MODEL MAGAZINE

NOVEMBER 1989 £1.95

AERO MODELLER

EXALTED CIRCLES

Control line Eurochamps report

SPARKLING SHUTTLEWORTH

Vintage Weekend Highlights

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AERO MODELLER

p.616

p.646

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Cover: Mick Smith's Mercury III glistens handsomely in the Shuttleworth sunshine at Old Warden during Vintage Weekend. Slimmer predecessor of our Plans Service favourite was a Silver Medal winner at the '88 M E Exhibition. Report starts on p.646. Inset: Eurochamp for Britain - Bill Draper with Superhawk at Wigan Pier (John O'Donnell photo). Read all about it on p.616!

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HANGAR DOORS

M.E Aeromodelling

The 59th Model Engineer Exhibition is set to go, from 30th December - 7th January in its bright setting at the Alexandra Palace in North London. In recent years aeromodelling support has been stronger than ever, with increased competition entries, healthy support from SAM 35, BMFA, Large Model Association, BSMA, BARCS and all the other club efforts - plus, naturally, the efforts of Dave Rawlins of DPR Models with his Workshop and Flying Championships. A great mixture.

This year even more space will be available for model exhibits. We aim to provide a special section featuring the best of this season's competition models, with information for the public about general specifications, model types, class targets and so on. But the core of the Exhibition has always been the entries from 'club' modellers country-wide - and this year we want even more from you. Let's see the M.E model aircraft stands absolutely teeming with craft of all types - control line, free flight, scale, rubber, glider and power; we want all of you; and with a wider-ranging model collection service we want more from everywhere! And remember - entry guarantees a free pass and ticket.

Welcome to all clubs, too. Thank you for your participation in the past; we anticipate even more variety than ever and will make your week a happy one.

And if it's New Year's Day at Ally Pally, it must be Dave Rawlins and the DPR team. Dave's enthusiastic encouragement of - especially - the young newcomer to aeromodelling has made his Model Flying Championships such a powerful feature of past M.E Exhibitions. The '90 programme appears opposite, in What's On with more details next month. Great competitions with super prizes!

Late news is that one extra day, for general Indoor model flying demonstration, and perhaps competition, may well be available. Update news in the December issue.

Don't forget - if it's aeromodelling it must be at Ally Pally!

Above: Noblers at the Nats - and that's George Aldrich himself! Great fun - see next month's issue for gen!

Appealing? Victoria Toon was also at the C/L and Scale Nats, collecting the Wings Appeal on behalf of Grantham Red Cross.

1989 Aeromodeller Coupe d'Hiver

Preliminary enquiries reveal that RAF Henlow will be available for our '89 Coupe competition on the traditional 'first Sunday in December' - that is, 3rd December. Confirmation next month. Classes will be 80 gram, 100 gram (with ROG rule); Vintage (run concurrently with standard classes) and Junior. The usual format, in other words. Get trimming now - who knows, it could be you who wins the Aeromodeller, Bernard Boutillier or 4A trophies...

Survey the Scene

In this issue we feature comments arising from our last Readers Survey. Were happy to note that Aeromodeller's mixture appeals to the majority - but we hear your comments and mean to act upon them.

One thing is clear. Major events, such as the Nationals and International Championships, demand space for detailed coverage. Reception to our F/F World Champs report in the October issue proves this. In this issue we devote major space to the C/L Eurochamps, held at the Three Sisters site at Wigan in July - a Eurochamps which produced a British Eurochamp in Bill Draper (Aerobatics) as well as strong individual (and thus Team) achievement elsewhere. This means that one or two regular columns have been squeezed out until next time, which is also when we'll feature Scale and C/L Nats coverage. Worth anticipating - C/L entries were much higher than last year and competition was closely-fought. Good to see C/L again an aeromodelling force in the UK, with new events such as

Vintage T/R and Combat, plus the modified British Goodyear to attract newcomers, or welcome back enthusiasts from the past.

Make a Date

Need to note those model flying dates? What you need is our 1990 Model Flyer's Diary; not only an accurate year calendar but a personal reference book with information specifically aimed at the model builder and flyer. Cost? Just £5.95 - see the advertisment elsewhere in this issue.

SMAE/BMFA AGM

The 1989 Annual General Meeting of the SMAE/BMFA (which do they want to be called?) takes place on Saturday, 25th November at the Crest Hotel, Coventry.

The now-regular static model exhibition will again take place (from 10am) and after an introduction by Chairman Kath Wat son, David Boddington (Editor of our sister publication RCM&E) will deliver a seminar entitled 'Whose Hobby is it Anyway?' - a personal (and no doubt, outspoken) view of aeromodelling today, and its future options Sounds a lively one, we'd say...

Details through your club of via the BMFA on 0533 518500. See you there!

The Dutch Spy - an appreciation

Sad news of the passing of Juste van Hattum, reported last month, brings this personal tribute from Gp. Capt. J. E. Pelly-Fry:

I first met the Dutch Spy - as his fellow students at de Havillands in pre-war days used to call him - at the Model Engineer Exhibition staged at the Royal Horticultural Hall in 1928. And that is a long time ago.

He walked up to me at the SMAE stand with the classic introduction, 'Mr Pelly-Fry, I presume?' and we both laughed when we realised that, in fact, we were both much younger than expected. He was twenty-one and I was seventeen; and each of us had been writting articles on aeromodelling for the esteemed ME (and other journals) at a ridiculously young age.

'Van', as most of us got to know him in England, unwittingly became the instrument of my entry into aviation because he used to take me in his car (at that time a rare commodity) to places like Stag Lane and Hatfield - there to absorb the aviation scene and meet people. It proved to be a quite invaluable starting point which I will always remember with grateful thanks and nostalgia.

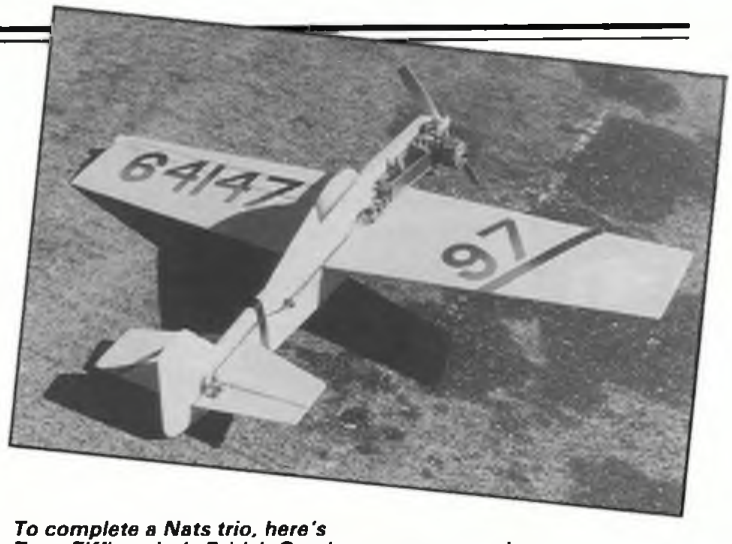
We travelled far and wide. To RAF Hendon for the first Wakefield Cup; to RAF Halton for another one; to the Fairey Aviation aerodrome, now part of Heathrow; to Brooklands and Heston, and, of course, to that mecca, Wimbledon Common.

In 1935 the Royal Air Force put me on the payroll and sent me to Egypt to join 216 Squadron whilst my charming friend had returned to Holland, there to work for the Koolhoven aircraft company on drawing office design work. We did, however, keep in touch until the clouds of war enveloped Europe when it became impossible to communicate with each other.

In post-war years our paths fortunately crossed again, and more than once he came to stay with me. Bu now he was the leading light in the Dutch aeromodelling movement under the umbrella of the Royal Netherlands Aero Club, and he contributed considerably in fostering the hobby amongst his compatriots, both young and old. Finally, he became a lecturer in aerodynamics at Delft University before he retired from active participation in the aviation scene. Tragically, a form of arthritis beset him; so much so that eventually he became bedridden in the final years of his long life. He died on 28th July.

Van was a very charming person, gifted with his drawings and sketches, multi-lingual, and possessing a rare sense of humour to suit the occasion. Very much an anglophile, he was at home here as anywhere else. He used to come out with such expressions as 'Dammit, I'm going to the dogs - but of course they're British dogs, not rotten stinking foreign dogs'! He used to delight in reminding us that if we did not behave, well he would see that Admiral Van Tromp's successor would once again sail up the Thames estuary and teach us another lesson. Splendid stuff!

Now, I have lost my longest-known friend of over sixty years standing; and the world of aviation in the overall sense has lost one of it's very talented sons. He will be remembered with affection and the greatest esteem by us all.



To complete a Nats trio, here's Tony Eifflaender's British Goodyear entry, complete with - of course - PAW 249. Not in the money this time - but next? See December issue for full Goodyear lowdown by top guys Dave Clarkson and Ed Needham.

WHAT'S ON

15th October
BMFA MIDLAND AREA FLY FOR FUN RALLY
RC, CL, FF
Venue: Barkston Heath. Informal flying for R/C, C/L, F/F. Trophies and prizes for best model (Hemswell Trophy), best flight, top Junior.
Comps for A/1, (PAMAG Trophy), CDH (PAMAG Trophy), SOP (GD Shield) Vintage (Butlins Cup). Contact: Brian Perks. Tel: 0858 63829.

15th October
MARLBOROUGH MFC FLYING SCALE CL EVENT
Venue: Marlborough College Field. Scale flying and barbeque. Contact: Chris Bradford for map. Tel: 0672 52309.

22nd October
MORLEY & DMAC ANNIVERSARY MEETING FF
Venue: Driffield Vintage Power Duration. Vintage Plus 10 Duration for 1950s power models. Other events too. Free entry. Prizes. BMFA members only. Contact: Stan Horne. Tel: 0532 610429.

22nd October
SOUTH BIRMINGHAM MFC VINTAGE CONTROL LINE RALLY
Venue: Rubery Hill Hospital, near Birmingham.
10am start. Generaly flying for all SAM 35 and BMFA members. Speed and Stunt comps to SAM 35 rules. Contact: Peter Martin. Telephone: 021-459 5520.

29th October
SAMS INDOOR FUN FLY
Venue: Watford Leisure Centre. Fly Indoor all day! Contact: George Wallbridge. Tel: 076 388 384.

13th November
THREE SISTERS C/L OLD TIME EVENT
Venue: Three Sisters, 10am start. Vintage T/R, A&B, Old Time Stunt, Midge speed. Contact: John Noble. Tel: 061 790 4056.

28th January
CRAWLEY INDOOR MEETING
Venue: Crawley Leisure Centre, Hasiett Avenue, Crawley. HLG, EZB, Peanut Scale CO_2 and Open Rubber Scale. Contact: John Dolding. Tel: 0293 510272.

30th DECEMBER - 7TH JANUARY
59TH MODEL ENGINEERING EXHIBITION

New Year's Day 1990 - All the details - DPR Model Flying day at the 1990 ME!

'HIT THE KIT' COMPETITIONS AT 11.00 am — 1.00 pm and 4.30pm
If you are under 13 years old, you can enter these events on the day! Score a direct hit on one of the D.P.R. Model may be used, (NO catapults to be used). Build a model and bring it with you - or make one on the day!

2.00 JUNIOR 'SUPERFIGHTERS
Another event for the under 13's using the Slot-Together rubber powered 'SUPERFIGHTER' models. Choose a SPITFIRE, HURRICANE or MUSTANG which can be assembled in a matter of minutes on the day!
SUPER PRIZES TO BE WON FOR THE BEST FLIGHTS

2.30pm JUNIOR & SENIOR 'NATIONAL CHUCKIE CHAMPIONSHIPS'
Anyone can enter this indoor duration event using D.P.PR. Models high performance 'CHUCKIE' hand launched gliders - kits are available from your local model/toy shop or direct from D.P.R. Models and may be built in less than an hour.
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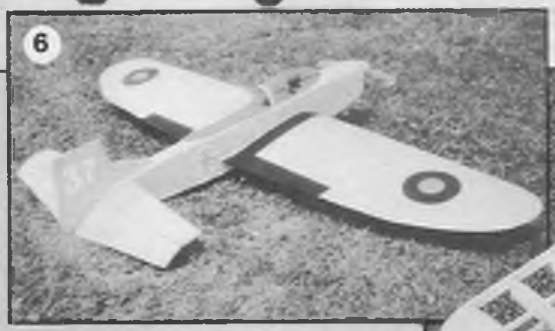
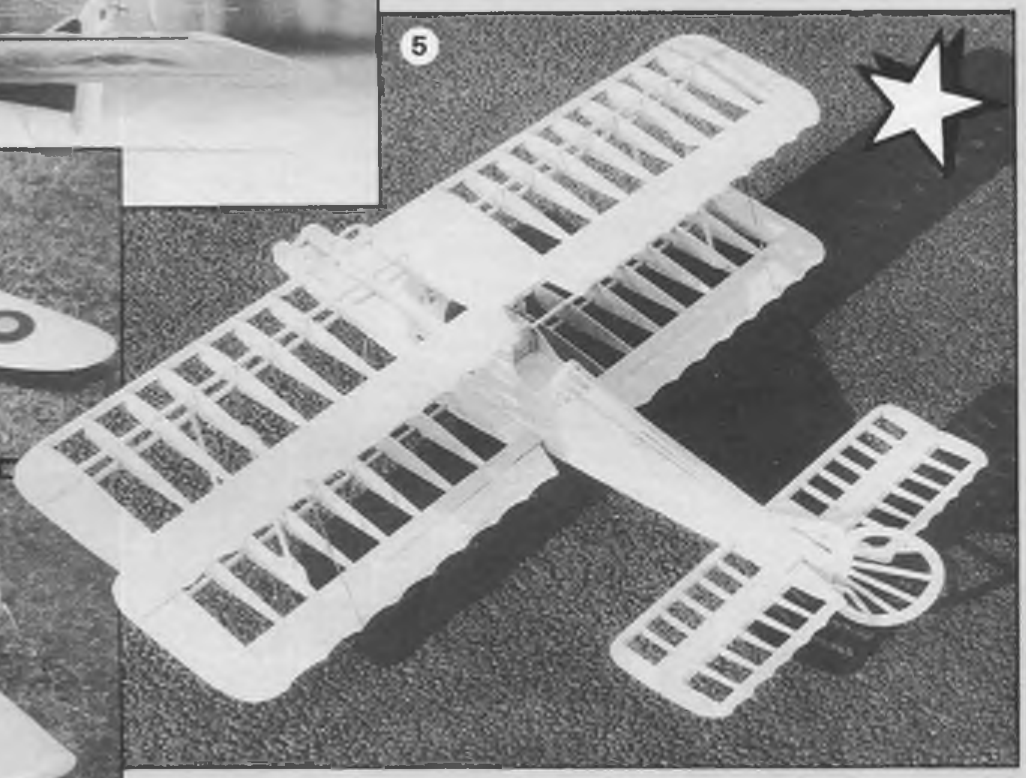
Contact DPR Models at The Vanguards, Shoeburyness, Essex SS3 9QY + SAE for entry form!

MODEL NEWS

Another kaleidoscope selection of aeromodelling pics. Our favourite earns a year's subscription – send in yours!





1: Richard Rawle and Richard Crapp swop R/C gear in their large R/C DH88 'Black Magic' at our Large Model Day. Hectic activity was rewarded, eventually, by a fine flight. 2: Falcons club stalwart John Carter waits for lift in the Nats Vintage fly off. Three-minute flight gave him sixth place. 3: From the archives - Carol Carr, then famous on radio and TV, admires Albert Briggs' C/L Avro Lincoln at the 1955 All-Britain Rally. 4 & 5: Our C/L correspondent Claus Maikis loves biplanes - this fun-scale WWI-style stunter for OS 35 power can happily manage 'round' manoeuvres. 6: Jack Stanley's unflapped 'bitsa' stunter for OS 35 FP was snapped by Bill Draper at this year's Wharfedale do at Ilkley. Model started life as a Thunderbird! 7: Same event, same photographer, same builder - semi-scale Messerschmitt converted from SIG Twister. Fast with OS 35! 8: Neat Gee Bee Model control-liner is the work of Henry Haffke from the States. Smart in red and white. 9: Elegant twin-rubber scale Ro-58 was built by Frantisek Kronfored from Lubomir Koutny's plan (who also took the photo). 10: David Beales concentrates as he gets away in the SAM 35 Vintage event at the Nationals.

Full power-a

MUCH has been written about Power model trim. I have flown such models competitively, here and there, for over ten years. I have observed from near (as the 'pilot') and from afar. The reason for inconsistent trim (in 99 per cent of cases) is pilot error. The other one per cent is when the model breaks, hits another model or gets blown off pattern by a strong gust. 'How can this be?' scream all the pilots. I'll explain.

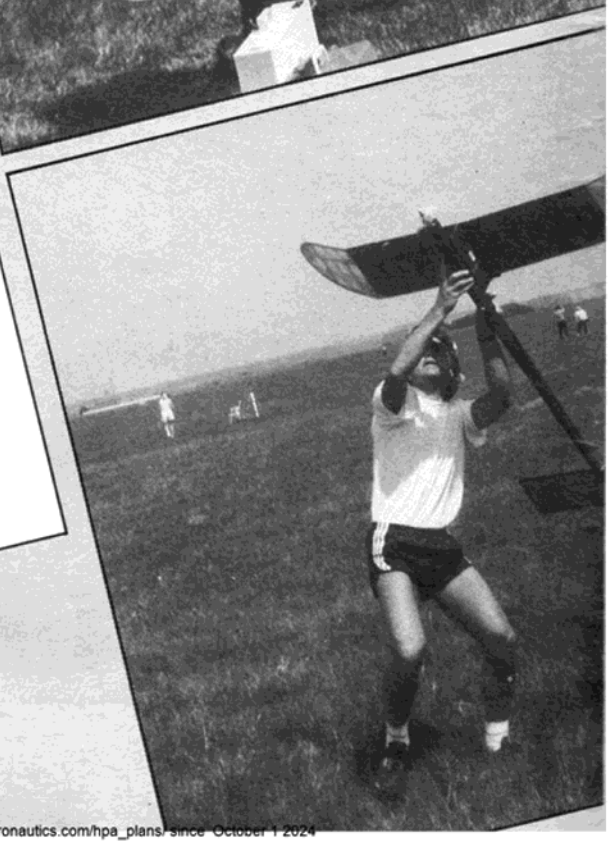
Good and Bad Old Days - Up to 1950

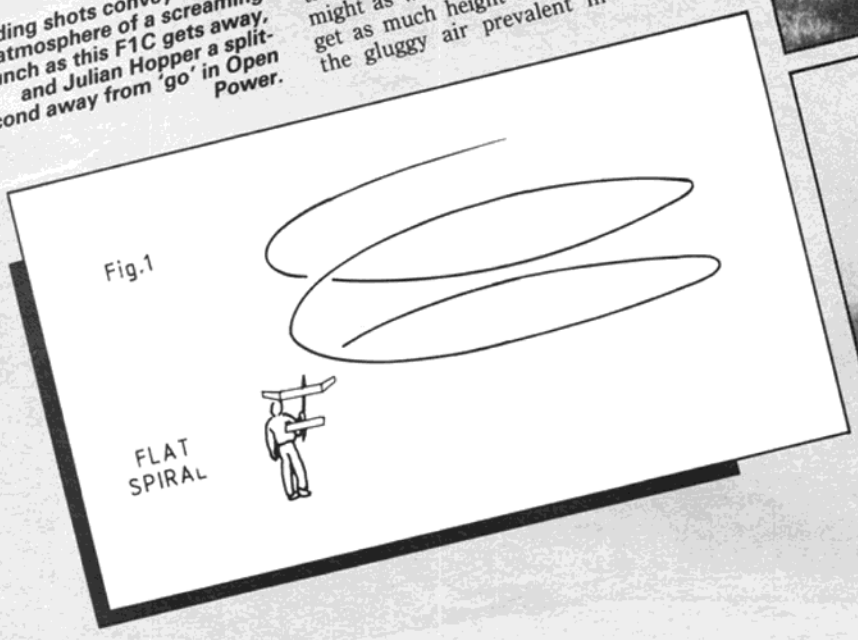
In this era models were, relatively, weakly-powered. There was inadequate thrust to lift the model vertically. If you tried it, they fell over and broke. Hence these models flew as 'fast gliders' on the power phase. The best trim evolved was to turn the model, usually right, using a fixed rudder trim tab. As the power increased, these models developed a bad habit of doing fast wing-overs. Launching as flat as possible was usually best; launching vertically or nearly so usually wrecked the model. See Fig 1.

Good Old Days - 1950-1960: Pre Auto Rudder (AR) and Variable Incidence Tail (VIT)

Now people like George Fuller, based in Roman towns like St. Albans, had noticed a new 2000-year-old rule the Romans had evolved. This was: 'The shortest distance between two points is a straight line'. They looked at their ever more powerful models and tried to straighten out the spiral. They worked out that in fifteen (later, ten) seconds the models wouldn't travel very far, so it might as well be as upwards as possible to get as much height as possible and out of the gluggy air prevalent in Britain (the

Heading shots convey some of the atmosphere of a screaming launch as this F1C gets away, and Julian Hopper a split-second away from 'go' in Open Power.





nd let go!

Concise free flight power trimming advice from down-under Jon Fletcher

reason, probably, why the Romans left).

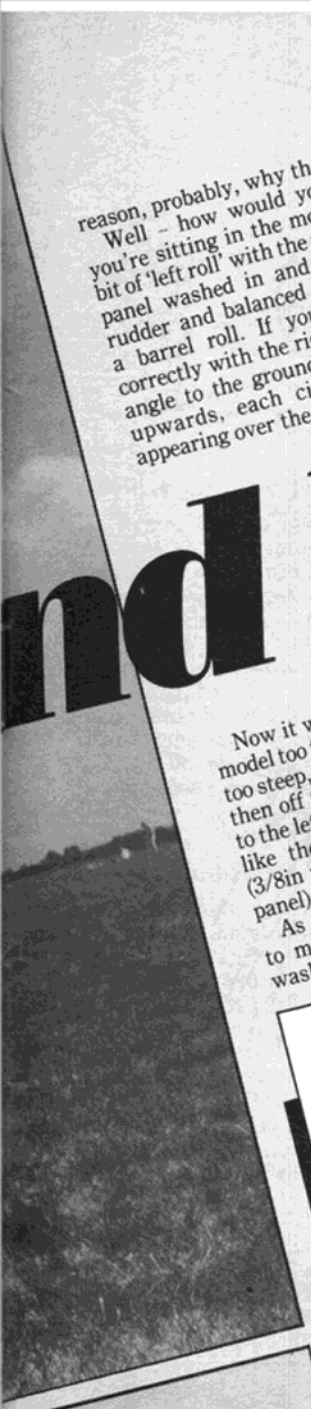
Well – how would you do this? Imagine you're sitting in the model. If you applied a bit of 'left roll' with the right hand inner wing panel washed in and with a bit of 'right' rudder and balanced it correctly, you'll get a barrel roll. If you launched the model correctly with the right amount of bank and angle to the ground, it would climb stably upwards, each circle of the barrel roll appearing over the pilot's head. See Fig 2.

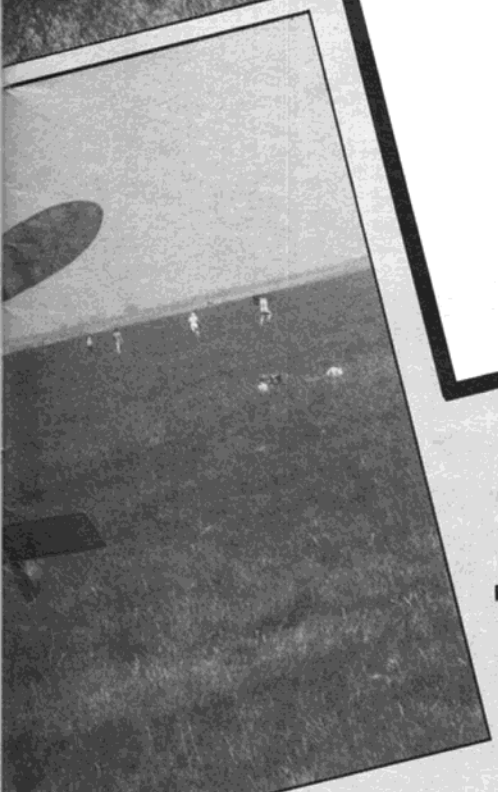
provided the answer. Why was this? Why was there only a noticeable affect on the glide? Well, in straightening out the climb from the force to pull the model upward wasn't coming so much from the wings and tail but the propeller. See Fig 3.

In fact in the climb phase lift from the wing and tail was becoming a decided nuisance preventing the barrel roll diameter from being reduced, so the CG was moved back and back.

Now it was found that if you launched the model too flat the model barrel rolled forward; too steep, it went backwards. Too much bank then off to the right; too little bank, then off to the left. People like George evolved designs like the Dixielander with lots of left roll (3/8in wash-in on the right-hand inner wing panel) and a right rudder trim tab.

As the rudder offset was now too small to make the model glide right against the washin, something else was needed. Tail tilt





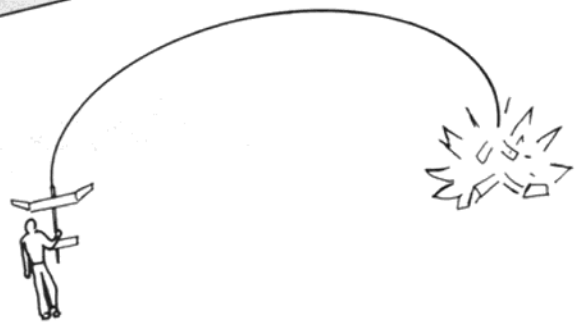


Fig.3

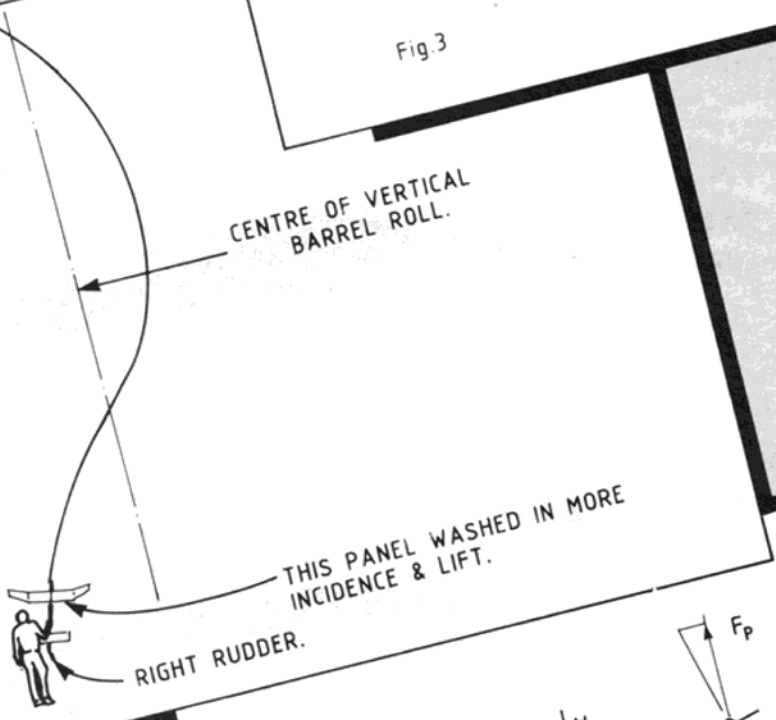


Fig.4.

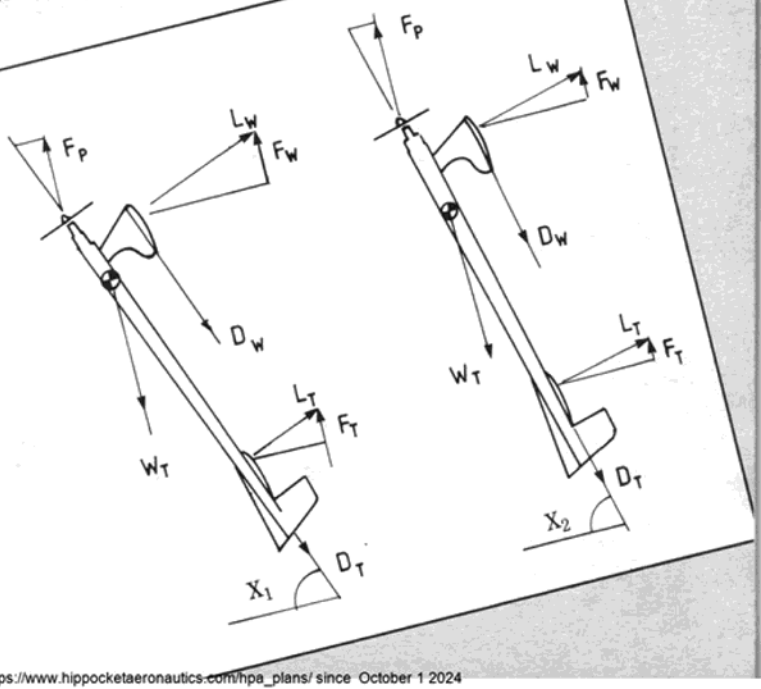
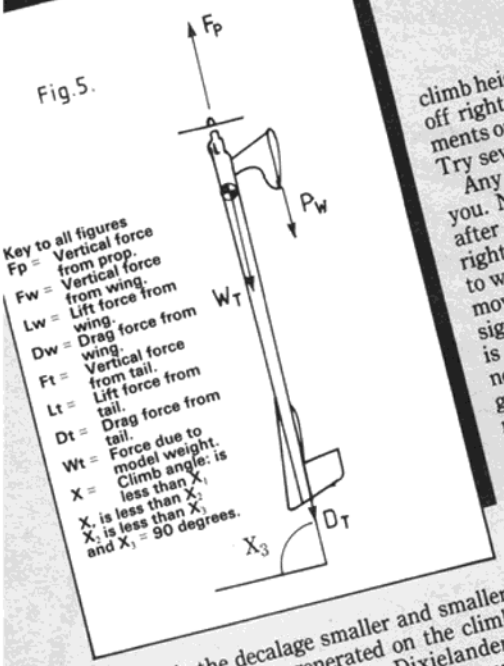


Fig 4 at right shows effect of rearward-movement CG position; lift and drag on climb becomes much smaller.

Full power -and let go!

Fig.5.



Key to all figures
Fp = Vertical force from prop.
Fw = Vertical force from wing.
Lw = Lift force from wing.
Dw = Drag force from wing.
Ft = Vertical force from tail.
Lt = Lift force from tail.
Dt = Drag force from tail.
Wt = Force due to model weight.
X = Climb angle: is less than X_1, X_2 is less than X_3 and X_1 = 90 degrees.

This made the decalage smaller and smaller so the lift and drag generated on the climb became very small indeed. Dixielanders started to bring home the gold! At the end of the Good Old Days engines had got so good that if you let go of the models vertically, then the thrust exceeded the model weight. Models didn't fall over any more and tore off toward the stratosphere, well for a second or so anyway. See Fig 4.

Beginning of the End: VIT and AR

Every now and then one of the Good Old Days' models would be launched poorly and pull out with a big stall. Even with a big tailplane, a 95 per cent CG leads to instability, especially if better-gliding aerofoils with more centre of pressure movement are used. Now what? Oh, perplexity! Well, why don't we push the CG back to 60-70 per cent and hold the tail down to achieve minimal decalage on the climb phase with an auto-rudder so we can find tune climb and glide phases independently of each other? Aha! Now with one of those new-fangled Cox TD 15s things should be really fast! Well, they were – so fast that many pilots couldn't observe what was happening, and suitably impressed by the depth of destruction upon hitting the ground gave up to fly glider or rubber, or even wireless models. If you kept going, like many did, the new performance could be truly staggering. The power model 'Roman Road' was here. Why was there such a knife-edge between bliss and utter despair? Launch angle had now become hyper-critical. I find ground slope and angled horizons are enough to cause me to mislaunch and crash models. Oddly enough, cloudy days are easier to launch into, as there is something to 'aim at', rather than a mere reference – there is less expanse. See Fig 5.

Well, What Do I Do Now With my VIT and AR Model?

If you continually fiddle about with the trim – don't. Deliberately set the model up with 1/8-1/4in right-hand inner wing wash-in and, at least initially, trim for a barrel roll climb. If you don't understand what the model is doing after you let go, ask someone downwind and away out to one side. Adjust your launch angle and bank to get a consistent climb; not forward, back, left or right. It will take several flying days consistently to get this right. When confident that you can straighten out the barrel roll for more climb height, pull the tailplane down and take off right rudder together. Use small adjustments only like quarter-turns on 8BA screws. Try several launches before adjusting again.

Any variation from launch is caused by you. Now if the model keeps barrelling left after launch, reduce the VIT further, or add right rudder. Reduce right rudder if it tries to wingover. Keep working the tail down and moving the rudder to the left until you see signs of the model bunting. The fastest trim is with both wing and tail at zero lift (not necessarily zero incidence). You'll know you get there as the model will now be axially rolling upward; that is, the barrel roll is 'stretched out'. You'll be able to look up the model's tail as it axially rolls left for a single spot in the sky, dead ahead of it. You'll also notice that as you approach the zero lift trim there will be a quantum leap in climb speed and height. I estimate going back to even a slight barrel roll trim takes 20 per cent from the climb height. If you consider the axial roll rate to be too fast you can now reduce the wing washin, you've now altered the zero lift state and will need to adjust both VIT and AR together to get back to the axial roll trim. The model in climb phase is now like a rifle bullet; it goes exactly where you point it. If you launch just fractionally off the vertical, the force due to the model weight will have a devastating effect and pull the model all over the place which it tries to combat by 'looking' for a trim which generates a lift component to equal the model weight. Somewhat difficult for it to do because you trimmed it out for the lift to be nothing, right? Just collect the big bits and rebuild/remake the model and concentrate on launches again. If you get it right and avoid poor air you'll win; that is all there is to it!

Different classes

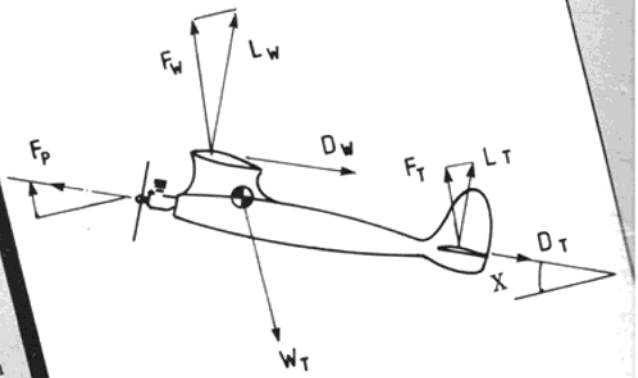
The above advice applies to 1/2A model and the Open Classes. The trim described for the 'Good Old Days, at the finish' is particularly applicable for today's Slow Open models. Now the F1C models. I've had a lot of experience trimming my F1C model. Not much progress, but lots of experience.

F1Cs are different, I think for the following reason. Most 1/2As and Open model engines tend not to speed up much in the air after the first couple of seconds or so. The breathing on the Cox TD .049 is relatively conservative by today's standards. This means the climb speed is relatively constant, and the trim that is good at four seconds also applies at seven or ten seconds. Not so for Rossi .15 powered F1C models. These motors generate more thrust than model weight but not as much as the TD .049 models do by comparison. Also, the Rossi's speed up 2,000 to 3,000 rpm in the air. We have measured this with a Kasty audio tachometer. As the models speed up, the trim alters; usually not in a left/right rudder adjustment sense, but in a loop/bent VIT adjustment sense. This results in the dreaded S-shaped climb with the model trying to loop initially, flying straight for the middle part of the climb then tending to bunt at the end.

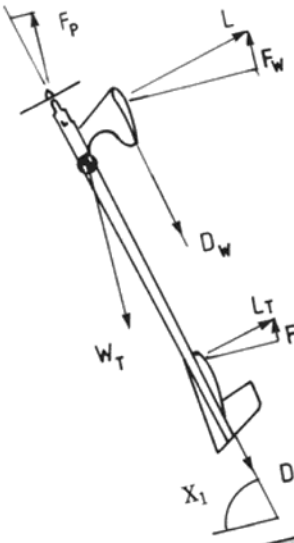
I don't have the definite answer for this problem yet. I believe many are using three degrees of downthrust and increased decalage on the climb to combat the problem, but in theory this brings more drag. Currently I have used a trim where the tail is too high for the start of the climb but is right for the end. A twelve second overrun (!) with the model still going vertically up confirmed the theory. (Forget to wind the Seelig timer...). See Fig 5.

I don't know the cause of the S-shaped climb but assume it to be proportionally more lift generated by the tail than the wing as the climb speed increases. This problem may be covercome in future by the use of different tail sections.

GOOD/BAD OLD DAYS.



GOOD OLD DAYS.



Above: The extremes – still applicable for Vintage and Slow Open Power trimming, as described in text.

BALSA CUTTINGS

Cyano de Bergerac noses round more matters of aviation

Snow job; the Blizzard of Oz

Brian Winch, merry monthly-model-magazine motor-market-monitoring monarch, and Tango Instructor by Appointment to the Inverted Institute of Antipodean Aeromodellers (you got that?) described an engine as having come from Switzerland. Actually, it came from Sweden. With immortal Australian rind he explained that he had glanced at his watch; and 'Made in Switzerland' must have stuck in his mind. If the author of this column ever tells you Super Tigres come from Woolworth's you'll know he's been looking at his watch too.

Diesel conversion

Once, your columnist worked in the polished mahogany and plate-glass halls of a many-branched organisation which appointed him to perform duties far and wide at all hours. By public transport. Apart from his valuable services and the tasteful fixtures mentioned above, that firm's dignity was further enhanced by ownership of a black Morris Series E saloon, which, it was clearly understood, would be re-allocated as soon as its customary custodian retired, thus affording a certain modeller a few hours to do a bit of building. But the GM, possibly under the impression that the (even in those days) multi-million-pound outfit whose fortunes he guided needed another £350 in liquid assets, sold it. For the next three years, young Cyano turned up at those prestigious premises in a different, brand-new car every Friday morning. They went mad. They grew grey and haggard from sleepless nights spent tearing the accounts to pieces — and eventually the Auditors, nagged to breaking point, resigned in a paddy. When an ugly discrepancy was found in the Post Junior's stamp book, high-level debate took place aimed at equating the price of an ex-factory Consul Convertible with the short-fall of six-and-elevenpence. The GM fell asleep at the wheel, pranging his aerodynamic, aluminium Bristol very profoundly. Meanwhile, the focus of these attentions went on running-in on the firm's time the phased replacements for his friend's self-drive hire fleet, sometimes ringing the changes with a Thames van. Perhaps rolling up to a somewhat formal appointment in a Dunn's bowler and pristine five-ton truck was an error of judgement, which led to an animated interview with the ex-Bristol enthusiast, but the outcome was — a quite civilised *company* car. (Out of which, by the bye, a falling tower crane smashed seven shades of Hades the next week, but then you can't help bad luck, as they say.)

This totally unjustified reminiscence was only prompted by the fact that it is a descendant of that much-compressed car which is owned by one of our club who got ker-azee about electro-flight. He spent an entire long day flying two leccy models in turn, one being revitalised via the cigar-thing in the dash whilst the other whined overhead. He boasted intemperately of how many hours aloft, etc. When he wanted to depart, however, the car didn't, exhibiting glum orange glows where the headlamps had been wont to beam, and giving just one sad little croak on the normally strident horn. As an electrical gen-man, John knew this meant two things: *(a)* his battery was flat as the proverbial; and *(b)* everyone else having gone, he would have to walk. A very fair stretch indeed. Surprisingly, utter blackness and fine rain soon descended on the unbelievably telephone-box-less lanes; he was nearly run over and got home to an unsympathetic reception from She Who Had Been Promised The Car Tomorrow To Take Mother. Never again would he clap his battery with evil, life-sucking little electric planes. He sold the lot for a song (well, just one verse) next Thursday club-night. Then on the Saturday he collected his car from the main dealers, who had unhesitatingly replaced under warranty the faulty switch in the bottom-warmer circuit under the driver's seat.

Sale Weekend; Old Wardrobe, Beds.

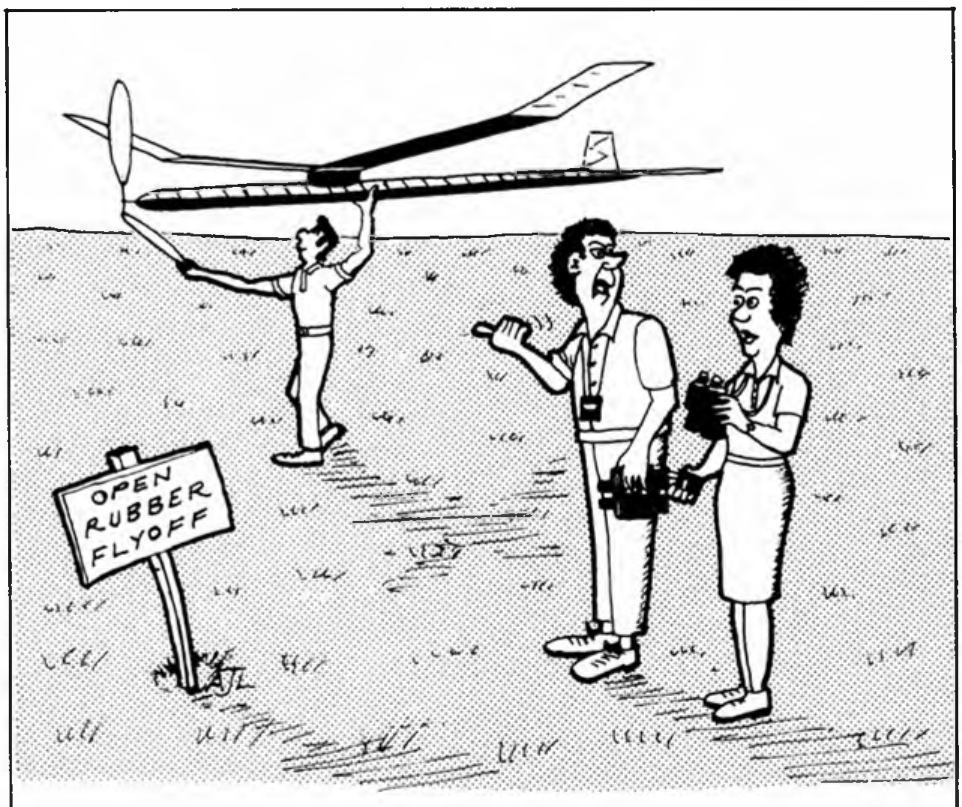
September Vintage Corner reported that an unprecedented two-mile queue of cars waiting to get into the aerodrome on Scale Saturday was partly caused by people who thought it was a furniture sale...

Oh, yes, they do Zeppelin

The Concise Oxford Dictionary (which says 'concise' means brief *but comprehensive*) just reckons a Spitfire is 'a person of fiery temper.' And that when you've been told it's for Lancashire, you know all you need to know about Lancs. This is the most widely-accepted authority on current English. The dust-jacket says so. Satisfyingly, Jane's *All the World's* doesn't mention the COD at all.

Fun for future fetchermites

Little Boy Blue, your glider has gorn,
Out of the meadow and into the corn.
Where is the soarer that sailed in the sky?
Packed in a bale of straw in July.



'It's all right – he's promised to limit the D/T to half an hour...

1989 EUROPEAN CONTROL·LINE MODEL FLYING CHAMPIONSHIPS

MIKE WHILLANCE SECO

BILL DRAPER TAKES AEROBATIC

THE national teams of the European nations gather at the end of July on every second year to determine a new European champion in each of the control line FAI classes, F2A, B, C and D. These championships are held on 'odd' years and are interleaved with the World Championships. Whilst naturally being of no less importance to the competitors the Eurochamps do tend to have a slightly more relaxed atmosphere, if only because the smaller entry permits less stringent flying schedules and more time for furthering international friendships.

And so it was to Wigan in the North of England that the competitors gathered for the second time in four years, with, no doubt, a little trepidation as to what the weather gods of the north had in store for them on this visit. The Wigan Eurochamps four years ago had been overcast, cool and windy; but England was on course to set new records with its hot, dry summer of '89 - and surely the odds against the Eurochamps weather turning bad would be very long. Little did we know! There must be something about these Champs because the same thing happened in Sweden in '87. All future organisers, please note - sacrificial offerings to the local weather god and the Great God Tarmac (He who always moves up ground level by five feet at just the wrong moment) should be made well before the start of the competition!

The Three Sisters Site in Wigan is a purpose built 'noisy sports' recreation area which is supported with the help of the Greater Manchester local government department. The site is bounded by a narrow and twisting go-kart race track which is also used to race motorcycles. The three original, tarmac flying circles, one of which has a permanent wire mesh cage and jury tower, was supplemented by an extra tarmac practice circle, which was laid with the help of the local government to support the champs.

But on to the flying, beginning with speed...

F2A Speed
Report by Ian Mander and Dave Brewin

The 1989 Eurochamps was expected to bring about a clash of the Speed giants. The Russians, Hungarians and the British (the latter under the capable leadership of Peter Halman) had all been pushing 300kph. We were not disappointed...

The first day of the event was reserved for the opening ceremony, official practice flying and processing of the competitors' models' characteristics. The processing is to check that the model meets the required technical characteristics of the FAI rule book before it is flown. The processing area had a busy and charged atmosphere with its combination of competitors, officials and other interested parties hoping to glean a few secrets. Speed competitors had their engines engraved for identification purposes, models weighed and flying surface areas calculated so that the maximum wing loading could be determined. A fixed fuel weight

UK TEAM TOP IN F2B • SECOND IN F2A AND F2D THIRD IN F2C
USSR TOP IN F2A AND F2D • ITALY TAKE F2C

Heading: Purpose-built C/L sites are rare; Bill Newton's aerial shot captures Three Sisters spaciousness. Right: Dick McGladdery's speedster lifts off the dolly. Above that: British and Soviet team members pose with John Lee and Audrey Bennett, Madam Mayor of Wigan.

ND IN COMBAT • PETE HALMAN THIRD IN SPEED

EUROCHAMP TITLE

John Lee (MP for Pendle, Lancs) speaks at the opening ceremony. Photo below: Stunt Eurochamp Bill Draper's winning Superhawk!

of 25 grams (one ounce) was added to the dry model weight to determine the load required for the line pull test. Control line spacing at the handle and wing tip was also checked. Most models had surface areas of just under six square decimetres with wing lengths of about 900mm and weights of about 560 grams, but there were a few exceptions. Sweden's Stjarnesund was the area king with almost 7.3dm² to support his nicely made Picco powered model. All the Hungarian team models were approaching 7dm² with their familiar, narrow-chord, 1200mm long wings. Szegedi's 'A' model sported the longest wing with a length of 1430mm and a tiny tip chord of 12.3mm. This model was also heavy and not the kind that the weather conditions were going to treat favourably, as later events were to show. At the other end of the scale were, again, the Russians with their lightweight, unitary-construction models of 900mm span. These feature rear fuselages permanently attached to the engine mounting pan as an aid to producing a rigid light model which tips the scales at (in Kalmykov's case) 460gm dry! Interestingly, the models were not constructed to the minimum area allowed by the rules of 5dm² but instead had a sensible margin giving 5.2m² to avoid any possible problems during processing. All of the Russian models were beautifully finished in white paint, obviously sparingly applied, since this is the heaviest colour, containing more pigment than any other. An explanation for this, given by the Russians at a previous champs was that they produced faster times from the timekeepers. It was generally reckoned by the hardened speed flyers, to be purely 'hyping' the opposition. However, as lead timekeeper for the event, Dave Brewin can verify that even though these models are amongst the fastest they are also some of the easiest to see, with virtually no discrepancy between the time keepers' stop-watches. Whilst the 'quick' watch is probably no different than it would have been for a 'coloured' model the average of the three watches is lower; hence better recorded speed. The Russian lads were kind enough to tell us in Kiev at the World Champs '88m. We should have listened to them!

A model particularly worthy of note was that of Britain's Dick McGladdery. It combined a fixed rear fuselage, which is manufactured from rolled mirralyte (1/64in) plywood, with a narrow-chord 1200mm wing, brought together in a model with a flying weight of less than 500 grams. This model was built over many long winter nights with meticulous attention being paid to mass control

through design and manufacture rather than the use of exotic materials.

Almost without exception competitors were using the outboard-engine, assymetric-sidewinder type of model with suction fuel system.

A good selection of engines were seen. Gone are the days when F2A was a Rossi benefit.

Kalmykov used his own Chicklon engine, as did Pitskalev. This engine features widely-spaced mounting lugs. Kalmykov quotes an output of 1.8bhp which could be conservative, as Peter Halman has seen similar figures produced by good Irvines.

Kalmykov is going into production with this engine; details can be obtained from the writer, via Aeromodeller, for those interested.

Chelkalin used his own hand-made engine which featured a 13mm diameter shaft, with the balls of the rear bearing running directly on the shaft. The shaft was balanced with tungsten weights opposite the crank pin and lightening holes behind the front race.

All of the UK team used the Irvine .15 engine and pipe but despite strong sales this year the engine is still a little new to have been developed into competition trim by other flyers.

The Hungarians were all on Moki power with Moki development engineer Bimbi acting as team supporter. This ever-friendly gent delighted many by producing a string of all kinds of Mokis for examination when the weather was too bad to fly (there was a gorgeous 8cc stunt motor and an enormous 25cc unit for large scale).

All the Italians were on OPS power, Colombini having transferred from last year's Rossi camp. Rossis and Mokis were split fairly evenly between the remaining competitors.

One line of discussion during the run up to the competition had involved much forecasting among European competitors as to how much the USSR team would exceed their excellent speeds achieved at the Kiev World Champs in '88. 310kph was the popularly-agreed target. In fact, a small minority of competitors, and just as unfortunately their national aero-clubs, were so sure of the end result that they did not support the event. However, as can be seen there was a good entry and the end results were not exactly as forecast. A second line of thought was that there were a number of competitors who were capable of exceeding 300kph and that under such pressure an upset could be possible. Those capable of attaining such speeds were Hungary's Josef Mult and Sandor Szegedi, the latter achieving five blinding laps in Kiev at what must have been well over 310kph. Peter Halman of Britain, who is the driving force behind the design, development and manufacture of the Irvine .15, had been knocking on the door of 300kph during the run-up to the champs. Dick McGladdery was the dark horse of the British team following his first place at the international Breitenbach competition in Switzerland earlier in the year; he had achieved several very strong flights at well over 290kph prior to the Champs.

The first revelation was at official practice. The Russian team appeared at their appointed slot, but instead of flying, proceeded to dismantle an engine. This piece of psychology effectively destroyed the rest of practice as most contestants were clamouring to examine the components and the superb workmanship revealed.

When Kalmykov (USSR) appeared for pre-flight processing it was discovered that his lines were short by about 100mm. At this point the Russian team proceeded to load the lines in order to stretch them by the required amount, but this was disallowed by Contest Director Jo Halman because the FAI Sporting Code describes lines as 'inextensible'. Then – lo and behold! Kalmykov produced, from his toolbox, a link to fit the lines – of exactly the right length.

And so to the competition itself, since all of the discussion and hypothesis pales into insignificance against the stark reality of the stopwatch. The weather throughout the event could at best be described as flyable; that means that usually you wouldn't fly but with the wind below the allowable maximum of the rule book you have to. Over the three days of competition flying the blustery wind remained about the same as did the temperature, fluctuating around 18-19 degrees with air pressure of 1015mb. The humidity ran around 40 per cent (except when it rained, of course).

Chelkalin is currently in the middle of developing his new engine of which he has high hopes; and justifiably so. Even though his engine would not stay on song for the full timed kilometre (ten laps) the average speed was commendably high. Had he practised as hard as the Italians (who arrived several days before the event) he would quite likely have taken first place. He did suffer some untimely bad luck whilst practising after the second round when a rogue stone chipping on the tarmac snagged and kinked his wires on landing ending the practice session.

By now Hungarian Sandor Szegedi must be wondering what he has to do to dispel the curse of Three Sisters that has apparently been set upon him. His first round flight in '85, which would have been good enough to win the event that year, was disallowed as being too high (these models fly faster when they're lower anyway). This year in the first round the Hungarian mechanical starter failed breaking what was probably his best propeller. During his re-flight the windy weather made his long winged heavy model difficult to fly and his handle left the pylon whilst he tried to maintain control thereby disallowing the flight. The speed would not have affected his individual placing on this occasion but would have clinched silver team prize for the Hungarians.

The same conditions caused a number of other competitors to suffer the same fate or that of not correctly placing their handles in the pylon yoke. In turn this put a heavy burden of adjudication upon the officials. A number of comments were passed by some competitors that the pylon top just below the yoke did not conform exactly to the FAI rule book and was aggravating the problem, but the FAI jury later ruled the equipment to be satisfactory.

The Hungarians continue to favour their wide chord, thick section rock maple single blade propellers over the thin carbon fibre blades used by most other competitors.

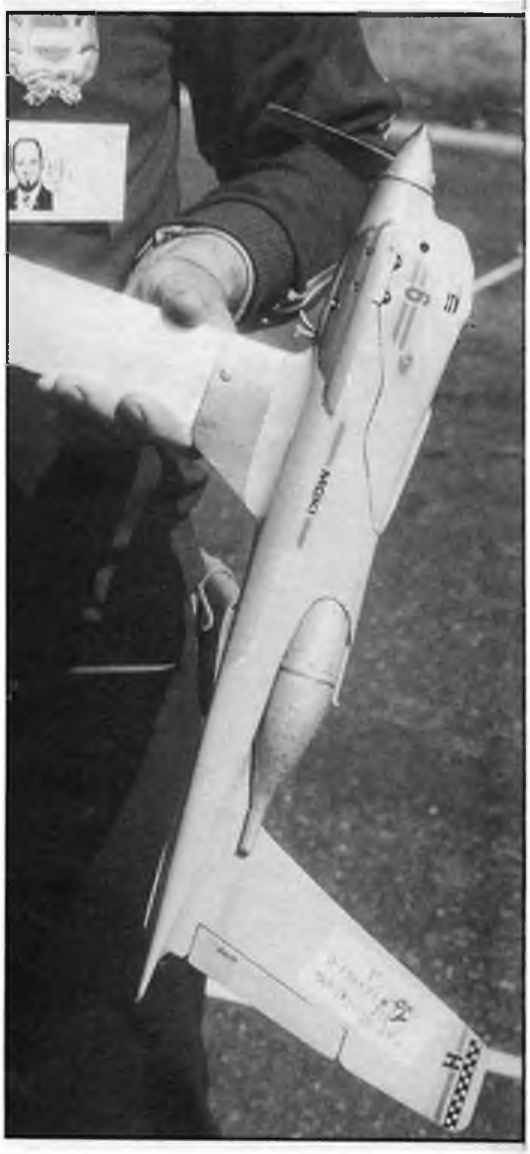
Day Two

The weather was marginally worse. Indeed, Kalmykov and Piskalev did not appear at their allotted times (they were rumoured to have gone shopping for wallpaper (in Wigan!). Only Chelkalin remained to uphold the Soviet banner. He tried hard to make it a Russian 1-2-3 but after a poor setting was forced to cut his engine. We were then treated to another interesting trick. The usual dolly retrieval antics were not for the Russians. They had another ready straight away, both being collected at the end of the flight. Chelkalin reflew; his speed was potentially highest of all but an enormous hiccup at half-distance spoiled the run for an official time of 281.16kph.

As world 2.5cc record holder, Paul Eisner is one person who knows that he can get round the pylon at speeds approaching 320kph but without the aid of line ties his FAI model is somewhat slower. His second round speed was close to a personal best and good for the conditions. Paul was the first flyer in the third round, when he took off there was just a light hint of rain but within 10 seconds there was a downpour and his model visibly slowed as the water density increased. Swede Stjarnesund suffered a similar fate at which point the flying was suspended for an hour and the first two flyers allowed reflights.

Dick McGladdery had the reverse situation to Eisner and was plagued throughout the event with an engine that was suddenly being un-co-operative together with a model that was showing that its best flying qualities were not to be had in windy weather. Much hard practice eventually yielded 279.5 in the second round, his third round (and slower) flight being disallowed because of handle-to-pylon problems. McGladdery, like many competitors, not reaching his full potential here.

Peter Halman slowed to 289.16, and Paul Eisner radically improved to score 282.94kph. Dick McGladdery broke his duck for 279.43. At the end of the round the British team was in second place, less than 1kph ahead of the Hungarian team of Mult, Segedi and Nagy who had managed respectable scores of 248.58, 290.71 and 277.71kph. Despite constant practice the Italian team scored only once



in this round; Emilio Zanin clocking 262.26kph with his OPS .15 model.

Poland fielded a full team, being headed by the ever polite and charming Andrezej Rachwal who was joined by his young son Tomasz. Andrezej produced a nicely built and finished model which was powered by his re-worked Rossi Mk3 fitted to his own cast aluminium alloy pan and his own spun aluminium Fat Boy large volume tuned pipe. Rachwal's Rossi had a steel sleeve in the rear bearing housing for better alignment and to permit the use of a standard size rear bearing. Needle rollers were used for the big end. Andrezej reversed the Breitenbach finishing order and just managed to pip McGladdery at this event, a little bit of friendly rivalry developing here.

Young Tomasz, as would be expected, used a set - up similar to father's.

He flew sensibly considering the wind and his slight stature choosing to enter the pylon early and let the model wind up. There is much more speed to come from Tomasz's equipment when he is a little stronger and can develop his flying technique. Third Polish team member Chojnacki had managed 286kph at the '86 World Champs but was unable to attain this earlier form. The Rachwals flew wide chord, thick section single blade carbon fibre replicas of the maple wood props used by them in previous years. Chojnacki stayed with wood.

All of the Italian team flew with OPS power this year and as stated earlier they practised harder and longer than anyone else but unfortunately their efforts were not to be fully rewarded. Fuel richening during flight seemed to be the problem with the engines almost flooding-off.

Frenchman Jean Magne suffered a similar fate to the Italians, uncharacteristically being unable to record a timed run with his Moki powered model (using a large volume Moki pipe). After a first round crash that literally broke everything in two French team mate Desloges fared much better to record 273.42 in the third round. Good to see this gentleman at the Champs as one of the organisers commented that as a youngster he remembers reading about Monsieur Desloges competing in speed at the 1953 Belgian International; that's 36 years of Speed flying!

The Bulgarians suffered from the early good laps and late bad laps syndrome and will surely go much faster in the future when the remedy to this problem is found.

The Swedes, Stjarnesund and Fallgren, used their own machined steel pipes (as did the Italians). Alone with Kjellberg they used a variety of engines (Rossi, Moki and Picco) and had strong runs with plenty of revs but unfortunately not the speed to match. Like the Bulgarians they are sure to progress quickly in the near future.

Luis Parramon and Gunter Rosenhan were the only entrants to use upright engined models fitted with centrifugal fuel switches. Rosenhan has recently been testing his Moki fitted with an Irvine pipe and reported impressive RPM gains in excess of 100. Unfortunately a lack of time to develop the set up meant that the potential of speeds approaching 280kph could not be realised. Rosenhan admitted to being in a Catch 22 situation with his long time CFS set up since, due to lack of competitions and flying partners in Germany, he is unable to undertake the extensive test flying required to develop a new suction fuel system.

Opposite page, top: Sandor Szegdi (Hungary) was fifth in F2A. Below that: Close-up of his Moki-powered model. Note swept tail. Right: British speed enthusiasts at practice sort-out. Paul Eiser (at left) and Peter Halman change props on Dick McGladdery's model.

At speed processing, Dick Hart gives eventual winner Kalmykov his prop back...

Day Three

Conditions were even worse, with bursts of torrential rain in which Rosenhan (W Germany) and Paul Eisner were caught. Both were allowed to try again.

Once again the leading Russians failed to appear, leaving only Chelkalin to try and boost his score, but this was not to be. After a solid pre-round practice flight of 300.25kph he could improve his timed run to only 290.97. This left the British and Hungarians teams to their nail-biting battle for second team place. A storming 295.73 by Peter Halman consolidated his own third place, backed by Paul Eisner at 280.74kph, but poor Dick McGladdery, despite a supreme effort, failed to sort out his recalcitrant engine and just failed to record a time within the allotted three minutes. A poor run by Nagy ensured that the British team maintained their slender lead over the Hungarians.

And so the competition came to a close with the top two places being settled much as forecast albeit at lower speeds than expected. Peter Halman's superlative efforts on the Irvine .15, which he uses in essentially standard form, were rewarded with a third place showing that this production engine can easily live in the company of the hand-built Soviet specials.

F2B Aerobatics Report by Bill Draper

Weather during the practice days was fine and hot but with a fresh and turbulent wind blowing over the surrounding bank, causing rough and lumpy air. This affected the Central and Eastern Europeans more than the western flyers who fly more often under these conditions. Practice took an early toll when Swedish flyer Ove Anderson's model cut in the climb to the wing-over and his new model keeled over to crash three-quarters of the way across the circle. Ove then had to use his old faithful ST46 model for the remainder of the contest. Some flyers even thought twice about using their official practice time.

Prior to the start, Team Managers were told to warn their teams about completing the required minimum number of laps between manoeuvres, and, in particular, on the correct completion of square outside loops in accordance with the rule book; that is, to dive from the last corner to achieve level flight in a quarter of a lap. Manoeuvres not so terminated would be deemed incomplete.

Two preliminary rounds would be flown on the first two days to determine the top fifteen. The positions below 15th place would be based on the flyer's best score. For the top 15, the preliminary round scores were discarded and they went into

a three-round flyoff on day three, with their best two scores to count.

The final...

The final round was opened by Luc Dessaucy of Belgium with a ST60 powered 1750qm lightweight model which can be almost completely dismantled. Wind was rough and turbulent, as in practice. Russian flyer Strakhov was the first to suffer penalty for the incomplete outside square, and after that all flyers were careful to complete correctly, although UK flyers do this normally. Beringer lost landing points with an overrun, and Rozenberg of Israel suffered the fate. Furlan from Italy used an ST46 in a very attractive ship which sounded very nice but was forced out of high-level manoeuvres by a rough patch. Ex World Champion Anatoly Kolesnikov used last year's plane but with a new home-built 10cc motor to set the lead in the round flying unhurriedly, with Henk De Jong in second place using a ST60 powered Derringer and Britain's Tony Eifflaender at third. Flying at the end of the day, Hungary's Juhasz was unfortunate to crash his quite beautiful P-51 Mustang (ST60) but he had a similar back-up model for Round 2. The wind was somewhat rougher for the beginning of this, and after the quite exciting warm-up flight by Nev Dickinson there was much discussion and studying of wind meters by the FAI jury before it was decided to continue.

Russian flyer Salonek, flying a big lightweight with home-built 10cc motor, made the opening flight, but failed to give his starting signal to start the clock, despite gesticulations from the timekeeper, and so the flight was scored zero. However, he had secured a flyoff position in his first round. Several early flyers aborted much of the schedule including Ballesio of Italy, flying his swept-forward-wing model, and Feger of West Germany. Wadovich of Hungary just touched the ground on an outside loop, damaging the prop but the motor ran on unbalanced. After recovering normal attitude the motor was stopped by his team mates throwing a rag, but some stress cracking had developed. Just prior to Barry Robinson's flight a very heavy storm lashed down for an hour, holding up flying all around; but when the rain stopped the wind had dropped too and Barry took full advantage to pile up a secure score for the flyoff. During this period Furlan of Italy pushed up his score and Peter Van De Mortel of Holland with a good looking ST 60 ship pulled up to make the flyoff. The weather returned to normal but even so, scores tended to be a little higher than in Round 1. George Liber of Belgium had to call an attempt when his lines broke some strands on pull test (all aircraft required the full 20kg pull). Bill Draper secured his flyoff position using his Enya SS 40 powered Superhawk, and a big jump from young Italian De Marchi with a very crisp ST45 powered job pushed him into the top fifteen. Scores rose towards the end of the round with improving weather and Gilbert Beringer raised a high score with his lightweight model (Webra 60 four-stroke) but soon overtaken by Tony Eifflaender's PAW 35 Freebird. Luciano Compostella was not to be outdone and his Webra 60 four-stroke craft took the lead briefly until Kolesnikov set the highest score of the contest to top the round.

And the flyoff!

The flyoff comprised four full teams, UK, USSR, Holland and France, plus the defending champion and one other each from Sweden and Italy. With fifteen flyers and three rounds, an 8am start was made. After Nev's warm-up, Peter Van De Mortel opened the fly off for Holland. Weather was dull and the wind somewhat turbulent but a little lighter than before so early in the morning. Fellow Dutchman Henk De Jong followed and piled up a high 2892 with a clean flight, but Luciano Compostella had to settle for nine points less. After Ove Anderson's big ST46 model with tricycle undercarriage had flown competently, Tony Eifflaender flew first for UK with his typical, fast schedule to move into the lead by one point over Henk. Barry followed with his big Northwind with ST60 only just behind Luciano, and the contest looked very close and open...

Gilbert Beringer again lost valuable landing points - not advisable at this level. The wind was starting to roughen now and as the round progressed Kolesnikov, flying bigger manoeuvres than usual, was just three points behind Barry. Almost at the end of the round, Strakhov found the air rough and lost points, and Bill Draper took off in blustery wind and rain, which eased as the flight progressed; so Bill finally topped the first round for the UK at 2898 points.

During the break Eric Janssen tried a practice flight but the heavens opened and he had to fly out the tank in heavy rain. After the rain had eased off the second round started a little late, still in similar air. Almost all the top group of flyers dropped their score a little but Bill Draper matched his first round score, and a full scorecard helped Gilbert Beringer up the scale. Tony caught a windy patch, as did Eric Janssen of Holland, whose elegant 46 model powered by an ST46 handled the well. Kalesnikov found a patch of usable air and pushed up what proved to be the highest score in the round. Not so lucky was Barry Robinson who finished a hairy flight with a long overrun. Strakhov also suffered, then had the plane blown over on landing to lose landing points. Henk De Jong should have followed but called an attempt on a flooded motor and Bill Draper followed in a heavy blow with a scheduled which was fast at times and spoiled by a bouncy landing in the wind. After Tony's flight in better air than his second round flight, Henk caught his hand in his prop, breaking the blade and losing his second attempt to finish the contest.

In the final analysis, Bill Draper's top two scoring rounds earned him the Gold Medal and title of European Champion, with defending champion Luciano Compostella in second place and Anatoly Kolesnikov third. The other UK flyers, Tony Eifflaender and Barry Robinson were close in fourth and fifth places to secure the Team Gold for a second time. Surely a healthy sign for UK aerobatics!

F2C Team Race Report by Dave Clarkson

Once more Three Sisters hosted an excellent F2C Euro champs. This was no surprise for, especially with the addition prior to the contest of an extra, fully-tarmaced circle, the Three Sisters site is the best permanent purpose built control-line site in Western Europe. No grant aid for this new circle, the necessary money came from two local clubs - Three Sisters and Stockport. In addition, the organisation prior to the contest was thorough and competent learning fully from the '85 Eurochamps also run at Three Sisters. Again it was aeromodellers who did the work and the organising committee headed by Ken Morrisey (Chairman), Gordon Isles (Treasurer) and Derek Heaton (Secretary) deserve the highest of praise. Only the weather, the achilles heel of the Three Sisters site, was less than admirable, for it blew a bit and rained a bit...

On schedule

It must be a great reassurance to competitors to walk into official processing and find it working smoothly to schedule, well laid out, properly equipped and performed by experienced aeromodellers who know their jobs. This is how it was - a job well done by Chief of Processing Ed Needham and his team of men and women. No-one failed at Official Processing but quite a few tanks had to be reduced in size - not an easy job with a carbon fibre tank, and there were quite a few of those seen.

One entrant had to glue a M3 screw through his tank whilst another had to saw off the rear of his tank, file the shorter tank and then re-glue the rear

Above: Team race pair Bodurkov/Popov (Bulgaria) at the pull test. Left: Swedish F2C representatives Andersson/ Ahling placed fifth.

Right: Mike Whillance's Combat model ready for the off; Mervyn Jones awaits signal to launch. Below: Tony Eifflaender confers with father Gig. Below that: Loet Wakkerman (Netherlands) launches for sister Monique.

Left: Speed winner Kalmykov (USSR) with white-painted model - see text! Below centre: Salonek releases team-mate Strakov's stunter; finished 13th. Bottom left: The Soviet Combat team with circle marshal Tomerilli (third from left). Below: Erling Linne (Sweden) with splendidly-finished Attraction stunter. Placed down the list at 35th.

Top: Assisted by Barry Robinson, Tony Eifflaender prepares. Above: British Speed team (McGladdery, Halman, Eisner). Below: Ian Gardner catches for Martin Sladdin; top Brit F2C pair at fifth.

Top of page: Soviet speedsters Kalmykov, Pitskalev and Chelkalin. Above: Italian Team Manager Judit Horvath poses with Compostella's second-place F2B model. Left: The winning F2D model of Beliaev readied by team mate Shablinskas. Below: Kolesnikov's colourful third-place stunter.

F2A Speed

Individual Results: 25 entries

			R1	R2	R3	BEST
1	Kalmykov	USSR	297.19	0.00	0.00	297.19
2	Pitskalev	USSR	296.62	0.00	0.00	296.62
3	**Halman**	**UK**	**292.21**	**289.16**	**295.73**	**295.73**
4	Chelkalin	USSR	288.69	283.61	291.34	291.34
5	Szegedi	Hungary	0.00	290.71	290.79	290.79
6	Mult	Hungary	285.19	284.58	289.16	289.16
7	**Eisner**	**UK**	**278.13**	**282.94**	**280.74**	**282.94**
8	Rachwall A	Poland	0.00	279.50	0.00	279.50
9	**McGladdery**	**UK**	**0.00**	**279.43**	**0.00**	**279.43**
10	Nagy	Hungary	271.29	277.71	269.13	277.71
11	Desloges	France	0.00	270.47	273.42	273.42
12	Rachwal T	Poland	264.25	263.04	270.74	270.74
13	Zanin E	Italy	270.47	262.26	251.92	270.47
14	Chojnacki	Poland	263.48	270.14	0.00	270.14
15	Kabakov	Bulgaria	0.00	248.79	270.00	270.00
16	Zanin S	Italy	267.86	0.00	0.00	267.86
17	Colombini	Italy	267.79	0.00	255.56	267.79
18	Tanev	Bulgaria	249.31	266.27	251.67	266.27
19	Stjarnesund	Sweden	0.00	263.67	255.20	263.67
20	Parramon	Spain	263.16	259.99	0.00	263.16
21	Kjellberg	Sweden	243.74	241.88	253.40	253.40
22	Fallgren	Sweden	249.77	249.08	0.00	249.77
23	Monev	Bulgaria	0.00	226.84	221.68	226.84
24	Rosenhan	FRG	0.00	214.58	0.00	214.58
25	Magne	France	0.00	0.00	0.00	0.00

F2A Speed

Team Results (10 entries)

1	USSR	885.15	6	Sweden	766.84
2	**UK**	**858.10**	7	Bulgaria	763.11
3	Hungary	857.66	8	France	273.42
4	Poland	820.38	9	Spain	293.16
5	Italy	806.12	10	FRG	214.58

Elvis Pizzarini (Italy) with eight-place retract-undercarriage F2C.

F2B Aerobatics

Individual Results (37 entries)

			RD 1	RD 2	FINAL1	FINAL2	FINAL3	TOTAL
1	**Draper**	**UK**	**2737**	**2826**	**2898**	**2898**	**2738**	**5796**
2	Compostella	Def Champ	2814	2885	2883	2867	2807	5750
3	Kolesnikov	USSR	2870	2905	2876	2859	2861	5737
4	**Eifflaender**	**UK**	**2824**	**2878**	**2893**	**2701**	**2838**	**5731**
5	**Robinson**	**UK**	**2674**	**2866**	**2879**	**2826**	**2575**	**5705**
6	De Jong	Netherlands	2833	2873	2892	2788		5680
7	Janssen	Netherlands	2803	2845	2853	2806	2795	5659
8	De Marchi	Italy	2548	2736	2852	2799	2646	5651
9	Beringer	France	2660	2875	2744	2884	2656	5628
10	Andersson	Sweden	2722	2800	2839	2737	1957	5576
11	Salenek	USSR	2738		2742	2799	2657	5541
12	Charles	France	2791	2694	2747	2733	2594	5480
13	Strakhov	USSR	2691	2726	2616	2827	2335	5443
14	Rampnoux	France	2656	2713	2635	2707	2696	5403
15	Van De Mortel	Netherlands	2632	2704	2618	2573	2207	5191
								BEST
16	Tokaji	Hungary	2670	2693				2693
17	Hamilton	Ireland	2641	2691				2691
18	Furlan	Italy	2083	2690				2690
19	Schmitz	FRG	2586	2662				2662
20	Kowalczyk	Poland	2553	2642				2642
21	Trudler	Israel	2467	2633				2633
22	Siwik	Poland	2538	2610				2610
23	Wenczel	Austria	2388	2597				2597
24	Liber R	Belgium	2470	2595				2595
25	Liber G	Belgium	2577	2479				2577
26	Doyle	Ireland	2449	2565				2565
27	Juhasz	Hungary	835	2546				2546
28	Ballesio	Italy	2522	288				2622
29	De Ssaucy	Belgium	2458	2502				2502
30	Rozenberg	Israel	2407	2484				2484
31	Wadovich	Hungary	2407	585				2407
32	German	Switzerland	2405	2339				2405
33	Weinmann	Austria	2209	2346				2346
34	Weclawiak	Poland	2327	1959				2327
35	Linne	Sweden	2082	2265				2265
36	Feger	FRG	2236	838				2236
37	Gromann	FRG	2230	2152				2230

F2B Aerobatics

Team Results (14 entries)

1	**UK**	**17232**
2	USSR	16721
3	Netherlands	16530
4	France	16511
5	Belgium	15108
6	Poland	14629
7	Italy	13234
8	FRG	12704
9	Hungary	11736
10	Ireland	10346
11	Israel	9991
12	Sweden	9923
13	Austria	9540
14	Switzerland	4744

F2C Team Race

Individual Results (29 entries)

			RD1	RD2	SEMI1	SEMI2	FINAL
1	Barkov Suraev	USSR	**3:19.8**		3:28.9	3:29.4	7:13.0
2	Voghera Rossi	Italy	**3:20.2**	3:41.7	3:20.9	4:27.8	8:00.0
3	Bodukrov Popov	Bulgaria	**3:35.1**	3:45.3	3:35.8	3:30.7	RET
4	Nazin Vorobiev	USSR		3:30.5	3:32.8		
5	Andersson	Sweden	**3:33.0**			3:56.7	
6	**Sladdin Gardner**	**UK**	**3:34.4**	**3:52.1**			
7	Pulido Pastor	Spain	**3:35.3**	**3:36.8**	3:43.0		
8	Magli Pirazzini	Italy	**3:41.6**	**3:36.1**			
9	**Smith Brown**	**UK**	**3:37.8**	**3:40.0**	**3:30.8**	**3:55.0**	
10	**Langworth Campbell**	**UK**	**3:38.8**	**3:49.6**			
11	Metkemeijer Metkemeijer	Netherlands	4:01.0	3:38.8			
12	Axtilius Samuelsson	Sweden	3:48.7	3:41.4			
13	Fischer Straniak	Austria	3:59.8	3:41.5			
14	Meijer Jordaan	Netherlands	3:41.7				
15	Rylin Gustavsson	Sweden	3:49.0	3:43.8			
16	Pennisi Zana	Italy		3:45.8			
17	Delor Surugue	France	3:46.1	3:59.7			
18	Marschall Kuchelkorn	FRG		3:47.6			
19	De Ridder Schot	Netherlands	3:54.2	3:47.9			
20	Ougin Constant	France		3:48.8			
21	Zhirov Shevchenko	USSR	3:52.6	3:52.8			
22	Liber Delrue	Belgium	3:57.7	4:12.7			
23	Dessaucy Dessaucy	Belgium	3:57.8				
24	Jotov Kolev	Bulgaria	4:07.7	3:58.2			
25	Nitsche Kuhnegger	Austria	4:02.2				
26	Reinisch Brandl	Austria	4:06.8	4:25.8			
27	Monev Papov	Bulgaria	4.25.9	4:14.9			
28	Ferguson Doyle	Ireland	5:06.7	4:24.8			
29	Scherer Perret	France	4:42.6				

F2C Team Race

Team Results (12 entries)

1	Italy	642.1
2	USSR	642.9
3	**UK**	**651.0**
4	Sweden	658.2
5	Netherlands	668.4
6	Bulgaria	708.2
7	Austria	710.5
8	France	737.5
9	Belgium	475.5
10	Spain	215.3
11	FRG	227.6
12	Ireland	264.8

F2D Combat

Individual Results (29 entries)

1	Beliaev	USSR	W W W W W W W W	8
2	**Whillance**	**UK**	**W W W W W L W W L**	5
3	Faizov	**USSR**	W W W W W L W L	4
4	Shablinskas	**USSR**	W W W W W L L	3
4	Wakkerman. L	**Netherlands**	W W W W L W L	3
6	**James**	**UK**	**L W W W L**	1
6	**Jones**	**UK**	**W W W L L**	1
8	Karwowski	Poland	W L W L	0
8	Cabrera	Spain	W W L L	0
8	Wakkerman. M	Netherlands	W W L L	0
8	Fallgren	Sweden	W W L L	0
8	Romagosa	Spain	L W W L	0
8	Konigshofer	Austria	W L W L	0
14	Giandrini	Italy	W L L	-1
14	Abrahamason	Sweden	W L L	-1
14	Janssens	Belgium	W L L	-1
14	Voss	Netherlands	W L L	-1
14	Hentschel	FRG	L W L	-1
14	Forstner	FRG	L W L	-1
14	Disler	Switzerland	L W L	-1
21	Braciak	Poland	L L	-2
21	Font	Spain	L L	-2
21	Maestrelli	Italy	L L	-2
21	Pavlov	Bulgaria	L L	-2
21	Lanfredini	Italy	L L	-2
21	Liber, R	Belgium	L L	-2
21	Wit	Poland	L L	-2
21	Ruckerl	FRG	L L	-2
21	Ostman	Sweden	L L	-2

F2D Combat

Team Results

1	USSR	15
2	**UK**	**7**
3	Netherlands	2
4	Spain	-2
5	Sweden	-3
6	FRG	-4
7	Poland	-4
8	Italy	-5
9	Belgium	-3
10	Austria	0
11	Switzerland	-1
12	Bulgaria	-2

Above: Barkov/Suraev (USSR) debate matters as the lines are attached. Left: Colin Brown cleans up the ninth-place F2C craft.

in place to give volume reductions of 0.05cc and 0.3cc respectively. Reasonable, accurate and expert - it's what everyone wanted to ensure a fair competition.

Official Practice proceeded smoothly with each entrant having the opportunity to practice on the contest circle for a time period of ten minutes. Not every competitor took this opportunity, no doubt because of the more than adequate practice facilities now at Three Sisters. Particularly impressive to me were Sladdin/Gardner (GB) with 17.6 sec/10 laps (127mph) for three-stop range of 26 laps and even more impressive Voghera/Rossi (Italy) with 17.2 sec/10 laps (130mph) for two-stop range of 35 laps. For the rest the norm appeared to be a two-stop range of close to 19 sec/10 laps, or, for a minority, three-stop range at close to 18 sec/10 laps. In this country it is rare indeed to see more than one model going this well in practice; here we had more than twenty - it was going to be a fast contest.

Thursday. The Processing and Practice day was over and everything had gone well for the competitors and officials. Only one welcome incident had occurred, the enforced replacement, through ill-health, of myself, as F2C Contest Director by Malcolm Ross. Twenty years on from their first appearance at a Euro Champs representing this country in F2C, Heaton/Ross were again to represent their country with honour - Derek as F2C Jury Chief and Malcolm as F2C Contest Director. We are fortunate to have committed, competent aeromodellers like Derek and Malcolm; and many others manned the line-check, managed the contest circle and filled the time-keepers chairs. Too many to name here but all did a great job making the actual contest a true and fair F2C Championship of Europe.

The Heats...

As I have written before, an F2C contest falls into three phases: the heats which serve to separate the 'men' from the 'boys': the semis where the men have their 'bottle' tested; and the Final where the Champion is found. At a Eurochamps, just as at a World Champs, the heats serve an extra function because the cumulative totals of the fastest time recorded in the heats by each national representative are ranked by Nation to give the Team Prize placings. As always the Team Prize is a great motivator and made for every contestant from the eight nations present with full teams trying their hardest, even if their individual chances appeared minimal.

In these days of reduced activity in control-line racing in most of the world, it was reassuring to receive 31 entries from 13 countries for these 1989 Euro Champs. Two of these entrants did not arrive, meaning a re-draw for the heats done after Official Processing had finished. It weas a tribute to the secretarial personnel present that the re-draw was typed, copied and distributed to all Team Managers within two hours of this re-draw being made. As re-drawn, each round of heats comprised ten races which meant, using a twelve-minute race interval, two hours of racing per day for the Friday - Round 1; and the Saturday - Round 2, split equally between each morning and afternoon, starting at 11.00am and 2.30pm respectively to allow adequate time for unofficial practice by the competitors, and also sufficient time for re-scheduling should the weather interfere - not unknown at Three Sisters. One aspect of the draws at this Eurochamps worthy of attention by the CIAM is that in the randomly-based draws, drawn under the supervision of the FAI Jury by 13 year old Stephen Ross, not only were two or more entrants from any nation not drawn to fly in any one race (as the rules require) but also no team was drawn to fly any of the teams they flew against in round 1 or with the same segment choice. These two conditions are not dictated by the rules but were applied with the approval of the FAI Jury in the interests of the competitors to ensure equal opportunity for all. I am sure that all of the competitors approved - maybe the rules should be amended accordingly.

Highlights

I am not going to give a race by race account of the heats; rather I will describe what were for me the highlights. Round 1, held in sunny but breezy and humid conditions saw the most dramatic of the two rounds of heats. The greatest highlight was the first ever sub 3:20 heat ever seen in this country. The flight, performed by triple World Champions Barkov/Suraev from Kharkov in the Ukraine was faultless. Every time I see Vladimir Suraev pitting I wonder how a left-handed person can perform this very right-handed job so faultlessly - an object lesson for all left-handers. Almost as impressive were Voghera/Rossi with a time only 0.4sec slower. Carlo Rossi uses a most unusual starting technique. He has the on-board priming systems on the model set to over-prime the motor, almost flooding it, in fact. Thus over-primed he flips its huge single-bladed prop (8x6in nominal dimensions) backwards and it starts on the backfire. If this fails (most times it worked) he flicked it forward, for now the excess prime had been cleared; and that did the business. Amazing!

All of the Brits did well in Round 1, putting them well placed for a team prize. Sladdin/Gardner and Langworth/Campbell both used their two-stop models for minimum-risk races, and achieved times within one second of their personal bests - no team manager can ask for better than that. Slowest of the Brits but still comfortably sub-3:20 were Smith/Brown using the last of their now out-of-production Cipolla motor bits - a triumph of teamwork over knackered motors. Much less pleased must have been the French and Dutch teams, for not one of them looked likely to make the semi-finals. Even less pleased were Nazin/Vorobiev from Moscow. In their first heat their model crashed, resulting in a smashed model and bent motor. The team judged responsible for this disaster was disqualified - the only DQ I saw in the entire contest for piloting errors, thus adding to French misery. Nazin's horror continued in their re-run for another crash resulted in no time for them in Round 1. This time it was Nazin's fault for in the wind he chose the forward segment; in his anxiety to take his 290gm (yes, 10oz!) model off at his first stop he ripped it out of his pitman's hand and catapulted into the tarmac. Another damaged model; so off he went to the trade tent and bought three packs of 5min epoxy glue. Their first model was unrepairable; their second model had a broken outboard wing and it was far too late, as dictated by the rules, to have a third model processed. They were one of the just four teams in Round 1 to fail to record a time.

Saturday was cloudy and windy for the second round of heats, making this, the 'nervous' round, more difficult, for this is the last chance to make the semi-finals and to achieve a team prize. Rain seemed likely to make things worse but fortunately it held off whilst the racing proceeded. Many teams had to improve on their first round performances and it is upon these that I will concentrate. Wisely, considering the conditions, Barkov/Suraev opted not to take their second round flight leaving it to their compatriots to put the Soviet Union in the reckoning for the team prize. With their only useable model now repaired and featuring two one-pence coins added as tip weight to assist in the wind, Nazin/Vorobiev finally got a time - and it was a good one too at 3:30.5. Maybe not as good as we knew that they could achieve for they broke 3:20 at the World Champs last year - but safe for the semi-finals and a great help to their team prize hopes. It remained with reigning European Champions Zhirov/Shevchenko to improve to ensure that but it was not to be for despite a clam-shell type side to the cooling, or was it the motor compression, right in any of their races even with the lot of practice that they did. So no improvement on their first round time, 3:52.8 against 3:52.6. Mind you, with those world-class times by the other two Soviet teams, they should have been OK but Italians Magli/Pirazzini improved by almost six seconds and compatriots Pennisi/Zana recorded their only time at these Championships in 3:45.8 to give Italy the team prize over the Soviet Union by the narrowest margin ever of just over 0.1 per cent! None of the Brits improved in this second round so we had to be content with two teams in the semi-finals and third national team place.

Semi-Finals

By the time the first round of semis was due to start at 11.00am on Sunday it was raining hard. The two teams representing Great Britain, Italy and the Soviet Union, together with the single representatives of Bulgaria, Spain and Sweden plus all of the officials waited until it stopped. Only a half-hour wait, but by then the electrical count-down clock and the electrical lap and warnings display equipment was water-logged and therefore inoperative. Since more rain seemed likely it was decided to proceed without these electrical aids and rely on the manual methods known to all - awkward since no manual warnings indication system was available so the 'tell the team manager' system remained the only one in use. No-one objected; so

thus the final contest day started.

Round 1, Semi 1 saw, in order, Barkov/Suraev (USSR), Anderson/Ahling (Sweden) and - with the only retracting undercart model - Magli/Pirazzini (Italy) start on the hooter. It didn't last for long. At their first pitstops both the Swedish and Italian pitsmen failed to catch their still-wet models cleanly and both ran irretrieveably into the circle, giving them no results and Barkov/Suraev a re-run. Semi 2 featured Nazin/Vorobiev (USSR), Sladdin/Gardner (GB) and Pulido/Pastor (Spain). From their first choice segment the Russians had a trouble-free run except for a cold first tank to record 3:32.8; would it be good enough for the final? Disaster struck Sladdin/Gardner at their second stop using their two-stop model for their model controls disengaged internally resulting in no control, therefore no take-off and no recorded time. Meanwhile, slowed by a slipped catch, the Spaniards were recorded a 3:43.0; definitely not good enough for the final. Semi 3 had to be split because of the re-run granted to Barkov/Suraev so round 1 finished with two-up races. The first of these, between Smith/Brown (GB) and Bodurkov/Popov (Bulgaria), was incident-free. The Brits' frantic driving (and work) to find and fit a better-fitting piston/liner assembly the previous evening paid off for a 3:30.8 resulted, definitely giving them (hence its name) was working well giving them 3:35.8. Voghera/Rossi (Italy) and Barkov/Suraev both were off instantly at the start of the last race in round 1; and Gino Voghera's home-made motor was the faster. Two trouble-free pitstops for both gave the Italians the result with 3:20.9 against 3:28.9. The triple World Champions has been beaten fair and square in a head-to-head. Was this a portent of things to come? Both looked certain to make the final.

The second round of semis started promptly at 2.00pm for thankfully the rain had not returned but the wind had - the Three Sisters weather is quite a test. Hard work during the lunch break had dried out the electrics with the result that all of the displays were now working reliably. Semi 1 didn't change the qualification situation for the final because both Magli/Pirazzini and Nazin/Vorobiev retired, the Italians with a motor that ceased working properly and the Russians again suffering from 'third segment choice' sickness for their model ran-in at their second pitstop. Semi 2 finished similarly in that Barkov/Suraev could not improve on their first semi time, Voghera/Rossi flew their second string equipment to a slow time (as had Smith/Brown in the first race of this round) and Sladdin/Gardner had a disaster with their three-stop model when at their first stop Ian Gardner caught the prop removing lumps from his hand and the prop resulting in some blood and a poor time. Semi 3 was not much better for the Spanish team of Pulido/Pastor who retired at their second stop with a motor or maybe a fuel feed failure, or for the Swedes Anderson/Ahling whose three-stop model cooked comprehensively. It was, however, a dream come true for Bodurkov/Popov from Bulgaria for their home-made BP motor was really working well and despite a glided finish they two-stopped to 3:30.7 to make the final, just 0.1 sec in front of ex-World and European Champions Smith/Brown. This was a contest with minimum margins for the Brits failed by just 0.1 per cent. It was a fast contest too, for it had required better than 3:38.8 to make the final. Only the 1988 World Championships in Kiev had seen higher standards. It was hard for Steve Smith and Colin Brown to just fail to make the final - and equally difficult for Bernie Langworh and Dave Campbell to just fail to make the semis. Even harder for Martyn Sladdin and Ian Gardner must have seemed their two disasters in the semis. Quite the opposite for Voghera/Rossi, Barkov/Suraex and Bodurkov/Popov of course, for they had come through the semi-finals to make the final.

The Final!

The hundreds of spectators crammed against the outside of the wire cage surrounding the race circle must have been praying for a good final. As so often happens at World and European Championships we did not see one, for it was all over in less than a minute. First to fail were Bodurkov/Popov who crashed in the wind at Lap 26. Voghera/Rossi's race effectively was over only a few laps later when their motor blew a head gasket and cooked. Thereafter it was hard to start and impossible to set meaning that they struggled to finish with all of their airspeed gone. It was Barkov/Suraev who made no mistakes and so they finished comfortable winners. There have been very few teams who have had the honour to be the reigning World and European Champions in F2C for until this final only Place/Hamworth and Smith/Brown from Great Britain had done so. Now the greatest team racers in history had joined the exclusive club and did they look pleased. A great Championships and great Champions.

F2D Combat Report by Paul Stanley

Day One: 26th July

A healthy twenty-nine entries registered from twellve countries. The full complement of three pilots were fielded by Italy, the Netherlands, Poland, Spain, Sweden, Russia, West Germany and Great Britain; two pilots represented Belgium, and there were single representatives from Austria, Bulgaria and Switzerland. Thus the scene was set for an eventful competition.

Day Two: 27th July

This was the day for processing and official practice. A number of motors were rejected during processing, either because of sub-piston induction (Rossi and USE being the main culprits) or oversize venturis.

Each country was allocated thirty minutes to practice in the official flight circle and all took advantage of this facility. Requests for streamers

Above: Monique Wakkerman from the Netherlands, only woman competitor of these Eurochamps, fought well in F2D. Left: Mike Whillance, top Brit in Combat, looks happy with his endeavours. Model was lashed together with tape to complete bout - caused a protest from Wakkerman as 'unflyable'. Below: Beliaev's modelis prepared for a bout against GB's John James.

Combat stamping at processing; Lyn Burles is assisted by Stuart Vickers.

resulted in a complaint to the FAI Jury; upon investigation, both paper and string were found to be approximately 50mm shorter than the specified, with the position of the ink mark (which should be at least 500mm from the end) varying somewhat between examples. A shortage of suitable paper meant that the streamers had been cut to minimum length in order to guarantee sufficient numbers — but they had shrunk in the colouring process. String had been cut to length with no allowance for tying it to the streamer; and as no piece of string had been used as a 'master' throughout, a cumulative ink-marking error arose. A number of enthusiasts — to whom many thanks! — spent much time reworking the streamers to bring them into line with the rule book.

During practice it was obvious that the Russians were most impressive with their incredibly tight-turning models. Others to impress were the Swedes, the Dutch — and, of course, the British team, consisting of John James, Mervyn Jones and Mike Whillance (who was standing in, at very short notice, for Tony Frost who was unable to attend because of a family bereavement).

Day Three: 28th July

Round One started on schedule at 9.30 with Fallgren (Sweden) beating Ruckerl (W. Germany) by three cuts to nil. Cabrera (Spain) and Lanfredi (Italy) had to refly, the Spaniard being the eventual winner. First disqualification came in the bout between Liber (Belgium) and Voss (Netherlands) when Liber failed to get airborne within the requisite two minutes. The only other DQ of the round occured when Pavlov (Bulgaria) left the centre circle to service his model without telling his opponent, Giandrini of Italy.

First Brit to fly was Mervyn James who fought to a convincing 4-0 victory over Ramagosa (Spain). John James lost against Loet Wakkerman (Netherlands) by 22 seconds of ground time, but maintains the satisfaction of a tiny cut that the scorers didn't see. The bout between Mike Whillance and Maestrelli (Italy) resulted in Great Britain making the first official protest of the competition; for the scorers had the bout at one cut each, with Whillance the clear winner on ground time, but the Italian F2D Jury Member insisted that Maestrelli was ahead by 2-1, so he was awarded victory until the protest, which resulted in a refly eventually won by Whillance.

In Round Two Monique Wakkerman (Netherlands) was first and last to fly, having enjoyed the luxury of a bye in the first round. She beat Ruckerl by 2-1 but against Wit (Poland) she was disqualified for flying in a dangerous manner. Other DQs in this round went to Karwowski (Poland) for failing to clear a line tangle before launching his reserve mode, Maestrelli (Italy) for releasing his handle while the model was airborne, and Pavlov, whose pit-crew jumped over his opponent's equipment.

The most notable bouts of the round were between Beliaev (USSR) and Abrahamsson (Sweden) and Shablinskas (USSR) versus Ostman (Sweden); the Soviets winning both — Beliaev 2-1 and Shablinskas by six seconds ground time. UK interest was maintained by Jones beating Brackiak (Poland) 3-2 and Whillance ahead of Voss by 65 seconds ground time after one cut each.

Day Four: 29th July

Twenty pilots remained at this stage. Only the Russian team had an unblemished record. Forstner (W. Germany) provided the only DQ of the round when he left the centre circle without telling Ramagosa (Spain). Voss put up a good fight against Beliaev but narrowly lost (after cuts at 2-2) thanks to eighteen seconds of ground time; the Russian had none. Faizov (USSR) called for a refly when his model was cut from the lines by Hentscel (W. Germany) to land just outside the designated fly-away area. Faizov won the refly 2-1; whilst Shablinskas beat Giandrini by the same margin, thus maintaining the Russians' perfect record.

Best bout of the round between Jones and Abrahamsson, the British flier emerging the winner by two cuts to one. Whillance beat Cabrera 1-0 and John James was victorious over Janssens (Belgium) after a protest was rejected. John's first model had been demolished, and his pit crew left a small part of the inboard wing tip, with broken bellcrank (and lines attached) inside the twenty-metre pitting circle, which the Belgians claimed — unsuccessfully — was contrary to the rules.

By Round Four a further seven pilots had been eliminated. Once again the Soviet pilots were successful, Faizov, Beliaev and Shablinskas beating Romagosa, Konigshofer (Spain) and Fallgren respectively. Mervyn Jones lost to Loet Wakkerman on ground time, with a splendid bout between Whillance and Moniique Wakkerman resulting in a 4-1 win for the UK flier. Poland's Karwowski had a bye in this round.

Eight competitors remained at the start of Round Five, which was delayed by forty-five minutes because of a deluge; during this period such comments as 'This should be a boating competition' were abundant.

The first bout between Karwowski and Faizov was interesting, to say the least. On launch, Karwowski proceeded to perform the most spectacular manoeuvres seen in the entire contest — when he was supposed to be flying level! After several attempts he managed to ground the model and continue with his reserve. His first model had taken water on board during the downpour with significant effect upon performance. Needless to say, the Russian flier went on to win.

John James narrowly lost to Beliaev on thirteen seconds ground time after cuts at one-all, and Mervyn Jones lost to Shablinskas after an unfortunate incident when the score was one cut apiece. A line tangle resulted in Mervyn's lines breaking — and the ensuing tangle was impossible to clear because the Russian model was still airborne; thus Mervyn spent over three minutes sitting in the centre circle, for had his reserve been launched he would have been disqualified.

Mike Whillance's bout against Loet Wakkerman resulted in controversy. It was scored 2-0 in favour of Whillance who was declared the winner, but the Dutch Team Manager lodged a protest, claiming that Mike had deliberately attacked Loet's low-flying but streamerless model — and also that Mike had deliberately tried to force Loet to crash while his own model was grounded to clear a line tangle. After much collection of evidence, and due deliberation, the FAI Jury decided that the only fair option was to refly the bout. Whillance duly went on to victory.

Day Five: 30th July

Down to just five competitors now, with the Russians still unbeaten, as was Mike Whillance, who was drawn against Beliaev — a bout which he lost by two cuts to one. Loet Wakkerman flew a tremendous bout against Faizov to emerge the victor by the odd cut in three. Shablinskas had the bye.

Still five competitors remained in Round Seven. Shablinskas' first flight — he had to go twice because of his previous-round-bye — was against Whillance who was the clear winner 2-1 and 100 seconds less ground time. His second bout was against compatriot Faizov; the outcome was identical. Loet Wakkerman and Beliaev were next in the air. The Dutchman took the only cut but was unfortunate to accrue ground time and a 100-point penalty when his streamer was damaged by his mechanics — and he lost the bout. Shablinskas and Wakkerman were thus confirmed in equal fourth position.

The medals were to be decided in Round Eight. Whillance and Faizov had one life each, with Belaiev's record still untarnished.

The draw was academic. Whillance had already flown against Beliaev, so he had to fly Faizov this time. After a very entertaining bout, with no ground time being accrued, the score stood at two cuts each. There followed a refly which Whillance took thanks to 127 seconds less ground time after cuts were equal at one each. Two fliers left for the last round...

A daunting prospect for Mike Whillance, who had one life against Belaiev's two, because to win he would have to beat the Russian twice. The final was to take place immediately after the F2C final, so a large crowd was present to witness what turned out to be a total anti-climax.

Shortly after the bout started a line tangle ensued which resulted in Whillance's lines breaking. Mike apparently did a remarkable job of clearing the tangle before launching his reserve, but as soon as the second model was airborne Beliaev indicated that a fragment of line was not only still present but was caught around the control mechanism on his own model. As a result, Whillance was disqualified.

The UK Team Manager lodged a protest but the rules on clearing line tangles are inflexible. The protest was rejected and Beliaev was decalred European Champion. Mike Whillance's Silver Medal position was all the more creditable when one considers that he had only two days to prepare for the event. Nevertheless, it was generally agreed that the Russian models were the best at the contest, with some novel construction techniques in evidence (*which we hope to evaluate later. GC*). Certainly the Russians' pitting technique was second to none.

In conclusion, a very enjoyable event, with fair and competent organisation. Thanks are due to all who made it possible.

Many thanks to our reporting team, notably John and June O'Donnell for organisational help and photo coverage.

Well done to all concerned at the Eurochamps!

Next major event is the World Champs in Metz, France, next year. See you there?

BUILD FROM OUR FULL SIZE PLANS!

Just right for point-eight motors –

Gary Mayes' scale Swiss subject...

Comte A.C.4 Gentleman

THE AC4 Gentleman was a product of Comte, the earliest Swiss aircraft manufacturer. First flown in 1928, the type was a high wing, strut-braced monoplane for a pilot and two passengers.

The prototype was delivered to Ad Astra on 18th September 1930, registered as CH-262. It was fitted with a 105hp Cirrus Hermes in-line engine. This was later changed to a more powerful Armstrong Siddeley Genet Major of 140hp. Sometime during the thirties the Swiss changed their registration system and this aeroplane was re-registered as HB-IKO.

Today the Comte is preserved by Swissair after extensive restoration and is kept in one of their hangars at Zurich. At present it is shod with 'doughnut' low-pressure tyres plus a tailwheel, and it sports an enlarged rudder. These features were probably introduced as a concession to operating from paved runways, for which this aircraft certainly would not have been designed.

Here's the model

I have taken the liberty of giving the model large-diameter wheels, a tail-skid and smaller rudder like those fitted in the thirties in order to give it an appearance more typical of the period. When designing this replica I did not have the luxury of three-view drawings to hand, so I worked from photographs; therefore it may not be dimensionally 100 per cent accurate. However, its functional lines and stable high-wing layout make it and ideal subject for a simple scale model.

Begin!

Make the fuselage first. Start by building two identical sides flat on the building board, one on top of the other to ensure accuracy. Use medium-hard stock for the longerons as they are not curved very much, and must resist any tendency for the covering to pull them in between the spacers. Double-glue all joints if you are using balsa cement.

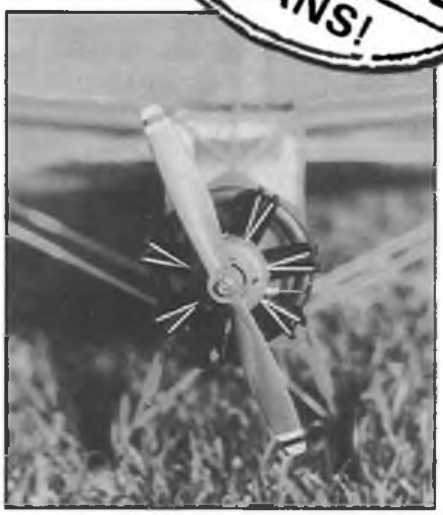
Cut out formers F1, F2 (plywood), F4 (balsa) and fabricate F3 with the grain running as shown. Also cut out the rear u/c support from plywood, not forgetting to drill a series of holes for binding; this also applies to F2. Cement the sides to F3 and F4 ensuring that all is square. When dry, join the tail end together and fix F2 in place, drawing the sides in with rubber bands. As an aid to accuracy I usually mark centre lines on the top and bottom edge of all formers, thus allowing a check of fuselage alignment by sighting from the stern post. Follow with all spacers top and bottom, gussets, wing location dowels and aluminium tubes for the wing and strut retention bands.

Bend the undercarriage from 16swg wire. Mark all lengths with an indelible marker pen, or similar, before you start bending; this will help in making things symmetrical. The u/c is held in brass tubes to allow the wire to spring a little. Sew the tubes in place with strong thread and coat with cement. Bind the axle/spreader to the legs with fusewire and solder the joints.

Make the cruciform firewall support from 3/16in sheet balsa and cement in place, together with F1. Cut a hole in the horizontal member to take the fuel tank. The stringers on the sides are notched to half their thickness where they meet the uprights, and are then cemented in place, followed by three stringers on the underside, the windshield frame members, the 1/16in plywood tailskid, and thin card glued with PVA to represent the fairings on the undercarriage legs.

Motor matters

Now for the juicy bit at the front! Screw the engine mount to the firewall, setting it



Above: Radial engine is fully detailed on plan. Couldn't be simpler. Below: 38in high-wing subject not only looks good but flies like a sport model!

to the required side and downthrust angles with a suitable tapered balsa packer. Note that the mount needs to be slightly 'port and upwards' of the vertical and horizontal centre lines to position the prop driver centrally. The crankcase for the dummy motor is made from a small plastic bottle. (Mine came from the local homebrew shop). Cut it to length and drill a series of 1/16in holes to receive the pushrod covers and the location pegs for the cylinders. The cylinders are round section balsa, would with thread to represent the cooling fins and drilled at one end to take the location pegs made from 1/16in dowel. The rocker covers are shaped from 1/8in sq balsa and carefully drilled to take the aluminium tube pushrod covers before being cemented in place. Make six cylinders like this and a short cylinder head used to disguise the model engine (DC Dart in the original). This is retained by a wire clip bent to engage in between two cooling fins and bound onto the dummy cylinder head. Next, paint all seven cylinders black. Epoxy the cylinders and pushrod covers in place; cut out a hole for the needle valve, and paint the crankcase grey.

To make the exhaust laminate a balsa ring from three layers of 1/8in sheet. You may need to experiment with the grain direction before you get one to stay flat. Sand the good one to a round section, cut a segment from it and cement back in place turned through 180 degrees to represent the open end. Paint it and then glue to the back of the cylinders.

The completed dummy engine is held in place by two small self-tappers, which engage short lengths of dowel protruding from the firewall just inside the crankhouse. The gap between F1 and F2 is covered with an aluminium litho plate fairing, or you can try 1/32in sheet balsa. On my model the paint soon started to wear off the aluminium giving it an authentic 'in service' look.

Wings

The wings are of straightforward conventional construction. The ribs are best made by the sandwich method, thus: cut two template ribs accurately from thin plywood; next cut the required number of oversize rectangular rib blanks from 1/8in and 1/16in sheet balsa. Stand the blanks together on your building board with a template at each end, the bottom edges of which need to be raised slightly on some scrap 1/16in balsa, then pin the whole lot together. Carefully carve and sand the resultant block to the shape of the template ribs, including notches for the spars which need to be a nice snug fit. When finished pull the pins out... and, hey presto! a complete set of ribs all with nice square edges. Next fabricate the wing tips from 3/16in sheet, and when dry, remove from the board. Select good straight TE section, mark out and notch them and then pin them over the plan. Set the lower spars and leading edges in place holding them with pins. Cement the ribs in place, setting the root ribs at the required angle, followed by the wing-tips which need packing up at the front. Fit the top spars and mark out and notch the outboard ribs for the dummy aileron spars. Unpin from the board when dry and sand the leading edge and tips to shape. Bend rubber band hooks from 20swg wire and cement onto thin ply reinforcements on the inside of the root ribs. Bind short lengths of aluminium tube to the lower spars where shown for the strut mountings to complete the wing panels.

Above: Red and white colour scheme is cheerful and bright. Use thin dope over red tissue if you can. Left: Detailing is simple but effective. Long live sport scale!

Tail affairs

The tailplane is simply built over the plan with 'rectangular' ribs. When the cement is dry, remove and sand to a streamline section. The fin is built in a similar fashion. All that's left to construct are the wheels and wing struts. To make the wheels cut out 1/16in ply discs and laminate with 1/32in balsa on each side. Drill the centre and epoxy in place a length of 16swg brass tubing; or, better still, a screwed brass locked in place with attendant nut, also epoxied. If you opt for the screwed brass bush, first cut away the balsa on either side to allow the head on one side and the nut on the other to grip the plywood. The tyres can be made from lengths of neoprene rubber cut from an O-ring or fuel tubing. Join with superglue (cyanacrolate) and then epoxy in place. The finished wheels are retained on their axles by small washers held with epoxy.

The lift struts are made from 1/4in x 1/8in obechi or possibly hard balsa sanded to a streamline section and then accurately cut to length with one end bevelled to meet the fuselage sides. 20swg wire fittings are bent to shape and bound in place. Use a light coloured thread for this as the paint won't disguise a dark colour.

Finishing

Cover the entire model lightweight Modelspan tissue. Use red pre-coloured paper if you can get it. Two coats of 50/50 clear dope and thinners should be sufficient to fill all the pores and taughten the paper. Cut the windows to shape from clear plastic sheet and glue them in place. I placed strips of tissue over the framework to disguise the thickness of the glazing at the edges and make the paint less glossy; however, that may be more trouble than it's worth. Paint with red colour dope which is best sprayed on (I use a humble scent – spray – type squirter) all over. Cut the registration letters and the crosses on the tail from white tissue and fix in place with clear dope. Leave them to dry well before carefully painting them with white dope or enamel. This method helps to stop the red base colour from leaching through the white. Remember, you can paint enamel over cellulose but not vice-versa. Paint on the hinge lines and other details. Don't forget to paint the propeller; nothing looks worse than a brightly coloured nylon prop on a scale model!

Glue the fin onto the tailplane, but off leave the bracing wires until the model has been trimmed for flight. Temporarily retain the tail with rubber bands. Finally balance the model carefully with the CG in the position shown, securing any ballast as far forwards or rearwards as possible to minimise the weight needed.

The Gentleman takes the air

Test glide into the mandatory long grass, aiming for a straight or slight left turn. Under power you should be looking for large left-hand circles, although mine insists on turning to the right without adverse effect. (It could be that the radial engine tends to interrupt and straighten the prop wash, which reduces pressures on the rudder). Incidentally, you may find engine starting easier with the model turned on its side. You should be rewarded with a gentle and realistic flier if you keep the weight down. Just the job for those calm evenings.

VIEWPOINT

Bruce Kopasz puts the case for unselfish Aerobatic participation...

IN BRITAIN today, we have the control line Aerobatic classes Vintage, Class 2 (Novice) and full-blown F2B. Many pilots, both F2B and Class 2, fly Vintage as well, and this of course is perfectly acceptable, but there are also pilots who fly in both F2B and Class 2 or continue to fly Class 2 when they are obviously too good for it.

So when is a Class 2 pilot not a Class 2 pilot? The Control Line Aerobatic Pilots' Association (CLAPA) rules state that a pilot has to discontinue flying Class 2 once he/she has scored 500 or more points in three Open competitions during one season. This may seem fair, but looking at most Open results, one sees that very few pilots reach the five hundred points barrier, probably because the competition is not stiff enough.

I think that the maximum number of points needed needs to be lowered; or a pilot could be banned from flying in Class 2 if he (or she) has placed top in three competitions during one season. This would bring a first, second or third place to within reach of the true novice. At the moment it is only the very good flyers, with big modern stunt models, who win the major competitions. Likewise, anyone who enters more than one F2B competition should not be permitted to enter a Class 2 competition. Also, if anyone wins Class 2 at the Nationals (in my opinion the ultimate Class 2 competition for a pilot) then they too should no longer be allowed to fly in that class anymore.

Now the top Class 2 pilots around are now perhaps shouting abuse at me: 'We haven't got time to fly F2B', 'We enjoy the easy atmosphere of Class 2', 'F2B is too hard to learn', and so on. Well, if you don't want to learn F2B or put more practice in (which isn't strictly necessary), then why don't you have a go at Vintage instead of taking the trophies off the real novices? As far as the atmosphere of the competitions go, the extra discipline only makes them run more smoothly; and F2B flyers are definitely amongst the friendliest people around, so there are no excuses there.

Natty Scottish Team jumper celebrates George Aldrich's Nobler – seen at the '89 F2B Home International!

As for those people who fly both F2B and Class 2, or continue to fly Class 2 once they have won a major competition, such as the Nationals, then shame on them. They can't be getting any enjoyment out of winning competitions that they know are below them; I certainly wouldn't.

When speaking to various Class 2 pilots during competitions throughout the country last year, many of them voiced complaints that a certain few people this year were winning or placing in most open competitions and should therefore be flying F2B. When one watches said pilots during a competition flight, one is inclined to agree that they should not be flying in Class 2.

Remember that Class 2, up to the 1988 season, was called 'Novice Aerobatics'; the name was only changed because many pilots disagreed with the term 'Novice'. But this class is still the same, and remains the ideal introduction to competition aerobatics, but unfortunately some people tend to look at it as an easy class to win a trophy in. Most pilots who have flown or do fly F2B will say that the Class 2 schedule now looks very easy in comparison. The extra discipline, stiffer competition and higher flying standards of F2B, do improve one's flying and trimming abilities. If a true novice goes to a Class 2 competition and is well and truly beaten by pilots with the models and the abilities that he or she associates with F2B is it likely that they will see Class 2 as a beginner's aerobatic or as a practice ground for the 'experts'?

If what I've written is read by any of the guilty parties, then how about it? Try moving up to F2B (and staying there!); it is great fun, and a much greater challenge. One other thing, don't let me give the impression that I just want more people to fly F2B, so I'm trying to drag them out of Class 2. I'm not. All I am trying to say is if the 'experts' leave the class and move up a grade then surely more new pilots will be more inclined to have a go at Class 2. One person whom I spoke to at the Nationals said that he didn't want to fly Class 2 because everyone else was much too good. Maybe next year we will have more newcomers to aerobatics...

...and Bill Biggs gets hooked again on aeromodelling

THERE CAN be few readers who can claim to be in the running for the title of 'Least Successful Aeromodeller'. I can. In the 1950s a number of projects competed for inclusion in the Biggs stable: a Frog Prince with its five-foot wingspan, brown tissue paper and pre-cut parts. It was never finished. Nor was D R Hughes' RE 8, although I got as far as buying an Elfin 1.5 for it. I wonder what happened to that? I actually finished a Keil Kraft Invader, but warps in the wings, if artistic, did nothing for its performance.

Then I joined the Army and put away childish things. Thirty years later, and still unsure as to what to do when I grew up, I chanced upon the December 1984 issue of Aeromodeller and its pull-out plan of the 1921 Waterman Sprite. Scale modelling! What had I been missing these past 30 years? Mind you, it took over three years to build between fits of enthusiasm; and flew as badly as the Invader.

Love affair

But I was hooked. I had become a born again aeromodeller. A lifelong, if intermittent, love affair with WWI aircraft and their scale replicas was approached relatively sensibly for a change; and plans for a Tomboy arrived and construction accomplished. Not without learning a few lessons en route. How do you get the engine into the nose compartment after completion without drastic surgery?

A PAW 100 Mk2 was a recommended engine choice. But get it to start? Hours of flicking away – and who says you cannot strain a muscle starting a 1cc motor? Have you never heard of Flicker's Elbow? A rare disease, only contracted by few, I believe. 'Add 10 per cent castor oil', I was told. No change. In desperation I sent it back to Progress Aero Works with a pitiful letter. It came back in 72 hours, having been checked and with helpful advice. In the end it dawned upon me that few engines start easily if the mixture is too lean.

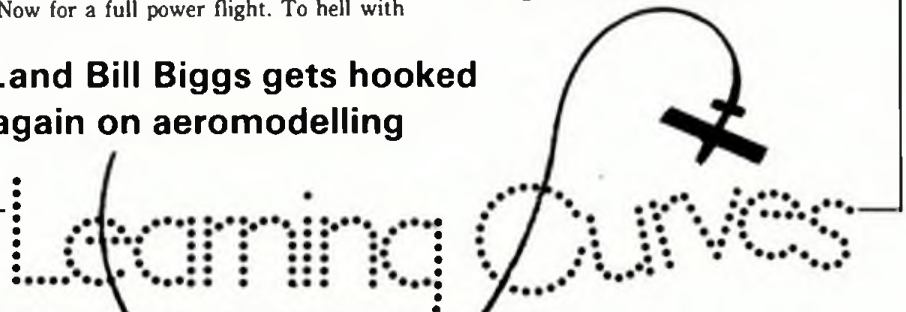
Flight facts

Flying. The aforesaid issue of Aeromodeller happened to have an article on trimming for free flight and the model just happened to be Tomboy. I was a good pupil and flew with the prop reversed; but could not understand why, when turning downwind, the plane would lose lift, bank over and power in. After a few Kamikaze landings my pride and joy was starting to look badly battle scarred. Out came John Watters' article again. Pack the tailplane, he advised; think about trim tabs. Eureka!

Now for a full power flight. To hell with modest fuel reserves – and what did that model shop acquaintance say about dethermalisers? I reckoned that there was about twenty seconds fuel left at launch. If so, it was a mighty long twenty seconds. She hung on the prop all the way up; and by the time the engine cut I was beginning to realise that the wind up there was stronger and the A3 only 1000 yards downwind. I started to run. At 51 years, and out of condition, I staggered to a halt as her last graceful swoop took her into the trees at the edge of the road 300 yards away.

Romances

It would be romantic to relate that in years to come some wanderer would find my first successful foray into the art mouldering like a WWII fighter on a Pacific atoll, but I found it 48 hours later. Sunday drivers on the A3 must have had a fright! The young man who provided me with a ladder from a nearby house said that his grandfather had always wanted to build model aircraft but had yet to do so at 73. I have news for you, sir. Start now, it is never too late! Mind you, the initial learning curve could be high...



SCALE MATTERS

More on biplanes and other scale subjects. Get building this winter!

OUR discussion last month of that perhaps most famous of British biplanes, the DH Tiger Moth, has generated a good deal of interest, reinforcing the gentle affection in which the Tiggie is held by aeromodelling and full-size enthusiasts alike. Peter Waxham rang us from Irvine Engines with news of a curious coincidence. On page 595 we included a shot, taken at Old Warden in 1978, of a Tiger in an RAF-style scheme, bearing the serial EM 726 on the rudder. Real reason for this choice was just that said Tiger was parked ahead of a Thruxton Jackaroo, both types having been discussed in the article. Peter tells us that EM 726, actually G-ANDE at the time (and thus known affectionately as 'Ghandi') was owned by a flying group at Stapleford which included Irvine Engines' then production manager, Roy Basinger. Not only that – but the same aircraft was photographed extensively by Mr Takamatsu of Pilot Kits and was used as the true prototype of the Pilot DH 82a in the late 'seventies.

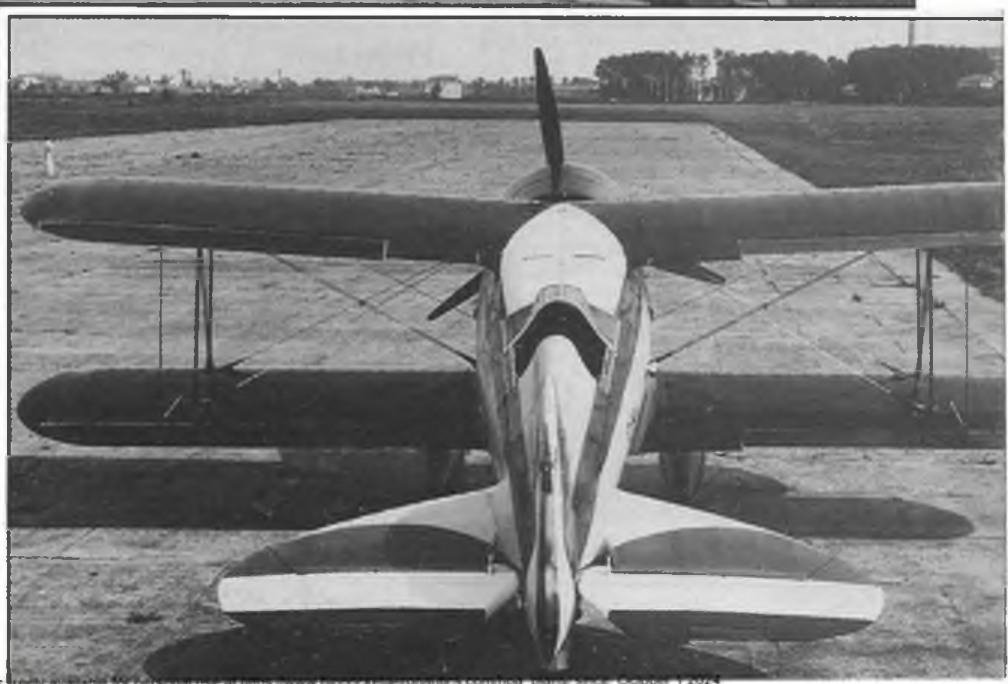
Actually, when we selected the photo we wondered what had since happened to G-ANDE, for it does not appear on the current register. Here Peter was able to fill in the details. This seems to have been a particularly unlucky Tiger in later life. It had been hit by a helicopter at Biggin Hill the year before our photo was taken, suffering damage (notably) to the undercarriage, and was rebuilt to the standard as shown. The following year it went through the hedge on landing at Stapleford and hit a haystack, doing itself no good at all. After another rebuild it appeared in a new all-yellow scheme, in which it lasted until mid-'84 when it was written-off after being taxied straight into a Cessna 152. Its registration identifies it as one of the many Tigers refurbished after demob by Rollason Aircraft at Croydon Airport in the mid-1950s. Reflect for a second – those were the days when you could buy an ex-service DH 82a for twenty-five quid...

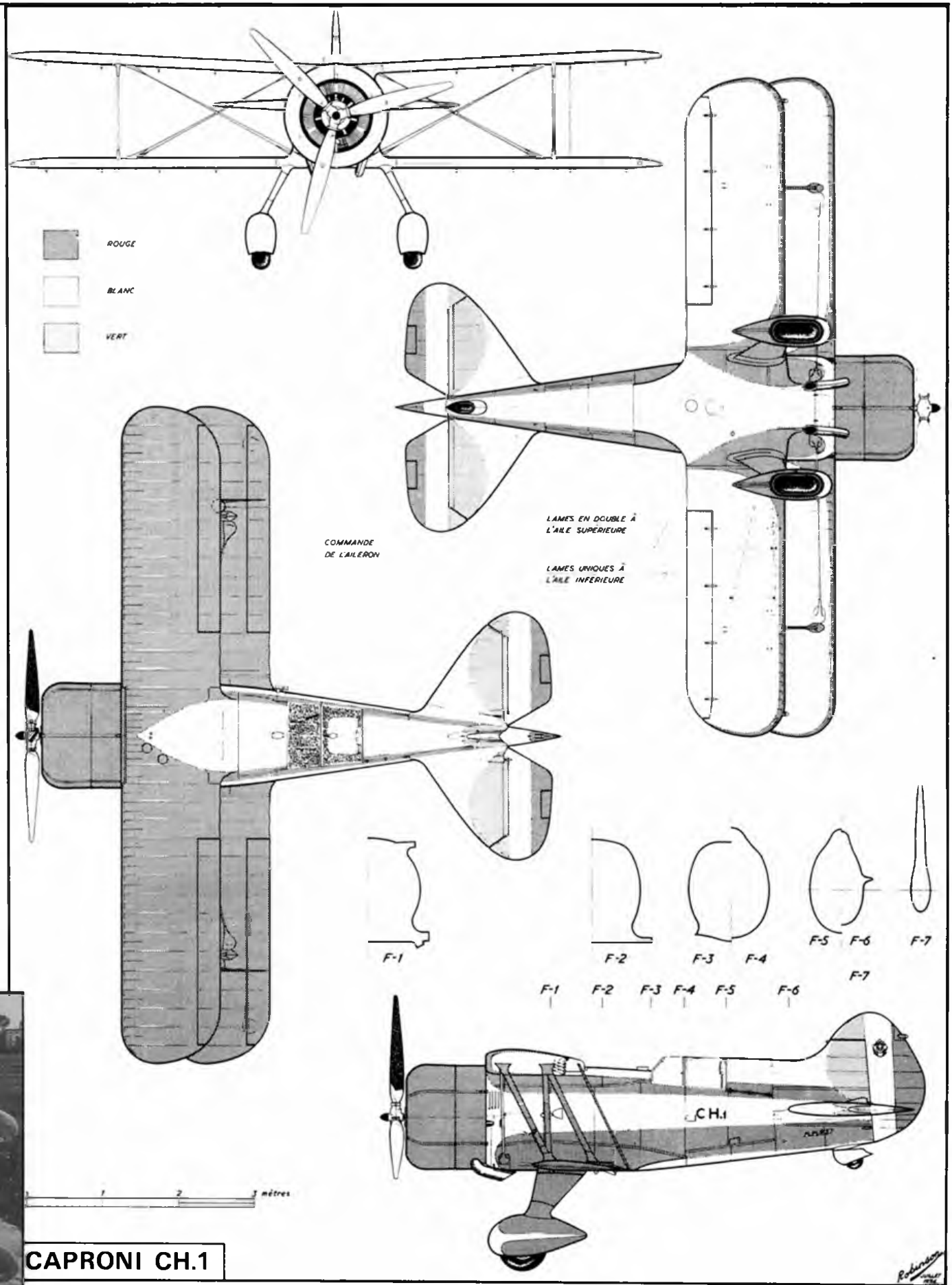
From commonplace to scarce

To create a successful flying model of a aircraft such as the Tiger Moth is perfectly satisfying. The aeroplane is familiar to all; information is usually easy to obtain and most enthusiasts will have a tale to tell about the same subject. Nevertheless, there is a particular reward in researching the unusual and to present it at a flying event in the knowledge that it will baffle many. With this in mind we present a selection of types that have taken our fancy recently. Perhaps a touch more research and we will see some of these unfamiliar shapes at flying events next year.

The dear little Renard R.17 – wingspan was only a touch over 30ft – would make a charming subject. We know that 'perfesser' Walt Mooney has already chosen it as one of his myriad of Stateside Peanut designs, but who'll be first for small-diesel power? Maybe you shouldn't be put off by the lack of dihedral; we've seen so many flat-winged subjects airborne, perfectly safely, during this year that we're suggesting this baby Belgian as a reasonable challenge – small tail and all! Only constructional difficulty is that deep-windowed cabin – but surely it's worth a try. Certainly for indoor...

Over to the Soviet Union for a real power scale subject – the Ya-6 (or AIR-6) from 1932





CAPRONI CH.1

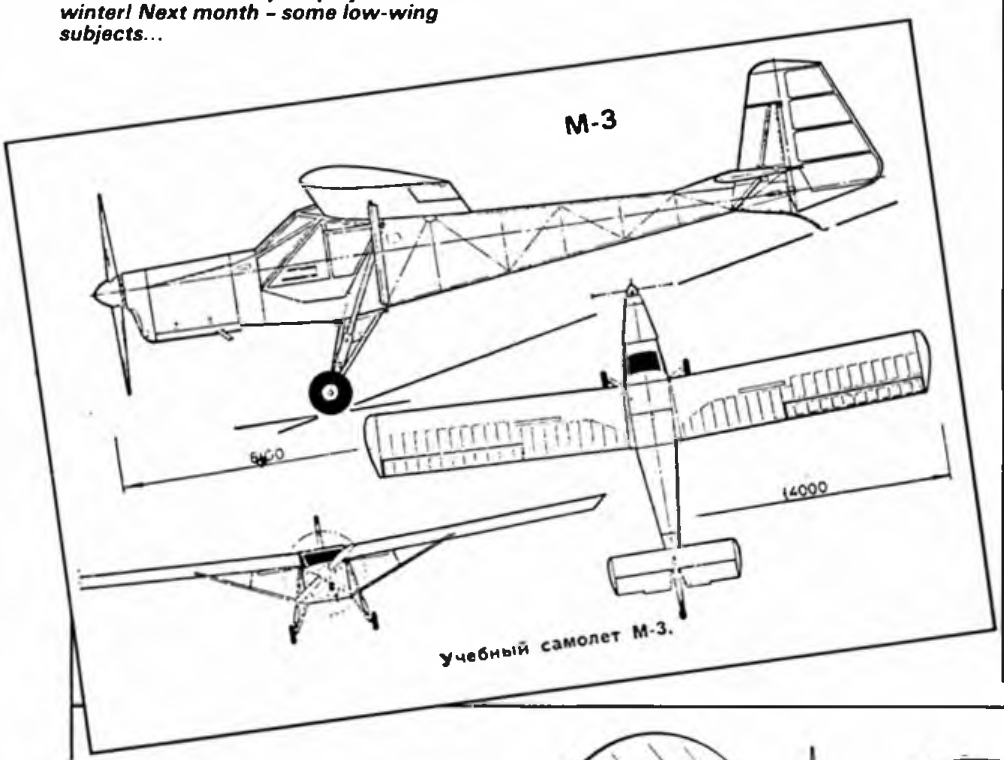
Caproni CH.1 data, from Aeroplani Caproni documents: Span: 8.600m (28ft 2.5/8in); Length: 7.190m (23ft, 7.1/8in); Wing Area: 19sq.m (204sq.ft); Empty weight: 1,400kg (3,087lb); Total Weight: 2,000kg (4,410lb); Cruising Speed: 340kph (211mph); Max. Speed: 390kph (242mph); Climb to 2,000m: 2min; Climb to 6,000m: 6min 20sec; Ceiling: 9,500m (31,170ft); Range: 1,000km (621 miles).

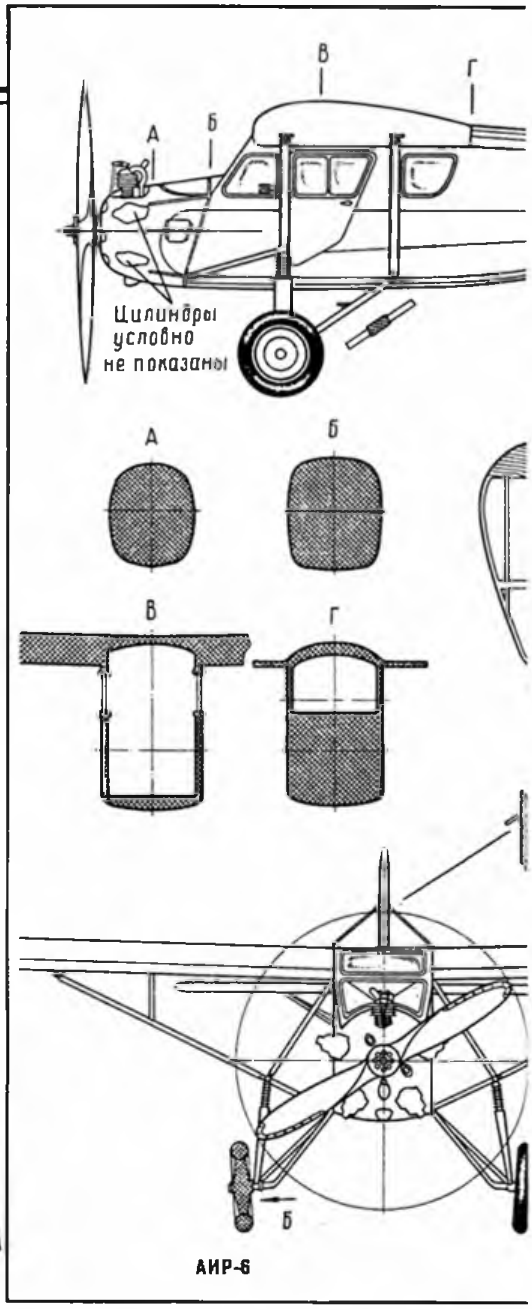
was built in small numbers for flying clubs, with a touch of air-ambulance use too. The drawing shown here – actually from a Russian volume – would need checking against a photo or two, but we have a nifty illustration showing CCCP-1002 in a cracking red, cream and black scheme... Ideal for the Barkston Heath breeze? And how could we miss out the modern M-3 (further details are still being researched) which is more like a rubber model than many a rubber model we could name!

Drawings on this page are referred to in text. Choose one as your project for the winter! Next month – some low-wing subjects...

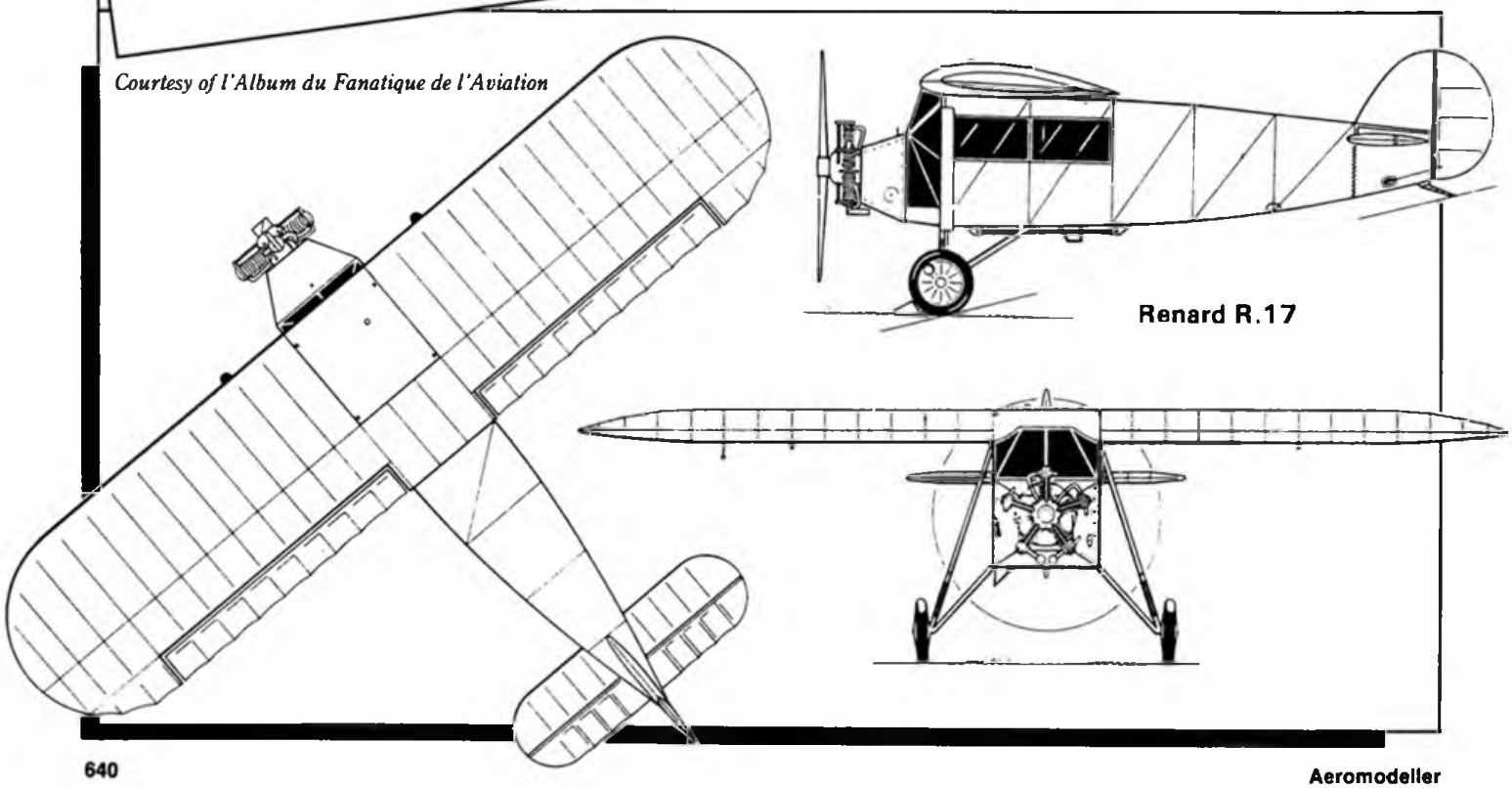
And lest the C/L enthusiasts feel left out, feast your eyes on the stunning Caproni CH.1, a thirties vision in Italian national colours of red, white and green which we know will appeal to many a race-plane modeller. And yes – you've spotted the familiar hand of draughtsman Harry Robinson, although the original was published in l'Album du Fanatique de l'Aviation in 1974.

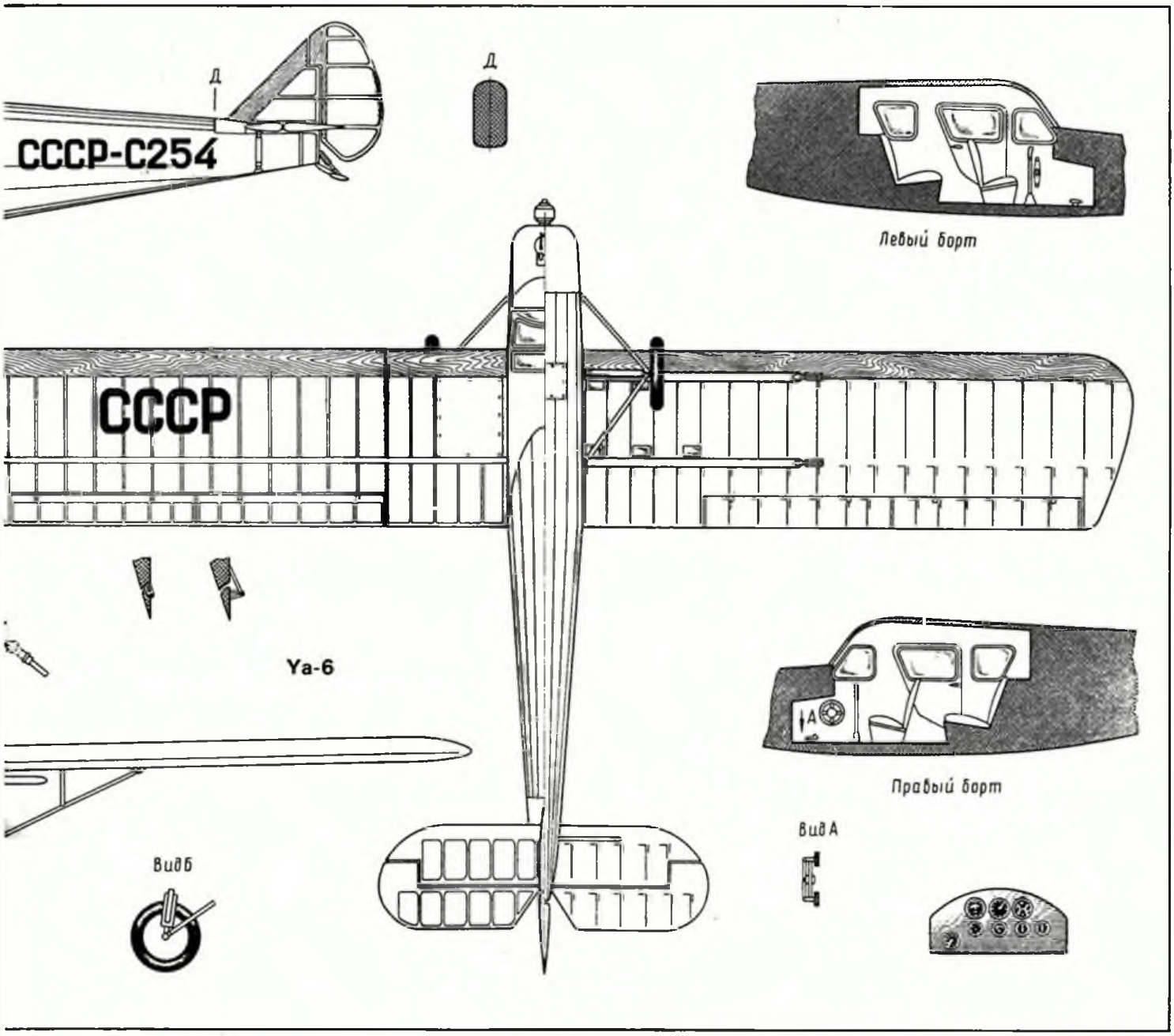
Just time to tell you that coming up shortly in Aeromodeller are Ian Stair's incomparable drawings for that classic inter-war biplane, the Fiat CR-32 – an absolute natural for flying scale, as the one or two enthusiasts who have seen our pre-production proofs can testify. Look out for it!





Courtesy of l'Album du Fanatique de l'Aviation





Over to John Robarts for shocking control line scale affairs...

Bernard Seale's latest – brutal Miles M20 for Merco 61 power awaits full trials!

I AM always very self-critical about my flight performance – in general practice and sport flying as well as competitions. Recently I have given thought to improvement in touch-and-go and landing manoeuvres. If you watch a full-sized aircraft landing you will notice that although it may bounce, this will be a gentle, soft happening which will not throw the machine back into the air. However, many C/L – and R/C – fliers tend to arrive in a heap, rather than settle into that realistic three-pointer.

Why is this? Let us consider a 'full-size' undercarriage, which – on a modern-day aircraft – will be sprung and hydraulically damped, with a considerable amount of travel. These features must be reproduced on the model. Springs should support the weight of the model, with sufficient resilience in reserve to absorb shocks. Wheels are next for attention. Full-size aircraft wheels are of

continued on p.654

FOAM

Part Two – and Steven Midson discusses shapes to form in foam

fun fol

THE answer to the question 'What can be done with sheet foam?' is: Far more than you would at first expect!'

The following comments apply equally to any sheet material that is used 'flat', that is without hammering or other process to stretch it into a compound curved shape. This includes balsa, plywood, paper, aluminium and other sheets. Here we discuss 2mm foam.

Foam's slight superiority lies in the fact that a small amount of pulling will stretch it to fill up a gap, and being 2mm thick, approximately 1mm can be sanded off to smooth any join or irregularity.

The sheet can take three shapes only, namely:

(a) Flat: Fig 1
(b) Cylindrical (constant or varying radius): see Fig 2
(c) Conical: Fig 3

Shape up!

Although you cannot make a compound shape, you will be amazed what complex forms can be made from a combination of the above basic shapes.

A series of small conical pieces glued edge to edge, very closely approaches a smooth compound curve. Indeed, if you study an apparently smoothly-curved aircraft, you will often find that it is really a series of straight lines which the eye sees as a continuous curve. See Fig 4.

However, a simpler and easier method is to cut and shape a piece from a block of foam, and glue it into the sheet foam assembly. Remember, it can easily be sanded; and if cut away inside, it is probably lighter than a built-up 'lobster back' assembly. Fig 5.

You will discover that it is possible to glue the edge of a conical piece to a cylindrical piece; for example, a fuselage top to curved fuselage sides. The slight compromise which arises will probably not even be noticed unless it has been pointed out.

The rules for a cone are that the lines on the surface running down from the point must be straight, and that you can only change radius of curvature at a straight line. Thus to achieve the matching described above and shown in Fig 6, the conical piece becomes three conical shapes with a straight line at the radius change. This is not strictly prototypical but if visible, the effect can usually be sanded out.

Joins up!

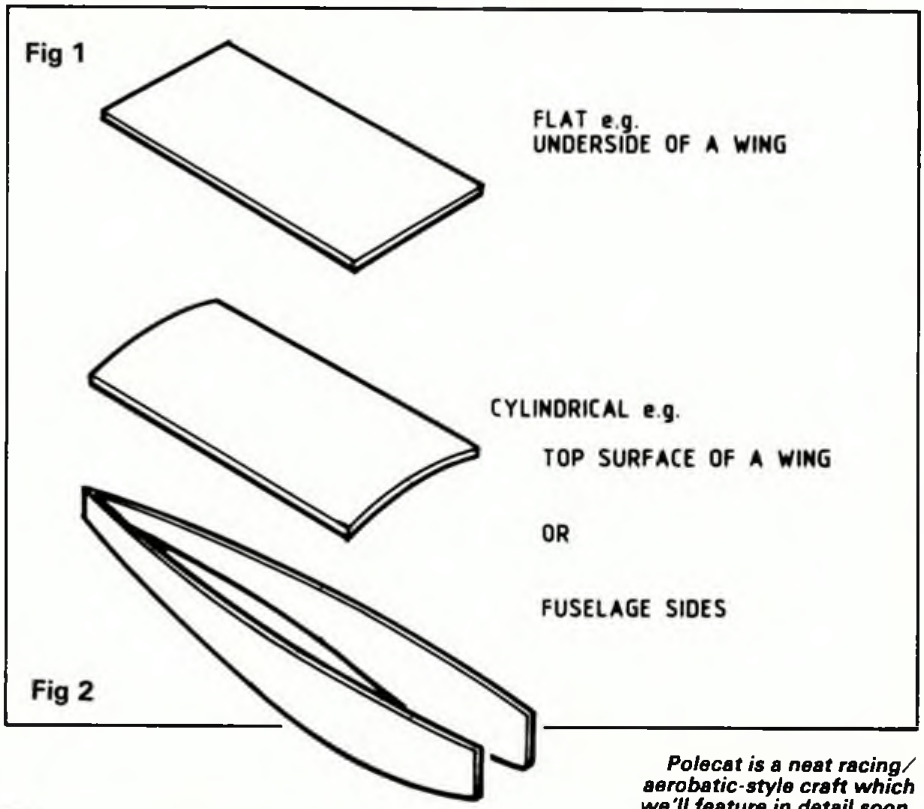
Joins between pieces can be made either edge to edge, or side to edge if the curvature of the 'top' piece is small, or if it is flat. When the glue has set hard, the edges can be trimmed and shaped as required. See Fig 7.

I recommend that PVA glue (slightly thinned if you wish) is used to join the foam. Types which claim to be 'sandable' are superior. There are other latex-type glues which are acceptable, but they do not give you the chance to adjust the pieces after you have brought them together. They are, however, faster to use if you can guarantee placing the pieces in exactly the correct position, first and each time!

Since the foam is so light, it is a shame to throw away the advantage by adding excessive glue, so take care to use fine glue lines.

Some traditional aeromodelling glues and finishes dissolve the foam – if in doubt, try on a piece of scrap.

When joining pieces it is suggested that you use masking tape (not sellotape) to 'pull' the pieces together and to hold there whilst



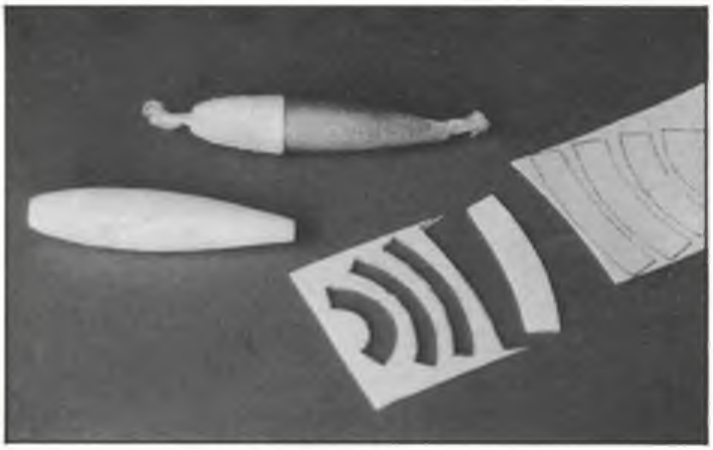
Polecat is a neat racing/ aerobatic-style craft which we'll feature in detail soon.

the glue sets. This is best done with many small strips, say 8-10mm wide rather than large pieces of tape. Fig 8.

Before glueing, cut the tape strips and stick them to one piece. Practice assembling, then peel off the tape, apply glue and join. If you find the masking tape does not want to come off, or pulls pieces of foam with it, dampen it with methylated spirits - this does not attack the foam.

To make a large compound shape for an engine nacelle or even complete fuselage as described above, you will need to make a 4mm-undersized former out of wood or even foam. Cover it with clingfilm and 'heat shrink' it to the former.

low-up



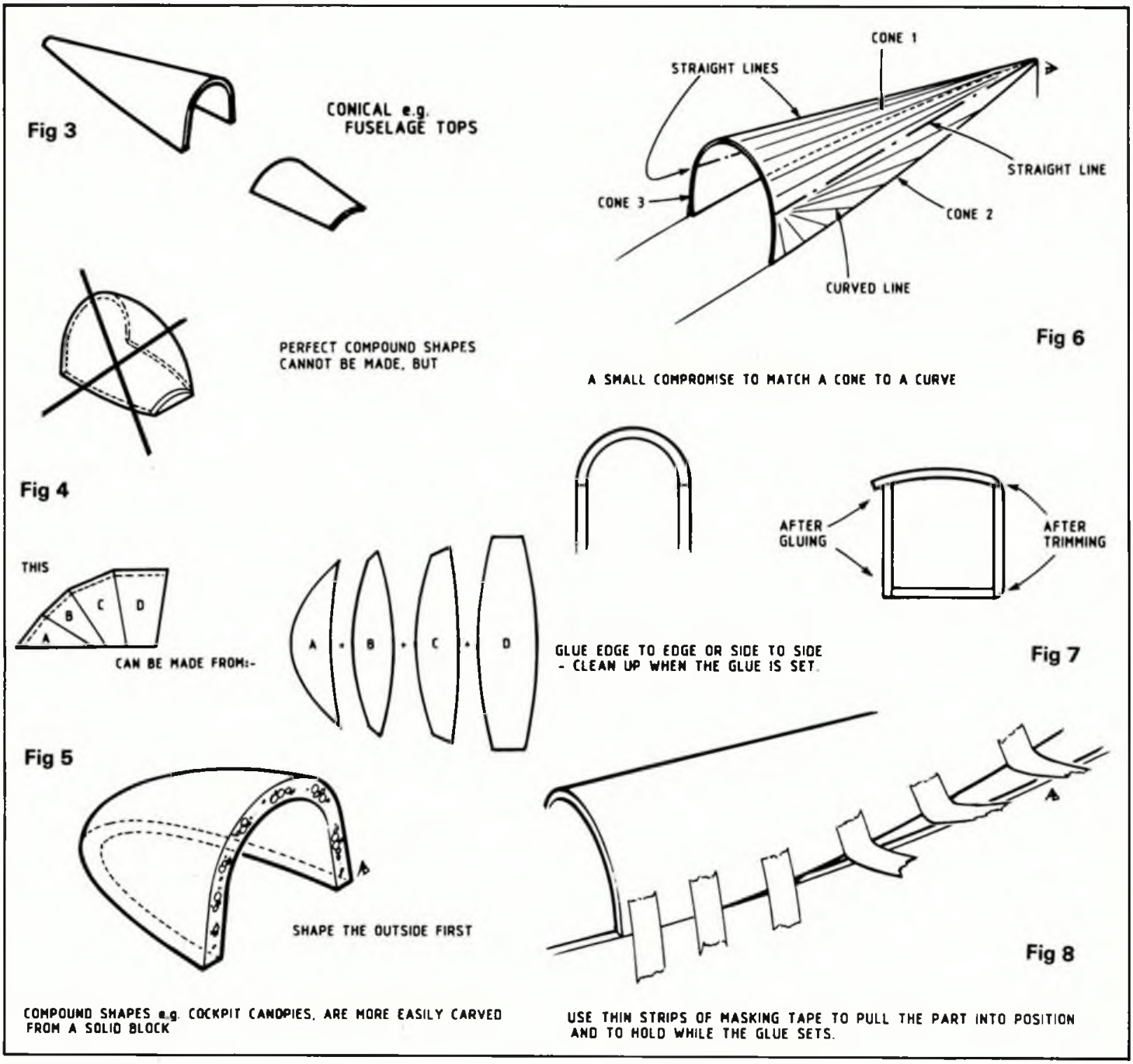
Compound curves of 'monocoque' type are easily produced from pieces of varying radius glued over a suitable former.

Some draughting techniques, or patient trial and error are then required to determine the shapes for the conical pieces which are to be placed and glued edge to edge over the clingfilm, whilst using vast quantities of masking tape to hold them in position till the glue sets. Provided the clingfilm is not pierced the glue will not pass through to fix your moulding to the former...

To remove the moulding cut the foam in half, separate the parts, pull out the clingfilm, add any internal strengthening required, and then glue the two halves together again to complete the assembly.

It will take you a little while to perfect the technique and produce an acceptable moulding, but the final results are very light and pleasing as you do not get the 'flats between the stringers' effect of traditional balsa and tissue construction.

Next month, more construction and finishing techniques.



Survey the scene

What you want from Aeromodeller - your responses aired...

RESULTS of our last Readers' Survey have finally been analysed. Thank you, all who contributed; the information is of great use — and some of it has been acted upon already.

Questions were posed by each major department involved in the production of Aeromodeller. Editorial, circulation and advertising disciplines all sought answers to help produce an even better magazine. The scope was wide — and the honesty of responses is respected. We should like to add that the balance of survey questions was viewed, editorially, as of paramount importance, with considerable notice being taken of the response to the previous questionnaire. Suffice it to say that those questions which requested 'lifestyle' details, such as eating and buying habits, or the number of rooms in one's house, have not been analysed.

But let's get on with it. What's the picture?

This is you!

The picture is happily stable, we'd say. Nearly eighty per cent of Aeromodeller readers have been with the magazine for over five years. It is encouraging to learn that nearly sixty per cent take longer than two hours to read their magazine; and over 90 per cent keep the magazine for over a year, frequently referring back to it (about once a month, on average). The majority of you read most articles. Nearly all buy every issue, with most purchases from newsagent shop collection. Over 70 per cent of readers are aware of publication day. Readers on subscription are well-established, with most loyal to us from two to ten (or more) years. Those who choose not to subscribe quote 'too expensive' as the majority reason, presumably because all the copies have to be paid for in advance, although an amazing one-third of those who replied were unaware that an Aeromodeller subscription costs no more that the over-the-counter price. About the same number requested subs details — these will be with you shortly.

Average it out

The majority of you are in full-time employment, and married, with an average age spanning a wide range from 25 to 64 years, peaking between the mid-thirties and fifties. Average annual income is so spread across the board that conclusions are impossible. Interestingly, of the promotional items mentioned keenest response was for additional supplements, over and above cover-mounted gifts, competitions and money-saving offers. You want even more value for money, in other words. OK — we'll see what we can do.

The importance of Aeromodeller's plans is forcibly underlined; 95 per cent of you stating an intention to build from them. Perhaps surprisingly to many, nearly 70 per cent intend to take part one day in a model flying competition one day — surely proof that there is more to our hobby than merely killing time.

All advertising was deemed useful, which is most encouraging. Overwhelmingly, the majority read all the ads. 78 per cent confirmed that they had bought products as a direct result. Good!

What of your preferences? Most encouragingly, all the content was felt to be 'worthwhile, good or excellent'. And Aeromodeller readers' fierce preference for non-R/C coverage was maintained to the point of paradox. The biggest 'anti' vote was against R/C, despite the fact that it receives scant coverage anyway (and then only of a type we are certain will appeal). Less full-size news was requested, in apparent contradiction to the fact that nearly one-third of you felt our Aircraft Described feature excellent! Broadly, though, the message was 'keep the mixture as before, but more of it'.

So let's look at what you thought, individually, to be the way to improve Aeromodeller. For now — over to you...

More for modellers not in the mainstream
EC, Felinfoel

More practical features; less competition reports
JDM, Billinghay

More attention to flying and trimming
TA, Holland

More on easy-to-build-and-fly competition models; comparative articles on aerofoil sections
JW, Isle of Wight

More on sport flying and building techniques
JR, Grimsby

Fewer specialist subjects; more on low-cost projects for the youngsters – tomorrow's aeromodellers
AW, Thongsbridge

I don't think you appreciate how little you offer youngsters – and then you complain about the lack of new faces
SC, Farnham

Less on individuals – more on the models
JG, Shipton-u-Wychwood

A beginners' corner!
JG, Headingley

Simple, good-flying models wanted
WB, Sweden

Good points here. Regular readers will be aware that we have investigated some aspects of the 'Junior question', and we try to include a fair proportion of designs and features for the youngsters. More planned, as is a basic constructional and flying feature, to run over several months during the winter, to help those starting out, whether afresh or anew.

More adverts
ND, Armagh

Much lower classified advert rates
JE, Abbeytown

Classified ads should be free. Circulation would soar if there was 10-20 pages of 'For Sale'
TK, Sapcote

Try not to be swamped with ads like other publications
A satisfied reader, Belfast

Better Vintage cover; more Indoor
ML, Yateley

Recognising growth in Vintage, don't give them excessive space
SC, Bramhall

More full-size – perhaps reprint earlier Aircraft Described
KH, Canada

More Aircraft Described – otherwise, good balance
DS, Bristol

Return of 1/72 Scale drawings
WO, Shirley

More on 1900-1919 aircraft; Bleriot, Santos-Dumont and other flying models
RW, London

Aeromodeller for models, not full-size
HC, Kenilworth

Stop cutting up pictures and printing out of line on separate pages
JG, Southampton

Stop printing articles at an angle, and no more plans across the staple fold
KJ, Bleadon

Too many drunken pages make me feel dizzy
SH, Australia

More on F/F Rubber Scale
IY, Japan

More on multi-engined Jetex
CP, Corby

Reintroduce 'solid' and 'plastic' content
CP, Heswall Hills

More technical articles – quicker on competition reports
PC, France

Too many space-consuming headings and photos at the expense of text
MS, Wellington

No criticisms – but more World and Euro-champs news
AR, Caversham

More detailed international competition reports
GB, Australia

More on aerodynamics and stressing structures
JR, Porlock

Three-month initial subscription might attract those with local purchase difficulty
JP, Barlby

A series on Life Profiles, or Where are they Now?
GS, Camberley

There is a lot of experience in the brains of successful competition flyers! Ask them!
GW, West Germany

Hire a C/L writer who can write a column as consistently good as Free Flight Scene
SW, USA

Aeromodeller *doesn't cater sufficiently for C/L flying*
NF, Newtownwards

F/F reporting outstanding; most other very good, so no complaints. But rocketry out!
GC, Monks Risborough

More on rockets – details of ballistics and so on
DF, London

Your price is not competitive
MC, Ashford

Reduce the price – more competitive with the others
CP, Offerton

Why is Aeromodeller *so much more expensive than RCM&E?*
DL, Brackley

Aeromodeller's price reflects the highly specialised nature of the contents, as demanded by its readers; there is less advertising revenue in this magazine than the others because it is in the world of R/C where advertising is highest – and *Aeromodeller's* readers wish for no R/C (except for occasional, selective topics). We have recently introduced a number of colour features at not extra cost and we aim to give even better value for money in coming months.

Aeromodeller *should not include R/C subjects*
EA, Whitby

No radio
CH, Bray

Bring back Engine Tests
ME Barby

Immediate reinstatement of Engine Tests and Photo Pages
AC, New Zealand

Engine Test reports; torque/rev graphs
DS, Basildon

There are few enthusiasts with the necessary bench gear to produce meaningful Test figures, and at present all are fully booked with other activities. Photo-pages, better known to *Aeromodeller* readers as Model News, has already made its reappearance.

Club news was good. Why gone?
JH, Maldon

Club News has disappeared because hardly anyone sends in specially-generated Club reports for the magazine.

Mixture at present almost ideal
DF, Church Crookham

Right now it's just perfect
JR, Netherlands

It has never been better
GJ, New Malden

It is getting more interesting; good value
PR, Camberley

Better than ever – I've read them all since No. 2
RA, Stowmarket

American mags lack the 'feel' of Aeromodeller
DL, Australia

I know Aeromodeller *since the early 'fifties – it was very good then, as it is now*
AN, Brazil

I have it because it is without R/C – the only one for C/L, F/F and Scale. Keep it so!
KK, W. Germany

Aeromodeller *is uniquely 'wide church' reading for model aviation buffs*
SU, Ewell

Keep at it – I've been reading it since 1956
AC, Thornton-Cleveleys

Many more pages needed – I'm trying to get everyone back to Aeromodeller, *the only F/F and C/L magazine*
RL, Worthing

I am surrounded by green fields... but nowhere to fly without radio-assist at least. Aeromodeller *has chosen to devote its pages to the ever-decreasing numbers who have the facilities – the more esoteric branch of the hobby... about time to get on track and become the only comprehensive magazine for all model aircraft enthusiasts*
DR, Todmorton

Now there's a thought... Only a small selection of views above. There were many echoes. Biggest demand was for more beginners' projects, and it's clear that the time has come for a fresh course guide to model building and flying. We'll do it! For the rest, all comments have been taken on board and we'll be doing our best to capture as many improvements as possible without losing *Aeromodeller's* unique character. Watch us and see...

A first look at Vintage Weekend, Old Warden on 19-20th August...

Main pic: Miles Patience holds Dad Mike's Elf replica powered Bantom. Above: Charlie Jeffreys and free-flight interpretation of the C/L Tyro Trainer.

Left: Stan Horne, Taffy Williams and Mike Barton at the fun-fly prizegiving.

SPARKLING SHUTTLEWORTH!

WELCOME, ladies and gentlemen, to sunny Old Warden! 'The traditional greeting was as appropriate as ever this year, and despite an overbundance of breeze we know everyone enjoyed a healthy dose of the sort of relaxed, informal model flying that only the site of the Shuttleworth Collection can supply.

Saturday's surprise, which we trust everyone appreciated, was the delightful departure of nearly seventy DH Moths as part of the '89 Famous Grouse Rally. This overnight stay, arranged well in advance, gave everyone the chance to enjoy the greatest assembly of Moth types seen in the UK. Although the last one left the field some time after the scheduled deadline of 10am we hope all will forgive the delay in true Shuttleworth spirit. A similar hold on Sunday, to allow the Collection's DH 51 to depart, was unexpected; a lesson in tighter scheduling for the future...

We'll just mention how delightful it was to welcome modellers old and new, from home and overseas. Special mention must go to Gordon and Josie Burford from down-under, visiting Vintage Weekend for the first time ever, for it was Josie whom we asked to present the prizes at the close play on Sunday evening. Not to mention George Aldrich, who showed how really to fly a Peacemaker...

Next month: all the Rubber and Control Line news. Meanwhile, full results at right. Vintage Corner's assessment of the meeting starts right after the colour pages...

Vic Smeed Precision
A. Crawforth: Tomboy

Frank Zaic Trophy
Peter Sanger: Mayfield Papier Mache

4A Trophy
Arthur Fox: Endeavour

Lancastria Cup
Brian Lister: Frog 150 Midge

Old Tyme Stunt
Mick Taylor: Reinhardt 1951

Fireball Trophy
John Robarts: Tyro Trainer

Fly for Fun
Vintage: Roger Gulliver, KK Pirate
Flying 25: John Michie, Ebenezer

Rolie Lelliott Trophy
Mark Pedwell: Midget 50

Chart/Telco CO.
David Gibbons: Simplex

Classic Speed
Mike Bennett

Mills Speed
Peter Michel: Weatherman

C. Rupert Moore Trophy
Trevor Faulkner: Jackdaw

C.A. Rippon Trophy
Chris Strachan

Danny Sheelds Trophy
Reg Parkham: 1935 Simmers

Earl Stahl
High wing: Simon White, Rearwin Speedster
Low wing: Doc Martin, Wildcat

Top left: Mick Taylor was top in the cheerfully - participated Yoicks competition. Top centre: A highlight was Ron Moulton's first control line flight for many a moon - his Baby Bipe design was replica Deezil powered. Top right: Fine-flying Scion by Doug McHard was aired again. Above left: Gerald Moore is justly proud of his well-built KK Gipsy. Above: The tee-shirt says it all! Dooling powered Dmeco Special by Don Burgess rent the Old Warden air. Left: Blue sky, a neat rubber job, sunburned enthusiast and the Old Warden copse - classic Shuttleworth!

Right: Keith Sedgwick with attractive Kanga Kitten, described by Alex Imrie overleaf. Below: Alan Thompson's neat Pinocchio, Mills .75 powered. Below that: Jacqueline Martin launches dad Brian's 36 Copland. Bottom left: Winner of the Danny Sheelds Trophy was Reg Parham with 1936 Simmers A-Frame pusher. Below right: Aussie visitor David Owen with neat So-Long powered by his own design diesel. Below that: Tomas Leijon's beautiful Bandit's spoked wheels make the design look even older than it is! Bottom right: This young enthusiast was delighted when Vic Smeed signed his neat Mam'selle!

...and Vintage Corner was there...

Alex Imrie visits Vintage Weekend in the sunshine

ON THE Saturday there was the usual difficulty of actually getting out of the car park, since after parking and rigging my eight-foot bamboo pole with its orange windsock car locator, I continually encountered enthusaists with interesting tales to tell or models and engines to show, and an intended quick look at the trade stands became so protracted that one began to feel that going out onto the aerodrome to see the flying would spoil what was already a very enjoyable occasion. Some enthusiasts never actually get out of the car park at all. Their Vintage Weekend consists of renewing acquiantances and making new ones, discussing every aeromodelling topic under the sun and searching the trade stands for materials and elusive bits that their local model shops can't provide. They enjoy this and seldom bring a model with them. When asked about this 'non-particiaption', they all say that they can usually find a place to fly at home but find it harder to surround themselves with dozens of enthusiasts with whom to exchange ideas and generally chew the fat.

Vintage par excellence

At an earlier meeting this year I was impressed with the yellow Keil Kraft Bandit on display at the Ben Buckle Kits stand and resolved to look at it more closely at Old Warden. In this age of modified Vintage models, where 'improvements' sometimes preclude identification of a design, it is a breath of fresh air to see the famous Keil Kraft trio of Pirate, Bandit and Outlaw as free-flight models with no changes from the kits – of the late 1940s. Although the splendid Bandit on the stand was covered with Litespan and sported a plastic propeller spinner, a look inside the kit showed that printed spinner parts are supplied, as is tissue. Selected strip and sheet wood with clearly printed parts on balsa and ply make this a quality kit. You only need wheels and a Mills plus liquids to produce a true Vintage model. I know, since I well remember making the Bandit when it first came out. This is how it really was. There are no present day frills here to spoil the authenticity; and the Pirate and the Outlaw have been treated in the same manner. These kits are excellent value and reasonably priced. I thoroughly recommend them. One word of advice. Despite the passage of forty-odd years, we don't know any more today than Bill Dean did then. Don't change anything. Hopefully at long last, this is the beginning of a trend to give present day Vintage modellers the real thing. Full marks to Ben Buckle Kits.

Stay off the sticks

The south-westerly wind tended to be gusty at times and there was a seeming reduction in the R/C models that usually fly at this meeting when the weather is fine. The Vintage R/C models that did fly appeared well handled in the air, but the odd one or two resorted to aerobatic manoeuvres that immediately proclaimed them to be radio models. Another point is that the big vintage models were carefully designed to behave themselves in the air; in other words, their areas, dihedral and rigging angles provide inherent stability, and these machines really resent having a control input applied for that upsets their equilibirium and it thus takes some time before the oscillations produced are damped out. It was noticeable that, especially on landing, coarse application of controls really upset the models and caused one or two firm arrivals that were no fault of the models or even the wind conditions. If the flyers had just lined the models up for a straight-in approach into wind and reduced power to put them into the correct gliding attitude and then left the sticks alone, the models' inherent stability would generally have coped. I presume that most models had elevator control, so the merest tweak on the stick would have flared the glide sufficiently for them to have landed well. Maybe if the radio men had come across and watched the stable landings that some of the free flight models were making without external assistance they might have got the message. A Vintage radio model with reduced dihedral and incidence does not have this natural stability and needs constant control inputs in the conditions that prevailed, but the authentic free flight Vintage model known more about the business than we do. Try it next time ... stay off the sticks!

Haggart Trophy

This is one of our main precision events but the degree of precision possible in the conditions prevailing was questionable. Since ROG of power models is discouraged at Old Warden on densely populated days, the necessary deletion of that requirement robbed the event of one of its most interesting aspects. Nevertheless, there were ten entrants for the comepetition which was for a target time of 35 seconds, three hand launched flights being allowed. In the first round two models retired due to damage, and the 50-second flight by Stan Horne's Spectre and Paul Lidster's 64-seconds flight (Diamond Demon), both of which flew out of the

Norman Peacock with his double sized Rigby Comet Junior, a better flyer than his big Swallow for reasons mentioned in text.

Right: Ken Tansley's fine 76in version of Calhoun Smith's Sportwagon is powered by a Merco 49. Below right: Tomas Leijon from Sweden pumps his unpainted German ready-to-fly compressed air model. Note angular tips of flying surfaces and tip dihedral of this version. Bottom right: Close-up of the power plant of the German compressed-air model showing the sidewinder mounting of the engine. (See text).

aerodrome and into the fields beyond, gave little hint that these chaps would eventually tie for first place! But their next flights were 35.03 and 34.97 seconds respectively, and later a fly-off decided that Stan Horne was the winner. In third place from the USA was Charlie Bruce with a spark ignition powered Porlock Puffin with a time of 36 seconds.

There is some disquiet amongst Vintage power modellers about this competition, which is rightly seen as the successor of the Bowden International Contest. It has demanding rules regarding authenticity of models eligiable for entry and these really require careful processing. ROG is a must, and from past experience it appears that it is in this area that most modellers showed themselves to be less than capable. There is no doubt that more space than Old Warden provides is required to do this competition justice, and it should really be held on an aerodrome like RAF Barkston Heath or Cranfield.

Windy ain't it?

Most of the small free-flighters were flying in the lee of the trees, and with the varying densities of foilage the flow pattern in that area must have been complicated and, no doubt, this accounts for some of the peculiar flight patterns witnessed. Close by the thick undergrowth almost still-air conditions prevailed but one did not have to venture far out into the field to begin to get the turbulent air whose eddies had a marked vertical downward component. Some models were, as a result, forced into the ground at speeds in excess of their terminal velocities and in such cases severe damage resulted. It was particularly interesting to observe the Stahl mass fly-offs. These models were well built and in good trim being flown as they were by some of our most experienced modellers. However, the varied air they encountered after release decided the issue. Some that got away out of the wake eddies were up and away; others, less lucky, were beaten down prematurely. If one's model could stand a bit of wind it was better to be well out in the field away from that burbling lee turbulence off the trees. There is always some turbulence in winds of the speed experienced at Old Warden and many models manage pretty well with their natural stability except they are, of course, rapidly borne downwind. It was those confused eddies trailing downwind off the trees that were the killers.

Roving commission

The dispersed nature of the competition flying meant that one could not follow the progress of this without missing all the other fun so as a result I resorted to wandering around, and obviously obtained a broader view of the goings-on than would otherwise have been the case. Because most people were flying in the lee of the trees, activity there was really concentrated. All types of models were doing great things, electric, CO_2, diesel, Jetex, rubber and compressed-air were all in evidence as means of power. As usual, it was impossible to see and record all the happenings so the following are merely examples of the varied models (and modellers) that crossed my path.

Ken Tansley, well known modeller and one time member of the old Northern Heights club flew his 'T9' on the Saturday, this being a replica of the machine with which he had so much competition success in 1946. (I see with alarm that I mentioned this model first in Vintage Corner seven years ago!)

Above: Peter Scorey with his 1928 Pelly-Fry seaplane built from the description in the Model Aeroplane Manual. Left: The Italian Job. Larger and heavier than the German compressed-air model, this model - to be sold by Jim Davis Models - had engine mounted upright on plastic nose, has differently shaped flying surfaces and vee dihedral.

Right: Scrappy - a 13in single-seater biplane - was built by Derek Damant who used a Brown Campus CO_2 for power.

This good flying Terry 1 — a 1940s parasol tailless - was built by Terry Brown.

His latest model is a Calhoun Smith Sportwagon (1.4 times full-size), a 76in beauty with an all-up weight of 6.3/4 lbs. which gives a wing loading of just over 1lb/sq ft and is fitted with Fleet radio to operate throttle, rudder and elevator. It is powered by a Merco 49 which is probably more than ample, but the model needed nose weight and Ken considered it better to use a heavy engine rather than lumps of lead. An additional advantage of overpowering is that the model can be flown well throttled back and this reduces the noise level. The Sportwagon has yet to be flown and Ken, being the old stager he is, wisely decided that Old Warden on a public day was no place to do that. The model was on display in the R/C Model Pound on Sunday, where it attracted much attention. The original 54in Sportwagon was, of course, a free flight model (Bantam .19 ignition engine) and was described in detail in Model Planes Annual 1949, which was one of the publications in the much lamented Ian Allen Model Aviation Series.

Keith Sedgwick went to work for Kanga Aero Models in Birmingham in 1940, which was managed at that time by Mrs McQueen since the proprietress, Mrs Bowden, was in Gibraltar with her husband. Keith immediately came under the spell of the CEB designs, and his first model was a fine looking 29in high wing cabin rubber duration model named the Kanga Kitten. He built a number of other models, then like many of us, other demands on his time meant he had a thirty-year break.

Recently he returned to modelling and decided to start at the beginning again, and made his splendid Kitten - the first of the type I have seen. Nicely finished in yellow and whie the model fittingly carried a kangaroo on the rudder.

Norman Peacock is a tenacious worker who just won't give up on the Rigby card models. Finding that the performance on his large versions suffered because of high wing loadings he has adopted Mike Hetherington's advice to make lighter card airframes. Previously his models adhered to the single surfaced wings of the small originals, but the induced drag was so high that turning flight cost too much precious height, which is always a rare commodity with card models. However, fitting double surfaced wings to his new double-sized Comet Junior has made it a more successful flyer than the big Swallow, which even when powered by a DC Dart was never able to climb above six feet.

Doug McHard flew his Hawker Demon, Short Scion and Reid and Sigrist Desford, and while so doing, was followed by a knot of admirers. Cameras clicked to get action shots and as the Scion (the gears and wire loop drives making a lovely rattling sound not unlike the clatter of Pobjoys) approached to land beside us, so intent was Dick Skerrett in getting his photo of a lifetime that he failed to notice that he had become an obstruction - but the knock-off-ability worked as intended and the Scion was soon assembled again. Launching this model is a distinct art, since removal of the revolving starter disc with the left hand must not interfere with the actual release of the model with the right hand immediately afterwards. After the Demon's flights (see Vintage Corner, September 1989) Doug was plagued with questions, and with infinite patience not only did he recount how to get the fine pre-war service finish that his model displayed, but ended up by giving the low-down on the Demon's rigging, explaining the effect of decalage and the lifting tailplane set at two degrees of negative incidence. He attributes the good flying properties of this aeroplane to the sweepback of the upper plane. Eventually the questioners seemed satisfied - might we, as a result of this interrogation, expect to see a whole squadron of Demons at Scale or Vintage Weekends next year?

Denis Fairlie, regular attender at all our meetings and a member of the 1936 British Wakefield Team, was flying a two-thirds size Wakefield, The Jay, a 28in mid-wing design by M Garnett which was described in this magazine in November 1942. This model made a delightful ROG take-off in the dead air fairly close in to the dense undergrowth, and climbed straight ahead towards the trees; but when it appeared that nothing could prevent it from roosting some twenty feet up, it turned about with its wing top almost brushing the leaves and orbitted

Above: Ted Gardener's Veronite No 1, 28 inches span, is electric-powered by a Derek Knight motor instead of rubber, as original. Left: Charlie Havis with his P E Norman designed Antspants. All-red model is fitted with wingtip slots and is replica Mills 1.3 powered. Foot of page: This double-sized Frog Interceptor, powered by a K&P electric motor, was flown by David Moult.

Denis Fairlie with his Jay which performed in such an amazing manner, as mentioned in text.

gently around before coming down in a very flat glide in a tail-down attitude, to make an almost perfect three-point landing. Denis said that this was the second time the model had behaved like that (doubtless due to a puff of wind at precisely the right moment that made it turn when it did) and he was not going to try it again! Looking this design up in the magazine made me realise that many such models appear inconspiciously in print; they never made the big time but remain as small, dimensioned drawings that can be easily overlooked. Making full-size working drawings is a piece of cake, and the resulting model is far more satisfying than something everybody else is flying.

It is surprising how many present day vintage modellers, who possess the original descriptive magazine article for a model, won't cut wood until the postman pushes the full size plan through their letterboxes; yet this has merely been drawn up from the information that they already had anyway!

Another peculiar quirk emerged from talking to the modellers. Many did not know the origin of their models. Often they only had a xerox copy of a plan which the plan supplier assured them was a Vintage design. Sometimes this was devoid of information, occasionally not even stating the model's name! I find this completely different from my own approach, where the motivation to build a certain model comes from a knowledge of its background or of the model's designer.

It is always refreshing to speak to the modellers; some of them complain; others joke; some lighten my load — while others make work for me! All confirm the enthusiasm for Vintage models that has such a hold on enthusiasts who were there then, or those that wished they had been there then, and others who couldn't care less about there and then except that it produced a crop of bumper designs that they enjoy building and flying to-day!

Compressed-air

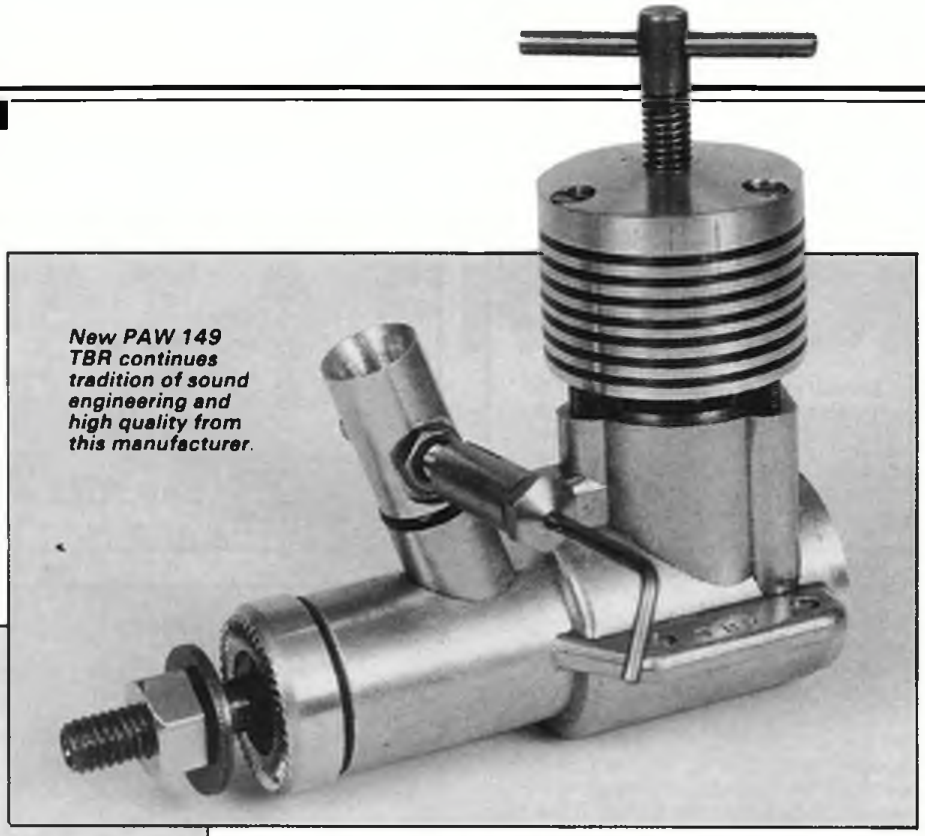
If there were any Vintage compressed-air models present I failed to locate them. This disappointment was tempered somewhat by being able to examine two versions of a ready-to-fly commercially available model of the type. Swedish champion Tomas Leijon, who currently holds R/C Speed (197 mph) and R/C floatplane records, was flying one of German origin. The manufacturer is not known. The idea is not new since I remember some eight years ago seeing such an engine as a geared unit in a toy car which did a short sprint after a few strokes of a plastic pump. This is obviously a development. The plastic engine, whose piston is not actually attached to the connecting rod, is glued to an obechi profile fuselage which also houses a small transparent plastic bottle. Sheet balsa wings and tail are taped together and the complete model weighs about three ounces. Tomas tells us that he has had flights of up to 1.1/2 minutes under ideal conditions, and he intends to fit the unit into a lightweight, built-up airframe. Before readers plan to follow suit it must be remembered that this engine, not being of '1930s type' is not 'SAM-legal' and therefore would not be eligible for vintage competition under the SAM ruling.

An Italian version which has a plastic nose fairing will be imported soon and sold by Jim Davis Models for £29.95 complete with pump. The only identification on this model was 'Ecological Air Propulsion', and the container was marked with the triangular international danger sign plus the inscription 'Max Pressure 7 Bar'. As one Bar equals one Atmosphere this means that the tank is safe to 100psi, a figure that I doubt will be achieved with the simple pump provided. Tomas was using his father's bicycle pump (he said) and when I asked him what pressure he put in, he said that he pumped until he could not pump anymore and when his face changed from red to purple, he stopped! His model flew well but landed with plenty of pressure still in the container. The propeller (he started it by blowing on it!) was about eight inches in diameter. His engine ran better than the Italian job, but this was probably only due to the differences in the pressures actually in the containers.

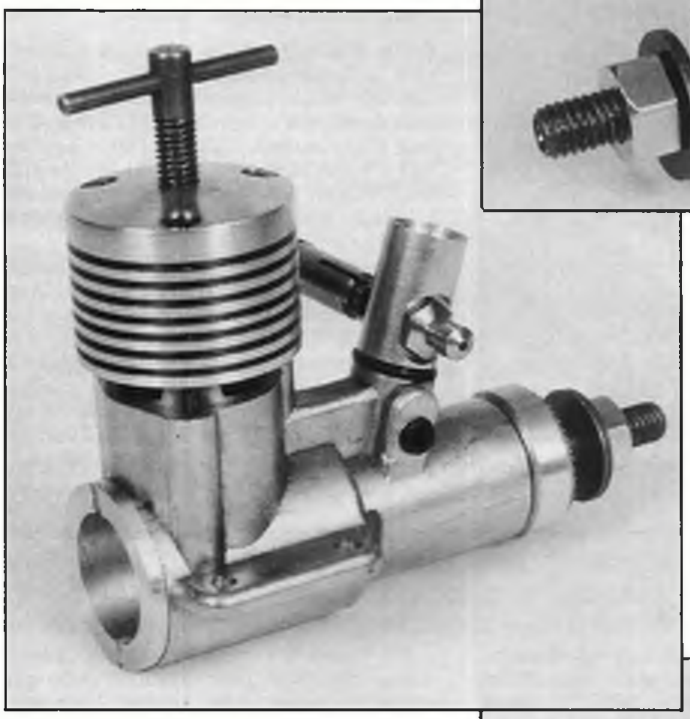
It is appreciated that this compressed-air model is not Vintage in any way, but it has been seen at Vintage Weekend and is mentioned here because of its follow-on interest to our articles on the subject earlier this year.

MOTOR MART

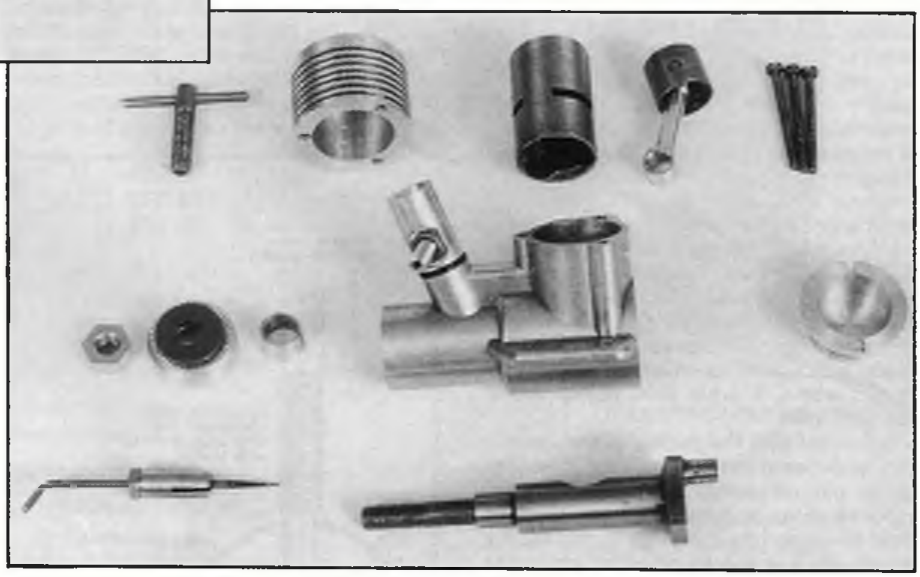
Latest diesels and glows from the UK and USA examined



New PAW 149 TBR continues tradition of sound engineering and high quality from this manufacturer.



Left: 149 TBR prices range from £49.45 to £60.95. Watch for PAW adverts! Below: Main components. Robustness guarantees long life...



MAINTAINING their policy of introducing new versions of established favourites in order to provide continually-competitive motors with full spares and service backing, Progress Aero Works' latest offering, the twin-ball-race PAW 149TBR, is now on the model shop shelves. Actually, three new versions of the familiar 1.5cc diesel will be available, as summarised below.

The 149 DS-4 is the 'bread-and-butter' model of the range, with bushed main bearing. One step up comes the 149 DS-BR, distinguished by its single, rear ballrace, and then we have the newest of the lot, the TBR. All are available in standard, tuned or R/C versions, the last type obviously distinguished by a straightforward barrel throttle with airbleed adjustment. In response to requests from the C/L competition fraternity there is now also a Goodyear/Combat, or 'G' version with needle valve lowered to the grubscrew position. This is more suitable for a side-mounted location, rendering it less vulnerable to accident damage. Of course, conversion of this model to R/C form is impossible.

Refinement

Much of the familiar 149 diesel is unchanged in this latest TBR refinement. Mounting dimensions remain as before, as does the piston, con-rod and gudgeon pin assembly. Bore is 0.500in and stroke 0.460in. Crankshaft diameter is 10mm and crank bore 1/4in. Dimensions of the front ballrace are 7x14x3.5mm; rear race is 10x19x5mm. Motor weight is 4.1/4oz. Claimed rpm figures are as follows: 15,800 for the standard TBR on a Taipan 7x4, with 17,000 produced by the tuned version on the same prop; changing to the Topflight 6x4 gives 30,000 (standard) and 21,500 (tuned). Maximum output of the R/C version is 0.29bhp at 19,500, with the standard version quoted as 0.3bhp at 20,000 and the tuned version top of the lot at 0.35 bhp at 24,000rpm.

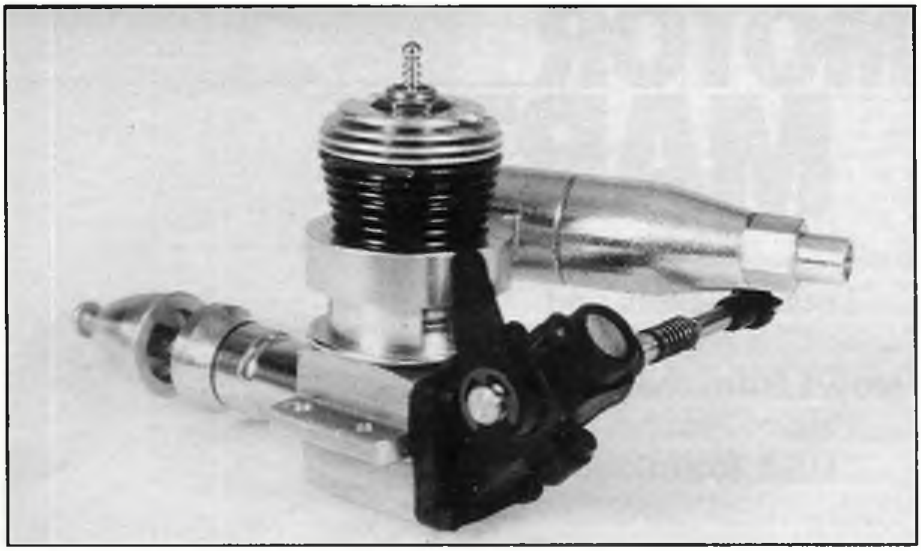
Tony Eifflaender tells us that on test in a Midge speed model at the Three Sisters Gala, 109.76mph was achieved despite a misfiring engine. Encouraging...

All PAW engines come with a helpful leaflet incorporating much advice gained by competition experience. Spares and service back-up is excellent.

Cox .074 Queen Bee

Latest from Cox Hobbies, that most prolific of glow motor manufacturers from Santa Ana, California, is the R/C versions of the Queen Bee 0.074 – which, as the designation

Several claims recently received for the title of smallest ever engine. We still think Ray Arden holds the title; but this Czechoslovakian 0.15cc diesel, built by Gustav Zapletal, is interesting...



indicates, is of 0.074cu in, or 1.21cc. Much of the engine follows traditional Cox design, but there are some interesting departures. Most obviously, a standard glowplug is fitted in place of the familiar one-piece glow-head. The cylinder assembly holds no surprises; nor does the crankcase, which is machined in classic Cox fashion, although the beam mounting lugs will be unfamiliar to enthusiasts reared on the myriad of 0.049 Cox glows produced since the mid-fifties. Reed induction is retained via a neat, moulded nylon, downdraught carburetter and back-plate assembly. The carburetter itself is separately attached via two screws and may be rotated through 180 degrees if installation demands. A neat expansion silencer muffles much of the usual small-glow's howl at little weight penalty.

Handling characteristics are pleasant and

Cox Queen Bee .074 RC shown above and left, with purpose-built motor mount.

docile. Minimal running-in is claimed necessary, although all engines benefit from a few carefully-judged tankfuls. Throttle response was reasonable – a reduction to about one-half of the quoted 13,500rpm on a Topflite 7x3.1/2 prop seemingly a touch high; but still likely to have a marked slowing effect on the relatively small models demanded by this motor.

The comprehensive instructions leaflet should leave no room for operator error. Even the phenomenon of 'shellacking' – a varnish-like build-up on piston and cylinder – is analysed and treatment recommended. A moulded nylon motor mount is also included, although our example proved a little flimsy in use.

SCALE MATTERS

Continued from p.641

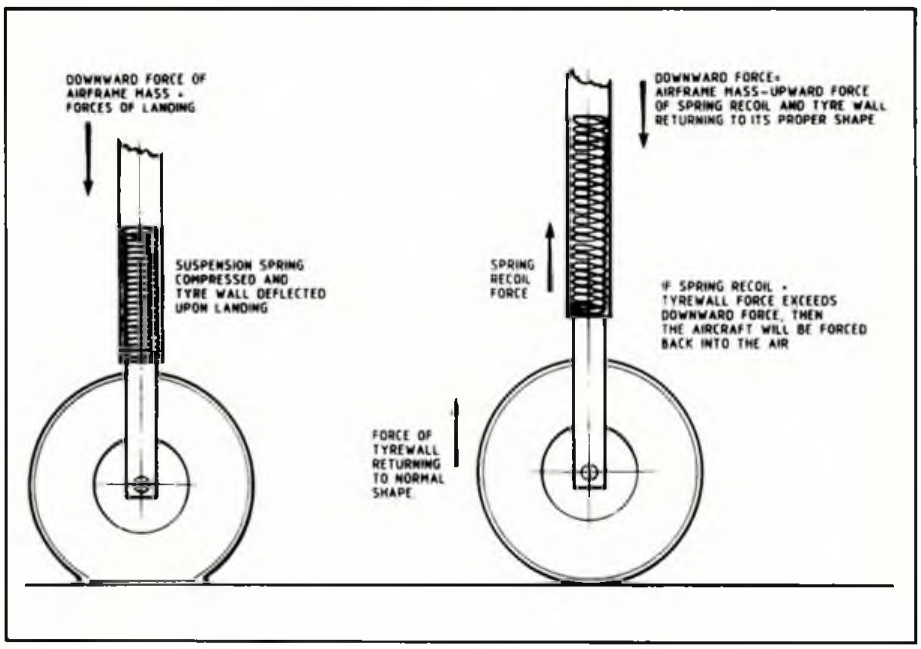
the low-pressure type. A considerable part of landing and taxying shocks is absorbed by the tyre wall. Rubber can absorb a tremendous amount of energy for small mass; this quality is known as hysteresis. Tyre and suspension combine to soak up the energy of the aircraft's arrival without ramming the bump stops. If the model's undercarriage is correctly designed it should be possible to build a lighter model because the structure need not take all the shocks throughout. Free flight modellers build light to reduce wing loading so that the model's speed is low, and kinetic energy to be dissipated on landing is at a minimum. This lessens the risk of the model self-destructing on arrival. There is no reason why C/L Scale fliers cannot follow the same rule.

It is vital that the flexing of the model's tyre walls must not be such that it returns to its natural profile coincident with the rebound of the suspension spring. This will tend to bounce the model back into the air again, which is exactly what we are trying to eliminate. This problem was actually suffered by one of the USA team members at the 1988 World Champs in Kiev.

Wheel, wheel, wheel

It is thus worth hunting around for wheels with tyres flexible enough to absorb as much of the landing loads as possible. The next problem may then be that the tyre and hub may part company under taxying. Remedy? Literally glue the tyre in place with cyano. I have done just this on my DHC Chipmunk (which has an otherwise rigid undercarriage) with astounding results; touch and goes, and landings, are now very satisfying to achieve.

Of course, it is essential that the wheels track correctly or the model may crab, with unsightly wobbly legs marring your taxy option and causing unwelcome vibration. Check with a straight-edge at an early stage of construction.



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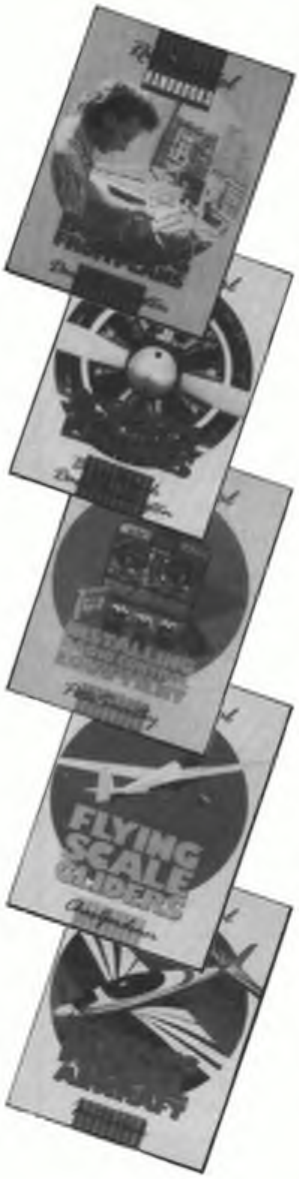

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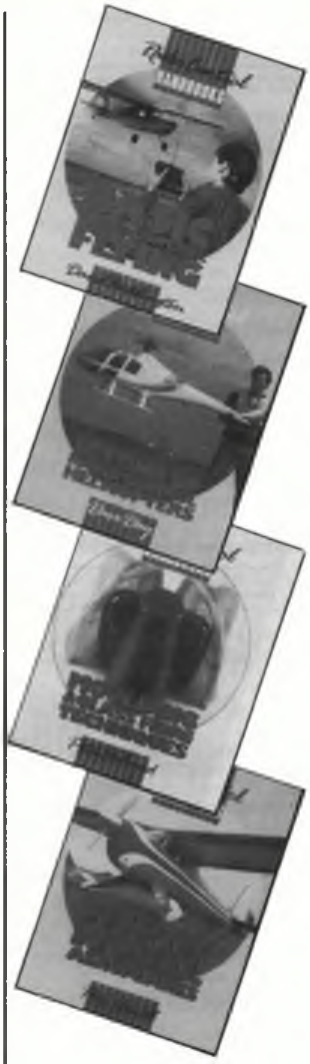

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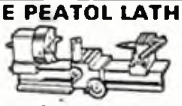

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