**
*Texaco Winners (left to right) 2nd Pat Keely, 1st Brian Laughton and 3rd Kevin Fryer.*

**Left:**
*Duration Winners (left to right) 2nd Kevin Fryer, 1st Brian Laughton and 3rd Lyn Clifford.*

**Above:** At Echuca Oldtimer *this is how the Texaco winners ended their flight!*

**Right:** *At Echuca Oldtimer Kevin Fryer present the trophy to Roger Mitchell for his 1st place in Electric Texaco*

TOTAL WEIGHT (IN GRAMS) OF VARIOUS SHEET SIZES OF BALSA WOOD

| Sheet Thickness (inches) | Sheet size: 2 x 36 in. | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Density (pounds/cu.ft.) | | | | | | | | | | | | | |
| | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| 1/32 | 3.0 | 3.8 | 4.3 | 4.7 | 5.3 | 5.9 | 6.5 | 7.1 | 7.7 | 8.3 | 8.9 | 9.4 | 10.0 | 10.6 |
| 1/20 | 4.7 | 5.9 | 6.6 | 7.5 | 8.3 | 9.4 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 1/16 | 5.9 | 7.1 | 8.3 | 9.4 | 11 | 12 | 13 | 14 | 15 | 17 | 18 | 19 | 20 | 21 |
| 3/32 | 8.9 | 11 | 12 | 14 | 16 | 18 | 19 | 21 | 23 | 25 | 27 | 28 | 30 | 32 |
| 1/8 | 12 | 14 | 17 | 19 | 21 | 24 | 26 | 28 | 31 | 33 | 35 | 38 | 40 | 43 |
| 5/32 | 15 | 18 | 21 | 24 | 27 | 30 | 32 | 35 | 38 | 41 | 44 | 47 | 50 | 53 |
| 3/16 | 18 | 21 | 25 | 28 | 32 | 35 | 39 | 43 | 46 | 50 | 53 | 57 | 60 | 64 |
| 1/4 | 24 | 28 | 33 | 38 | 43 | 47 | 52 | 57 | 61 | 66 | 71 | 76 | 80 | 85 |
| 3/8 | 35 | 43 | 50 | 57 | 64 | 71 | 78 | 85 | 92 | 99 | 106 | 113 | 120 | 128 |
| 1/2 | 47 | 57 | 66 | 76 | 85 | 94 | 104 | 113 | 123 | 132 | 142 | 151 | 160 | 170 |

| Sheet Thickness (inches) | Sheet size: 3 x 36 in. | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Density (pounds/cu.ft.) | | | | | | | | | | | | | |
| | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| 1/32 | 4.4 | 5.3 | 6.2 | 7.1 | 8.0 | 8.9 | 9.7 | 10.6 | 11.5 | 12.4 | 13.3 | 14.2 | 15.1 | 15.9 |
| 1/20 | 7.1 | 8.5 | 9.9 | 11 | 13 | 14 | 16 | 17 | 18 | 20 | 21 | 23 | 24 | 26 |
| 1/16 | 8.9 | 11 | 12 | 14 | 16 | 18 | 19 | 21 | 23 | 25 | 27 | 28 | 30 | 32 |
| 3/32 | 13 | 16 | 18 | 21 | 24 | 27 | 29 | 32 | 34 | 37 | 40 | 43 | 45 | 48 |
| 1/8 | 18 | 21 | 25 | 28 | 32 | 35 | 39 | 43 | 46 | 50 | 53 | 57 | 60 | 64 |
| 5/32 | 22 | 27 | 31 | 35 | 40 | 44 | 49 | 53 | 58 | 62 | 66 | 71 | 75 | 80 |
| 3/16 | 27 | 32 | 37 | 43 | 48 | 53 | 58 | 64 | 69 | 74 | 80 | 85 | 90 | 96 |
| 1/4 | 35 | 43 | 50 | 57 | 64 | 71 | 78 | 85 | 92 | 99 | 106 | 113 | 120 | 128 |
| 3/8 | 53 | 64 | 74 | 85 | 96 | 106 | 117 | 128 | 138 | 149 | 159 | 170 | 181 | 191 |
| 1/2 | 71 | 85 | 99 | 113 | 128 | 142 | 156 | 170 | 184 | 198 | 213 | 227 | 241 | 255 |

| Sheet Thickness (inches) | Sheet size: 2 x 48 in. | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Density (pounds/cu.ft.) | | | | | | | | | | | | | |
| | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| 1/32 | 3.9 | 4.7 | 5.5 | 6.3 | 7.1 | 7.9 | 8.7 | 9.4 | 10.2 | 11.0 | 11.8 | 12.6 | 13.4 | 14.2 |
| 1/20 | 6.3 | 7.5 | 8.8 | 10 | 11 | 13 | 14 | 15 | 16 | 18 | 19 | 20 | 21 | 23 |
| 1/16 | 7.9 | 9.4 | 11 | 13 | 14 | 16 | 17 | 19 | 20 | 22 | 24 | 25 | 27 | 28 |
| 3/32 | 12 | 14 | 17 | 19 | 21 | 24 | 26 | 28 | 31 | 33 | 35 | 38 | 40 | 43 |
| 1/8 | 16 | 19 | 22 | 25 | 28 | 31 | 35 | 38 | 41 | 44 | 47 | 50 | 54 | 57 |
| 5/32 | 20 | 24 | 28 | 31 | 35 | 39 | 43 | 47 | 51 | 55 | 59 | 63 | 67 | 71 |
| 3/16 | 24 | 28 | 33 | 38 | 43 | 47 | 52 | 57 | 61 | 66 | 71 | 76 | 80 | 85 |
| 1/4 | 31 | 38 | 44 | 50 | 57 | 63 | 69 | 76 | 82 | 88 | 94 | 101 | 107 | 113 |
| 3/8 | 47 | 57 | 66 | 76 | 85 | 94 | 104 | 113 | 123 | 132 | 142 | 151 | 160 | 170 |
| 1/2 | 63 | 76 | 88 | 101 | 113 | 126 | 139 | 151 | 164 | 176 | 189 | 202 | 214 | 227 |

| Sheet Thickness (inches) | Sheet size: 3 x 48 in. | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Density (pounds/cu.ft.) | | | | | | | | | | | | | |
| | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| 1/32 | 5.9 | 7.1 | 8.3 | 9.4 | 10.6 | 11.8 | 13.0 | 14.2 | 15.4 | 16.5 | 17.7 | 18.9 | 20.1 | 21.3 |
| 1/20 | 9.4 | 11 | 13 | 15 | 17 | 19 | 21 | 23 | 25 | 26 | 28 | 30 | 32 | 34 |
| 1/16 | 12 | 14 | 17 | 19 | 21 | 24 | 26 | 28 | 31 | 33 | 35 | 38 | 40 | 43 |
| 3/32 | 18 | 21 | 25 | 28 | 32 | 35 | 39 | 43 | 46 | 50 | 53 | 57 | 60 | 64 |
| 1/8 | 24 | 28 | 33 | 38 | 43 | 47 | 52 | 57 | 61 | 66 | 71 | 76 | 80 | 85 |
| 5/32 | 30 | 35 | 41 | 47 | 53 | 59 | 65 | 71 | 77 | 83 | 89 | 94 | 100 | 106 |
| 3/16 | 35 | 43 | 50 | 57 | 64 | 71 | 78 | 85 | 92 | 99 | 106 | 113 | 120 | 128 |
| 1/4 | 47 | 57 | 66 | 76 | 85 | 94 | 104 | 113 | 123 | 132 | 142 | 151 | 160 | 170 |
| 3/8 | 71 | 85 | 99 | 113 | 128 | 142 | 156 | 170 | 184 | 198 | 213 | 227 | 241 | 255 |
| 1/2 | 94 | 113 | 132 | 151 | 170 | 189 | 208 | 227 | 246 | 265 | 283 | 302 | 321 | 340 |

## From Hank Sperzel hsperzel@cox.net

I have one of those Ultrasonic cleaners that Micro Mart sells. I picked it up at a contest where some stuff was being sold from an estate. For $7 I couldn't pass it up.

I use a dishwashing detergent and warm water. I like to take the engines apart and soak them in lacquer thinner to remove the oil. A soldering brush and a tooth brush comes in handy here.

After degreasing, the parts go into the Ultrasonic cleaner. The model I have has a timer built-in. I then dry the parts with my heat gun. I use a gun oil to lube the parts before re-assembly.

# Free Flight Hank in Omaha

## The Funeral Boat

A funeral procession pulled into a cemetery.

Several carloads of family members followed a black truck towing a boat with a coffin in it.

A passer-by remarked, "That guy must have been a very avid fisherman."

"Oh, he still is," remarked one of the mourners.

As a matter of fact, he's headed off to the lake as soon as we bury his wife."

*From the Newsletter of the Propstoppers RC Club Jan 2000 (Courtesy Silent Electric Flyers of San Diego Newsletter)*

## Stall Speed is a Misnomer

**By Bruce Cronkhite**

This short article is prompted by a batch of traffic on the EFLIGHT mailing list on the Internet related to the difficulty of determining the correct landing speed for a model.

The reason this is difficult is that there is no such thing. There is, however, a correct approach Angle of Attack.

Many people worry about slowing their model down to a reasonable approach speed for fear that the model will stall. Consequently they fly too fast on approach, and run off into the mulch, or the local equivalent.

The U.S. Navy had the same problem when trying to get pilots to land on carriers. It is critical that the airplane approach the deck at the slowest possible speed consistent with some margin above stall to account for turbulence and other unavoidable occurrences while on final.

The Navy discovered that while their airplanes of different sizes and configurations had widely varying stall airspeeds, they all stalled at very nearly the same Angle of Attack. This is regardless of type, number of wings, or prop or jet. This angle of attack is very near 15 degrees. Not pitch angle, but angle of attack.

So the Navy developed a system of measuring and referring to AQA by a system numbered in Units. In this system a 'Unit' is approximately 2 degrees, modified by some small quantities determined from the flight test data on the aircraft itself.

Now here's the magic. ALL Navy airplanes stall at 30 units AOA. Sure, there are some Navy pilots who can keep an airplane under control at higher than 30 units but they probably graduated from test pilot's school, and were working hard the whole time.

Well, what does that mean to us? Ready for this? Learn to see your model's angle of attack on final approach. You certainly can see 15 degrees so if you are less than that you won't stall if your model is aligned along your approach slope, you're going too fast at too low an angle of attack.

That is the reason that I tell my students to keep the model fuselage level with the ground on final approach. This is a neat crutch that stabilizes the AOA at a reasonable number less than stall, but higher than supersonic, regardless of the angle of approach. Try it.

# CLASSIC AND VINTAGE WEEKEND

**(Incorporating the Roy Robertson Trophy)**

## 23rd & 24th January 2016

## 9.30am to 5.30pm

## P&DARCS, Burley Field, Cardinia

*Join us in celebrating our 50th Anniversary*




**Saturday, 23rd January**

**Sunday, 24th January**




**Saturday Night Anniversary BBQ, cutting of P&DARCS Birthday cake and night flying.**

Entry Fees: $5.00 per model to a maximum of $20.00

Saturday night BBQ at canteen prices. BYO drinks.

Free camping - tents or caravans.

Check our website for more details - www.pdarcs.com.au

# CLASSIC AND VINTAGE WEEKEND

## 23rd & 24th January 2016

## 9.30am to 5.30pm

## P&DARCS, Burley Field, Cardinia

### Classic Kit Models

The models we have grown up with and loved are growing in popularity again. You may still have a dusty one in the back of your workshop. Dust it off or build a new one. Plans are available for down load in a lot of cases and due to the mostly small size can be built out of your scrap box in no time at all. Go on, build your childhood dream and take part!

**Eligibility**

Any kit or plan model designed or produced between 1950 and 1980 approx. in other words, the hey-day of traditional modelling. Think of Hearn's Hobbies, Aeroflyte, Carl Goldberg, Top Flite, Sterling, Pilot, Graupner etc. and you will get the idea. Gliders or power models, winch, i.c. or electric are welcome in this class.

**Competition**

Nominate a flying time in minutes.
Take off, ROG or hand launch. To make it easier, all full minutes in the air will be announced for you.
Land as close to the nominated time as possible. Penalty points for any seconds over or under time.
Landing points are awarded for touching down in inner or outer circle. (Remember them?)
A judge will also award a score for flight performance befitting the model presented.

### Foam Gliders

A classic in its own lifetime, the foamy is at home in large numbers in every club all over the country and the world. So, why not include it in this event and have some fun? P&DARCS is celebrating its 50th anniversary, let's see if we can get fifty foamy's in the air in round 1. That, surely, would also have to be a record. It's all up to you, we depend on you to make it happen!

**Eligibility**

Any electric powered foam glider, any size, no restriction on power system as long as it's flying safely.

**Competition**

Mass launch on count of three.
20 seconds motor run terminated by air horn signal.
The first three* models landing are eliminated from the second round.
Last one landing wins!
The contest director can, at his discretion, award 'Wildcard entries' into the next round to eliminated competitors.
(* actual number of eliminated models will depend on the number of entries.)

# PILES OF INKJET PRINTERS

**What to do, what to do, what to do...**

**George Engel, Lakeland, FL Mac User Group**

(Ed. Note: While this doesn't apply directly to modelling, the vast majority of us who have computers are using inkjet printers. As you can see below, things have changed, and you may be wasting money needlessly.)

While I was looking for some Christmas Ornaments in my Utility Shed the other day, I kept moving around my three (3) almost new empty Epson and Canon Inkjet Printers. In the house we have three (3) more InkJet printers that I rarely use anymore. I have one on my rarely-used PC, one on my Mac Tower and one on my wife's iMac. Then there's the Canon Selphy, my 4×6 colour Inkjet printer, along with the two dozen packs of 'Premium Glossy Photo Paper' under the desk, gathering dust. All of this equipment hardly being used anymore. Why is that?

It appears that the three Inkjet printers in the shed ran out of ink and the cost of a set of Inkjet cartridges for the Epson printer ran about $56.00 for a set of six cartridges at Best Buy and Staples. Fortunately for me, I replaced the whole Epson printer, with a full set of cartridges for only $49 at Wal-Mart. The next time, I replaced that printer for only $39 on sale, again with a full set of Inkjet cartridges. It happened again with my Canon printer, same scenario. As it happens, I put the older printers in the shed, taking out the empty cartridges to Staples for two dollars each. That's a twelve dollar return I used when I bought the new printer. That meant only Twenty-Seven dollars after my ink cartridge rebate.

Whoa! All of this and I get a one-year warranty besides? Today's peek at Wal-Mart shows me a Canon Pixma MP250 for just $32.00, with cartridges! So short-term, it's cheaper to just deep-six your old/new printer when it runs out of ink? It appears so and there's something wrong with that!

Second, the cost of my Glossy Inkjet paper is prohibitive, priced from ten dollars to $19.95 for 20 sheets, depending on sales and where you shop. So, figuring on the varying cost of paper and the non-varying cost of ink, my 8×10 colour photos costs me around seventy cents to a dollar apiece. And, I have around 20 packs of paper just sitting there, looking up at me.

For a professional, who works in the field and gets paid for their work, this is the cost of doing business. But for the home consumer, this can get to be an expensive hobby.

What really brought this to a head was a recent 14-day Cruise trip we made to Portugal, London, etc., where I took in the neighbourhood of 3,600 pictures, all in Hi-Resolution of course. After I threw away around 1,500 of them (duplicates, etc.) that's still around 2,000 pictures. You want how many printed copies of the trip? I don't think so! Sending that many prints out, I'd have to take out a second mortgage.

The answer for me of course, was to use SAM's or CostCo for printing out my photos. My 200 final 5×7's for the Scrapbook costs were pretty cheap, as low as twelve cents apiece, with a two day wait time. Being an average Mac User, and not a professional, this is what I do now, so my colour printers just mostly gather dust, except for that really special photo or my friends request. I can hear your next question coming... 'But what do you do for all your black and white printing?' Actually, it's all my black printing, but who's quibbling over semantics?

After running the numbers through my feeble brain time and again, I finally bought myself a Brother HL-2040 Laser Printer on sale for $79.00 (retailed around $119.00.) Later that year on Black Friday I bought another for a neighbour for $49 (with toner cartridge) at Best Buy. The next year I gave my HL-2040 to my wife for her Mac and I bought a Brother HL-2170W (wireless) for myself. At under $100 on sale! We get around 3,000 copies or more on each toner cartridge using the Draft mode (and almost a case of paper in regular mode, - Ed.) I use the wireless printer for my Mac Tower, my PC and the iMac, and my wife can still print to both printers, since her printer is hard- wired and she has wireless on her iMac. (Just received a Best Buy catalogue in the mail with a Brother HL-2270 Wireless Laser Printer for $99.99 and a HL-2230 Non-wireless for $69.99).


For the average consumer, that toner cartridge can last you somewhere between a year or two, and the cost of another toner cartridge online is around $21 from Amazon and $60 retail at Staples. Guess where I get mine?

Financially, my switch from Inkjet Printer to Laserwriter was the best decision I could make for my printing needs. My colour printing is now few and far between since I use SAMs or CostCo for colour printing. All my colour 'Photoshopped' photos are burned to CD's or DVD's for friends and family and shipped out that way. They print what they want. I have relatively few hard copies now. If I have a special request or need for that extra special touch, I'd go to a professional Printer for that.

Lastly, I mean no offense to all you good professionals out there, but for the average home consumer in this tight economy, inkjet printers are an unwelcome and financial burden. I'd rather save my money for an iPad (or for a good kit or some balsa). For me, today's economical monochrome Laserwriters are real money-savers!

# UNDERSTANDING ENGINEERS.

**Understanding Engineers #1**
Two engineering students were biking across a university campus when one said, "Where did you get such a great bike?"

The second engineer replied "Well, I was walking along yesterday, minding my own business, when a beautiful woman rode up on this bike, threw it to the ground, took off all her clothes and said, "Take what you want."

The first engineer nodded approvingly and said, "Good choice: The clothes probably wouldn't have fit you anyway."

**Understanding Engineers #2**
To the optimist , the glass is half-full. To the pessimist , the glass is half-empty. To the engineer, the glass is twice as big as it needs to be.

**Understanding Engineers #3**
A priest, a doctor, and an engineer were waiting one morning for a particularly slow group of golfers. The engineer fumed, "What's with those guys? We must have been waiting for fifteen minutes! "

The doctor chimed in, "I don't know, but I've never seen such inept golf!"

The priest said, "Here comes the greens-keeper. Let's have a word with him." He said, "Hello George, What's wrong with that group ahead of us? They're rather slow, aren't they?"

The greens-keeper replied, "Oh, yes. That's a group of blind firemen.
They lost their sight saving our clubhouse from a fire last year, so we always let them play for free anytime!"

The group fell silent for a moment. The priest said, "That's so sad. I think I will say a special prayer for them tonight."

The doctor said, "Good idea. I'm going to contact my ophthalmologist colleague and see if there's anything she can do for them."

The engineer said, "Why can't they play at night?"

**Understanding Engineers #4**
What is the difference between mechanical engineers and civil engineers? Mechanical engineers build weapons. Civil engineers build targets.

**Understanding Engineers #5**
The graduate with a science degree asks, "Why does it work?"
The graduate with an engineering degree asks, "How does it work?"
The graduate with an accounting degree asks, "How much will it cost?"
The graduate with an arts degree asks, "Do you want fries with that?"

**And Finally**
Two engineers were standing at the base of a flagpole, looking at its top. A woman walked by and asked what they were doing.

"We're supposed to find the height of this flagpole," said Sven, "but we don't have a ladder."

The woman took a wrench from her purse, loosened a couple of bolts, and laid the pole down on the ground. Then she took a tape measure from her pocketbook, took a measurement, announced, "Twenty one feet, six inches," and walked away.

One engineer shook his head and laughed, "A lot of good that does us. We ask for the height and she gives us the length!" Both engineers have since lost their engineering jobs.

# TEXTING

An elderly couple, had just learned how to send text messages on their mobile phones. The wife was a romantic type and the husband was more of a no-nonsense guy.

One afternoon the wife went out to meet a friend for coffee.

She decided to send her husband a romantic text message and she wrote, "If you are sleeping, send me your dreams. If you are laughing, send me your smile. If you are eating, send me a bite. If you are drinking, send me a sip. If you are crying, send me your tears. I love you."

The husband texted back to her, "I'm on the toilet. Please advise."

**TRIVIA**
The Same Processor Used In Macintosh II Personal Computers Is Still Going Strong In Which Fighter Jet?

| | |
|---|---|
| The Eurofighter Typhoon | The MiG-21 |
| The F-16 | The F-15 |

Answer →

**Answer: The Eurofighter Typhoon**

Released in 1987, the Apple Macintosh II featured a then-quite-powerful 16 Mhz Motorola 68020 processor. Although the processor was replaced fairly quickly with the release of the Macintosh IIx in 1988 (and disappeared altogether when the original Macintosh II was discontinued in 1990), well-designed chips never die; they just find a new purpose in life.

In that regard the Motorola 68020 wasn't sent to the CPU graveyard, it was just repurposed (and readily so on account of its falling cost and high reliability) for other tasks. While it is no longer used in personal computers, one of the places the old 68020 found a new lease on life in was the avionic and navigation systems of the Eurofighter Typhoon fighter jet, used by the air forces of Britain, Germany, Italy, and Spain.

*The following information was published in a pamphlet provided by the makers of Powermaster Hobby Products, Elgin, Texas. Although there is nothing really startling in the publication, it is a clear concise explanation of how to store and maintain your glow fuel.*

## FUEL FACTS

During the Q&A pan of countless meetings at hobby clubs all over, one of the frequently asked questions is, "What's the shelf life of fuel?" The answer is both simple and easy: Properly stored, model engine fuel will last almost indefinitely. So ... what constitutes "properly stored?" Let's take a look.

Contrary to many things you might have read or heard, just about the only thing that adversely affects model fuel is the absorption of moisture from the air. Keep the air away from it, and your fuel will likely be potent longer than you are! Methanol - the major ingredient in model fuel - is hygroscopic. This means it's virtually 100% soluble in water, and absorbs moisture from the air like a vacuum cleaner sucking up dirt. Most modellers have no idea how rapidly this can - and does - happen, and tend to be rather sceptical about the idea. Let me paint a picture for you: Almost everyone has spilled a little fuel on the top of their fuel can in their flight box. If so, you've no doubt noticed that the shallow film of raw fuel takes on a cloudy, milky look. What you are seeing is the methanol sucking moisture right out of the air. Since the quantity of fuel is thin with a lot of surface area, the absorption is rapid, the water won't mix with the oil and the fuel turns cloudy. Just remember how quickly this happens .... almost immediately ... and it might give you an idea of just how quickly your fuel can be ruined if you leave the cap off, allow a vent tube to remain open, etc.

The wide surface area relative to the quantity of the fuel exposed is disproportionate, of course, to leaving the cap off the fuel can, but you get the idea. In a humid condition such as exists in some parts of the country, it doesn't take very long at all to adversely affect your fuel. And it doesn't take a large opening ... a cross-threaded cap, a small vent line, etc., is all that's needed to do the damage.

The solution is simple, of course ... just keep it tightly sealed. And yet, sometimes that's not enough. Most of us have seen small droplets condensed inside our fuel cans after it's become partially empty. This is the result of condensation of moisture as the air trapped inside the can cools. Until recently, there was little we could do about this, but there is now a method to take care of this problem. POWERMASTER FUEL SAVER is an aerosol can containing an inert, non-flammable, non-toxic, non-polluting, heavier-than-air gas. At the end of each flying session, simply "spray" FUEL SAVER into the fuel container for about one second, and then seal tightly. FUEL SAVER completely displaces and replaces the moisture laden air, and the fuel will be factory fresh until opened again.

For the reasons above, it's our opinion that it is rarely a good idea to buy model fuel in 55-gallon drums. Unless all the fuel is poured up the first time the drum is opened; a substantial volume of air is trapped inside the drum each time it's opened. Steel containers of any kind warm and cool much more readily and rapidly than plastic and condensation is much more evident in this type of container. The result is that the last portion of the drum of fuel is quite likely to be contaminated with moisture, sometimes to the point of being unusable.

There is another downside to buying fuel in drums, especially if more than one person is using it. With no control over the type container the fuel is dispensed into … perhaps not bearing sufficient or proper warnings, etc., the liability is incredibly high if an accident of any sort should occur. Model clubs considering this type of fuel purchase for their members should be particularly aware of the potential liability ... which is huge!

While it's true that the UV in sunlight (or in fluorescent lights, for that matter) will cause pure nitromethane to deteriorate over time, it's our experience that once the nitromethand is in solution and substantially diluted, the deteriorative effect is relatively minor.

To test this, some years ago we put a gallon of 10% fuel out in direct sunlight for a month. At the end of that time, we tested that fuel in an engine -v- fresh product and could see no difference. While it certainly won't hurt anything to store fuel away from the direct sunlight, etc., it's our personal opinion that the adverse effect of sunlight on fuel under normal operating conditions is too little to worry about.

# VARMS and SAM 600 OLD TIMER FUN FLY

VARMS followed a similar event in March with another in November but the strong wind was a bit too much for the vintage gliders and while electric powered 1/2A Texaco models flew they struggled to stay upwind and land safely.

The SAM 600 members brought some nice old time models as can be seen in the photographs and while the weather could have bee better everyone enjoyed the social gathering.

(*Report and photos courtesy of John Lamont, Editor and producer of the e-magazine Australian Model News*)

Trevor Boundy's "Westerner" a 1938 design by Elbert Weathers and powered by an open rocker OS60 four stroke engine.

A 1938 Frank Zaic designed "Transporter" glider by Trevor Boundy.

A 133% scaled up Hearn's Hobbies "Eagle" glider by Brian Laughton.

A replica of the 1946 "Fillon's Champion" glider by Brian Laughton. Note the complex wing fillets and elliptical tip dihederal.

Brian Laughton's ½A Texaco model of the "Albatross" is electric powered.

A pair of electric powered ½A Texaco models by Max Haysom. Blue model is a "Powerhouse", the yellow model is an "Albatross".

A committee discussion on where to position the C of G on an electric foamy.

Gliders hanging from the roof of the club house. The large blue and yellow model was by Geoff Vincent and flown in a World Altitude record attempt.

# Allison X-4520 24-Cylinder Aircraft Engine

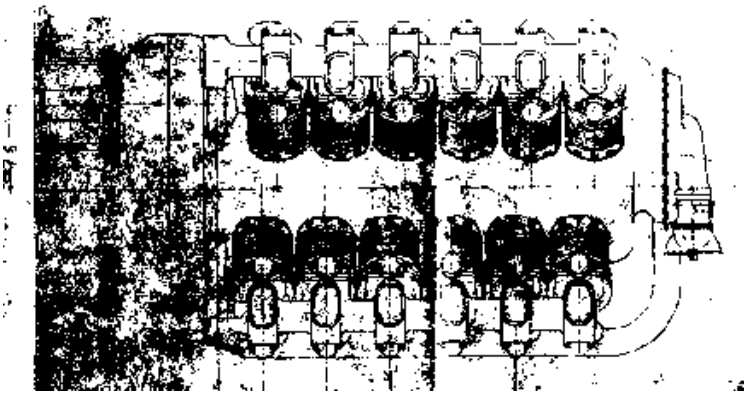
By William Pearce

*The restored Allison X-4520 24-cylinder, air-cooled engine carrying Allison serial number 1. Note the distributors on the front of each overhead camshaft. (Paul Jablonski image via the Aircraft Engine Historical Society)*

When the United States entered World War I, the Allison Experimental Company (Allison), founded by James Allison, set out to construct equipment for the war effort. Previously, the company was known as the Allison Speedway Team Company, because James Allison was a co-founder of the Indianapolis Motor Speedway and was focused on automobile development. During the war, the Allison Experimental Company supplied some of the tooling for production of Liberty V-12 engines. Throughout and after the war, Allison was involved in designing and building various Liberty parts, including the epicyclic (planetary) gear reduction for the Liberty 12B (200 of which they constructed) and various other gear reduction units, gear boxes, and superchargers. Allison also developed and produced an inverted Liberty engine and air cooled cylinders for the Liberty. The Liberty was Allison's first foray into aircraft propulsion; its next was the X-4520.

On 4 January 1921, the Allison Experimental Company changed its name to the Allison Engineering Company. By 1924, the Army Air Service (AAS) Power Plant Section at McCook Field, Ohio had designed a large 24-cylinder engine in an "X" layout. They asked Allison to refine their design and construct a prototype. The engine was given the AAS serial number 25-521 and also carried the Allison serial number 1.

The X-4520 had four banks of six air-cooled cylinders. The banks were arranged at 90 degree intervals around a common crankshaft housed in an aluminium, barrel-type crankcase. The cylinders had a 5.75 in (146 mm) bore, 7.25 in stroke (184 mm), and 4.9 to 1 compression ratio. Total displacement was 4,518 cu in (74 L). Each cylinder had two valves, and the exhaust valve was sodium cooled. The valves for each cylinder bank were actuated by a single overhead camshaft. At the front of each camshaft was a distributor that fired the two spark plugs per each cylinder for that bank. Each camshaft was driven by the crankshaft via a vertical shaft at the front of the engine.

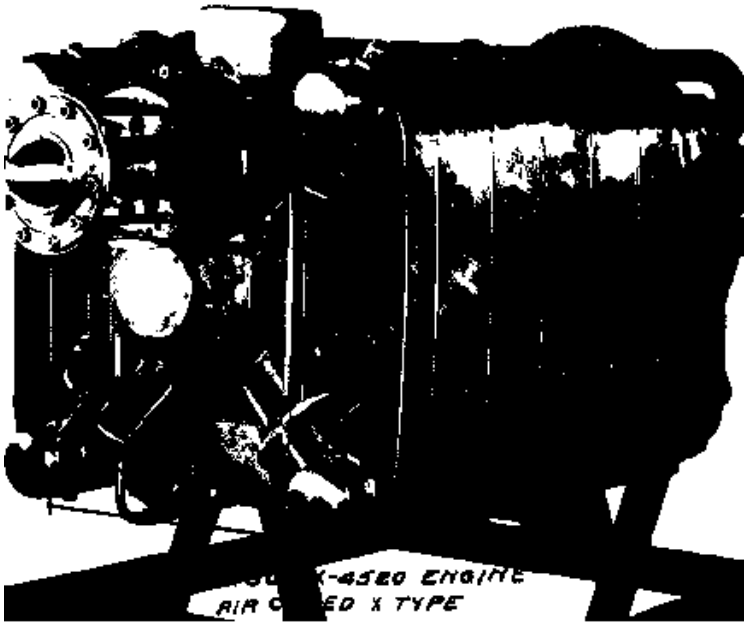


*An early 1925 AAS drawing of the X-4520. The most notable differences between the drawing and the actual engine are that the drawing has the lower banks of cylinder staggered forward of the upper cylinders, and the intake manifolds exit the top and bottom of the rotary induction.*

The flat top aluminum pistons had three rings above the piston pin and one ring below. Each of the six 3.5 in (89 mm) diameter crankpins was 4.3125 in (110 mm) long and accommodated two fork-and-blade connecting rods side-by-side. The top cylinder's pistons were connected to the front fork-and-blade connecting rod. The bottom cylinders were staggered slightly to the rear, and their pistons were connected to the rear fork-and-blade connecting rod. The seven crankshaft main bearings were of the (Hoffman) roller type. Roller bearings were selected by the Power Plant Section because their reduced length allowed for a shorter, and therefore lighter, engine.

The engine had a 2 to 1 spur reduction gear and a rotary induction (fuel/air mixer or moderate supercharger) geared with a step-up ratio of 5 to 1. At 1,800 rpm engine speed, the propeller would turn 900 rpm and the supercharger 9,000 rpm. Two updraft carburettors fed the rotary induction at the rear of the engine. The air/fuel mixture was then distributed to each cylinder via manifolds that ran in the upper and lower Vees of the engine. The X-4520 was 108 in (2.74 m) long, 60 in (1.52 m) wide, 53 in (1.35 m) tall, and weighed around 2,800 lb (1,270 kg).

Allison completed the sole X-4520 engine in 1927, but no facilities existed that could handle the rated output of 1,200 hp (895 kW) at 1,800 rpm. At the time, it was one of the largest and most powerful aircraft engines ever built. It was not until 1931 that the engine was finally run by the Army Air Corps (AAC). While the engine produced 1,323 hp (987 kW) at 1,900 rpm, it also experienced cooling-issues, and a piston stuck in a cylinder during testing. By this time, the AAC had little interest in the engine, and the cause of the issues were never investigated.



*The Allison X-4520 with baffles surrounding sides of the engine to direct cooling air through the cylinder's fins.*

The X-4520 was intended for a very large single-engine biplane bomber, most likely the Huff-Daland XHB-1. This aircraft had an 84 ft 7 in (25.8 m) span, was 59 ft 7 in (18.2 m) long, and was fitted with a 780 hp (582 kW) Packard 2A-2540 V-12 engine. By the time the X-4520 was tested, a design shift had occurred from the use of large single-engine aircraft to multi-engine aircraft. This left the X-4520 without an application, in addition to the technical issues experienced during testing.

Even with the AAC's lack of interest and the engine's technical issues, the X-4520 was displayed at the Century of Progress Exhibition in Chicago, Illinois in 1934. The engine was retained by the AAC and placed in storage at what would become Wright-Patterson Air Force Base in Dayton, Ohio. The X-4520 was disposed of as scrap around 1970 (apparently aviation history enthusiast Walter Spolata saved the engine). The X-4520 eventually found its way to the New England Air Museum in Windsor Locks, Connecticut, looking in rough shape after being in outside storage for a number of years. The engine was then acquired by the Rolls-

A REDNECK LOVE POEM

SUSIE LEE DONE FELL IN LOVE,
SHE PLANNED TO MARRY JOE.
SHE WAS SO HAPPY 'BOUT IT ALL,
SHE TOLD HER PAPPY SO.

PAPPY TOLD HER, SUSIE GAL,
YOU'LL HAVE TO FIND ANOTHER.
I'D JUST AS SOON YO' MA DON'T KNOW,
BUT JOE IS YO' HALF BROTHER.

SO SUSIE PUT ASIDE HER JOE
AND PLANNED TO MARRY WILL.
BUT AFTER TELLING PAPPY THIS,
HE SAID, 'THERE'S TROUBLE STILL.

YOU CAN'T MARRY WILL, MY GAL,
AND PLEASE DON'T TELL YO' MOTHER.
BUT WILL AND JOE, AND SEVERAL MO'
I KNOW IS YO' HALF BROTHER.

BUT MAMA KNEW AND SAID, MY CHILD,
JUST DO WHAT MAKES YO' HAPPY.
MARRY WILL OR MARRY JOE;
YOU AIN'T NO KIN TO PAPPY.
**********

(Kinda brings a tear to yer eye, don't it!)

**This poem actually earned a poetry prize in West Virginia in 1912.**

***The huge Huff-Daland XHB-1 was originally to be powered by the X-4520. As events unfolded, the aircraft was powered by a Packard engine. The man standing under the nose of the aircraft gives a good indication of its immense size.***


***The Allison X-4520 on display at the Rolls-Royce Heritage Trust Allison Branch in Indianapolis, Indiana. Note the induction and how it differs from the 1925 drawing. (Paul Jablonski image via the Aircraft Engine Historical Society)***

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*Vee's for Victory! The Story of the Allison V-1710 Aircraft Engine 1929-1948*
by Daniel D. Whitney (1998)

*Bearing Loads and Stress Analysis of the Model X-4520 Engine Rated 1200 B.H.P. at 1800 R.P.M.* by Norman Tilley (1925)

PHOTOS BY ELOY MAREZ

Probably the most convincing example of Bud Croshere's wood bending technique is this corkscrew-shaped piece of alder wood, which was treated as per the text and then wrapped around a 3/4-inch dowel. Alder wood is a member of the birch family and is pretty tough stuff.

# WOOD BENDING TECHNIQUES

**By BUD CROSHERE . . . If you've ever wished, in the middle of a construction project, that some of the sticks or sheets were already pre-bent to shape, this article is for you. It's easy to do . . once you know how.**

• *This article was presented at the 1st Annual Southwestern Model Shipbuilding Symposium, Oct. 15, 1977, sponsored by the Nautical Research Guild, So. Cal. Chapter. It is used by permission of the author, and of the Ship Modelers Association Newsletter, in which this article also appeared.*

*The author, Mr. Bud Croshere, is retired from aerospace and related industries, and has extensive experience in model building, both ships and airplanes. He has developed many techniques, such as the one presented here, on the use of materials and tools, both hand and power, to make life easier and more interesting for the modeler.*

*The wood bending techniques described are aimed at the builder of model ships, or miniature ships, as Bud prefers to call them, but they will be equally interesting and useful in many phases of airplane model building, especially those scale models of Wright Flyers, Bleriots, and similar all-wood construction planes.*

*We hope to present more of Bud Croshere's work in the near future, and ask your comments on this method of working wood and your ideas about other construction or tool use techniques that need extended description.*

The model shipbuilder is frequently faced with the need to bend accurately strips or sheets of wood to complex contours that must be followed closely. Heretofore, this need has been approached either by steaming, drybending over a hot mandrel, or cold soaking and drying in position. None of these is entirely satisfactory.

Steaming or cold soaking requires that the piece to be formed be clamped securely into position until dry. Frequently this is not possible in the confined areas often encountered. In both of these techniques, the dried piece will spring back somewhat when released and special fastening is required to force it into position while it is secured. Dry bending over a hot mandrel (such as a soldering iron) can eliminate the problem of springback, but it is essentially a trial-and-error process that requires tricky multiple bends that are difficult to control. Except for the simplest forming problems, this method rarely produces satisfactory results in practice. Most model ship builders find that accurate bending of wood to complex shapes is one of the most difficult tasks, and one for which an improved method is necessary.

No matter how slight the bend, the finished pieces will hold their curve permanently. One of the best things about this method is that there is no loss of strength in treated strips of wood.

Several years ago, there appeared in contemporary model magazines vague references to the efficacy of adding small amounts of weak household ammonia to the water in which wood to be bent is soaked. In support of these recommendations, there were suggestions that the ammonia changed the physical character of the wood is some way and thus rendered it temporarily more pliable. Although tests based on the published information were disappointing, they served as a prod to further investigation.

This report summarizes information gleaned as the result of correspondence with the Weyerhaeuser Company and the Forestry Colleges of Syracuse and New York Universities concerning the theoretical and practical aspects of treating wood with various concentra-

dium of ammonia. Also reported are results of practical tests made by the author using simple equipment found in most model makers' shops. These are based on the extensive experiments conducted by various wood product laboratories who kindly furnished much valuable information on the subject.

A list of the references consulted is attached for the benefit of those who want to explore the subject further.

DISCUSSION

For the present purpose, wood may be thought of as an orderly assembly of microscopic elongated hollow cellulose tubes held together by an adhesive called lignin. When wood is deformed by external loads, forces are set up in directions tending to cause slippage between these cells. The strength of the wood depends not only upon the amount of cellulose in each cell, but also upon the ability of the lignin to prevent slippage between adjacent cells. Conversely, success in forcing wood permanently into arbitrary shapes requires temporary plasticization of the lignin thus permitting good reorientation of the fibers), followed by complete restoration of its adhesive strength (thus locking the cells into their new positions).

The lack of complete success using steam or cold-soaking to bend wood into intricate shapes and having it remain bent with little springback lies in the inability of these methods to cause adequate plasticization of the lignin adhesive agent.

Although the chemical composition of lignin is not simple nor well understood, its role in providing wood with its remarkable strength and durability is well known. Further, the tendency of lignin to become plastic in the presence of weak alkaline solutions is documented. Chemical science has long known that ammonia, a gas, is readily soluble in water and that the solution is alkaline. Further, a solution of water and ammonia will evaporate, leaving no residue.

From the above, one can hypothesize what happens when wood is been after being treated in a solution of ammonia and water. The lignin is plasticized by the alkalinity and the cells rearrange themselves in response to the internal stresses set up within the wood by the bending loads. As the piece dries, the ammonia goes out of solution, the water evaporates, the lignin regains its adhesive properties, and the wood is locked in its bent position.

RESULTS

While all investigators report that best results are obtained when wood to be bent is treated with liquified ammonia and superheated steam in specialized retorts, such equipment is far too costly and dangerous for the home workshop. To avoid these practical difficulties, a concentrated solution of ammonia in water, called aqua-ammonia, was obtained in ordinary gallon bottles from a local chemical supply house. A small amount of the solution was poured into an 8-inch test tube and stoppered to prevent escape of the pungent fumes. To avoid spills, the tube was held upright in a mason jar positioned before an open window to let the fumes escape as work progressed.

These examples of what can be done with this wood bending method/system. Many thanks, if any, springback occurs when the parts are removed from the forms.

Several test pieces of alder wood, 6 inches long, 1/4 inch wide and 1/8 inch thick were inserted into the tube and soaked for 15, 30, and 60 minutes. Even after the shortest soaking, the wood had taken on a very water-logged appearance. The pieces were very pliable, had the general texture of wet leather, and easily could be bent with the fingers. It was not difficult to wrap them spirally around a wooden cylinder 3-1/2 inches in diameter and enhold them in position with ordinary pins. When dry and unstressed, the bent strips sprung away from the cylinder less than 1/16 inch. This is a highly significant and favorable achievement not attainable either by steaming or cold soaking methods. The dry wood was slightly greyer than an unstressed strip, and the grain was somewhat raised. The bent pieces could be sanded, drilled, cut, glued, and painted as readily as virgin pieces.

To check for a possible loss in strength, two identical pieces, one untreated and the other soaked for 60 minutes and then dried straight, were clamped in a vise and their ends loaded with equal weights. Each bent down the same amount and, when unloaded, returned to their original straight shape. From this, it may be concluded that there is no significant loss in bending strength due to the ammonia bath.

It was found that if the test pieces were soaked longer than 60 minutes, they became somewhat more difficult to form than those soaked for a shorter period. When bent around cylinders less than 3 inches in diameter, blisters on the inside of the bend failed in compression, probably due to column failure by the individual cellulose cells.

After a dozen or so strips of alder had been soaked, the solution in the tube remained transparent but had a reddish cast resembling strong tea. Whether this was caused by dye extracted from the wood or lignin dissolved by the aqua-ammonia is not known.

Other types of wood usually used by the model shipbuilder, such as pine,

Continued on page 27

Bending . . . . . *Continued from page 17*

holly, mahogany, and boxwood were subjected to similar tests. Results were similar to those described above.

Following the success of these initial tests, all of the individual planks representing the main sides of a 1/4-inch-to-the-foot model of an English 6th rate warship were cut, plasticized in aqua-ammonia, formed directly over the frames and held in position until dry, using ordinary household pins.

A layer of paper was inserted between plank and frame to prevent possible staining. When dry, each plank was removed, sanded, trimmed, and fastened in position with glue and treenails. For this and similar applications, results were obtained that could not have been achieved by any other wood bending technique.

CONCLUSIONS

1) Aqua-ammonia, a saturated solution of ammonia in water, can be used at room temperatures under home workshop conditions to bend wood more easily and with better results than can be attained using more conventional methods.

2) The ammonia solution causes the wood to undergo a temporary plasticization that renders it pliable and capable of being bent into shapes not attainable by steam or heat bending. When the workpiece is held in the bent position until dry, there is no appreciable loss of strength and little springback to original shape.

3) Aqua-ammonia is readily obtainable in ordinary glass bottles from chemical supply houses at low cost. It can be used safely if work is performed in a well-ventilated area, if pieces are handled as little as necessary, and if hands are rinsed thoroughly after exposure.

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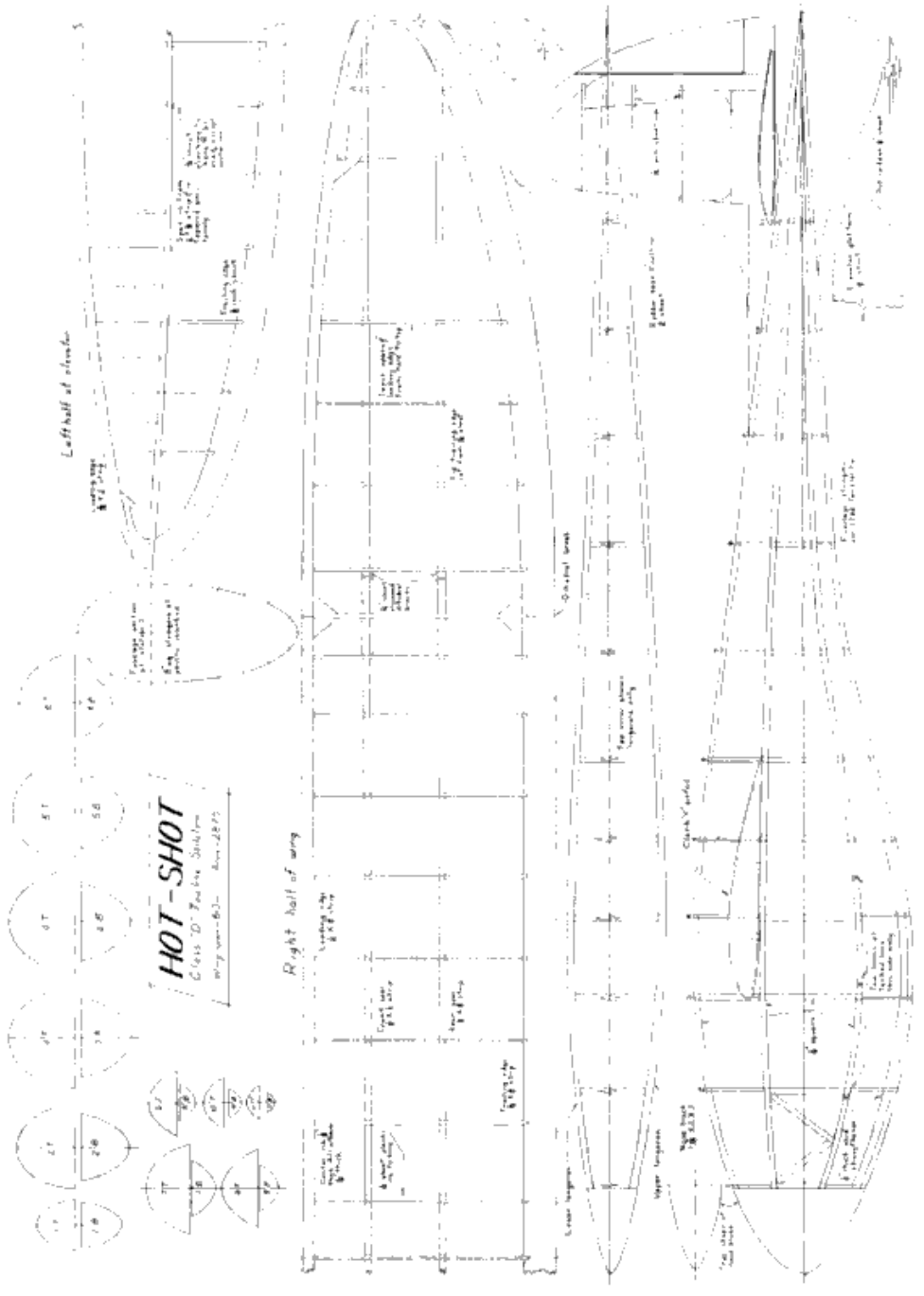

# Contest Calendar 2016

SAM 600 Australia
Victorian Old Timers Association Inc.
10 Cunningham Drive
Endeavour Hills
Vic 3802

**Contests commence at 10 am, unless otherwise stated.**
**The MAAA 2013 Rules apply.**
**The CD for all SAM600 events will be nominated on the day of the event.**
**General Meeting Echuca 9am April 17th / AGM Cohuna 9am September 18th**
**All 1/2A, Duration & Texaco events will have the electric equivalent**

| | |
|---|---|
| **January 23rd & 24th 50th Birthday Bash !** | **P & DARCS Cardinia**<br>Saturday - Classic Aerobatics, Foam Glider Mass Launch, Classic Kit Models<br>Sunday - Vintage Glider, Texaco, Duration, |
| **March 5th & 6th** | **Shepparton** Saturday - 1/2A Texaco, Burford, Duration<br>**SAMS Nationals** Sunday - Texaco, 38 Antique, Climb & Glide |
| **March 24th to 28th Easter** | **Canowindra** SAM Champs Down Under<br>SAM 1788 Competition |
| **April 16th & 17th** | **Echuca** Saturday - 1/2A Texaco, Burford, Duration<br>Sunday - General Meeting 9am.Texaco, 38 Antique, Climb & Glide |
| **April 30th & May 1st** | **Monarto S.A.** VIC/SA Champs |
| **May 14th & 15th** | **Ballarat** (new field) Saturday - 1/2A Texaco, Burford, Duration<br>Sunday - Texaco, 38 Antique, Climb & Glide |
| **May 21st & 22nd** | **Cohuna** Saturday - 1/2A Texaco, Burford, Duration<br>Sunday - Texaco, 38 Antique, Climb & Glide |
| **Sept 17th & 18th** | **Cohuna** Saturday - 1/2A Texaco, Burford, Duration<br>Sunday - AGM 9am. Texaco, 38 Antique, Climb & Glide |
| **Oct 1st & 2nd** | **Wangaratta** **Eastern State Gas Champs**<br>SAM 1788 Comp |
| **Oct 22nd & 23rd** | **Echuca** Saturday - 1/2A Texaco, Burford, Duration<br>Sunday - Texaco, 38 Antique, Climb & Glide |
| **Nov 5th & 6th** | **Cohuna** Saturday - 1/2A Texaco., Burford, Duration<br>Sunday - Texaco, 38 Antique, Climb & Glide |
| **Nov 27th** | **Ballarat** Sunday - 1/2A Texaco, Texaco, Duration, Climb & Glide |