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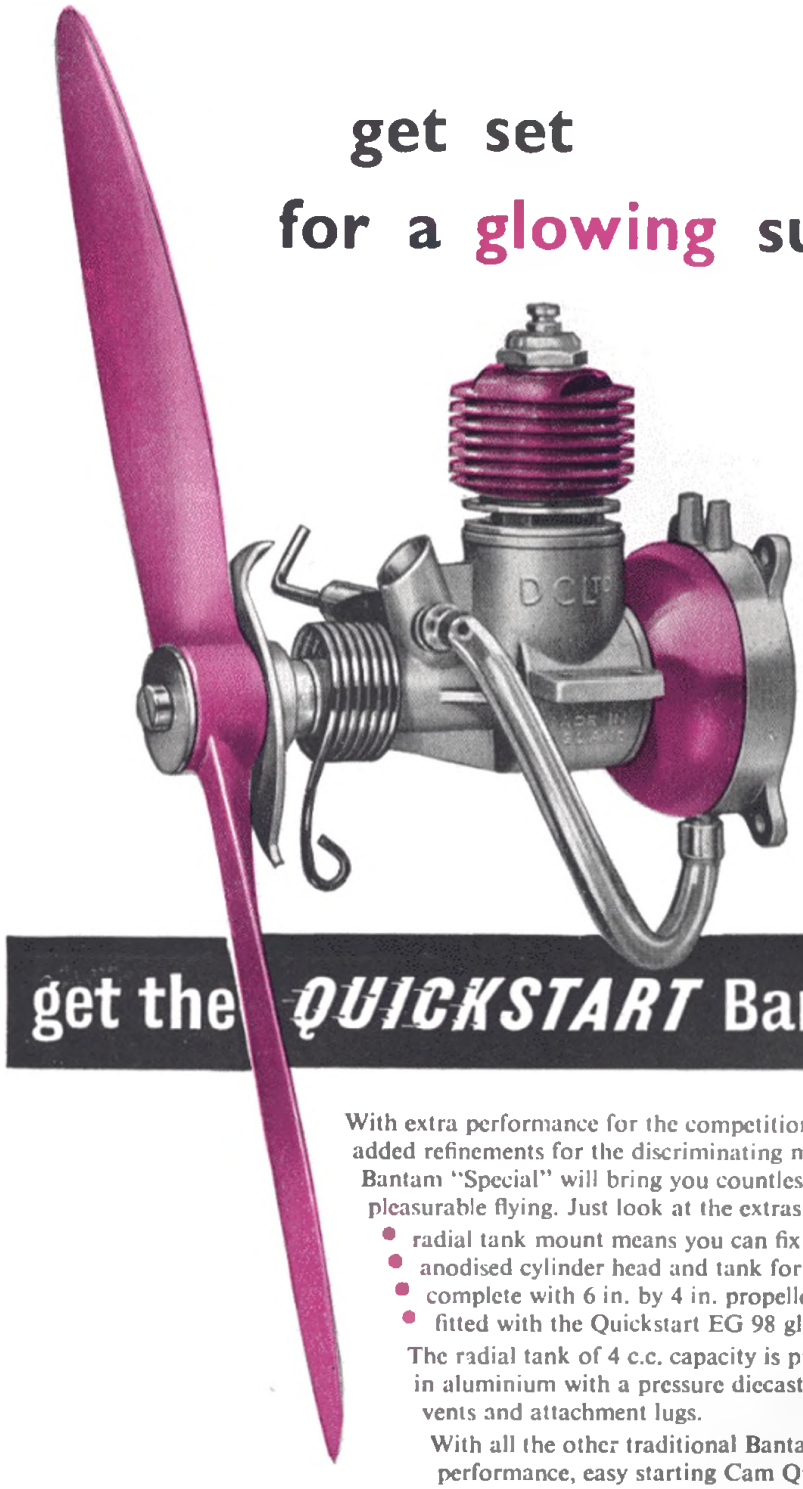

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AERO MODELLER

MAP HOBBY MAGAZINE

October 1962

VOLUME XXVII No. 321

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cover

Bright Day-Glo Flame and contrasting white finish of "The United Steel Companies Ltd." Piaggio P.166 executive make it a natural subject for scale modelling. These comparative views of the model (at top) and real machine emphasise the accuracy of our plan and Maurice Bodey's workmanship. Fitted with two A.M.15 engines driving pusher airscrews, the model is a first class performer. Perceptive readers will note that since the model was made, and before the lower picture was taken, G-APXK was re-sprayed with slight change to the nose colouring and a more simple Union Jack and company name.

next month...

Fresh from his travels to Moscow and Kiev, the editor returns with a full account of the *World Championships* for Control-line models. "*Radio goof-ups*" is the title of a radio control article that will appeal to all who have experienced the frustrations—and triumphs of R/C—illustrated by the inimitable Roland and written authoritatively by Ken Willard. "*Migrator*" is an A/2 with simple lines from Vancouver, Canada, which will be attractive to all British gliding enthusiasts. *Aeromodelling in (faraway) Indonesia* is another interesting feature to come, along with others we have ready for your enjoyment—out on October 19th. Don't forget, the *third* Friday of each month!

other modelling angles . . .

Details of all the competing models at the 1962 World Radio Control Championships will be revealed in October issue of our companion magazine *Radio Control Models & Electronics*. This information plus technical data will give the first part of a complete coverage on this momentus event. Additionally, the Bonner Story gives the background to the successful development of the most renowned servo and actuator manufacturer, Howard T. Bonner of Los Angeles. Technical review is of the Metz R/C outfit and Commercial Developments covers latest in the trade. A main feature is "Champ Chats". Ed Kazmirski tells how he trims his latest design, the Taurus, and a 3-view gives valuable information on this exciting design. These features plus some very interesting how-to-do articles make October R.C.M. & E. an issue to reserve now.

October *Model Maker* features include a home-built electric motor for boat propulsion, notes and a design for hovering craft, radio for beginners, the Lola F1, T34 tank, a lap recorder, the SSK Mercedes, Airfix cars reviewed, and many other items.

Both magazines are the same price . . . 2s. per copy. If your Hobby Shop or newsagent does not carry a stock send 2s. 4d. for a return post delivery from the address below.

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To quote Ken: "It is the most beautiful, complete highly pre-fabbed kit I have ever seen. The balsa is the best I have seen in a long time. The die cuts are clean and perfect. Finished nose blocks, leading and trailing edges, etc. Included are 2½ in. wheels, rudder and stab horns, finished landing gear with mounting nuts and bolts for engine, wheels, horns, etc., also aluminium spinner. In fact there is nothing to buy but the glue. As one fellow here put it, they couldn't put glue in the box, because if the box got shook up too much the plane would be assembled . . . The instructions say this kit is for advanced builders only. I would like to see what they put up for beginners!"

QUOTATION FROM "PULSE", MONTHLY MAGAZINE OF THE MODEL AERONAUTICAL RADIO SPECIALISTS OF MONTREAL ON THE "VISCOUNT".

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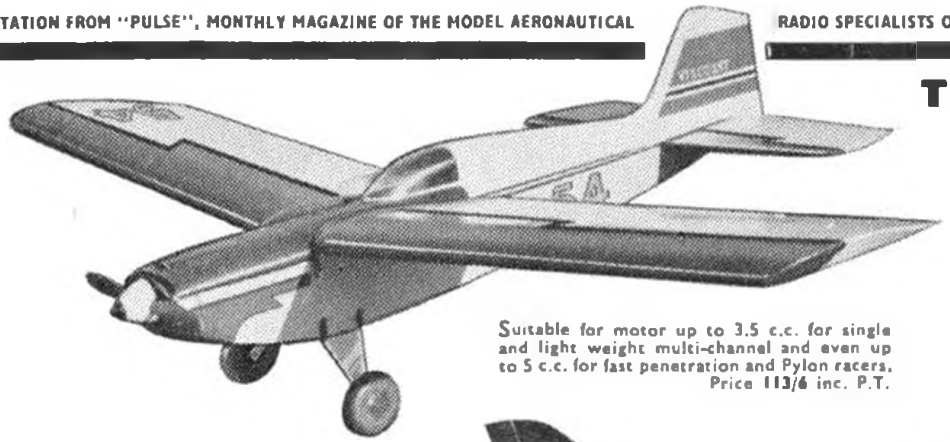

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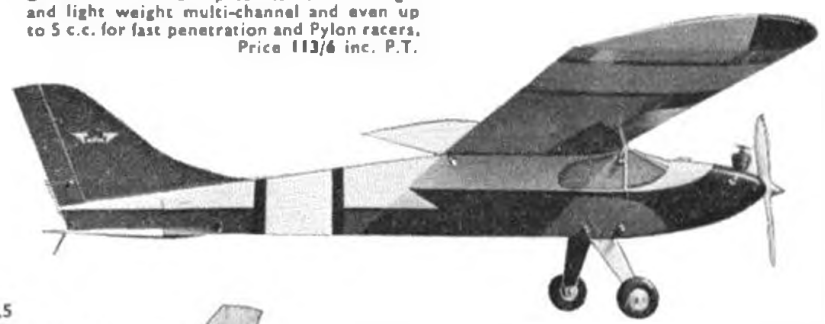

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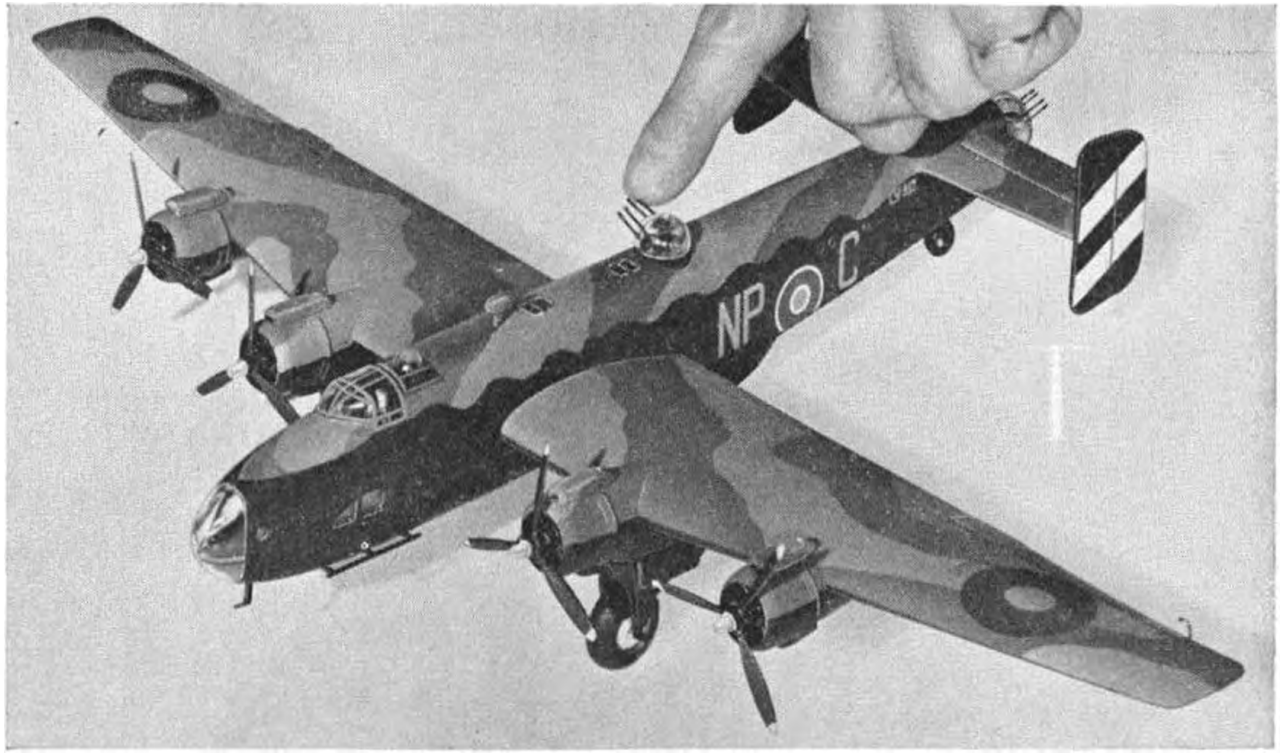

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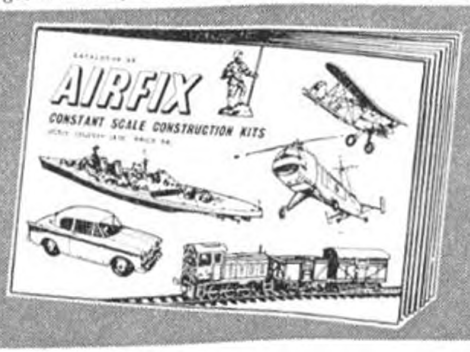

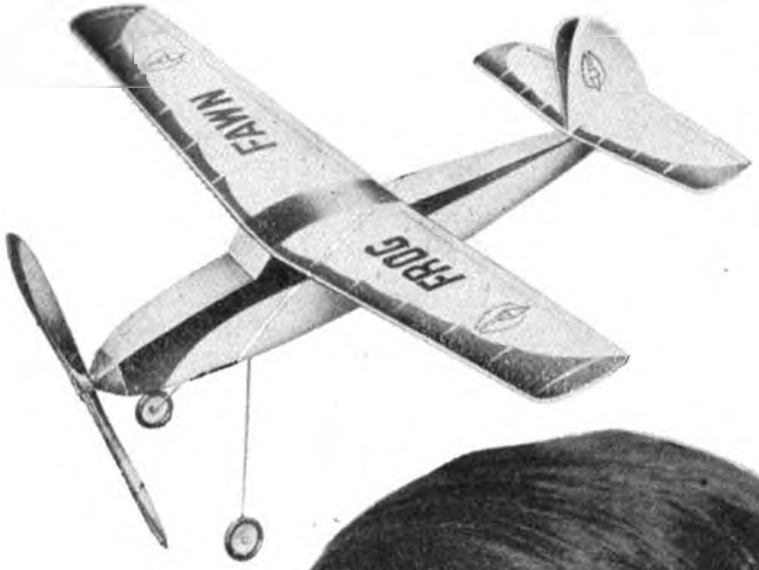

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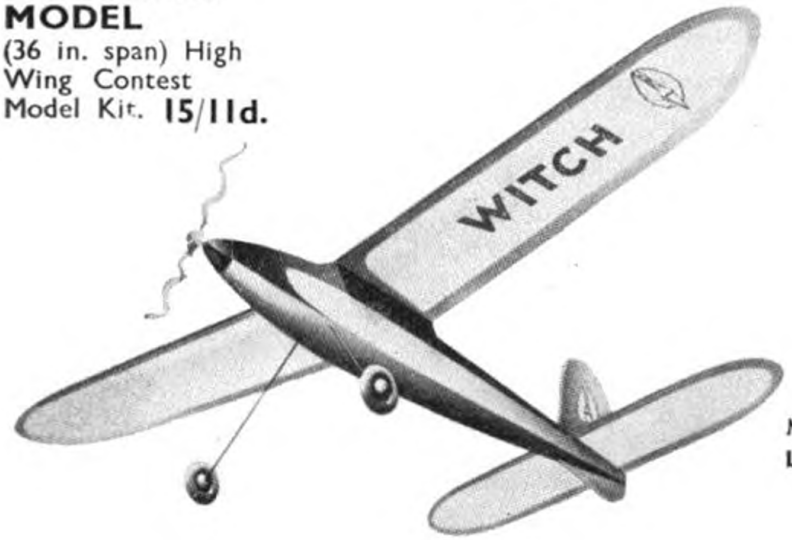

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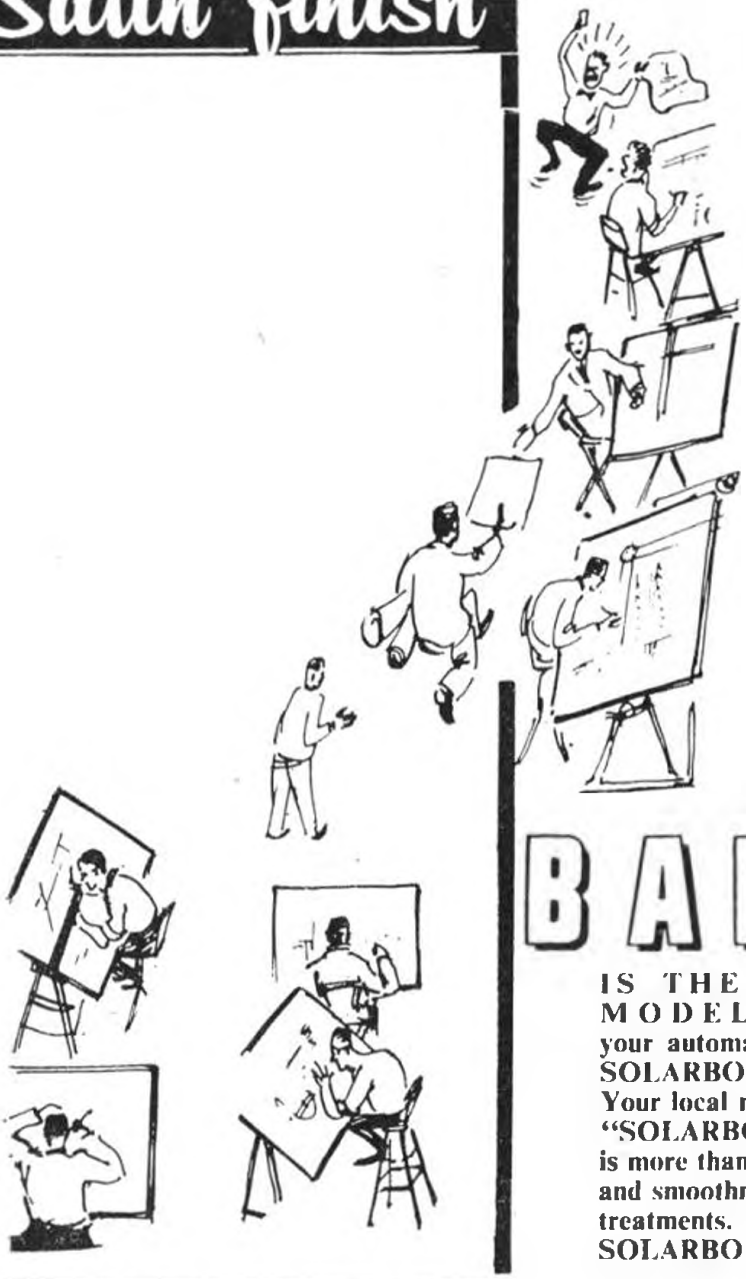

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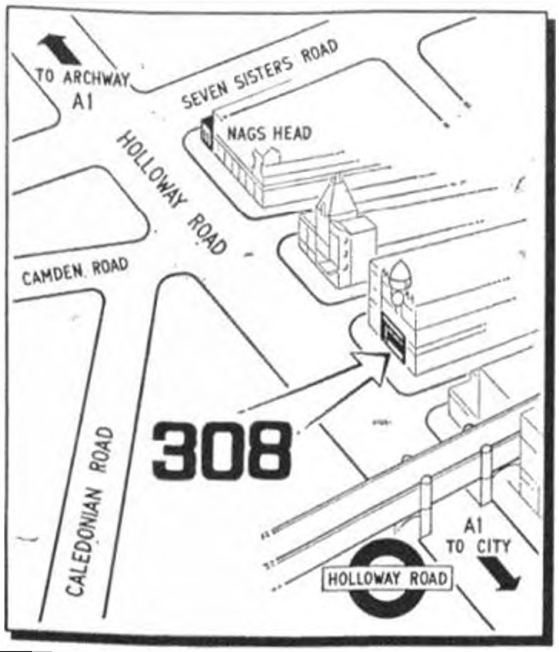

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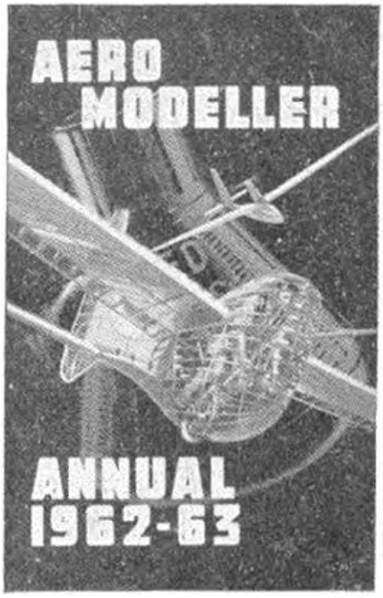

TO the experienced aeromodeller AEROMODELLER ANNUAL is a regular treat, as much a part of their modelling life as balsa and diesel fuel. Newcomers to the hobby will find it equally enjoyable, and it is for their benefit mainly that we mention that this is now its 15th year of publication. Its object is to gather in one yearly volume some of the cream of the world's model plans, plus articles on subjects of special interest in the current year, plus a selection of practical and theoretical information that will help aeromodellers of all degrees of skill. For this volume we have Laurie Bagley again executing the cover painting, which depicts man-powered *Puffin* against a starry sky with American space capsule *Friendship VII* in orbit. Articles include Man-powered Flight; a 3-volt sub miniature Transistor Receiver by Dave McQue; Franz Czerny on Jedelsky's "Standard" models; Schneider Trophy in Miniature; Water-powered Free Flight; Lightweight Rubber Models by Peter Gasson; Anti-warp Structures; Control Surface Design for R/C; Fact & Fallacy of Design Theory; Scale Prototypes for R/C; Glide Trim; Power Prop Selection; Multi is the *Real* Answer. Also included: Engine Analyses of the year, International and British Contest results, and a host of fully dimensioned model plans embracing famous, interesting, curious models from all over the world.

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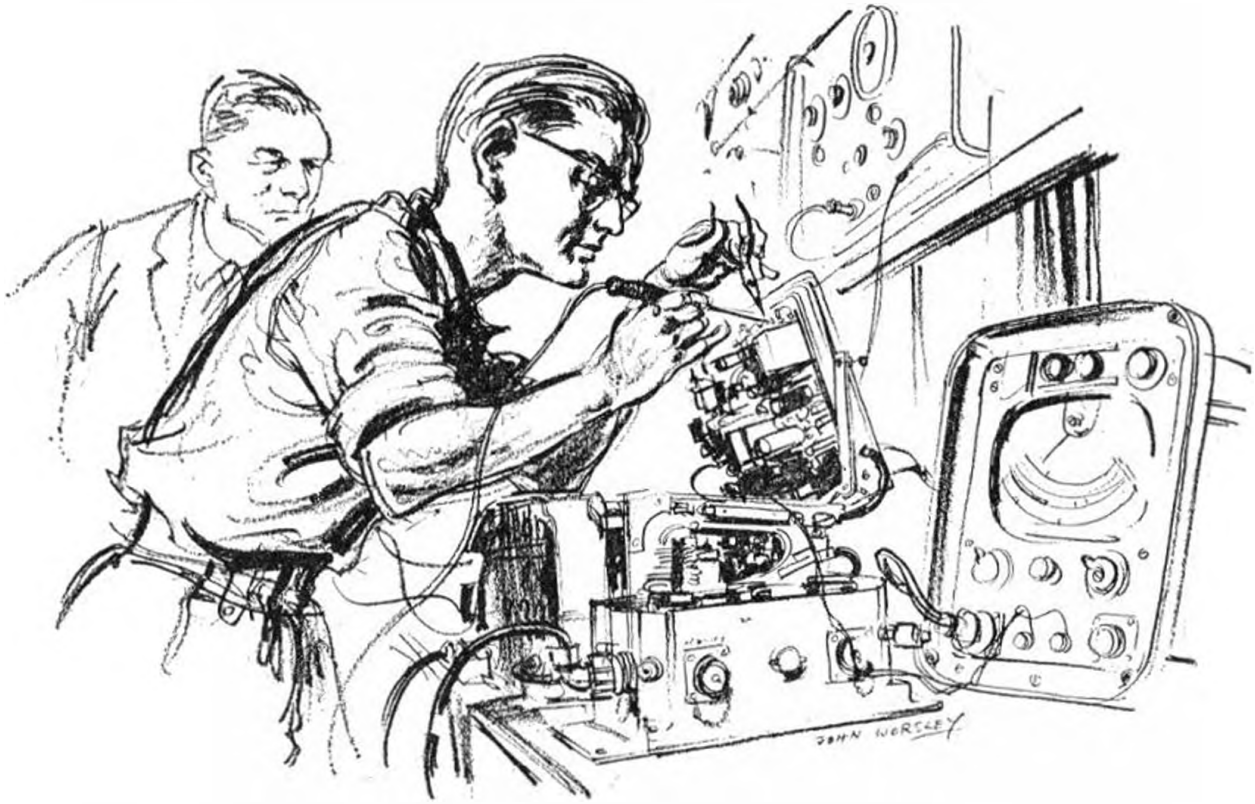

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Heard at the Hangar Doors

WHAT A WHOPPER (part 2). L. Watson and 14 ft. 9 in. *A.P.S. Goliath* mentioned last month. Weighs 37½ lbs., has Octone R/C and 49 c.c. Power Pak engine driving 24 in. x 6 in. prop. Readers are reminded that special exemption from the Ministry of Aviation is required for aircraft models weighing over 11 lbs.

Us for U.S.S.R.

Thanks to the generous response of the modelling fraternity, The Model Trade Federation, individuals, clubs and the S.M.A.E. Area's represented by team members, plus a handsome donation of £500 from the Society of British Aircraft Constructors, British participation in the World Control-line Championships at the beginning of September in Kiev, was assured.

Model Aeronautical Press Ltd., publishers of this magazine, donated £50 to the fund in keeping with their traditional practical assistance on the occasion of S.M.A.E. appeals.

Additionally, the editor accompanied the team in its travels via air and rail to the Ukranian capital and will provide a full report on the eventful meeting in our November issue.

Go . . . on $H_2O + NaCl$!

If anyone had suggested water power for models a couple of years ago we'd have thought him even more of a "wierdy" than most of us. Yet the water actuated silver Chloride cell is old stuff to many people in the electrical industry and such batteries have been put to many everyday uses.

Special units for electric powered free flight, produced by the Japanese Yuasa Company and the British McMurdo Company have been the subject of considerable experiments by ourselves and a resumé of results is to be included in the 1962-63 AEROMODELLER Annual.

This is no doubt that in terms of power for weight, the Silver Chloride cell has no electrical match and despite the fact that the cells are not re-chargeable, it is possible to obtain a motor-running time/cost ratio equal to the accepted internal combustion engine or solid fuel reaction unit.

We have enjoyed the thrills of "discovering" electric power possibilities for over three years. Now, the Sanwa "*Electra*", as imported from Japan and distributed at Ripmax for 14s. 11d. retail, brings this new field of aeromodelling to the inexperienced novice. Our tests have shown that this ready moulded expanded polystyrene model is capable of more satisfactory (and successful) flights than many other "beginner introductory" kits and in the hands of an experienced modeller can return flights of excellent duration.

The batteries are fitted, connected to the motor then injected (by eyedropper) with a 15 per cent. saltwater solution. Within seconds, the battery begins to give power. The model is then turned upright allowing excess water to drip away, and the motor will run for about 50 seconds, driving the little 4½ in. plastic prop at up to 3400 r.p.m. Thrust builds up for the first stage, then a flat power curve output gives steady climb.

We feel that the "*Electra*" is likely to be the forerunner of many of its type.

Chance to meet the Pilots

The London Society of Air Britain, which has regular monthly meetings at the Holborn Central Library, London, on the first Thursday of each month, will welcome aeromodelling visitors to their 7th Annual Test Pilots Forum on Thursday, 4th October, 7-9.45 p.m. Five famous test pilots will answer with skill and wit, questions of current aviation concern. From past experience of these meetings, we advise all scale enthusiasts with a flair for full-size interest to attend and sample L.S.A.B. activities. Another Air Britain item of importance is their second annual international recognition contest to be held on 20th October in Kensington, open to teams of three with trophies for the leading team and top scorer. Individual entries are also eligible and details can be obtained from M. Hooks, 24 Brook Road, Thornton Heath.

In other Spheres

One is often tempted to reflect on events of a few years back and to wonder what happened to many of the famous names of aeromodelling which seem to have disappeared from the present day scene.

We were happily reminded of that A/2 champion from Germany, Rudolf Lindner, when we found that he has become German Open Class Sailplane Champion for 1962 in a Phoenix. This makes a great triumph for Rudi because he has now been twice world champion as a modeller and he has reached a peak in German full-size gliding.

We also read of Henri Stouffs, who was leading Belgian in the 1962 Belgian Sailplane Championships, but actually placed 4th behind two Germans and a Dutchman in the open contest. Henri was, of course, well known for his magnificent efforts at pit-work for Neri Bernard

in team racing and for his own aerobatic achievements at the various Criterium of Europe meetings held at Brussels.

Then we were reading a strong editorial in the French magazine *L'Air et L'Espace* concerning the future of V.T.O.L. fighters and the issue of contracts for the future. Who was the author? None other than our old friend Jacques Morisset, that indefatigable French aeromodeller, fondly remembered by many British enthusiasts for his visits to this country on international occasions.

Continuing on the same theme, we are more than pleased to see full credit given to Grahame K. Gates as Design Manager for the Beagle M.218 light twin which made so impressive a debut at the Farnborough Air Display. Quoted as "the most promising British light aeroplane for thirty years", the M.218 is quite a contrast with Grahame's enormous tailless gliders for which he is well-known.

Modelling of Taste

We get many unusual enquiries for aircraft plans from AEROMODELLER Plans Service. They range from scale drawings of miscellaneous types which are required for engineering departments to design new maintenance hangars, to manufacturers who have apparently lost their own records of what they have built in the past and, of course, we meet the constant demand of aviation historians. Late in May, we had a unique request from Brion Clark, Patissier of the May Fair Hotel, Berkeley Square, London. He had been commissioned to make a celebration cake on the occasion of the 30th anniversary of United Arab Airlines. Could we please supply him with plans of the De Havilland Dragon and the De Havilland Comet airliner to common wingspan so that he could model them in marzipan and icing sugar? This was no real problem for us, although, in fact, the two drawings are not included in our scale range. We were able to assist with sufficiently good enough details for Mr. Clark to produce the magnificent result pictured on this page. For those who like facts and figures, the cake weighed 60 lb., including 10 lb. of marzipan and 21 lb. of icing sugar. It took two weeks to make and was entirely designed and made by Brion Clark. What one might well term an edible masterpiece!

Indoor World Championships

Apparently ignored in the turmoil of the recent Radio Control Championships, attention is now focused on the forthcoming World Indoor Champs. at R.A.F. Cardington on September 22nd—23rd, 1962. Entries have been received from Finland, Germany, Hungary, U.S.A. and of course Great Britain, plus a lone entry from New Zealand to be proxy flown.

With all three members of the British team, Draper, Parham and Monks, achieving 30 minutes plus at the selection Trials, affairs seem all set for a memorable meeting, with probably all previous records "going for a burton." (See report, page 487).

Interested spectators will be welcomed during the contest, but *must* produce their S.M.A.E. Membership Card to gain admittance. It is further stressed that the nature of the contest demands that everyone be prepared to move in *slow* motion (the draught created by quick walking can blow the covering completely from a model!) Advance results next month, full report in December.

S.M.A.E. contest results

International Team Selection Trials *7 entries* *August 11/12th*

1.	R. Draper	*Coventry*	61.27*
2.	R. Monks	*Birmingham*	61.08
3.	R. Parham	*C.M.*	58.55
4.	W. Spurr	*Teeside*	53.49

Time given is aggregate of two best flights.
* Includes new British record of 34.34.

Pilcher Cup (U/R Glider) 66 entries *June 24th*

1.	M. Burrows	*St. Albans*	6:31
2.	D. Latter	*Brighton*	6:13
3.	K. Winstanley	*Brighton*	5:24
4.	A. F. Wisher	*Croydon*	5:11
5.	L. Larrimore	*Portsmouth*	4:27
6.	M. Fripp	*Brighton*	3:49
6.	J. O'Donnell	*Whitefield*	3:49

Gamage Cup (U/R Rubber) 48 entries

1.	J. West	*Brighton*	10:10
2.	N. P. Elliott	*Croydon*	7:12
3.	J. O'Donnell	*Whitefield*	5:17
4.	D. Harper	*Glevum*	4:17
5.	R. Paveley	*Hornchurch*	4:00
6.	A. R. Wells	*Hornchurch*	1:46

Top right, marzipan and icing sugar cake decoration by Patissier Brion Clark, with models of the De Havilland Dragon and De Havilland Comet (see "Modelling of Taste"). At right a variation in colour schemes for those who make the Piaggio P.166 model described in this issue, is this NATO camouflaged Aeronautica Militare version with Italian red, white and green roundels.—Makes an easier painting job than the model on our cover!

Twin victory!

World Radio Control Championships

Convincing British team victory and tie for 1st. place at R.A.F. Kenley

THE WORLD OF radio control came to historic R.A.F. Kenley on August 17th, 18th and 19th. Never has there been such a gathering of sparkling R/C talent and manufacturers of international repute. The competitors enclosure became a world forum, with only the Australasian representatives missing. At a glance, during any of the 24 hours of contest flying, one could have seen all the household names in radio control. A spectator apologised *"sorry I missed yesterday's flying—my plane was delayed leaving Hong Kong"*, and another ardent enthusiast, whose plane was *not* delayed came straight off a 23 hour sleepless Singapore flight to be among the first spectating arrivals. Such was the spirit of the meeting. With 13 nations represented by 32 fliers, all of them colourful personalities, the Championships could not fail to be a complete success.

The hardworking S.M.A.E. committee, the R.A.F.M.A.A. helpers and the A.M.A. officials can take full credit for a magnificent job of organisation. Special thanks are due to the Officer Commanding Kenley, Group Captain O. Gradon O.B.E. and his personnel. Also *Castrol* as sponsors, and the apparently tireless five international judges.

And what a finish! We're quite used to the excitement of team race finals, duration fly-offs and last minute winning flights at other Championships; but to have Tom Brett and Harry Brooks separated by only 1.7 pts. in almost 3000 was breathtaking. Technically they became equal winners, but Tom won the fly-off and so is the Champion and Trophy holder.

In team, results speak for themselves. With all three in the first four placings, Great Britain held an unassailable lead despite their share of misfortunes.

First, the broad impressions. Models were design influenced, if not actually original, by the *Voltswagen*, *Stormer* and *Orlon*. Brett's winner, the *Apogee* is very small at 570 sq. ins. wing and 5¼ lbs. weight against Brooks' 692 sq. ins. and 7 lbs. 10 ounces of the *Reb*. No one design showed special advantage, the key factor is obviously to obtain a high power weight ratio, as demonstrated by Samaan in his one magnificent roll and climbing roll. Full span ailerons on some did much to eliminate the twitch often seen in the past and throttle control is now reaching the stage where it is employed in manoeuvres just as in full size practice.

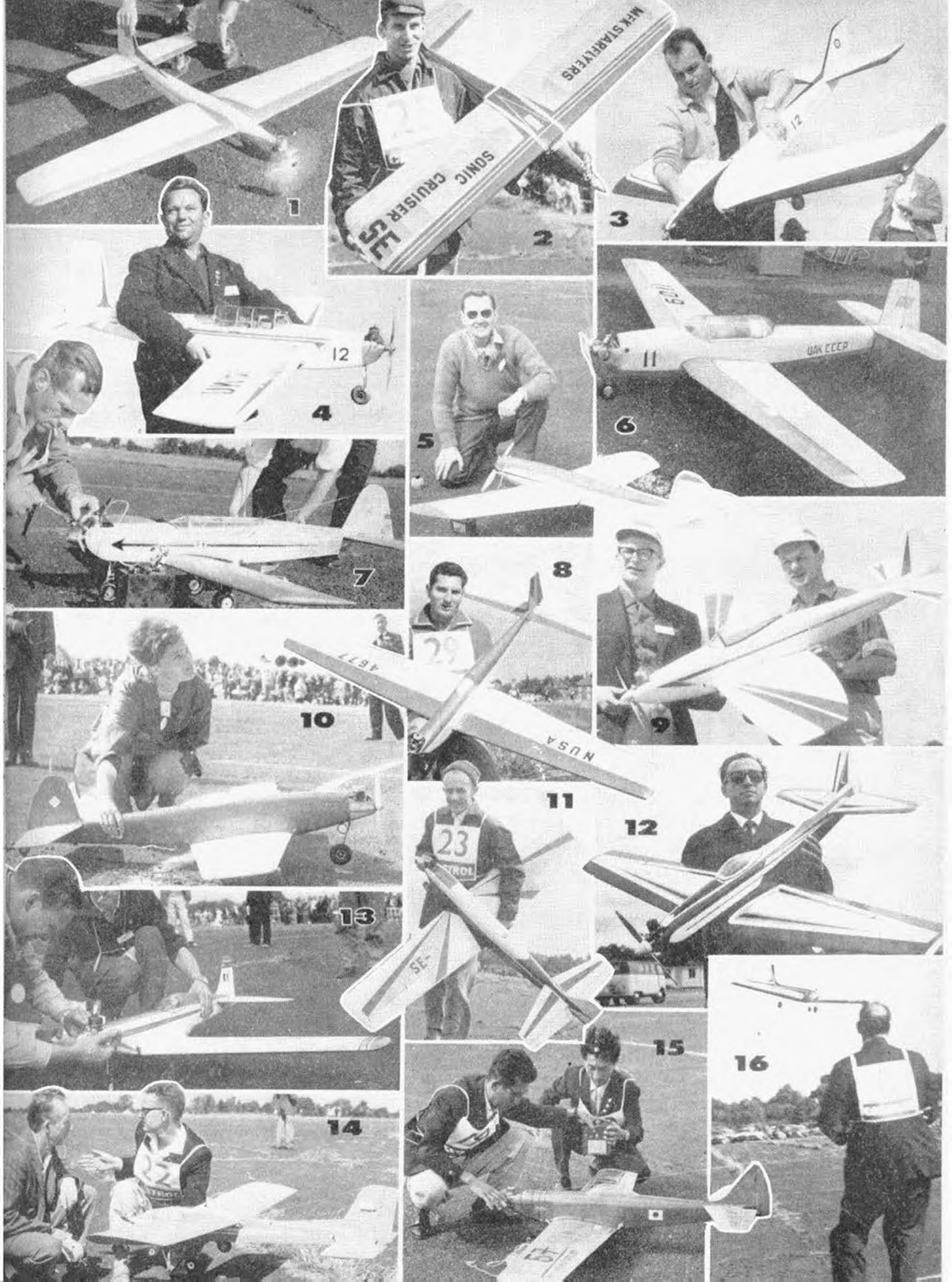
Equipment was divided into half using Superhets and transistor amplified servos, the balance with reed-relay super regen. sets, an assortment of pneumatic servo systems, two proportional outfits in the hands of the designers and three commercial proportional sets. It may be significant that all pneumatic servo entries struck trouble and the only radio which required adjustment was the Russian Velichkovsky's. In fact, one's greatest impression is that of the complete reliability of *modern* R/C systems. Brown's Quadruplex proportional was the centre of technical interest and a foretaste of the future, though it demands more of piloting technique.

Performances fell short of our expectation. Too many mistakes; poor positioning (Olsen stated by judges to be *only* competitor consistently well positioned); lost headings; lazy eights with poor intersections, unequal in size and often like dumb-bells; insufficient attention to premium manoeuvres like Procedure turn, Rolls, Inverted flight and Inverted eights—which together amass 730 pts. out of 2210 possible. It was like early C.I. stunt (and a great deal more difficult). The contest was open to the men who could work through the pattern and get something for everything attempted. This is not such a bad situation. It leaves no query in the results, and offers opportunity to latecomers. On the credit side, some manoeuvres shone with brilliance.

Bosch was best at outside loops in all 3 rounds, he also gave us beautiful climbing rolls, along with Brown, Olsen, Brooks and Corghi, the last two also achieving near perfection in the vertical eights of the second round. Brett's inverted flight, vertical eight and outside loops were his star performances along with excellent landings, a manoeuvre which many executed with skill to delight the appreciative crowd. Under these circumstances, we had the fascinating spectacle of ¼ of the entry capable of individual victory. Their chances fluctuated

continued on page 486

Heading: Equal winners, Tom Brett of the U.S.A. and Harry Brooks Great Britain, with their models after the fly-off. Brett used strip ailerons, Brooks has conventional type ailerons. At Left: British team manager Stewart Uwins receives the Team Trophy (donated to the F.A.I. by Model Aeronautical Press, publishers of this magazine) from Air Vice Marshall B. A. Chacksfield C.B., O.B.E., A.F.R.Ae.S., R.A.F. at the concluding banquet. Opposite: 1. Samaan's Merco 49 powered lightweight, troubled by pulse rates and jamming throttle servo was flown at full bore. 2. Levenstam (Sweden) and fine finished blue/orange deBolt Sonic Cruiser, Merco 49. 3. Mechanic Bacchi checks Corghi's Italian swept wing with powerful Super Tigre S6. 4. Russian entries were Yak-18 inspired, Velichkovsky's reserve had home constructed 10-channel gear, first model with pneumatics crashed. 5. Van den Bergh with *Sky Dancer* before fatal spin. Model re-built and flown without cowl. 6. Arler's large Webra twin diesel with Rum pneumatic gear did not recover from one spin. 7. Van de Hoek of Holland with small Veco 29 entry using self made Orbit circuit gear. 8. Willis Robinson's elegant Moody with dazzling Metalflake decor from U.S.A. 9. Most elegant of all, von Segebaden (left) design *Mustfire* flown by Eliasson of Sweden (right) model developed using full scale practice at SAAB. 10. Mrs. Bosch restrains hubby's fast model, note tricycle plus large tail wheel. 11. Swedish kit designer Dilot uses Bramco gear. 12. Rival to *Mustfire* for appearance and certainly best decorated model, was Italian Bellocchio's fast flying spectacular *Tian*. 13. Impressive flying by Belgian Teuwen with modified *Valkyrie* was handicapped by small tank, otherwise has winning flying style. 14. "So what do I do?", Monty Malherbe from Pretoria, South Africa, checks with mechanic Bob Dunham before flying orange *Stormer*. 15. Joyful Japanese entrants, Oki (left) and Kato prepare to fly, were unique in being completely free of nerves, laughed at own mistakes while flying, perhaps a trifle too casual. Unlike . . . 16. Harry Brooks seen making one of his very precise landings on the spot with red, white, black *Reb*.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Brett, *Sure glad it's all over!*

Brooks, *It was nothing—really!*

Olsen, *but for a J bolt . . . .*

V.d. Bergh, *but for an elevator . .* *with apologies for catching them in off-moments!*

according to the misfortunes of others but in the end, under a best two out of three flights system, the result order is a fair representation of standards.

Contest progress, was exciting from start to finish. Second to make a full flight in the first round, Don Brown established an unrivalled score that would have been higher still had his magnificent tail-slide not flipped inverted. Thereafter, one judged by Brown's standards. Olsen was beset by ferocious gusts in a squall that darkened the skies. He came within 24 pts. of leading Brown, a 3½ turn spin being culprit. Brett flew high, out of the rough air, making an enormous but strikingly symmetrical inverted eight. Then hopes raised for Van den Bergh with newly built *Sky Dancer*. Alas, a lean engine wavered when inverted, he rolled to safety out of the inverted eight, squeezed out a climbing roll—called the spin. From 300 ft. the nose dropped, never to rise. Elevator control was gone and a twelve inch hole terminated a vertical dive. Bosch followed with his very fast model taking 3rd place to Olsen & Brown, then in closing stages of *Day* 1, Brooks showed style to oust the German Champ. *Order was Brown* 1304, *Olsen* 1279, *Brooks* 1255, *Bosch* 1225, *Brett* 1203, *Van den Bergh* 1067, *Malherbe* 1058.

Day 2 was a contrast. Sun shone and wind calmed. Brett was third to fly and despite losing headings, topped Brown's score by 92. It was U.S.A. versus G.B. now! Sixth to go was Brooks, showing first a well shaped procedure turn and an outstanding vertical eight to make amends for other shapes, plus a beauty of a landing. He leapt into the lead, heading Brett by 27 pts. Malherbe's throttle control was outstanding. In fact his Veco 45 was the only motor to function as wanted, through 3 flights. The Orange *Stormer* was flown just like full size, pulling power when needed; but drifted in the breeze on all outside loop manoeuvres. Velichkovsky gave a scare with a hairy inverted recovery. He played the clicker box like a master but without power or fast servo return . . . Then Olsen, rarin' to go—found 8 ounces of fuel in the fuselage! J bolt through the tank! His reserve, with a trend not to fly straight, improved first day's score by just one point. Corghi, impressive with a Super Tigre that shouted its song for miles around, made a superb vertical eight; but like equally spectacular compatriot Belocchio, needed closer study of that judges' guide. Then Brown, surprisingly made a lazy horizontal and very staggered vertical 8, lost power, did not spin, and lost pattern and spot landing! Still he amassed just one point more than Olsen. Overnight, Van den Bergh had rebuilt the Dancer with Olsen aiding. Den Allen on the Merco, Bob Dunham on the Superhet. Nothing like having the makers work on your gear! Flight not perfect; but a good scorer and to the dreaded spin it was high average. Came disaster again. The engine cut, *Dancer* spun on—back to the bench again! Came Teuwen's rapid fire schedule, fighting a battle with fuel consumption, and completing the lot in about nine minutes, then Samaan. Servo bothers eliminated his throttle so he flew full bore. Such rolls and climbing roll are rarely to be seen. End of *Day* 2 now gave the order as *Brooks* 2678, *Brett* 2599, *Brown* 2585, *Olsen* 2559, *Bosch* 2489, *Van den Bergh* 2244, *Malherbe* 2166.

Indication that *Day* 3 would offer highest scores came with flight 3 when Robinson improved by 350 pts., making a fine inverted 8 and spin, zipping through to touchdown in 9:45 whereas most took 13 minutes. Brooks was 5th away to make the flight of his life. Stars were his procedure turn, stall turn, inverted run climbing roll and landing for a top score of 1507. Bosch followed, and while almost as good, lost heavily through not positioning for the judges. Malherbe, with mechanic Bob Dunham at his shoulder, seemed deserving of more than 1185. Brown could have won with a good flight; but when the engine cut in the tailslide it sealed his 5th place. Then Van den Bergh, again rolling to save the engine as soon as the large inverted 8 was complete, accumulated 1451. G.B. team lead was assured, with individual now dependant on Brett. He had to "hit the ball right out of the park" as they say. 1535.3 was needed to level with Brooks. 6 hours separated their flights, comparison was difficult and excitement intense. When, after excellent outside loops, vertical eight and high average through other manoeuvres except the horizontal eight it was announced that 1537 was the score, there was a fluttering of rule books. Article 5.3.14 calls for a fly-off if less than 2 per cent. difference—and this was a mere .06 per cent.! Olsen tried hard to make up 1653 to settle the position, returning his best score of 1469 which assured him third place. Then came the deciding match.

Nervous tension is inherent with multi-channel R.C. Both Tom and Harry showed they were not infallible, Harry calling the vertical eight and doing a climbing roll, and Tom losing his horizontal eight incomplete. The decision was right, they were matched equals, and Tom deserves the *King of the Belgian's* Trophy for the better of the closing flights. So ended a memorable meeting, in itself showing sweeping advances since 1960, and undoubtedly promoting further improvement for 1963.—*More pictures and report in our companion magazine RADIO CONTROL MODELS & ELECTRONICS for October, plus technical report in November issue.*

Individual placings

			Score	Engine	Radio
1. T. Brett	*U.S.A.*	1396 + 1537	2933	K & B 45	Orbit 10 (Superhet)
2. **H. Brooks**	**G.B.**	1423·6 + 1507.6	2931·3	Rogers-McCoy 60	F & M Hercules/Midas
3. **C. Olsen**	**G.B.**	1280·6 + 1469	2749·6	Merco 49	R E P Dekatone
4. **F. Van den Bergh**	**G.B.**	1177·6 + 1451	2628·6	Merco 49	Orbit 10 (Superhet)
5. D. Brown	*U.S.A.*	1304·3 + 1281.6	2585·9	Merco 49	O/D Quadruplex
6. F. Bosch	*Germany*	1264·3 + 1292	2556·3	Super Tigre 51	OMU 10
7. J. M. Malherbe	*S. Africa*	1108 + 1185	2293	Veco 45	Orbit 10 (Superhet)
8. G. Samaan	*Germany*	1126 + 1072	2198	Merco 49	Bellaphon/Polyton
9. W. Robinson	*U.S.A.*	832·6 + 1243	2135·6	K & B 45	Orbit 10 (Superhet)
10. C. Teuwen	*Belgium*	1010·3 + 1024.3	2034·6	K & B 45	Orbit 10 (Superhet)
11. H. Gast	*Germany*	967·6 + 1027	1994·6	K & B 45	Bellaphon/Polyton
12. A. Bellocchio	*Italy*	1028 + 955	1983	K & B 45	Orbit 10 (Superhet)
13. E. Corghi	*Italy*	984·3 + 935	1919·3	Super Tigre 56	Controlaire 10 (Superhet)
14. M. Kato	*Japan*	1006 + 904.6	1910·6	K & B 45	Orbit 10 (Superhet)
15. P. Eliasson	*Sweden*	889 + 1016.3	1905·3	Merco 49	Kraft 10 (Superhet)
16. A. Sauthier	*Switzerland*	840·6 + 1047	1887·6	K & B 45	F & M Hercules/Midas
17. P. Louis	*Belgium*	847 + 935	1782	K & B 45	Orbit 10 (Superhet)
18. R. Dilot	*Sweden*	765·6 + 811.6	1577·2	K & B 45	Bramco 10
19. A. Matthey	*Switzerland*	678·3 + 767	1445·3	OS 49	F & M Hercules/Midas
20. J. DeDobbeleer	*Belgium*	778·3 + 634.6	1412·9	K & B 45	Orbit 10 (Superhet)
21. A. Bickel	*Switzerland*	615·3 + 745.6	1360·9	K & B 45	Nievergelt
22. H. Oki	*Japan*	405·6 + 876.3	1281·9	Enya 45	Kraft 10/Chimitron
23. F. Plessier	*France*	652·3 + 601.3	1253·6	K & B 45	Bellaphon/Polyton
24. J. Levenstam	*Sweden*	627 + 600	1227	Merco 49	R.E.P. Octone
25. V. Miliani	*Italy*	585 + 575.3	1160	Super Tigre 56	Allotti 10 relayless
26. F. Martens	*Holland*	592 + 536.6	1128·6	K & B 45	Self-made Orbit/R E P
27. P. Marrot	*France*	563·6 + 508.3	1071·9	Super Tigre 56	Self-made O/D
28. A. A. Arler	*U.S.S.R.*	402·3 + 189.6	591·9	Webra 7·6 twin	Rum-1 (7)
29. P. Velichkovsky	*U.S.S.R.*	264·3 + 274	538·3	Super Tigre 29	Self-made 10
30. W. van de Hoek	*Holland*	20 + 195.3	215·3	Veco 29	Self-made/Orbit
31. W. de Mulder	*Holland*	58·3 + 91.6	149·9	K & B 45	Self-made/Orbit
32. P. Stephansen	*Norway*	46·6 + —	46·6	Enya 29	Self-made O/D

Team placings

1	**Great Britain**	8309.4
2	U.S.A.	7654.5
3.	Germany	6748.9
4.	Belgium	5229.5
5.	Italy	5062.6
6.	Sweden	4709.5
7.	Switzerland	4693.8
8.	Japan	3192.5
9.	France	2325.5
10.	South Africa	2293
11.	Holland	1493.8
12.	U.S.S.R.	1130.2
13.	Norway	46.6

RALLY REPORTS

CHESTER M.F.C., organisers of the **CLWD Slope Soaring** event on July 15th, were relieved when good weather arrived first for free flight and then as the wind blew up, for R/C, so that first class performances resulted. Radio was a nominated time event with five minutes the target and points lost in seconds above and below this figure M. B. and J. Fellows of Kidderminster proved to be invincible with their relatively small pulse controlled models. J. Conroy's *Hoverking* made a most impressive free flight with a slow spiral and then a slower spiral down the valley. It was pipped by a scant two seconds when John O'Donnell flew his A/2 to 6:13 to win the Gosling Trophy and now to earn him a collection of three Clwyd medals. Junior class was notable for Ben Norris of Chester, who used an unorthodox trim with unequal wings on his *Graupner Amiga* and rudder setting so that the flight was of the wandering type turning into and holding lift as if radio controlled. He was beaten by six seconds only, by fellow club-mate R. Howard. Although there is no tailless class, record holder H. F. Wilde put up an impressive 3:24 demonstration before he eventually presented the prizes to the winners.

Gosling Trophy	J. O'Donnell (*Whitefield*)	6:13	
A/2	J. O'Donnell (*Whitefield*)	6:13	
Open	J. Conroy (*Wallasey*)	6:11	
Junior	R. Howard (*Chester*)	5:15	
R/C	J. Fellows (*Kidderminster*)	37 points	

The appalling weather which prevailed throughout the South of England on August Bank Holiday Monday, obviously came down from Scotland where the annual **SCOTTISH GALA**, held at R.N.A.S. Abbotsinch, Paisley, Glasgow, was thoroughly spoiled on Sunday, August 5th. On the face of it there seems to be very little support for the event even by Scottish aeromodellers and the same band of travellers from the North, North Western and London area made the long journey to take back most of the prizes. In view of the conditions, the results are a tribute to those who flew and dared the elements.

Clyde Model Dockyard Trophy
Open Rubber (18 entries—6 flew)

1. J. O'Donnell	*Whitefield*	3:00	3:00	3:00	9:00
2. H. Tubbs	*Baildon*	2:46	2:09	2:59	7:54
3. J. Pool	*Halifax*	1:56	2:46	2:26	7:08
4. J. Hannay	*Wallasey*	3:00			3:00

K.L.M. Trophy
Open Power
(23 entries—7 flew

1. U. Wannop	*C.M.*	2:28	2:15	3:00	7:43
2. W. Douglas	*Glasgow M.A.C.*	2:23	1:37	2:21	6:21
3. M. Doyle	*Belfast*	2:04	2:25	1:24	5:53
4. J. O'Donnell	*Whitefield*	1:22	1:33	1:07	4:22

Open Glider
(24 entries—11 flew)

1. B. Picken	*Wigan*	0:35	2:10	2:37	5:22
2. E. Black	*Glasgow S.A.*	2:28	1:50	0:23	4:41
3. P. Kazer	*York*	0:41	3:00	0:55	4:36
4. J. O'Donnell	*Whitefield*	1:10	1:36	1:46	4:32

Taplin Trophy
Radio Control (8 entries—3 flew)

1. Clark	*Glasgow Barnstormers*	230 pts.
2. Taylor	*Glasgow S.A.*	180 pts.
3. Halley	*Kirkcaldy*	150 pts.

F.A.I. Team Race
1. Cunningham *Prestwick* 2. A. Wallace *Novocastria*
Class B Team Race
1. D. Dugmore *Novocastria* 2. D. Gorden *Dumburton*

The **INDOOR** team eliminators and Indoor Nationals were held in the hangar at Cardington on Sunday August 12th. Most of the broken windows had been repaired and with little or no wind outside, also an increase in temperature, conditions inside were near perfect for indoor flying.

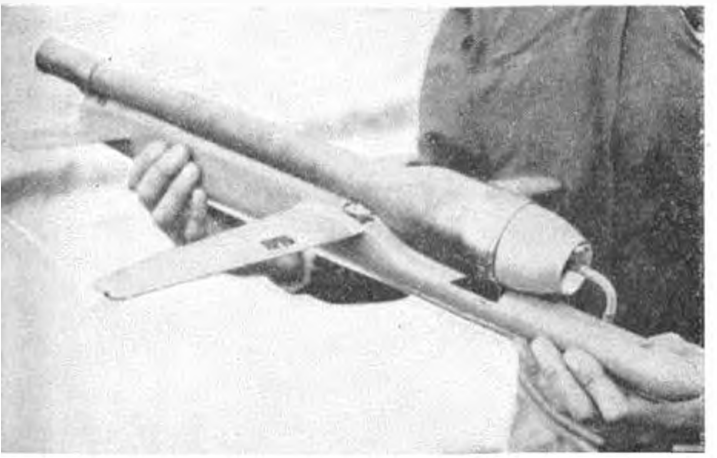
Ray Monks started the ball rolling with a flight of 30:11 that qualified him for the "Thirty Minute Club" and at the same time setting a high target. Ron Draper's model (as usual!) climbed too high and hung up in the roof girders after nearly 19 minutes. Others flew but their times were disappointing. Reg Parham's first flight (after a near disaster when the motorstick started to collapse) did not climb as high as he had hoped, but the cruise and descent were good and it touched down at 26:20. Inspired by this he merely reduced the prop pitch to increase the climb and on 1750 turns the model climbed beautifully to about 20 ft. below the girders for his best ever time of 30:27. To see how consistant the model could be it was immediately rewound and sent aloft again this time for 28:28. The 2 min. difference in these two flights could be accounted for in a winding error. With a 25:1 winder, only 4 turns of the handle means 2 minutes of flight!

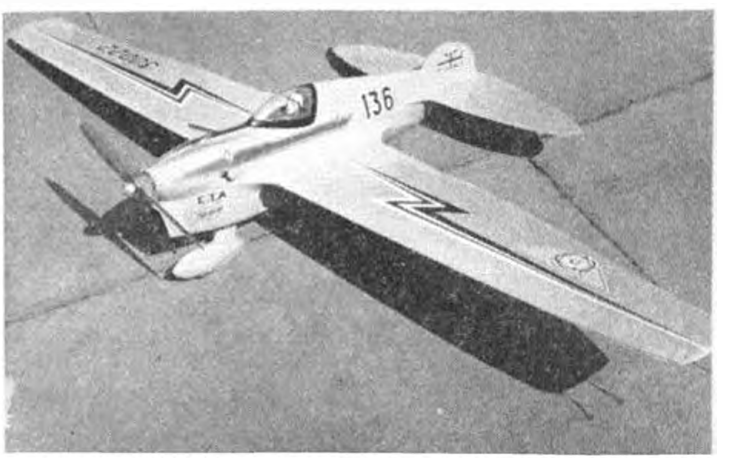
L. to R. at the SCOTTISH GALA. "They'll go that-a-way" says Urlan Wannop to D. White and Wiseman of York prior to first flights Ron Fraser is holding D.C. Rapier powered *Delta 707* with A/M transistor Rx single channel. One neutral is used for "up" elevons and it also has a gimmick for elevons to act as ailerons. Peter Montgomery of Kirkcaldy with massive 29 x 36 in. double blade folder prop driven by 20 strands ¼ in. rubber. 700 turns give a 2:15 run. At right, scene at CLWYD, semi scale *Caravelle* R/C glider quite a new approach and spot landing ace, Fellows of Kidderminster with his small R/C Soarer. Below, left Ralph Gould's new jet record holder *Shock Wave* with Dynajet has done 173 m.p.h. At right, latest of the Davy Long team racers, *Tigress Mark VII*, showing spatted wheel as flown in the World Championships

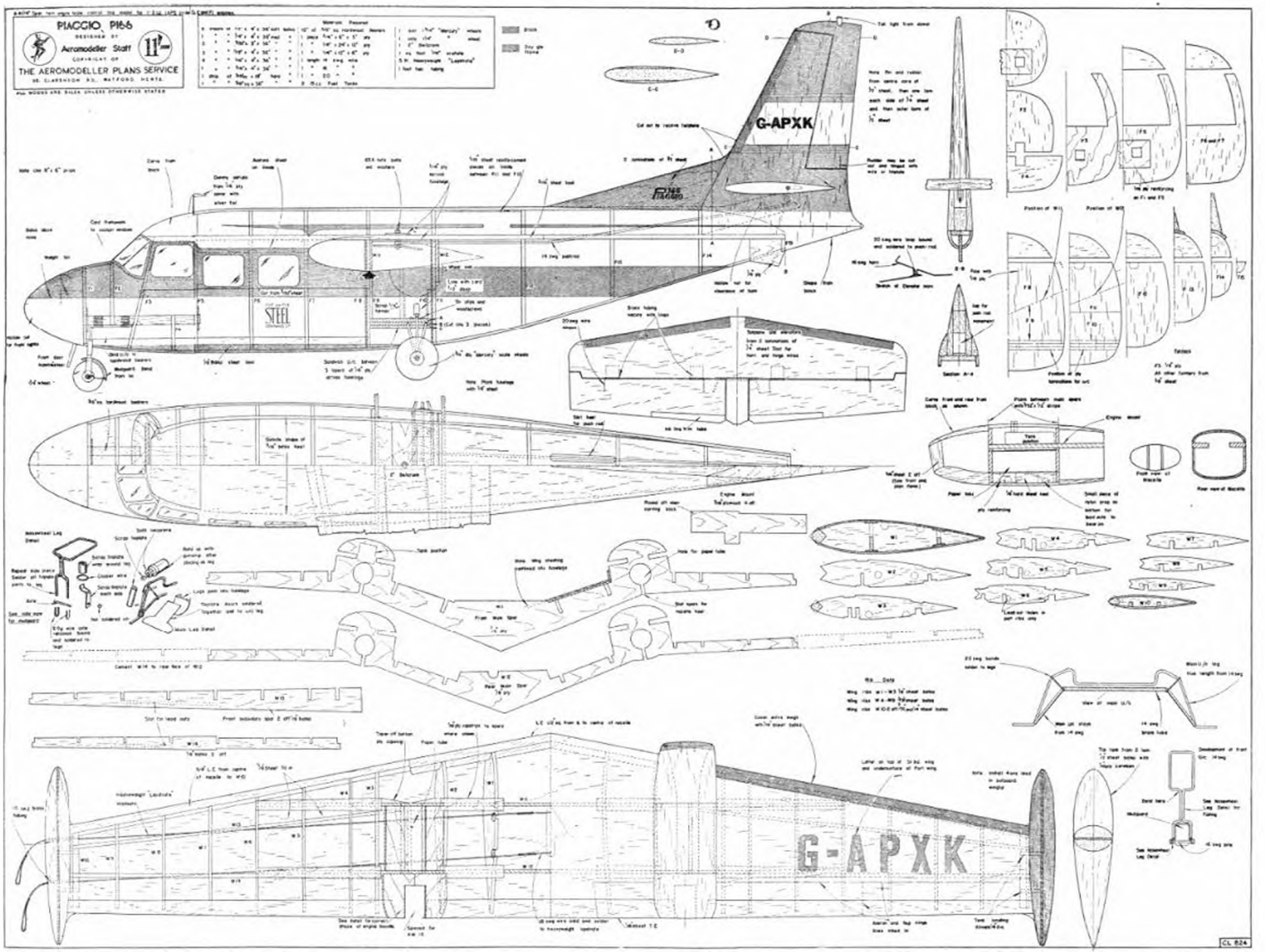
Ron Draper made a 26:53 flight and then aired his lightest model. For once it was not girder work for Ron as the model only attained a height of about 80 ft. and it wafted around to touch down at a new British record time of 34:34. Ray Monks did nearly 27 mins. and then followed up with 30:57. Bert Spurr made 25:03 and was trying to improve. Ernie Thorpe made 22:07 and 23:34.

A sideline of interest is that Reg Parham had John Malkin's New Zealand entry which will be flown at the World championships by proxy. It suffered only slight damage on its 12,000 miles air trip and its best test flight of 21:52 on 1500 turns should give builder great encouragement.

More reports pages 508, 509.







FULL SIZE COPIES OF THIS 1/6th SCALE REPRODUCTION ARE AVAILABLE AS PLAN CL 824 PRICE 11/- POST FREE FROM AERODMODELLER PLANS SERVICE

Model on the Cover!

PIAGGIO P.166

control-line for two 1cc.-2cc. engines

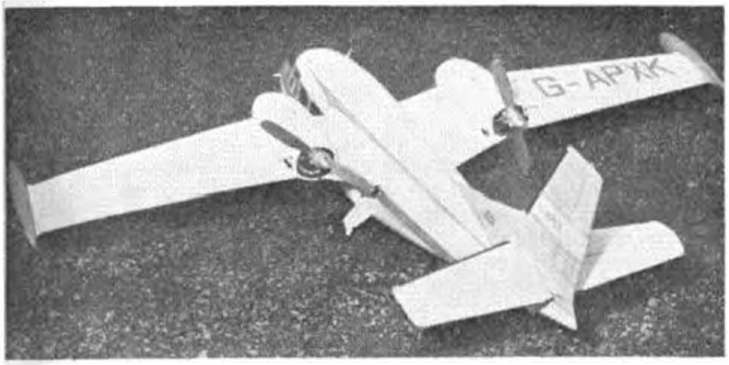
WE KNOW FROM our plans sales records that twin engined control line scale subjects are favourites. Our range already includes a considerable variety, but demand existed for a more exotic type with ample flair for lavish decoration. We could think of no better subject than the Piaggio P.166 executive transport and commissioned Maurice Bodey to make this model from staff member W. Peter Holland's design for a pair of 1.5 c.c. engines. Maurice has produced a real stunner and but for the fact that it ran into somebody else's accumulator at the Nationals, might well have been placed high at this year's Championships.

Construction of the model has been kept as simple as possible, but special care must be taken in construction of Wing Spars and of the u/c units.

The 3/16 in. balsa fuselage keel is cut out to the shape shown on the plan. Mark on positions of Formers F5—F15 and cut out slot in keel for pushrod. Cement Formers F5—F15 to keel, followed by $\frac{1}{8}$ in. balsa sheet bottom keel. Set aside to dry.

Thread $\frac{1}{4}$ in. sq. hardwood bearers through F1—F5 and glue with Evo-Stick or some similar slow drying glue. (Note angle of F3). When set, cement to keels top and bottom. Check for correct alignment. Bend front U/C from 14 S.W.G. and bind and cement to bearers. Add Formers F2 and F4, plus top of formers F5-F15.

Wing spars W11 and W12 should now be cut from $\frac{1}{8}$ in. ply. Great care must be taken over these as the whole wing strength depends on them. When cut out, glue to respective positions on formers F8-F11. Cement $\frac{1}{4}$ in. sheet reinforcements pieces on F8 and F10 in position on F11. Cut out $\frac{1}{16}$ in. ply bellcrank plates, drilling before finally cementing in place.Make cabin sides from $\frac{3}{32}$ in. sheet balsa with window positions cut out, and cement in place. (Do not fit windows yet).



Bend main U/C leg from 14 S.W.G. and U/C stays, also from 14 S.W.G. Solder together as shown on plan. Bind all joints well with fuse wire first before soldering. Cut out the $\frac{1}{8}$ in. ply plates A, B and C and glue A and B together and assemble complete U/C to it, followed by Plate C. Use Evo-Stick throughout. When completely dry, glue securely to F8 and F10.

Cut out all wing ribs and cement W1 and W2 into place on W11 and W12, followed by $\frac{1}{16}$ in. ply capping strips. Add W14 to W12, then cement W3-W6 on to spars and cement subsidiary spar W13 into place. Add remaining ribs W7-W10 ply capping strips and the $\frac{1}{16}$in. sheet balsa T.E.

Now turn to the nacelles. Use Evo-Stick on Engine bearers. Add 15 c.c. tanks, and also rolled paper tubes. Plank section between spars with $\frac{3}{32}$ in. and $\frac{1}{4}$ in. strips. The front intake and rear cowling blocks should be lightly glued and carved roughly to shape. Remove and hollow out, then cement firmly in place and sand to a smooth finish. Add the L.E. and tip tanks at this stage, then cover complete wings with $\frac{1}{16}$ in. sheet, not forgetting to feed lead-outs through ribs first. Note that wing sheeting enters into fuselage.

Bolt bellcrank into position and connect pushrod to it. The fuselage can now be planked in the usual manner. The nose block, cabin block, and tail block can be cemented into place and carved to shape. Sand complete fuselage to a smooth section.

The fin and rudder is made from two laminations of $\frac{1}{8}$ in. sheet and sanded to a symmetrical section. Then cut out slot to receive the tailplane. The tailplane unit is made in the usual manner from two laminations of $\frac{1}{8}$ in. sheet, sanded to shape and cemented into place into slot in fin and rudder. Connect pushrod to elevator horn, in manner shown on plan. Make sure these joints are soldered well. Cut out the wheel-wells for main U/C and line the inside with thin card. Cut away planking for front U/C wheel-well. Give complete airframe a final sanding, obtaining the smoothest finish possible. The bottom of cowlings should be removed and the engines installed. Make cut-outs for cylinder heads and fuel needles, not forgetting to fuel-proof inside first.

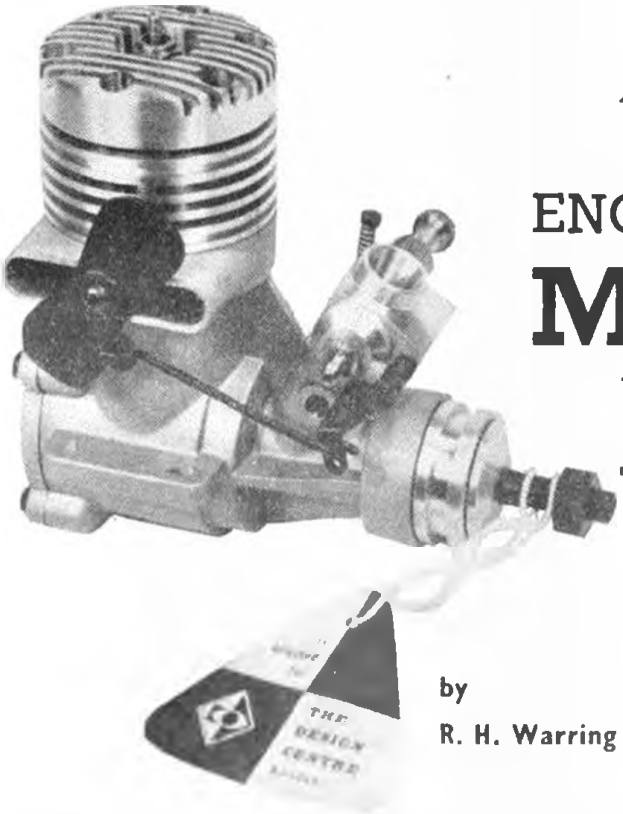
Cover complete model with lightweight tissue and give two coats of clear dope, followed by at least three coats of sanding sealer until a satisfactory finish is obtained. Add final details such as U/C doors and tail skid.

Pli spray white, giving three coats and Humbrol Hi-Glo "Fire Orange" were used for the decor. Outline all Day-Glo with a thin black line. Add all cabin windows and windscreen, aerials, nose and tail lights etc.

The model should be flown with 8 in. x 6 in. pusher props. With two good 1-5 c.c. engines, good take-offs should be made without any trouble. Speeds of up to 60 m.p.h. can be attained and one engine flights made.

Fly the model on 50 ft. lines and test-fly in calm weather. All up weight is about 40 ozs.—and she lands absolutely beautifully on the stubby trike undercarriage —try it—you'll like it!

Pictures of Maurice Bodey's prototype (actually more than a year in development and which has been subject to modification during the proving flights) emphasise the unusual and most attractive lines of this twin pusher gull winged subject. Model was produced with the full co-operation of the manufacturers, Piaggio, Genoa, Italy



ENGINE ANALYSIS No. 100

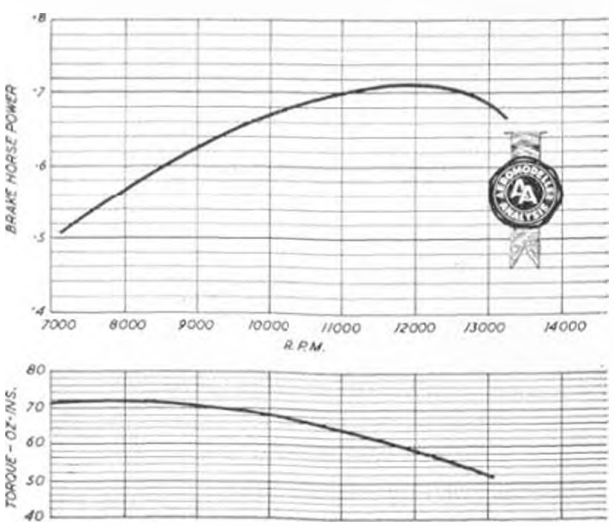
MERCO 49 R/C

We celebrate a century of tests with an outstanding product

by R. H. Warring

THE MERCO 49 is probably the finest British production engine which has appeared to date. Designed and developed to meet a specialised demand the price is high, but it offers real "value for money" engineering throughout as well as achieving a top *world class* rating for power output. This latter claim is emphasised by the fact that it has achieved substantial success and recognition as a "first choice" power unit for R/C in the United States or the virtual "home" of the glow motor, and where so many excellent designs have been produced over a period of nearly two decades.

The Merco, of course, "borrows" many of the design layout features originated on the other side of the Atlantic for large glow motor layout, but it is essentially an original development from the "29" and "35" series and "engineered" on British lines. The result is a very sturdy motor but one which, because of its exceptional workmanship and finish, is extremely attractive in appearance and a precision engineer's delight internally. The benefit of sturdy construction should be a long and consistent life, particularly with a ball race mounted shaft. The only penalty paid is in the matter of weight. The bare engine weighs 13 ounces which, although not at all unreasonable, could materially shift the c.g. forward on a radio control design originally intended for a lighter power unit—*e.g.* a typical American "35" weighing 7-8 ounces. Conversely the modellers who always build tail-heavy in any case could find this a boon—but the man who gets down to optimum structural weights could find a shortening of the nose-length necessary to come out within the design c.g. range.



Despite being a large and extremely powerful engine the Merco "49" is extremely easy and safe to handle, with matching size propellers. Finger choking followed by a prime through the exhaust produces first or second flip starting from cold, with the needle at the running setting or opened up slightly. Re-starting when warm does not even require finger-choking, provided the fuel line has not drained empty. We found also that the Merco would start readily over a wide range of throttle settings, hot or cold.

Running adjustment is essentially non-critical and easy to establish. The actual setting depends on the fuel used. The Merco runs smoothly and well on straight fuel without marked deterioration of starting characteristics. For smoothest running and optimum performance, however, the addition of up to 5 per cent. nitromethane is recommended. This also appears to make adjustment of the throttle setting (barrel valve stop) and air bleed (idling mixture jet) less critical for maintaining minimum r.p.m. One can play about with the low speed settings, using various combinations of the barrel stop and air bleed adjustment. From a normal load-speed of 10-11,000 r.p.m., slow running can be held consistently at about 2,500. A slightly higher figure—*e.g.* approaching 3,000 r.p.m. would probably be safer for flying, however.

The one important over-riding adjustment is a slightly rich setting on the main needle. Extreme low running speeds are not necessary for flying and the few hundred r.p.m. which may make all the difference between a critical adjustment and one which is consistently reliable will not materially affect flight performance. Any propeller which normally revs at 10,000 r.p.m. and is slowed to 3,000 r.p.m. will have lost much of its thrust and will act as a pretty efficient brake in a dive.

The multi-speed performance of the Merco 49 is not so completely worked out that it could be classified as foolproof. It does need careful adjustment and the suction lift seems to become a little "marginal" at low speeds. Tank position, therefore, can be important and should be selected to suit low speed running. A pressurised tank seems to upset things completely, making adjustment very sensitive. On the other hand, we are satisfied that if trouble does occur in flight—*e.g.* the engine stopping in the air—the cause is not in the throttle design but (*i*) incorrect adjustment of the two low-speed controls (or too lean a main mixture setting); (*ii*) unsuitable tank positioning; or (*iii*) an unsuitable plug. The makers specifically recommend a shielded type glow plug for multi-speed use.

On test, the Merco "49" peaked at around 12,000 r.p.m., with a corresponding B.H.P. figure slightly

Propeller—R.P.M. Figures

12 x 6 Tornado nylon	10,200
12 x 5 Tornado nylon	11,000
12 x 4 Tornado nylon	11,750
11 x 6 Tornado nylon	11,500
11 x 4 Top Flite nylon	12,300
10 x 6 Top Flite nylon	12,500
10 x 6 Frog nylon	12,700

Fuel: Mercury No. 5.
Recommended propellers:
R/C 12 x 6 or 11 x 6.
Free Flight 12 x 4 or 13 x 4.
Control Line 12 x 5 or 11 x 6.
Price
£11 19s. 8d, including Purchase Tax

Specification:
Displacement: 8·2 c.c. (·49 cu. in.)
Bore: ·880 in.
Stroke: ·805 in.
Bore/stroke ratio: 1·09
Bare weight: 13 ounces
Max. power: ·72 B.H.P. at 12,000 r.p.m.
Max. torque: 72 ounce-inches at 8000 r.p.m.
Power rating: .088 B.H.P. per c.c.
Power/weight ratio: ·0555 B.H.P. per ounce
Manufacturers:
D. J. Allen Engineering Ltd., 30 Angel Factory Colony, Edmonton N.18

Material specification:
Crankcase: pressure die-casting in L.33 light alloy, sand blast finish
Crankshaft: EN 1A steel, case hardened
Liner: EN.1A Steel, case-hardened, ground and honed to finish
Piston: low expansion light alloy; two cast iron rings
Connecting rod: RR.56 light alloy forging
Cylinder jacket: turned dural
Head: turned dural
Crankcase back cover: pressure die-casting in L.33 light alloy, sand blast finish
Gudgeon pin: EN.1A steel, hardened and ground; fitted aluminium end pads
Main bearings: ¼ in. ball race (rear) and 8 mm. ball race (front)
Cylinder head: dural turning, central plug position, contoured combustion chamber
Carburettor unit: turned dural body and barrel valve; brass spray bar and thimble
Propeller driver: turned dural, split steel collet fitting
Exhaust baffle, throttle arm, linkage: black-finished steel

in excess of .7. The power curve is extremely flat and an interesting characteristic—for a glow motor, at least—is the high and sustained torque developed at lower r.p.m. figures. Nylon propellers are a logical—and safer—choice for a motor of this potential, and confined virtually to one size—12 x 6. This size produces a static r.p.m. figure of 10,000 on 5 per cent. nitro fuel, which means that the "unloaded" figure in flight will be slightly lower than the peak. Most of the radio flyers appear to have adopted the 12 x 6 prop. as standard, although 11 x 6 could equally well be used to develop true peak r.p.m. in the air, and may be preferred for control line. 12 x 5 and 12 x 6 are other possible sizes for free flight, pulling the operating r.p.m. down but still remaining on the flattish part of the power curve. Larger diameter sizes do pull the r.p.m. down rather a lot. Any smaller propeller diameter than 11 inches makes one approach hand starting with exaggerated caution!

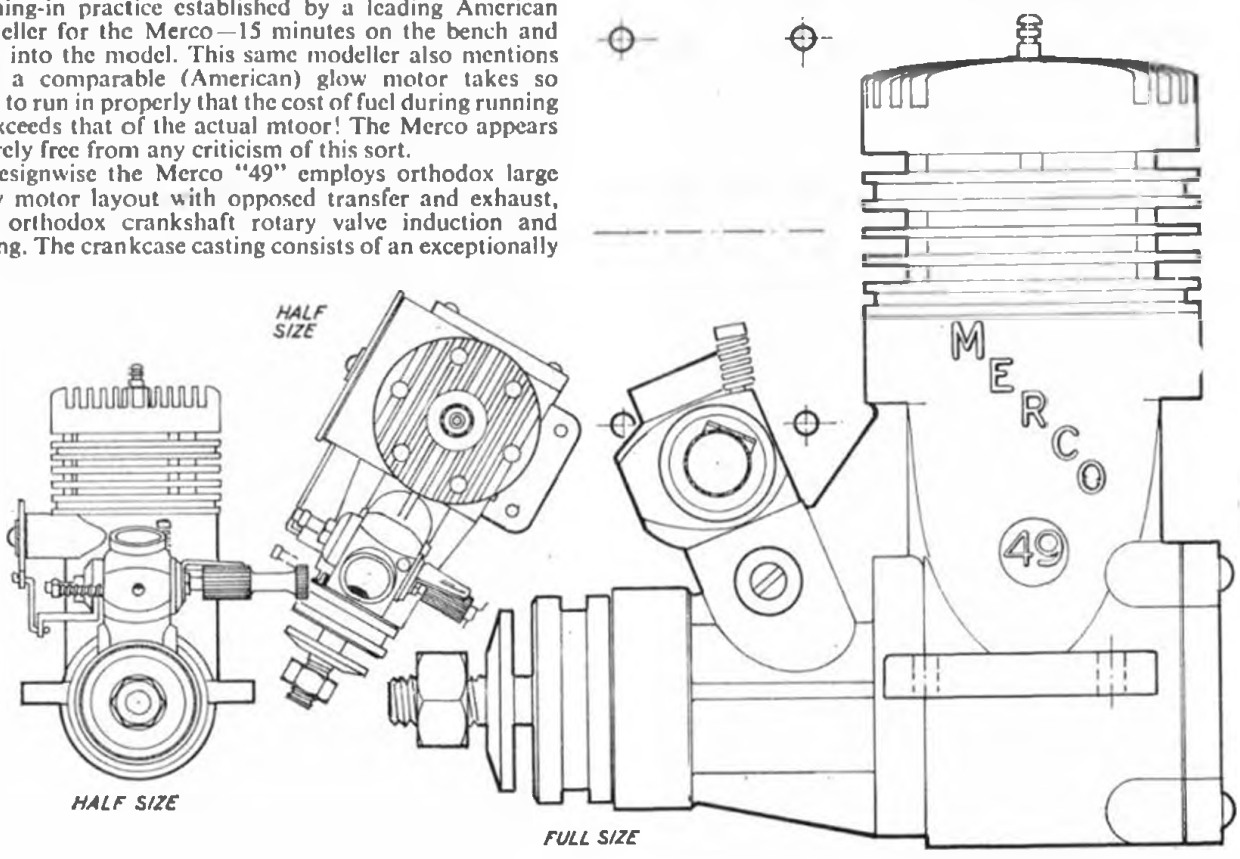
The combination of ringed piston and ball race mounted crankshaft results in an engine which appears to need very little running-in time. The maker's mention one hour, and not leaning out the mixture completely for the first 30 minutes. On the particular specimen we had (and which had experienced little or no previous running) only ten minutes running-in was more than adequate and there was no further detectable change in performance after this time, over a final total of two or more hours. There was no evidence of tightness of slowing up or overheating. This seems to confirm running-in practice established by a leading American modeller for the Merco—15 minutes on the bench and then into the model. This same modeller also mentions that a comparable (American) glow motor takes so long to run in properly that the cost of fuel during running in exceeds that of the actual mtoor! The Merco appears entirely free from any criticism of this sort.

Designwise the Merco "49" employs orthodox large glow motor layout with opposed transfer and exhaust, and orthodox crankshaft rotary valve induction and timing. The crankcase casting consists of an exceptionally clean and well finished pressure die-casting in light alloy, incorporating lower cylinder housing, intake stub and ball race housings. A hardened steel 1 in. o/d liner with a flanged top plugs into the lower cylinder casing and is positioned vertically by a turned finned jacket. When the head is in position and tightened down with screws the liner is thus positioned by the depth of the jacket, tightened up against the bottom of the liner flange. Three long screws extend down into the crankcase unit, with three further screws attaching the head to the jacket. The bottom of the jacket itself seats on a thin paper gasket. The cylinder is slightly offset laterally (Desaxe), which is a design characteristic of all the Merco series; this arrangement giving certain theoretical advantages.

Ports cut in the liner walls consist of four equi-spaced square holes for the transfer and four similar sizes square holes, spaced apart in pairs, for the exhaust. Transfer and exhaust have substantial overlap. Port areas are relatively small and the use of a series of separate port openings rather than a single port each side is dictated by the necessity of maintaining a satisfactory unbroken rubbing surface area to avoid trapping the piston rings. The transfer passage way itself is incorporated in the main casting and does not require an additional piston port to open.

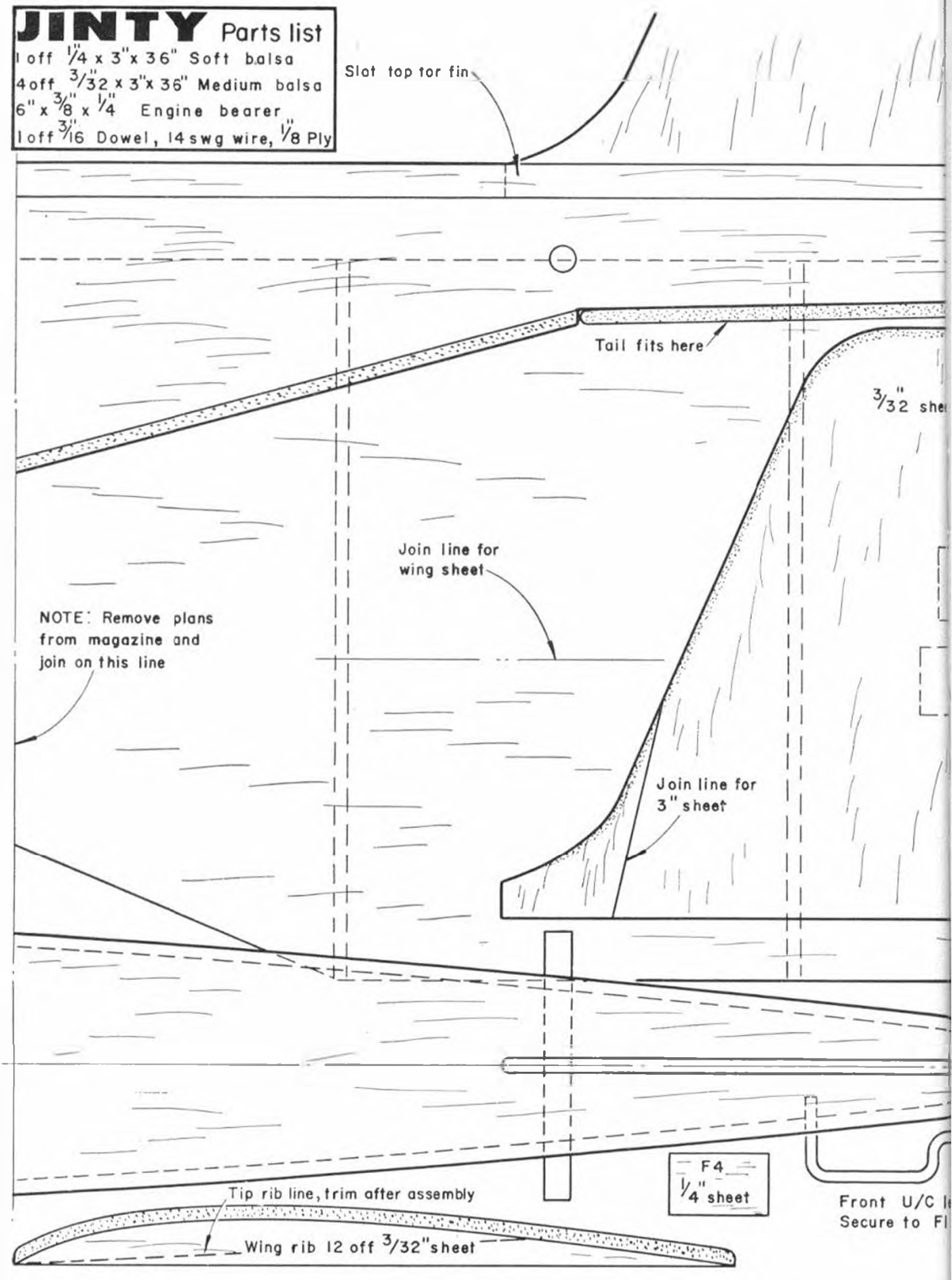
The piston of light alloy, grooved to accommodate two cast iron rings and shaped with a filleted deflector

(continued on page 510)



JINTY Parts list

1 off 1/4 x 3" x 36" Soft balsa
4 off 3/32 x 3" x 36" Medium balsa
6" x 3/8" x 1/4" Engine bearer
1 off 3/16" Dowel, 14 swg wire, 1/8" Ply



Full size plans for JINTY

A 31 inch wingspan all sheet balsa model for free-flight (or R/C) by CLIFF WALKER

"JINTY" WAS DESIGNED, as is known in Yorkshire, as a "*Chuck-a-baht*". This is an extra model to carry when out on a day's flying, and to be used as a relaxation model (*a*) at the end of the day, (*b*) should one prang the larger models, or (*c*) the queue is too long for radio.

The requirements for this type of model are: dimensions such that the model will fit into the boot of the car, along with picnic basket, folding chairs and what have you, a fuselage capable of taking lightweight radio should the model prove suitable, tough and, above all, easy and quick to build.

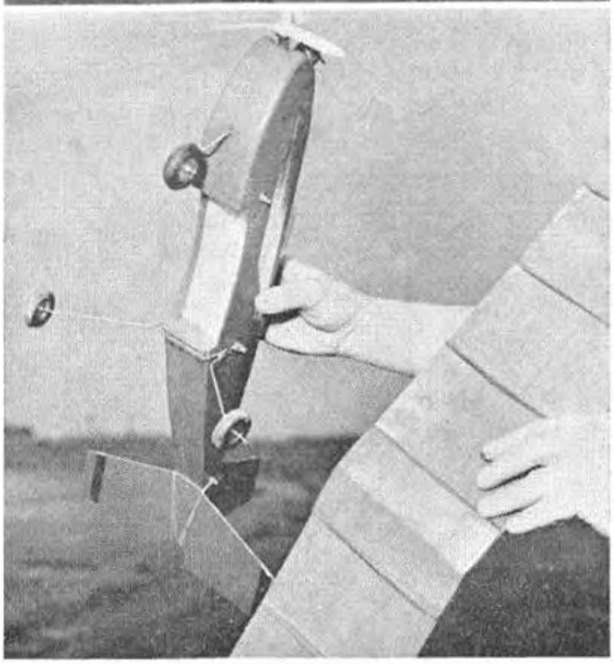
"JINTY" is the latest in a series designed and built over one weekend, looks like an aeroplane and is a really good performer. Interested?—then have a go, you will enjoy making it.

The original has a Mills .75 engine fitted with three-bladed prop; but any engine up to .8 would be suitable.

Straight-forward fuselage construction calls for pre-cementing engine bearers to suit your engine. Stitch on the front u/c leg and well cement. Assemble the fuselage frame on its back, over the plan. Use a couple of clothes pegs to nip sides to engine bearers until set. When set, add nose doublers, bottom planking, wing dowels, and fill in fuselage nose. Lay on to ¼ sheet, draw round fuselage for top deck with sharp pencil. Cut slightly larger. Cut slot in deck to receive fin. Sand roughly to shape. Pre-cement and fix firmly on fuselage. Sand off to fuselage with nice rounded curves. Fit fin; this does not require an anti-warp strip as the slot in the deck takes care of this, but don't be lazy here and omit the trim tab, as this is really useful.

Wings are all sheet construction. Build in two halves, cut wing strakes to shape but do not stick the joint yet. Pin ribs over plan, placing pins to the rear of the ribs. Cement on the front 3 in. strip, pinning through both the sheet and ribs into the board. Remove rear pins—cement trailing edge strips, pre-cementing joint-pin down. Notice that all the ribs are the same size and the wing tip rib is now protruding well beyond the tip T/E. Take the wing from the board and cut the tip rib flush with T/E, sand the underside of the rib till it meets T/E. You now have a half wing with a natural wash in at the tip—a great asset. Complete the other half. Bring the two half wing joints together, having placed 3 in. packing under the tips, and you will find they only touch towards the middle. Use a sanding block on the high spots each joint until they fit. Pre-cement and fix. Leave to dry well with dihedral packings still in place. When dry, cement well underneath the dihedral joint, and sheet between the first wing bays. This gives a platform for wing bands. Finally, dope on a 2 in. wide piece of fine linen around the joint for extra strength. The tailplane is a sheet shape with anti-warp strips.

Undercarriage is simple, but very efficient and virtually crash-proof. Don't alter its position as it gives a perfect take-off. For fixing, use one rubber band from each wing dowel, stretched round the U/C yoke and dowel twice.



Simple lines, quick and cheap to make—a fine flier and tough structure. . what more is wanted? Aluminium tape decorates an all red prototype seen demonstrated at the British Nationals. Note single surface sheet wing and clever u/c fitting

Sandpaper all components and cover with lightweight tissue doped on. Sand lightly. Give two coats of Butyrate dope and sand between each coat. I emphasise the sand because that is the difference between a good smooth finish and a daub. Decor to suit yourself. The prototype model was coloured red, and for speed the decor was effected in silver metal tape.

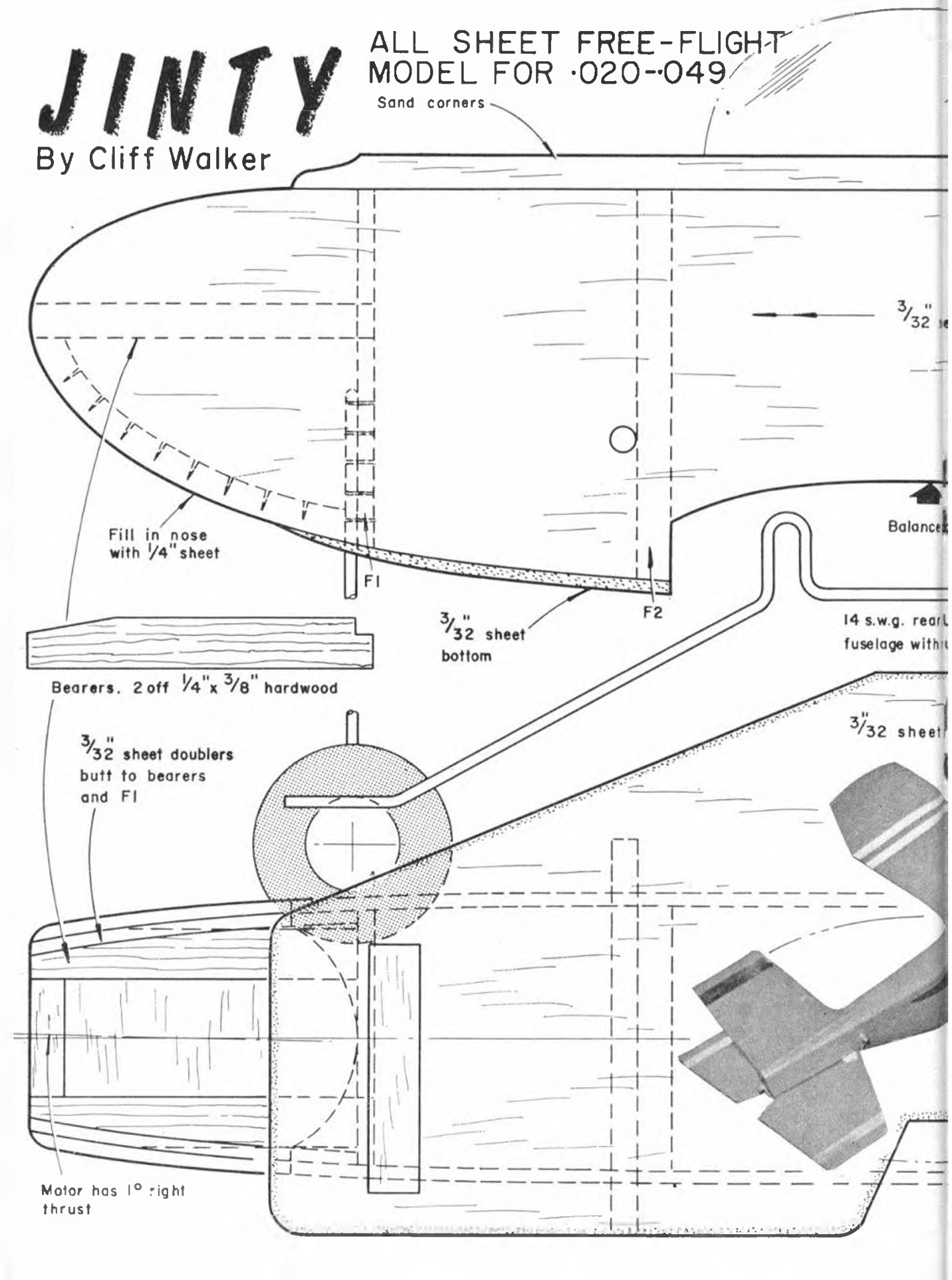
Test for glide in the usual manner; if you have the C.G. to plan position then it should be satisfactory; if not, the tailplane may be packed with thin balsa. Now here is the important part; bend the trim tab about ¼ in. to the left, this is a safety precaution as with most free flight low wings, a right turn under full power will build up into a spin; on the other hand you can trim to

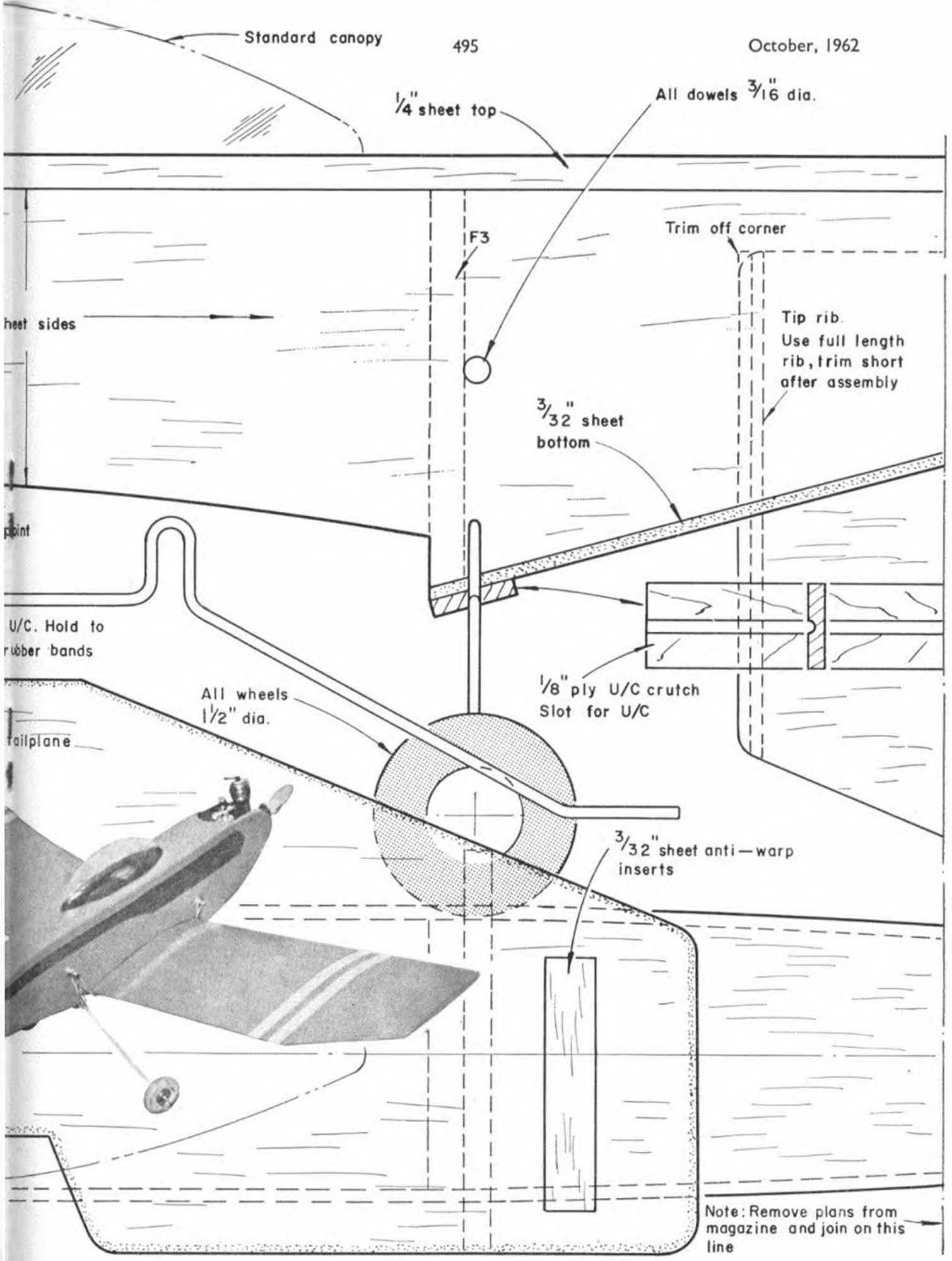
(Continued on page 496)

JINTY

ALL SHEET FREE-FLIGHT MODEL FOR .020-.049

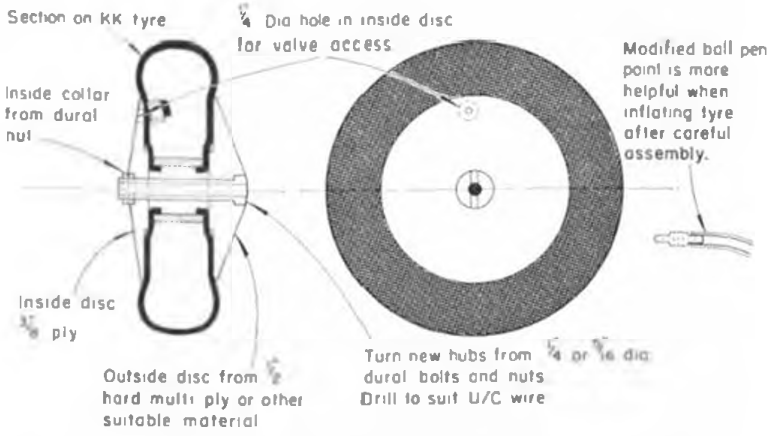
By Cliff Walker




Standard canopy
1/4" sheet top
All dowels 3/16" dia.
F3
Trim off corner
Tip rib.
Use full length rib, trim short after assembly
3/32" sheet bottom
U/C. Hold to
rubber bands
1/8" ply U/C crutch
Slot for U/C
All wheels
1 1/2" dia.
tailplane
3/32" sheet anti—warp inserts
Note: Remove plans from magazine and join on this line

Brian Sichi describes a simple method of making

SCALE WHEELS



Wheel complete with disc hubs, and dismantled to show original tyre shape shows how to convert a standard product into one of those "not available on the market" scale items

WHEN IN MARCH 1957 we published drawings for Brian Sichi's *Sopwith* 1½ *Strutter*, it was classed as a semi-scale, due to the fuselage planform, wing section, and the lack of scale type wheels. Normal airwheels were used at the time as the best available means for a soft landing on a rigid faired undercarriage. However, when a second 60 in. R/C version of the 1½ Strutter was built, Brian was determined not to use the usual all ply or ply disc and solid rubber method for the wheels. He therefore developed a modification for a pair of Keilkraft 3½ in. airwheels, as detailed here. The final scale appearance is good and there is the facility of tyres. It is also nice to know that when you launch 4—6 lbs. of model it will have the cushioning effect of scale type airwheels.

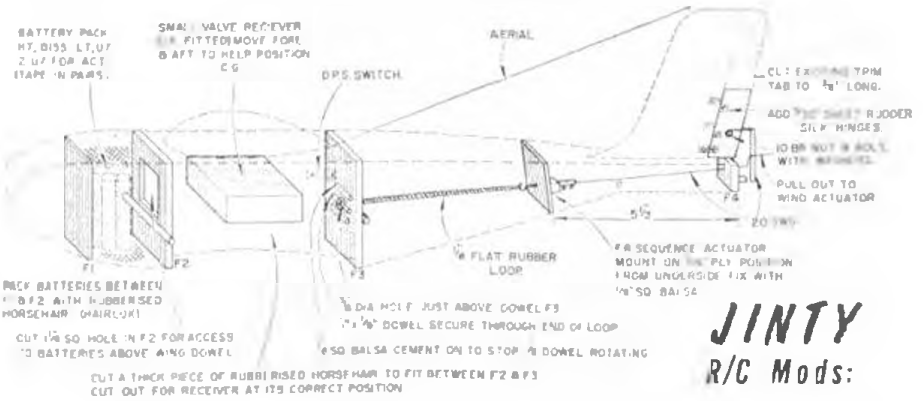
In making the modification the only difficulty for the average modeller may be in obtaining the use of a Lathe to turn the metal wheel hubs, for which the use of ¼ in. or 5/16 in. dia. dural bolts and nuts, turned and drilled is advocated. Otherwise anyone who has a Wolf Cub or similar drill with an Arbor Assembly, and a few sharp chisels can turn the wheel discs from ½ in.—¼ in. hard multi-ply. The latter is indeed a most enjoyable part of the job.

After painting the discs, assembly is as usual for airwheels, although a little care is required to line up the valve hole with the ¼ in. hole in the inside disc. This done, the discs are slowly pressed together, the hub and collar fitted and screwed up tight. Provided really hard ply is used, (if the discs are to be made from wood) the wheels will give no trouble at all.

FULL SIZE PLAN JINTY (continued)

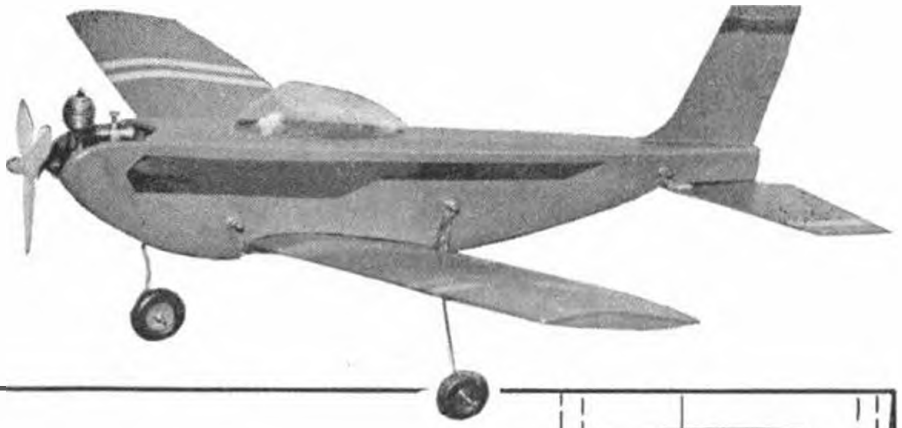
fly in left-hand circles as tight as you like and "JINTY" will keep on in the climb. All set? Place her on the runway and let go. "JINTY" has a beautiful take-off, then into a left climb, and when the engine cuts, a slow glide to the right. Watch your fuel for the first flight or you may require your running shoes!

If you are thinking of fitting lightweight radio, make the third former of ⅛ in. ply with appropriate locators, and cut out for your escapement. See details as used on the prototype, at right.



JINTY R/C Mods:

Tricycle undercarriage and low wing position on this all sheet balsa model are novelties which add to its attraction and give excellent landing and take off characteristics. Radio control conversion details are given on page opposite. Model will perform on a wide range of engines and is easy to build as well as to fly with ·5 to ·8cc.



F4

fin

Reinforce with linen

Wing is one surface of 3/32" sheet with ribs cemented to undersurface. Dihedral 3" under tips

Sheet with 3/32" on undersurface between first bay in each wing half

Trim tab. Hinge with old cement tubing

St'bd tip

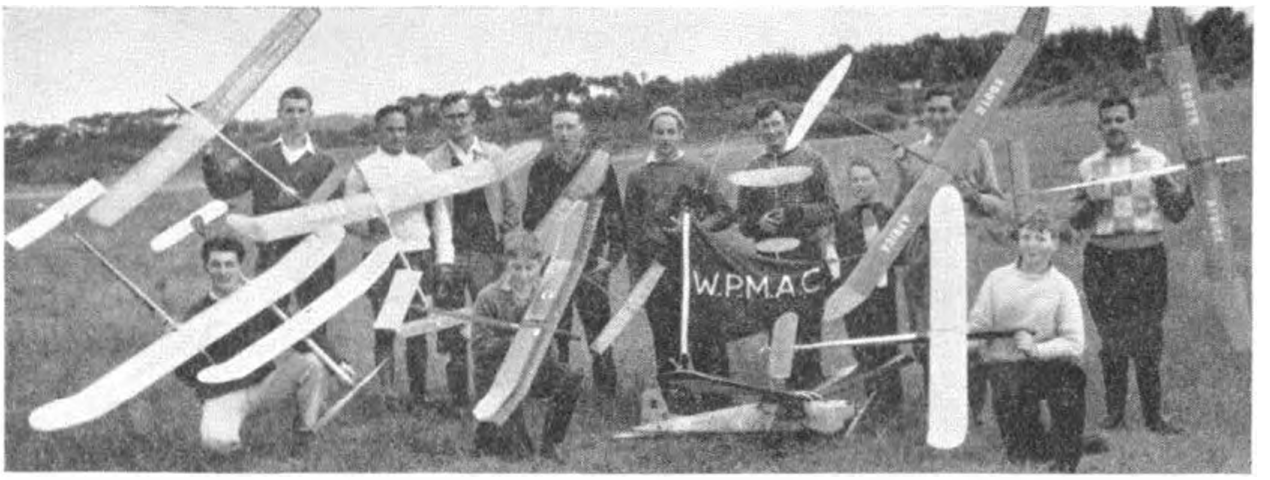
14 s.w.g. ith thread

F1 1/8" ply

F2 and F3. 1/4" sheet

F2 chamfer line

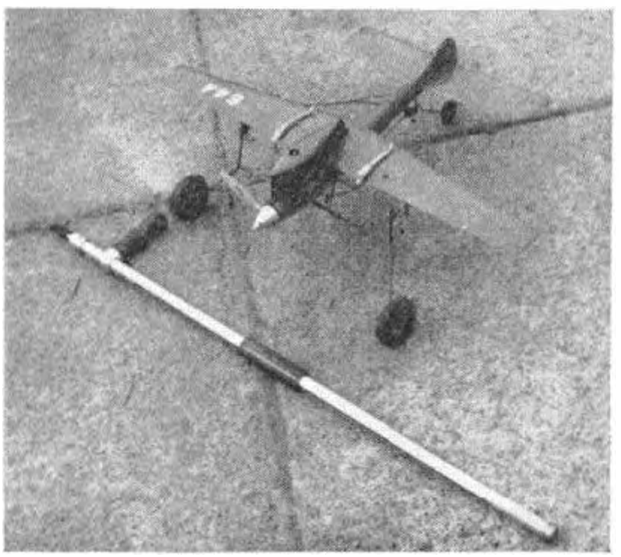
F3 chamfer line



World News

FINANCIAL CONSIDERATIONS affected attendance at the World Championships for control line models due to costly travel to Kiev, **U.S.S.R.** However, last minute information lists thirteen Nations in attendance, and these include **U.S.A., Belgium, Italy, Finland** and of course **G. Britain.** Not all could field a full team. The U.S.A. which originally elected to cut team race participation, made a change so that the successful Nats Champs Stockton and Jehlik could attend. Italy despatched only speed men, referred to as the Super Tigre Squadre and *not* including record holder and National Champion Ugo Rossi! Conversely, Belgium had her speedsters on the short list and would only have sent them if finances materialised. Interesting teaser is that from all available information, G. Britain had fastest team race times in all the team selection trials, and was well up in speed. Next month we'll have the full low-down on what happened . . . if they let the Ed out!

Over in **Brazil**, the *Associacao Brasilieira de Aeromodelismo* was beset by appalling weather for the 4th **S. American** Championships. It was cold and windy! Definitely *not* the average European's picture of Brazilian conditions! Anyway, advance news gives an **Argentinian** victory to Jorge Cea in speed at 105 m.p.h. with S/Tigre G.20, and the Leys brothers at 6:23 with Oliver Tiger in T/R. Brazil won stunt, with Cezar Gama's Fox 35-*Thunderbird*, Walter Nutini took Wakefield, a scant 4 secs ahead of the Argentine's Colombo, and Kiuoshi Veno took both F/F power and R/C (using all-Japanese equipment). Honours were spread further by Miguel Quartino of **Uruguay** taking the A/2 event. Pictures next month. These S.A. Champs are the nearest approach to the oft suggested "World Regional" meetings. They serve to stimulate contest standards, though perhaps not to the same extent as the World Champs; but are also a solution to the high cost of team travel.

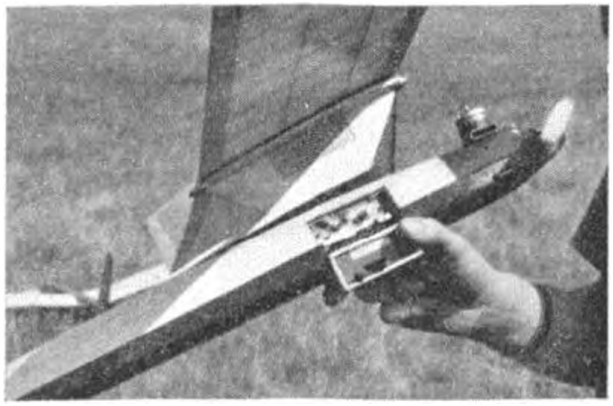


A longer established and similar meeting is the annual Nordic Countries Champs which many modellers will imagine is restricted to free flight. Not so, for the 2nd control-line champs took place at Helsinki on August 4th-5th. On a points basis, the hosts, **Finland** came out top, ahead of **Sweden** and **Norway**, and this was largely due to their sweeping 1, 2, 3, victory in stunt by Kari and the two Sundell Bros. and a 1st and 2nd in speed by Valo and K. Jaaskelainen. Sweden's Rosenlund and Bjork were not up to their usual performance in team racing but managed fastest heat time of 4:56 and won the final at 5:04 to add another honour on *Miss F.A.I.*'s already long list. Denmark did not participate this year and Norway sent only stunt men, with Birger Bulukin (Nordic F/F power Champ) taking a 6th place. Either Norway or Denmark will stage next year's event; but not, we imagine on the runway of the National Airport as the Finns were able to fix this time. We hasten to add that it was a brand new, as yet unused runway too!

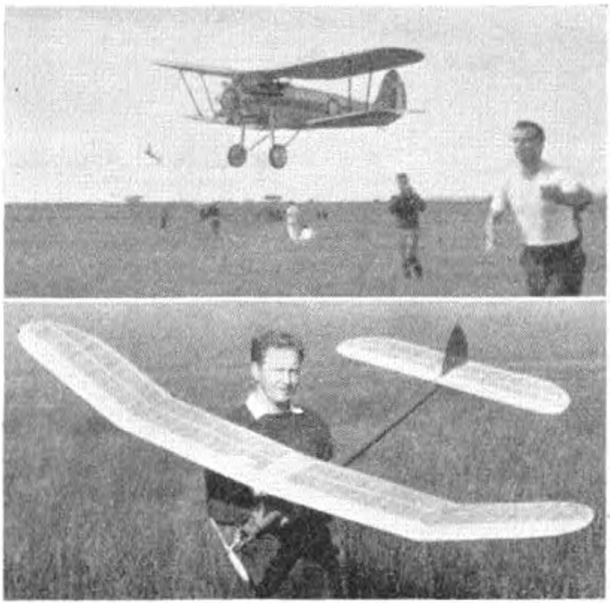
Over in **Australia**, we understand that the Merco engines have gained a real grip on the stunt fraternity, with 1st, 2nd, 4th and 6th in the Victorian State Champs. In free flight, Ralph Kenyon won Wakefield with a perfect 900 score, and Cox engines took first three places in Class 1 power ratio. Best was Brian Laughtons ratio of 26.91:1 with a Cox .051. Incidentally, when reporting the Aussie Nats earlier this year we mixed their glider events. They have F.A.I. sailplane (won, as we said, by Sean O'Connor) and A/2 run separately, won by Brian Amey, a gent who, when occasion demands, can leap two four foot barbed wire fences and a car bonnet with the model *still safely in tow*! Quite a Kangaramey!

Heading. Group photograph of Western Province M.A.C. members at their Championships during July in Cape Town, SOUTH AFRICA. Left. Ugo Rossi's 140 m.p.h. F.A.I. speed model showing his new type single line control handle. Model uses a new design engine based on a Super Tigre crankcase but otherwise entirely Rossi creation. Flight made on standard fuel in ITALY at Coppa Shell

Above. GERMAN Champs. Left Harald Wesp winner of the A/2 class with a perfect score of 900 seconds plus a 6th round time of 210 seconds, uses all sheet surface wing. Centre, tailless winner Gerd Neuhauser with Cox Tee Dee 15 on very long nose projecting forward of fuselage with swept forward wings, unusual design with remarkable performance. He also won the International tailless at Leutkirch last year. Right, F. Griepenberg winner of the A/1 class with 802 seconds, all sheet surface upper wing



Hans Seelig was F.A.I. power winner at the GERMAN Champs with 896 seconds, using Super Tigre G20 and quadruple action timer operating engine cut-off, auto-rudder, wing angle and dethermaliser, all pre-set in fuselage hatch as seen. Below at Victoria Championships AUSTRALIA, Bob Greenhill launches Glo-Chief 29 powered 72 in. Bristol Bulldog at Laverton. What a flying field! Bottom is Norman Barclay and 7 ft. Dooling 29 class 3 (Australian rules) model, which is claimed to float around rather than to glide. Photographer tells us that deep grass is loaded with snakes!



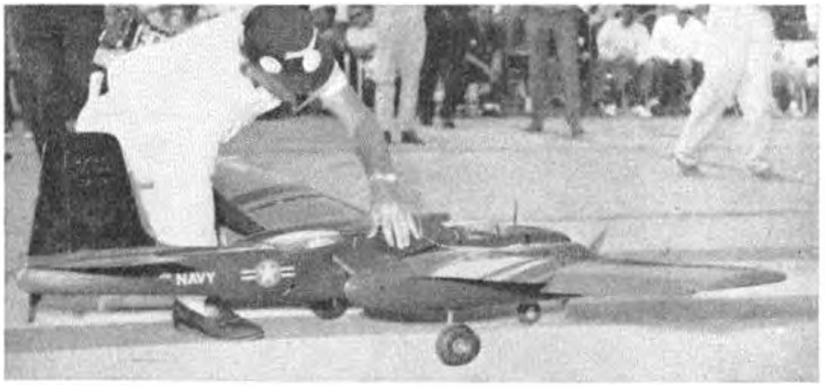
Mufflers are becoming a must, and a demonstration team with muffled Merco went out from Melbourne to demonstrate how it can be done. Would someone please show the manufacturers too?

Some "sights of the World" geographical books carry pictures of the "Valley of a thousand Hills" in Natal, S. Africa, It *is* a sight. Also a *fright*, when close to the S.A. Nats, and collecting lost models. Brian Partridge from Jo'burg was in the lead for ½A when he dropped in the hills, so did Pete Visser, who was lucky to locate and won by a 4th flight. Pete's all sheet surface *Texan* proved the answer to rain damp, and his A/2's went well to carry off that event as well. "Cookie" Watt took Wakefield, and he also went along with Brian Partridge to the Rhodesian Nats. and between them they won all the free flight events.

Without doubt, the momentous news on the month comes from the U.S.A. Nats. held at Glenview Naval Air Station at the end of July. Pages following give an insight into the most impressive event, for scale models, and we shall be carrying on with model details next month. Our reporters on the spot tell of jet flying at 02:48 a.m., of many tyre and u/c failures when the "heavy" C/L scale models dunked back on terra firma, of a 72 in. rotor *scale* multi channel radio controlled *Bensen Gyrocopter* with Merco 35 and of a scale type which few had heard of simply because it *started as a model*, and will be scaled up for full size production as the Jeep-O-Plane with rumoured 14 million dollar backing. Such is America! Pictures next month of these, and also of some strikingly novel free flighters. Bill Werwage notched yet another Nats victory in stunt with his Fox 35 *Ares* (and collected a hundred dollar bonus from Ambroid in the bargain!). Dr. Ralph Brooke and his Orbit equipped Veco 45 *Whistler* was stated by some to be smoothest of all the multi men, and moreover, along with Ed. Kazmirski flying *Taurus* as detailed in October R.C.M. & E. and Jerry Nelson with his *Sultan* makes up the 1963 World Champs R/C team to go to Genk, Belgium next time. 167 entered multi, order by the week-end was Kaz Nelson, Zel Ritchie (with a *Sultan* and his own Space Control system) Brooke, Les Fruh and Hal De Bolt. Top 15 then flew to select the team and only Ritchie slipped a place. Top five used Veco 45, trike gear and full span strip ailerons.

★ Stars at the

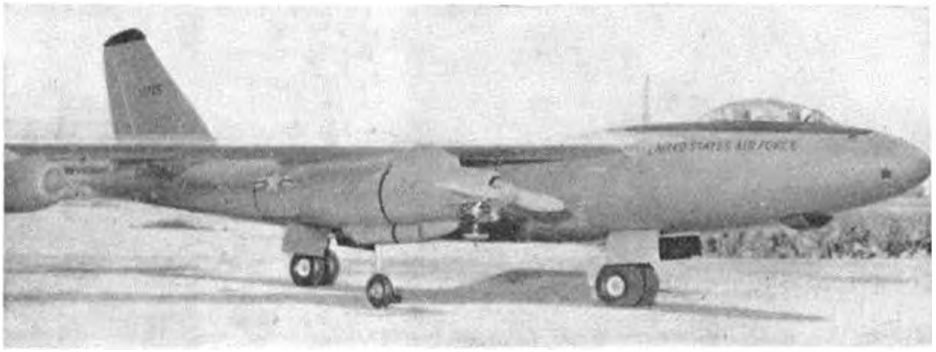
OUTSTANDING MODELS AS



Most outstanding event of the 1962 U.S. Nationals held at Glenview N.A.S., Illinois, U.S.A. July 23--29, was undoubtedly flying scale radio control, where one had to have a twin engined type to be able to place within the first three. Winner was Bob Doell from Carpenteria, California, with this unusual Douglas B-26 *Invader* in U.S. Navy markings with bright fin carrying the insignia of the Pacific missile range. A 10-channel Superhet and two Veco 35 engines form the equipment. We do not know if the drooped aileron is used permanently to combat the tendency to roll, but in any case, Bob's points totalling 6,375 gave him a tremendous lead

At left Harry Latshaw of Robinson, Illinois, set up an unofficial record of 130.38 m.p.h. for a standing start one mile with his Eta 29 model. His official time of 123.83 m.p.h. gained him 2nd place in the open class and has created a heavy demand for the Eta 29 in the U.S.A. An Eta 15 also won F.A.I. racing. At right, radio scale *Caudron* racer of 1936 vintage by Al Masters of Rocky River, Ohio, has K & B 45 in top half of cowling, working flaps, steering tail-wheel 10-channel R/C in 61½ in. span, 65 in. length, weighs 8v lbs. giving a loading of 37 ozs. per sq. ft.

Nose view of a *Lockheed P38 Lightning* is not in the least unusual ordinarily, but this one at left happens to be Phil Breitling's 3rd place radio control scale model from Torrance, California which amassed 4,580 points. Two Super Tigre 56 are totally enclosed, the nose-wheel is steerable, the main gear is fitted with brakes and 10-channels operate full controls. This P38 is very stable at a flying speed of about 65 m.p.h. and it weighs about 8½ lbs. Phil, who is previous radio control scale winner at the U.S. Nats., arrived at Glenview with the model untested. First take-off indicated a roaring 45 deg. climb and a steady tendency to roll with the double-torque, which Phil managed to fight and control throughout his contest flights. We understand that he is going to have a special pair of opposite rotation engines for the future. Some idea of the size can be gained from the engine in the cowling and the 12 x 6 propellers.

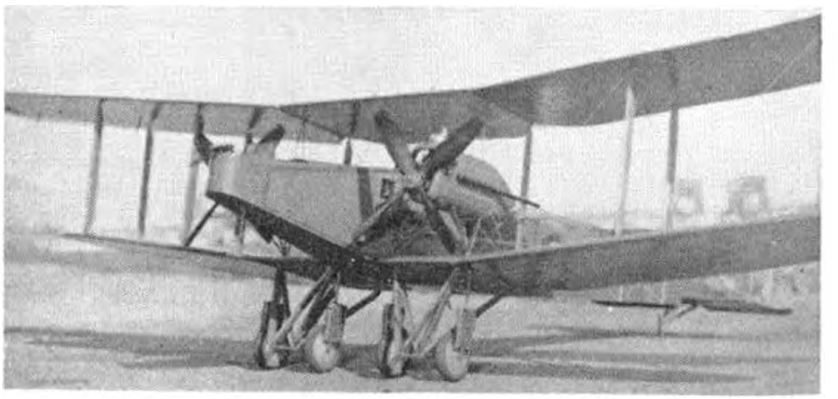


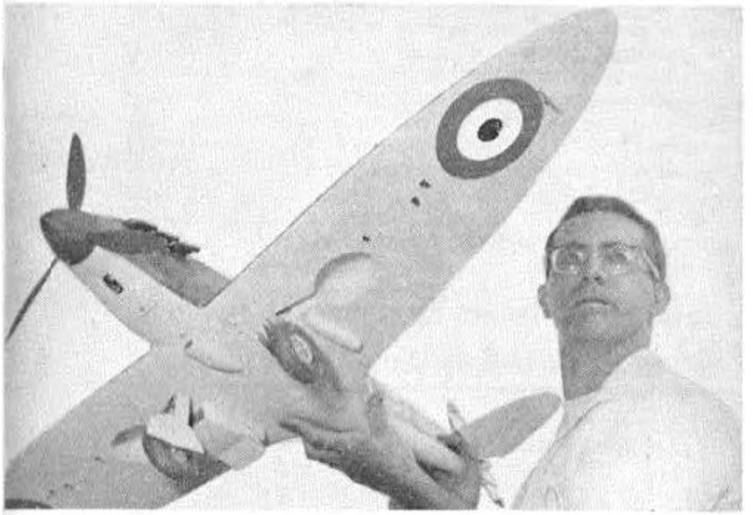
Stunning achievement by Joseph Martin of Warwick, Rhode Island was this *Boeing B47* (prop jet experimental version) with two K & B 45's mounted in the inboard nacelles, whilst the outer jets were dummies. The B47 placed 2nd with 4,632 points and has a steerable pair of nosewheels on its bicycle type under-carriage which tracked very well on take-off having the scale type outrigger wheels to stabilize it. Estimated speed was up to 70 m.p.h. and the model is fitted with full range of controls, navigation and cockpit lights, landing lights and was impressively stable. Considering the structural difficulties, the high aspect ratio swept wing and the under-carriage arrangement, which has created an unenviable reputation for its full-size counter-part, this B47 by Joe Martin deserves every accolade

U.S.A. Nats ★

SEEN BY DICK STOUFFER

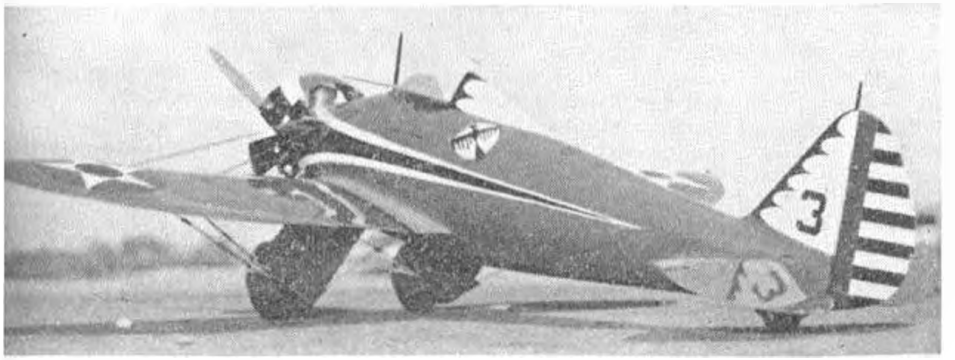
Contrasting with the B-26 opposite is Kenneth Morse's (from Northville, Michigan) Handley-Page Bomber, which was 5th in open class control line scale with 263 points. A Fox 29 is fitted in the starboard nacelle and a Fox 35 on the port side. There is ample propeller clearance but we have no doubt that Ken had a tussle with that very short power moment. Having the engines so close to the C.G. brings an often unexpected controlling problem. Fully rigged with gun in nose cockpit and authentic camouflage, A.M.A. rules give extra points for scale operation, working turrets, flaps, U/C, etc. which will handicap the veteran, especially as there is no other pointing for realism in flight.





At left Larry Simmons with his control line scale *Spitfire Mark I* from Chicago weighs 5 lbs. 4 ozs., has 320 sq. ins. wing, K & B 45 engine and retractable undercarriage. At right is the 1937 U.S. Nats. winning radio control design Chester Lanzo of Rocky River, Ohio, being aired 25 years after its original victory. Model is identical except for modern modifications, including 10 channel radio and a Super Tigre 56 to replace the original Brown. Wingspan is 9 foot, weight 6½ lbs. A number of old hands always turn up at the U.S. Nats.

Fighter types are popular radio control scale subjects in the U.S.A. as they are in Great Britain. Bill Bertrand's 1/6th scale Me 109G from Allen Park, Michigan, has a Fox 59 completely buried within the enormous cowling. Cooling air is apparently taken through the large spinner centre, small fan blades can be seen inside. The model has a span and length of 65 in., weighs 7½ lbs., which gives it a loading of 24 ozs. per sq. ft. It has been used in many previous contests and is equipped with Space Control proportional R/C system. A disadvantage of the larger type of multi channel scale model is that one cannot employ very large propellers and the bulkier fuselages and heavier structural weights demand more thrust than normally required for conventional models of similar size. Bertrand's relatively small three blade prop is an example in this case.



Winner of control line scale was Jerry Worth of Harvey, Illinois, with this *Boeing P-26A*, fitted with an OS Max 49 R/C. This model gained the highest points in the three C/L classes at 321 and study of the photographs reveals a very high quality of finish with shock absorbing scale undercarriage to take the 8½ lbs. landing weight. Throttle control is linked through the Roberts three line system. All controls operate in scale fashion from the cockpit and after his flight, Jerry landed the P26 under power, taxied around the circle and stopped in front of the judges, then cut the engine. A very fine effort indeed. Jerry is also a likeable personality and was very busy helping his fellow modellers get their machines into the air and incidentally this is only the second model he has ever made!

Speed Secrets

Invaluable tips on an approach to speed flying as told to RalphGould by Gus Johnson

AS A NEWCOMER to speed flying, I naturally looked for a successful design before progressing from "29" to "60" models. Gus Johnson's original black painted *Ginmill* is now a familiar sight to most speed fliers in this country, and when I say "original" it must be appreciated that this model is seven years old and has been a consistent and regular contest winner since the original conception of the design in 1954. Some notable official speeds are 155 m.p.h. at the 1954 Tampa, Florida, Jubilee, 160 m.p.h. at the Florida State Championships, 157 m.p.h. at the 1958 King Orange Internationals, 156 m.p.h. at the 1960 British Nationals and 160.9 m.p.h. at the 1961 British Nationals, most of this achieved incidentally, with the same engine. Obviously, the model is a formidable contest design.

The model is designed around the McCoy "60", series 20 racing engine mounted in an aluminium half-pan (available from Paul Pomadi of Nuneaton); is built almost entirely from hardwood and incorporates the Stanzel Monoline system; it is rigged to fly in a clockwise direction and is aerodynamically set up for "circular flight" as a glance at the plan will indicate. This is achieved by engine, cowl and fin *inset*, wash-out and wash-in in the wing panels and forward sweep of the wing. A simple explanation of this set-up is as follows: The model flies in a clockwise direction to utilise the engine torque in the critical take-off stage, helping to keep it on a tight line. At speed, the offsets partly balance the effects of centrifugal force and torque, and in consequence, heavy line tension is avoided. This allows engine power to be utilised to the full with minimum drag from the airframe which would otherwise be flying slightly "nose out" or at an angle to the relative airflow. The Monoline system, with its greatly reduced line-drag, permits a forward pivot point with the model maintaining line tension, hence the 5 deg. forward sweep to the wing. (A fuller explanation of this point is provided in the Monoline *Speedmaster* Unit instruction leaflet.) Do not be alarmed by the large amounts of inset shown on the plan, there is no tendency for the model to "come-in", and it can be flown in high winds in complete safety—the design possesses a marked "grooving" stability.

To start construction, the engine should be mounted in the pan using 4 B.A. screws and incorporating 2 deg. right thrust. Engine mounting lugs will protrude slightly over the edges of the pan and should be filed flush with the sides. It will be noted from the plan that the McCoy prop. driver is discarded and a one-piece driver/spinner backplate fitted in its place, the Pomadi speed pans are cast to fit this modification, which reduces the shaft overhang on the bearings by $\frac{3}{8}$ in. and provides a sturdy assembly which will stand the loads imposed by a mechanical starter. The spinner itself is a cut down Veco Needlenose 2in., and fits the propellor nut with the stud provided, the driver is a simple turning job and keys on to the shaft in the same way as the original. Cut the fuselage crutch from a 1 in. plank of hardwood, preferably of close, straight grain (pine, deal, or passwood if available) and shape and hollow out so that it is a snug fit over the engine and will contain a pen bladder tank, containing 50-60 c.c.'s of fuel, at the same time keeping a good wall thickness, particularly where the hold-down bolts and locating studs fit to the pan. Recess the wing and tail positions in the crutch, being careful to maintain zero/zero incidence, there should be at least $\frac{1}{4}$ in. depth below the wing or the control unit may foul the carburettor venturi when the model is assembled. Cut the air duct in the left hand side of the crutch, just ahead of the hold down bolt opposite the carb. and angled forward slightly and flush with the outside of the model; this ensures a continuous supply of fresh air for the engine without any ramming effect.

Cut and sand the tailplane and elevator from $\frac{1}{8}$ in. 5-ply, assemble with good quality linen hinges and a small brass bush either side of the horn for smooth operation. A small Veco horn, or one made up similar, is ideal for the job—preferably silver soldered or brazed, a failure of this component would be disastrous.

The wing, probably the most important component contributing to the successful performance of the model, should be carefully marked out on a blank and carved and sanded to the section on the plan. Draw the outline and mark plainly *top* and *bottom* to avoid confusion, before drawing in the 40 per cent. chord maximum camber line on the top side and 50 per cent. maximum camber line on the bottom. At the root section, draw a line $\frac{1}{4}$ in. from the bottom of the blank to $\frac{3}{16}$ in. at the tip to indicate the leading and trailing edges, then adjust the trailing edge lines at the tips, using a protractor, to give 2 deg. wash-in on the left and 2° wash-out on the right panel. Cut away L.E. for the Monoline unit installation and tack cement back in place before carving and sanding the wing to section, noting that the leading edge is not sharp but has a diameter of $\frac{1}{16}$ in. to $\frac{3}{32}$ in., and the wing profiles are smooth arcs throughout. After shaping, install the control unit and tip guide tube, ensuring that the unit is completely free and does not bind and that the control line can be attached and removed easily. Temporarily fit the wing and tailplane and link up the controls with the 16 S.W.G. push rod and its supporting push, making sure that the controls

snap back to neutral after operation up and down.

Carve the cowl from laminations of hard balsa and assemble round the engine and crutch so that the whole top half will slide on and off with ease. The cylinder head is left exposed for cooling, and the top lamination of the cowl should be a snug fit around it for maximum efficiency. Note the comparative sizes of the inlet and exit air passages of the cowl, these are important to maintain the correct working temperature of the engine. Finally, attach the cowl with right rotation about the axis of the engine cylinder.

Carve the top and bottom rear fuselage blocks and shape the plywood fin, then roughly assemble the model to check the balance. If this is badly out of place, re-position the wing accordingly before the final assembly; the model should balance at the control unit. Fillet the wing and tail to fuselage joints with plastic wood or soft balsa, then reinforce with gauze and cement before grain filling and painting. Final finish is up to the individual builder, a glass-like finish is not essential, rather aim to get a smooth continuous surface with wet and dry paper and soapy water, before polishing with Brasso. A solid fuel proof finish should be used or the model will soon look very "second hand"—at least 10 coats of fuel proof paint should be used to resist the powerful action of hot fuel.

The dolly is a simple structure of 10 and 12 S.W.G. wire, but remembering that the success of every flight depends upon its efficient working, some care should be taken to ensure that the model fits snugly in the cradles and wing rests, and that it tracks correctly holding the model at zero angle of attack. Use good quality wheels that won't throw their tyres at high speed, if disc wheels with solid rubber tyres are used, it is advisable to wire the tyres to the hubs, and also to bind the inside wheel treads with smooth tape so that it will slide if the dolly does go off track. A 4 oz. weight is attached firmly to the outside leg to prevent tipping and gives the whole assembly some "feel" until flying speed is reached. Final assembly point of the dolly is the centre pin of 12 s.w.g. wire that slips loosely into the pan as close as possible to the back of the engine; before soldering this pin, the following check for the correct rig of the dolly should be made. Put the model in the dolly and hook up the line and handle as though to fly, then try to pull the model round as for take off. If the tailwheel pulls in, move the pin forward, or back if the main wheels pull in until the dolly will remain squarely on the line, then permanently solder the pin in place. The length of the pin should be approximately 1¼ in.

Picture opposite shows author Ralph Gould (jet flying instructor in R.A.F.) with his *Ginmill*, made under the guidance of Major Gus Johnson, U.S.A.F. Below, Don Pinckert (now back in his native California) and Gus Johnson with their successful *Ginmills*, each of which has recorded successes in British National competitions. Note that Gus's own model has an experimental external Monoline installation ahead of the leading edge

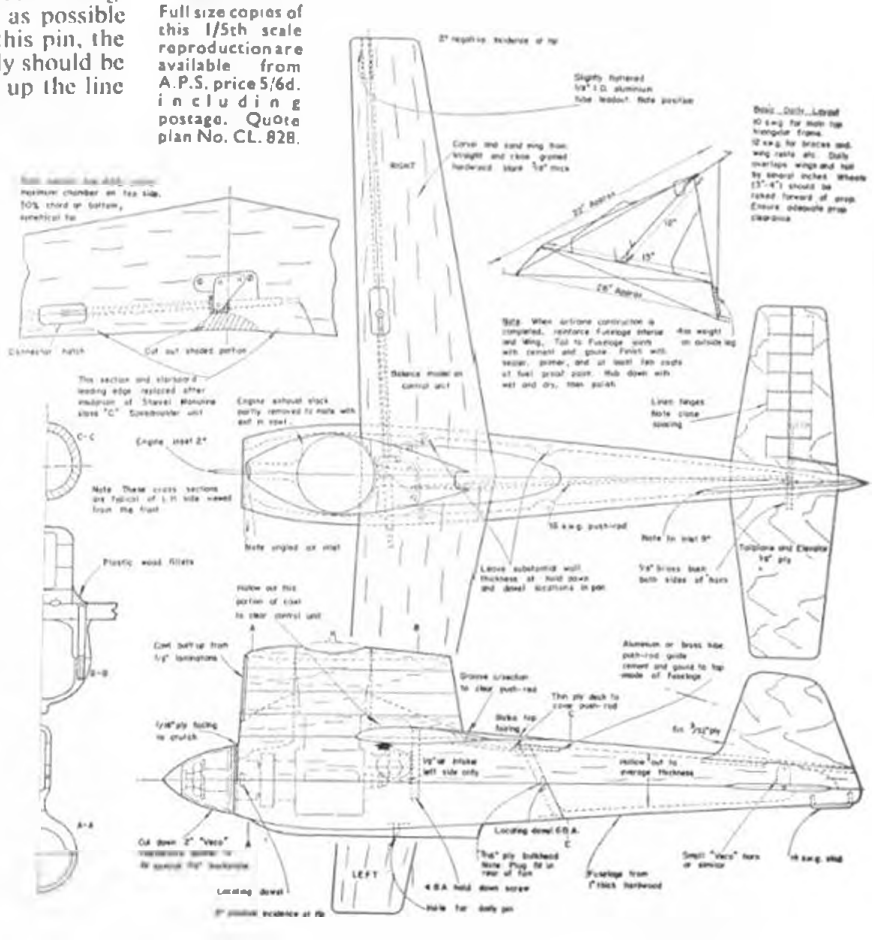
Flying

Assuming that the intending builder has at least flown a Monoline trainer, no great difficulty should be experienced in flying the *Ginmill*, provided that the basic differences between Monoline and two-line control are fully appreciated. It must be remembered that Monoline is trimming control fitted to a basically stable speed model, and full up and down obtainable so easily with two lines is seldom used, except to damp out an oscillation. There is a slight lag in Monoline control, but once this has been experienced and necessary anticipation applied, the control system is quite positive.

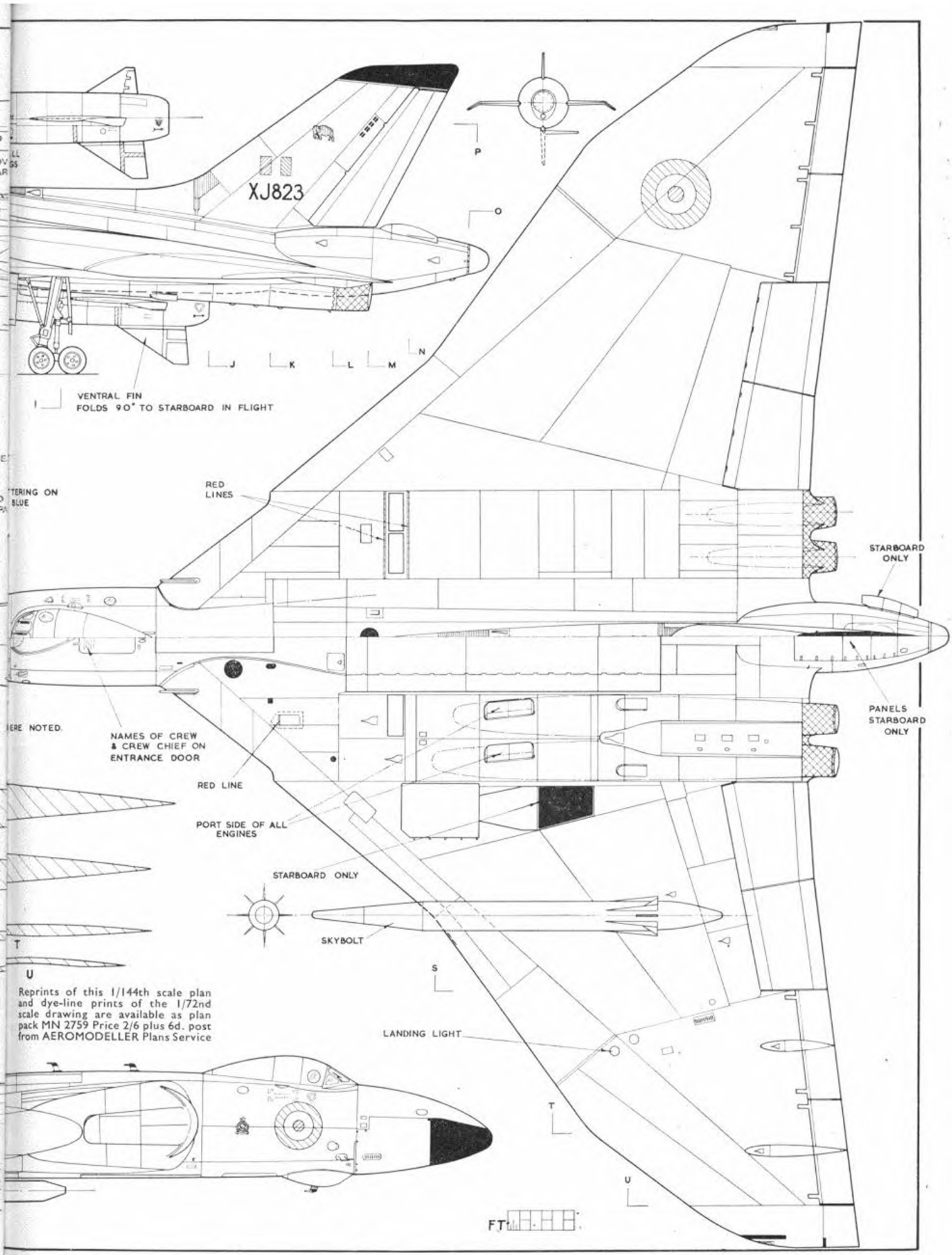
Start the take-off run pointed downwind and hold the model on the dolly with neutral or slightly down elevator until flying speed is reached, usually after a ¼ lap—slight up elevator will then unstick the model and down must be applied immediately to correct the climbing attitude. As the model comes back to level flight, neutralise the control knob then trim it out as it accelerates to top speed. Acceleration as the model leaves the dolly is very good, and the model must be brought back to level flight as quickly as possible before an oscillation starts (which no amount of up elevator will stop on the downhill plunge). Once in the "groove" the *Ginmill* should fly "hands-off". Gus learned to fly Monoline with a hand launched "60" model, so why not give it a try—it's definitely faster than two lines and under present S.M.A.E. line rulings, there are no minimum line diameters imposed as there are in America: A.M.A. rules require .028 in. line, in this country .020 in. or .022 in. should be adequately strong and faster.

Ginmill

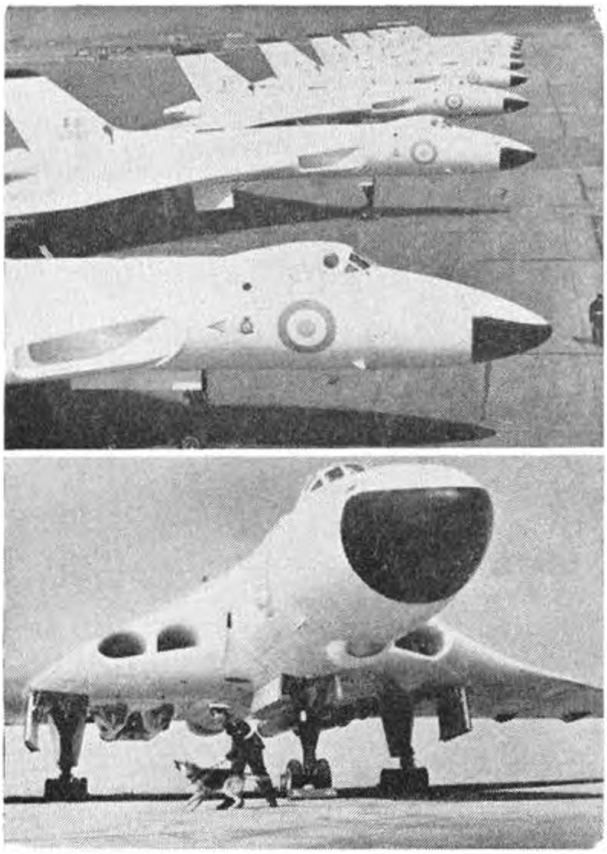
Full size copies of this 1/5th scale reproduction are available from A.P.S. price 5/6d. including postage. Quote plan No. CL. 828.



AVRO VULCAN B MK. II



Reprints of this 1/144th scale plan and dye-line prints of the 1/72nd scale drawing are available as plan pack MN 2759 Price 2/6 plus 6d. post from AEROMODELLER Plans Service



Vulcan B.2 Squadron line-up at left is an impressive sight, also the view from under the nose (with guard-dog keeping unauthorised personnel at a distance). These views were taken by us during the course of study for the plans on previous pages. Below are the Douglas Skybolt and Avro Blue Steel installations on Vulcans. Note the additional blister near the wing tips of the Skybolt carrying XH 563

ability, and round trips exceeding 8,000 miles have frequently been made. Prototype installations of the externally carried missiles have been made on XH 563, which went to the United States for inspection by engineers at the Douglas Aircraft Co. for adaptation to carry two Douglas Skybolts and XH 539 has been carrying the first Avro Blue Steel stand-off bomb.

The Vulcan has demonstrated its extremely high performance in take-off, climb and manoeuvreability wherever it has been displayed and this has been particularly impressive to those who have seen "scramble" take-offs during military exercises. It is a complex weapon system capable of flying very close to the speed of sound, above 50,000 ft. altitude and has an excellent maintenance record. A point which may not be generally realized is that it actually carries *five* jet engines, the extra one being a 90 h.p. Rover gas turbine unit used as a generator for the many ancilliary systems (there are more than 100 electronic motors and actuators). This is buried within the wing as an auxiliary power unit. From the modelling aspect, the wing sections are of special interest and may possibly inspire new thought in the design of model free flight Deltas.

Dimensions:

Span: 111 ft.
Length: 99 ft. 11 ins.
Height: 27 ft. 1 in.

AEROPLANE IN OUTLINE No. 64

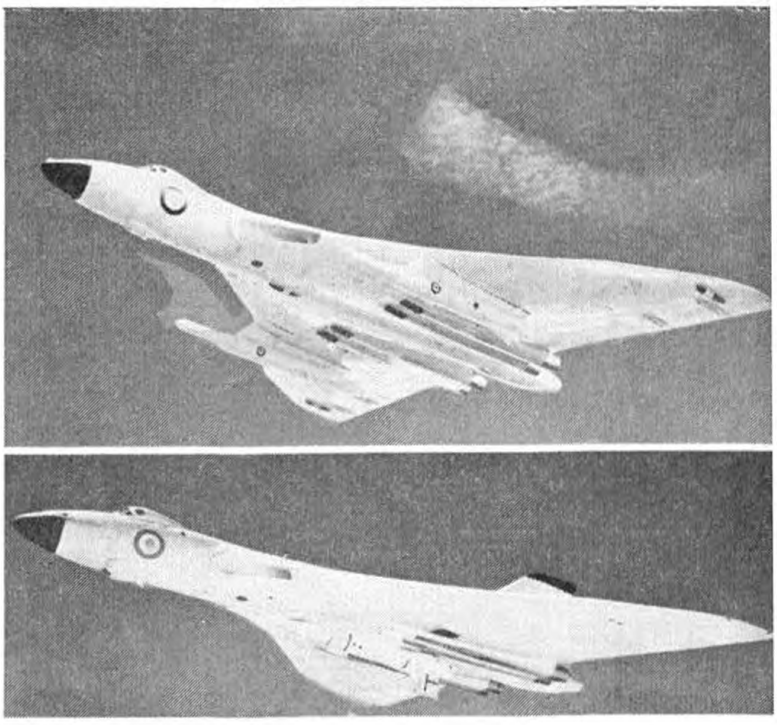
AVRO VULCAN B.2

DRAWN BY D. H. COOKSEY

BRITAIN'S FIRST bomber to be specifically designed for carrying a stand-off bomb or large air-launched ballistic missile, the Avro Vulcan B.2, is now well established in Squadron Service. The Commanding Officer's aircraft of No. 27 Squadron is illustrated in our 3-view drawing and another Squadron, the first in fact, to receive the Avro Vulcan Mark I and also the Mark II, is No. 83. Each of these Squadrons is based at R.A.F. Scampton.

Externally, an immediate recognition feature of the Mark II is its lower set nose due to the shorter nose wheel leg, which brings the fuselage almost parallel to the ground line. Closer examination will show the increase of wingspan by 12 feet and the change in the control system. Whereas on the Mark Ia conventional aileron and elevator system was employed, the Mark II uses elevons. This is to remove aerodynamic buffet limitations and enables the aircraft to take advantage eventually equipped with the 20,000lb. thrust Olympus first verions being produced with the 17,000 lb. Olympus as compared with the Mark I's 13,500 thrust jets.

The bulged rear fuselage extension with electronic counter-measures equipment, which first appeared on the Mark IA, is now a standard feature of the B.2 and also the flat aerial plate which bridges the gap between the starboard jet nacelles. Fitted for in-flight refuelling, the Vulcan B.2 has an extreme long distance cap-



Club News

FIRST CLAIMANT TO correctly identify 3 tins bearing the name of a famous Tobacco brand and containing modelling gear and tools will have his goods returned by N. P. Nielson of 90 Copse Avenue, Westwick Lane, Kent, who found them near the C/L circuits at the Nats! Item for *all* to note is that the 1962 **South Coast Gala** is *cancelled*. Efforts to find a suitable airfied have been unsuccessful and rather than use an inferior place, they've decided to cancel.

Proposed site for the **S. EASTERN AREA** Slope Soaring meeting in November, is at the well known landmark the Wilmington "Giant" just off the A27 between Polegate and Lewes, a first class site with almost 360 deg. faces, so it is claimed in "*Seadog*." Must be a task to get to the top!!

John West of **Brighton D.M.A.C.** followed up his success in the Shelley by winning the Power at Northern Heights, the Surbiton Gala and Devon Rally, and Ken Winstanley won the Glider at the Surbiton Rally while Fred Boxall was placed fourth in the Rubber. It is also confirmed that John West flying a *Mercury Mentor* won the Gamage Cup, and that Dennis Latter and Ken Winstanley came second and third in the Pilcher Cup—good going by the south coasters!

In **LONDON AREA**, the 1962 **Blackheath Gala** will be held at Chobham Common on October 21st. Flying commences at 10.00 a.m. and contests are for U/R Rubber, Power and Glider. Entries will be 1s. 6d. For further details contact P. Crossley, 11, Broadfield Road, Catford, London, S.E.6.

Hayes M.A.C. Rally will be on October 7th at Chobham Common. Classes to be flown will be Glider, Rubber, Power and ½A Power. In the first round of the LONDON AREA Knock-out Comp. Hayes team (Rubber, Power and Glider) won against **Springpark**, but it was a hollow victory as the opponents could only raise two models with which they turned in far better times.

A lot of ½A Team-racing activity is evident at the present time, the most popular motor is the Oliver Cub. At the last S.M.A.E. speed meet at Oakington, the K. Lindsey—G. Copeman group placed in F.A.I. Class, and J. Taylor placed in Class 2 and 3. Kevin Lindsey's *Rossi Vulcan* Jet entry struck fuel trouble in the shape of a quart can standing on the tarmac, this has temporarily silenced it.

The Club has put on two displays, one at the National Physical Laboratory, one at the Thames Valley Grammar School where they had an audience of around 1500 to see a Speed flight of near 150 m.p.h. with a McCoy 60, a precise stunt exhibition by Jeep Newman, Combat, and a six in a circle finale with an obstacle course. They had the aid of the **Feltham, Kenton** and **Northwood** Clubs and hope to provide a few pounds towards the cost of sending the British C/L Team to Kiev—£8 in fact.

The Hayes Circuit, Charville Lane was officially opened on Saturday July 28th at 2.30 p.m. by Councillor Burke, the Chairman of the Council. Members of Feltham, Northwood, Kenton and Esher clubs also took part. Rather fortuitously, the first official flight, by John Taylor of Hayes, was the fastest ever recorded by a Hayes model, 147 m.p.h. with a McCoy 60-20 job swinging a hard-carved 8 x 13 in. Maple prop. Altogether, Speed, Stunt, team race, Combat, Scale and sport-type models were demonstrated.

Cosmo A.C. demonstration team have performed twice recently. Once for the Meopham Scouts Camp Day and another for A.E.I. Ltd.'s Gala Day.

In the latter, the normal schedule was changed so as to include a demonstration of One pilot flying two models, by Stan Robinson. This proved to be highly successful and entertaining.

Aubrey Tick, is experimenting with a 61 in. span stunt model of 660 sq. ins. area. It has a detachable nose so that various engines can be fitted. Although designed primarily for an Oliver Tiger 2.5 c.c engine it is hoped soon to be powered by an E.D. Super Fury 1.5 c.c. engine, since the model has a very light wing loading of 6 ozs. per square foot.

Wanstead A.C. have decided to split their rally over two dates. First, for Class B combat and B T/R will be November 4th. More details later. Contest minded modellers will be welcome new members —contact D. J. Bolt, 14 Marston Road, Ilford. They amuse themselves at club meetings with Cox .010 R.T.P. 100 lap Rat Racing (one stop compulsory). Models have to be flown one at a time for safety.

Owing to growing crops **Debdenairs M.F.C.** club F/F comps have had to be postponed, but they should be under way again by September 2nd, when several "*Garter Knights*" will be in attendance. Things being very quiet lately, it was decided to hold a display in the local library foyer with the kind co-operation of the librarian, together with his books on flying subjects, including several recent issues on modelling topics and photos on loan. This has been tied up with reports and photos in two of the local papers

Public Libraries induce us to use their facilities. Debdenairs M.F.C. took them up in a unique manner, and obtained considerable local publicity with this display of latest books and models

Mike Burrows of St. Albans won the Pilcher Cup and was also 2nd in the Open Glider at Surbiton. Devon Gala was attended by a few members and there, Mike Burrows flew a rubber powered *helicopter* in the open *rubber* event but lost it after staying in sight for 2 mins 8 secs! Latest models on the build are two Autogyros, one for .5 c.c. and 1 c.c. and yet another head skinning *Charybdis* (large) for 3.5 c.c.

The free flight lads have had a good time of it lately, four **Whitefield** members flew for the **NORTH WESTERN AREA** in the recent Champs and took 2nd, 3rd and 5th Power places at the Rush Trophy, Toolan and Bailey (5th and 2nd) both using *Dixielanders* with *off-set* pylons and Day Glo colour schemes. No trimming troubles with this off-set and the Day Glo patches are a boon for spotting in corn. *Farmers will always* retrieve, they find, *if* you show them where the model is. Local Gala at Prestwich saw the control-line boys in action for two half hour demonstrations. It's the one time of the year when John Citizen likes big noisy motors, and a small well drilled team of control-line flyers can really fetch the crowd around the circuit. Using a Gala as a sort of extra club meeting with higgledy piggledy flying is a waste of time, and boring for the spectators. Take a tip, get a small team, fly to a pattern for ½ an hour, and finish with *everybody* in the middle.

A model club has been formed at **R.A.F. Wilmslow** in Cheshire, and extends an invitation to all civilian model fans in the Area. Present membership is ten, all of whom are extremely keen, with two large rooms at their disposal, where they can build day and night, and run engines until they melt, without any interference! Contact Cpl. Johnson, 27 Tudor Road, A.M.Q., R.A.F. Wilmslow.

An exhibition of models is being organised by the **South Manchester Model Group** and is to be held in the Stamford Hall, Altrincham,

Contest Calendar

September 19th — *Irish Free Flight Nationals.* English modellers welcome. Details from P. Brennan, c/o Royal Bank of Ireland Ltd., Dundalk, Co. Louth, Eire.

September 23rd — *Northern Area "Air League Rally".* Open Rubber, Glider, Power, ½A Power, Single, Multi R/C, ½A, A, B T/R Combat, Scale, Solid and Plastic Scale. R.A.F., Elvington, Nr. York.

September 23rd — *Crawley M.A.C. Rally.* Open Glider, Rubber, Power, ½A Power, Chuck Glider, Combat, Pre-entry Combat 2s. 6d., P. Cameron, 31 Slafford Road, Crawley, Sussex. Venue, Great Buckswood Farm on A264, turning off A23.

September 30th — *Esher D.M.A.C. F.A.I. Team Race* event. at Esher flying site, Fairmile Common, on A3. Pre-entry 2s. 6d. to I. W. Creighton, 27 Harvey Road, Walton-on-Thames, Surrey.

October 7th — *Hayes M.A.C. Rally.* Open Glider, Rubber, Power and ½A Power. Chobham Common.

October 13th — *F.A.S.T.E.* Rat Race, Stunt and Combat at U.S.A.F. Lakenheath, Suffolk.

October 14th — *Lincoln Aeromodeller's Rally.* Open Glider, Rubber, Power, Single Channel R/C. Jr. Chuck Glider event. R.A.F. Wigsley Nr. Lincoln, details: P. Wyatt, 1 Wharfdale Dr., Fosse Est., Lincoln.

October 14th — *Luton D.M.A.C. Slope Soaring Contest.* Ivinghoe Beacon, Nr. Dunstable, Chiltern Hills. R/C Multi and Single, Free Flight and Chuck Glider, Entry fee 2s. 6d. R/C, 1s. 6d. F/F. Pre-entry to D. W. Bateman, 14 Ridgeway Drive, Dunstable, Beds.

October 21st — *Blackheath Gala.* Open Glider, Rubber, Power. Details: P. Crossley, 11, Broadfield St., London, S.E.6. Venue Chobham Common.

October 21st — *Northern Area F.A.I. Meeting* (except C/L Speed). R.A.F. Elvington, Nr. York.

November 4th — *Whatfedale 1000 lap T/Race.* Class B Racers. R.A.F. Rufforth. Pre-entry 2s. 6d. to C. Secker, 36 Rockwood Avenue, Leeds 9.

November 4th — *St. Albans M.A.C. Gala.* Open Rubber, Glider, Power, ½A Power, Chuck Glider, R/C Single Channel Spot Landing, Chobham Common 10 a.m.—4 p.m.

November 11th — *Croydon D.M.A.C. Gala.* Open Rubber, Glider, Power, ½A Power, A1 Glider, Coupe d'Hiver, R/C Spot Landing. Chobham Common.

SMAE Contests

September 23rd
Control Line Speed and Stunt
AEROMODELLER Trophy (R/C Multi control) } *R.A.F. Odiham*

September 30th
Model Engineer Cup (Team Glider)
Weston Cup (F.A.I. Rubber) } *Area*
Power (½A) } *Centralised*

October 14th
White Cup (U/R Power)
Frog Junior (U/R Rubber/Glider) } *Decentralised*

Ches. (near Altrincham and Bowden Railway Station) on Friday October 5th for three days.

Oldham Club gave a display and had Frank Warburton the stunt champion appear in it, with his Fox 40 powered Stampe *Monitor* and his *Picchio*. Oldham members took radio models, but owing to the gusty weather could not fly them. They included J. Mellor's K.B. 45 R/C powered *Smog Hog*, E. Schofield's *Gee-String* powered by Super Tigre G 56 R/C, also J. Shaw's Veco 19 R/C *Super Sixty*. Some of the local A.T.C. lads also brought C/L scale models.

At the first meeting of the newly formed **"Blackwood and District Model Aeronautics Club"** in **WALES**, new officers were elected. Local unattached modellers are asked to contact L. Salmon, "Hafod", Highfield Road, Pontllanfraith, Mon.

As the number of competitions attended by **NORTH EASTERNERS** mounts up, **Novocastrians**, also count up the cost of repairs. After the long drive down to High Wycombe, J. Muncaster had his two new models smashed, and the Wallace Laurie team will want a new motor after the 300 laps marathon final. At the Scottish Gala the same team had another model "dig a hole in the tarmac" after a 4:39 heat; but things such as these are forgotten when the Dugmore-Bell-Roughead team set up a new record for the Class B (Eta 29) with the very fast time of 6:35.6 at the Scottish Gala.

Two flying displays were held by **Colchester M.A.C.** at local fetes, which resulted in many inquiries from **EAST ANGLIA** and an increase in club funds. On August 5th they invited members of **Harwich M.A.C.** over for a get together. Weather was perfect and a very enjoyable time was had, not counting three broken P.A.W. 1.49 con rods! A power-ratio contest was held the week before, using *Poppets*, M. Bolingbroke being the winner.

F.A.S.T.E. Club has been very busy of late, hence the lack of news for publication. They had a successful Nationals, and great success at the U.S.A.F. Meet held at Molesworth early in July. They invited a number of well-known British modellers to participate, most of whom met with some success, as the results will show. It was a fantastic day for Speed, there was 30 deg. humidity in the air, and the air temperature was about 65 deg. to 70 deg. F., which led to a top speed of 171.6 m.p.h. in Class C Speed, by Gus Johnson with *Gimmill* as detailed on pages 502/3 of this issue. The winner of "B" Speed at the Nationals, Hall/Yeldham, only managed to come in 4th, and turned the same speed on this occasion as they did at the Nats!

There were some gasps of surprise when Ralph Gould flew his Jet as the first and only run produced a speed of 173 m.p.h.! Unfortunately there was no pylon available, so the speeds could not be put forward as records, but were timed by unbiased modellers from a different club.

The Banquet afterwards to which all were invited was a great social success. You should have seen the Twist!!! All the wives present voted the meet (particularly the social events following the more serious flying time) a winner.

The July Speed Meet at Oakington saw Ralph Gould set up a new British Jet record, which has been sent in for ratification. We feel sure that this record will not last long, and can be increased by several m.p.h., if Ralph can be more fortunate with the weather, on this occasion there was 90 deg. humidity, like flying through a puddle!

The F.A.S.T.E. Club will be running a Contest on October 13th, 1962, at U.S.A.F. Lakenheath, Suffolk. This is to celebrate the opening of a Modelling Shop for the Base Aeromodellers. Events will be Junior and Senior Class 2 Rat Race, "A" Combat and Stunt. There will be trophies down to third place for each event. The Junior Rat Race trophies will be of equal value to those for the Senior event. Flying will all be over grass, so Rat racers will need good sized tyres. No F.A.S.T.E. Club members will participate. Refreshments etc. will be available. There are no entry fees, and the flying will commence at 10 a.m. Entry will be closed at 12 Noon. No age limit at all, anyone between 9 and 90 welcome.

Results of U.S.A.F. Molesworth Meet

Class "A" Speed	1. Hank Nixon	127 m.p.h.
	2. Tony Carpenter	117 m.p.h.
Class "B" Speed	1. Don Pinckert	157.2 m.p.h.
	2. Gus Johnson	155.6 m.p.h.
Class "C" Speed	1. Gus Johnson	171.6 m.p.h.
	2. Don Pinckert	161.4 m.p.h.
Jet Speed	1. Ralph Gould	173 m.p.h.
F.A.I. Speed	1. N. Butcher	126.2 m.p.h.
	2. Pete Wright	117.5 m.p.h.
F.A.I. Team Race	1. Yeldham Hall	4.40 mins.
	2. Johnson/Pinckert	5.02 mins.
Rat Race	1. Chas. Taylor	7.41 mins.
	2. Ron Lucas	8.24 mins.
Combat	1. Don Pinckert	
	2. Bob Miller	
Scale	1. Ron Lucas	
Stunt	1. "Jeep" Newman	
	2. Frank Warburton	
½A Free Flight	1. Jack Swatek	11.12 mins.
	2. Gus Johnson	11.00 mins.
"A" Free Flight	1. George French	15.00 mins.
	2. Don Pinckert	14.23 mins.
A/1 Glider	1. Gus Johnson	12.50 mins.
	2. G. D. Bolt	11.57 mins.
A/2 Glider	1. R. D. Godden	14.02 mins.
	2. H. James	13.05 mins.

The Team Trophy was won by the F.A.S.T.E. Club.

Thirteen **WESTERN AREA** members from **Weston Controliners** attended the Nationals this year, Dave Christopher came fifth in the Gold with his latest twin boom stunter. At the Northern Heights Gala, Pete Healey came first in the combat and Roger Dudley was third in helicopter event, with his *Jumpin' Bean*. Further success was gained at High Wycombe with Roy Burgess first in combat and Dave Christopher third in stunt. Pat Teazle won the spot landing event at a recent Radio Control rally at Stroud.

Tiverton M.A.C. recently held their Annual General Meeting at which new officers were elected. New secretary is E. G. Salisbury, 5 Loughborough, Tiverton, Devon. It was also decided to concentrate the club's activities on C/L Combat and Rat Racing, but also to introduce Chuck Gliding and Free Flight with a view mainly to attracting new members.

In the **MIDLANDS** a profit of £8 odd resulted from two **Leicester M.A.C.** C/L demonstrations, and the Committee has decided to form a demonstration team as a result. They are also investigating the remote possibility of obtaining by *fair means or foul*, the land for sale (at £9000) on Market Harborough 'drome.

Club member D. England reports his experience of the Clwyd Slope Soaring Rally, using an A/2 specially designed and built for the event. Unfortunately the first flight made with the model proved to be its last, for after launching from the usual position about 1000 ft. up on the side of Moel Fammau near Mold, they watched it gradually dwindle and vanish against the panoramic landscape stretching towards distant Snowdonia. However, it recorded 2 min. 10 secs. and was placed fourth in the class. He is now a confirmed slope addict and is looking for a replacement Elmic "Universal" timer so that he can start building another similar model.

Lincoln Aeromodellers' Rally in the **EAST MIDLAND AREA** takes place at Wigsley Airfield on October 14th, 1962 for Rubber, Power, Glider and S/C Radio Control, plus a Chuck Glider Comp' for Juniors. Chuck is free. All events are 2s. 6d. Pre-entry to:— P. Wyatt, 1 Wharfdale Drive, Fosse Est., Lincoln, or 3s. 6d. entry on the day and all competitors must have full S.M.A.E. insurance.

In the **NORTHERN AREA** combat boys couldn't compete. The sad experience of strong wind at the 1962 **Wharfedale C/L** Rally has not deterred arrangements for next year, and a provisional date has been fixed for Sunday 23rd June, with Rufforth as the proposed venue. All T/R classes will be held, with also Combat as a minimum. More on this later. Ken Long and Les Davy have been preparing for their trip to Kiev for the World Champs, and great things are confidently expected.

Five Towns M.A.C. have at last found a summer flying field for C/L only. Rat Race is popular using 3½ c.c. engines and 50 ft. lines. Results of their last half-hour duration Rat Race are:—

1st C. Wilshaw 402 laps.
2nd E. Clutton 398 laps.

Thanks to a club auction, funds are improved by £13.

THE CLUBMAN.

Rally reports

Surbiton Gala was held at Chobham on Sunday July 29th on probably the best flying day of the year. Wind was light and as the sun hardly appeared, it was not too hot. Standard of flying was high and a fly-off was required in *all* events. So far as is known no models were lost and everyone enjoyed themselves. The club makes no profit as the entire entry fee is handed back in prize money and prizes run down to 4th place in the 3 main events. J. O'Donnell won the Gala Championship as planned. He would have got the Smiths Electric wall clock anyway. The club omitted to say that the wall was a *canteen* and the face 2 *feet* in diameter! He took the joke well and everyone had a good laugh. He also collected a chrome pot as well for luck.

Power—Fly-off times—(35 entries)

1. J. West	*Brighton*		5:00
2. G. French	*Essex*		4:17
3. A. Young	*St. Albans*		4:16
4. Cook	*Canterbury*		4:10
5. Doyle	*Belfast*		4:09
6. G. Fuller	*St. Albans*		3:32
7. T. French	*Wayfarers*		2:58
8. Sladden	*Canterbury*		2:29
9. M. Brown	*Reading*		1:44
10. P. Manville	*Bournemouth*		——

Rubber—Fly-off times—(29 entries)

1. R. Lennox	*Birmingham*		6:12
2. J. North	*Croydon*		5:35
3. J. O'Donnell	*Whitefield*		5:19
4. F. Boxall	*Brighton*		5:10
5. B. Rowe	*St. Albans*		4:32
6. Stracham	*Exmouth*		4:27
7. Wells	*Hornchurch*		4:25
8. Sherwood	*Hornchurch*		3:27
9. Godden	*Cambridge*		3:21

Glider—(57 entries)

1. K. Winstanley	*Brighton*		9:00 + 3:37
2. M. Burrows	*St. Albans*		9:00 + 2:30
3. J. Manville	*Bournemouth*		8:10
4. N. Elliott	*Croydon*		8:12

½A Power—(15 entries)

1. G. French	*Essex*		9:00 + 4:20
2. K. Smith	*Croydon*		9:00 + 1:55
3. G. Fuller	*St. Albans*		8:04

Gala Champion
J. O'Donnell ... *Whitefield*

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This year the **Rush Trophy Gala** was moved from the normal site of Newcastle Town Moor to the deserted aerodrome of Thornaby-on-Tees, North Yorks. Attendance was similar to '61 in the free flight events; but this year the airfield permitted team racing which drew 55 more competitors. No perfect scores were obtained in Glider, only one in Power but six reached the rubber fly-off. Standard of flying was not exceptionally high but competitors had a stiff breeze to contend with during the morning and early afternoon periods, this taking its toll of glider wings and rubber models; all competitors were required to show evidence of insurance and the need for this was evident when one power model (of comparatively small area) with a 5 c.c. glowplug was seen rapidly disappearing vertically on an overrun!! When the D/T operated, breaking the wings and sheading the whole tail unit; the fuselage plummetted back to earth in very quick time fortunately falling on to open ground. Spencer of Ashton topped Glider and Mike Proctor (Baildon) having lost his model on the 2nd max, completed his 9 minutes with an ETA 15D unballasted FAI model. The Whitefield contingent (minus John O'Donnell who was busy at the Indoor Nationals) kept up the good work with second and third place in Power. In the rubber fly-off six prominent modellers fought for top honours. Both Peter Montgomery (Kirkcaldy) and Ron Pollard (Tynemouth) spiralled in and Tom Stoker almost did before recovering to settle down to the 4:09 winning flight. All the models in the fly-off exceeded 4 minutes but the lower official times were due to bad background; Stoker's model reached a greater height than the others and benefited accordingly. Re-entry was allowed in the F/F comps at a further fee of 2s. 6d.; this helped Henry Tubbs into the rubber fly-off and almost did likewise for "Wuz" Wiseman of York with his O/D ½A TD 049 power job. Tom Stoker (Baildon) was the Rush Trophy winner and he received an additional prize of useful glassware for his efforts. Each man in the rubber fly-off also received a prize. The control line events proved to be a Wharfedale benefit; but besides winning all four events this active Northern T/R club helped organise Combat.

The Novocastrians made a good job of their annual gala and so long as their excellent club spirit prevails all is set fair for further enjoyable meetings in the North-East.

Power

1. M. Proctor	*Baildon*		9:00
2. J. Bailey	*Whitefield*		8:23
3. J. Parrott	*Whitefield*		7:55

Glider

1. Spencer	*Ashton*		7:30
2. P. Wyatt	*Ashton*		7:25
3. P. Liddell	*English Electric*		7:03

Rubber

1. T. Stoker	*Baildon*		9:00 + 4:09
2. C. Rennie	*Tynemouth*		9:00 + 3:55
3. H. Tubbs	*Baildon*		9:00 + 3:45
4. D. Morley	*Lincoln*		9:00
5. P. Montgomery	*Kirkcaldy*		9:00
6. R. Pollard	*Tynemouth*		9:00

½A Team Race—(13 entries)

1. Hughes	*Wharfedale*		10:38.4
2. Bellamy	*Wharfedale*		11:07.3
3. Whitwood	*Stanley*		11:13

F.A.I. Team Race—(16 entries)

1. Davy Long	*Wharfedale*		5:22.3
2. Drury	*Rotherham*		5:36
3. Kirton	*R.A.F.M.A.A.*		5:59

Class B —(10 entries)

1. Horton	*Wharfedale*		7:21.2
2. Northage	*Wharfedale*		9:04
3. Yates	*Leigh*		10:40

Combat—(16 entries)

1. Lee	*Wharfedale*
2. Bell	*Ashington*

Rush Trophy Winner: Tom Stoker—*Baildon.*

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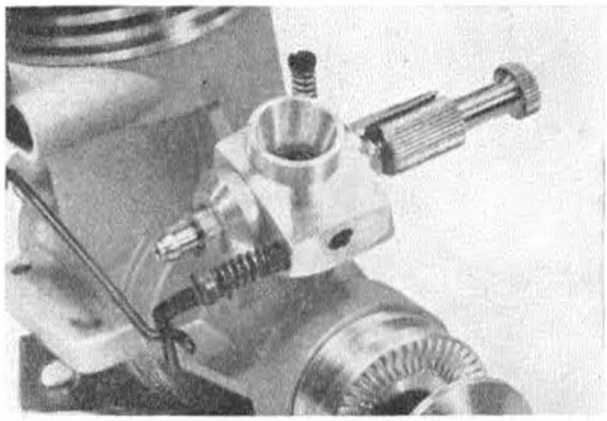
Merco 49 R/C test *(cont. from p. 491)*

on top. The ¼ in. diameter fully floating gudgeon pin is hollow and fitted with aluminium end pads. Piston walls are quite substantial and total weight of the piston plus rings is a little under ¾ ounce. The gudgeon pin is of hardened steel, ground and honed to finish. The connecting rod is a forging in light alloy with plain bearings and drilled with lubricating holes at each end.

The ½ in. diameter crankshaft is turned from EN.1A steel, case hardened, ground and fine-finished. The crank web is cut away for counterbalance and the solid crankpin is ¼ in. diameter. The ½ in. diameter length is maintained up to the front bearing, where it steps down to .315 in. diameter (8 mm.) and thence (outside the bearing) to the ¼ in. diameter threaded propeller shaft. The dural prop. driver is secured by a split steel collet on the 8 mm. length of shaft protruding from the front bearing. Both races are S.K.F. high-speed type. Shaft port is rectangular, approximately ½ in. x ⅜ in., opening into a ¾ in. diameter central hole.

The carburettor unit is fabricated in dural and consists of a body unit plugging into the stub intake in the crankcase casting, where it is located and secured with a screw on each side. The brass spraybar is assembled through the body and encircled by a barrel throttle linked to an external lever. This lever is coupled to a centrally pivoted exhaust flap to close the exhaust opening progressively with barrel rotation.

Two adjusting screws are fitted to the carburettor body. One acts as a stop for the barrel movement for location of the degree of slow speed opening. The other controls the opening of the air bleed hole leading directly into the throat of the intake. This opening is masked off by rotation of the barrel at "open" throttle setting and thus is effective as an air bleed only at low speed settings



Close up of production type carburettor with forward facing air bleed for slow speed setting

when the barrel opening uncovers the hole. The whole carburettor unit and its linkage is very well made and positive in action and adjustment. The needle valve is locked by a spring and serrated thimble "ratchet" action, is light to adjust but holds exact settings. The throttle arm is on the right hand side (the same side as the exhaust) and the needle on the left.

Summarising, an engine of the highest quality throughout which should establish a lead in "multi" R/C work throughout the world. Whilst the specific output of .09 B.H.P. per c.c. is not as high as that achieved by many racing glow motors, it must be remembered that this is produced at a comparatively modest r.p.m. figure—and a figure, incidentally, which is about the ideal for radio control or large stunt control line work. It is certainly the most powerful engine of its type we have received to date—and a real pleasure to handle.

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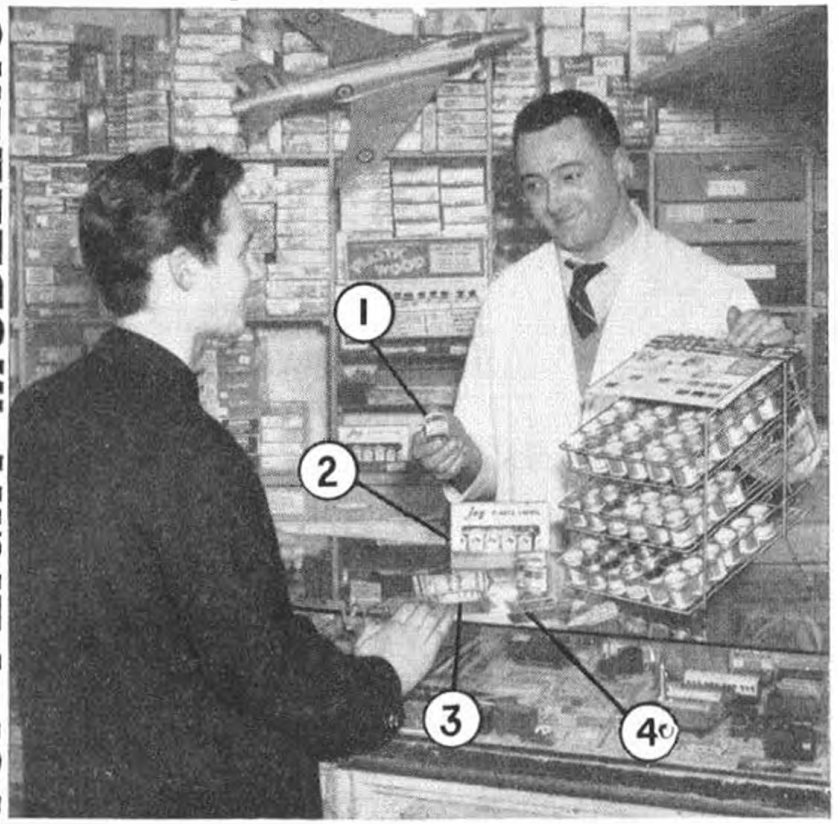

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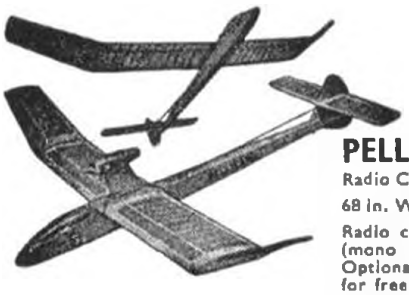

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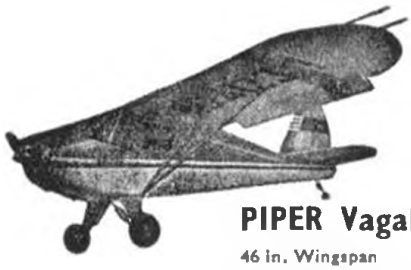

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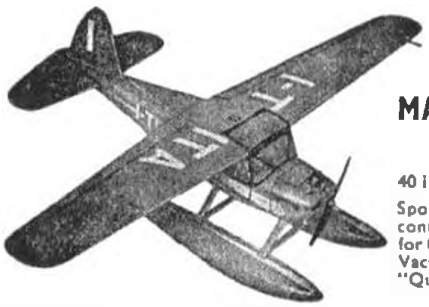

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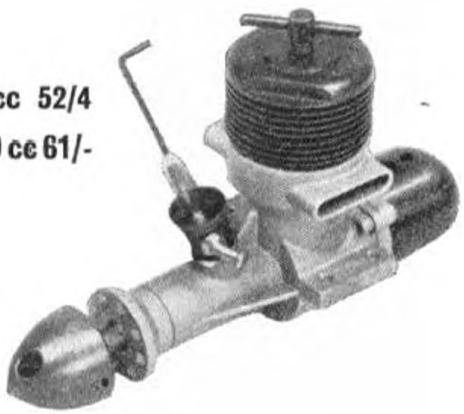

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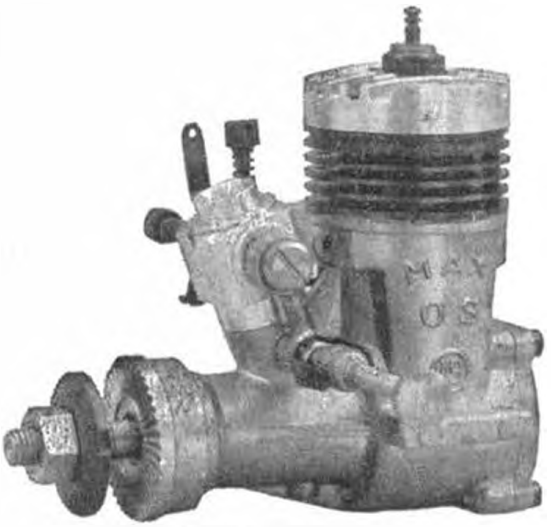

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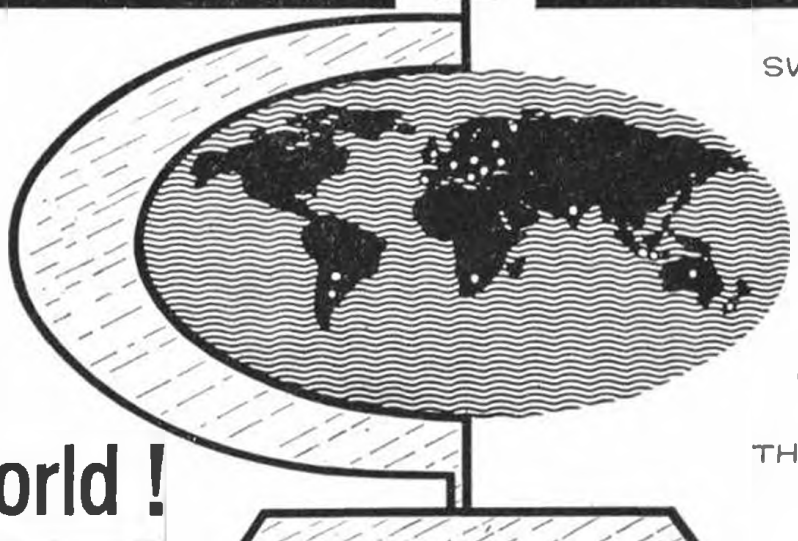

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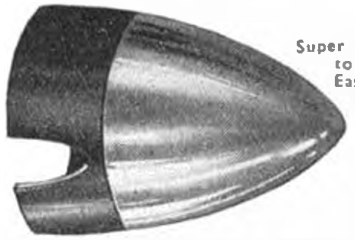

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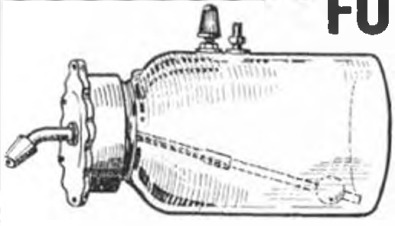

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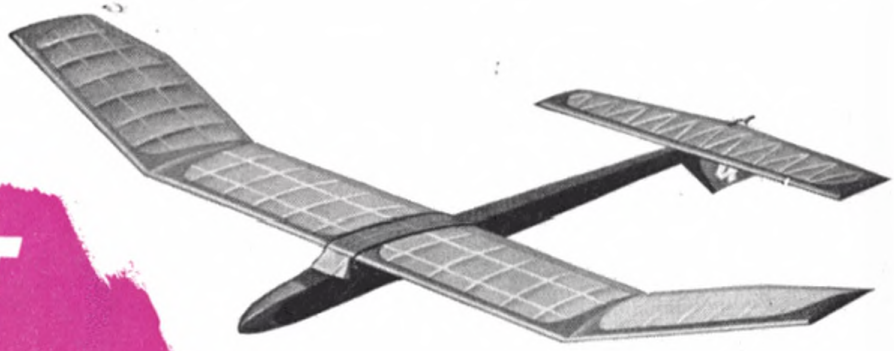

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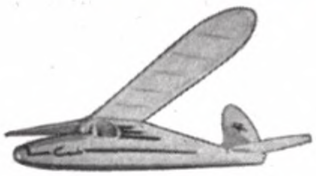

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