OCTOBER, 1953

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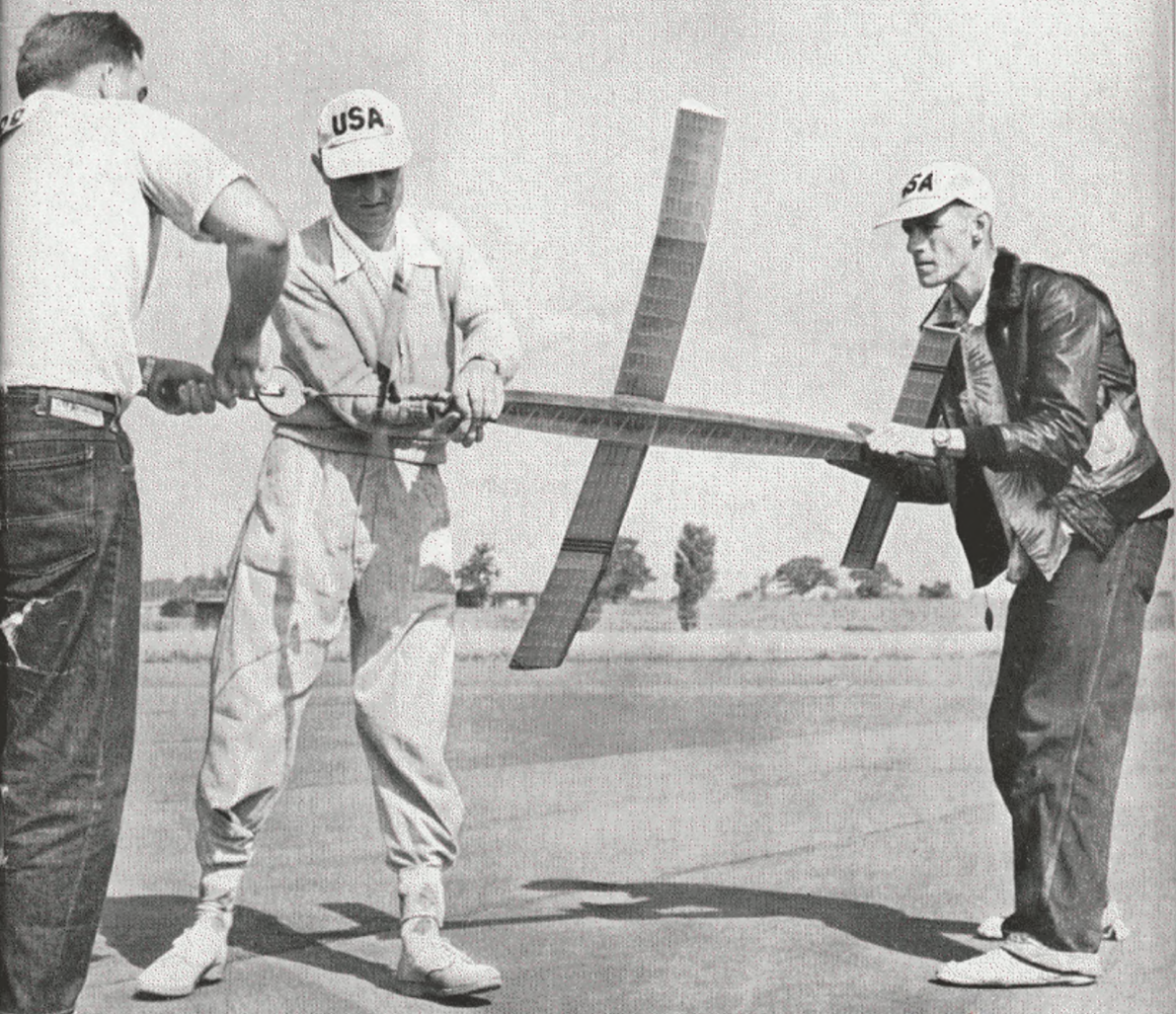

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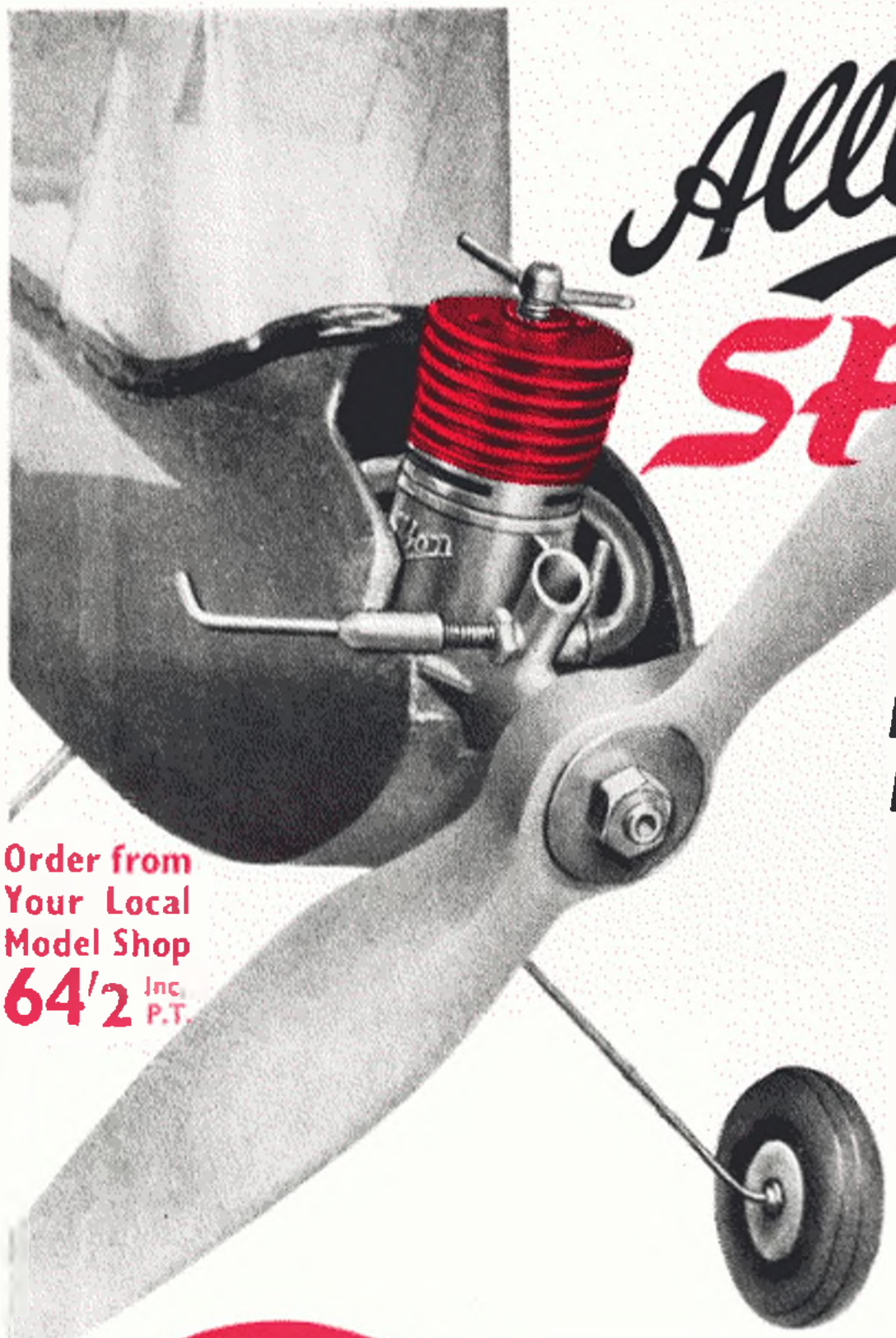

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VOLUME XVIII
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Editorial and Advertisement Offices:
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FOLLOWING on the first of the 1953 World Championship series at Milan, in which Great Britain came so close to being the winners, events culminated at Cranfield over the August Bank Holiday with what is generally agreed to be the finest International model meeting yet witnessed.

The many months of hard work by the organising committee paid dividends, assisted by the most remarkable spell of fine weather yet experienced. Following on many weeks of un-Summerlike weather, hopes were very low indeed on July 31st, the date of the official reception, for that day saw a steady and continuous downpour of rain for sixteen hours solid. However, the Clerk of the Weather relented and August Bank Holiday for 1953 must surely be a record for the fine weather provided.

Greater support than ever had been received from twenty-one nations, and it is interesting to record that the S.M.A.E. only had to find ten Wakefield proxies to accommodate those who were unable to accompany their models personally, and no Power proxies were required.

As to the events themselves, these are fully reported elsewhere in this issue, but we are certain that everyone who was fortunate enough to witness these two major contests will agree that the whole tone of the meeting was a steady build up to the most remarkable climax in the history of aeromodelling.

The perfect weather produced three Wakefield finalists with triple maximums, and the contest was therefore declared a tie between Argentina, Great Britain and the U.S.A. A fourth round was then conducted to decide the individual holder of the Trophy, and our sincere congratulations go to Joe Foster of America for his remarkable flight of 7 : 25 in conditions where thermals were rapidly disappearing.

It is with pride that we place on record the feat of fourteen-year-old Hugh O'Donnell of the Whitefield Club, on whose young shoulders fell the honour of upholding British prestige in this most important fly-off. Here indeed is a world champion of the future, as his steady record over the last few years clearly indicates.

The fourth, and the last, World Championship for 1953 was that for A–2 Class Gliders, held again at Lesce-Bled in Yugoslavia, and here the picture is not so bright from the British viewpoint.

Our team arrived in Yugoslavia only to find that their models had been shunted off the train somewhere along the route, and in spite of frantic efforts to trace them they were still missing when the contest was held. No words are adequate to describe the sterling efforts of the team who, nothing daunted, designed and built two models—working all through the night prior to the contest—in order to obtain at least some sort of score for their country. Their efforts were duly rewarded after excruciatingly bad luck in the first round when everything was literally washed out, a feat that was duly recognised at the concluding banquet, when a special award was made to the British contingent in appreciation of their efforts and refusal to be beaten, and they undoubtedly received the greatest round of applause at this function.

Much has been learned from the 1953 Championship events that calls for both home and international consideration, and we trust that the lessons learnt will be put to good use for future years.

Finally our thanks to those many readers who wrote congratulating us on the production of our Stop Press Supplement last month, a service which has been sincerely appreciated both at home and abroad.

Cover Picture . . . .

. . . shows World Champion (Wakefield) Joe Foster, of California, U.S.A., putting the last few turns on the second motor for his third maximum flight at Cranfield. Shielding the nose is Joe Elgin, one of the victorious American power team, while team-mate and World Champion (Power) Dave Kneeland, of Missouri, U.S.A., acts as anchor-man.

Heard at the Hangar Doors

A Surprise Decision

Probably the greatest surprise at the highly successful World Championships meeting at Cranfield was the belated announcement that, as the rules for the Wakefield Trophy event call for a three-round contest, the decision of the Jury was a three-country tie, the fourth fly-off only being a means of deciding who should hold the actual trophy.

Whilst this was naturally gratifying from a nationalist viewpoint, we fail to understand how this tallies with the printed Rule 10, which states : " If two or more competitors make the same score *the final placing* shall be established by a fourth flight which will be timed to the end ". In our opinion the official decision detracts from what was a very definite and clear-cut American win, and we trust that the F.A.I. will speedily sort out a clarification of this, and other rulings that have proven embarrassing in practice.

We have been taken to task for referring to the Jury as of F.A.I. status in our Special Supplement, whereas their appointment was at the invitation of the S.M.A.E. However, we fail to see how a committee consisting of the President, Secretary and Assistant Secretary of the Models Commission can be regarded as having other than full F.A.I. authority, though we stand to be corrected !

More Time, Gentlemen—Please

How often a well-intentioned rule can go astray was amply demonstrated during the fourth round fly-off in the 1953 Wakefield. This, surely the most vital in the whole series of flights, was conducted under conditions that severely handicapped the keyed-up flyers, and the F.A.I. rulings want a speedy alteration to cope with possible future fly-offs.

In each of the three normal rounds, flyers have at least half an hour in which to make their flight, thus allowing for damages, winding difficulties, bringing into action a reserve model, etc., etc. In a fly-off, however, all such latitude is ignored, and the competitors are required to get their models airborne within three minutes of the word to start winding. As was remarked at the time, some of the more complicated models require more than three minutes to prepare for a flight, and as was demonstrated by Hughie O'Donnell's misfortune, the slightest mishap during preparation can wreck a good man's chances. Delighted though he was to win, we know Joe Foster had every sympathy with Hughie's hard luck and would have much preferred to have a straight fight with a plucky opponent, who, young though he is, showed that he has the stuff that makes the world's best aeromodellers.

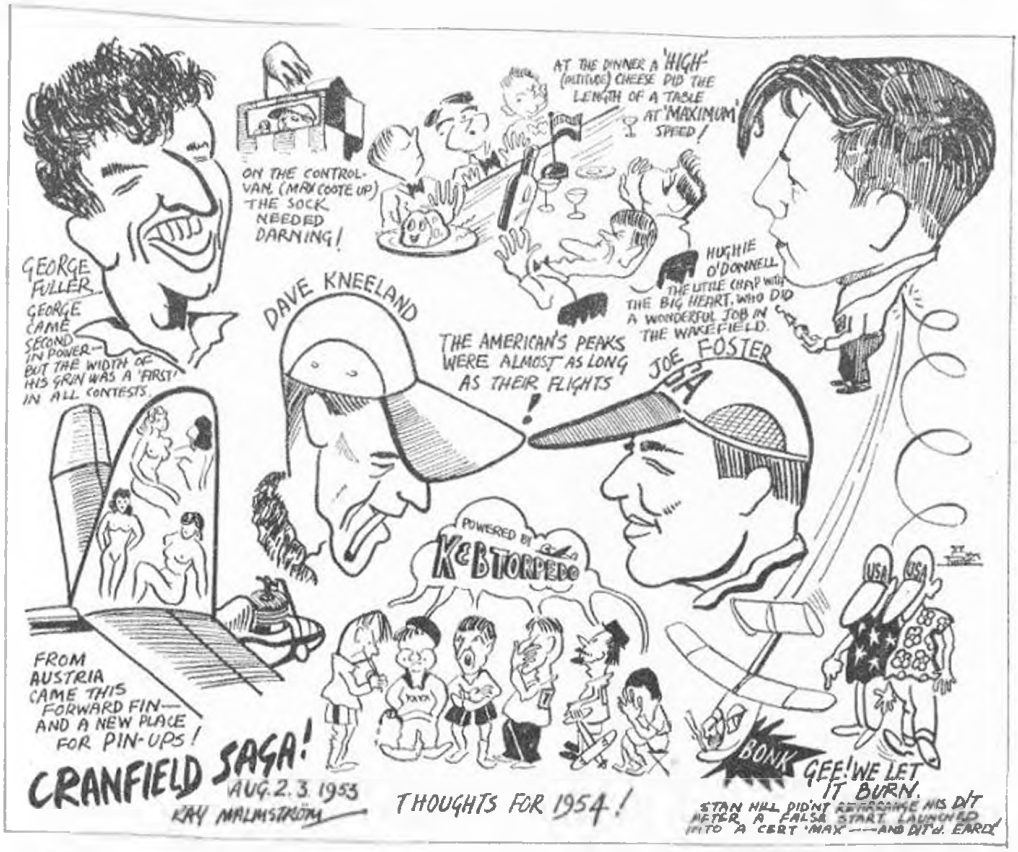
Noticeable too was the impractibility of the " one helper only " rule particularly in the Wakefield event. In fact one could safely say that a large proportion of modern Wakefield models need at some time during winding operations, the assistance of a third helper. Certainly three helpers were very much in evidence at Cranfield in spite of the prevailing rules, and although we agree with keeping the number of people on the take-off area to a minimum, we do feel that here is a common sense adjustment to present Wakefield rules that might well be introduced for 1954. What do Wakefield flyers themselves think ?

K & B Corner

The view on this page of the competitors enclosure at Cranfield reveals both American and British teams besides many other personalities. During most of the run of the power event the American boys were besieged by would-be acquirers of K & B Torpedoes, and it says much for American generosity when we record that samples of these new motors were fairly distributed on an international basis. Knowledge of American generosity unfortunately brought aeromodelling spivs on the scene endeavouring to buy up supplies for their own financial gain. This was not only restricted to motors, to witness one grasping customer who cadged the entire stock of American Glo fuel for his selfish little self. We only hope it blows holes in the tops of all his pistons !

Pity the Poor Timekeepers

Much criticism has been voiced regarding Ted Evan's first round flight time in the Wakefield,



officially recorded as 4 : 32. Being present on the tarmac during the flight in question we state without hesitation that Ted's model did go out of sight at the time given, mainly due to the extreme height the model had reached. It was obvious that even had the wings fallen off at the time watches were stopped, the model would have gone on falling, never mind flying, for a maximum. The timekeepers for the international contests at Cranfield were all specially picked and the two chaps in question we know as experienced flyers of above average integrity who did their job *exactly according to the rules* which state that watches will be stopped *when the model goes out of sight*. We have every sympathy with Ted who failed to record what was in fact a flight of over five minutes, but point out emphatically that the fault lies with the rules and not with the timekeepers. Such episodes will, we hope, be avoided in future when the five flight, three minute maximum rule comes into use.

So Now we Know

We have often wondered what it took to become a can-carrying official in the S.M.A.E., but our inquisitive instinct has been set at rest by reference to the sour-grape tinged writings of the Editor of the " Northern Area News ". Decrying the fact that any spectator going to Cranfield would not be able to do more than spectate (though who the heck would expect to do otherwise passes our understanding !), he states that " you have to be rich or influential to be an official ".

And to think that all these years we have laboured under the impression that the sole requisite was an ability and willingness to do a job of work in an honorary capacity, and be ready at all times to be kicked when perhaps thanks might be anticipated. But then probably our sense of values is wrong somewhere.

We are consoled by the knowledge that the author of such damaging mis-statements is undergoing a bout of sour-grape squeezing by virtue of the fact that the Organising Committee only allocated official positions to those who were willing to do more than half an hour's work throughout the period of the contests, and thus deprived him of a buckshee week-end at the Society's (and its members') expense.

I.R.C.M.S.
MEETING AT SOUTHEND

STRONG winds and weak organisation spoilt what might have been an interesting International Radio Controlled Contest at Southend on July 26th. The flying area was ill-chosen, and no attempt was made to alter it until after the contest had actually started—when it was too late—being down wind on the edge of the aerodrome, adjacent to a railway line and housing estate.

Sid Allen was the only competitor who put up a model in the contest. This was promptly blown out of sight over the housing estate, but, being the only flight, was properly awarded first prize! All credit to Sid for risking the model—not his best as he was happy to point out—and for at least a minute it was responsive in some degree to signals but this seems a very sad effort for an *International* event. We feel very strongly that the S.M.A.E. should retain full rights to organise any and every event that is honoured by acceptance in the F.A.I. Calendar in future years. A little more thought, and some prompt announcement from a well-sited P.A. system (even this was ill placed!) could have produced an abridged evening contest with say a reduced time per competitor that would have merited in some degree its imposing title.

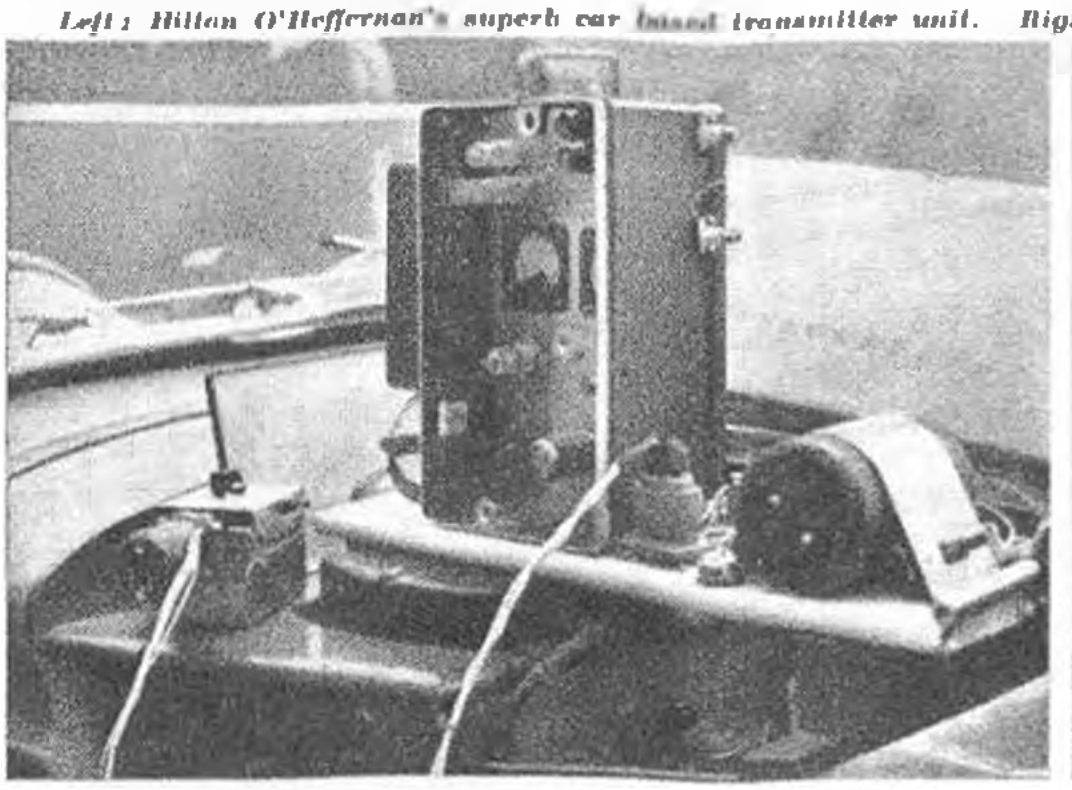
However, as a friendly radio control fans get-together it served a useful purpose. Nearly everyone who claims to be anyone in that field was present, including the putative world record holder O'Heffernan, with his most interesting car-based transmitter. Flying Doctor Millet came over from France, and was more than dismayed when his carefully prepared glider was damaged before he could fly in the "social" evening attempts. Comforted by his compatriots Madame and

L'Equipe Francaise: Albert Wastable, his charming wife, and "le Docteur volant" Millet. Albert holds his remarkable Micron powered model which made a wonderful after-contest display.

Monsieur A. Wastable he repaired it and performed creditably. Most amazing spectacle of the day was undoubtedly Wastable's performance. Equipped with a six-reed set he had slow and fast engine speeds, rudder and elevator controls. First the model taxied out on the grass, was given full throttle and took off in a few feet, to climb steadily. Directional control was perfect, and for the first time a "fullsize" type of loop was seen with the model accelerating in the climb, without any of the prior spinning to attain velocity. A spot landing was made, on a dead stick after crowds had baulked an engine-on attempt, within ten paces of the marker—bloc. Millet's hat! Several other enthusiasts, notably Lt. Col. Taplin and Sid Allen, had also elevator models on show, but these were not flown.

So impressed was George Honnest Redlich, who had acted as guide, comforter and translator to the French party, that when we last saw him he had already had successful flight tests with *his* six-reed set!

Left: Hilton O'Heffernan's superb car based transmitter unit. Right: Rodney Clark heares off Sid Allen's winner.



We apologise for not showing Dave Kneeland with his official trophy, but feel sure that readers will appreciate this sight of a very unofficial trophy presented to Dave at the Cranfield banquet by artist Ray Malmstrom.

Aeromodeller Staff Members Report on

The Three Free-Flight

WORLD CHAMPIONSHIPS

WAKEFIELD

Joe Foster U.S.A.

POWER

Dave Kneeland
U.S.A.

A/2 GLIDER

Hans Hansen
Denmark

1953 has been a significant year in international contest flying with a total of twenty-four nations competing in the World Championship events. Outstanding factors were the sweeping American victories in Power and Wakefield at Cranfield, and the return of the A/2 Glider Championship to Denmark, the country of its original conception.

Never has the standard of international flying been so high, and never has the competition between nations been so keen. We of the AEROMODELLER have done our best to convey by pen and camera in following pages the true spirit of these events, and sincerely hope that even our non-contest readers will appreciate the space devoted to the subject.

Aeromodellers the world over have a common bond in the fascination and education of a grand hobby, and to our minds the actual competition side of these World Championships is secondary to the free exchange of ideas and the splendid atmosphere of international cameradie that such events leave in their wake.

Power

On the left: George Fuller puts the 'fluence on his Elfin 1/8 job under the eyes of several American team-members.

1. Another British team member who failed to find lift was Pete Cameron who aggregated 10:01. 2. Processing scene where the Frenchmen await their turn at the scales. 3. Norman Couling gets ready to press the stop watch button as Yugoslav Tasic eases the last revs from his motor. 4. Terrific dihedral was a feature of two Swiss machines, one of which was lost on the previous day. Jakob Huber tunes up whilst team manager Arnold Degen looks on. 5. Joe Elgin returned the first max of the meeting with a climb that shook nearly everybody.

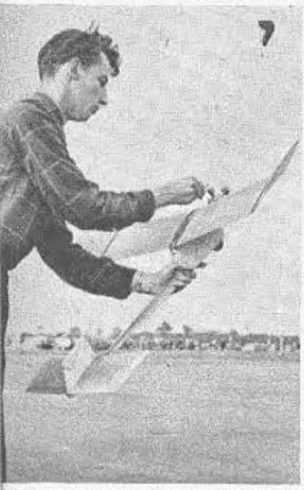
THE Third World Power Championships was delayed in starting as the wind had swung 120 degrees away from its earlier prevailing quarter. In consequence, thermals had time to brew up whilst control was moved to its new point. This was a good thing, for all first round flights were then made in equal conditions of visibility and thermal activity, and the contest opened up with a ripsnorting climb by Joe Elgin's slim pylon, automatically conceded by astounded spectators as a maximum from the moment the Torpedo 15 stopped at 19 seconds. Elgin's flight was in fact a prelude to a contest *par excellence*. Probably the most educational power event ever held in Europe, it was certainly the best run in the annals of International aeromodelling. For the first time in our experience, power models were reaching Wakefield class heights in 17/20 seconds power run, and, significant fact, the U.S.A. were making their first real entry in the World Power Championships. American participation, an event that has been long awaited by British modellers, was more than welcome at Cranfield.

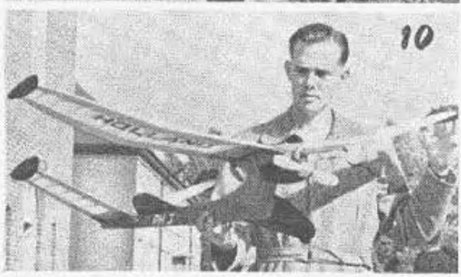
After Elgin's opening maximum, team managers hastened to put their first men in the field. Eddie Cosh sent George Upson out on the tarmac to make the first British flight; but though a beautiful max., the power run was well over the allowed 20 seconds. His subsequent effort was less than his normal average, probably due to over caution. In the meantime, Lederer of Austria amazed all fortunate enough to be nearby by releasing his stick fuselage entry in the *vertical* attitude for a perfect straight climb. In strict contrast, Stan Hill of the U.S.A. sent his "Amazon" 40 roaring across 50 feet of tarmac before entering a terrific climb on his third take-off attempt. This apparently for certain max.; but, alas—the fuse had been burning for two minutes on the ground and the d/t popped at 3 minutes.

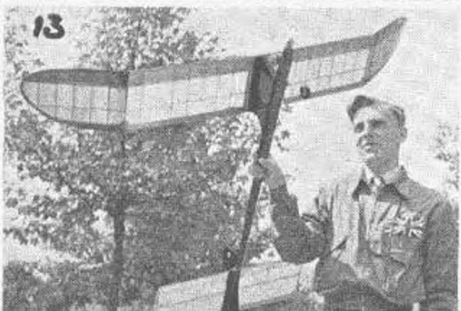
Cigar-smoking Jakob Huber, flying Swiss team-mate Bodmer's design with extraordinary dihedral angles, also d/t'd early. This adding to the frustration of poor Bodmer, who had lost his own model the previous day.

Forty-six flights were made in the two-hour round before lunch break, and the scoreboard registered no less than seven maximums, one of which was accredited to reliable Peter Buskell, and another to Dave Kneeland of the U.S. team, who was beginning

6. With his reserve piled up the previous day, Dave Kneeland didn't put a foot wrong to record his triple max. 7. Smallest model to fly in the contest was Ericsson's E.D. 1·46 entry. 8. Vidussich of Italy who placed third, tunes his Super Tigre at flight attitude. 9. The Irish contingent, centred around Jeff Woodworth's model, discuss their prospects for the third round. 10. Kempen of Holland fixes one of his safe-flying but vicious-looking "Fighting Cock" style models. 11. Partinen and Storgards of Finland, using E.D. 2·46 diesels, made good representation of the small modelling movement in their country. 12. Spectators burst into applause at the phenomenal rate of climb of Stan Hill's silk-covered "Amazon". 13. The sun causing warps is the only explanation for the mysterious loops which spoiled Pete Buskell's last flight and British chances. 14. The glossy finish on Leppert's (Germany) model almost hurt the eyes. Swept wing was interesting. On left: Scoreboard kings Malcolm Young and Phil Gutmant, put up the first round scores for inspection by Rushy.





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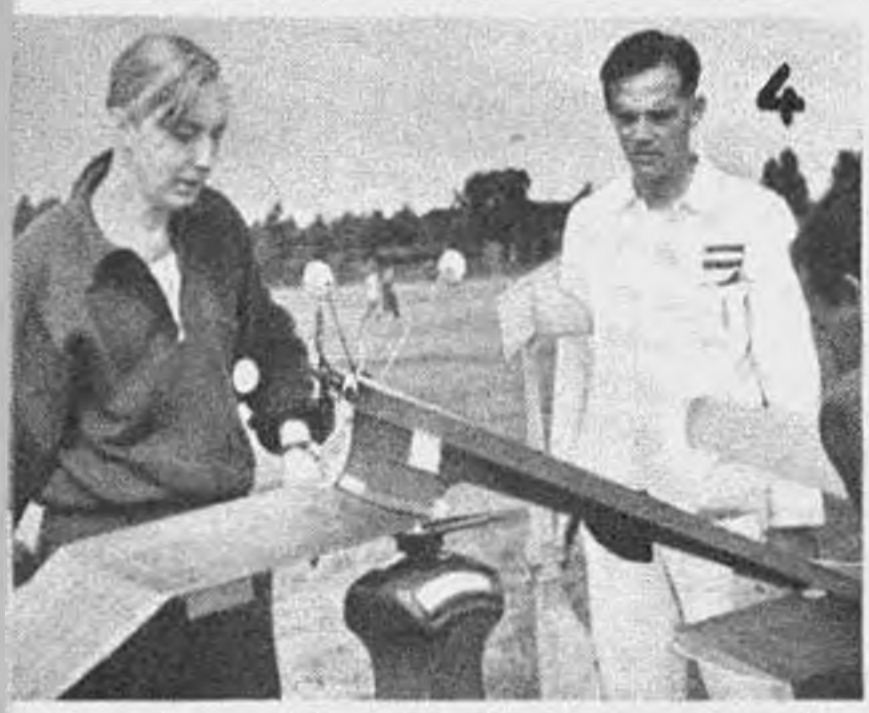
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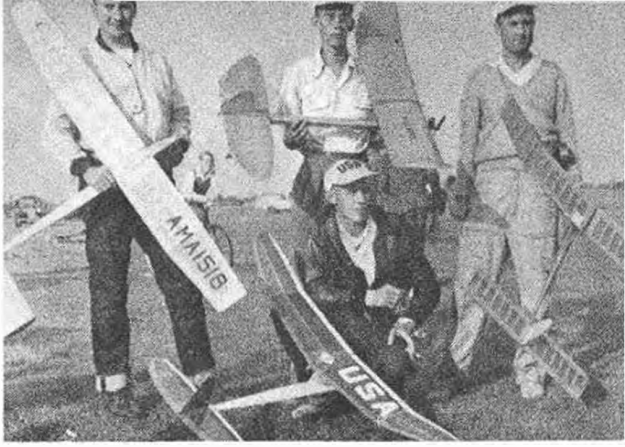
1. George Fuller's fooling did not prevent his turning in three top-rate flights for a well-deserved second place. 2. Vertical take-off by most unusual model present, entered by Austrian Lederer. Note forward fin, single blade prop is used. 3. The yodelling Frenchman, "Tarzan" Lefort, gets his dethermaliser straightened out in preparation for a flight. 4. Kempen of Holland watches Dahlqvist of Sweden weighing in for a flight. 5. The beautiful Franjo Kluz cup is filigree silverwork throughout, even to the smart pylon model on top. 6. A strong contingent travelled over from Eire, among them O'Regan's San de Hogan which lists its contest victories on the pylon.



Above: Stan Hill, Carl Wheeley, Joe Elgin and (in front) Dave Kneeland formed a powerful American team which effectively "Torpedoed" the opposition.

to be recognised as an entrant of outstanding merit.

As is already known, the U.S. team were using the new K. & B. "15" glow plug motors exclusively. Driving props that European modellers would think twice about before fitting to diesels of even 1·5 c.c., the K. & B's really screamed their way upstairs, though rivalled, we may say, by the Italian Super Tigre G.20's. Through each round we were treated to the clean-cut performance of the "fine pitch" brigade, yet in this battle betwixt diesel and glowplug it was difficult to tell whether the diesels really were at a disadvantage with their lower revs and coarser pitch props. Geoff. Woodworth of Ireland came into the lead early in the second round with a second five-minute max. . . he was using one of the few Oliver Tigers on the field, and his model a modified Mercury Mallard. Then the Belgian pair, Ferber and Lippens, each scored maximums, again with diesels, in company with Yugoslavian Tasic and Holland's Kempen. On the other side, Roberto Bacchi and Vidossich of Italy and Dave Kneeland came through with their glow motors.

Chagrin at first fears that the Irish model was lost turned to jubilation as the efficient recovery squad under Johnny Lamble and Gorham returned the yellow job intact. We visited the downfield area to see how recovery was going, only to have the air go completely "dead" for this part of the third round, and returned to learn that Buskell's model had looped after take-off, and Woodworth's Mallard made a dull flight of only 1 : 53. It was now up to George Fuller for Britain, and while we waited, Dave Kneeland came forward for his last attempt. Already in the lead, his "Vapour Trail" had to do its very best to clinch the final result. By now the air was dead as could be! A sizzling climb, a wide loop, and then a beautiful gain in height right up over the perimeter after a 19-second run decided many that the "Torp" is *the* motor in the 2·5 class. This was confirmed within a half-hour by two more maximums by Elgin and Hill, and yet another only three seconds short of a maximum by Wheeley, all of the American team. Drifting lift from the hangar helped a bit: but "V.T.'s" altitude made doubly sure of a maximum, and the model landed at 5 :05. Chaired back to the tarmac by Wakefield men, Montplaisir and Foster, Dave was now an undefeatable winner with an impeccable model.

So now we settled to watch George, the inimitable, Fuller. He was on top form. Bubbling with humour, he kept the sprits of the British team to highest level, and even when out on the take-off area, created no small earthquake when he asked the timekeeper in which hole should he put the fuel. But George was out of luck. Twice he had made less than maximum flights, and now he was to return 1 : 02. Yet this placed him second . . . and study of the results will show how many others gained two max's with thermal aid to fall short on their other flight. Fuller's performance certainly deserves more credit than is at first realised.

As the field cleared of power competitors with the greatest miscellany of designs imaginable, and everyone thinking of a possible transatlantic trip in '54 (the U.S.A. also having won the team trophy) the Wakefield boys took over for test flights preparatory for the blue ribband event on the morrow.

7. To bring his model up to correct F.A.I. weight, Carl Wheeley had to dope in a British penny on the underside of his Diamond fuselage. 8. Italy's Roberto Bacchi and very fast climbing model, the fuselage of which was built to the shape of the close-cowled motor. 9. Guillemard of the F.A.I. and Georges Lippens of Belgium making National gestures in front of the latter's model. 10. Maurice Ferber's model had straight dihedral, rather an unusual feature in the contest. 11. High-thrust pylon model by Kroin of Germany had very spectacular long-run take-off. 12. Kainz of Austria makes a scientific hypodermic prime on his engine before starting: note the supersonic wing tips.

On right: Scene at time-keeping control with recorders C. Taylor, Bob Gosling, Capt. Taylor, time-keepers, and Rushy.

Wakefield

MANY sighs of relief were heard when Monday morning dawned clear and fine, with the promise of a day at least equal to the standard set on Saturday and Sunday. Despite a beautiful red sunset on the previous evening, it seemed almost too optimistic to expect a third fine day in succession.

Activity commenced practically with first light, especially by the New Zealand proxy flyers, who had received their models late on Sunday afternoon. The Hastings bringing the crate had turned back for Malta with oil pressure trouble on Thursday, and on arrival on Friday had been diverted to Dishforth, thus completely upsetting the carefully made arrangements for bringing the models up from Lyneham. After considerable time spent in telephoning, a message was passed via Dishforth control tower to the Hastings, which was returning to Lyneham and had eventually got airborne late on Saturday evening. Geoff Linford drove all day to collect the box on Sunday, and if the proxy flyers had any sleep that night it was a miracle!

In view of all this, it was with considerable pleasure that we saw Bethwaite's model (flown by Reg. Parham) first away in the opening round of the contest, and for an easy maximum at that. The wind was from an unusual direction, north-westerly, but was very light and many models landed inside the aerodrome. Thermals were plentiful and stro-o-ong—as witness the Canadian proxy-flown entry, which connected despite losing part of a blade and suffering from severe bunch trouble. Few motors gave up in this round, although some of the Canadian and N.Z. models were afflicted.

As model followed model we began to be slightly appalled at the number of five-minute flights being returned—27 in all, in the first round! First British member to fly was Ted Evans, who got off with a perfect take-off and a thrilling climb. Then the Evans jinx stepped in and the model was clocked off at 4 32, while still at a good height, by the very honest and conscientious timekeepers. Unfortunately, the machine was well in sight of many spectators, and was seen to D.T. at exactly 5 : 00 while still a hundred feet or so up.

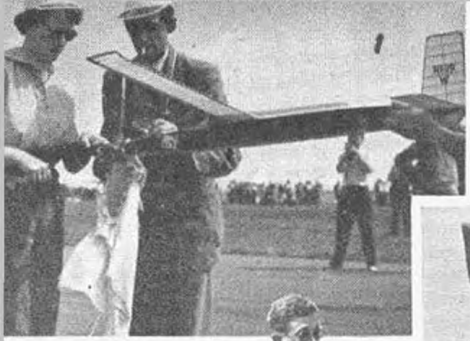
Great interest was shown when the Argentinians came out to fly; these "dark horses" had shown that their constructional standards were well on a par with anything else there, even though some of their models' features were strange to our eyes, and before long they demonstrated that their flying was as good as their building. The beautifully constructed entry of Bobkowski (Guatemala) also showed that it was a serious contender for honours.

Holland's Vonk had trouble in his first attempted take-off, damaging the model and causing him to fall back on his reserve machine, which, nevertheless, flew well throughout the day and gave him 14th place.

On left: A scene in the processing room, with one of Argentinian Sandham's models in foreground.

1. Frau Sumann totalled 14 : 34 for 8th place and top German time. 2. Hard luck spoiled Moberg's chances: here he ruefully surveys his "cross-section" fin minus its last high-mounted tail. 3. Ted Murlow holds the Canadian model which proxy Mike Green rebuilt from the nose forward three times. 4. Du Toit of South Africa also had bad luck in losing this, his best model, on its first flight. 5. Hughie O'Donnell dusts his model down prior to his third maximum. 6. Now 'Whoi' should it do that? reflects Osborne of Ireland after a rubber motor smash. 7. The sole entry from Guatemala, Bobkowski's unusual model arrived complete with mascots for proxy Baldwin and assistant T. Rhead of the Wigan Club. 8. Tomkovic of Yugoslavia makes a clean cut release, he finished at 45th place with just over 6 minutes. 9. "Sparky" Vonk of Holland wrote off his first machine on an attempt, but an identical reserve earned 14th place. 10. Roy Chesterton prepares for a D.T. lighting session when assisting Bob Copland, whose luck proved right out. 11. In the first Argentinian entry in an International comp., Eliseo Scotto showed that South American flying is of a high standard. 12. George Reich placed fourth, one second robbing him of a place in the fly-off.

Heading shows typical control scene during either of these events with Father Amiard and F.A.I. representative Guillemard making their own timing of a model in the air.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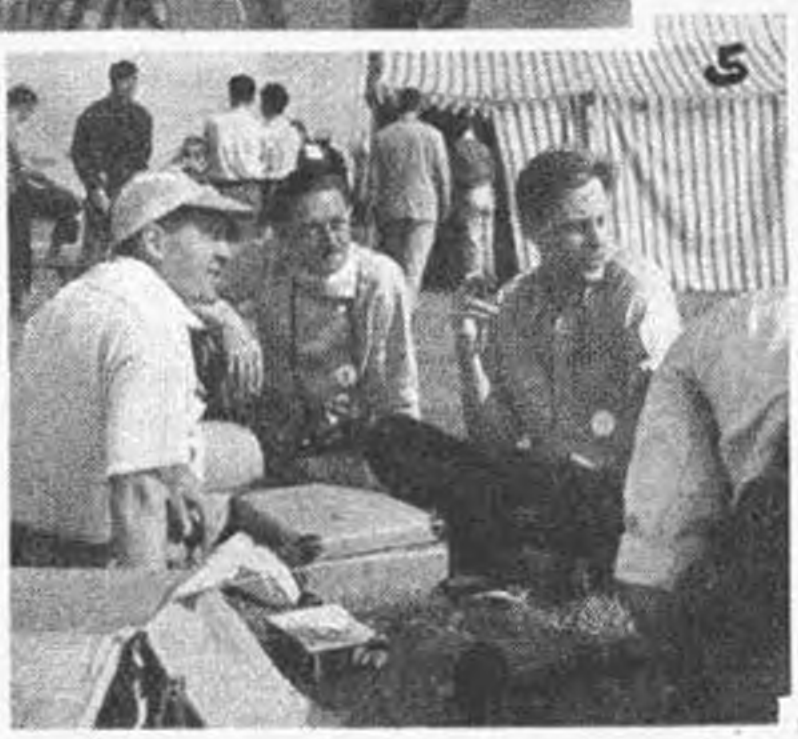
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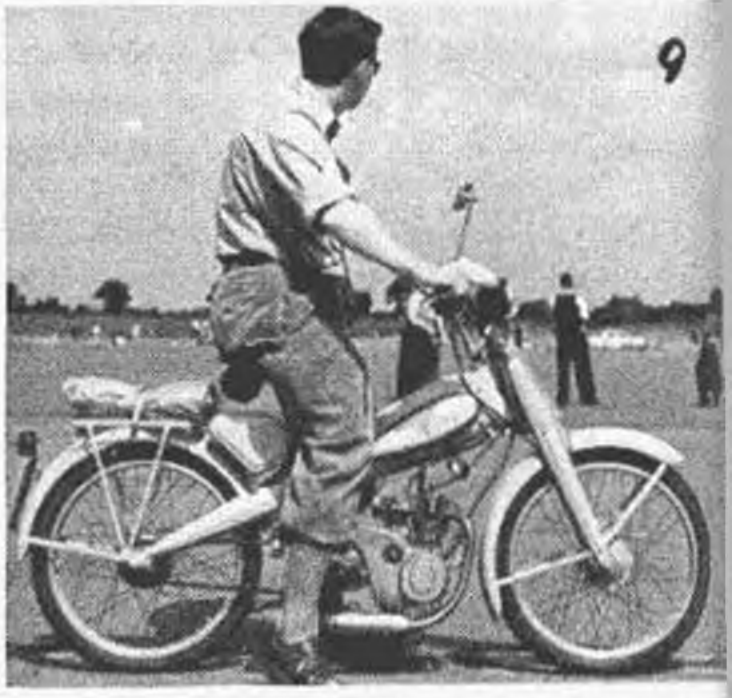
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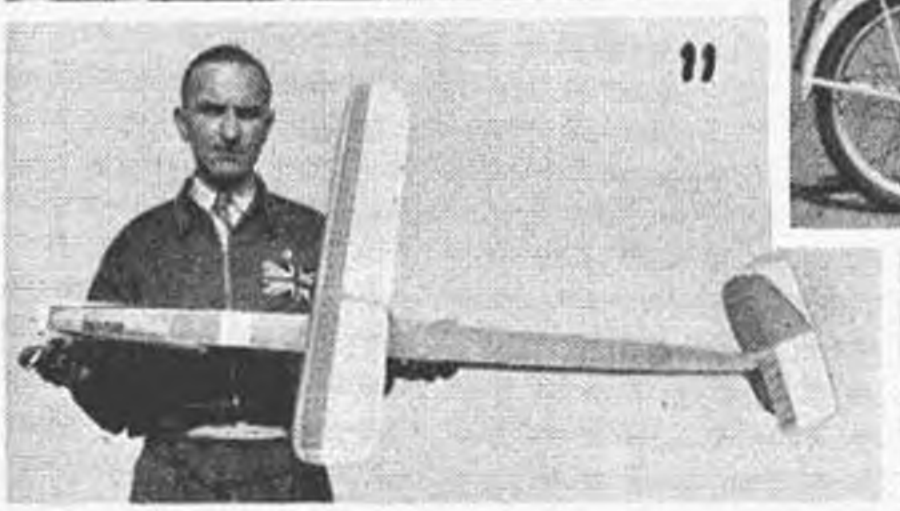
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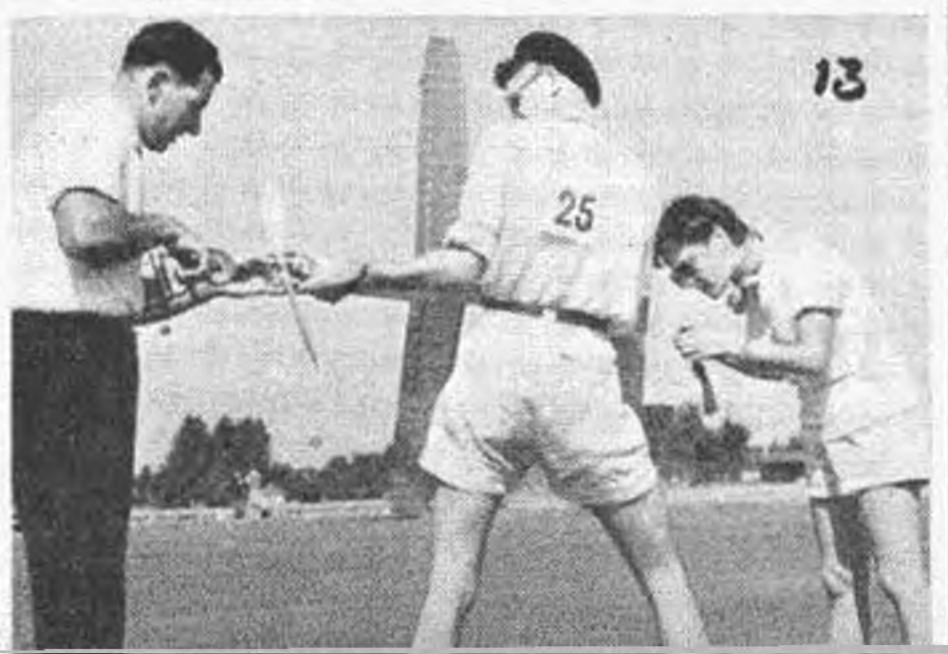
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Montplaisir of the U.S.A. also had take-off trouble with his long fuselage job, a premature retraction causing damage to his prop ; he too flew his reserve throughout, to place 12th. Moberg of Sweden was perhaps the unluckiest entrant when a D.T. failure lost his first-string model (later found near Dunstable) after a max. His second flight was also a max. and, on D.T.'ing the tailplane of his reserve machine became detached and disappeared upwards, to be lost ! It speaks volumes for the honesty of the Swedish team when it was learned that he actually had a spare tailplane bearing a processing stamp, but would not use this without first seeking permission, which was refused. Du Toit (South Africa) also lost his first-string model.

Cloud forming towards the end of the first round reduced the constancy of the thermals, but British hopes had been raised by both the O'Donnells returning maximums.

The second round saw cloud masses drifting slowly across the 'drome, with a consequent reduction in the frequency of lift and more noticeable scattered areas of down-draughts. The temperature had risen and the quiet of the contest began to be more frequently punctuated by the "splatz" of breaking motors. J. O'Donnell was an early casualty in the sinking air, and it became obvious that our chances were resting on Hughie unless some phenomenal change in the weather took place. George Reich (U.S.A.) gave a wonderful show of sportsmanship when his airborne model disappeared behind an obstruction and he was clocked off at—as a glance at the watches showed—4 : 59. This odd second later cost George a place in the fly-off, but his philosophic acceptance earned him friends for life.

Hughie came up trumps with a second max., and Evans produced one to help the British total along. Bad luck attended Hakansson (Sweden) who smashed his fuselage after a double-max., and both the interesting inverse-tapered Argentinian models were rendered *hors-de-combat* with wing failure. Scotto, however, quietly put up his job for his second five minutes.

The third round saw a tensioning of the atmosphere, though meteorological conditions remained much the same. Sweden's total was really formidable, but Moberg was out and Hakansson's model, hastily re-built, was badly out of trim. Carl Hermes became the first American motor casualty, and changed his sheet-fuselage model over to a more conventional reserve. Evans presented the audience with a real text-book maximum, but the first cheers were for Scotto's third flight, another faultless max. Louder cheers greeted Hughie O'D's reaching his treble, and these were echoed again as Foster achieved the only other triple-max. Down-draught was still there, as evidence Copland's last flight, which was well below his normal evening air average.

Above : Lady Goddard presents the F.N.A. Wakefield Team Trophy to Bill Fletcher, the U.S.A. team manager.

The fly-off was sheer agony for the onlookers, especially when Hughie stopped to patch a couple of strands in his motor. Scotto was unfortunate in catching a weak patch of sinking air, but Foster flew into a riser and was well up by the time the British model got away (to the cheers and sighs of relief of the crowd !). Handicapped by flapping tissue, burst by the loose strands, Hugh's model went up in the tight, fast spiral which was the most outstanding flight feature of the whole contest, and levelled out in rising air at nearly the same height as Joe Foster's job. As the results show, Joe's model eventually had the edge, though there appeared very little in it, and so the veteran Wakefield Trophy *and* the F.N.A. Team Cup go to America for the next twelve months—a very well deserved win and a very popular one.

But don't try to convince a certain Irish farmer that the Americans actually won this contest—a 'phone call was received fourteen days after everyone had gone home which informed Cranfield control tower that a model had just landed in one of this gentleman's pastures bearing an "Urgent" label asking the finder to 'phone immediately !

1. Pete Alnker of the Surbiton Club, placed highest in the New Zealand team, flying proxy for H. Marsh. 2. M. Balasse of Belgium winds with the help of Vicomtesse de Barre de Comogne and watched attentively by Jacques Morrisset of France. 3. Johnny Knight helps Reg Parham to prepare New Zealander Bethwaite's first-class model. Team Manager Hundleby looks on, to see that they are doing things in the right manner. 4. Fee of Italy listens to the public address whilst a rebuild announcement in his own language tells him that he has more than one assistant on the field. Roberto Bacchi shields himself from brilliant English sun, with shade brought to keep off rain. 5. Finnish reunion : Montplaisir, Holland and Blomgren review memories of former Wakefields. 6. Hakansson's model required rebuilding ; here Dahlgren of the Swedish pacer team lends a hand. 7. Mamirano and Sandham of the Argentine also went in for some heavy repair work. 8. The retrieving crew did a wonderful job ; here John Tumble spots with the binoculars and others await the arrival of the next to chase. 9. Runway control was in the hands of Hans Payer, chief of the Zurich Club, with his neat little 40 c.c. Molom. 10. One of the few long fuselage jobs was Montplaisir's of U.S.A. This one came to grief on its first take-off. 11. Everyone sympathised with Evans, who had as potent a model as any ; sheer bad luck kept him out of the fly-off. 12. Full marks to Malmo Verber who placed fifth—the highest place ever taken by a lady flyer. Husband helps wind. 13. Malmo. Lefort attends to the D.T. as Frenchman Gerland finishes winding. On right ; British team manager Eddie Cash peers anxiously at Hughie O'Donnell making a slight adjustment.

IV Svetsko Prvenstvo Letecih Modela Jedrilica

Reported by G. S. RUSHBROOKE

Left: The British team appear satisfied with their efforts, after many vicissitudes. Left to right: Tony Brooks (Grange), Maurice Haxton (Solihull), Rushy (team manager), Geoff. Linford and Geoff. Byrd, both from Loughborough College.

Below: Processing well under way inside the large hangar at Bled.

BY virtue of Bora Gunic's win at Graz last year, Yugoslavia had the task of organising the contest for the Swedish Glider Cup for the second time since the inception of the Championships, and once again the site was that pleasant Yugoslavian summer resort, Lesce-Bled, a delightful spot noted for its picturesque lake, complete with church-dotted island, and real mediaeval castle perched on a mountain side.

Unfortunately for the British contingent, little appreciation could be taken of these pleasant surroundings, for, following a chapter of incidents, the party arrived at a late hour at the local railway station, only to find that the luggage van had been shunted off the train somewhere along the line, and the three boxes containing British hopes were "missing somewhere in Europe". Experience is a hard teacher, but it becomes obvious that in future a maximum travelling-box size must be instituted for teams travelling abroad, for the trouble commenced owing to the somewhat generous proportions of at least one box which no amount of coaxing would entice into a Continental railway compartment.

After an initial clash with the railway authorities at Ostend, which almost caused the team to miss the Tauren Express, no further trouble was met until half-way across Germany. The boxes, too large to stand in the compartment itself, were suspended at one end of the coach where they travelled happily until it appears some person, wishing to make use of the facilities found in such locations, moved the carefully stacked crates. The sound of breaking glass lead to the appearance of an irate German train conductor who demanded our attention to a broken carriage window—and a box lying on the floor so obviously the cause of the calamity. Somewhat mollified by agreement to pay for such damage as had been caused, said conductor nevertheless demanded that such ungainly freight be immediately transferred to its proper place in the luggage van, a request to which we had finally—though reluctantly—to agree.

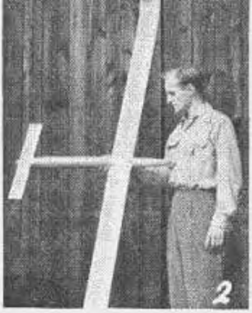
The climax came at Lesce Station, where the half-team sent to collect the boxes found to their horror that the luggage van had disappeared—and with it the British models for the morrow's contest. Feelings were somewhat alleviated when our Yugoslavian hosts assured us that they would explore the situation and have a speedy settlement for us, and we spent our first night on Yugoslavian soil anxiously awaiting the outcome of their enquiries.

The welcome news that three model boxes were in the Customs depot at border town Jesenice greeted us next morning, and we adjourned to the field at Lesce to witness test flying and the official processing, confident that the missing models would soon be in our hands. Consternation followed, however, when it was learnt that the boxes just arrived were the Swedish entries and not ours, and hurried plans were made to try to trace the missing machines by back-tracking on our journey. With the aid of a local car driver, Geoff. Linford took off for the Austrian border and the telephone wires hummed for as far back as was allowed.

Meanwhile it was decided that rather than have a blank entry from Great Britain, an attempt would be

1. 4 a.m. and all ready for first test flights. 2. Kurt Sandberg (Sweden) with high a/r "banana" fuselage model that disappointed in action. 3. Official opening of the Championships by the President of the Yugoslavian Aero Club. 4. Eppler (team manager) and Lindner of Germany with their interesting sheet covered models, employing full span turbulators. 5. A very popular official expresses pleasure as she chalks up Geoff. Byrd's maximum. 6. Linford and Brooks prepare to launch one of the makeshift British hopes. (Note mist in the background.) 7. After the comp. was over—the two Geoff's demonstrate the whip obtainable in the hardwood fuselage of Model No. 1. 8. Ossie Czepa (Austria) appears concerned as his team lines up for processing. 9. This year saw the first entry of Greece into international competition. Salellarakis prepares to fly, complete with heavily blanketed compatriot. 10. A droshky, a droshky, our dollars for a droshky! George Perryman, Ed. Small and Kristine Zale appear pleased with their unique means of transport to the airfield. 11. 3 o'clock in the morning—and the British team work like mad to prepare their makeshift models for Round 1. 12. The team from Israel, with leader Naftali Kadmon on the left, were very smart in flannels and light blue blazers. Impressed everyone with their ability and keenness. 13. Herr Stuppi of the Saar created a furore when observed eating the table decorations! Dutch team leader van der Cuay helps him to a second course. 14. Max Hacklinger (Germany) on the right repairs a damaged wing on the machine that gained him a special award for the best piece of construction in the entry. 15. Slide rule versus normal—but who was right is anybody's guess. Austrian entrant waits patiently for the verdict.


1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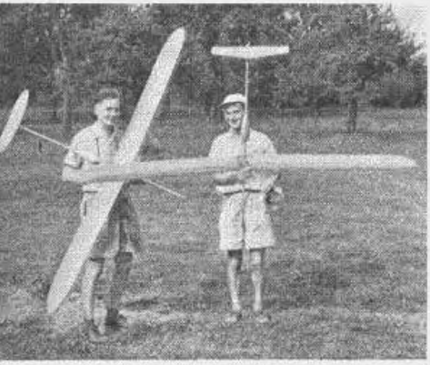


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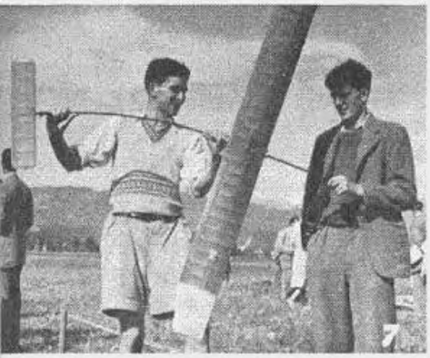
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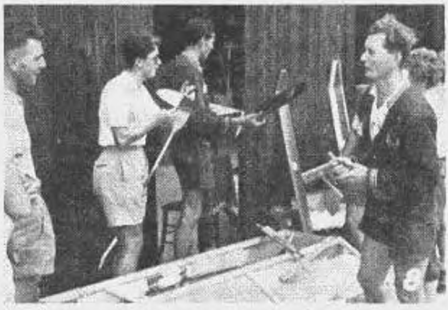


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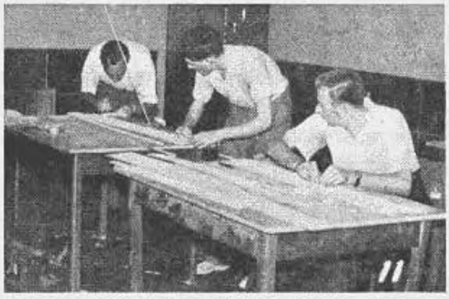
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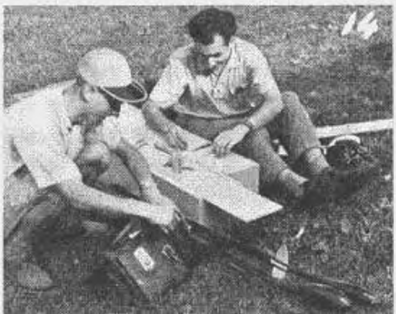
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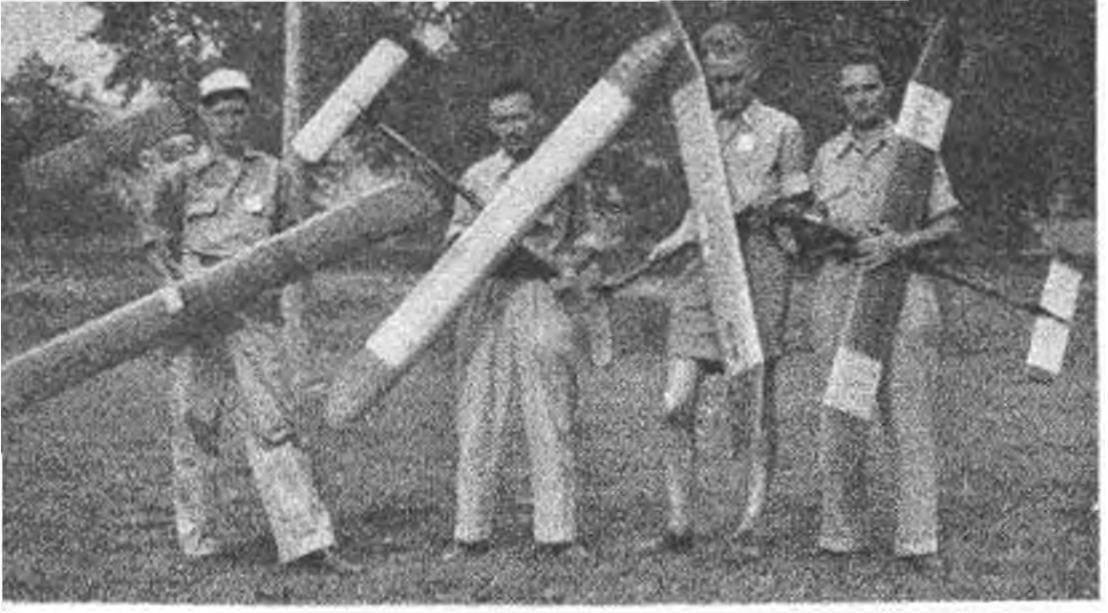


The victorious Danish team look very intense before the start of the contest. Left to right: Ove Nendum, Borge Hansen, Fritz Neumann, and the winner—Hans Hansen. All are from the Copenhagen club.

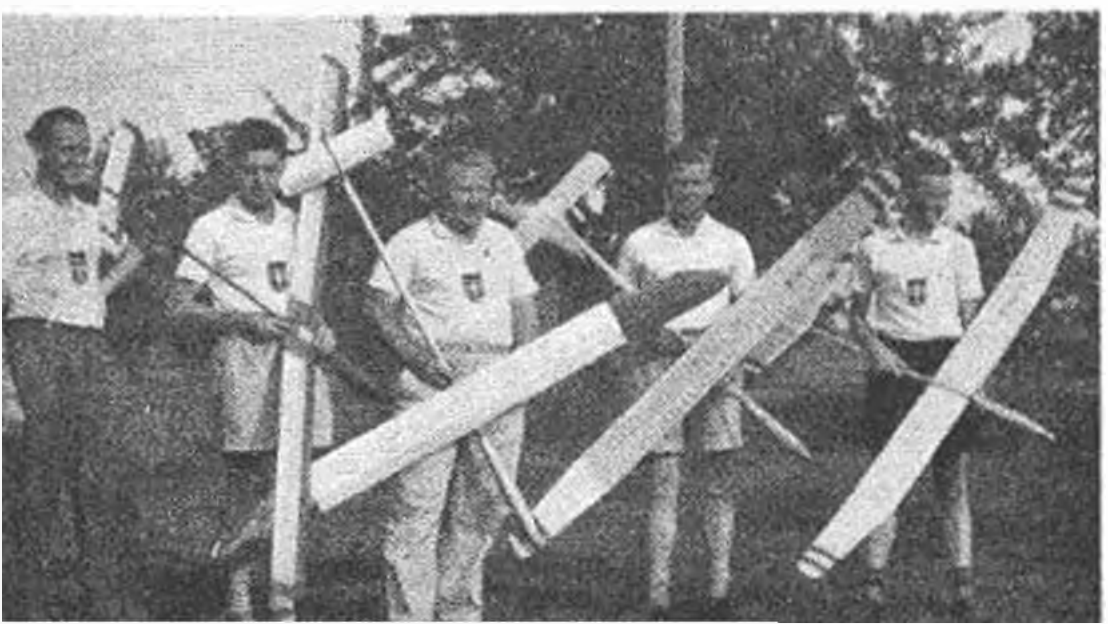
made to build a model in time for the start of the contest, due to take place at 4.30 a.m. the following morning! Such were the sterling efforts of the complete team, ably assisted by the offer of materials from many other teams, that by the time the official bus left at 3.45 a.m., *two* complete models were ready to take the air.

It being agreed that Tony Brooks and Geoff. Byrd would officially fly the machines, we anxiously waited on the pitch-black airfield for sufficient light to allow first test runs to be made. It immediately became obvious that, despite hasty designing to meet the materials available, and the fact that construction had of necessity been considerably rushed, the models were both capable of useful duration, and testing was rigorously pursued until well after the first round got under way at 5 a.m., following a half-hour postponement owing to lack of light.

Under the circumstances one can be excused for not having much idea of what went on elsewhere, but it was only too obvious that the flight system adopted was leading to considerable confusion, bordering on chaos. Competitors were funnelled through control out to a line-length check, and with no particular drift direction to standardise launching runs, the air was soon filled with cautions and cuss-words in a fine variety of languages as lines were crossed or run into. Fifty five competitors from sixteen nations were only too anxious to get their models airborne within the all too brief one hour allowed per round, and the weatherwise obviously anticipated a worsening of the none too happy conditions.

However, in spite of mist, and drift that continually changed in direction, the number of maximums that started to be chalked up made it clear that something peculiar was happening. Unfortunately for the British team, the answer to the situation appeared on the scene too soon to be appreciated, and very definitely at the wrong time for us! With Brooks all ready to launch (having picked his way with difficulty through the many lines and modellers that littered the field), without warning came a downpour of rain of such

Team from the Saar, with tubby Herr Stuppi leading them, were notable for their lemon-coloured shirts, and efficient models.



intensity that everyone was soaked to the skin within a very few minutes. The obvious course was for an announcement to postpone the round, but with no such speech making itself heard, the British model was launched. (It was learnt later that, even had it been the intention of the organisers to call such a postponement, no public announcement could be made as the loudspeaker system was completely ruined by the downpour.)

Up went the model, and at far less than full height was released with little hope of success—only for the wing to suddenly fail to take the strain and fold up. With time rapidly running out, Byrd then put the second model into the air, but here again the wing failed even before it left the line. So much for British hopes it seemed, and, together with our gallant pair of timekeepers, Bernot and Novta, who dutifully stuck with us throughout the contest, we scurried across some half a mile of aerodrome to the shelter of the already crowded hangar to await developments.

What a picture!! Never have I seen so many wet and bedraggled folk in one place before, and personally I only remember being as wet once before, after falling out of a canoe in Headingly Park, Leeds!

Back to Bled, where the team, completely flaked out after two sleepless nights, were soon in bed complete with glasses of that potent Yugoslavian tipple, Slivovic—guaranteed to kill or cure incipient pneumonia, or the patients.

Followed another day of trying to trace the selected models, again with no success, and the makeshifts were repaired and strengthened in an effort to still rack up some time. A conference of team leaders and officials agreed that the remaining two rounds should be run off the following morning, but after a later start, with postponement to the Monday if conditions still did not allow of a start on the Sunday. Owing to the inability of many visitors to extend their stay indefinitely, it was further agreed to conclude the contest on the 24th, come hell or high water. (It was further agreed that it is a team manager's duty to wake his own team up and get them out to the official transport—though the two Italian flights made just after closing time as a result of late arrival were allowed to stand in the official records after a show of hands.)

A fitful sleep, with each awakening confirming that it still poured with rain, came to an end at 4.30 a.m. on Sunday the 23rd, and bleary-eyed crews staggered out of their various hotels to find that the downpour had stopped, though naturally everything was wringing wet, and the sky looked anything but promising. The mountain peaks that completely surround the town and airfield were shrouded in a thick mist, but a slight breeze eventually cleared the tops to disclose that heavy snow covered a considerable portion of their height!

Further tests were quickly concluded, as we had no intention of being caught out as on the previous day. A glance at the scoreboard disclosed for the first time that the thermal conditions created by the front advancing ahead of the previous day's rainstorm had brought about no less than nine maximum flights – and conditions were far more promising for the remaining two rounds.

Five-thirty a.m. saw round two under way, and it mattered not which way you ran to launch a model, for currents criss-crossed the sky, and it was a weird experience to actually see wisps of cloud merge into

small cumulus at the base of the foothills, then suddenly burst and fly upwards as though a bomb had been exploded under them. Such thermals were fortunately fairly well away from the flying field, for I very much doubt if any model could have withstood the violent stresses obviously taking place within these wind-devils.

Maximum flights were being clocked all over the field, and we waited with bated breath as Byrd got his model into the air. A perfect straight tow to full line length was followed by a slow, circling glide that just occasionally hit weak patches of lift, and—after causing us all heart failure by circling amongst the trees of a small orchard—the model finally sank into the grass at the edge of the field. Time ?——exactly 5 minutes ! ! Thus were the brains and constructive efforts of the lads justified, and congratulations were forthcoming from all sides, for it is true to say that the sympathies of the whole entry were with us.

Tony Brooks could not get the same perfect launch with his model ; nevertheless, his 3 : 31 was good going with a model which obviously wanted more attention and test flying.

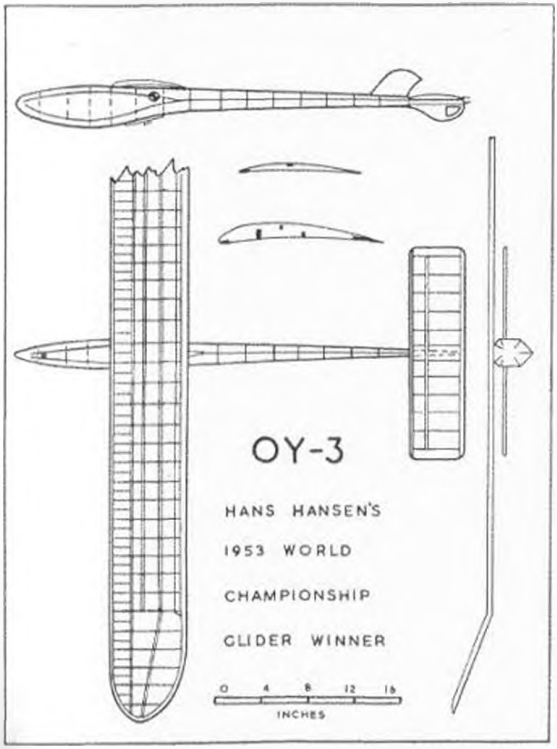
A sharp eye kept on the scoreboard disclosed that of the nine Round One leaders only Hans Hansen of Denmark had collected a second full score and led the field comfortably from Heinz Denzin who had also collected a max. but who dropped 14·6 seconds in the first round. Also well in the running were Templier of France (seventh last year), Gunic, and Borge (brother of Hans) Hansen. In all, eleven maximums were scored in this round, undoubtedly due to the still but thermal-loaded atmosphere that obtained throughout the early part of the round.

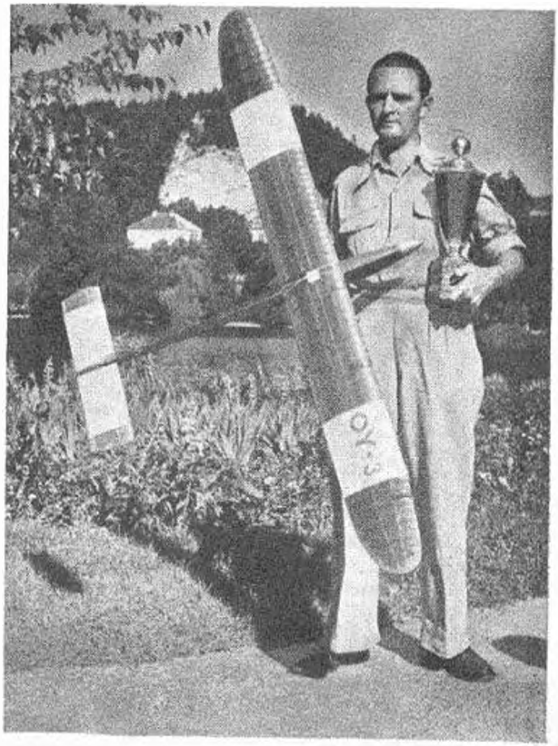
A half-hour break saw the commencement of the final round, and all eyes were on Hansen to see whether he could manage the 2 . 46 that would place him beyond all danger. Despite conditions that were rapidly becoming a hotchpotch mixture of up- and down-draughts, he got another perfect launch and secured his third maximum—the third world championship that has been won with a maximum score this year.

Denzin was 42 seconds short of a maximum, but managed to maintain second place over Templier, who clocked a 5-minute. Other max's went to Skala (Austria), Schonborn (Saar), and Schnabel of Switzerland, who had two max's, but an aggravating 2 ; 08 o.o.s. on his first flight resulting in a lost model.

British attention however was riveted on Brooks and Byrd, and the former tried his last ounce to get an improvement on his earlier efforts. Veering on the line again prevented a full tow, and the model shot off

"Georgia" Perrynian looks positively keen manager Bill Fletcher prepares to test Henry Dore's entry. In the obvious amusement of their appointed time-keepers. Though built to the usual American excellence, both models suffered badly in the contest.





George Perryman from the Southern States of America, exhibits his finely constructed model, still retaining the well-known swept-back, polyhedralled tailplane form seen on earlier Wakefield models from his stable.

prematurely to record 2 : 20 and a total score of 5 : 51. Indeed, better than nothing.

With conditions as they were, Byrd waited for some time with the line stretched out in the hope of anticipating lift, and finally got away to another dead overhead

Above : Heinz Denzin (Germany) second place man receives his prize at the banquet. Below : Borge Hansen (Denmark) collects the massive glass Daumerie Cup on behalf of his successful team.

tow. Perhaps he was a little too anxious to get the best out of it, however, for he kept plugging away down the field with the model at full stretch until we had great difficulty in seeing the line released. At last it was off, but after one or two little bumps it got into an obvious down-draught and lost so much height that his final score for the round was 2 : 27. (Deciding to fly the model back rather than carry it, the job was immediately launched again in the opposite direction—and clocked an easy 8 minutes ! ! !) Such is the luck of the aeromodelling game.

Congratulations were showered on the winner whilst we all waited around the scoreboard for the final times and placings to be chalked up, and it was gratifying to find that Great Britain were by no means bottom, even flying half a team with hurriedly built substitute models. As team manager, that I was proud of " my boys " is to put it mildly, and I say without hesitation that no better representatives have left this country to uphold our aeromodelling prestige. They worked with a will, *and as a team*, and I do not think it is stretching it too far to say that they probably did more for British prestige by losing than if they had won top honours. To know that that opinion is endorsed by many others who were there is extremely gratifying.

Both Israel and Greece were represented for the first time at this contest, Naftali Kadmon doing well to place 15th in his first International event, though the only Greek lad to fly was obviously inexperienced in such conditions. However, they made a showing, and we welcome these two new countries to International flying and all the fun and goodwill that goes with it.

Following breakfast and a clean up, competitors were taken out to the lovely Bohinj lake for lunch, and many put in a spot of mountain climbing before the return to Bled for the concluding banquet and prize-giving. Reversing our usual procedure, the awards were given out before the meal, and Hans Hansen came in for enthusiastic applause when he collected the lovely Swedish Glider Cup, as did his brother Borge when staggering off with the heavy glass Daumerie Cup for the Team award.

Others up to tenth place went forward to collect their prizes, and Max Hacklinger got a special cheer when it was announced that he qualified for the special prize awarded to the best constructed model in the contest—a decision which we heartily endorse, for on rare occasions have we seen comparable examples of the aeromodelling art.

Then—surprise of surprises ! The British team manager was asked to come forward to collect a special award in recognition of the stout effort made by his team in overcoming adversity, and refusing to be beaten in spite of circumstances. It is no line-shoot to say that this announcement brought the house to its feet, and I felt extremely proud as I accepted the award on behalf of Brooks, Byrd, Linford and Hansen.

After this the fun waxed fast and furious, and we broke it up in the early hours of the morning. Many—including the British team—had decided to stay on for the Yugoslavian Nationals, but I had to leave for London on the Monday morning, still without news of the lost models, but with the one consoling piece of information that the crate of New Zealand entries which had been consigned by registered luggage to travel with us, had turned up some hours after the conclusion of flying at Ljubljana (though consigned to Lesce-Bled ! !) Don't ask me why or how—it remains one of the mysteries of Continental travel that baffle even those hardened to the ways of British Railways !

1953 WORLD CHAMPIONSHIPS

POWER

1.	Kneeland, D.	U.S.A.	5 : 00	5 : 00	5 : 00	15 : 00
2.	Fuller, G.	G.B.	4 : 26	4 : 50	4 : 02	13 : 18
3.	Videsich, G.	Italy	2 : 54	5 : 00	5 : 00	12 : 54
4.	Buskell, P.	G.B.	5 : 00	4 : 45	2 : 45	12 : 30
5.	Lederer, A.	Austria	4 : 36	3 : 19	4 : 32	12 : 27
6.	Hill, S.	U.S.A.	3 : 18	3 : 44	5 : 00	12 : 02
7.	Tasic, T.	Yugoslavia	1 : 53	5 : 00	5 : 00	11 : 53
7.	Woodworth, G.	Ireland	5 : 00	5 : 00	1 : 53	11 : 53
9.	Kempen, C.	Holland	1 : 49	5 : 00	5 : 00	11 : 49
10.	Rupp, G.	Germany	4 : 51	3 : 28	3 : 27	11 : 48
11.	Elgin, J.	U.S.A.	5 : 00	1 : 45	5 : 00	11 : 45
12.	Ferber, M.	Belgium	1 : 42	5 : 00	5 : 00	11 : 42
13.	Lippens, G.	Belgium	4 : 05	5 : 00	2 : 17	11 : 22
14.	Huber, P.	Switzerland	4 : 35	4 : 38	2 : 07	11 : 20
15.	Partinen, J.	Finland	3 : 30	4 : 53	2 : 47	11 : 19
16.	Bacchi, R.	Italy	3 : 33	5 : 00	2 : 04	10 : 37
17.	Barth, J.	Germany	1 : 27	4 : 01	5 : 00	10 : 28
18.	Wheeley, C.	U.S.A.	3 : 15	2 : 03	4 : 57	10 : 15
19.	Zigic, D.	Yugoslavia	5 : 00	3 : 36	2 : 30	10 : 06
20.	Schmitter, P.	Switzerland	2 : 56	3 : 29	3 : 40	10 : 05
21.	Cameron, P.	G.B.	3 : 11	4 : 00	2 : 50	10 : 01
22.	Lefort, P.	France	5 : 00	1 : 22	2 : 30	8 : 52
23.	Marchina, R.	Italy	1 : 16	3 : 50	3 : 40	8 : 46
24.	Kainz, H.	Austria	0 : 50	3 : 25	4 : 23	8 : 38
25.	Broerse, P.	Holland	2 : 32	2 : 04	3 : 58	8 : 34
26.	Leppert, H.	Germany	1 : 51	2 : 43	3 : 37	8 : 11
27.	Goetz, A.	France	5 : 00	1 : 40	1 : 27	8 : 07
28.	Maibach, F.	Switzerland	2 : 10	3 : 11	2 : 41	8 : 02
29.	Bergamaschi, G.	Italy	1 : 47	3 : 02	3 : 08	7 : 57
30.	Storgards, B.	Finland	1 : 58	3 : 09	2 : 41	7 : 48
31.	Auner, C.	Sweden	2 : 03	2 : 32	2 : 51	7 : 27
32.	Kreis, E. H.	Germany	2 : 39	2 : 15	2 : 32	7 : 26
33.	Thompson, P.	Ireland	1 : 45	2 : 33	3 : 00	7 : 18
34.	Blomberg, S.	Sweden	1 : 00	4 : 19	1 : 46	7 : 05
35.	Rennesson, A.	France	1 : 40	2 : 51	2 : 30	7 : 01
36.	Upson, G.	G.B.	2 : 29	1 : 51	2 : 12	6 : 32
37.	Mokry, F.	France	1 : 47	2 : 04	2 : 12	6 : 19
38.	Prhavc, J.	Yugoslavia	1 : 46	1 : 34	2 : 55	6 : 15
39.	O'Regan, M.	Ireland	1 : 45	2 : 09	2 : 07	6 : 01
40.	Dahlqvist, N.	Sweden	2 : 43	—	3 : 06	5 : 49
41.	Vandermeulen, W.	Belgium	2 : 13	0 : 33	2 : 53	5 : 39
42.	S'Jongers, J. J.	Belgium	1 : 21	1 : 24	1 : 56	4 : 41
43.	Hekking, R.	Holland	0 : 56	2 : 14	1 : 08	4 : 18
44.	Carroll, J.	Ireland	0 : 56	0 : 59	2 : 20	4 : 15
45.	Ericsson, K.	Sweden	0 : 52	—	0 : 58	1 : 50
46.	Domberger, H.	Austria	0 : 54	—	—	0 : 54
47.	Krenn, E.	Austria	—	—	—	—
48.	Bodmer, M.	Switzerland	—	—	—	—

TEAM RESULTS.—(1) U.S.A., 38 : 47. (2) G.B., 35 : 49. (3) Italy, 32 : 17. (4) Germany, 30 : 27. (5) Switzerland, 29 : 27. (6) Belgium, 28 : 43. (7) Yugoslavia, 28 : 14. (8) Ireland, 25 : 12. (9) Holland, 24 : 41. (10) France, 24 : 00. (11) Austria, 21 : 39. (12) Sweden, 20 : 21. (13) Finland, 19 : 07.

WAKEFIELD

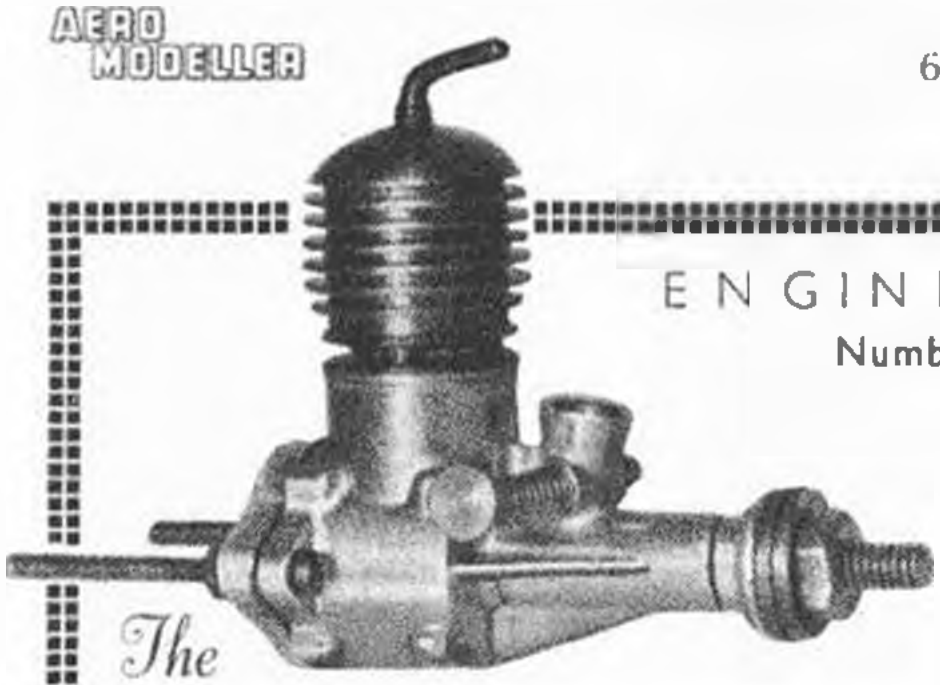
1.	Foster, J.	U.S.A.	5 : 00	5 : 00	5 : 00	15 : 00
2.	Scatto, E.	Argentine	5 : 00	5 : 00	5 : 00	15 : 00
3.	O'Donnell, H.	G.B.	5 : 00	5 : 00	5 : 00	15 : 00
4.	Raich, G.	U.S.A.	5 : 00	4 : 59	5 : 00	14 : 59
5.	Ferber, Mdm. L.	Belgium	5 : 00	4 : 55	5 : 00	14 : 55
6.	Nilborn, J.	Sweden	4 : 53	5 : 00	5 : 00	14 : 53
7.	Blomgren, A.	Sweden	5 : 00	4 : 40	5 : 00	14 : 40
8.	Samaan, Mrs. I.	Germany	5 : 00	5 : 00	4 : 34	14 : 34
9.	Kannenworf, L.	Italy	5 : 00	4 : 33	5 : 00	14 : 33
10.	Evans, E. W.	G.B.	4 : 32	5 : 00	5 : 00	14 : 32
11.	Fea, G.	Italy	5 : 00	4 : 28	5 : 00	14 : 28
12.	Montplaisir, C.	U.S.A.	5 : 00	4 : 02	5 : 00	14 : 02
13.	O'Donnell, J.	G.B.	5 : 00	3 : 47	5 : 00	13 : 47
14.	Vonk, M.	Holland	4 : 50	3 : 43	5 : 00	13 : 33
15.	Hakansson, A.	Sweden	5 : 00	5 : 00	3 : 28	13 : 28
16.	Colombo, E.	Argentine	5 : 00	3 : 17	5 : 00	13 : 17
17.	Gerlaud, E.	France	5 : 00	3 : 05	5 : 00	13 : 05
18.	Lippens, G.	Belgium	5 : 00	3 : 01	5 : 00	13 : 01
19.	Marsh, B.	N. Zealand	5 : 00	2 : 47	5 : 00	12 : 47
20.	Nocetti, G.	Italy	5 : 00	3 : 48	3 : 52	12 : 40
21.	Gilg, P.	France	5 : 00	2 : 37	5 : 00	12 : 37
22.	Rowe, R.	S. Africa	2 : 14	5 : 00	5 : 00	12 : 14
23.	De Vries, C.	Holland	2 : 37	5 : 00	4 : 33	12 : 10
24.	Corwell, N.	Ireland	4 : 45	2 : 20	5 : 00	12 : 05
25.	Copland, R.	G.B.	4 : 05	4 : 33	3 : 10	11 : 48
26.	Sadorin, E.	Italy	4 : 08	4 : 13	3 : 03	11 : 24
27.	Balasso, E.	Belgium	3 : 09	5 : 00	3 : 14	11 : 23
28.	Heidmuller, B.	Germany	3 : 40	2 : 30	5 : 00	11 : 10
29.	Bethwaite, F.	N. Zealand	5 : 00	4 : 37	1 : 24	11 : 01
30.	Goetz, A.	France	3 : 12	3 : 19	4 : 06	10 : 57
31.	Hermes, C.	U.S.A.	2 : 25	4 : 08	4 : 22	10 : 55
32.	Mackenzie, D.	Canada	3 : 05	5 : 00	2 : 29	10 : 34
33.	Mursap, F.	Argentine	2 : 15	5 : 00	3 : 17	10 : 32
34.	Ford, A.	Canada	2 : 54	5 : 00	2 : 28	10 : 24
35.	Knudsen, E.	Denmark	2 : 11	5 : 00	3 : 08	10 : 19
36.	Higgs, H.	Canada	1 : 52	3 : 13	5 : 00	10 : 05
37.	Moberg, C.	Sweden	5 : 00	5 : 00	—	10 : 00
38.	Bobkowski, A.	Guatemala	5 : 00	3 : 00	1 : 53	9 : 53
39.	Drew, G.	Ireland	5 : 00	1 : 31	3 : 04	9 : 35
40.	Lipinski, G.	Germany	5 : 00	2 : 11	2 : 19	9 : 30
41.	Campbell, W.	N. Zealand	2 : 58	3 : 05	3 : 25	9 : 28
42.	Ferber, M.	Belgium	1 : 43	5 : 00	2 : 36	9 : 19
43.	Kleiman, L.	Canada	2 : 22	3 : 04	3 : 48	9 : 14
44.	Fresl, E.	Yugoslavia	5 : 00	1 : 53	2 : 14	9 : 07
45.	Tomkovic, M.	Yugoslavia	5 : 00	4 : 05	—	9 : 05
46.	Prhavc, J.	Yugoslavia	1 : 14	3 : 11	4 : 15	8 : 40
47.	Strattner, W.	Germany	1 : 31	5 : 00	1 : 33	8 : 04
48.	Visser, P.	S. Africa	2 : 33	3 : 27	2 : 03	8 : 03
49.	Hewitson, R.	N. Zealand	4 : 13	1 : 34	1 : 30	7 : 17
50.	Du Toit, D.	S. Africa	5 : 00	0 : 53	1 : 20	7 : 13
51.	Morisset, J.	France	5 : 00	1 : 57	—	6 : 57
52.	Martins, P.	S. Africa	1 : 53	1 : 54	2 : 01	5 : 48
53.	Stojadinovic, V.	Yugoslavia	—	2 : 07	3 : 11	5 : 18
54.	Chase, M.	Australia	4 : 41	—	—	4 : 41
55.	Sandham, A.	Argentine	4 : 37	—	—	4 : 37
56.	Osbourn, N.	Ireland	2 : 30	0 : 54	—	3 : 24
57.	Fitzpatrick, G.	Ireland	2 : 35	—	—	2 : 35

TEAM RESULTS.—(1) U.S.A., 44 : 01. (2) G.B., 43 : 19. (3) Sweden, 43 : 01. (4) Italy, 41 : 41. (5) Belgium, 39 : 19. (6) Argentine, 38 : 49. (7) France, 36 : 39. (8) Germany, 35 : 14. (9) New Zealand, 33 : 16. (10) Canada, 31 : 03. (11) South Africa, 27 : 30. (12) Yugoslavia, 26 : 52. (13) Holland, 25 : 43. (14) Ireland, 25 : 04. (15) Denmark, 10 : 19. (16) Guatemala, 9 : 53. (17) Australia, 4 : 41.

A/2 GLIDER

1.	Hans Hansen	300	300	300	900	Denmark
2.	Heinz Denzin	285·4	300	258	843·4	Germany
3.	Jan Pierre Templier	300	235	300	835	France
4.	Bora Gunic	300	270	254	824	Yugoslavia
5.	L. Bausch	300	251	265	816	Holland
6.	Gerald Skala	280	300	300	800	Austria
7.	Walter Schonborn	211·7	288	300	799·7	Saar
8.	Giovani Federici	152	300	281·3	733·3	Italy
9.	Lenart T. Persson	300	243	189	732	Sweden
10.	Borge Hansen	242	293	195	730	Denmark
11.	Hans Schnabel	128	300	300	728	Switzerland
12.	J. Van Loo	209·2	271·4	266·6	707·2	Holland
13.	Alfred Bickel	131	300	272	703	Switzerland
14.	Hacklinger	187·1	300	215	702·1	Germany
15.	Naftali Kadmon	276	159	245	680	Israel
16.	Emil Fresl	266	182	290	678	Yugoslavia
17.	Henri Maes	180·2	247	225	652·2	Belgium
18.	Rudolf Schenker	300	172	162	634	Switzerland
19.	Andre Goetz	143	270	190	603	France
20.	Gerhard Wummel	300	170·5	132	602·5	Germany
21.	Pierre Follete Dupuit	139	271	184	584	Monaco
22.	Fritz Neumann	—	300	282	582	Denmark
23.	Valdemaro Lensi	213·4	152·1	217	581·5	Italy
24.	Kurt Persson	246·6	196	123·5	566·1	Sweden
25.	Werner Hauenstein	300	175	90	565	Switzerland
26.	Rudi Knoll	35	300	214	549	Saar
27.	Rune Anderson	155·6	203·6	184·6	543·8	Sweden
28.	Shraga Katz	254·4	78·8	211	536·2	Israel
29.	Eduard Avonts	276	218	138	532	Belgium
30.	J. F. Hecking	—	300	217·4	517·4	Holland
31.	Cassio Pisani	108·5	234·3	162	504·8	Italy
32.	Oskar Czepa	300	101	98	499	Austria
33.	Pierre Lefort	133	190	173·5	496·5	France
34.	Jean Maes	118·2	145	229	492·2	Belgium
35.	Luciano Toni	90	162·4	213·1	465·5	Italy
36.	Christian Claesens	108	229	119	456	Belgium
37.	Rudolf Lindner	147	187	119·5	435·5	Germany
38.	Herbert Weintraut	151	129	165	445	Saar
39.	G. C. M. Byrd	—	300	147	437	Gt. Britain
40.	Kurt Sandberg	97	139	173·4	409·4	Sweden
41.	A. A. Teunissen	22	208·6	161·2	391·8	Holland
42.	Sakellarakis	42·6	192	155·7	390·3	Greece
43.	Josef Schober	219·8	43	103·2	366	Austria
44.	A. J. Brooke	—	211	140	351	Gt. Britain
45.	Fritz Zidek	20·4	153	174	347·4	Austria
46.	Joze Smole	—	185	160	345	Yugoslavia
47.	Ove Nesdam	135	86	123	344	Denmark
48.	J. Fontaine	16	130	187·5	317·5	France
49.	Zeev ben Shaher	42	169·6	105·6	317·2	Israel
50.	Henry Dore	35·4	41·6	133	210	U.S.A.
51.	J. Navaro	208	—	—	208	Monaco
52.	Meir Fried	114	57	33	204	Israel
53.	George Perryman	16·8	70	49	119	U.S.A.
54.	Roger Aubertin	—	86	—	86	Monaco
55.	Ladislav Pinter	—	—	80·5	80·5	Yugoslavia

TEAM RESULTS.—(1) Denmark, 2211. (2) Germany, 2148. (3) Switzerland, 2065. (4) Holland, 2040·6. (5) France, 1934·5. (6) Yugoslavia, 1847. (7) Sweden, 1841·9. (8) Italy, 1816·9. (9) Saar, 1793·7. (10) Belgium, 1676·6. (11) Austria, 1665. (12) Israel, 1638. (13) Monaco, 878. (14) Great Britain, 788. (15) Greece, 390·3. (16) U.S.A., 329.



ENGINE ANALYSIS

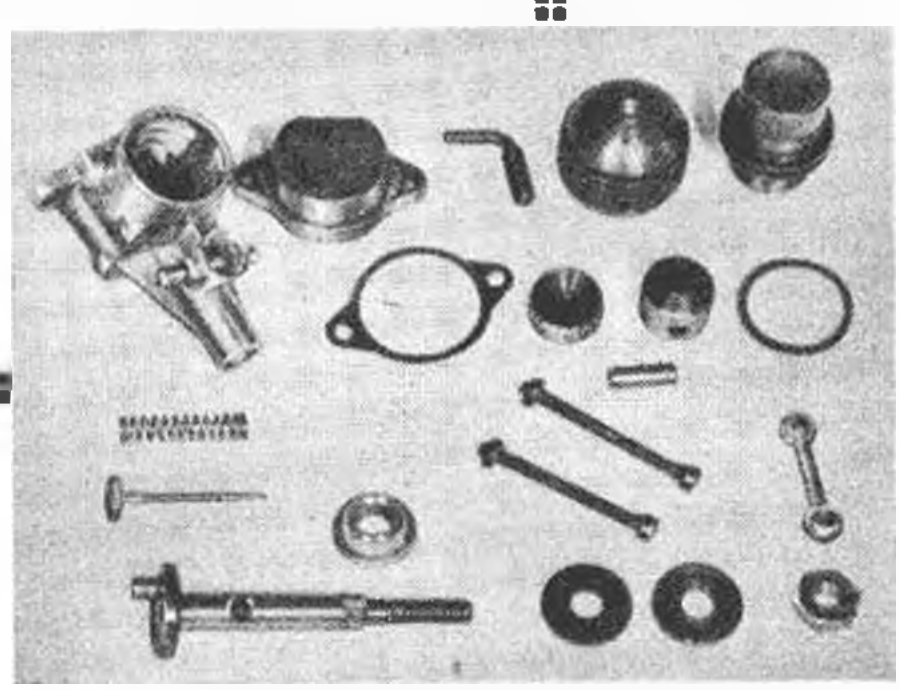
Number 14 (New Series)

BY

RON WARRING

The McCOY ·049 DIESEL

Actual size photo shows how this neat new red-head displays European influence in design. Parts below have high standard of finish. Contra piston has a plastic sealing ring and crankshaft, a milled section for positive drive washer fitting.



THE McCoy ·8 c.c. diesel, the first American commercial diesel in the "popular" size of model motors, is an exceptionally compact little job, well designed and beautifully made. We had been warned, however, that it was intended to run on McCoy fuel (of which none was available and no formula published) and might prove a little tricky on British fuel. Actually nothing could be farther from the truth. Although Mercury No. 8 as used for running-in was probably not the ideal fuel (judging from the blackened, oily exhaust), starting and running characteristics were as consistent and foolproof as any other engine yet tested in this new series. Starting, in fact, could be given top points —appreciably easier than some of our own half-c.c. diesels to which class its overall dimensions compare, although its displacement, of course, is more than half as big again.

Towards the end of the test period, and just as we were wondering how to acquire a McCoy Duroglo for own personal use, it suddenly "blew up" on us! At the time it was making a high speed run in excess of 13,500 r.p.m. with a small propeller. Exhaust note was steady and there was virtually no trace of hunting. Particularly pleasing, too, was the virtual absence of vibration. Then, without warning, there was a sharp crack as the crankshaft broke in half and the front part, with propeller attached, windmilled across the room. Subsequent examination showed that the shaft had parted at the point where the intake valve is formed. This consists of a hole drilled to give access to the hollow centre of the shaft, definitely weakened by the fact that a lateral "keyway" is milled across the shaft at the surface. The break was a diagonal one, starting approximately from the middle of this "keyway", with little evidence of failure due to a material fault. Whether, in fact, the shaft is actually overstressed at this point is a matter of conjecture. *Replacement, provided a spare is available, is quite easy.

* *See manufacturer's comments on page 606.*

Having no spare shaft available, however, this concluded the series of tests. Enough figures were available to plot the complete power curve and we were down to the smallest size of likely propellers (6 × 2) and so the test figures are reasonably complete. We had, however, intended investigating starting and running characteristics on various other British fuels to complete the picture.

There are one or two "different" features, as compared with small British diesels. The controls do not look any bigger, yet they seem that much easier to manipulate—a tribute to good design and proportioning. The contra piston, too, is fitted with a synthetic rubber ring to act as a seal, rather than the lapped metal-to-metal fit which has previously been common practice with diesels. The adjusting lever thread also runs in a fibre insert in the head. This gives a much smoother "feel" to adjustment of the contra piston whilst the plastic ring eliminates sticking and provides a somewhat better gas seal. What the anticipated life of the plastic sealing ring is cannot be estimated. After approximately one hour's running time, deterioration was marked in the amount of "crumbs" which had flaked off. The compression seal itself was still perfect, however, or near-perfect, for only the very slightest trace of fuel oil could be detected in the head and the contacting *surface* of the ring seal appeared as good as ever, and its hardness maintained. In other words, the *fuel* did not appear to attack the synthetic rubber ring but adjustment and pressure might possibly account for some deterioration by mechanical action. It is anticipated, however, that fuel in the head could attack the fibre insert for the adjusting screw.

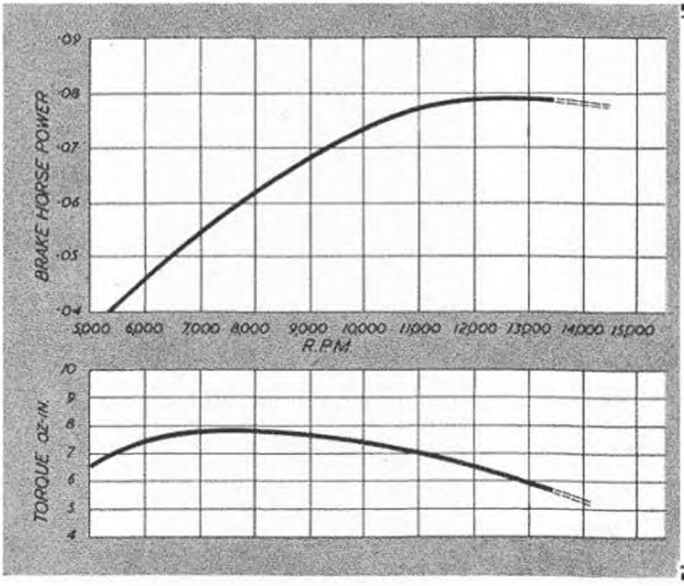
For the initial run it took very little time to establish the compression and needle valve setting for starting. Priming through the exhaust, compression had to be slackened off about half a turn from the final running position. The needle valve was absolutely non-critical over two or three turns. It was also found just as easy to start the McCoy ·049 by finger choking, although the procedure differed slightly.

Priming through the exhaust, excessive fuel is introduced into the cylinder and compression had to be slackened off to start. Provided starting compression was within half a turn of running setting, then the engine would continue to run satisfactorily and left plenty of time for final compression adjustment. With finger choking, two turns of the propeller with a finger over the intake produced ready starting with the compression setting left in the running position and no further adjustment was required.

Response to varying the needle valve control was particularly difficult to detect. From rich running, continuing to close the needle valve produced a higher exhaust note and slight increase in r.p.m. which was maintained over another turn or so until closed too much and the motor starved out. The compression control, on the other hand, produced a very positive response. The best running position was very easily found by listening to the exhaust note. Increasing the compression beyond the optimum produced a detectable "labouring". Slackening off, the exhaust note became sweeter, until finally an occasional miss could be detected. From this point the engine could be slowed right down over a further half turn decrease in compression without stopping, although, running, of course, was now in bursts. Maximum r.p.m. was achieved by using the minimum compression possible without "missing" taking place. The compression setting was not greatly altered for optimum running at extremes of low and high speed.

Judging speed on the exhaust note can be misleading and particularly so with the McCoy. Below about 10,000 r.p.m. the engine seems particularly quiet and, apparently, slow running. An r.p.m. check, however, showed higher figures than anticipated. Above 10–11,000 r.p.m. the true "high-speed" noise appears, emphasised by a particularly gratifying smoothness of running. There was little tendency to hunt at high speeds, even during the initial running-in period when run-in consistency was marked at all speeds produced during the tests. No doubt the counterbalanced crank web contributed materially to vibrationless running.

The McCoy ·049 appears fairly economical on fuel but response to cut-out action is rapid. Delay between shutting off the fuel supply and the engine stopping is a minimum. What was particularly pleasing, the appearance of an air bubble in the fuel line, produced only a momentary miss. The engine continued to run, in fact, when sucking in a complete length of aerated fuel in the line, missing badly but not stopping, and settling down quickly to steady running once more when a normal fuel supply was resumed. The suction on finger choke is also impressive, drawing up fuel successfully through a ten-inch length of fuel pipe with a head of several inches, so tank location should be no particular problem.



McCOY ·049 DIESEL

Specification

Displacement: 8 c.c. (·049 cu. in.).
Bore: ·405 in.
Stroke: ·386 in.
Bore/Stroke Ratio: 1·05.
Bare Weight: 1⅞ ounces.
Mounting: Radial.

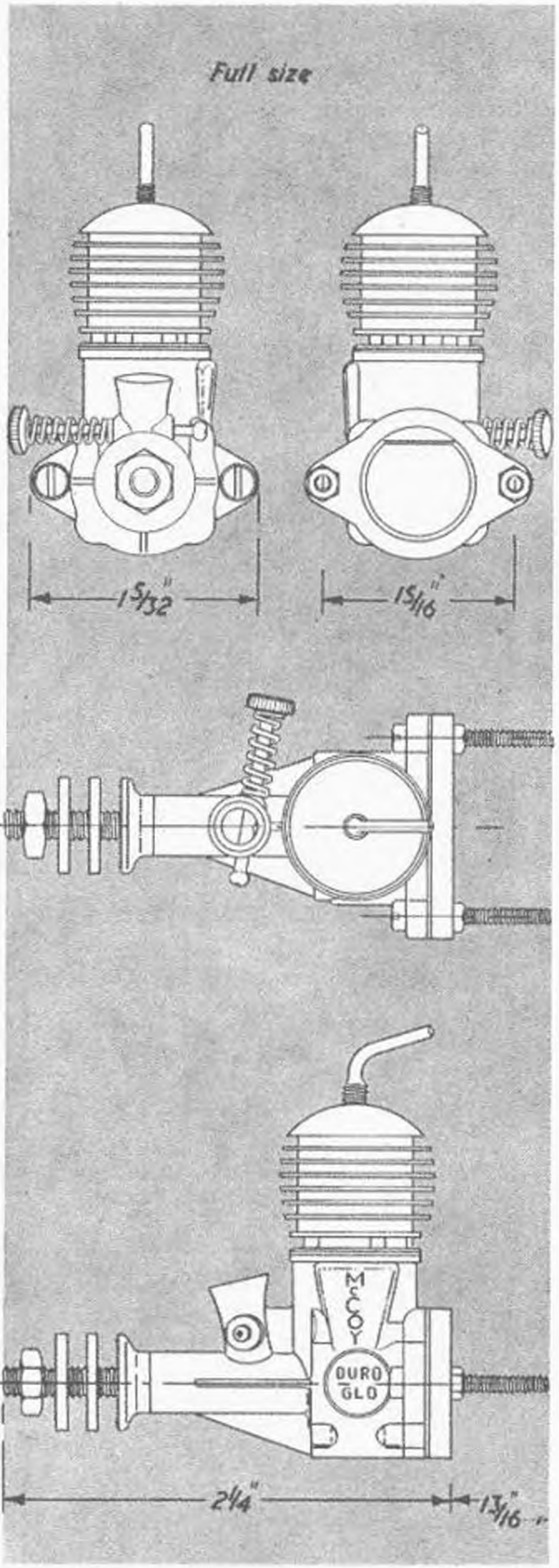
Material Specification

Crankcase: Aluminium Die Casting.
Crankcase Bearing: Plain.
Cylinder: Cold Rolled Steel.
Cylinder Casing: Aluminium.
Piston: Steel.
Contra-Piston: Steel (synthetic rubber sealing washer).
Crankshaft: Steel.

Manufacturers:

Duro-Matic Products Company,
8509, Higuera Street, Culver City, California, U.S.A.

Retail price: $5·95 (approx. £2.2.0 equivalent).



The method of mounting the engine is a little strange to British eyes. The two bolts securing the back of the crankcase are made very long and are intended for radial mounting of the engine. Only one nut is supplied for each bolt and therefore it is difficult to provide any suitable locking of this assembly when mounted. The thread is an American one. The nearest British equivalent—a 6 B.A. nut—is too loose to grip the threads properly. British modellers, in fact, would prefer to enlarge the holes slightly and use standard 6 B.A. screws with locknuts for mounting. There is little excess metal on the flanges to permit drilling out the holes the necessary oversize dimension with extreme care.

To sum up, although the particular engine on test suffered a major structural failure we still class the McCoy .049 in the " I want " class. Maybe the crankshaft failure was just an unfortunate accident. Apart from that, however, just about everything with regard to the operation and running of the engine is quite delightful. Power output at various speeds, on the other hand, is perhaps not quite as high as might have been expected from an engine from the " McCoy " stable, although directly comparable, size for size, with current British and Continental diesels.

McCoy's Comments

In consequence of the crankshaft failure, we were quick to contact the Duro-Matic Products Company so that in full fairness, both to the manufacturers and our readers, we should be able to publish an explanation of the breakage. We are therefore doubly pleased to quote from correspondence received on the subject, which shows that the McCoy people have already made three important changes in crankshaft production to obviate any recurrence of this fracture.

" . . . assure you that your deduction that the cause was incorrect material was quite accurate. The material has been changed : the heat treat specifications have been carefully engineered ; the method of removing the sharp corner at the intake has been corrected to assure greater strength at that point . . . we are shipping to you a new crankshaft to replace the one damaged in the test "

The new crankshaft does, in fact, bear out these points, and we assure readers that no further trouble can be expected.

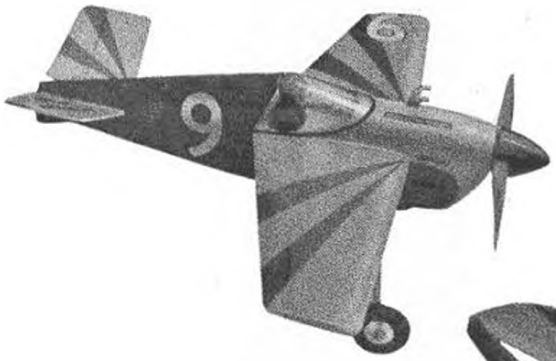
Fuel :
Mercury No. 8

NOTE.—For the benefit of overseas readers, Mercury No. 8 fuel equivalent formula is :

PARAFFIN	40%
CASTOR OIL	25%
ETHER	32·5%
AMYL NITRATE	2·5%

Propeller Dia.		Pitch	R.P.M.
9	×	4	5,700
8	×	6	5,450
8	×	5	6,200
8	×	4	6,700
7	×	6	6,750
7	×	5	7,500
7	×	4	8,000
6	×	5	10,000
6	×	4	11,650
6	×	3	12,250
6	×	2	13,000

Constant Geometric Pitch Wooden Propellers.



THE GNAT TEAM RACER

by Ron Moulton

Two versions of this model can be built to suit any of the 1/2A Team Race rules. 35 or 50 sq. ins. for 1 c.c. or 1·5 c.c.

NO official rules exist for Class ½A team racing — as yet; but each year the East Anglian Team Race Rally organised by the Cambridge M.A.C. includes what is becoming a popular new class among the events of the day. The 1953 Cambridge Rally attracted a couple of dozen of these baby racers, but unfortunately most of them were overnight specials and were not eventually entered in the contest. The Gnat was in fact one of those specially built for the Cambridge Meeting and though it cannot be reported that it won first place, it did at least prove that it could cover the required 50 mile eliminating heat non-stop at an airspeed between 45 and 50 m.p.h. This is the 35 sq. in. version, fitted with an Allbon Spitfire, the maximum capacity engine under the ·99 c.c. limit imposed by the Cambridge Club, and the best airscrew is a wooden 6×6 of geometric pitch.

This illustration of the parts required for the Gnat will be handy when used in conjunction with the full size plans presented on the following two pages. One of the engines most suitable for this little design would be a Mel'oy ·049 diesel featured on the opposite page, though the Mills ·75, E.D. Bee or Allbon Spitfire would be equally suitable in this new class.

One difficulty not readily realised is that with such a small wingspan of slightly less than 14 ins., propeller diameter is near to 50 per cent. of the span and often more than half the fuselage length. This means a long undercarriage; partly overcome by use of an inverted engine. The 50 sq. in. version for the proposed High Wycombe Club rules using 1·5 c.c. engines, has a larger span and with its 7 in.×6 in. airscrew is slightly more realistic in appearance; note the larger wing and tail detail on the plan.

Engine installation in the Gnat is a simple matter and, in fact, the design can be adapted to take any capacity up to 1·5. Should, for example, an Allbon Dart be fitted, then the fuselage depth can be altered and the wheel diameter reduced accordingly.

The ¼ in. sheet wing should be sanded to shape, with the exception of the centre section on which are mounted two engine bearers with appropriate parting distance for crankcase width. Bellcrank assembly and engine are fitted, then ⅛ in. sheet sides and bulkhead D with undercarriage attached. Fit the push-rod and deflector plates H, and parts I, J. Add the ⅛ in. sheet bottom, the ¼ in. square blocks in front of the bearers, the celluloid tank, and then parts A, B, C, in that order. Butterfly tail must be firmly cemented in place and care be taken that the elevator is free moving and neutral with the lead-out wires. Now add E, G and F, the pilot, cockpit cover, and decorate to suit your own whim. 8-thou. flying wires are suggested, the regulation line length for Cambridge being 30 feet.

The Gnat

FRONT END OF KK RANGER COVER

SCRAP FILLET

1/4" SQ.

C.G.

1 1/4" SPINNER

PORT SIDE ONLY

(A) 1/8" SHEET

ALLBON SPITFIRE

1/16" SHEET FAIRING

14 S.W.G. U/C

1/8" SHEET FUSELAGE BOTTOM

(B) 2 OFF. 1/8"

1 1/2" DIA. WHEELS

1/4" X 3/8" HARDWOOD BEARERS

PAXOLIN BELLCRANK

20 S.W.G. LEAD OUTS

1/16" PLY GUIDE

1/4" MED. SHEET WING

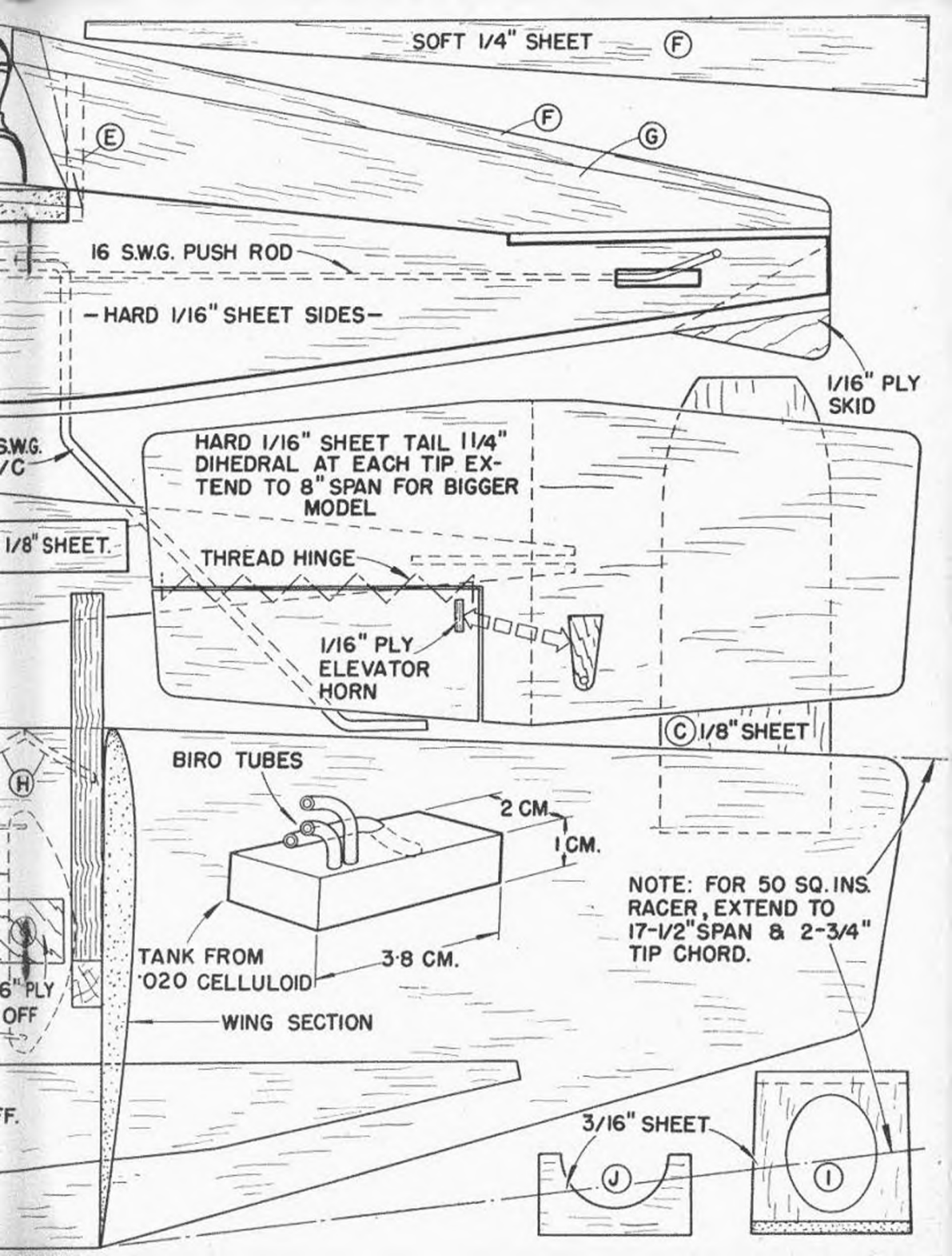
1/16" PL 2 OFF

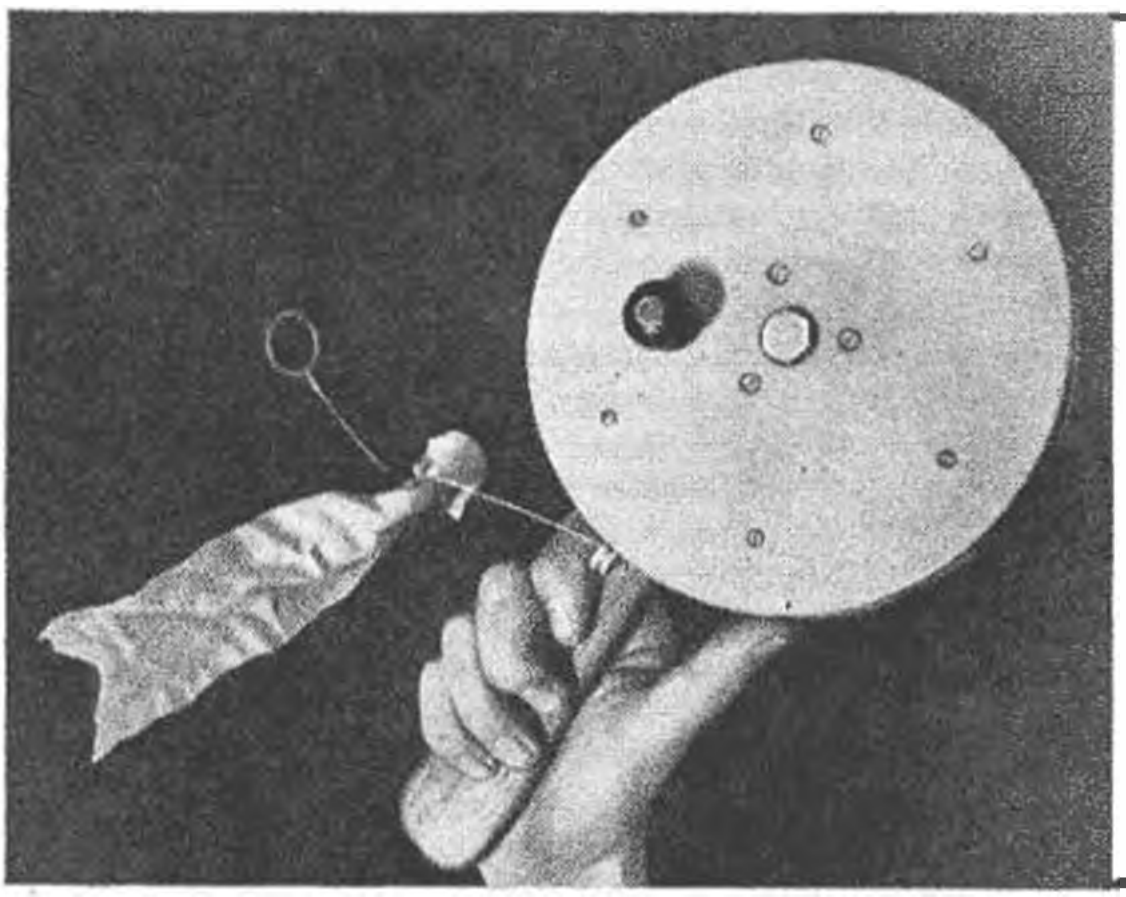
(G) 1/16" SHEET. 2 OFF.

(D) 1/8" PLY

(E) 1/8" BALSA

(H) DEFLECTOR 1/16" SHEET 2 OFF


SOFT 1/4" SHEET
F
E
F
G
16 S.W.G. PUSH ROD
– HARD 1/16" SHEET SIDES –
1/16" PLY SKID
S.W.G. /C
HARD 1/16" SHEET TAIL 11/4" DIHEDRAL AT EACH TIP EXTEND TO 8" SPAN FOR BIGGER MODEL
1/8" SHEET.
THREAD HINGE
1/16" PLY ELEVATOR HORN
C 1/8" SHEET
H
BIRO TUBES
2 CM.
1 CM.
NOTE: FOR 50 SQ. INS. RACER, EXTEND TO 17-1/2" SPAN & 2-3/4" TIP CHORD.
TANK FROM ·020 CELLULOID
3·8 CM.
6" PLY
OFF
WING SECTION
FF.
3/16" SHEET
J
I



Peter Casson describes his...

TOWLINE WINDER

for the New 50m. Line

THE International Glider Rules require that the towline must be rewound immediately after launching, and indeed this is essential from the modeller's point of view to enable him to get after the model without delay. Therefore the winding winch must be capable of winding in the line in a matter of seconds, and so must either be highly geared or employ a large winding drum which takes the place of gears.

A small grinding machine is usually pressed into service as a towline winder. But fitting this up is just as big a job as making the design shown here, because a drum still has to be made and a handle fitted to the machine, which in itself is almost impossible to accomplish properly.

THE PARTS REQUIRED :-

Two S.3. type journal bearings.
One ¼ in. dia. steel hexagon head bolt, 2½ ins. long, threaded for ½ in. of its length.
Two hexagon head back nuts to suit bolt (¼ in.).
One ¼ in. Thackeray spring washer.
One ¼ in. plain washer.
One 2 B.A. instrument screw, 1½ in. long.
Two 2 B.A. hexagon back nuts.
Two plywood or hardboard flanges.
One race housing.
Six distance pieces from ½ in. dowel.
Twelve No. 8 countersunk screws, ¾ in. long.
Six No. 4 countersunk screws, ⅜ in. long.
One winding knob, plastic, wood or metal.
Hardwood handle.
One porcelain line guide (fishing rod end fitting).
One brass 14 S.W.G. bush.

The Components

The flanges of the drum are made from two 8 in. dia. discs cut from a sheet of $\frac{3}{16}$ in. plywood or hardboard. On the intended outside face of one disc two circles are lightly marked with a pair of compasses. One is 6½ in. dia. and the other 1¼ in. dia. Space out six equidistant points on the large circle. Each point will be 3¼ ins. apart, this being the radius of the circle on which they are spaced. In the same manner mark off three equidistant points on the inner circle.

On each of these points a hole is to be drilled, and for this purpose the two flanges are clamped together and drilled simultaneously. The size of each hole is $\frac{1}{4}$ in. dia., and they should later be countersunk (on the outer side only, of course) to suit No. 3 screws on the outer circle and No. 4 screws on the inner. When all the holes have been drilled and the flanges unclamped, another hole, $\frac{5}{16}$ in. dia., must be drilled in one of them for the winding knob. It should be 1½ ins. from the centre of the flange and conveniently spaced between the existing holes. In the centre of each flange is drilled a ½ in. dia. hole. When drilling this hole great care should be exercised to ensure that the edges are square and sharp.

Six distance pieces $\frac{9}{16}$ in. long are cut from a length of ½ in. dia. dowel. It is essential that these pieces should be accurately cut, as any discrepancy will be very obvious in the finished winch, and if the ends are not cut squarely, the line will slip into the bad joint between the end of the dowel and the side of the flange. These distance pieces are drilled through with a $\frac{1}{16}$ in. dia. drill.

The race housing, which should be a circle of wood 1⅞ in. dia., can be cut from an ordinary piece of board $\frac{9}{16}$ in. thick. In the centre of this circle of wood should be drilled a ⅞ in. dia. hole to take the ball races, which should be a good press fit.

Two distance pieces for the ball bearing assembly are cut from a piece of brass or steel tube ½ in. inside dia. and approximately $\frac{1}{16}$ in. thick. One piece is cut ¼ in. long and the other ⅜ in. long. Care should be taken to ensure that the ends are perfectly square, otherwise it is impossible to obtain a good running fit for the bearing. The approximate size of the handle may be seen in the drawing, and its design and the type of wood to be used is left to personal taste. A ¼ in. dia. hole is drilled in the top end of the handle for the main

spindle, and another hole ¼ in. dia. for the line guide bush is drilled 4½ ins. down.

The line guide fixed to the handle is a large porcelain end-fitting of a fishing rod, which can be bought at any sports or angling shop. This porcelain fitting is put on by fitting it into a standard brass 14 S.W.G. prop shaft bush, which is then screwed into the handle. To enable the two prongs of the porcelain fitting to push tightly into the bush, the hole will have to be enlarged (a fine fret-saw blade is useful for this). When it is pushed in, the fixture is completed by soldering.

Any sort of knob will do for the winding knob providing a hole can be drilled which will allow a 2 B.A. screw (with a countersunk head) to go through with an easy clearance.

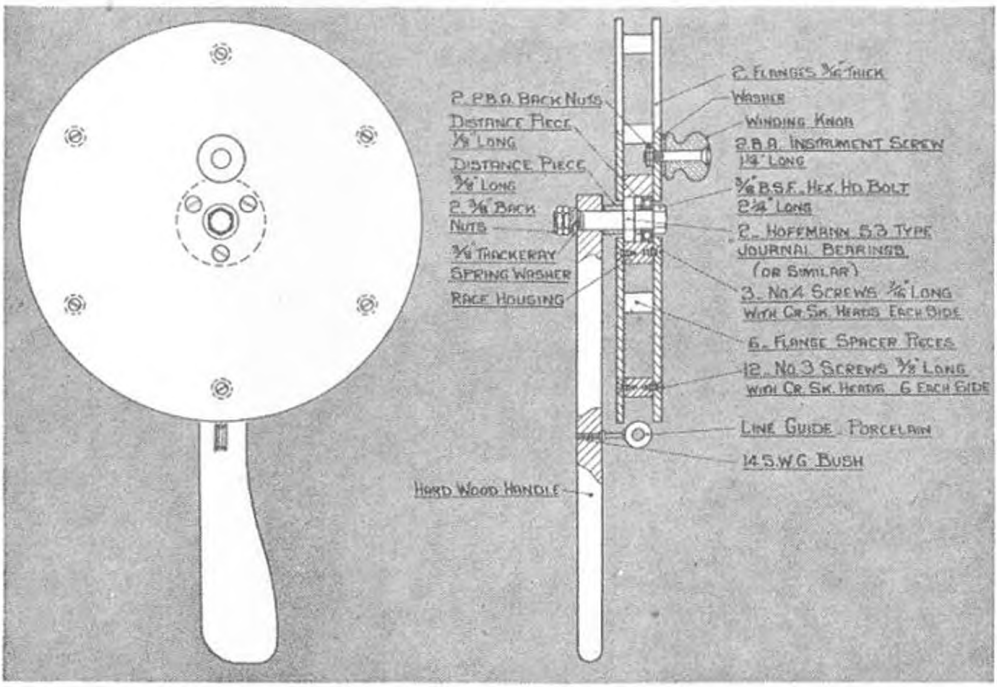
For the main bearing spindle a ⅜ in. hexagon head bolt 2¼ ins. long is used. But to find a bolt which is a good press fit into the races, a very careful selection has to be made and probably a number of bolts tried before the right one is found.

Assembly

With all the components made, it now remains to assembly them. Screw the race housing to the flange which has the hole for the winding knob. Mount the ball races on the ⅜ in. bolt, one adjacent to the head and separated from the other by the ¼ in. tubular distance piece. The mounted ball races are pushed into the race housing, and when fitted to satisfaction the other flange may be screwed onto the housing, clamping down on the races. All the dowel spacer pieces may then be screwed in.

In order to fix the winding knob to the drum, the instrument screw which is to be used for its spindle should be screwed into the flange which has already had a $\frac{1}{32}$ in. dia. hole drilled in it, to make a thread. If the builder has a 2 B.A. tap, the thread may be cut in the flange with this, although it is quite satisfactory to make the thread just by using the screw. When this thread has been cut, the knob is slipped onto the screw with a washer which comes between the knob and the flange. The screw is then finally screwed into the flange until the knob will just turn with hardly any play. Two back-nuts (especially thin nuts) are then put on the end of the screw which projects on the inside of the flange and screwed down as tightly as possible. It is a good safeguard to cover these nuts and the end of the screw with a liberal blob of balsa cement.

Before assembling the hardwood handle to the mainbearing spindle, the porcelain line-guide which has been soldered into a bush should be screwed lightly into the provided hole and filed off flush with the surface of the wood on the other side. When a ⅜ in. distance piece and a washer have been put on the spindle, the handle can then be added and clamped on with a Thackeray spring washer and two lock nuts.



VIC SMEED'S '53 BOWDEN TROPHY WINNER

PUSHY-CAT

A 44 inch pusher sport model for engines up to 1 c.c. Super-stable, this is the 'plane for perfect r.o.g. take-off and landing.

Margaret Smeed admires hubby's handiwork. Sweep-back equals dihedral angle, giving optical illusion of a flat wing in this view.

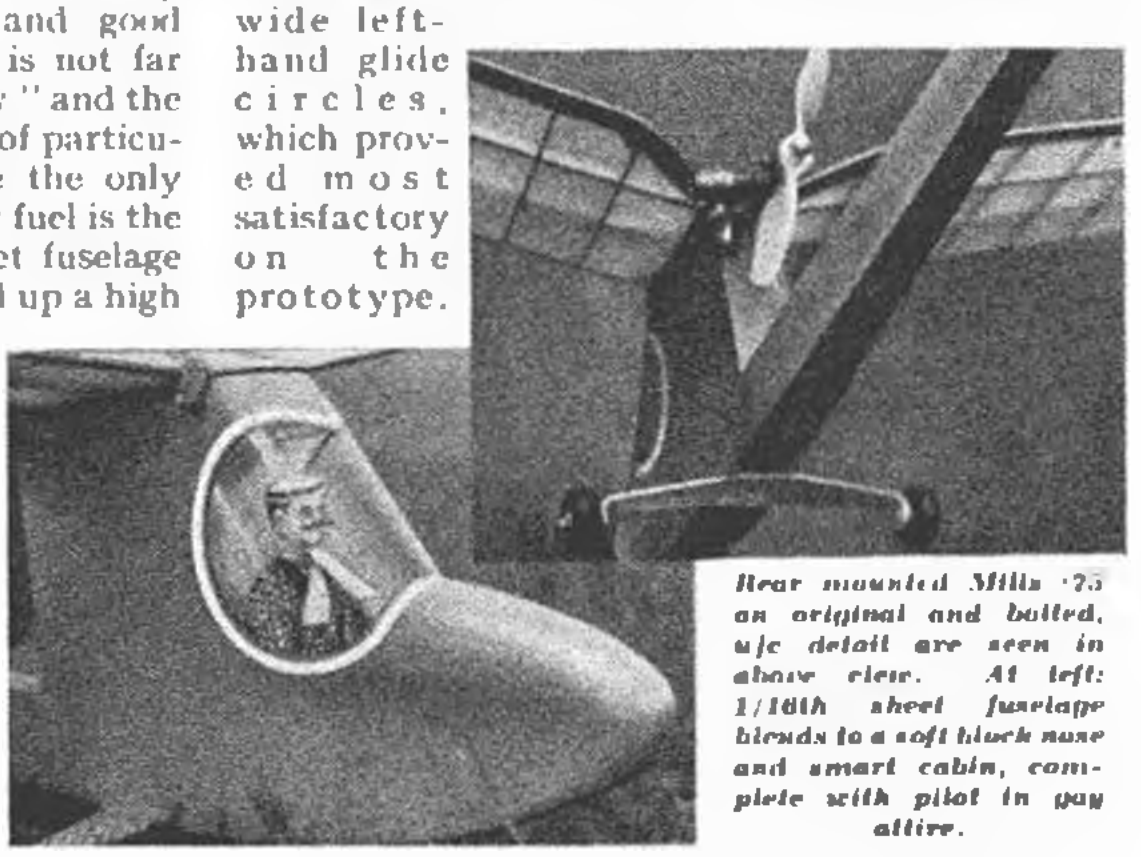
JUST about all of a model's ailments centre round, or affect, the C.G. To design a trouble-free model is therefore simple—don't let it have a C.G. "Pushy-Cat" is one model which definitely hasn't one, for, although it balances where indicated on the plan, the vertical factors bring the true C.G. to a position almost one inch *outside* the airframe, in thin air! Does this produce visions of the model scudding away and leaving its C.G. standing ?!!

Seriously, "Pushy-Cat" is an attempt to get out of the rut while still retaining reasonably simple construction, easy trimming, and good flight characteristics. The appearance is not far from scale (remember the "Scheldemeuw" and the "Carden-Baynes" ?) and the lay-out is of particular interest to concours builders, since the only part of the model likely to be affected by fuel is the leading edge of the fin, and the all-sheet fuselage offers an excellent base on which to build up a high finish. The configuration also lends itself to flying-boat adaptation, and a suggested removable "shoe" is shown on the plan.

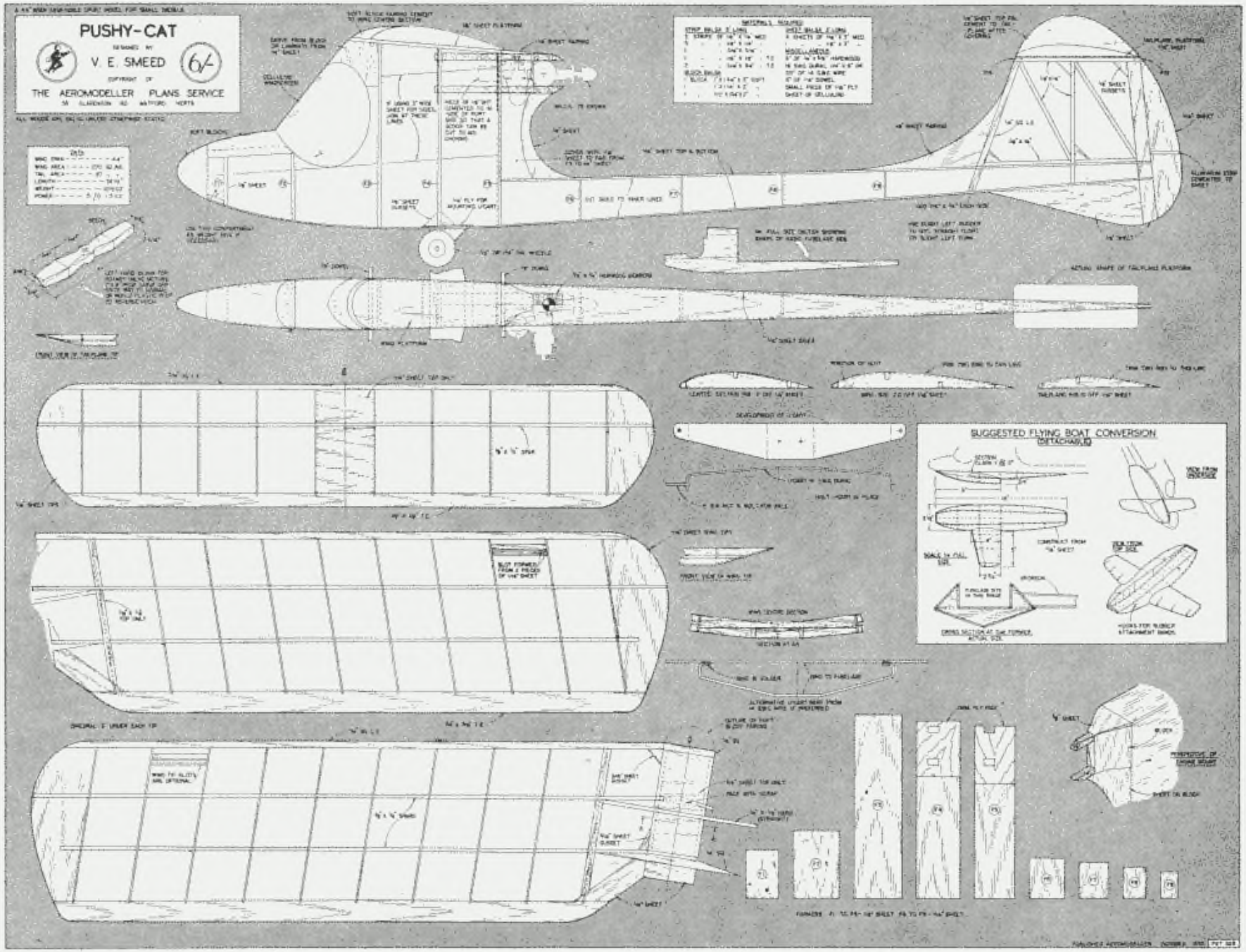
One minor snag is that rotary-valve motors will require a left-hand airscrew, since they will not run "backwards". A plastic prop of suitable diameter can be warmed in an oven until soft enough to be twisted to reverse pitch, or a wooden prop carved from a beech blank as illustrated, which takes less than twenty minutes. Side port engines, such as the Mills ·75 used on the original, can use an ordinary airscrew put on "back to front", the engine being run in the opposite direction from normal.

Building the model is very straightforward; use softish balsa and keep colour doping to a minimum if a ·5 motor is to be used. Space bearers as required, but check propeller clearance. The cabin top front and rear engine fairing are the only awkward spots; very soft block may be used at these points if desired. Cover the entire model with lightweight Modelspan. The small strip of aluminium cemented on the rear of the rudder enables the 1/16 in. sheet to be bent slightly across its grain for rudder trim, without springing back straight.

Balance the model on the engine bolt as shown, using ballast in the box provided, if necessary (none was needed on the original). Tailplane packing for glide trim should not exceed 1/16 in. —add or remove ballast if more is necessary. Slight left rudder will give a straight ahead or wide left-hand glide circles, which proved most satisfactory on the prototype.



Rear mounted Mills ·75 as original and bolted, u/c detail are seen in above view. At left: 1/16th sheet fuselage blends to a soft block nose and smart cabin, complete with pilot in gay attire.



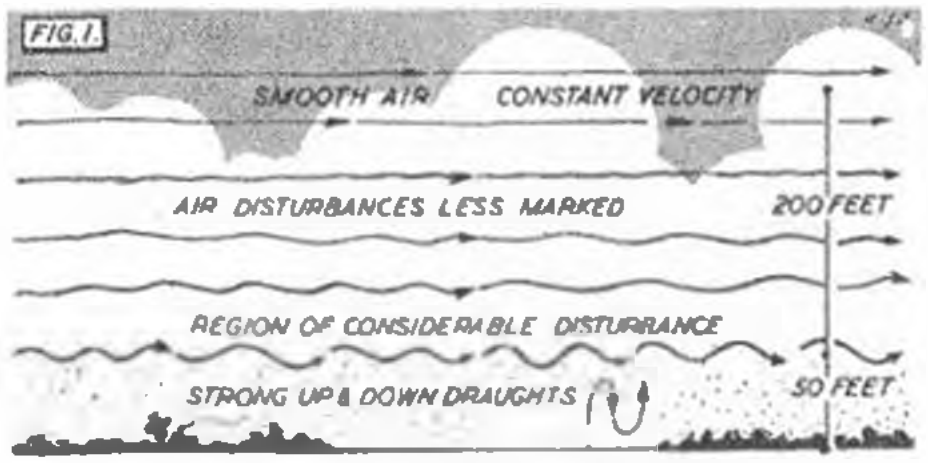
Full size copies of the 1/5th scale plan can be obtained from the Aeromodeller Plans Service, price 6/- post free.

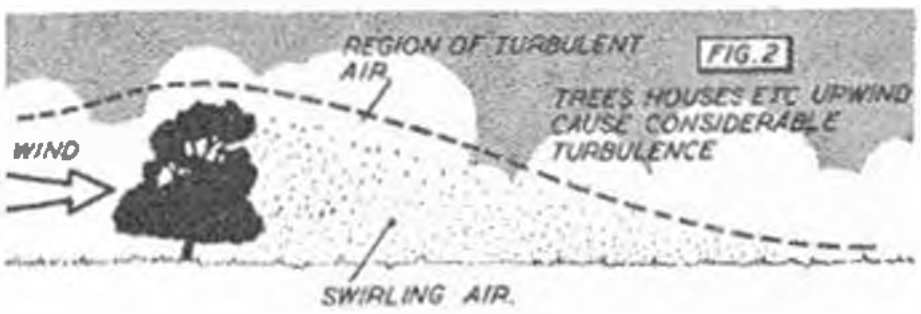
Getting the best out of . . . .

SPORT MODELS

Best method of launching big power models is ably demonstrated by this Isle of Wight modeller with his A.P.S. Kros. Final heave is given with the right hand.

QUITE the majority of models are flown " for fun " rather than in contests. Not that contest flying itself isn't fun. It can be, especially when you are lucky enough to achieve one of the top places. On the whole, however, contest flying can be far more disappointing than " flying for fun ", even though the model may be performing much better. Just a few seconds lost, perhaps through no fault of your own, may make all the difference between an extremely satisfying day out and one in which the sole consolation is that " there's always a next time ". With " sport flying ", as non-contest flying has, rather anomalously, come to be termed, specific performance in terms of duration does not really mean anything. *Every* good flight can be a source of enjoyment and the tension accompanying a contest entry is absent.





The sports model, therefore, starts with the advantage that it need not be trimmed out to peak performance and, also, that it does not matter particularly if *all* of its flights are good ones. It is desirable, in fact, that its performance should *not* be as good as that of a contest model. In competition work, long flights are the order of the day and, unless the weather is particularly kind, recovery of the model after each flight can be something of a problem. Long flights are always more attractive than short ones, but, at the same time, to appreciate a long flight you must be able to see the model all the time. There is little point in making long out-of-sight flights with a sports model if you can only see part of the flight and have to spend most of the available flying time out in the country searching for your missing machine. Generally speaking, therefore, the sports flyer aims for shorter durations, keeping the model within the bounds of the flying field so that recovery is easy and he can spend as much time as possible *flying* rather than searching for lost models.

In practice this does not always work out satisfactorily. More often than not the sports flyer chooses a design which, inherently, has a restricted performance, as compared with a duration machine. Unfortunately the " amended " design, which possibly has more attractive lines or full-scale " realism ", may also be far less consistent. Good short flights may be interposed with bad ones so that the model has to absorb a lot of punishment in the course of a day's flying. It has to be a tough model, to stand up to that sort of treatment.

Again, too, the sports flyer is generally less experienced at trimming a model and handling it under different conditions than his contest-flying counterpart. Lack of experience is a primary cause of inconsistency—and damage. Model aircraft are not like other models which, if improperly adjusted, are not likely to come to serious harm. A model aeroplane which is not trimmed properly is virtually doing its best to commit suicide—and trimming is a fairly critical process.

Successful sports flying then can be considered under two separate headings—the type of model to fly and how to handle that model if *flying* performance is your main aim; and the best approach to adopt if you want a realistic looking

model which may then be more tricky to handle, but where actual flying performance is considered secondary. The best proposition is to get *flying experience* first and then graduate to the more exacting designs.

If *flying* performance is your aim you can do no better than adopt a duration-type design, especially as regards rubber-powered and glider models. These, inherently, should have a large reserve of stability. For sport flying they do not need to be trimmed out to contest performance, so a somewhat safer trim can be adopted when, provided the design is sound, they should prove particularly consistent. The majority of contest designs, too, are on the large side as compared with typical " sports " models. This also is an advantage from the flying point of view. The smaller the model, in general, the more sensitive it is to wrong adjustment or mis-handling and the lower its reserve of stability.

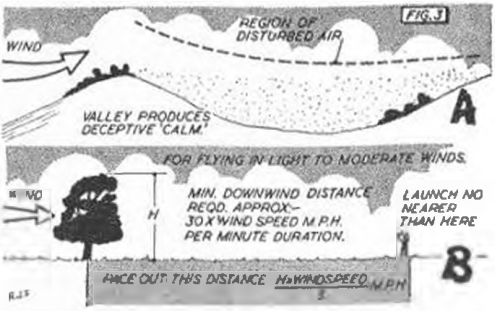
Unfortunately, of course, the larger the model the greater its cost, and younger aeromodellers in particular often have, of necessity, to start with the smallest of the kit designs. They have the consolation, however, that with a kit model the design itself has been proven and so such flying faults as may develop are normally the results of their own errors, which practice can eliminate.

The first, and one of the most important considerations in sports flying is to choose the weather. There is little point in flying *any* type of model in high winds (only the contest flyer has to do this, for important contests and good weather only coincide by sheer accident). When the wind is strong the air is very turbulent near the ground. A steady wind in itself is not all that harmful, it is the swirling gusts which can do the damage. And wind is seldom steady unless it is quite light and blowing over substantially flat ground.

Fig. 1 shows, diagrammatically, how a wind blowing over the ground is slowed up by contact with the ground and as a result tends to roll up into areas of up and down currents. Disturbances like these persist, although diminishing in effect, up to two hundred feet or so, above which height the air is generally much smoother. Since nearly all sports flying is done in this lower region, windy days are not really suitable for sports flying.

Any obstructions along the windward side of the flying field make conditions worse. Houses or a row of trees, for example, produce more burbles, as in Fig. 2, indicating that the apparently sheltered points are probably the worse for launching. You can get the same sort of deceptive " shelter " in a valley—Fig. 3—again a bad point for flying on windy days.

Models just do not have a fair chance on windy days. Even a 20 m.p.h. wind is equivalent to something like exposing a full-size aeroplane to a 300 m.p.h. super-tornado with, in scale, even more marked turbulence. No full-size pilot would cheerfully take off under such conditions!



Usually the best time for sports flying is on calm evenings when the weather is not a hazard and the possibility of losing models on thermal flights is remote. If you want the thrill of making occasional long flights, warm, but calm sunny days are productive of thermal activity and any well trimmed model is likely to soar to considerable heights in one. You may, however, end up by losing the model completely, unless you have fitted a dethermalizer.

Normally a dethermalizer is something not used with sports models. If you are flying a duration-type model, however, it is not a bad idea to use one—not so much to guard against the possibility of losing the model on thermal flights as to bring it down each time well within the confines of the flying field and save you too much chasing. The design of most duration models is such that fitting a simple tip-tail dethermalizer is quite a simple job, as in Fig. 4.

As regards the actual trimming of the model, the three basic types of free flight models can be considered separately. Starting with a glider, all


Smaller models are easily launched single-handed. Here, the Rev. F. Callon makes a perfect release of the prototype "Madcap," a design already famous as an ideal Sport Model.

we really want is a *reasonable* glide and good tow-line stability. You should be able to adjust the glide by simple hand launched tests.

Gliders

Experience indicates that the point of balance should be no further aft than the mid-chord of the wing—Fig. 5. If farther back, towing stability may be affected. If, with this balance position, the model stalls from a hand-launched glide, add more ballast weight to the nose until a smooth glide path is obtained. Check the new balance point found. This should not be more forward than one-third of the wing chord. If it is, remove excess nose ballast until the balance point *is* at one-third chord. Any stalling tendency still present should be cured by packing up the front or leading edge of the tailplane, 1/32 inch at a time.

In the rather unlikely event of the model diving instead of gliding properly with the balance point at mid chord, pack up the rear of the tailplane (i.e. the trailing edge) until the proper glide is achieved. As a check on the glide performance, from a shoulder-height launch the model should

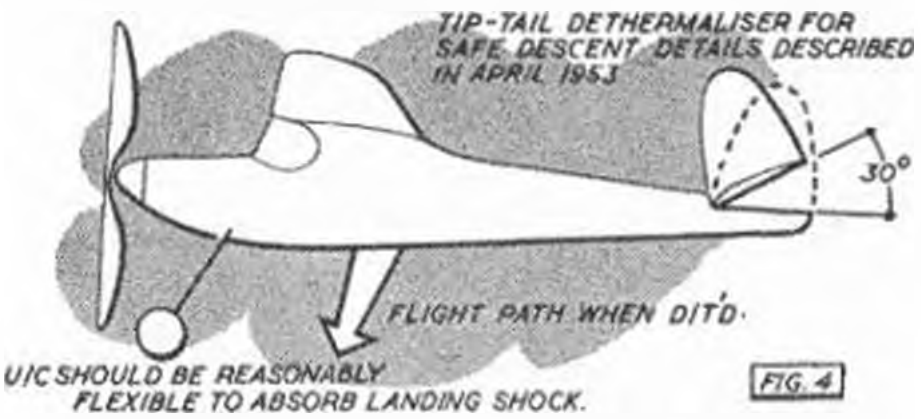


FIG. 4

glide forwards and downwards to reach the ground about eight to ten paces in front of you, with no wind. If there is a wind, always launch the model into the wind. The distance travelled from the launch will be slightly reduced, according to the strength of the wind. One further point—the glide path should also be *straight*.

This glide trim established should be quite satisfactory for sports flying. How well the model behaves on the towline is largely dependent on the design of the model itself and the accuracy with which it has been built. Warps or faulty alignment, for example, almost always cause trouble when tow-launching. Any obvious faults of this nature must be eliminated—Fig. 6.

Likely faults—and possible cures—for failure of the model to tow up properly are illustrated in Fig. 7. If the model weaves first to one side and then the other, as at " A ", then either move the tow-hook position back slightly (or use a more rearward hook, if more than one hook is fitted) ; or add more ballast weight to the nose to bring the point of balance farther forward. In the latter case, of course, you will also have to re-trim the glide slightly by packing the tailplane T.E.

If the model just turns off and dives to one side, try to get a straight tow by adjusting the rudder

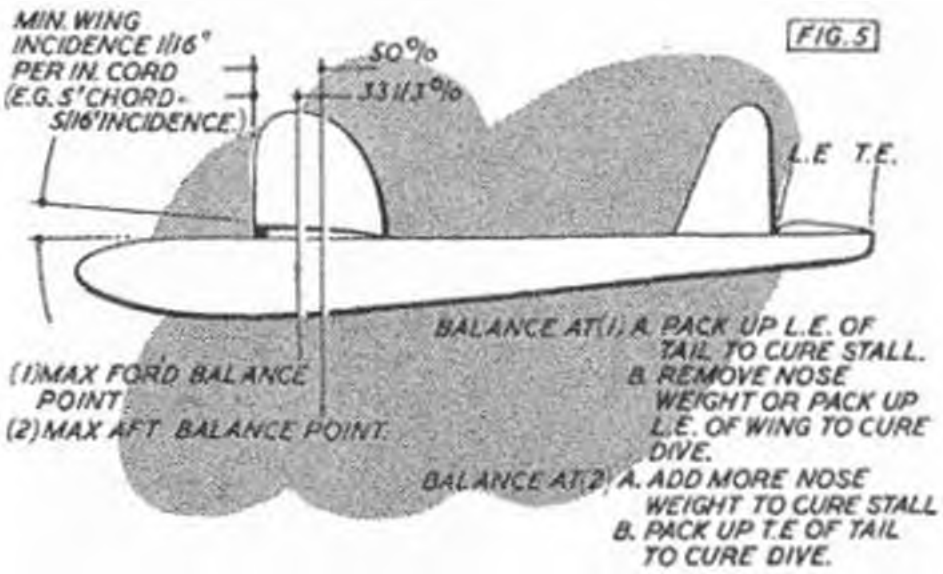


FIG. 5

or trim tab setting. If this proves too sensitive (i.e., a slight rudder correction produces a dive to the other side), move the tow-hook position *forward*. More fin area in the form of small fins cut from sheet balsa and stuck to the tailplane may also be helpful in rendering the main rudder less sensitive. If trouble still persists, move the centre of balance and the tow-hook position forward and try again. Remember, however, that warps, etc., may over-rule all of these corrections. Another possible source of trouble is one wing substantially heavier than the other.

Incidentally, rather than a running tow-launch, sports gliders can be launched much more conveniently by a weak catapult of the type shown in Fig. 8. Roughly one quarter of the length of this catapult is thin strip rubber, the remainder thread. The rubber end is staked down to the ground, the model hooked on the other and the catapult extended by walking backwards to stretch the rubber to about four times its natural length. Release the model and it should be pulled forwards and upwards in the manner of a running launch.

Rubber models

Rubber-driven sports models should be trimmed for glide in the same manner as gliders and then like any other rubber model for the power turn, using downthrust and sidethrust to prevent stalling under power. Follow the same technique as advised in a previous article for contest rubber models, but without working to the same fine limits. As a general rule, in fact, it is a good idea to forget about sidethrust entirely and trim on downthrust alone, letting the model fly straight or in wide left- or right-hand circles under power. Do *not* try to make the model fly in tight circles. If you want to try sidethrust to get a right-hand circle under power, never use more than 1/32 in. packing.

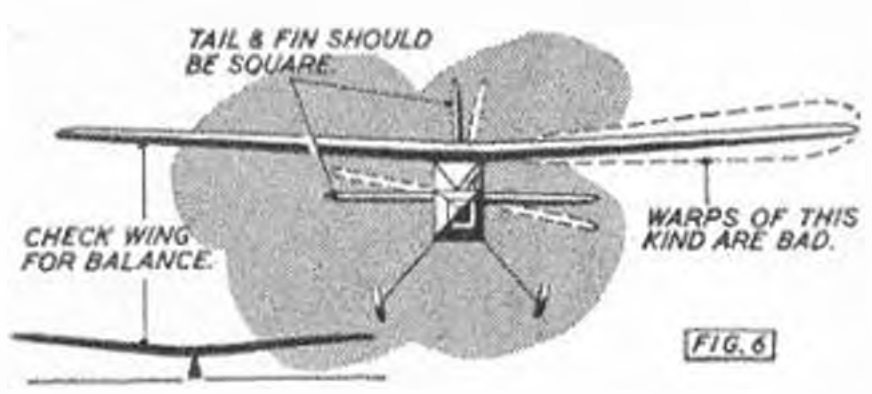
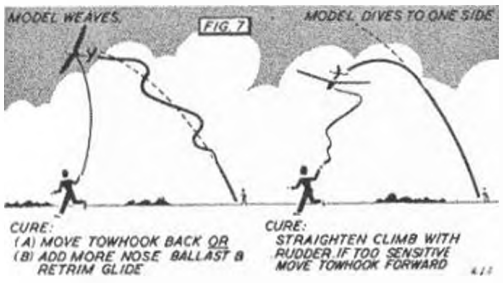


FIG. 6

when there should be little or no danger of the model spiralling in under power.

It also pays, usually, to employ rather more downthrust than would be used on a contest rubber model. This helps hold the nose down and gives a more stable flight, less likely to be upset by gusts. This produces a moderate angle of climb, rather than a steep climb. Excessive downthrust is bad, for this will make the model tend to fly fast and flat without climbing properly—Fig. 9.

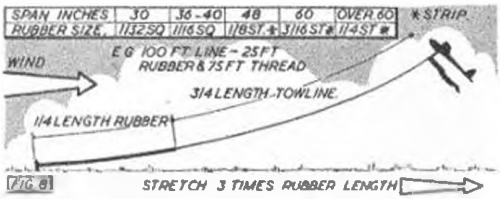
To prolong the life of your rubber motor, lubricate it well in the first place, keep it stored in a glass jar or similar container when not required for flying, and never wind it up more than three-quarters maximum turns. If necessary, add an extra strand or two to the specified motor size to get "maximum power". By never flying on more than three-quarters turns the motor should last a long time without breaking up and you will avoid that excessive initial burst of power, characteristic of a fully wound motor, which is so difficult to trim out properly.



Power Models

The safest type of sports power model is the underpowered duration design—a duration model fitted with an engine about one-half of the recommended capacity, for example. This will have an exceptional margin of stability under almost any conditions, yet still have enough power to climb the model reasonably well. You can soon tell if you have got a "safe" combination. Flying speed under power should not be appreciably faster than the gliding speed with power off. It is the high flying speed produced by the use of a powerful engine which makes contest-type power models tricky to trim out. With a low powered engine (for the size of model) you have a low flying speed and quite generous margins for adjusting sidethrust and downthrust. Again, however, we would recommend ignoring sidethrust, or using only a minimum offset.

The balance of operating requirements for the models discussed could be summarised under the heading "common-sense". In other words, make sure that the model is serviceable and properly airworthy before flying. Make sure that rubber bands used to hold on wings and tail are secure, strong enough and not on the point of breaking.

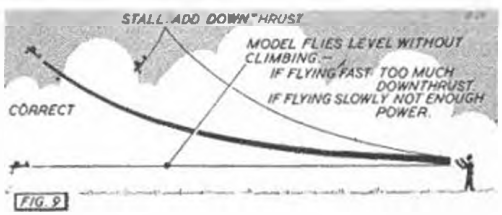


Check bands that have been exposed to strong sunlight. Bands tend to break up at an alarming rate under such conditions. Diesel or glo fuel also attacks natural rubber bands. A quick pre-flight check before each launch is a wise precaution.

Remember! Over ninety per cent. of all crashes are due to negligence on the part of the modeller himself.

With regard to flying semi-scale designs, the same general rules apply. Adopt, as far as possible, the technique and experience of trimming the "duration" designs to produce a stable flight pattern. The less the inherent stability of the design the more sensitive it will be to bad adjustment and air disturbances. This means, fly such models only in calm or near-calm air, at least until fully conversant with their limitations and do not try anything "clever" with them. Two excellent rules in this respect are: generally *underpower* such models so that they fly reasonably slowly and are therefore less sensitive to adjustment; and fly them as far as possible on a substantially *straight* course or in very wide circles. If possible, avoid using any rudder offset at all as this is a frequent cause of spiral dives should speed build up during flight. This rule is especially helpful as regards trimming Jetex-powered flying scale or near-scale models where speed does tend to build up during power flight and the efficiency of the jet motor increases proportionately. The merits of low powered flying are exemplified by the ducted fan models of scale or near-scale appearance which, with conventional (airscrew) power would probably be unstable for similar layouts, simply because of the increased flying speed produced by the more efficient airscrew propulsion.

The margin of safety decreases with increasing flying speed. Thus heavier, faster models become progressively more tricky to trim. Safe, consistent flying is the main requirement of the sports model. The trickier models are more exciting but should not be tackled until you have a sufficient background of practical knowledge in the art of flying the "safer" designs.



Developed for the North Western Area 1/3rd Rubber Weight rules . . . . . Ideal for other groups adopting restricted rubber contests.

About the designer . . . Aged 27 . . . Structural Draughtsman . . . member Cheadle Contest Club . . . is contest-only fan . . . hates building, likes still air flying . . . also rebuilds 2-seat hot-rod cars, plays tennis.

IN July, 1952, the North Western Area decided to try out a new rubber model formula proposed by the Cheadle club. The important rule was that rubber weight should be limited to one third of the total flying weight of the model, and, surprisingly, perhaps, the idea " took ". " Yardstick " is an example of the type of model evolved to take the most advantage of the specifications, and despite the restricted rubber weight, is capable of a regular near-three minutes on full turns.

The original model was first flown in November, 1952, at Tilstock, and turned in something over the two-minute mark on average, in rain. This performance was ascribed to a slightly nose-down glide caused by a slightly too powerful tail, so a 25% tailplane was built to replace the original 33%. A much improved glide resulted, though with a tendency to spiral which was not really eliminated by re-building the tailplane with an undercambered section. As a last measure, the wing was moved 1¼ ins. and the incidences re-arranged, and presto! The trimming headaches disappeared and flights of over 2½ mins. became regular.

From this it is apparent that " Yardstick " is a model that has had a considerable amount of development work put into it, and with the possibility of this restricted-rubber rule being adopted for several major contests, it is interesting to study the general features. The 28-in. 8-strand motor is taut between the hooks, and takes 600 turns; the fuselage is extended aft of the rear rubber anchorage to gain additional tail moment, and a fine-pitch airscrew is used to make the most of the climb on the amount of rubber allowed. In common with most low-pitch props, folding is the best answer to glide drag. Lightweight construction, even though it reduces the permitted motor weight, pays off in the flight performance, and geodesy proves worthwhile in reducing surface twist. Like most lightweights, " Yardstick " uses a cabane-mounted wing.

Construction is straightforward; note that 3/32 in. square is used aft of the motor peg, being spliced on to the longerons. After assembling the body, the lower longeron is dropped for extra rigidity at the tail, as shown, and the top longeron cut away. The 1/8 in. sheet nose allows side and downthrust to be sanded in before adding F1. The fins and wing struts complete the basic assembly, which is then covered with lightweight Modelspan and given two coats of clear dope and one of banana oil.

The wing is built over the plan, fitting the W2 ribs between the leading and trailing edges before installing the spar. One set of ribs need to be cut in half for assembly. The ribs adjacent to the outer dihedral breaks should be fitted after the dihedral has been set up. Add W6s to prevent tissue sag, and cover with Jap or lightweight tissue, giving one coat each of dope and banana oil.

The tailplane is built in a similar fashion, and after covering placed on its seating to allow locating keys to be positioned and the small fairing added.

Soft ⅛-in. sheet is used for the propeller blades, which should be carved with 1/16 in. undercamber. Drill the pivot holes accurately, fit hooks and bind the root ends with nylon. The pivot tubes are nicked and spread over at each end. Bend the wire arms until the blades fold flat, soldering the stop arm in place when the correct position is found. The blades are, of course, removable, though this is unnecessary for winding.

Weigh the completed airframe and make up the motor, adding ballast to the C.G. if the airframe is underweight. Aim for a right-hand glide circle of about 60 ft. in diameter, and use sidethrust in preference to downthrust to control the climb. Don't forget the D.T. . . . . .

Full size copies of the ¼ scale plan opposite, with extra detail added, may be obtained, price 4/6 post free from the Aeromodeller Plans Service.

YARDSTICK

DESIGNED BY

B. T. FAULKNER

4/6

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THE AEROMODELLER PLANS SERVICE

56 CLARENDON RD WATFORD HERTS

ALL WOODS ARE BALSA UNLESS OTHERWISE STATED

"DATA"

WING SPAN — — — — — — 36"

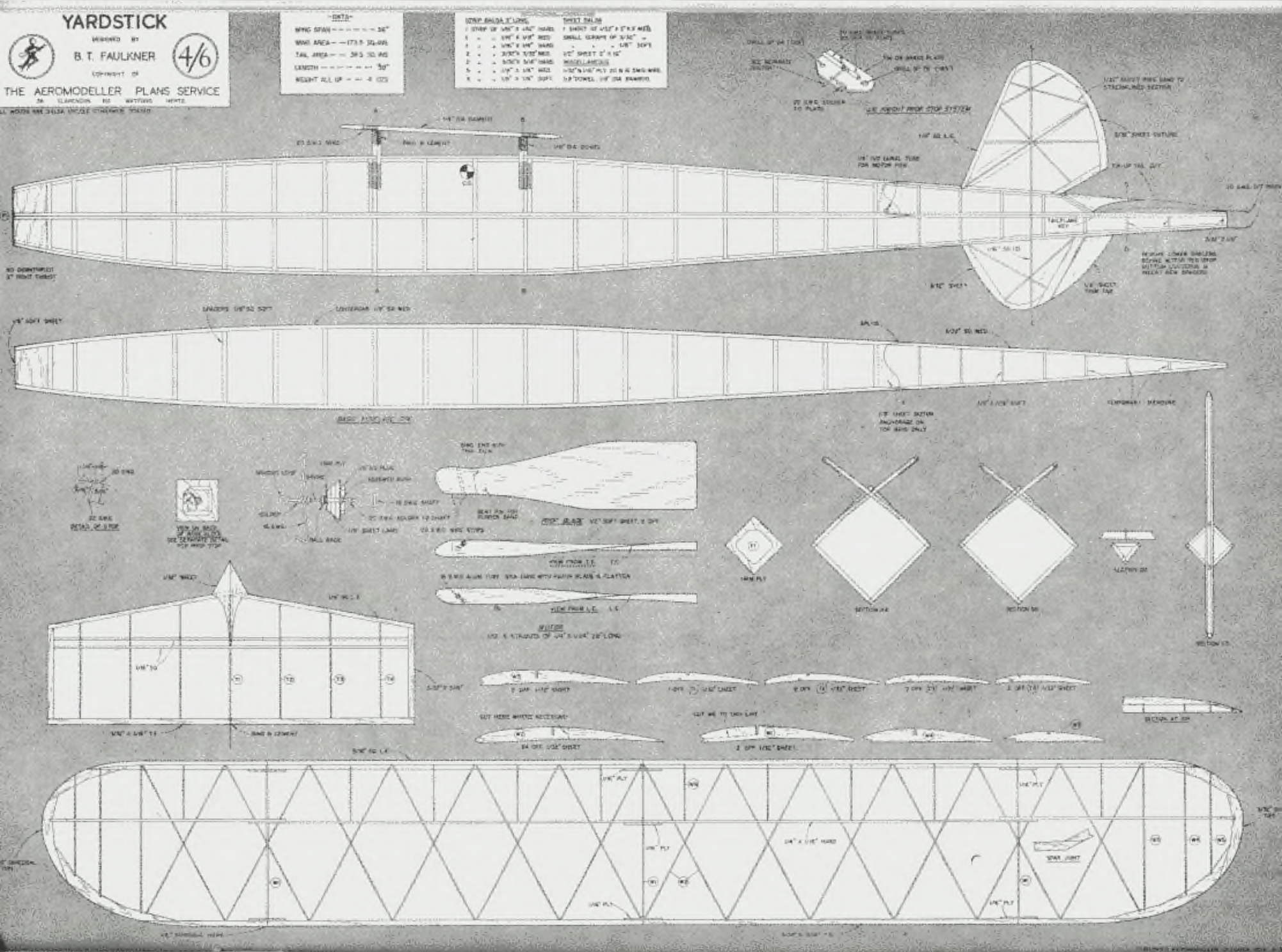
WING AREA — — 173.5 SQ.INS.

TAIL AREA — — — 39.5 SQ.INS.

LENGTH — — — — — — — 30"

WEIGHT ALL UP — — — 8 OZS.

STRIP BALSA 3" LONG	SHEET BALSA
1 STRIP OF 1/16" X 1/4" HARD	1 SHEET 12" X 5" X 1/16" MED.
1 " " 1/16" X 1/8" MED.	SMALL SCRAPS OF 3/32" "
1 " " 1/16" X 1/8" HARD	" " " 1/16" SOFT
2 " " 3/32" X 1/2" MED.	1/2" SHEET 3" X 12"
2 " " 3/32" X 3/4" HARD	MISCELLANEOUS
5 " " 1/8" X 1/8" MED.	1/32" & 1/16" PLY TO B.M.S. WIRE
4 " " 1/8" X 1/8" SOFT	1/8" DOWEL, 1/16" DIA. DRAWING



RADIO CONTROL NOTES

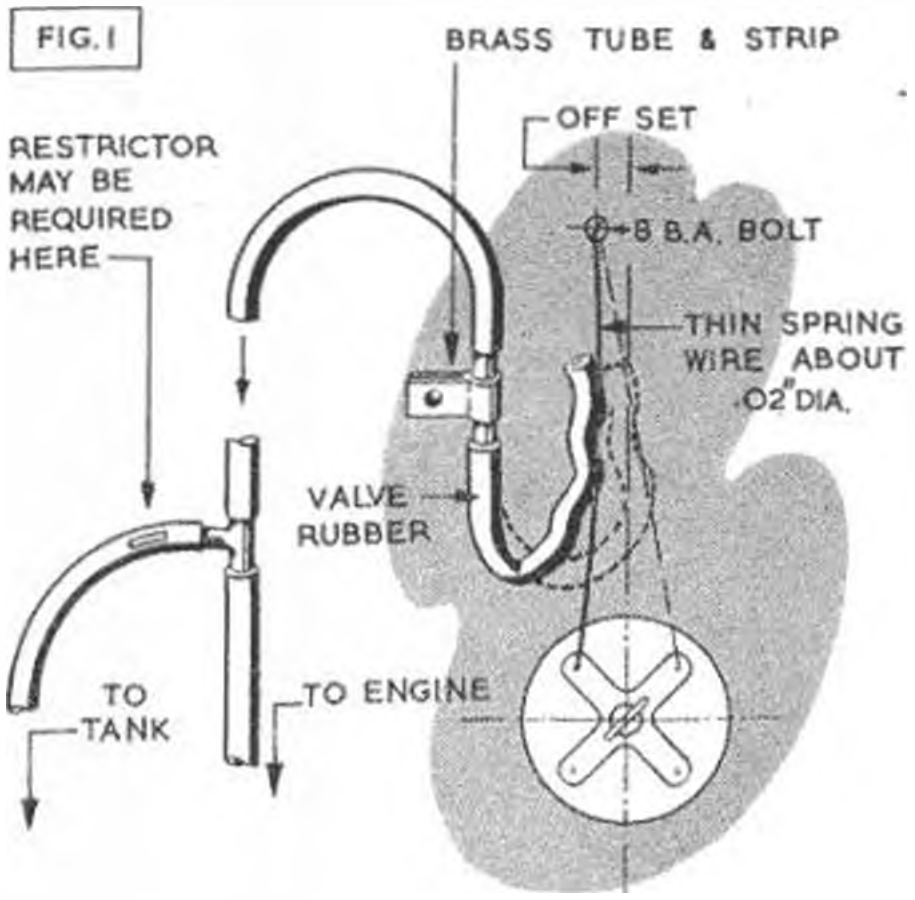
By

HOWARD BOYS

Heading photo shows John Daines with his scaled up Debutante (5 ft. span) which he intends to radio control, using the "Aero-modeller" No. 1 transmitter and receiver. Power will be an E.D. 2 c.c. Competition Special.

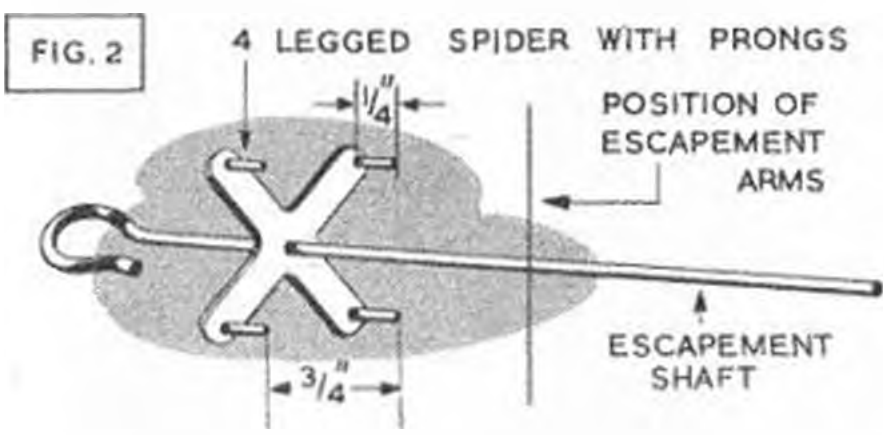
THE first item this month comes from Mr. G. C. Riall of London S.W.3, and is a scheme he has used successfully for engine cut-out. As shown in Fig. 1, it is built on to a self-centralising escapement, and consists of a piece of cycle valve tubing fixed so that it has a kink for all stationary positions of the escapement. On moving from one position to another, the kink is opened to allow air to pass along the tube, and thereon into the fuel line. A few odd movements do not stop the engine, but twenty or thirty will, if carried out quickly. The scheme is operated this way because one neutral position was required for down elevator. Should this not be required, the cut-out could be simplified by using one peg only to hold the tube unkinked in one neutral position.

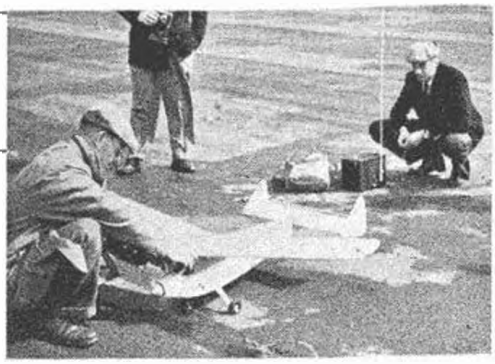
FIG. 1



A normal escapement has a spider soldered to the shaft, with a prong at the end of each of the four legs, as shown in Fig. 2. The escapement is mounted on a plywood bulkhead which has a hole big enough to clear the spider. On the other side of the bulkhead is fixed a piece of thin spring wire so that it just touches a prong in the resting position of the escapement, and yet when the shaft is rotated 90 degrees the wire is pulled across and released. A piece of cycle valve tube is threaded on the wire as shown and the free end slipped on to a piece of brass tube that is soldered to a piece of strip. This is fixed to the bulkhead in such a position that the valve tube is kinked, and the kink opened out as the shaft rotates. On the other end of the brass tube is connected a piece of fuel tubing that is coupled up to the fuel line by means of a Tee piece. This Tee is best fitted within an inch of the engine, and if any difficulty is experienced in getting the engine to stop, a restrictor can be fitted in the fuel line from the tank. This restrictor can be a piece of aluminium to fit the tube, with a groove along it, the size of the groove being found by trial.

FIG. 2

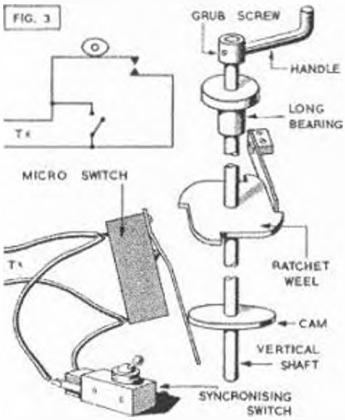




F/Lt. Davidson starts his radio control model "Racon", whilst S/Ldr. Ware stands by to check the radio prior to launching. Scene was at the R.A.F. Championships, and we can safely say that this was the last photograph taken of "Racon", which under full power from its E.D.2·46, spiralled into the tarmac to end what has been a very successful flying life. Radio unit was an E.C.C. 851.

Control Boxes

Mr. Riall mentioned that he used a rotating handle with double cams to operate a micro switch for the transmitter, so that winding the handle quickly would cut out the engine. Details of a control switch answering this description have been sent along quite independently by Mr. Morgan Drewe of Hemel Hempstead, who states that a number of members of the Apsley Club use such a "Beep" box. Their main use of this is to obtain right turn with the handle to the right, and left turn with the handle to the left, after having once synchronised it.



This box is shown diagrammatically in Fig. 3; note that a ratchet prevents the handle from going wrong way round. The ratchet and cam can be soldered to the vertical shaft which goes through a long bearing at the top, and the handle would be best held with a grub screw to facilitate dismantling. An oval cam operates the usual micro switch which has another switch connected across it so that the handle and rudder positions can be synchronised.

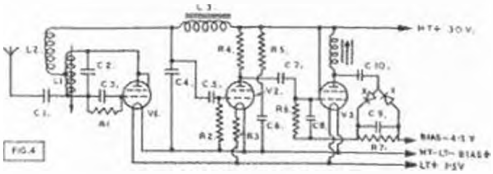
Three-Valvers

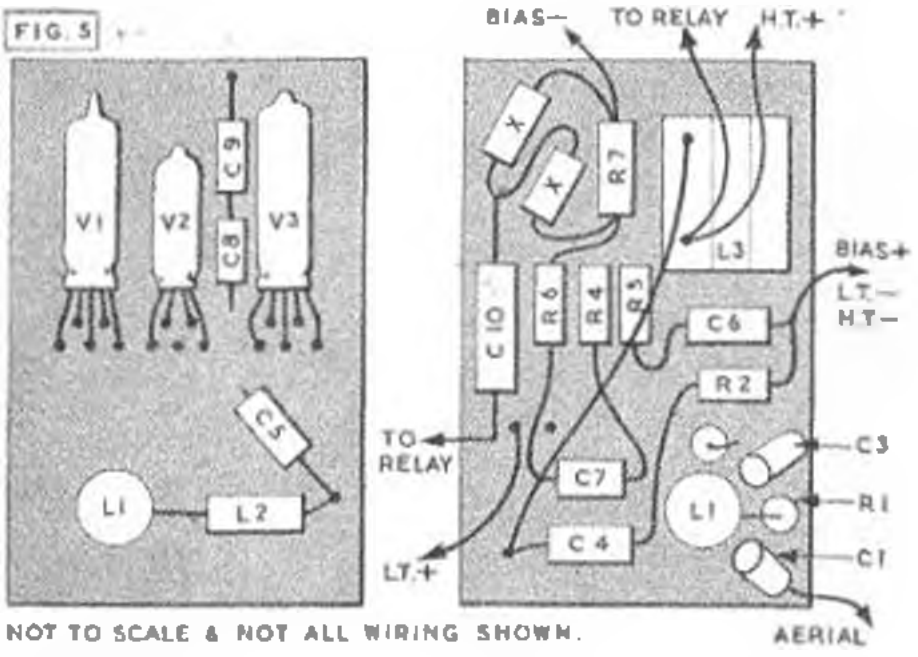
More people are taking an interest in the more ambitious three-valve receivers these days. These receivers work on the same principle as the well-known E.D. set and use an audio, or tone modulated transmitter. Mr. R. N. Blunt of the Coventry Radio Controlled Models Club has produced the smallest and neatest the writer has seen and the circuit is shown in Fig. 4. Except for the relay it is mounted on a base of paxolin only 2½ inches by 1½ inches. The relay used is a 3,400 ohm Siemens type, and is mounted forward in the model so that in the event of a crash it is not likely to knock holes in the valves. The valves and choke used are ex-gov. advertised in radio magazines by Messrs. Elpreq, though suitable new types are available from Messrs. Hivac or Mullard. The parts were a bit crowded on a photograph, so a drawing (Fig. 5) has been made to show the layout of components, the values being :—

C1 3·9 pf (5 pf)	R1, R5 3·3 megohms
C2 4·7 pf (5 pf)	R2 2·2 megohms
C3 36 pf (50 pf)	R4, R7 1 megohm
C4, C5, C6, C7, C8, C9, C10 ·01 mfd	R3 22 ohms
	R6 100 K.ohms

L1, 20 turns 28 or 30 s.w.g. cotton or silk covered wire on ¾ in. iron dust cored former about ¼ in long. L2, 50–60 turns fine enamelled wire wound on a 3 megohm resistor ¼ in. dia., 5/16 in. long and ends soldered to resistor wires. L3, Hearing aid output transformer, primary winding only. C4 L3 comprise a series tuned circuit that will resonate in the region of 200–500 c.p.s. It should be possible by using special chokes for L3 with appropriate values for C4 to get two receivers working on different audio frequencies which do not interfere with each other, and thereby have two models flying at the same time.

The valves are V1, V3, CV387, V2, CV443. New valves of the same characteristics for V1 and V3 are, Mullard DL72 and Hivac XY1·4B or XFY10, and for V2, Mullard DF70, and Hivac XW0·75B or XFW10. The XF types are a little smaller than the others, being the same size as the XFG1. The rectifiers marked X are often referred to as crystal valves, germanium diodes, silicon diodes or Xtal diodes, or at least something like that, and prices

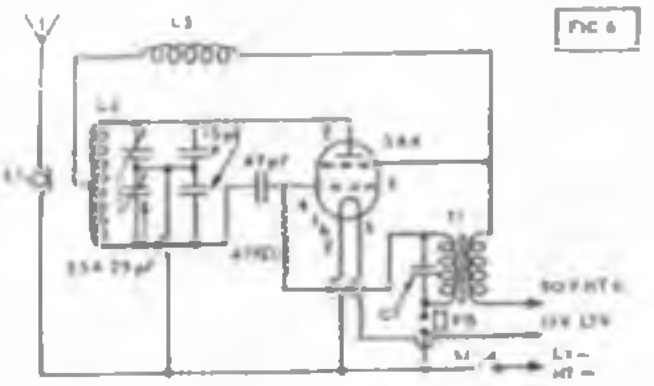




range from about 2/– to 4/6 each. The bias battery can be made from a 15 volt hearing aid battery. Only 30 volts H.T. are needed to give a current change in the relay of 0·2 m.a. up to 2 m.a. with signal.

Another interesting development with this receiver that Mr. Blunt has succeeded with, is substituting a relay for the choke L3. He actually used a Bolton, or Aeromodeller hard valve circuit for the first valve, though it is possible to get a current change in the anode of this valve of about 1 m.a. without quench coils using 45 volts H.T. This means that two sequences could be operated, one by keying the modulation to the transmitter, and the other by keying the transmitter off. A further development to this by Mr. Blunt has been to use a 3A5 valve in place of V1 and V3, and in this case V2 was not necessary. The only disadvantage with the 3A5 is the heavier filament current needed.

A high power transmitter suitable for use with the above receiver was described by Mr. Sinfield in the January 1953 issue of these " Notes ", but a fairly low power should give good enough range. Such a transmitter has been built by Mr. Brophy, also of the Coventry R.C.M.C., though at present range has not been checked. The circuit is given in Fig. 6, and it will be seen that only one valve is needed, and only 90 volts H.T. This transmitter can be operated from dry batteries. The tuning coil L2 consists of 14 turns of 18 s.w.g. wire $\frac{3}{8}$ in. inside diameter stretched to about $1\frac{1}{4}$ in. long, with L1 being 2 turns inside its middle, though of course insulated from it. L3 is an ordinary R.F.C. of about 60 turns of 30 s.w.g. cotton covered wire close wound on a $\frac{1}{4}$ in. diameter former. T1 is a frame blocking oscillator transformer as used for television receivers and obtainable at 4/6 each. The price is mentioned because some cost very much more, but they are not necessary for this transmitter. The condenser CT is chosen to suit the frequency at which the receiver works best, and is found by experiment. The value is not likely to be very critical and will probably be somewhere between 0·1 and 0·001 mfd. S1 is a switch for switching on the transmitter, and PB is to key the modulation. Normal anode current is 20 m.a. which drops to 12 m.a. when the modulation is keyed on.



Queries are often received regarding relays, and these are about the most difficult item of the amateur constructor's equipment. A home made type was described in these " Notes " for March 1950 and the only improvement that can be added to that is a better pivot for the armature. The bracket would need to be altered so that a hole was provided on each side and a shaft put through, see Fig. 7. This shaft could be a staff mounted in jewelled bearings by a watchmaker for finest results, and is well worth the surprisingly low cost. The armature is then soldered to the staff.

There is no doubt that the best relay that has been available was the SCR522 ex-government type, even though it was a little on the heavy side for lightweight receivers. One of the best light types was an imitation of this and was fitted to the more recent Ivy receivers, but unfortunately the Ivy suffered from manufacturing difficulties. The types mentioned so far had balanced armatures. That is, the armature was pivoted about its centre of gravity so that no matter in what attitude they were mounted, there was no out of balance weight tending to pull the armature one way or the other. Another advantage of the balanced armature is that any vibration has very much less chance of causing the contacts to chatter.

Unusual subject for a scale model, but very suitable for radio control purposes is this Convair 1.13 built by Sgt. Moles of R.A.F. Bomber Command and entered in the R.A.F. Championships. Model, which is powered with an Elfin 2·49, weighs 3 lbs. 10 ozs., and radio equipment is being installed.

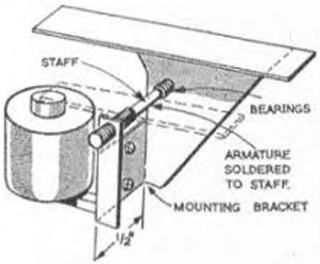


FIG. 7

The next best thing to a balanced armature is one in which the moving parts are very light, the lighter the better, and is not very likely to flop about from one position to another with different attitudes of the relay. Of this type one was shown in the photograph of the AEROMODELLER Baby Receiver, and another is the E.D. polarised.

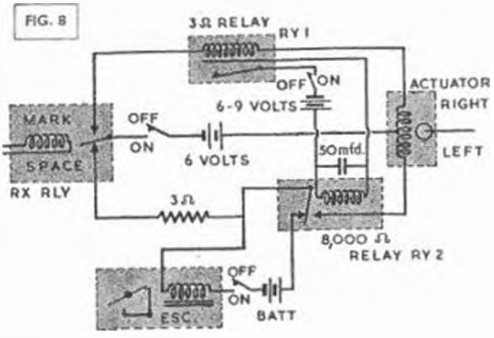
Some hints were given on adjusting relays in the January 1952 " Notes " and there seems nothing to add to that.

The next thing is the uses of different relays, since actuating schemes have been described in recent issues using high and low resistance types. Some people naturally do not know what all these differences are about.

How the Relay Works

Firstly, a relay is a device whereby a small force can be used to control a larger force. The type we come across most often is that used in the anode circuit of a valve. The signal causes a small change of current through the relay which operates the contacts and allows the larger current required for the actuator or escapement to be switched on and off. As the relay has to work on very small changes of current it needs to be sensitive. The more force it produces on the contacts the more current they will handle. The force created depends on the current, the number of turns of wire in the relay bobbin, and the area and length of the iron in the magnet. There will also be an air gap between the armature and the magnet which has the greatest effect of all. The force varies as the square of the gap. That is, if the gap is two thousandths of an inch the force will be only a quarter of that at one thousandth, and at four thousandths only one sixteenth of the force at one thousandth. However, it is generally the resistance with which we are most concerned, since this is usually a measure of the current required to operate it. With a small current a large number of turns will be required and thin wire has to be used to get them all in. This gives it a high resistance. If a relay is used in the actuator circuit there is a lot more current to play with so a few turns of thick wire can be used which gives a low resistance. In the June " Notes " Mr. McCullough mentions 3 ohms, whereas the sensitive relay in a valve anode circuit will generally be something like 5,000 ohms. Another thing must now be considered and that is the voltage lost across a relay. This depends on the resistance and the current flowing. Take the anode relay for example. If the current flowing is 1 m.a. (one thousandth of an amp) and the relay resistance 5,000 ohms, the voltage lost will be 5 volts. If then the H.T. battery is 45 volts there will be only 40 left after the current has passed through the relay. This relay would work the same if a 5 volt battery was connected across it. A similar type of relay, but wound for a resistance of 3 ohms would require a much greater current. It would not be likely to work out in proportion to the resistance because of the different wire that would be used, but let us consider the sort of uses for these relays. This is shown in Fig. 8, which is a copy of the system described by Mr. McCullough. Here is a 3 ohm relay in series with the actuator and a 6 volt battery. To see the sort of thing that happens let us take easy figures. Suppose the actuator resistance to be 9 ohms, then the total resistance would be 12 ohms and the current flowing ¼ amp. Out of the 6 volts, 1½ will be absorbed by the relay and 4½ by the actuator. This working out comes from Ohm's Law which says that the current in amps equals the volts divided by the resistance in ohms. The contacts of the 3 ohm relay are used to switch current to another relay, this time of 8,000 ohms resistance. If a 9 volt battery is used the current will be just over 1 m.a., which should work such a relay satisfactorily. The 8,000 ohm relay has a large condenser across its coil, and this slows down its release after the current has been switched off. If now a high resistance is connected in the circuit, say next to the battery, the battery voltage would need to be increased in proportion, but the pull on of the relay would also be slowed down. This sort of scheme is called a delayed relay. A low resistance relay can be delayed, but it means such an enormous condenser, as a small one would be discharged too quickly by the low resistance. To delay the pull on would also need such a high resistance with a much increased voltage that many more volts would be wasted. It does work but is not practical for model aircraft control. It might be mentioned here that delayed relays are used with vibrating reeds. The relay is usually about 5,000 ohms with a 15,000 ohm resistance in series and a condenser of ·5 mfd across the coil. This can conveniently be used with the receiver H.T. battery, and in this case the high resistance is practical. Very little delay is needed because the reed vibrates quickly.

FIG. 8



International TAILLESS

AT BREMEN

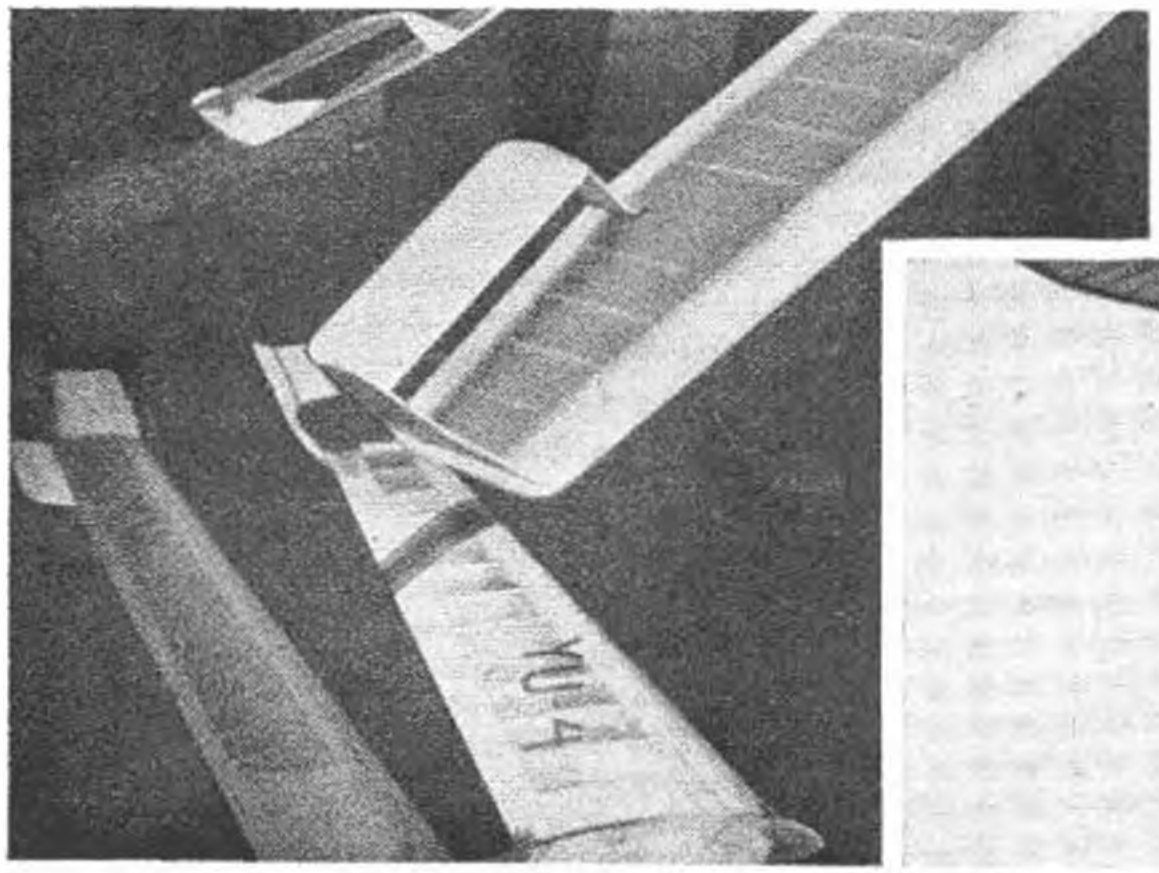
Reported by HANS PFEIL

THE second International Flying Wing Glider contest, held over July 18th/19th at Bremen in Germany, attracted full teams from Austria, Holland, Yugoslavia and the host country, Germany. In all there were sixteen competitors, showing a considerably improved interest over the initial event held last year when International flavour was supplied only by one visiting Dutch competitor.

For the first time as far as we are aware, this was an International contest to the five, three-minute maximum flight ruling. The new glider line length of 50 metres (164 ft.) applied and the five flights were split up over the two days. Starting at 3 p.m., the first round on the 18th took place in strong winds of up to 20 or 30 f.p.m. Rain fell later in the day; but not until after the first two rounds had been completed with A/2 champion Bora Gunic in the lead with the only three minute maximum. He was flying in his first tailless contest, having commenced construction of his Bremen entry only six weeks before the contest. It featured peculiar shaped elevons, hinged high above the trailing edge as with all the other Yugoslav designs—and was a piece of superb design and workmanship.

On Sunday morning the third round began at the early hour of 7 a.m. with highest times returned by the Germans Lange and Kron, the team placing became definitely in favour of the German contingent. In this round, Gunic managed a meagre 23 seconds, which he improved to 69 seconds in the fourth round and capped with a beautiful maximum in the fifth round to clinch his position as individual leader. During these last two rounds, thermal assisted flights were much in evidence. Thunder clouds were brewing in the distance; but it was apparently difficult, with the 50-metre line, to make positive contact with the updraughts. Thermal base would appear to have been fairly high off the ground.

Hans Domberger of Austria, whose simple but superbly finished model did well in the initial two rounds, was a close runner-up for first place but unfortunately failed to find a thermal for his last flight. On the other hand, Heinz Kron of Germany



Heading shows the Dutch contingent fraternising with two German "Meisjes". A. Scheffer at right, placed highest at 6th. Below and left, are Bora Gunic, and details of his winning model. Biplane elerons at tips are easily adjusted for trim, and reminiscent of D.H.110 tail unit.

connected lift to return a time of only 9 seconds short of a maximum and bring his excellent example of good aerodynamic design into third place.

From a constructional point of view the competition did not introduce any particularly outstanding new ideas, apart from the separate elevons of the Yugoslav models. The average size of the 1953 entries was between 6 and 9 ft. span and it is to be expected that the logical development will be for a radical increase in wing area in future. Undercambered sections derived from the MVA 123 and MVA 309 were most common, in combination with inverted sections, or the use of symmetrical airfoils at the tips, with wash-out.

In all this was a very well organised International event and thanks are due to Herr W. Grass, who handled the technical side, and the Bremen Airport Association for the loan of the commercial airfield. Even though full size aircraft were landing and taking off all the time, full co-operation with the control tower (via an ultra-short-wave walkie-talkie) ensured smooth running with every safety precaution and but a few brief interruptions.

Now that it is established on the F.A.I. calendar and is obviously arousing considerable International interest, perhaps the time is now opportune to remind British tailless enthusiasts that they would be very welcome at the 1954 competition, there is hope also, that the same meeting will include power and rubber classes to make it a complete "International Flying Wing Championship."

RESULTS

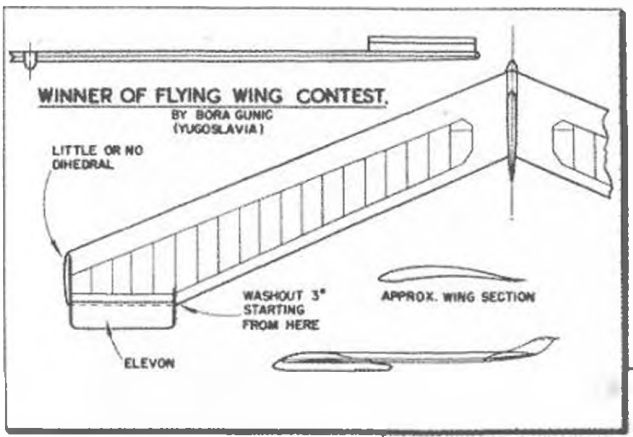
			Secs.
1.	B. Gunic	Yugoslavia	527·4
2.	H. Domberger	Austria	482
3.	H. Kron	Germany	475
4.	H. Lange	Germany	458
5.	G. Isensee	Germany	434
6.	A. Scheffer	Holland	366
7.	J. v.d. Caalj	Holland	313
8.	E. Hekking	Holland	309
9.	W. Zailhofer	Germany	280
10.	J. F. W. Hekking	Holland	250
11.	L. Petkovski	Yugoslavia	217
12.	— Janic	Yugoslavia	200
13.	G. Rancin	Yugoslavia	194
14.	A. Birke	Austria	194
15.	H. Jansa	Austria	176
16.	H. Girak	Austria	—

Team Placings.

1.	Germany	1,347	3. Yugoslavia	944
2.	Holland	988	4. Austria	852

Design Competition.

A special prize for the best constructional and aerodynamical development was donated by the Max-Planck-Institution for aerodynamics research at Goettingen ; won by Helbert Jansa of the Austrian team.



GUNIC FLYING WING

Conventional structure, with two part wing, small pod for central fuselage and selection of towing positions. Wing section is highly undercambered with slight reflex at the trailing edge and wing tapers off at the tips, producing 3 degrees washout angle. Leading edge planked covered, and end-plate fin also serves as a support for the unique elevons.

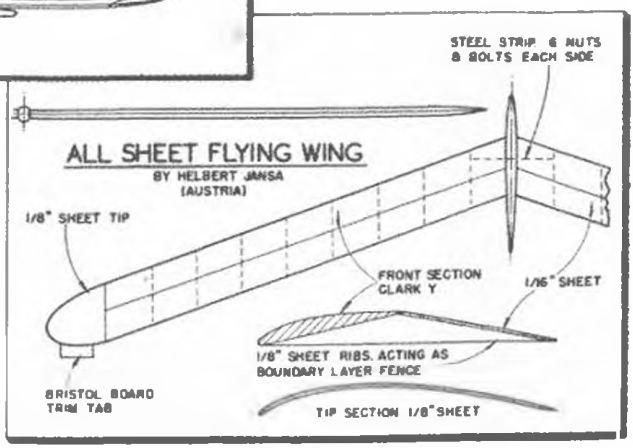
Span : 78¾ ins.

Root Chord : 6½ ins.

Tip Chord : 4·72 ins.

Total Area : 540·1 sq. ins.

Weight : 14·81 ozs.



ALL-SHEET WING

Helbert Jansa's novel all-sheet wing is of two-part construction in more than one sense. The wing halves are joined by a steel strip and nuts and bolts, whilst the forward 50 per cent of the chord is sheet, sanded to normal Clark Y section. Attached to the trailing edge of this is a rear 1/16th sheet, making a highly undercambered section, with ribs on the underside to act as boundary fences. Due to lack of trimming experience, model placed last on scoreboard.

Span : 108 ins.

Chord : 8½ ins.

Weight : 17·9 ozs.

R.A.F. CHAMPIONSHIPS

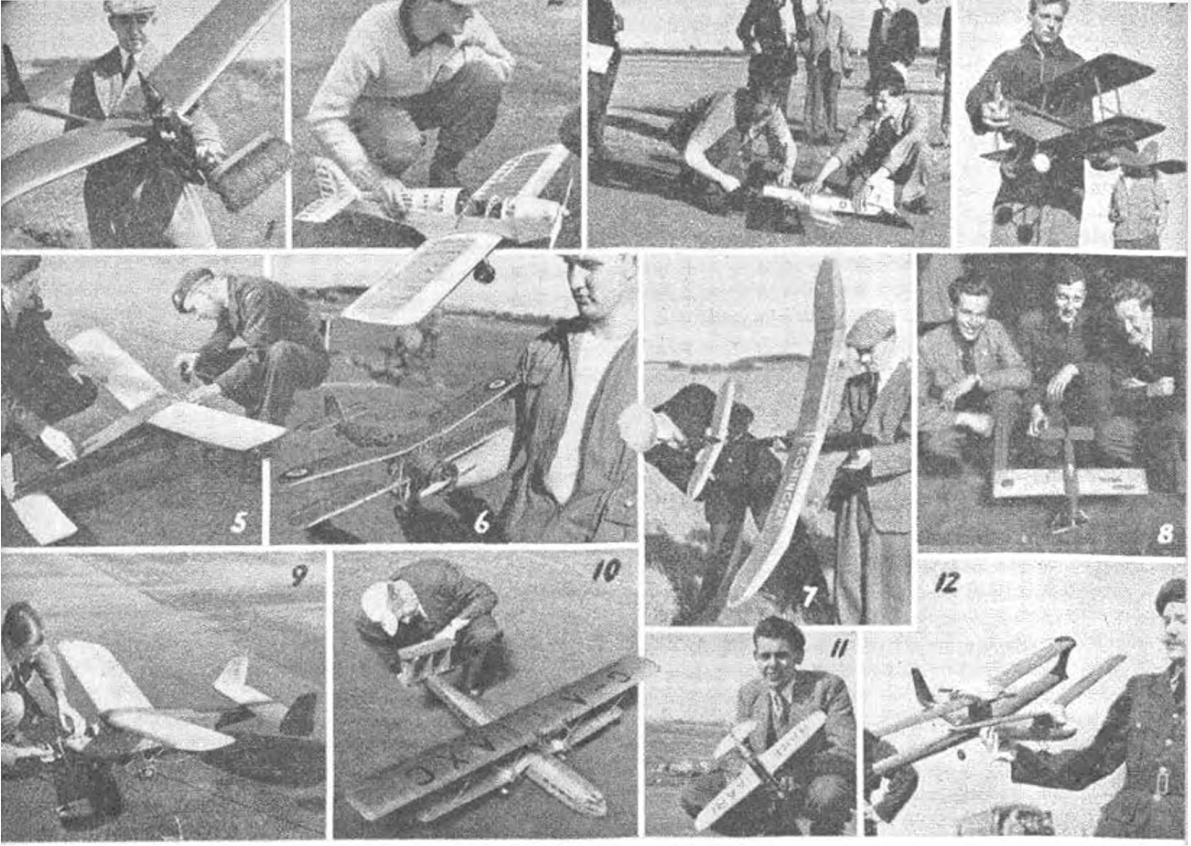
Described Pictorially by Harry Hundleby

Heading photo depicts S/Ldr. Ellis launching his Spitfire powered delta which weighs 30½ ozs. and uses a Clark Y airfoil. Left, Air Vice Marshal Sir Dermot A. Boyle, K.B.E., C.B., A.F.C., examines a scale Boomerang flown by S.A.C. Ellis, watched by Group Captain A. A. Sage, Chairman of the R.A.F.M.A.A. Below, A/Appr. Osbourne of Halton pits the turns on his lightweight rubber model held by A/Appr. Hayler.

THE Royal Air Force Model Aircraft Association no doubt picked St. Athan aerodrome for this year's Championships not only for its virtues as a flying ground, but also because it is one of the largest stations in the R.A.F. with the necessary accommodation to house the large number of competitors. St. Athan lies in Wales and when it rains in Wales it certainly rains! After a fine start on Saturday, 25th July, which did enable several of the free flight contests to get under way, down it came in torrents until late afternoon. Fortunately a roomy R.A.F. hangar was at the disposal of the organisers so that many of the control line events and the concours classes were able to continue uninterrupted. In the concours Sgt. McHard produced a superb solid scale winner with his Me 262, and Sgt. Edward's Fokker D IV flying scale model was a pleasure to behold with a flying performance to match, winning first place in its class. In the ½A team race which attracted many entries, Jun. Tech. Beckett's delta racer provided a good deal of amusement by emulating a race car, and digging its nose deeper into terra firma every time up elevator was applied.

There was no doubt that S/Ldr. "Bill" Verney, the Contest Director with over twenty different events to run, was relieved when rain ceased after tea. Taking advantage of the last few hours of daylight, free flight events were pushed ahead at all possible speed.

Next morning brought no rain but that Welsh Weather Man produced as nice a gale as we have ever flown in. These R.A.F. lads are, however, made of stern stuff and all the contests continued unabated. Even the flying scale concours entries attempted their qualifying flights and the radio control event saw many stout hearted attempts at making the upwind pylon.



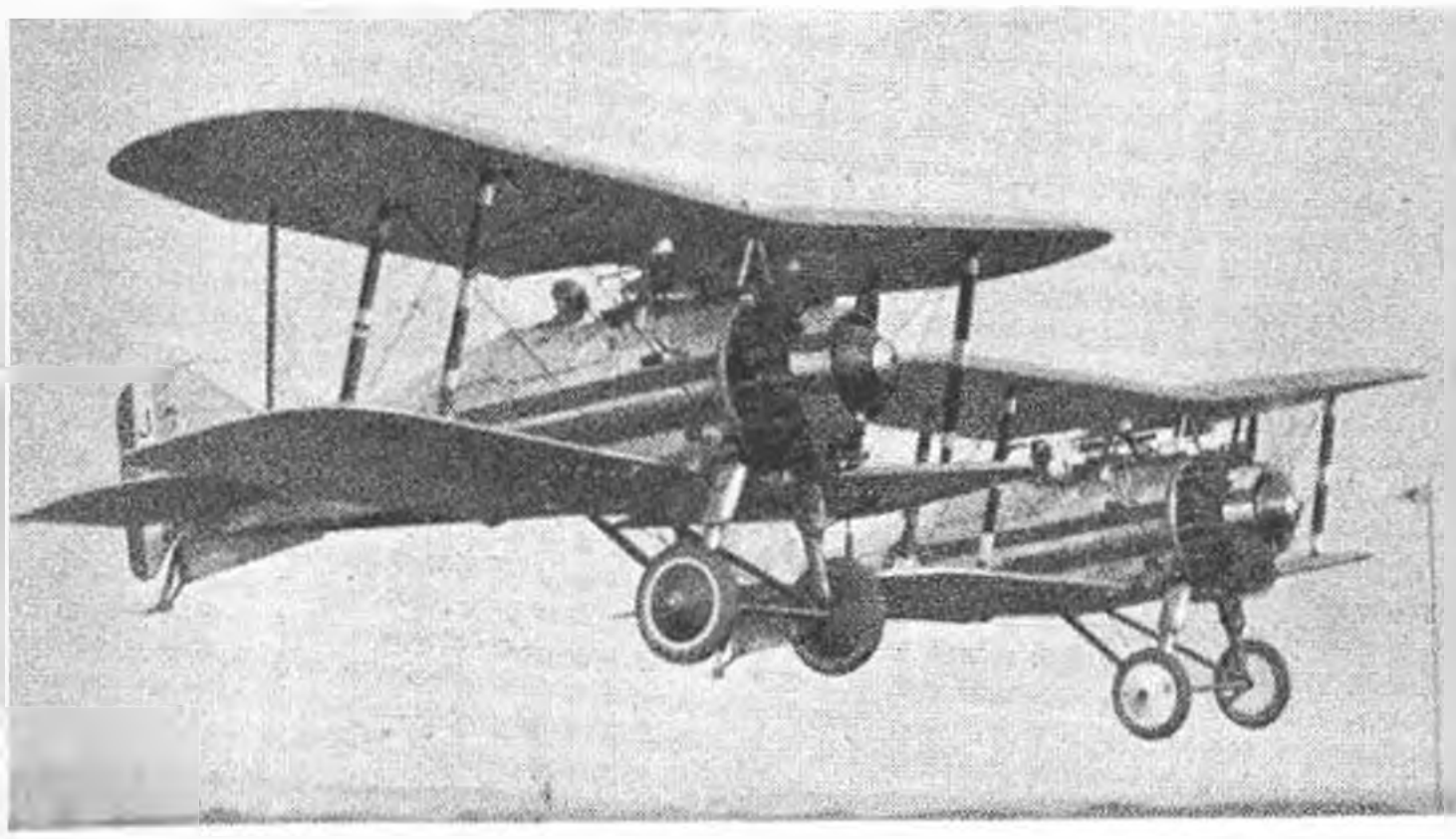
We were particularly fascinated by the unorthodox event which is always a special feature of these championships and this year was no exception. S/Ldr. Laurie Ellis from Debden flew an intriguing delta which was surprisingly stable in spite of the gale, and the inevitable annual McHard monstrosity performed sufficiently well to carry him off first place in the event. Outdoing even Mac's fertile imagination was an epic entry in the form of a flying broomstick, complete with witch, officially designated "2113 NIV Brooms Bass Flying". This, believe it or not, actually flew to gain third place, and we have no doubt that Wattisham stores are one item down on their inventory!

During the afternoon an R.A.F. Heron touched down bringing Air Marshal Sir Hugh P. Lloyd, K.C.B., K.B.E., M.C., D.F.C., LL.D., retiring President of the R.A.F.M.A.A. and Air Vice Marshal Sir Dermot Alexander Boyle, K.B.E., C.B., A.F.C., C.-in-C. Bomber Command. Sir Hugh has done much for the Association during his presidency, and there is no doubt that his keen interest in model aeronautics is sympathetically shared by Sir Dermot, his successor.

Cpl. Burch of Maintenance Command was the individual champion of the meet, winning the control line aerobatic event; the control line speed event; the glider concours, and placing third in both "½A" and "A" team race events. Altogether a most prolific modeller who well earned the AEROMODELLER Trophy presented to him by Mrs. Baker-Carr, wife of Air Commodore J. D. Baker-Carr, C.B.E., A.F.C., Commanding Officer at St. Athan. Maintenance Command won the Command Championship Trophy after keen competition amongst competitors ranging from Boy Entrants to Squadron Leaders.

1. F/Lt. Robertson with his flying broomstick. 2. A free flight Tipsy Junior concours entry. 3. S/Ldr. D. D. Forbes of West Raynham starts his Frog 500 Firebrand. 4. A fine S.E.5, entered in the flying scale aerobatic event. 5. Sgt. McHard, left, assists Jun. Tech. Badger in starting his Citizen R/C entry. 6. L.A.C. Winter of Ipswood built this Frog 50 powered model of the Swordfish, held here by L.A.C. Welch who flew proxy. 7. S/Ldr. Ware lights his D.T. assisted by F/Lt. Davidson. 8. Class "B" T/Race winners, Cpl. Burch, L.A.C. Andrews, and Cpl. Barker. 9. S.A.C. Lock with a modified Junior 60 flown in the R/C event. 10. Two Albon Darts powered this impressive model of the Hannibal. 11. L.A.C. Ardley, winner of the Class "A" T/Race, with his E.D. 2·46 job. 12. Sgt. McHard with his "Cucumber" Urge is provided by two push-pull Darts.

Above, A/C Bowles, winner of the C/L scale concours event, with his neatly finished Tipsy Junior. Below, Sgt. McHard's superbly detailed solid of the Me. 262, which features refinements such as a fully retracting undercarriage, working flaps, and cockpit canopy.



AIRCRAFT DESCRIBED

NUMBER 58

BY

G. A. CULL

The GLOSTER GREBE

Wearing the two black bars of 25 squadron, these two Grebes show red and yellow wheel discs. Bomb racks for eight 20 lb. bombs are visible and grass is sticking to the tailskids. (Photo: "Flight")

AFTER World War I, R.A.F. Fighter Squadrons remained equipped with war-time types, namely, a few S.E.5A's and a number of Snipes. Eventually the powers-that-be sanctioned the building of three Gloster machines for fighter trials and three "Grouse" airframes were modified and re-engined with A.S. Jaguar III two-row radial engines. Re-named Grebe I, these were a great success and earned an order for a production version. Lighter and faster, these joined the R.A.F. a year later, powered by the 385 h.p. Jaguar IV and armed with two Vickers guns on the cowling. Great improvements were made over the war-time types; the radial engine contrasted with the Snipe's rotary, the bungie sprung U/C was gone and the wings embodied the H.L.B. sections. The high lift top wing did most of the work in flight, when the lower wing was at minimum drag incidence, but this was effective for take-off, and the staggered biplane layout made possible the short fuselage, so aiding manoeuvrability, of which the Grebe had an excess. The fin and rudder, however, smelled strongly of W.W.I, being similar to the S.E.5, and stamped both as coming from designer H. P. Folland.

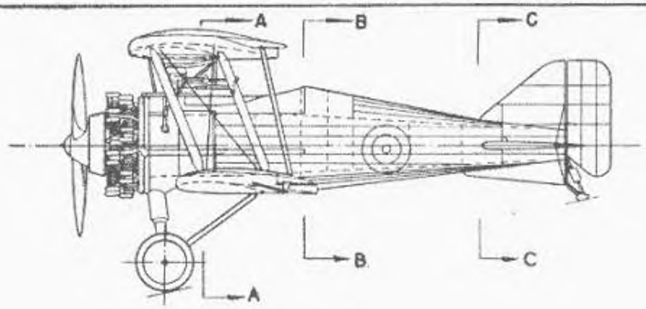
In 1925 a batch of two seat trainer Grebes was built for squadron conversion of new pilots. One of these, J7520 with Racing No. 23, flew in the '28 King's Cup Race, and was a likely winner until a flying wire broke; a forced-landing for a temporary repair with *string* enabled the Grebe to reach Liverpool for a new wire. The delay caused No. 23 to finish in 10th place. Considerable research work fell to the Grebe, which at Martlesham became the first machine to survive a T.V. dive undertaken, at last, when parachutes were first issued. Pulling out of this dive at 240 m.p.h. caused some lift wires to stretch! The Hele-Shaw variable pitch prop was test flown on a Grebe, and Glosters carried out three experiments into gaining a good forward view. These comprised (i) normal wings but with thinned down centre-section, (ii) Grebe outer wings faired straight down into the fuselage, and (iii) normal wings but with no centre section at all. At the end of tests in July '28 it was found that the thin centre section was the best proposition, also giving best climb and speed, and so was used on later designs, starting with the Gamecock II.

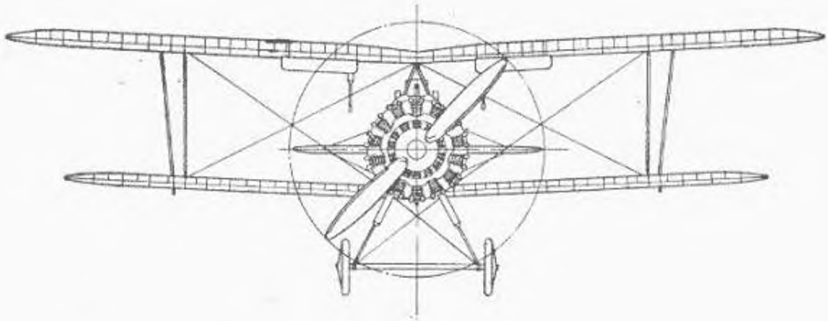
The Grebe II of 1926 embodied the experience of dive and spinning tests and had slightly improved cowling lines, while stiffer, narrow-chord ailerons were fitted. A number were supplied to New Zealand in both single seat and dual forms. Three other firms built Grebe parts, Hawker's making bottom wings, Avro's did top wings, and D.H.'s turned out ailerons and smaller parts; a total of 130 Grebes were built. Nos. 25, 29, 32, 56 and 111 Squadrons flew the delightful bee-like Grebe with great zest until re-equipped from 1927–30 with the Gamecock (which owed everything to the Grebe), and the Siskin, of which many were Gloster-built.

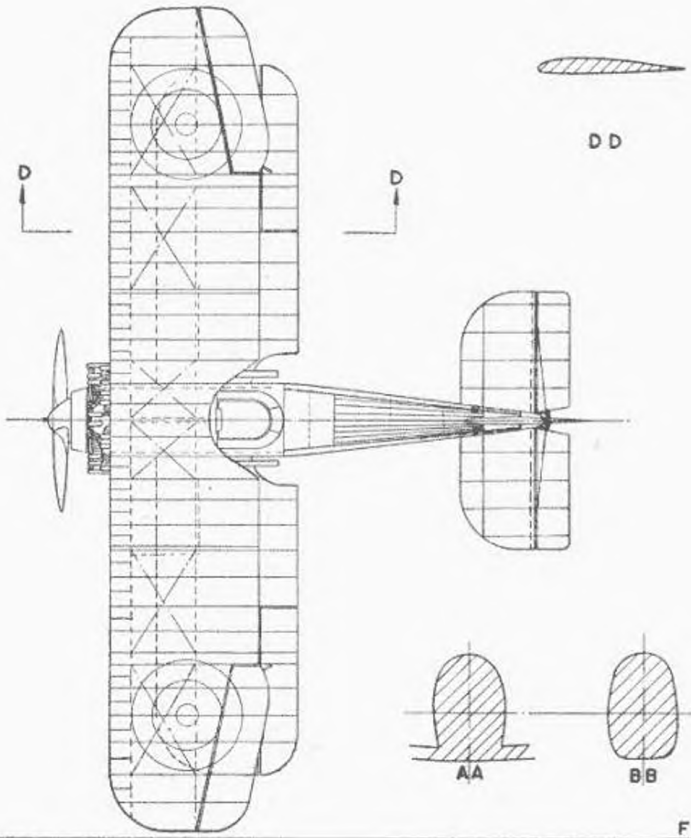
Colour. Silver dope overall with usual red, white and blue roundels above upper wing tips, below lower wing tips, overlapping ailerons, and on fuselage sides. Full width of rudder taken up with red, white and blue stripes with red nearest hinge. Serial number in black on rear fuselage and below lower wings. Sometimes on rudder stripes also, when letter surmounts numbers and with white outline against blue or red. Squadron markings down fuselage sides and on top wing:—25 Squadron: Two parallel black bars (from propeller to fuselage roundel). 29 Squadron: Red diagonal crosses with top and bottom bars. 32 Squadron: Blue band with white diagonal intersections. 56 Squadron: Red and white checkerboard. 111 Squadron: Single black band. Flight colours red, yellow or blue, carried on wheel discs.

Specification. Grebe II. Span 29 ft. 0 in. Length 19 ft. 6 in. Wing Area 254 sq. ft. Weight Empty 2,190 lbs. Weight Loaded 2,814 lbs. Wing Loading 10·3 lbs./sq. ft. Max speed 152 m.p.h. Climb to 20,000 ft. in 24 mins. Absolute ceiling 23,000 ft. Duration 2¼ hrs. at 15,000 ft.

Construction. All wood. Fuselage is box of 4 ash longerons with spruce struts and wire bracing. Whole faired by spruce stringers. Wings have two spindled spruce bars with lattice ribs and four ailerons. Tail unit similar to wings with adjustable tailplane. Whole fabric covered with all controls unbalanced.







GLOSTER GREBE I

FT

1/72nd scale "J" type reprints, and 1/48th scale "A" type Duplino prints of this drawing are available price 6d. & 1/- respectively, post free, from the Aeromodeller Plans Service.

SCOTTISH PAGE

Dave Cassels of Paisley M.F.C. won the Aeromodeller Scale Power Trophy at Lanark with his detailed Aeronca Sedan, engine is an E.D. 3·46 diesel.

THE GLASGOW MODEL AIRCRAFT CLUB Gala Day can be fairly safely described as the number one Scottish model flying event of the year, as the prize list includes the Royal Dutch Airline's " Flying Dutchman Trophy " and the magnificent C.M.D. Trophy, which is presented by the Clyde Model Dockyard Co. to the winner of the rubber duration event. An additional attraction to the K.L.M. Airline Trophy is that the winner is presented with a flight to Holland, where he becomes the guest of the Royal Dutch Aero Club for the Dutch National Contests. The Gala Day, held at Abbotsinch Aerodrome, Paisley, on August 9th, had only moderate entry, compared with previous years, but never the less, some interesting models turned up, in particular an APS Schmid Swiss Komet, powered by an E.D. Pacer, flown into second place in the K.L.M. Trophy contest by Joe McMaster of Glasgow M.A.C. Winner of the trophy was Ian Donald of **DUNFERMLINE M.A.C.**, who scored 6 min. 38 sec. with two flights, his model being lost after the second flight. McMaster's time was 4 : 47, also scored with only two out of the possible three flights. Third place score was returned by W. Howie of Glasgow, who clocked 4 : 37. Jock Finlayson of **STIRLING M.F.C.** won the Clyde Model Dockyard Trophy, his " Wee bit bigger than Wakefield " F.A.I. rubber job being timed for 6 min. 42 secs. Bill McConachie, Glasgow M.A.C., was second with only one flight, his model flying o.o.s. at over 6 min. The Dunfermline Club come into the picture again, with member George Simpson scoring 4 min. 32 secs. for third place in the C.M.D. Trophy. Alec Clark of the **GLASGOW BARNSTORMERS CLUB** brought his interesting Wakefield to fly for the C.M.D. Trophy. This model features a long Bilgri style fuselage with return gears into the bargain. Unfortunately the model was unable to show its paces due to damage by the gusty weather prevailing. The usual bevy of sport flyers attended the Gala, and John Fox of **POLLOCK M.A.C.** drew a large crowd of spectators with his " Jetex Hawker Hunter ".

The **WEST OF SCOTLAND AREA** Team Race League is being led at present by the **S.A.S. AUCHENHARVIE M.A.C.** Keeping at the good work in both class A and B racing are Thom Park, Bob Finnie, Alec Cook and the kiddo himself, J. G. MacArthur. Pit stop specialists are Dave Norwood and " Magic Mitts " Andy Walker, who have been timed at seven seconds for a pit stop. The Glasgow Barnstormers, who race the S.A.S. boys at the next fixture, have every intention of changing the league placings around somewhat, as recently acquired Oliver Tiger two point fives are circulating class A planes at 70 m.p.h. for a hundred laps—so the Barnstormers claim anyway. Other Area news is of the team selected to represent the area at Long Marston. The two Glasgow clubs, **LANARK M.F.C., PRESTWICK, S.A.S. M.A.C.** and the **IRVINE & D.M.A.C.** The final three Scottish S.M.A.E. areas eliminator contest was held at Lanark on July 26th to decide the Scottish team for the United Kingdom Challenge Match, to be flown in N. Ireland this year. This eliminator saw more interest from the East Coast Scottish Areas than of previous years, but the West of Scotland area again constitute ninety per cent. of the ultimate team. Exceptions were Pete Russell of Stirling M.F.C., who was the worthy winner of a place in the glider team and clubmate Jock Finlayson in the rubber team. The weather at this competition was of the foulest nature—even for ducks ; a high and exceedingly turbulent wind blew all day, accompanied by steady rain, which intermittently broke into real Hollywood style hosepipe downpours. The final comp. results elected the following club and area members to the Scottish team.

Power :		
J. Bell	S.A.S. M.A.C.	West of Scotland Area
A. Clark	Barnstormers	" " " "
R. Parsons	Prestwick M.A.C.	" " " "
L. Blair	Glasgow M.A.C.	" " " "
Glider :		
P. Russell	Stirling M.F.C.	South East Scottish Area
R. Bare	Irvine D.M.A.C.	West of Scotland Area
B. Harris	Prestwick M.A.C.	" " " "
J. MacArthur	S.A.S. M.A.C.	" " " "
Rubber :		
J. Finlayson	Stirling M.F.C.	South East Scottish Area
W. McConachie	Glasgow M.A.C.	West of Scotland Area
R. Ouston	Glasgow M.A.C.	" " " "
N. Shanks	Lanark M.F.C.	" " " "

A happy group at the recent rally between kettering D.M.A.C. and Oundle D.M.A.C. How many models can you identify ?

CLUB NEWS

AS another contest season rapidly passes, we are again mildly astonished that so many concours events do not stipulate that a flying model should prove its eligibility. We have known "flying" models win five or six concours prizes without any attempt being made to fly them. One such model, built to a commercial design, has a beautiful finish. The design weight is 17 ozs., and this particular example weighs 42 ozs.

East Anglian Area

A repeat show has been requested after the success of **WARE D.M.A.C.'s** first public demonstration this season, and Jetex speed and duration events will also help to keep the members' time occupied. An Open Glider Cup has been presented for competition by Mrs. Hills.

NORWICH M.A.C. also report great success with an exhibition at a local fete, the value of the exhibits necessitating an all-night guard. Stunt and combat went down well, but the crowd's excitement resulted in damage to models and lines, and R. Sallis of **CAMBRIDGE M.A.C.** was forced to land outside the grounds with his R/C model. When some measure of control had been established, the models flew again, the radio job in particular proving a big attraction with landings six feet from the Tx., etc. R.A.F. St. Faiths saw the annual comps. flown off in wind. J. Rant winning rubber and Jetex, B. Holden power, and A. J. Soames sailplane.

Three members and an ex-member of **BELFAIRS M.A.C.** were among the nine to fly off in the Thurston Cup, and the glider people have been doing extremely well. "Ugly Duckling" is a popular design A2 (72 ins., 46 ins. l.o.a., 21 per cent. tail, cabin-style body), since Miss P. Healey won the Clwyd meeting with this design and 12 year-old H. Rawlings placed 6th in the Thurston with an identical model.

North-Western Area

A standard programme for exhibition flying has been developed by the **WORKSOP** club; starting with a single noisy machine as a crowd-drawer, the display moves through stunt, speed, scale, and formation stunt, to a combat session climax in the middle of which a judiciously placed long-fuse firework produces spectacular results. The increase in local interest more than offsets the reduction in actual contest flying.

Hustle up those weary contest jobs, for on September 20th **HYDE M.A.C.** is laying on a rally covering rubber, power, glider, Jetex and team racing A and B with a useful prize list and one of the finest flying sites around. Extra prizes for R/C speed and stunt, are ready if anyone wants to fly in those categories. No. 125 buses from Hyde take visitors to within two minute's walk of the field, so, if you want a new motor or some useful electrical gear (presented by Messrs. Oldham & Son Ltd.) or any of the other excellent prizes, now's your chance.

A new N.W. club is the Aircraft Section of the **COLNE D.M.E.S.**, which is evenly divided into contest and non-contest flyers. New members are welcomed and a "recruiting drive" is scheduled for the near future.

The novices glider competition held by **WHITEFIELD M.A.C.** and won by D. E. Willis with 7 : 36, was amusing in that the times returned were all considerably higher than the club's C.M.A. scores, flown at the same time and headed by J. O'Donnell with 4 : 01. Successes at the Northern Heights Gala were marred by the loss of E. Horwich's Nordic in a cornfield on its second flight.

East Midland Area

Coningsby was the site of the East Midland Area Rally and the weather was ideal. Littleover's Jackson brothers took the top three places in rubber, G. E. actually winning with a double-max. T. Bootland of Scunthorpe beat T. Goddard of Grimsby by 20 secs. in the fly-off of the two double-maxs, returned in glider, and R. Dunkley (Skegness) totalled 4 : 47 to win power. A spot-landing event, the spot being about 300 yards away, was won with an error of 40 feet by W. L.

Trotter, and the team race (A) by Forester's, D. Bolton, who stopped only twice in the 200 lap final, but averaged over 70 m.p.h. !

Northern Area

Rubber is favourite at present with **AMPLEFORTH COLLEGE M.A.C.** R. Zoltowski has raised the Wakefield record to 6 : 33 (pylon, single-blade folder, 1954 job) and R. Robinson the F.A.I. to 4 : 20. The lightweight record still stands at 21 : 00. Most interesting is a 24 in. " Mustang ", Dart-powered, which flies extremely well with pendulum controls. The third " Thunderwing " (A.A. 1951) has appeared and flies well, while contest power models are unusual in that high-thrust-line jobs outnumber pylons by three to one. A very successful summer exhibition has been held.

FORESTERS M.F.C. are unbeaten in class A racing this season, due mainly to club mate John Oliver's fine motors, and added further to their successes at Walsall and the E. Midland Rally. At Solihull, K. Oliver (no relation) lost his glider in crops after two maxs. and had to be content with sixth.

A 2½ minute maximum was agreed on when **BRADFORD M.A.C.** met **BARNSLEY** in the second K.O. round, due to the latter's limited flying space. Only one member of the Barnsley three-glider team failed to turn in a treble-max., whereat the Bradford team (R. Calvert, glider, A. Collison and J. Pannett " Hogans ") declared ; even if all their remaining flights had been maxs. they couldn't have pulled it off.

Western Area

The well-organised **TROWBRIDGE M.A.C.** Rally was spoiled by a mid-afternoon downpour, but early conditions were favourable—so much so that J. Down of South Bristol lost both his glider and power models for first-round five-minute maximums, despite D.T'ing. Results were : J. Ralph (Glevum) 9 : 22 ; glider, D. Francis (Bristol and W.) 5 : 20 ; power ratio, D. Turtall (Swindon) 34 : 4 ; concours, A. Waters (Bristol and W.) D.H. Beaver.

SOUTH BRISTOL are hoping to popularise a new class of team racer—max. engine 10 c.c., min. area 200 sq. ins., 3 oz. tank, 2½ in. wheels, 5 in. cockpit, and 65 ft. lines. Good news for fuel manufacturers, if it is taken up !

A flying scale rubber event was tried by **BRISTOL AND WEST**, winner being G. Woolls, 1 : 29 with a 24 in. Max Holste. J. Berryman's Cessna C.34 and A. Cole's Fokker D. VIII placed second and third. A big crowd turned out to watch this interesting contest and was most impressed by A. Cole's Jetex 50 Avro Vulcan, which flew beautifully. Control line is on the upgrade, a twice-size E.D. 3-46 powered " Arrowhead " being among the interesting models. Eleven " Woodford Specials " have been built by various club members, who have nothing but praise for this popular model, but who take the precaution of webbing the spars in the centre few bays, thereby adding a useful safety factor for windy weather flying.

South Western Area

A novel idea of **BARNSTAPLE D.M.A.C.** is an annual aeromodelling camping holiday, near Kentisbury Down. Normal flying takes place regularly on Chivenor Aerodrome, and radio and ducted fans are receiving attention. At least five members have been working on PAAload models for the A.M. design competition—you have, incidentally, just a fortnight left before *your* chance of a gold watch expires. September 30th is the closing date.

South Eastern Area

The third round of the E.M.M.A. Championships, held at Kingsdown Common, Deal was again troubled by strong winds, but the Herne Bay, Dover, Deal, Thanet, Sittingbourne, and Canterbury clubs combined to make it a worthwhile meeting. The Pilgrims once again collected the lion's share of the points. It is rumoured that C. Ashby of this club dropped some cement in his box three months ago, and can't get his models out . . . Full marks to C. Follington who has made a first-class job of his first power model, an " Envoy ", despite the loss of one arm.

London Area

Good news from the Dagenham district is that the use of a flying ground has been officially granted to Bernard Pryer's " Brotherhood of Boys ", a club with probably the youngest average age in the country, but, as Fairlop habitués will remember, brimful of enthusiasm and real ability. Sailplane, F.F. scale and semi-scale are the dominant interests at the moment, and the new ground has proved quite suitable for power models of up to 60 ins. span.

A recently formed club, **NORTHWICK PARK M.A.C.**, now includes twenty-five members and a fine list of records. Examples—glider 12 : 35, D. Leech ; power 13 : 45, G. Upson ; distance 45 miles (glider to Lewes), A. Bevan ; chuck glider 3 : 50, D. Leech. Interest is mainly in gliders-o.d., A2's or " Quickies " but contest successes have so far been in the power sphere, notable being G. Upson's qualifying for the British team.

Congratulations to Laurie Barr of **WEST MIDDLESEX M.F.C.** for his Queen Elizabeth Cup win, which has given the club a big fillip, aided by R. Law's third place in this contest and second in the N.H. Gala

CONTEST RESULTS

NORTHERN HEIGHTS GALA 1953

THE QUEEN ELIZABETH CUP

1. L. Barr	West Middlesex	495·5	points
2. R. Mead	Northern Heights	410	,,
3. R. Law	West Middlesex	408	,,

THURSTON HELICOPTER TROPHY

1. C. M. Ingram	Wilmot Mansour Club	180	points
2. A. Hodgson	Andover	177	,,
3. D. Smith	Unattached	158	,,

DE HAVILLAND TROPHY. OPEN POWER

1. C. Marsh	Ilford	491	points
2. B. Cullen	Sittingbourne	302	,,
3. R. Cullinane	Unattached	301	,,

CORONATION CUP. CLASS A TEAM RACE

1. T. Smith — South Bristol

MODEL ENGINEER CUP. CLASS B TEAM RACE

1. McNess — West Essex

FLIGHT TROPHY. OPEN GLIDER

1. A. Brookes	Grange	452·6	secs.
2. J. O'Donnell	Whitefield	377	,,
3. R. Law	West Middlesex	342	,,

FAIREY CUP. OPEN RUBBER

1. P. Allaker	Surbiton	520	secs.
2. P. Giggle	Brighton	509·8	,,
3. J. O'Donnell	Whitefield	494	,,

R.A.F. FLYING REVIEW CUP. RADIO CONTROL

1. S. Sutherland	West Essex	87	points
2. G. W. Merrick	Worcester	85	,,
3. S. A. Miller	Luton	64	,,

CONCOURS D'ELEGANCE

Power Driven Models	R. Hill	" Cumulus "
General Flying Models	A. Smallwood	" Wakefield "
Flying Scale Models	H. T. Jackson	" Sopwith Snipe "
Unorthodox Models	J. Marshall	" Autogyro "

THE "AEROMODELLER" CHALLENGE CUP

J. O'Donnell — Whitefield

CONTEST CALENDAR

Sept. 20th	**International Team Race and Criterium of Europe.** Holland. **Hyde M.A.C. Rally.** Hyde, Cheshire. **All-Britain Rally. International Jetex Contest.** Radlett, Herts.
Sept. 27th	**K. & M.A.A. CUP (A/2). Halfax Trophy (Power)—1954 Eliminators).** Area Centralised.
Oct. 11th	**U.K. Challenge Match.** Ireland.
Oct. 17–20th	**International Glider, Power, C/L.** Madrid.
Oct. 18th	**Davies Trophies, Ripmax Trophy, C/L Speed.** Centralised.

Championship. The Northern Heights are the club's opponents in the semi-final of the London Cup.

BUSHY PARK M.F.C. squelched to 3rd and 4th places in the team races at the above mentioned Gala, and have been having fun with their flights for the "News Chronicle" gliding comp. J. Castle established a new junior record of 5 : 12, but best flight proved to be J. Simmons 10 : 00 o.o.s. The model disappeared in an easterly direction, but 1½ hours later a dot was descried approaching from the north which turned out, on landing less than half a mile away, to be the same machine, "Chip-Chop", a 520 sq. ins. 7 ozs. lightweight!

Midland Area

The sixth annual C/L rally staged by **WALSALL M.A.C.** was an outstanding success, enjoying the splendid weather of Bank Holiday Monday, and a large crowd drawn from the adjacent fete. Alan Hewitt of South Birmingham provided a diversion when he lost the outer wing of his original "Ambassador" but carried on through the book with the remnants to place second to R. Buck (Five Towns), who also took class 3/4 speed with 107·5 m.p.h. Outlaws M.A.C. gave an excellent combat show, and Foresters M.F.C. swamped the team racing. Concours prize went to a "Bearcat" by N. Fletcher.

Tuesdays, 8 p.m. at Bingley School, sees **WOLVES M.A.C.** ready to welcome new members—among other advantages this club has two excellent flying fields. A coach trip to the N.H. Gala saw K. Trumper do best, totalling 4 mins. odd with a 200 sq. ins., 7½ ozs., Elfin 1·49 job which features a sharpish climb; unfortunately a misjudged motor run spoiled his chances of placing.

BLACKHEATH & HALESOWEN M.A.C. is another club gripped by the combat fever, up to 1·5 and 2·5 and over being the classes. Results are so far a toss-up between the fast, semi-aerobatic model and the slower, full-stunt job. F/F. interest is still strong, as witness J. Adamson's A2 100 qualification.

Southern Area

Team racers are still the vogue in **WEST HANTS A.A.** and Salisbury, Swanage, Southampton and Amesbury clubs recently visited for a most successful race meeting sponsored by the S.R.D.E. company. Tutte of Salisbury took the class B cup home, thus preventing a clean sweep by the host club.

BOURNEMOUTH M.A.S. thoroughly enjoyed an attempted seaplane contest staged recently—even the type who found a discrepancy between water-depth and gum-boot-height! Unfortunately no entrant succeeded in getting unstuck from the pond used, so the event is being held again later on. The serialised club history in the club journal has now reached 1931 and makes fascinating reading. The club duration record was raised that year from 33·5 secs. to 47, 48·5 (with a 20 oz. model!) and finally to 51 secs. Later in the year G. F. Baster had pushed it up to 3 : 10 (a British record) with a Wakefield. Happy days!

Pen pal seeker is James G. Gray III, 5802, 54th Avenue, Riverale, Maryland, U.S.A., a 20 year old student who is interested in contest F/F. (all categories) and C/L and wants to exchange supplies, etc. In this country J. Crane of 89, Lower Gravel Road, Bromley, Kent, wants to return an E.D. ·46, 30 ins. cabin tricycle model to its clueless owner. Wonder if writing one's name and address on a model would help to identify it?

Remember those stories of stunt models free flighting? Here's a new twist—a Blackpool club member flying an Amco 3·5 "Ranger" lost the handle on take-off; subsequent flight reached 900 ft. and landed in a tree, where the lines made recovery virtually impossible. Who's first with a 125 sq. in. Amco free flighter?

The CLUBMAN.

NEW CLUBS

COLNE D.M.E.S. (A.S.)
K. McClare, 17, Slater Avenue, Colne, Lancs.

NORTHWICK PARK M.A.C.
J. Curry, 13, Byron Road, North Wembley, Middlesex.

SECRETARIAL CHANGES

ALDENHAM SCHOOL M.E.C.
D. R. Pilcher, Paull's House, Aldenham School, Elstree, Herts.

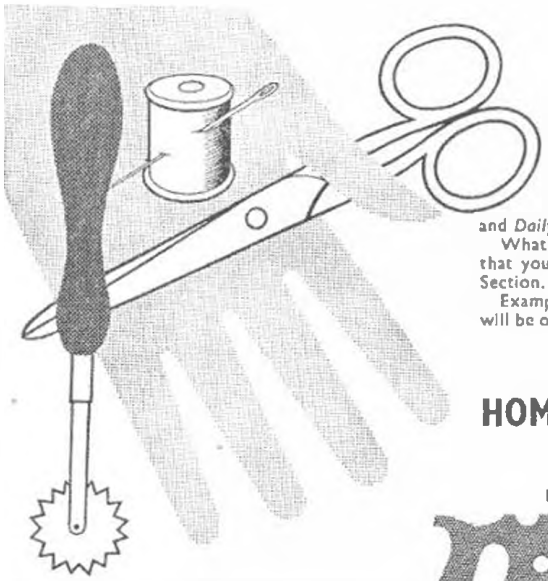
SALFORD M.A.C.
T. Dobson, 175 Ullswater Road, Flixton, nr. Manchester.

HYDE (CHESHIRE) M.A.C.
T. Waller, 100, Victoria Street, Newton, Hyde, Cheshire.

AMPLEFORTH COLLEGE M.A.C.
R. E. S. Robinson, St. Dunstan's House, Ampleforth College, York.

BLACKHEATH & HALESOWEN M.A.C.
C. Wheldon, 31, Shenstone Flats, Kent Road, Quinton, Birmingham, 32.

"Look, son, when I said 'Free Flight' I didn't mean you get a ride for nothing!"



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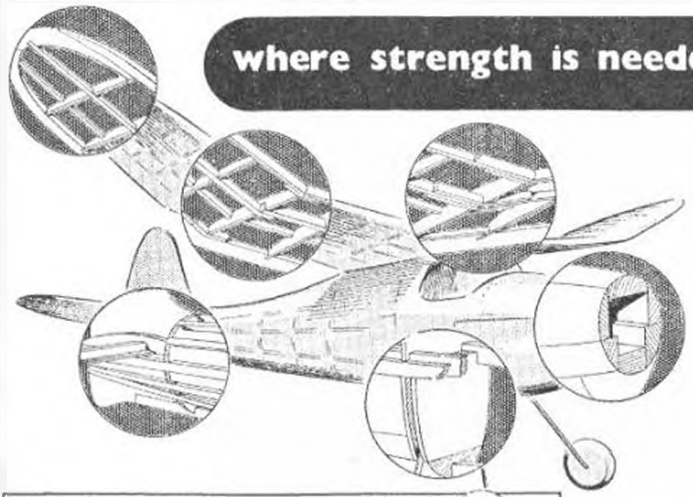

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