



Points of Interest:

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**NEWSLETTER
No. 179
NOV-DECEMBER
2012**

**DURATION
TIMES**



OWEN T2.5cc DIESEL

The long-overdue T2.5cc Diesel will be approved by the forthcoming MAAA Rules Conference in May 2013, as an eligible engine for the GB event under MAAA Rules. It is currently approved by a number of State bodies, including SAM 1788.

It is planned to complete approximately 30 x T2.5cc engines for sale by the end of February next year (2013). Further completed engines will go out at the rate of roughly 30 per month to those people who placed orders with me.

However, I would like to see the engines used at the SAM 1788 Championships over Easter 2013 and I would ask those who have a T2.5 on order and who are entering the GB event at Easter to contact me as soon as possible.

David Owen owendc@tpg.com.au (02) 4227-2699.



ORANGE MODEL AIRCRAFT CLUB Inc.

INVITES YOU TO ATTEND AND COMPETE FOR THE

ALAN BROWN

Perpetual Memorial Texaco Shield

On the Weekend

2nd and 3rd FEBRUARY, 2013.

At the

ORANGE MAC FLYING FIELD at BORENORE

Saturday 4th - Commencing at 10am - ½A Texaco & Burford

Commencing at 1-30pm - Oldtimer Duration

Sunday 5th - Commencing at 9-30am - Oldtimer Texaco

(ALL EVENTS WILL BE FLOWN TO 2009 MAAA RULES)



For Information contact: **Stewart West - Telephone 02 6331-9822**

Duration Times is the official Bulletin of SAM 1788

SOCIETY OF ANTIQUE MODELLERS OF AUSTRALIA 1788 Inc.

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Secretary:	Grant Manwaring	7 Arthaldo Court, Nicholls. ACT. 2913.	02 6241-1320.
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Committee Members: Basil Healy, Ian Connell.

Email for Duration Times - iwa@internode.on.net

SAM 1788 EVENTS CALENDAR - 2013

February	2-3	Alan Brown Perpetual Memorial Shield Texaco	Orange	Stewart West	02 6331-9822.
February	16	Glider Test Day	Goulburn	Grant Manwaring	02 6241-1320.
February	23	Glider Test Day	Yarramalong	Basil Healy	02 4341-7292.
February	16 or 23	Glider Test Day(S.A.)	Willunga Vintage MAC, Sellicks Beach	Dave Markwell	0409 092 013.
March	2-3	Hunter Valley Championships	Muswellbrook	Peter Scott	02 9624-1262.
March	28-1 April	SAM1788 Championships	Canowindra	Grant Manwaring	02 6241-1320.
April	27 -28	Wyong River 4th Old Timer Weekend	Wyong	Basil Healy	02 4341-7292.
June	15-16	New England Gas Champs	Tamworth	Basil Healy	02 4341-7292.
July	20-21	Golden West Old Timer Competition	Parkes	Peter Smith	0423 452 879.
August	*23-25	Oily Hand Diesel Weekend	Cowra	Andy Luckett	02 6342-3054.
September	7-8	Belconnen/Yass Club Oldtimer Weekend	Yass	Grant Manwaring	02 6241-1320.
October	5-6	Eastern State Gas Champs	Wanganatta	Grant Manwaring	02 6241-1320.
October	16-20	Cootamundra, Coota Cup	Cootamundra	Grant Manwaring	02 6241-1320.
November	2-3	Muswellbrook Oldtimer Weekend	Muswellbrook	Phil Thiethener	0417 725 981.

* Provisional Dates at this time.



From the President: Well time flies, another Christmas and another year of old timer flying to look forward to. Gail and I wish you all a happy and safe New Year and look forward to seeing you at the contests in 2013.

A few of us; Basil, Potter and I, will be taking on the free flighters at Richmond shortly - weather permitting. I even went as far as making a new fuselage for my freeflight Stomper. The only problem is lack of practise. Flying freeflight twice a year tends to show up in things like forgetting to start the timer (mine are always running on the K56 timers), launching at the wrong attitude etc. Don't let this put you off for Canowindra though as I will be donating a prize for first place in freeflight Vintage Power.

If you haven't flown a freeflight model before, give it a go. A Stomper is an easy model to build and fly. It is competitive as well.

We have sent in two rule change proposals.

1. In Burford Duration ball race motor to get 38sec run. Dave Owen's new replica PB motor to get same run i.e. 38sec.
2. In Nostalgia the diesel engine run increased from 25sec to 35sec.

I notice that the South Australians have proposed that Nostalgia be altered to have three classes: A, B & C. Engine runs being 25, 30 and 35sec. This is not so far off what we propose.

Some of the other rules the Victorian and South Australians are suggesting are cutting fuel allocations in Texaco and a possible minimum weight for 1/2A Texaco. I'm told that they have some very good conditions at their local flying fields as far as lift goes. It may be that flying their models at say Coota they may have to think again. Anyway, whatever or if at all anything changes, we are all flying in the same circumstances. It's still the last one down or the biggest score that counts and as long as we enjoyed the flying, that is what mattered.

Other things to be considered were the take-off and landing areas at contests: specific sizes and regulation. I don't think we agree with them. The workload on contest directors, who would rather be getting their models ready, is already a chore they could do without. To then load on them a set of regulations which must be implemented is just not on! The CD's use common sense when setting up the flight line, alter it as conditions change, decide on a reasonable landing area - again depending on weather conditions and commonsense. It has always worked fine, so don't alter it now! I don't remember any safety issues on setting up for a contest, leave it to the Contest Director and helpers as we have always done.

Peter Scott.

Submission from Basil Healy on behalf of SAM 1788 Australia to Chairman of MAAA Oldtimer Rule Sub-Committee, Mr. Kevin Fryer.

Dated 29 October, 2012.

Dear Kevin,

Enclosed please find a rule change proposal instigated by Peter R. Smith (Canberra Smith to most people) to prohibit the use of automatic flight control systems in Old Timer competitions. Apparently these are freely available on the Internet, probably for use in autonomous control models. The use of an item such as this would remove all the skill required to pilot any limited engine run model during the climb. It is hoped that we can nip this one in time before somebody incorporates it in a model.

Further to the above, Peter Scott put up a proposal to use small diesels in $\frac{1}{2}A$ Texaco. This proposal appears to have lapsed due to a lack of seconders.

Another proposal instigated by Jim Rae, to increase the engine run of ball-race engines to 38 seconds in the Gordon Burford event was trialled at Cootamundra recently and appears to have levelled the playing fields between plain bearing and ball-race motors. I still need a few more signatures on this proposal before forwarding it on to you.

Your proposal for field layout was discussed at our Committee meeting at Cootamundra. We found that while the general principle was sound, the pit area with its two additional zones for take-off and standing while the model is landed to be unnecessarily complicated and time consuming to set out, requiring 8 witches hats or similar.

We disagree with the proposal concerning where a model finishes when it stops its landing roll. Reason:- At 100 metres distance it is not possible to determine accurately where the model touches down. Under the present rule it is possible for the timer or contest director to walk to the far end of the defined area and ascertain whether a model is IN or OUT at the completion of its landing roll.

Personal Note - As my late wife was a keen tennis player I spent a bit of time umpiring and found it quite hard to determine whether a ball was inside or outside the back line on a tennis court, which is appreciably shorter than 100 metres and the umpire's head is ten feet above the court!

Sorry Kevin, we can only give limited support for the field layout. Get rid of the take-off area and just call it a take-off line and eliminate the area where pilots have to stand for landing. Maybe specify that they are not to proceed past D-D while the model is in flight, but that is all. Keep it simple or we will start losing fliers.

Regards,

Basil Healy.

Submission from Basil Healy on behalf of SAM 1788 Australia to Chairman of MAAA Oldtimer Rule Sub-Committee, Mr. Kevin Fryer.

Dated 16 November, 2012.

Dear Kevin,

Here are the other two rule change proposals that I mentioned in my previous letter.

Peter Scott managed to round up the necessary number of seconders at the Muswellbrook contest last weekend. The Nostalgia proposal was trialled at Cootamundra with a fairly "hot" Swayback flown concurrently with the Gordon Burford models. Heights achieved by the two different classes of models were almost identical in each round flown.

The proposal for the Gordon Burford Event is backed by a number of competition results in which ball-race engines are usually beaten by plain bearing engines when it comes to the fly-off.

On another matter, I received a copy of the Electric Flight Old Timer rules from Gary Ryan and these were discussed by the Committee at Muswellbrook. It is obvious from the accompanying letter, that they have seen the light and that they cannot compete directly with IC powered aircraft. However, we see no reason why they cannot fly concurrently with the IC powered aircraft with separate trophies for their event. It would help swell the numbers at Old Timer events and at events like the Eastern States Gas Champs at Wangaratta, would help with the payment of the field hire. Accordingly, we support the proposal to adopt their rules.

Regards,

Basil Healy.

P.S. There has been quite a bit of chat on the internet about a proposal by Peter (Condo) Smith to change the Standard Duration event to a Height Limited event.

So far the general drift is to leave it as it is. Condo has yet to show us how to use a height limiter and there is the added problem of checking each contestants height limiter with a laptop computer. The next rule change four years away seems like a good time to consider this idea, after we have seen how the Electric Flight people handle their height limited event.

Basil.

Rules comment from Trevor Carey tc192170@bigpond.net.au

Thanks for Duration Times, I really enjoy reading it and a lot of the time I agree with the comments made and sometimes I am moved to comment but until now have kept that in check. I would with your permission like to offer the following:-

1. With regards to Standard Duration

- a. Right from the start this event has been plagued with "rule exploiters" and to my mind down out right cheats. In making this statement I would also like to say that most of these people have moved on and the "rule bending" has essentially been eliminated.
- b. The modifications proposed essentially do away with the "original rules" so why continue to call it Standard Duration.
- c. In reading the rules my mind has already thrown up a number of ways to bend same, so where do you go.
- d. I personally consider that the event, as it stands, cannot be supported with suitable engines at reasonable prices etc.

2. With regards to Burford: I whole heartedly agree with the proposal to remove the difference between PB and BR engines. I was recently given an average performer (with a PB engine) which I replaced with a BR engine, and with no other modifications outperformed the PB engine. This same engine in another Burford model was "a real dog" As Mike stated prop and model choice have a lot to do with "an engines performance". And that doesn't take into account the ability or otherwise of the driver on the day. BTB Jim is still trying to get said model back off me, maybe after Canowindra.

With the proposed rule changes, I would suggest that people once again look north to see what we are doing. Not all of our rules are acceptable to others but there is some seeds there that could / should be looked at by our southern brethren.

Lastly I would like to congratulate NSW on doing what should have happened years ago and split the Nats into its various components but Scottie why didn't you guys make Canowindra the Nationals?? Much better place more time to compete and everything is there and it is / would be a big relief to us QLD'ers financially.

Anyway, keep up the good work, and you never know I just might be moved to contribute an article or two if you would like.

Regards, Trevor Carey.

Rules Comment from Peter (Condo) Smith peter_condo@yahoo.com.au

Re STD Duration, Dave Markwell, I look forward to you being the CHIEF Scrutineer and model Contest Director for STD Duration, at the SAM 1788 2013 Champs. To accept the NOMINATION, just reply with an email titled "YES" to the SAM 1788 Committee. Thanks, Condo.

Rules Comment from David Markwell dfandpa@chariot.net.au

Hi Peter, Yes, I am OK with CD etc. for STD Duration at the SAM 1788 2013 Champs.

I have been ruminating over your Height Limited event proposal, and I agree that Std,Duration has become too complicated, (as I said last rule change also) for a simple event. And maybe we should change the concept, as long as a limiter can be put in an existing Std.Duration model. I don't think our guys will go for it as we are running out of steam here, but if it makes for more interest then it cant be bad. If it allows direct competition with electrics, I think it may end up an all electric event though. Anyway, submit the proposal and I wish you success with it, and will try to promote it in SA. Dave.

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02 4227-2699

CHRISTMAS THOUGHTS FROM CONDO.

Christmas is coming and Santa is on his way,
Condo is getting another engine, a McCoy, did I hear someone say.
The bearded one wants razor blades, but Gail is not so sure,
I guess they will end up in the bottom drawer.
Latto is trying to get a Phantom to go,
Think he have better luck if he stood under the Mistletoe.
Jim Rae has had a good year, winning everything in sight,
but I suspect Santa will still visit him on Christmas night.
Santa will come to us via Queensland so I hear,
where little "Condolhiza" Walsh will see Santa for the very first time.
Now Santa visit everyone whether they are good or bad,
so let's hope he leaves goodies in your bag.
Now if Santa only leaves you Undies and you were looking for more,
Then celebrate Christmas in July and come to Parkes if you want some more.
Now SAM members are a crafty lot and I fear to say we may all miss out,
Because Santa is likely to end up pissed under Dickos Christmas tree!

Merry Christmas

Condo 2012

Muswellbrook Oldtimer Report and Results.

From Peter Scott.

Cool and windy weather conditions greeted us for the first contest, Old Timer Gliders. Trouble with the towline slowed the event. The models climbed well on the tow after this and most handled the wind well. Top place went to Basil with his MF7. Ian Roach was only ten seconds behind him and I was third with 36 seconds behind Ian.

Next up was the Burford contest. Weather was cool and very windy. Jim Rae's model, the Amazoom, quite liked the conditions and placed first. I came second with the Jaded Maid and Basil third with a Dixielander. The rest retired hurt or simply didn't fly. It was decided at this point to postpone Duration to the following day as folks were not happy with the idea of breaking their models.

Sunday dawned sunny and calm. This soon changed and by the time the Tomboys were in the air they became tricky to fly. Beakey won this event and I came second. I was lucky as the model was blown a long way down wind, with no chance of flying back. I had a fair hike to retrieve it, but as long as you can see the Tomboy land it counts!

Duration was then flown and as you can see from the results, the conditions precluded any fly-off. I think we were all quite grateful not to break a model.

Beakey damaged his big Playboy and was a bit pee-ed off! Again, Jim's Lion Cub suited the conditions and beat Grant by seven seconds. All the scores were close. My Stardust scared me by fluttering the wings on the climb. I think this model requires a slower engine or a better wing.

1/2A Texaco actually had the need for a fly-off between Adam Tjanavaras with his Baby Bird and Basil with his Atomiser. Both decided that the joy of 1/2A flying in those conditions was wearing thin. So, a coin was tossed and Adam won.

Texaco saw only four flyers, the rest chickened out! The sparkies did well. Dave Brown got up a long way, sometimes came down nearly as fast! I flew a Bomber to second place. The engine bearers broke on the third flight as a gust of wind caught the model three feet off the ground and dumped it. Grant was third. In spite of the weather, it was enjoyable flying all the same.

The Muswellbrook club looked after us well. The food was good, we flew everything and the contest deserved to have more entries.

To make more off a weekend of it, the Muswellbrook club put on a control line fun-fly weekend. There was quite a lot of activity in the two circles on Saturday, less on Sunday but it was good to catch-up



Above: Assisted by Basil Healy timing and Jim Rae launching, David Beake's Playboy, powered by a Dooling .61, is already airborne in the breezy conditions experienced at Muswellbrook. Right: Adam Tjanavaras, from Tamworth, collecting 1st Place trophy for 1/2A Texaco.

MUSWELLBROOK OLDTIMER WEEKEND - RESULTS

O/T Glider

Basil	HEALY	MF 7	360
Ian	ROACH	Archangel	350
Peter	SCOTT	Dragon	214
Grant	MANWARING	Thermalist	208
Jim	RAE	Fugitive	203
Dave	BROWN	Frog Prince	133
David	BEAKE	Thermalist	104

Gordon Burford

Jim	RAE	Amazoom	PB	768
Peter	SCOTT	Jaded Maid	BB	531
Basil	HEALY	Dixielander	PB	447
Grant	MANWARING	Lil Diamond	PB	180

Tomboy

David	BEAKE	Irvine Mills .75	331
Peter	SCOTT	Scholloser 1cc	319
Jim	RAE	Mills .75	277
Basil	HEALY	Mills .75	244
Ian	CONNELL	MPJet	204

Duration

Jim	RAE	Lion Cub 130%	Saito 56 4/	787
Grant	MANWARING	Playboy	YS53 4/	780
Basil	HEALY	Megow Chief	YS 53 4/	717
Peter	SCOTT	S'dust Spl 170%	Saito 62 4/	671
David	BEAKE	Playboy	Dooling 61	607

1/2a Texaco

Adam	TJANAVARAS	Baby Burd	720	1st*
Basil	HEALY	Atomiser	720	2nd*
Grant	MANWARING	Lil Diamond	715	
Peter	SCOTT	Lil Diamond	637	
Garry	WHITTEN	Baby Burd	602	
Jim	RAE	Pine Needle	318	
Dave	BROWN	Megow Chief	74	

* Coin Toss

Texaco

Dave	BROWN	Flamingo	O&R 60	1800
Peter	SCOTT	Bomber	Cunningham	1781
Grant	MANWARING	Bomber	OS 60 4/	1550
Jim	RAE	Dallaire 75%	ASP 30 4/	1329



Dyeing the Polyspan Lite

From Alfredo Herbon aherbon@coopenet.com.ar

I want share with SAM Fliers a good method to apply a semi-translucent colour to Polyspan Lite or regular Polyspan.

I used a traditional Argentine powder aniline "Colibri" brand, colour Amarillo Canario (Canary Yellow). It is used for cloth dyeing using cold water process. Here the 20 gr pack of aniline, surely elsewhere you have several brand for similar product.

Basically the procedure is to dissolve the powder from one pack (20 gr), into 2 pints of regular thinner, the same one used to dilute nitrate dope. The aniline components do not dissolve completely into the thinner, perhaps some of the components dissolve only into water. After letting it rest two or three hours, the tinted thinner turns transparent, because the not-diluted tiny particles sets in jar bottom. Then I filtered it, using a paper coffee filter.

The thinner takes that tone (not altered by photography), as you can see the colour defers a lot from a "canary yellow", but when you pour it in the nitrate dope and spray the Polyspan it turn to a translucent true yellow.

That tinted thinner is used to dilute the nitrate dope using a mix of around 25% of not coloured thinner and 75% of coloured thinner. The first time I used this method I doped all parts using a good quality brush, but the colour was not perfectly uniform, so this time I decided to apply it using my spray gun, using a very diluted nitrate dope.

I decided to start with the tail group (stab plus rudder), because these are small parts, to get experience ...

After brushing two coats of clear nitrate dope (not tinted), over the Polyspan Lite, I applied four coats of tinted dope.

The next picture shows the result. Those reddish spots are rest of a previous covering trimming. The two wires and wood base are to support the stab horizontal.

Here the right side of the rudder. The piece of scrap plywood worked as spray holder. Again the reddish spots from old trimming ...

The left side ...

I'll do the fuel proofing spraying two light coats of automobile polyurethane "clear", used as final coat for that kind of paints.

Alfredo. aherbon@coopenet.com.ar

From Hank Sperzel

hsperzel@cox.net

Hi Alfredo,

MRL used to sell a Yellow Florescent powered dye that you mixed with thinner and clear dope. I've used it quite a bit and just love the stuff. Here is my Ascender finished with the said dye. It is so bright in sun light it all most hurts your eyes.

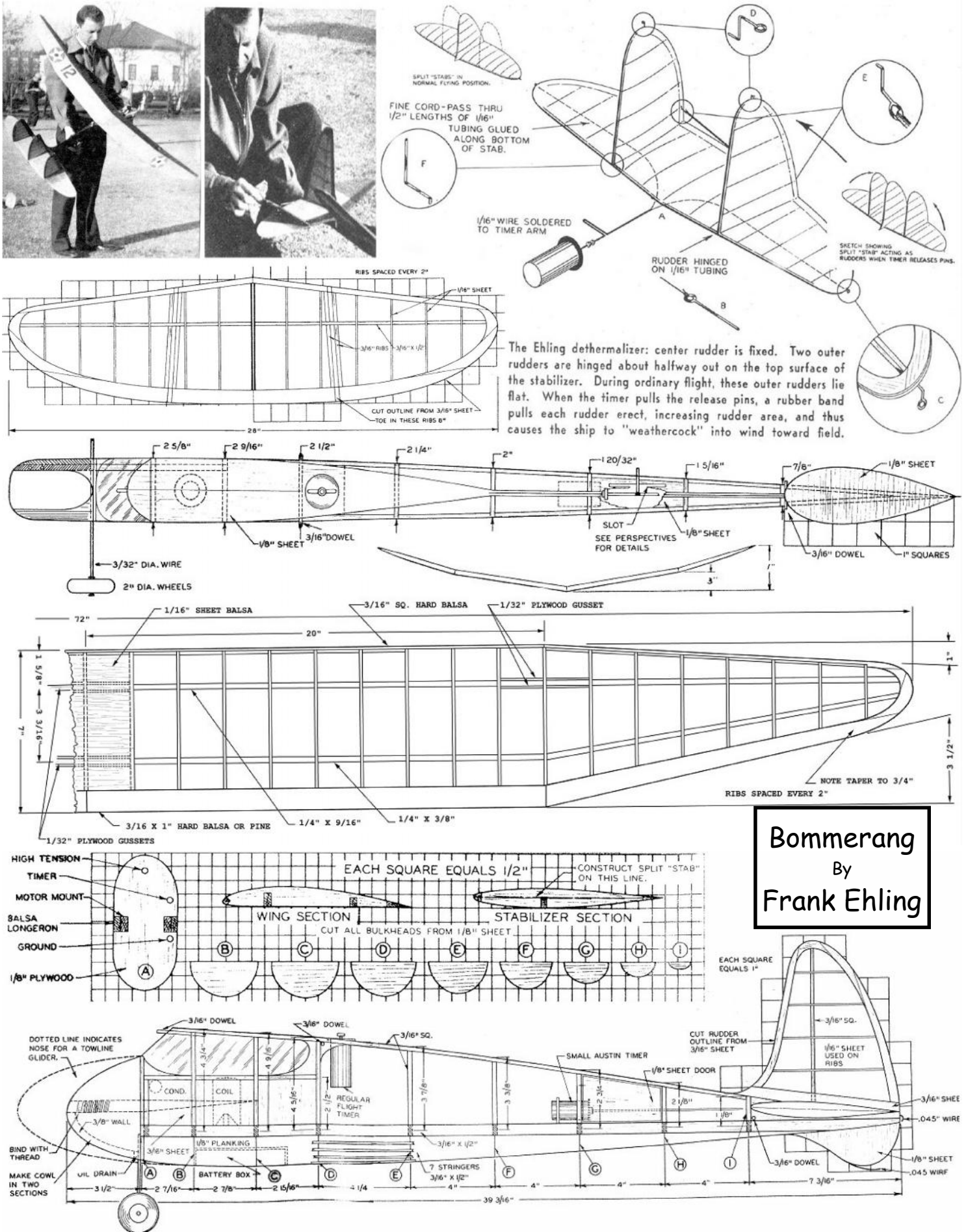
The Ascender was lost at this years' Nat's and spent two months in the beans. It was found when the beans were harvested. I just received the airplane yesterday from Phil Sullivan. The yellow on the wings and stab had bleached out quite a bit as did the Red Design Master Floral spray on the fuselage. There are a few holes in the covering from hail and I'll need to recover the airplane but it is supprising how well the Polyspan held up. The only warps in the wing or stab are the ones I put in, Wash-in the right wing, and it's still there! The engine, an ED Hunter 3.49, is in great shape, no rust or anything.

The airplane had lots of mud on the fuselage from sitting out that long. The Texas Timer was covered with sandy mud. I washed the mud off with a tooth brush under running water and put it in my wife's ultrasonic jewelry cleaner. I let it run for about an hour, took it out, rinsed it with hot water and blew it dry with air. Then I put some clock oil on the spring and on the bearings with a nee-



dle, here is a case where more is not better.

The Timer seems to be just fine, but, a lesson learned: I had too much fluid in the ultrasonic cleaner, it covered the face plate of the timer, and it took some of the decal off the face. The Texas Timer is something like the old Timex Watches, "It takes a beating and keeps on ticking!"



Bommerang
By
Frank Ehling

PETER CHINN'S

RADIO MOTOR COMMENTARY

OS FS-40 four-stroke tested

The news that OS were to follow up their 10cc FS-60 and twin cylinder 20cc FT-120 four-stroke engines with an entirely new 6.5cc (.40cu. in.) model was first released in this column in November 1980. A factory drawing of the prototype FS-40 engine was published in the March 1981 *Commentary*.

The FS-40 is now in production and during the past month we have run tests on an example from the first production batch.

As a four-stroke motor contains very many more parts than a two-stroke, it is, inevitably, more costly to produce. Nevertheless, anything that can be done to move four-stroke prices down towards a more competitive level, will be welcomed by the many modellers who would like to enjoy the quieter operation, excellent throttling and sheer fascination of a good four-stroke. This is what OS set out to achieve with the FS-40 and in the UK, for example, this new engine, at just over £78 including VAT, is 30 per cent below the cost of the FS-60 and 10-20 per cent lower than the prices of other current four-strokes of similar size. Only the smaller and simpler Saito FA-30 is cheaper at just under £74, less glowplug.

This reduction in cost has been achieved without sacrificing the high quality construction for which OS, the world's largest model engine manufacturers, are noted. Unlike its rivals, the FS-40 still has its camshaft supported in two ball bearings; its valve gear (of the same high quality as the FS-60 and FT-120) is fully enclosed; it has the special ultra hard wearing cylinder plating found on other top OS models and, of course, all the casting and machine work are to the same high standards.

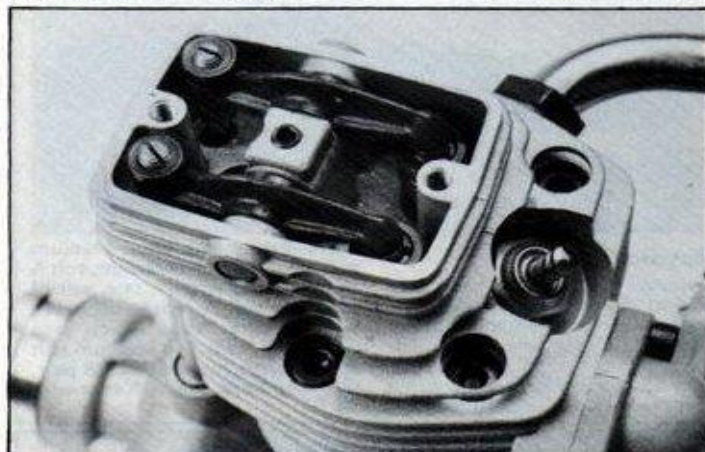
Clearly, it is largely the rationalisation of the engine's design that has made it less costly to produce. Take, for example, the body of the motor. Instead of being assembled from, perhaps, three or even four separate components, a single casting embraces the crankcase, front housing and cylinder jacket, plus the transverse housing above the main bearing that contains the skew gear driven camshaft. The valve rocker box and support for the rocker shaft are integral parts of the cylinder head and a single casting, bolted to it, forms both the inlet pipe and carburettor body.

The overhung crankshaft, which is carried in 12 x 24mm and 8 x 19mm steel caged ball

setting tappet clearances. The pushrods are enclosed in steel tube covers which are sealed in the camshaft housing and rocker box with o-rings.

On test, the FS-40 started easily and ran smoothly. The engine is supplied with an OS F-Type glowplug and the maker's fuel recommendation, as with most other four-stroke glow engines, is for a mixture containing between five and ten per cent nitromethane. We used five per cent nitro and 20 per cent castor-oil for the first two hours of running and ten per cent nitro and 18 per cent castor for the tests. Four-strokes will tolerate lubricant percentages somewhat lower than those advisable for two-strokes and a 12-15 per cent castor content could probably have been used quite safely. Fuel consumption is, of course, much lower and a four or five ounce tank should be adequate for quite lengthy flights.

As the figures in the performance table show, the FS-40 indicated a maximum torque of 50oz. in. at 7,000 rpm on the dynamometer. The decline of the torque curve, as load was reduced, was quite even and the peak power output calculated from the figures recorded was 0.455bhp at just over 11,000rpm. This, equal to a specific output of



Left: FS-40 with rocker box cover removed. Sturdy rockers are same as on FS-60 and FT-120, and right, the FS-40 cylinder head showing inlet valve assembly removed.

Below left: the production version of the OS FS-40, now on sale in the UK at a very reasonable price.



journal bearings, has helical teeth on its 12mm od which mesh with a 22-tooth spiral gear in the centre of the camshaft. Each end of the camshaft is located by a 5 x 13mm steel caged ball journal bearing. Access to the camshaft is via a removable plate on the right side of the camshaft housing and an interesting and useful feature is that the standard camshaft can be replaced with a special reverse-rotation camshaft that re-times the valves for opposite crankshaft rotation.

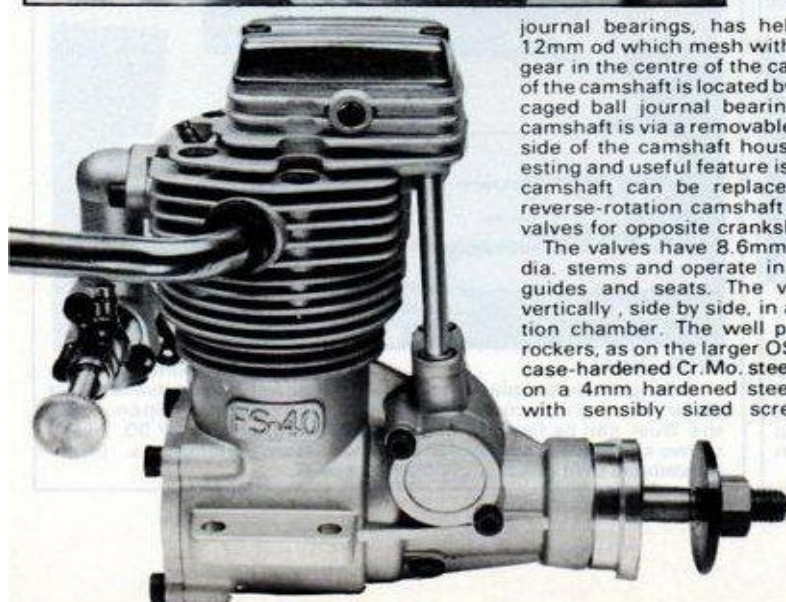
The valves have 8.6mm dia. stems and operate in phosphor bronze guides and seats. The valves are placed vertically, side by side, in a discoid combustion chamber. The well proportioned valve rockers, as on the larger OS four-strokes, are case-hardened Cr. Mo. steel castings, pivoted on a 4mm hardened steel shaft and fitted with sensibly sized screw adjusters for

70bhp/litre, is well up to expected levels for current four-strokes and is about ten per cent higher than the specific output obtained from the original production model FS-60.

The peak of the power curve is commendably flat, which means that the engine will pull some quite largish props without serious loss of power. OS suggests 10½ x 6, 11 x 6 or 12 x 5 sizes according to model type. Obviously, there is no point in propping the engine for much over 10,000rpm on the ground as this may take it over the peak in the air.

The FS-40 ran with modest vibration and was generally easy to handle, although rather sensitive to needle-valve setting. The throttle, on the other hand, was not at all critical and response was really excellent, with a low idle (we actually had it ticking over at 1,800rpm on a 12 x 5) and steady part-throttle firing and a smooth linear transition.

Checking tappet clearances on the FS-40 is not as easy as with the other OS four-



Specifications and Test Data for OS FS-40 four-stroke

General data

Type: Single-cylinder, glowplug ignition, pushrod-OHV four-stroke with twin ball bearing crankshaft and twin ball bearing camshaft.

Bore and stroke: 21.2 × 18.4mm (0.8346 × 0.7244mm)

Swept volume: 6.495cc (0.3964cu. in.)

Stroke/bore ratio: 0.868:1

Measured combustion chamber volume: 0.87ml

Nominal compression ratio: 8.5:1

Measured valve timing:

Inlet opens: 45° BTDC

Inlet closes: 60° ABDC

Exhaust opens: 45° BBDC

Exhaust closes: 45° ATDC

Carburettor: OS barrel-throttle type with adjustable airbled idle mixture control and 4.4mm choke (10sq. mm effective choke area).

Silencer: Not included. Exhaust pipe, plus pressure adaptor supplied.

Checked weight: 341 grammes — 12.0oz.

Required bearer spacing: 33mm.

Performance tests

Power output gross: 0.455bhp at 11,200rpm.

Torque, gross: 50oz. in. at 7,000rpm.

Equivalent net bmep: 99lb/sq. in.

Specific output, gross: 70bhp/litre.

Power/weight ratio, gross: 0.61bhp/lb.

Typical prop rpm

6,400rpm on a 13 × 6 Top-Flite maple
7,000rpm on a 13 × 4 Punctilio beech
8,000rpm on a 12 × 5 Top-Flite maple
8,900rpm on a 12 × 4 Zinger maple
8,950rpm on an 11 × 6 Top-Flite maple
9,500rpm on an 11 × 6 Power-Prop maple
9,400rpm on an 11 × 5 Top-Flite maple
9,800rpm on an 11 × 4 Power-Prop maple
10,200rpm on a 10 × 6 Top-Flite maple

Test conditions:

10% nitromethane fuel; air temperature 11°C; pressure 757mmHg; relative humidity 75%

strokes because, even with the cover removed, the rocker box sides prevent easy access with a feeler gauge. To help matters, the engine is supplied with a couple of special feeler gauges having angled tips, but adjustment is still a bit fiddly. Happily, the test motor needed only one minor readjustment during the course of running-in and testing which suggests that, once run-in, the FS-40 will operate for long periods without need of attention here.

As can be seen from the photos, the FS-40 is of neat and uncluttered appearance. The overhead valves naturally make it taller than an equivalent displacement two-stroke, but it is quite compact and weighs just 12oz. Supplied with the engine, in addition to the feeler gauges already mentioned, is a set of Allen keys and spanners to fit the various screws and nuts, and an adaptor for fitting to the exhaust pipe by which means the fuel tank can be pressurised to assist fuel delivery. Generally speaking, the only time the adaptor may be required is when, with an upright

engine installation, the tank has to be positioned well below the level of the carb jet. It is suggested that the pressure adaptor is then fitted to overcome any tendency for the engine to starve in sharp manoeuvres.

Question and answer department

Mr. E. I. MacBean writes: "I would be most grateful if you would help me clear up a point that has been confusing me for some time.

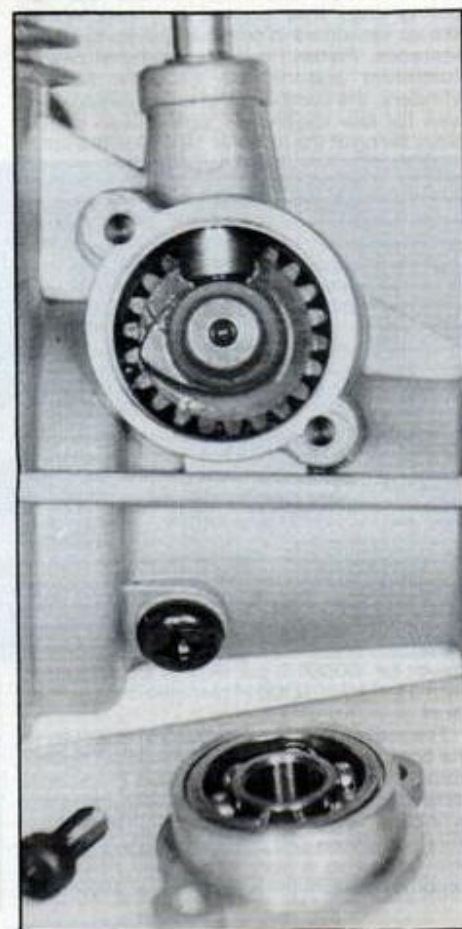
"Many years ago while going through an experiment in physics at school to do with coefficients of expansion in metals, our teacher produced a large chunk of metal and a steel ball which, at room temperature, would just fit through a hole in the lump of metal. Upon heating the latter over a bunsen burner, but leaving the ball at room temperature, it was found impossible to fit the ball through the hole, much to my surprise as, until then, I had expected the hole to get larger. He explained that, upon heating, a metal expands from its centre of mass. Therefore, unless I have completely misunderstood this principle, in an internal combustion engine, as it warms up, the bore gets smaller and the piston gets larger.

"So far, so good, but the confusion arises from some of the things you have written in your tests, for example in your test of the K&B 6.5. Also, in the July 1981 RCM&E, concerning the Enya 21X, you talk about the piston and liner having similar coefficients of expansion, thus maintaining constant clearance between the cylinder wall and piston. Surely a more constant bore to piston clearance would be kept by metals of low coefficient of expansion, dissimilar or not, but not by a high coefficient of expansion metal such as aluminium.

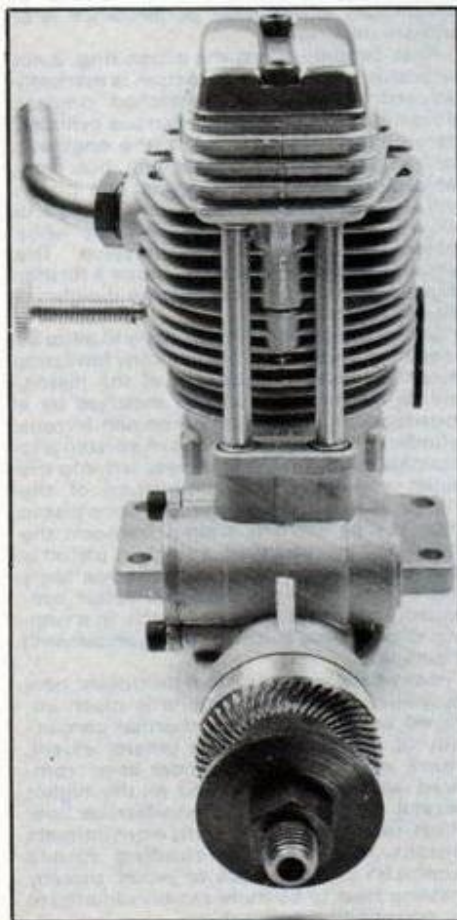
"On a separate note, please do a test on a K&B 21. You will be astonished by its power."

To get the last item out of the way first, we tested the K&B 21 (3.5) soon after it appeared on the market several years ago. Assuredly, it is a most powerful piece of work, especially when run on the high nitro fuels for which it was designed. Ours returned a gross output of 0.88bhp at 22,000rpm on 50 per cent nitromethane fuel, using the standard Perry carburettor as fitted to the aircraft version. Gross torque reached 50 oz. in. at 14,000rpm, equivalent to a brake mean effective pressure of over 90lb/sq.in. (Full results of these tests were published in our Engine Test series in *Aero Modeller* for March 1978, and in *Model Airplane News* for December 1977).

As regards thermal expansion in internal combustion engines, cylinder bores very definitely get bigger, not smaller, as they warm up. That this does not follow the pattern of the experiment in elementary physics, mentioned by Mr. MacBean, is explained by the fact that, since expansion is in three dimensions, the greatest linear in-



Far left; front view of OS FS-40 emphasises its clean uncluttered lines, and above, the OS FS-40's camshaft, ball-bearing mounted at each end, is skew-gear driven directly from crankshaft.



crease is in the direction of the longest dimension of the body under consideration. In a thin walled hollow cylinder, such as an i.c. engine cylinder-liner, the longest dimension is the circumference of the cylinder and the second longest its height, each of which is usually at least 20 to 30 times the third dimension: i.e. the thickness of the cylinder wall, so, although the cylinder wall becomes thicker by thermally expanding inwardly as well as outwardly, the cylinder also increases both its outside diameter and inside diameter because of the much greater linear expansion of its circumference.

Put in the most easily understood terms, a cylinder liner can be likened to the steel tyre that fits onto a cast steel locomotive wheel (or

RE-BUILDING A GHQ

by David Owen

The term 'reworked' is used here in the same way that politicians use 'revised', or 'renewed', and covers a broad spectrum of meaning.

A friend had very generously given me a fairly rare, early Taipan diesel for my collection and the GHQ job was proposed as a way of saying thanks.

This GHQ started out as a pressed-piston engine, complete and basically in good (!) condition. But it was essentially a non-runner and my brief was to 'rework' it into a useful engine for '38 Antique.

My thinking all along was that a quick cylinder hone and a new, lapped, cast-iron piston would do the job. So, I pulled it apart and cleaned it and it soon became obvious that virtually all internals would need replacing. I could see that even simple parts such as the screws and needle valve would have to be 'reworked' too.

In addition to that, I decided that the exhaust timing was far too high at 160°+ and would need to be lowered to around 140°. Exhaust, transfer and induction (inlet) ports were in fixed position in the cast steel liner and could not be altered. This meant that any timing changes would have to be achieved through a re-design of the piston and that had consequences with the rod length and cylinder head. As the cylinder ports were drilled holes only, it was decided to go with a lighter piston in an effort to minimise the likely vibration prone to these older engines, even at low peaking speeds. I was aiming for 6000 on a 14x6 Taipan, which is around contemporary Brown Jnr capability. The following work was done:

The cylinder was honed and an alloy, single-ringed piston was fitted. A new conrod and wrist pin replaced the original low grade items. The piston and rod were re-designed to effect the desired changes to timing. The bronze shaft bush was serviceable and it was honed to fit a new crankshaft, which was the same stroke as the original, but incorporated a degree of counterbalance. The crankcase was checked and the axes were found to be square. I wanted to retain the original, spoke-finned head, otherwise the engine would not have that unique GHQ appearance. This was possible, following a judicious skim of the combustion chamber, the sealing surface and the plug seat. At least the original designers did not skimp on the numbers of head screws, ensuring a good head seal.

The timer assembly was checked over and found basically OK with a bit of careful adjustment, though the casting would subsequently break in two and require replacement. A new steel prop driver, incorporating the ignition cam, was made. Unfortunately, the original 5/16" journal shaft had no shoulder against which a collet could be used to locate the driver. There was insufficient material in the front housing to enlarge the shaft bush, so 5/16" it was and it was necessary to revert to the original driver design, with a 2mm steel pin through the shaft providing location and torque. A GB 5cc diesel prop washer and a new 5/16" UNF nut finished the prop end.

All screw holes were cleaned and re-tapped to clear. New screws and gaskets were fitted throughout and finally a needle valve assembly from an R/C Enya was used to replace the dodgy original item. A small deflector was added to direct exhaust upwards and away from the inlet and needle.

The 'reworked' GHQ starts easily and turns a 14x6 Taipan at around 5800 rpm. I believe the effort was worth it. Albert Fisher



Original GHQ parts



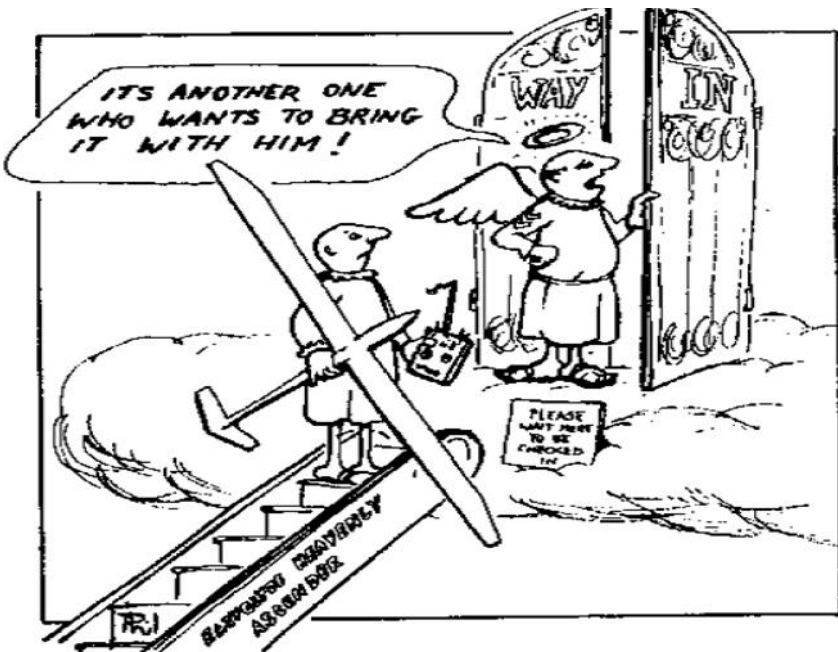
GHQ on test stand Jan 2012

has built a Finneran Flyer for it and I hope the combination will create a bit of interest in Oldtimer circles.

There will be some who say the engine is no longer a GHQ and I can understand that view- point. However, the performance is in line with similar engines of its day. I think the unique-ness of returning what was regarded as a useless lump into a useful lump was worth the effort. Perhaps others will try and we'll see a GHQ revival in Australian Oldtimer flying!



The finished GHQ, after replacement of the timer assembly. The cast timer assembly frame cracked and failed during an early flight of the Finneran Flyer, causing an instant lack of power when the engine timing changed. Below is the Finneran Flyer, the handiwork of Albert Fisher.



WANTED:
JR PCM 9X11 Transmitter
FOR SALE:

OS 60 open rocker, excellent condition.
 New bearings fitted recently - has contact breakers on front. \$200.00
 Enya 60 FS. Has spare Minimag front end. \$100.00
 JR X 3885 transmitter - Channel 649 no battery. \$80.00

Peter Scott
 (02) 9624 1262.

R/C Old Timer Glider From Grant Manwaring

Old Timer Glider was flown as part of the Muswellbrook Old Timer weekend, an entry of seven brave flyers fronted up in very windy conditions. Not ideal for this type of model. We did fly two rounds with the result based on the best flight on the day. The results are included in the event report in this issue of Duration Times.

Ian Roach, who writes a column in Airborne Magazine, was along and flew the Archangel to a very credible 2nd place, just behind Basil Healy. Ian handled the conditions well and enjoyed seeing what we are doing with this class. I believe he will include some comment in his "On Silent Wings" column. It may spur some other flyers to give it a try.

As mentioned in the last Duration Times, we will again hold the Old Timer Glider test days in February 2013. These test days will be at three sites as below. Please let the contact persons know in advance if you are intending to participate.

Goulburn, Ted Swan Field	16 th February 2013	Contact is Grant Manwaring (02 6241-1320)
Central Coast, Yarramalong Turf Farm	23 rd February 2103	Contact is Basil Healy (02 4341-7292)
South Australia, Willunga Vintage MAC, Sellicks Beach	16 th or 23 rd February	Contact is Dave Markwell (0409 092 013)

The idea of the day is to flight testing and trimming of the models and to help each other get the model prepared for Canowindra at Easter. It will also let flyers get more familiar with winch launching.

Also as part of this day we will fly a postal competition, three rounds, two to count. I will collate the results and publish in the January-February issue of Duration times. There will a prize for 1st, 2nd and 3rd places, which will be presented at the beginning of the glider event at Canowindra. So get those half finished models completed, the ones that are broken fixed so you can use these days to advantage.

This month's plan is the Fugitive published in Aeromodeller. Jim Rae has been flying this model for some time, he has scaled it to 185%, wingspan of 86", it weighs in at 2lb. The model has long fuselage moments and is fairly easy to build. The high aspect ratio wing and light weight make this a good performer.

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Telephone: 02 4341-7292

Dave Brown - Model Draughting Services
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Wallerawang NSW 2645
Email: daveb@ix.net.au
Telephone: 02 6355-7298



THE ROLE OF THE TIMER AND USING BINOCULARS.

From Mike Myers mikemyersgln@charter.net

Well that's an interesting question Stephen. At the recent SAM 26 John Pond Memorial at Taft, the safety briefing by Dick Fischer included the directions to timers to *"watch out for your pilots and protect them. They're looking at their plane and can't see what else may be near them"*. Aside from "protecting" your contestant, I've always thought that part of the timer's job was to look out and see what other models in the air are doing. Whether it's seeing a competitor in rising air, or a flock of birds, or bits of debris in a thermal, the timer "scouts" for lift. A good timer and a pilot are a team. My early old timer model career was devoted entirely to free flight. While you can't steer your FF model into lift after you launch it, you certainly do learn to recognize when your model has gotten some "help" from a thermal, or is down air. You also learn (or try to learn) to pick thermals coming through so you can launch into "good air".

My first experience timing for a SAM RC competitor was with former SAM President Don Bekins back in 2003. I was standing next to him like a bump on a log while his OT glider was in the air and he asked me - or told me - to look out and see how the other models were doing, to look for signs of lift etc. So that's when I started to learn how to time a SAM RC contest model.

At the SAM 26 John Pond Memorial, two modellers were in a Class C flyoff - not certain whether it was ignition or glow. Current SAM President Ed Hamler may not have been timing one of the competitors (don't know whether he was just an observer or was actually timing). This particular competitor had launched 4½ minutes before another contestant - so he had that much of a flyoff time lead on that contestant. These guys were up in good air, and the winning flyoff time was 40+ minutes. At one point Hamler advised his contestant to "cover" his opponent - i.e. fly his model over and get under the other contestant, in order that both planes shared the same thermal. With a 4½ minute time lead, staying in the same air would inevitably lead to a win for the guy who took off earlier. That's contest strategy and good advice. Apparently the advice was not followed - and the contestant went looking - unsuccessfully - for other "better" air - and came second in the flyoff.

In another instance another SAM President - me - was timing for Dick Bartkowski in E-Texaco at Muncie - either in 2006 or 2008. I was not using binoculars - but I was watching for thermals and helping Bartkowski steer into them. As a timer in a Texaco contest, it's also incumbent on the timer to know how the other competitors are doing - who has the then high score etc. Bartkowski had had a long flight - maybe 45 minutes or so. The then highest time on the E-Texaco board was around 44 minutes. So at that point Bartkowski had first place locked up (it was late in the contest day and it was not likely that anyone else would put up a flight). All that Bartkowski had to do at the point was bring the model down and land on the field. (An off field landing yields a zero score in SAM RC contests). I suggested that Bartkowski bring it down; he wanted to stay up and get some more time. A bit of breeze came up and Bartkowski's model flew out of sight - and out of control. No landing, (well it did ultimately come to earth about three miles south of the field) and no score. Well it was a nice flight - but as a timer, I'd wasted 45 minutes of the contest day on a no score flight. And Dick had a nice flight but didn't win a prize. It brings to mind the old adage that pigs get fat, but hogs get slaughtered.

This sort of coaching, situational awareness to protect the flier, and awareness of where the contestant stands in the competition is part of what an experienced timer and contest flyer is supposed to bring to the table. I won't let a contest flyer (or even a park flyer) launch without first demonstrating to me - on my command - left and right and up and down. That prevents the dreaded "I ain't got it" launch with the radio off. With the new 2.4 Ghz radio systems, the old habit of turning the receiver on just as you start to start the engine doesn't always ensure that the transmitter and receiver have "shaken hands" immediately. A very experienced contest flyer, and SAM HOF member, made the mistake of launching without wiggling the sticks at an Eloy contest a few years back and scared the bejabbers out of half a dozen of us as his out of control bird flew in very tight low circles down the flight line, scattering contestants who were jumping out of the way. His radio was on but it had not "connected". That may be a failure to "shake hands" or it could have been ignition system interference. But he launched without confirming that his rudder and elevator were not only working - but moving in the right direction. That's a mistake.

The timer also does safety checks and awareness checks when the contestant starts the engine - is the throttle advanced on the engine (don't laugh, this weekend I had the starter on my motor and it wasn't starting or drawing fuel. Problem solved when my timer pointed out I hadn't opened the throttle). The timer may help launch the model as well.

Now as for binoculars - and their use. I don't think that binoculars have ever been "illegal" in SAM RC contests. For a long time their use was barred in SAM FF events - but that rule got changed a few years back. The binos do give an advantage of sorts - also a disadvantage as it's sometimes easy to lose sight of a model in binoculars and then have some difficulty in re-acquiring the "target".

But the limiting factor in all of this is the RC pilot's eyesight. He or she still has to see the model to control it, and to eventually steer it back home. If the pilot can't see it - then he and the plane are in trouble. I've had at least one occasion where I was flying in a contest event and simply couldn't see the model anymore. My timer (now a "co pilot") had to tell me which way to steer to bring the model back in sight. I got the model back, but if the situation had been worse, I would have handed the transmitter to my timer - thus earning a zero score - but at least saving my model.

Sorry for this long answer to some people's pet peeve from the last SAM Champs - but I thought it well to discuss the other side of the question on the role of the timer. When you're flying FF where eyesight is king, you soon learn who the "good" timers are and who are the "bad". Back in the day at Taft, one of the modellers had a young son "Eric" who had the eyes of an eagle. If you had a choice, you wanted to get Eric as your timer - versus say, Mike Myers - who had the eyes of a somewhat myopic mole when it came to seeing things at altitude and distance. And as long as a SAM RC timer does all of the things outlined above, you'll probably want an experienced timer at a SAM RC contest. And if you can't find one, you do what Don Bekins did to me as a newbie SAM RC timer - you explain to your newbie timer what sorts of things he or she can do to help you and to keep you safe.

On using binoculars, Bob Angel is right that binoculars (in RC events) can only be used to help guide the model directly back to the field in the event of an emergency. The relevant FF rule says that use of binoculars by the timekeeper is permissible by not required.

Here's the relevant section on Timer Responsibilities from the 20120 SAM Rule Book:

K. Anyone serving as a timer is an acting contest official and is responsible for minimum knowledge and enforcement of the rules. The timer must monitor the 5-minute time limit to get airborne, record the scores of all model releases and launches, and report any rule violation or flight irregularities to the CD for resolution.

L. The timer must see the model released to start the flight and must see the model land on the field to conclude the flight score. It is not necessary that he have the model in view at all times during the flight. To prevent loss of a model, binoculars may be used only during a declared emergency to aid the pilot in returning the model directly to the field. For safety reasons, timers are allowed to accompany the contestant through the model's flight and retrieval.

But this question has three parts;

1. Is it legal to use binoculars during a declared emergency to aid the pilot to return directly to the field? The answer is "Yes" See rule above.

2. Is it legal to use binoculars to "coach" a flyer during the middle of a contest flight? Here we have a point. The answer is "No".

3. Is it "legal" for the timer to "coach" his flyer? Certainly that's been the practice of many timers. Here I point out the difference between the Italian approach to regulatory or statutory interpretation, "If it's not expressly prohibited, it's permitted" and the German approach to regulatory or statutory interpretation, "If it's not expressly permitted, it's prohibited." On the question of the timer "coaching" his flyer, I go with the Italian interpretation. Clearly safety issues "Hey Bob, better duck because a big model is aimed straight for your head", mean that the timer has to talk to the flyer. Some flyers want coaching, some don't need it, and some ignore it, but shouldn't.

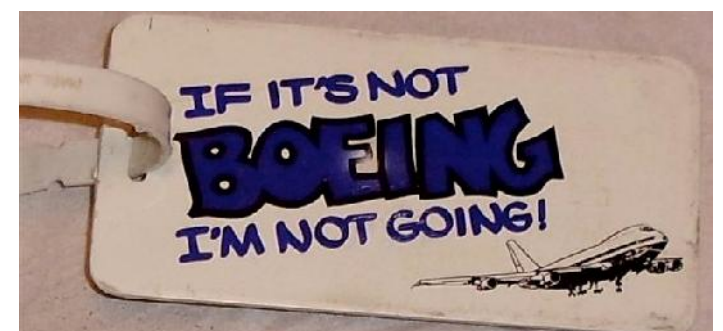
If you're timing a long Texaco flight - I recently timed an "unofficial" E-Tex flight of 1:00:0.04, (yes that's one hour and 4/100ths of a second) so you're going to be standing next to the flyer for a long time. Over the course of an hour two people are going to wind up talking about something, and it might as well be how the model is doing, and how the flight might be improved.

Now on the subject of a flyer not needing coaching. There's a story that's gone around about a flyer who was flying a big Lanzo Stick (FF Class E size) at a contest. One of the other contestants noted that the model was stalling a bit in the glide. When the flyer retrieved his model and brought it back to the stooge to wind it, the contestant approached him and offered some advice about how to improve the next flight. The flyer listened politely to the advice. This contestant then asked who had designed the model. The flyer replied, "I did". I doubt that Chet Lanzo needed much advice or coaching about how to fly one of his rubber model designs. But Chet was always polite and patient.

Editor's Note: *MAAA R/C Oldtimer Rule 5.4.1.5 (L) states: "The use of binoculars or similar aid shall result in a zero score for that round or fly-off,"*



Basil Healy's new toy - a Borysko Wing currently powered by a .60FS. Will be an interesting model to see flying. No doubt about Basil, always building something different. He intends to fly this model in '38 Antique powered by Orwick .64 Spark Ignition Engine.



Tip re Walston Tracker Transmitters.

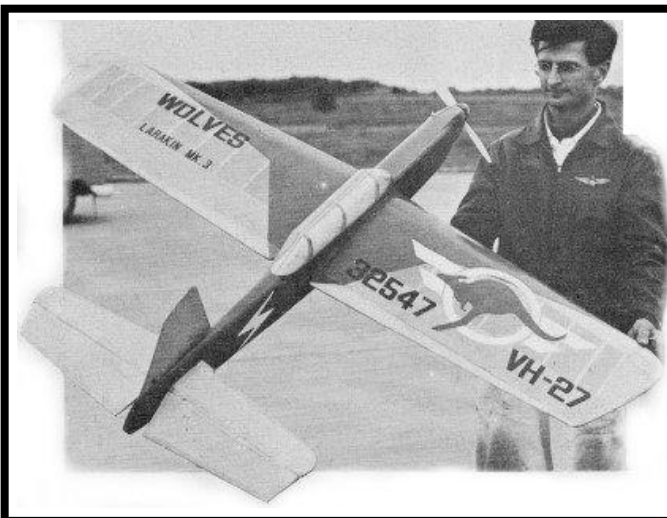
From Mike Myers mikemyersgln@charter.net

Some years ago I helped the late Jan Sakert find his lost model at Lost Hills - and learned a lesson in the process. He'd had an OOS flight with his brand new Curtiss Robin FF Scale Power model. He lost the Walston tracker signal and couldn't find his model. The next morning he asked me to help him look since I'd been chasing a model that had gone up in the same thermal.

So we went out looking going along the line of flight of the model I'd successfully retrieved. We found his model. When it landed, it had flipped over on its back. The antenna had touched the ground, effectively killing the signal. We found it by eyesight - he was not getting a signal on his receiver - until he lifted the model (and the antenna) off the ground.

Since then I've tried to keep the antenna inside the model (either building an antenna "tube" using a plastic drinking straw inside the fuselage, or inside the wing) or at least tape the end of the antenna to the side of the fuselage, or along the TE of the wing.

Your mileage may vary, but I think that's a worthwhile precaution. I've seen guys flying rubber models that just rubber-band the small transmitter on top of the wing. That's okay, but try to find a way to insure that the antenna tip won't touch the ground when the model DTs or otherwise lands.



VALE - BRIAN HORROCKS

Stunt champion in The 1961 Gold Aerobatics Trophy, Australian Brian Horrocks, passed on 7th December, 2012, aged 86.

Brian flew his "Larakin Mk.3 using the same Australian GloChief .49 motor that had won for him in 1959. His model was the biggest in the contest: 60 inches span, 830 sq. in. wing area and weighing 3lb 12 oz.

Unlike most other stunt exponents, he did not use a four-cycle level-flight needle setting but propped his engines for a steady two cycle pull throughout the pattern.

Mini Tracker Transmitter.

From Hank Sperzel hsperszel@cox.net

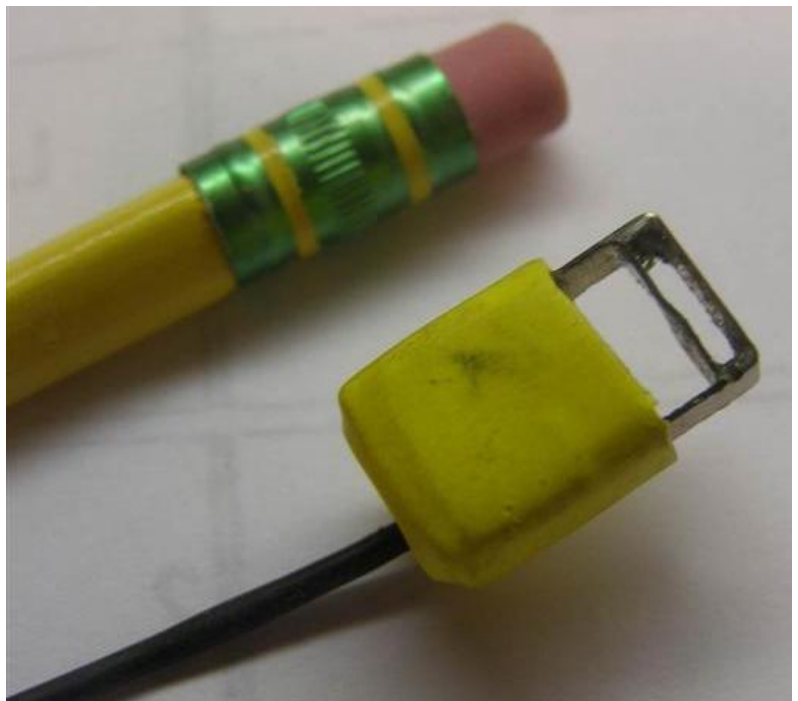
Here is the radio tracker that I use in the small stuff, like .020 Replica, P-30, Gollywock and the likes. It is a one cell transmitter and only weights a few grams. No, it doesn't have the range the 3 and 4 cell units has but it sure does help if you should happen to DT into the corn or beans.

I have a small "box" built into the bottom of the 1/4A Ramrod that it fits into and a piece of lite plastic tubing that runs down the inside of the fuselage that the antenna slides into.

The transmitter is built by LL Electronics in Mahomet, IL. It is compatible with the Walston Receiver. Mine is on 219.587 MHZ but they will build one to your frequency. Mine is about 10 years old and I think I gave about \$100 for it. It is model # LF-1 Merlin Special and weights 2 grams with the battery.

Reading the specs for the LF-1 it says: "Using a 1.5V single silver oxide battery it has a minimum life of 14 days, max of 20 days at continuous operation. You can achieve approximately a 3 mile line of sight signal."

These telephone numbers are old and may not be current, 800-553-5328, International customer may fax 217 586-5327. www.radiotracking.com



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