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Editorial Director**D. J. Laidlaw-Dickson****EDITOR****R. G. MOULTON**

AERO MODELLER

**HOBBY MAGAZINE****other modelling angles . . .**

The radio control aircraft enthusiast should be stimulated by a thorough analysis of all the models competing in the World Radio Control Championships at Genk, Belgium in November *Radio Control Models and Electronics*. Supporting photo features will provide inspiration for that next aerobatic model. A two page plan features a small pylon racer for those who wish to try fast flying. A new beginner's series starts this month describing the meaning of radio control and its applications. Starting with the absolute basic beginnings, we hope to guide new modellers to successful proficiency. For those who wish to learn more on theory; the problems are answered simply in a supporting article. Boat modellers will enjoy following the construction of a kit superhet and, in support of proportional control (successful at the World Championships), a do-it-yourself sophisticated system is described. In addition to the ever popular batch of "Gadgets", Equipment Tests and Review of Commercial Goods, there are two simple approaches to better radio; one a fine position boat steering device, the other an even simpler servo amplifier. A three-foot motor yacht which will appeal to many modellers is a big feature of November *Model Maker & Model Cars*; of equal interest will be a simple "mechanical" means of obtaining proportional control on multi channel radio gear. The A class yacht championships, barque "Forthbank", steam lubrication and other features make up the marine side of the issue, car modellers will have the Indianapolis Lotus-Ford, 1914 Mercedes, chassis-less metal construction, tabulated car motors, Cranshaw's Lotus 18, and other useful articles to enjoy

November 1963

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cover

Most successful Open Rubber class design this season is undoubtedly Derl Morley's 48 in. lightweight which, in its first four contests, reached the fly-off in each and won no less than three of them. At Northern Heights Gala, Derl collected the Fairey Cup with 9:25 fly-off time, at Abbotsinch he won the Scottish C.M.D. trophy with 9:45, at the South Midland Gala, Cranfield, the fly-off time was 5:56 and at the Northern Gala, R.A.F. Church Fenton Derl placed 3rd with fly-off time of 4:43. Overall length of the big fuselage is 52 ins., wing chord is 5 ins. and tail area 80 sq. ins., making it 34 per cent. of the wing area. The airframe weight, complete with 24 in. diameter by 28 in. pitch propeller is only 3 ozs. Weight saving structure includes sliced ribs, with tapering box and inverted "T" section wing spars. The wing airfoil is 10 per cent. thick and of the flat bottomed type as used on John West's power model, which we featured in July issue. Motor run is 70 seconds on 710 turns of the 44 in. long, 16 strands of 1 inch Pirelli. Quite a power house—no wonder it has been so successful!

next month . . .

Bumper Christmas Edition—a much enlarged issue with extra pages and our traditional free pull out full-size plans, including one for Pal Joey, a neat and tough little radio sportster specially designed by famous American magazine editor and model designer Bill Winter. Simple lines and docile performance on any .8 c.c. engine will make this one of the most popular plans we have ever published. Retractable Undercarriages includes something all team race enthusiasts have waited for in the form of Kjell Rosenlund's retracting single wheel. Col. Bowden reminisces with food for thought on engine types. Engine Analysis will be the unorthodox horizontal piston, Aero 35. A 42 1/2 in. span free flight, true scale, Flying Flea will be the main A.P.S. plan feature. Peter Gray describes the Halberstadt CL.II as one of his superbly authentic scale drawings.

Editorial and**Advertisement offices**

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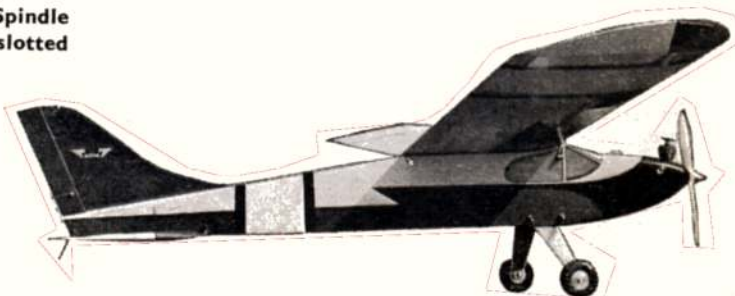
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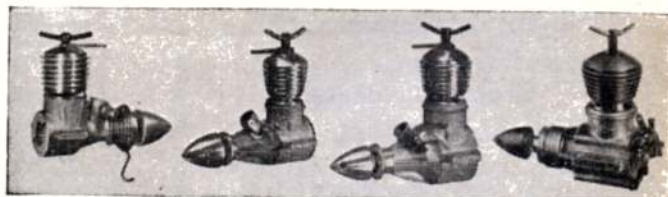
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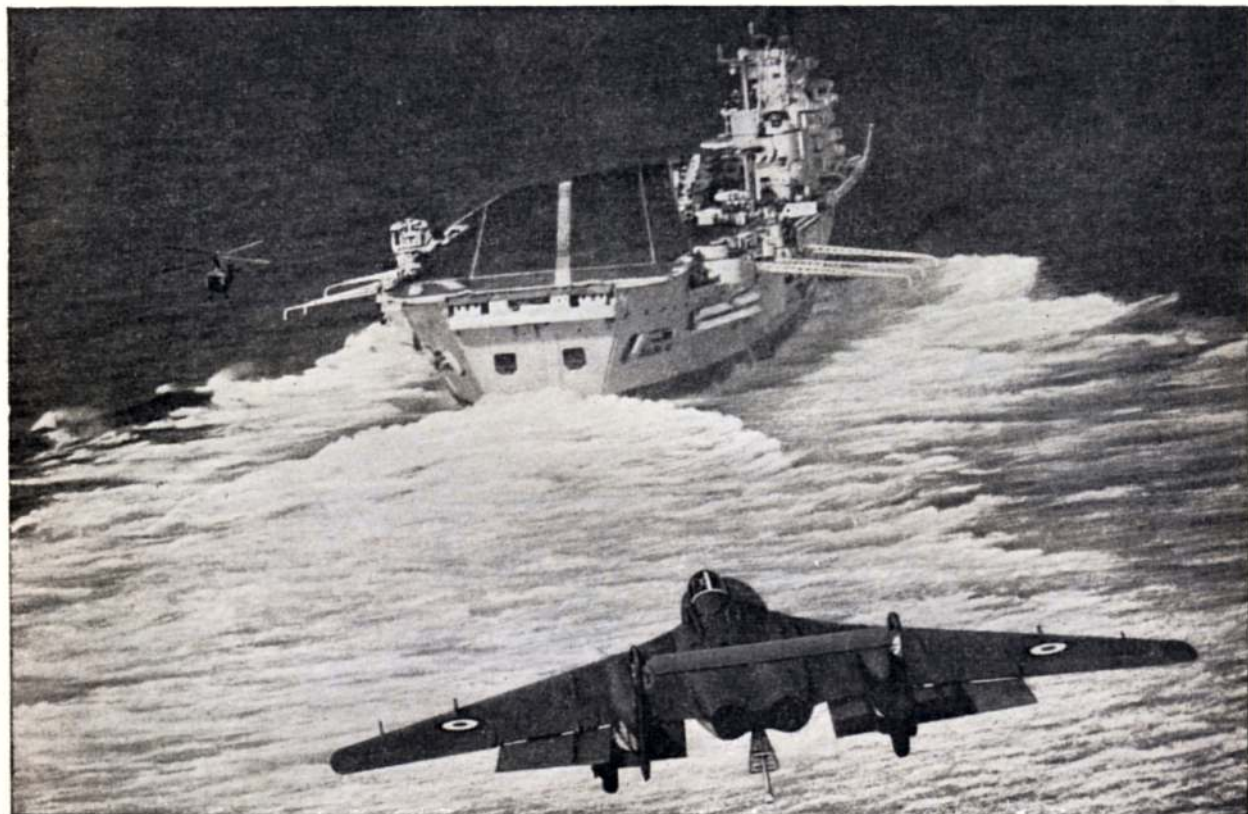


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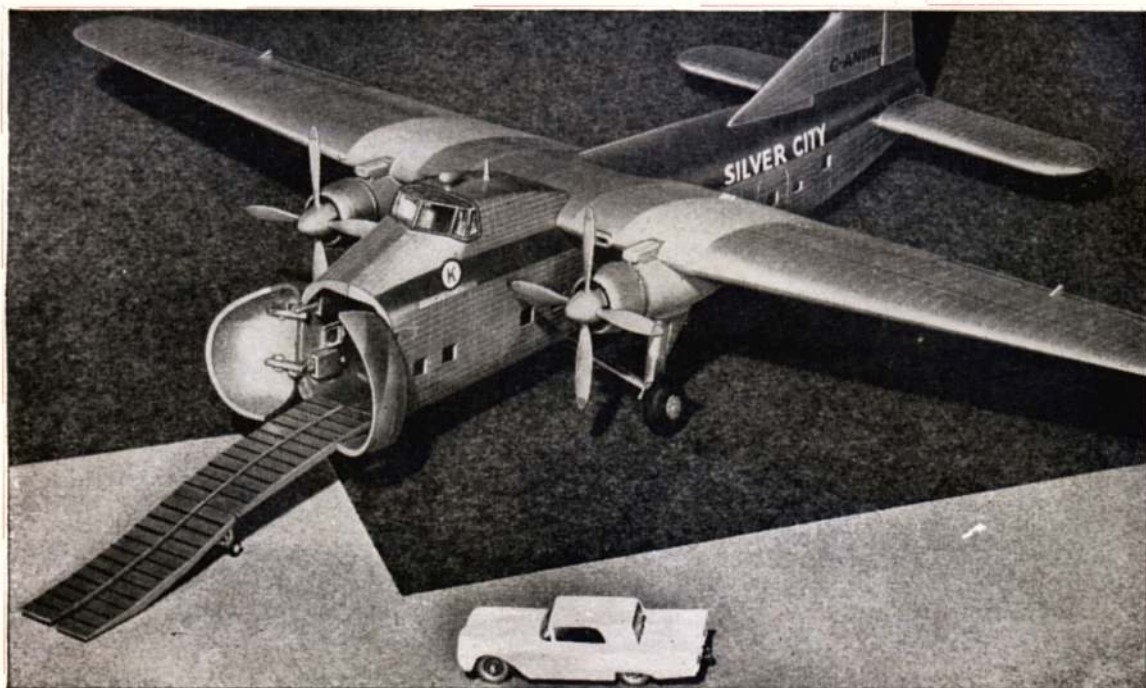
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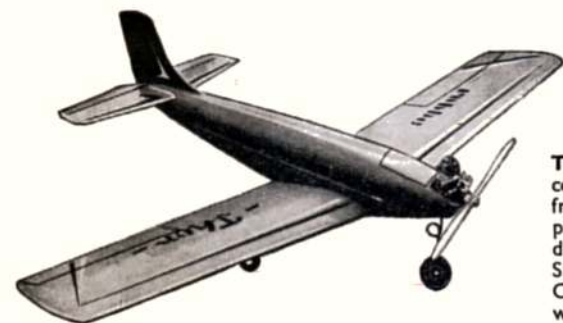
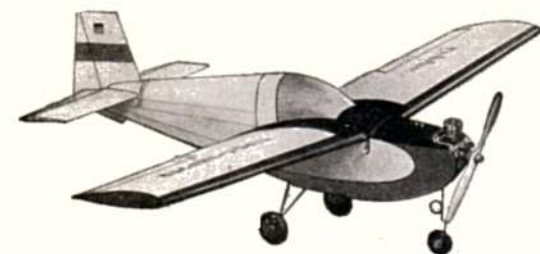
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robbe

CONGRATULATIONS to Fritz Bosch (Germany) for his fine achievement in the recent **World Championships** for Radio Control models at Genk, Belgium. Top scoring individual with the finest flight of the meeting, gaining 1,968 points and top total of 3,780 points, Fritz became co-champion with Dr. Ralph Brooke (U.S.A.) by virtue of their close results. Fritz uses **Telecont 9** channel transmitter-receiver combination. The triple simultaneous Tx, and plug-together receiver unit, gives him all he wants for a stimulating performance. It can do this for YOU too! Radio reliability, quality of construction and micro-sensitive twin stick controls make Telecont 9 a **World Champion** outfit.

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ABOUT TELECONT: Fully transistorised, economical transmitter using only 7mA standing current. Accumulators re-chargeable without removal via special sockets. Tx housed in miniature leather case like a camera—and is about the smallest and lightest you will find. Receiver—also fully transistorised—has sensitive relay that is nevertheless unaffected by vibration: the whole unit is stable, crash resistant and thoroughly reliable. Any Telecont Rx will work with any Telecont Tx. Well planned plug-in system makes installation a pleasure. Workmanship and material is highclass throughout. You will really enjoy yours!

CESSNA 182 48 in. span free flight or radio control scale model, suitable for motors 2½ c.c. upwards. Fuselage is moulded in crash resistant plastic, with many detail-moulded parts that really glitter. Wings and tail surfaces are of conventional balsa construction, with prefabricated parts. Altogether a scale model capable of a real "concoors" finish, that also gives a sparkling performance in the air. £5.4.1

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Fritz Bosch

seen at left, making one of his superb contest flights in Belgium.



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WEIGHT CHART (2)

This table lists weights of all standard Balsa sheet and block sizes in various wood densities from 6 to 16 pounds per cubic foot. Figures are given correct or to three places of decimals for 36 in. lengths in each size. Example: to find the weight of $\frac{1}{2}$ in. by 3 in. sheet in 8 lb/cu. ft. Balsa. Read across from sheet size to column headed 8 lb/cu. ft. Ans. Sheet weighs 2.000 ounces.

To find weight in ounce fractions (e.g. as given by letter balances), values can be estimated from the following equivalents.

$\frac{1}{16}$	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$
.0625	.125	.1875	.25	.3125	.375	.4375	.5
$\frac{9}{16}$	$\frac{5}{8}$	$\frac{11}{16}$	$\frac{3}{4}$	$\frac{13}{16}$	$\frac{7}{8}$	$\frac{15}{16}$	$\frac{1}{2}$
.5625	.625	.6875	.75	.8125	.875	.9375	

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SIZE 36" X	BALSA DENSITY POUNDS PER CUBIC FOOT					
	6	8	10	12	14	16
SHEET						
$\frac{1}{32}$ " X 2"	.125	.167	.271	.250	.291	.333
3"	.1875	.250	.3125	.375	.4375	.500
4"	.250	.333	.417	.500	.583	.667
$\frac{1}{16}$ " X 2"	.250	.333	.417	.500	.583	.667
3"	.375	.500	.625	.750	.875	1.000
4"	.500	.667	.833	1.000	1.167	1.333
$\frac{3}{32}$ " X 2"	.375	.500	.625	.750	.875	1.000
3"	.5625	.750	.9375	1.125	1.3125	1.500
4"	.750	1.000	1.250	1.500	1.750	2.000
$\frac{1}{8}$ " X 2"	.500	.667	.833	1.000	1.167	1.333
3"	.750	1.000	1.250	1.500	1.750	2.000
4"	1.000	1.333	1.667	2.000	2.333	2.667
$\frac{3}{16}$ " X 2"	.750	1.000	1.250	1.500	1.750	2.000
3"	1.125	1.500	1.875	2.250	2.625	3.000
4"	1.500	2.000	2.500	3.000	3.500	4.000
$\frac{1}{4}$ " X 2"	1.000	1.333	1.667	2.000	2.333	2.667
3"	1.500	2.000	2.500	3.000	3.500	4.000
4"	2.000	2.667	3.333	4.000	4.667	5.333
$\frac{3}{8}$ " X 2"	1.500	2.000	2.500	3.000	3.500	4.000
3"	2.250	3.000	3.750	4.500	5.250	6.000
4"	3.000	4.000	5.000	6.000	7.000	8.000
$\frac{1}{2}$ " X 2"	2.000	2.667	3.333	4.000	4.667	5.333
3"	3.000	4.000	5.000	6.000	7.000	8.000
4"	4.000	5.333	6.667	8.000	9.333	10.667
BLOCK						
1" X 1"	2.0	2.667	3.333	4.0	4.667	5.333
1 1/2"	3.0	4.0	5.0	6.0	7.0	8.0
2"	4.0	5.333	6.667	8.0	9.333	10.667
2 1/2"	5.0	6.667	8.333	10.0	11.667	13.333
3"	6.0	8.0	10.0	12.0	14.0	16.0
$\frac{1}{2}$ " X 1 1/2"	4.5	6.0	7.5	9.0	10.5	12.0
2"	6.0	8.0	10.0	12.0	14.0	16.0
2 1/2"	7.5	10.0	12.5	15.0	17.5	20.0
2" X 2"	8.0	10.667	13.333	16.0	18.667	21.333
2 1/2"	10.0	13.333	16.667	20.0	23.333	26.667
3"	12.0	16.0	20.0	24.0	28.0	32.0
2 1/2" X 2 1/2"	12.5	16.667	20.833	25.0	29.166	33.333
3"	15.0	20.0	25.0	30.0	35.0	40.0
3" X 3"	18.0	24.0	30.0	36.0	42.0	48.0
4"	24.0	32.0	40.0	48.0	56.0	64.0

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Flying Officer Gordon Mitchell was born and educated in Edinburgh. He joined the R.A.F. three years ago and, after training as a pilot on Jet Provosts, Vampires and Varsitys, volunteered for helicopter duties. Now 26, he was stationed until recently in Cyprus, as a Sycamore pilot with No. 103 Squadron. The role was search and rescue over the Eastern Mediterranean, and he averaged seven flights a week. 'Interesting work, good pay, a chance to travel', he says. 'I've got a career worth having'.

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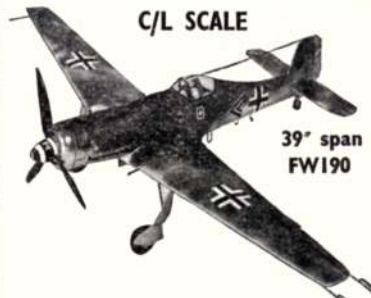
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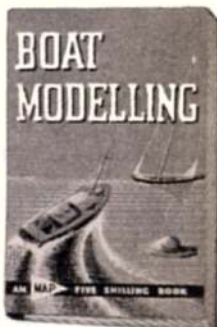
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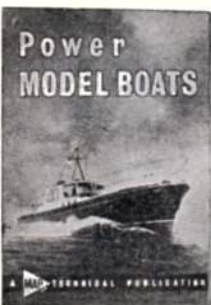
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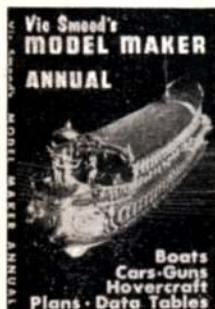
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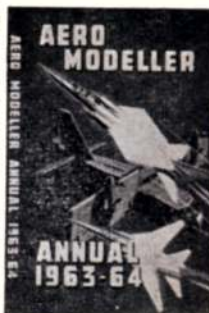
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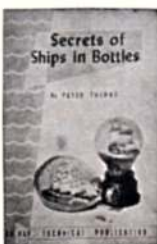
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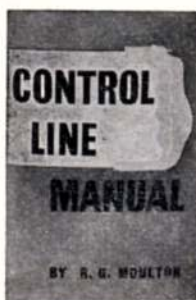
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Technical Books in the World!

38 CLARENDON ROAD WATFORD HERTFORDSHIRE



David Brazelton's neat scale control-line model of the Vought SBU-2, 1 in. to 1 ft. powered by O.S.29. It has full interior detail. Realistic photo taken by the hangar of the 169th Tactical Fighter Squadron, Illinois Air National Guard, Peoria, Illinois

Is it a Record?

IT IS MORE than unfortunate that there is no provision for A. G. "Tony" Young of St. Albans M.A.C. to claim a world record for his remarkable performance at Chobham Common in the S.M.A.E. F.A.I. Glider event on September 15th. Such were conditions that of 17 entries, in the London Area, no less than six scored a perfect 900 secs. and went on through succeeding rounds. Al Wisher and Kip Jackson continued to max out as far as the 4½-minute round then made 4:11 and 3:19 respectively, but Tony went on . . . and on, through thirteen rounds up to the seven-minute stage. Tiring after this mammoth effort, towing the glider across the rough shrubland of Chobham, the ultimate launch came when the model veered off as Tony tried to tow into a circle and finished at 2:10. Thus his complete score was no less than 15 minutes in the contest followed by succeeding rounds with an additional total of 44:10—only 50 secs. short of a full hour of gliding in official flights under F.A.I. rules.

If ever there was a case for a record, surely this is it.

Fly with Care

It would seem that we could never repeat the warning "Fly Safely—Stay Away from Power Lines" too often. A member of Glasgow Hornets club was severely burned recently when he took his control line model too close to 11,000 volts power lines. Melvyn Absen of Wakefield, Yorkshire, has been critically ill in hospital with severe burns when his control line model struck a power line carrying 132,000 volts. According to witnesses, there was a blue flash and the modeller was blown off his feet, burned from head to foot, leaving a small hole in the ground where he had been standing.

The moral of this is obvious. One does not even have to contact overhead power lines to discharge the load, since a flashover will travel many feet, particularly in damp conditions. It is absolutely **unsafe** to fly any control line model using wire lines within the proximity of overhead lines. Canadian authorities have issued a warning poster on this very subject, which we would have liked to have seen in all British model shops but the electricity authorities have displayed no more than a passing interest in propositions for a similar poster. For the moment we must pay heed to the unfortunate experiences during August and September in Glasgow and Wakefield

with the hope that the modellers recover safely from their injuries.

There is, of course, a further hazard to model flying and that concerns personal injury from power models, not necessarily out of control. We have seen enough dangerous flying, control line and radio control at this year's rallies to decide that a model meeting is *not* the place to take very young children. We need a new sense of responsibility among modellers and organisers. Lest those who like to fly indiscriminately scoff at these remarks we remind them of a fatality already reported in this magazine, and now, a very serious injury at Los Angeles when a radio control model hit another modeller when on landing approach. The model was said to have been misdirected through radio interference but this did not in any way excuse the fact that the unfortunate Allen Latta suffered a punctured lung, fracture of nine ribs and a shoulder blade.

Take notice of these accidents. Do not ignore the fact that many aspects of power modelling are dangerous, and for goodness sake *be careful*.

† Carl Simeons

We know that all the competition fraternity will be extremely sorry to learn of the early death of Carl Simeons at the age of 30. Carl collapsed at Messrs. Handley-Page Ltd. where he worked, and died on the way to hospital on September 26th. A modeller for many years and one who has contributed considerably to the success of St. Albans M.A.C., Carl was much respected for his jovial outlook, and ability with lightweight models. The glider design, No. 96A, named after the address of the club, was very much his inspiration and he used this model to achieve high places in many contests. In recent months he had qualified as an instructor glider pilot with the Southdown Gliding Club. He lived for flying, and we know that all aeromodellers will extend their sympathies to his mother at so seemingly unjust a loss.

Credit where due

The full-size plan in October issue was obviously well received. We saw one ready to fly within three days of publication date and it wasn't long before the local youngsters were asking us whether we had created the design ourselves. Thus chastened, we hasten to correct

the impression for *Hexy* was designed by Eric Clutton of Stoke-on-Trent and is part of his novel collection of unorthodox models which have been seen at most of the rallies and galas this year. As a matter of fact another of them will be featured next month in December issue as part of the full-size pull out plan. This is the larger and amusing *Fishface*. Definitely a semi scale model! Apologies to Eric for having left his name off October's plan.

"Model Flying"

The S.M.A.E. undertook many months back, to send all full members a copy of the printed newsheet "Model Flying", but it is obvious that a large number of full members are not receiving their copy. The S.M.A.E. requests that all full members submit a card to the S.M.A.E. stating club and membership number as a claim for direct posted supply of each edition. It is equally important to notify the Society of any change of address.

1000 Lap Record

Report from Brazil tells us that a new record for the 1000 laps has been established at the "Guanabara" meeting, Rio de Janeiro with the time of 53 minutes, 13.7 seconds by the team, Crespi, Maeda and Berel. Unusual fact is that a 2.5 c.c. engine was employed, the Enya 15D. There is a new "Aeromodelodrome" at Guanabara, officially inaugurated on the 30th August and now a centre for considerable activity. Demonstrations have been made before notable officials and the enthusiasm of the modellers has been well received.

SMAE Results

July 28th Events

White Cup		(U/R Power)	18 Flew
1. J. West	...	Brighton	9:00 + 4:00
2. M. C. Bayram	...	Lincoln	9:00 + 3:50
3. D. J. Wiseman	...	York	9:00 + :12
4. J. Manville	...	Bournemouth	8:29
5. D. Furbank	...	Lincoln	7:57
6. P. Manville	...	Bournemouth	7:50
Frog Junior Trophy		9 Flew	
1. F. Ballardie	...	Prestwick	9:00 + 10:10
2. J. Abbs	...	Norwich	8:17
3. J. H. Bailey	...	Neath	7:10
4. M. McNamee	...	Wallasey	6:37
5. M. Williams	...	Neath	6:16
6. C. Foss	...	Brighton	5:16

August 18th Events

C.M.A. Cup		U/R Glider	37 Flew
1. B. Spencer	...	Ashton	8:07
2. U. Wannop	...	Edinburgh	7:34
3. P. Manville	...	Bournemouth	7:17
F.A.I. Rubber		10 Flew	
1. R. Wells	...	Hornchurch	13:40
2. H. Tubbs	...	Baldon	10:09
3. B. Picken	...	Wigan	9:01

Keil Trophy

		Team Power	
1. Prestwick	...	29:46	
2. Brighton	...	23:57	
3. Whitefield	...	19:45	

Latest Plugge Scores

1. Brighton	...	803:672
2. Whitefield	...	662:909
3. St. Albans	...	531:743
4. Stevenage	...	456:699
5. Wallasey	...	429:759
6. Essex	...	421:353

C/L Contest, R.A.F. Debden

Class 1 Speed		2 entries	
1. J. Barlett	...	Colchester	80:18 M.P.H.
Class 2 Speed		1 entry	
1. W. Kelsey	...	Brixton	129:3 M.P.H.
Class 3 Speed		2 entries	
1. N. Butcher	...	Croydon	115:9 M.P.H.
2. S. Moxham	...	Colchester	94:78 M.P.H.
Class 4 Speed		6 entries	
1. R. Gould	...	F.A.S.T.E.	136:3 M.P.H.
2. W. Kelsey	...	Brixton	130:0 M.P.H.
3. R. Tilbury	...	C.M.	101:2 M.P.H.
Class 5 Speed		3 entries	
1. M. Billinton	...	Brixton	160:9 M.P.H.
2. I. Roffey	...	Brixton	150:1 M.P.H.



"Where there's a hobby —
there's hope!"

Annual General meeting

Important date in the affairs of the Society of Model Aeronautical Engineers Ltd. is the week-end of November 30th/December 1st. The annual prize-giving, Dinner and Dance takes place during the evening of Saturday, November 30th at the Royal Station Hotel, York. Accommodation is limited and early application for tickets, price 30s. each, should be made to the Society Competition Secretary, B. A. Messom, 9 Thornfield Avenue, York.

The Annual General Meeting starts during the morning of Sunday, December 1st at the same hotel. This Northern location was selected by popular vote at the 1962 A.G.M., which was held in Manchester and very well supported. It is hoped that similar good support will be seen in 1963 for there are many important matters concerning the Society which will be fully discussed and, as before, the A.G.M. will provide a forum for everyone in the Society, whether a full member, country member or an associate to air his views if not necessarily to have an official membership vote.

Undoubtedly, one of the greatest bones of contention will centre upon the opinions expressed on the success of the trial increase of membership fees instituted for the current year.

Contest Calendar

October 20	London Area C/L Champs. Hayes Circuit S.M.A.E. Combat, 1/4 A and F.A.I. T/R.
October 20	Blackheath F/F Gala. Chobham Common, Open R/G/P 1/4 A P. Starts 10 a.m.
October 27	Surbiton Gala. Chobham Common, Open R/G/P 1/4 A P. Starts 10.30 a.m.
November 3	East Anglian Area. Decentralised F.A.I. Contest. Pre-entry 2s. 6d. to Comp. Sec., M. Woodhouse, 33 William Street, Norwich, Norfolk.
November 3	St. Albans Gala. Chobham Common. Open R/G/P, 1/4 A Power.
November 10	Walsall M.A.C. Pre-1950 Old Timer event. Spark ignition and diesel F/F and Concours event. Starts 10 a.m. Banners Gate Entrance, Sutton Park, Nr. Sutton Coldfield, Warwickshire.
December 7	Airtech M.F.C. Indoor rubber T/R & Scale. Airtech Canteen. Details P. Richardson, Holly Farm, Long Crenon, Bucks.
December 26	Farnborough Boxing Day Rally. Chobham Common, Open G/R/P 1/4 A P.
February 2	Bristol and West Winter Rally (Provisional) Blakehill Farm Airfield Open R/G/P, 1/4 A Power All F.A.I. event (R.G.P. combined).



Mrs. Kuosma holds "Bleak", number nine in the author's series of designs

A fascinating account of model flying boat design by **KAUKO KUOSMA** from Finland, introducing two plans to A.P.S.

A WATERY STORY

DURING THE WINTER of 1958 the author became possessed by the idea of designing and building free-flight flying boats. These day-dreams were partially inspired by a lovely summer cottage in the eastern lake district of Finland, the locality having near ideal conditions for this kind of sport flying.

Murky stories were heard about the problems of getting the models to take off from water, and the extra power needed. A small size of airframe was decided upon and to be sure of success, two different types were drawn, one with personal ideas of how a flying boat should appear, the other model being more like current designs.

The result of the own-design was an airframe with gull-wings—this in order to have sufficient water clearance, with tip floats and twin rudders. The step was located *behind* the c.g. position, the idea being to support the hull in near level attitude much like the case of tricycle landing gear on landplanes.

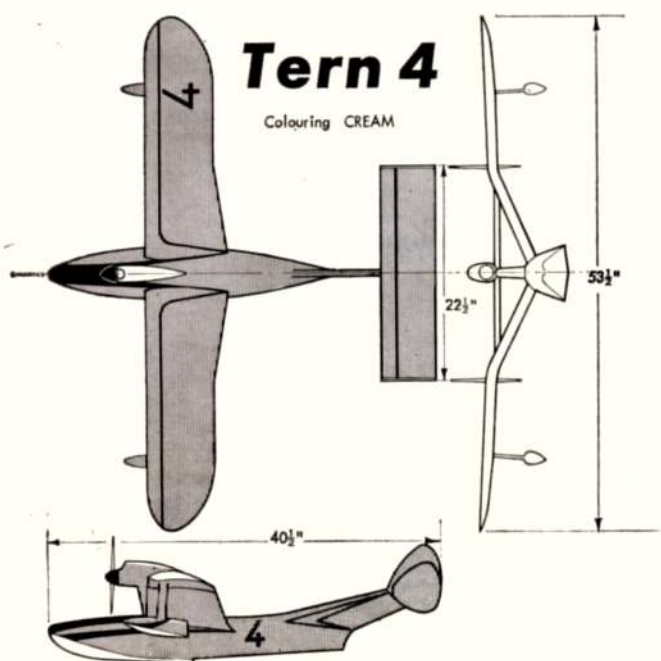
All these untried ideas and the fact that it would also be a first power model seemed to point towards a brilliant fiasco. The plane was dubbed *Tern*, had a wingspan of 53½ ins. and proved too heavy to be trimmed by hand-launching. After some short runs to verify course holding ability, the tank was filled amid tense excitement, enlarged by instability of a modest rowing boat, went off furiously ploughing through the water, getting on the step

and after last long jumps, shot skywards. *Tern* settled in a steady turning climb and everything went well. Minutes later, it was realised that the tank was over-size and the model diminishing rapidly from view. Binoculars were used to follow the continuing climb. Such was the calm that the model came down close to the launch point! One could clearly hear the whistle of wind as *Tern* passed the boat in the silent air of the summer evening.

The author's exultation did not have any noticeable limits at the time he picked the plane from the water, where it had been rolling lazily on the waves produced by the hasty splashing with oars.

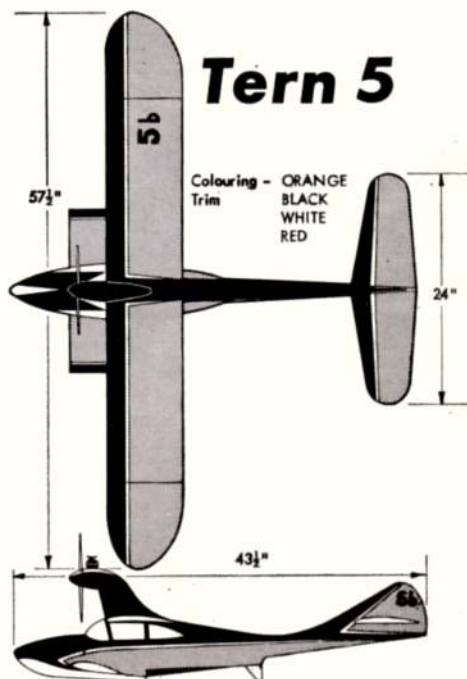
Curiously enough, no similarly happy results were obtained with the other model, not even after repeated modifications and it was finally dropped as not being able to unstick. Of course, it could be hand launched when forcefully heaved and it flew alright. This model had hull sponsons and a long narrow water-hull form. The plane ended its career as a test bed for raked butterfly tailplanes.

The next model was an enlargement of the successful *Tern-4* type having a span of 63 ins. and weighing 58 ounces. This new *Tern-6* proved to be an extremely stable design with an appreciably shorter water run for take-offs and able to unstick from a disturbed surface. It could be fitted with wheels and was actually glide trimmed this way.



Tern 4

Colouring CREAM

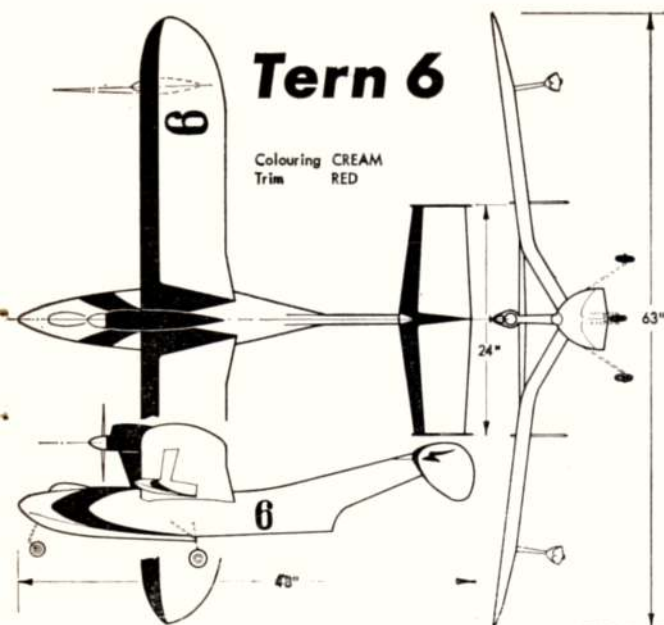


Tern 5

Colouring - ORANGE
Trim BLACK
WHITE
RED

Tern 6

Colouring CREAM
Trim RED



The model had a steady and consistent flight pattern with wide turns and reduced risk of loss in thermals because of the heavy weight. It allowed a 30cc tank for very long flights over the lake in calm evening air.

Tern 6 now has four summers of intensive flying behind it. The consistency brings a loss of interest in the type since it no longer offers any real challenge. It also introduced a complacency which rapidly disappeared when trying to get airborne a big twin-float cabin type sportster Tern-8. This model flew and looked beautiful, but stubbornly refused to rise off water, though clearly riding on steps. A sudden gust could turn the model upside down, no doubt because the high wing position. Wing incidence was too shallow, this being evident when observing the climb—it somehow lacked the urge of earlier models. The wing section, thinner than usual and not sheeted on the leading edge, could have been the reason of not obtaining enough lift. Two big floats and their struts caused much drag and this, combined with the big size (span 63 inches) probably absorbed the marginal power of 2.5cc. Though this type will be further investigated, it is already evident that for water performance, the flying boat design is to be preferred.

During the summer of 1960 a new 71 in. flying boat, the X-9 was flown in order to try an entirely different layout. It had a raked butterfly tail sitting on a low fin, the tip floats were moved close to the fuselage in order to avoid the somewhat flimsier design at the wing tips, but to be of equal effectiveness, they had to be bigger, adding to the total drag. Wing tip wash-out proved very efficient—the model refused to stall and could easily be trimmed to fly in a typical “flaps down” attitude. However, the slow airspeed needed much offset of the tailplane to introduce a turn. The solution was a left-right flight pattern. The motor torque gave a left turn under power, the tail set at right holding the nose high, as generally a left turn in this phase of flight is hazardous if not controlled by cross-setting of tailplane. Before this combination was found, the model made one particularly hair-raising flight, stubbornly continuing on a dead straight path both power-on and gliding, ending somewhere in a forest one could barely distinguish from the boat. After two days searching in the uninhabited wilderness, the model was found nestling intact on the top of a 60 ft. Birch tree. Rescue was by nailing cross-ties on this tree and the next. In this process, hanging halfway between soil and high heaven the author certainly lost all trace of ancestral abilities in tree-climbing. . . .!

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November, 1963



“Tern 4” (below) and “Tern-6” above and left, are twin fin gull-wing models with a remarkable stability, especially number 6, now four seasons old

The X-9 experiment led to the *Bleak*, the model having a 67 in. wingspan of more rake in the tail, the wing section rather thick, purposely chosen for comparison with that of the X-9. Power-on speed increased, but the glide remained flat and slow. The new section allowed a much stronger structure, particularly in the root and joint regions. *Bleak*, like all other models, had a three-piece wing, the centre part built integral with the fuselage; the outer panels were fastened with hardwood dowels. This was very handy for transporting and should the model suffer any severe impact on landing, the dowels sheared neatly at joints, leaving the wing panels intact. Tailplanes were secured with rubber-bands, allowing for trimming changes.

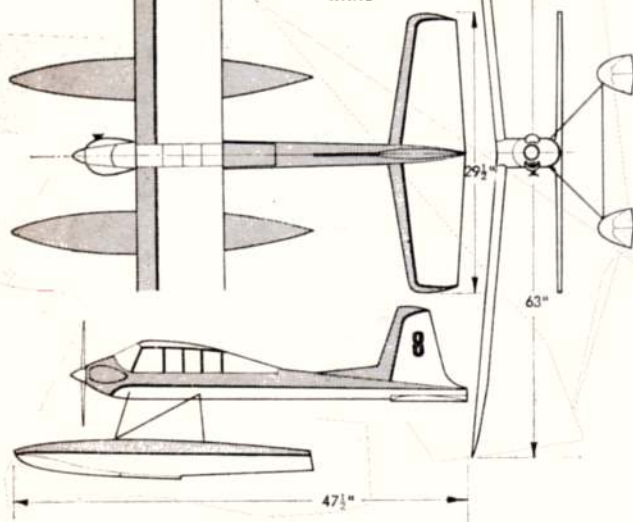
To combine the features of the *Tern* and *Bleak* types a new model, the *Gull* was built in summer 1962. The gull-wing, with tip floats were joined to a *Bleak* fuselage and raked butterfly tail. Whole length of the hull was made “wet” in order to try any improvement in water run. Span is 63 in. with weight only 39 ounces. Results obtained lead to the conclusion, that here is the most effective layout. Power-on speed is more than adequate with a fast climb, the glide again nice and slow. There does not seem to be any need to design a long water line in the hull, a shorter after-step portion having all the necessary steering control.

It is this model which is introduced to AEROMODELLER PLANS SERVICE. A reliable hull form had now been determined with some details not entirely in accordance with ideas commonly approved. All the books tell one to design the hull and step position after the two-wheel undercarriage principle. The splendid water performances of *Tern-6* proved that a step location *behind* the c.g. position is possible. A stout hull-form, rather broad, gives good heeling stability and most probably is easier for planing, a narrower hull sinking, of course, much deeper.



Tern 8

Colouring BLUE
Trim BLACK
WHITE



Bleak T 9

Under Surfaces, Fin. WHITE
Remainder GREY
Trim BLUE & BLACK



Variety in shape is shown with the twin float number 8 at left, the flat centre section of flying boat "Bleak" and the gull-wing of "Gull" above and right. Butterfly tail is both practical and attractive

Instead of a long water line, the shorter after step portion of the hull can be built with a concave water line at the rear, this giving a very strong corrective action, combined with proper mounting angles of tip floats—the model obtains a sort of automatic steering and heeling control. Clearly, these are stronger in effect during water run than the flying surfaces—so the flight trim does not change the water run, but the moment it leaves the surface, flying trim takes over.

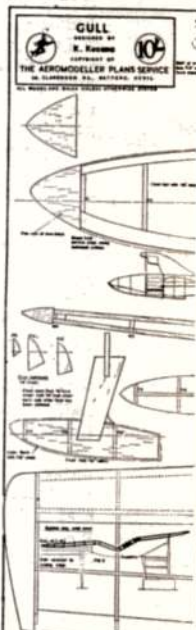
A very important point to remember, when designing this type of model is to give the hull bottom in the short straight section just before step location a more positive angle compared to the wing incidence, otherwise take-offs would not be possible. When glide trim is obtained, motor thrust is used to control power-on flight. If the take-off is difficult, then add upthrust. Now this may produce a stall in motor flight. To correct, add ballast in small increments to the nose and retrim for glide with tailplane angle. On the contrary, if the model tends to turn too steeply without gaining height, do not correct with the tailplane, as this would only stall the glide, but first add upthrust.

All turning under power is controlled by off-setting the motor thrust to the right.

Initial climbing angle is usually very steep, then diminishes rapidly, until the model attains its normal flying attitude. This may be a result from the rearward step location, helping to keep the tail high. This attitude lessens the effective wing incidence, also the drag. So apparently the model reaches a higher speed in water than when flying! The result is a sharp upward nose pitch on take-off. Once airborne, the tail corrects the angle, the overspeed declining to a short, steep climb. As this offers a quick safe altitude for the most critical short initial flights, it is a good practice to begin flight tests by take-offs from water.

Latest model in the series is a biplane of "antique" lines and simple design, known as *Seal*. To fool some onlookers, the *Seal* has a pilot and observer sitting in their open cockpits, the pilot looking steadily ahead, the observer on his side peers at the things down below. Of course, both Jack and Jim, properly moustached, each wear a red scarf.

Having generous flying surfaces, the size of the model is rather small with a wingspan of 49 1/2 ins., the simple shape reducing the weight to 35 ounces. Compact in size, it is a very rugged model. It once *did* fly to pieces, when after clumsy positioning on water, *Seal* dipped its lower





wing, changed direction of the take-off run and charged the boat. In the next second, the model shot through two of the cabin windows, the impact smashing the rest of the glass too!

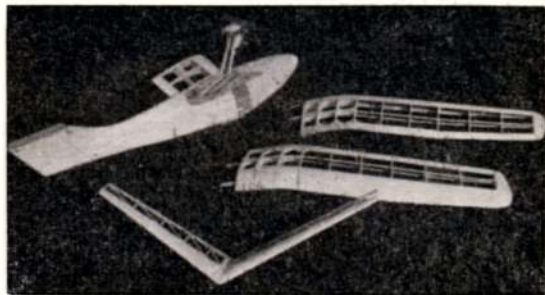
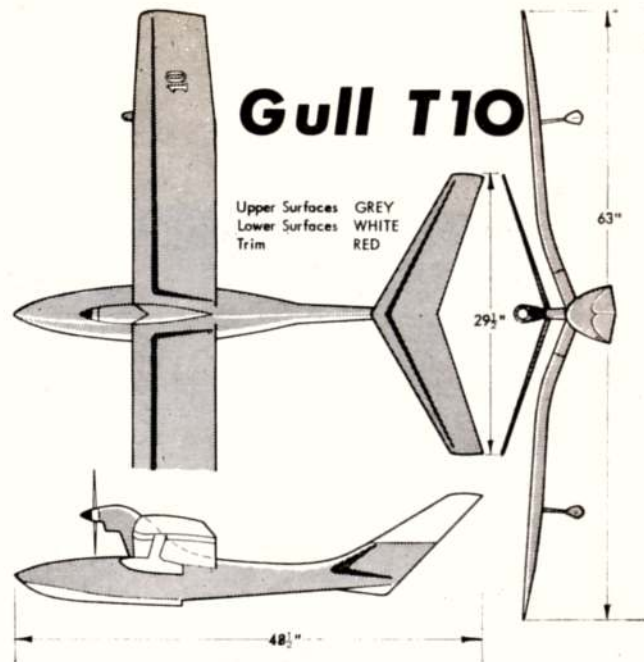
The construction of all these flying boats is all balsa, except the hardwood engine bearers, two main struts of pylons and wing-fastening dowels, ply being used for those wing ribs where the dowels seat. The hull is all planked with 1/16 in. balsa sheet, flying surfaces being covered with thin brown wrapping paper. This paper was used a lot in Finland during the war years, later rejected because of weight. However, it is extremely tough and elastic, and after the final varnish it is completely waterproof.

Full building instructions are included with each of the A.P.S. plans for *Gull* and *Seal*, but since they are different in their layout of thrustlines and drag centres, some trimming problems may arise and these will be of interest.

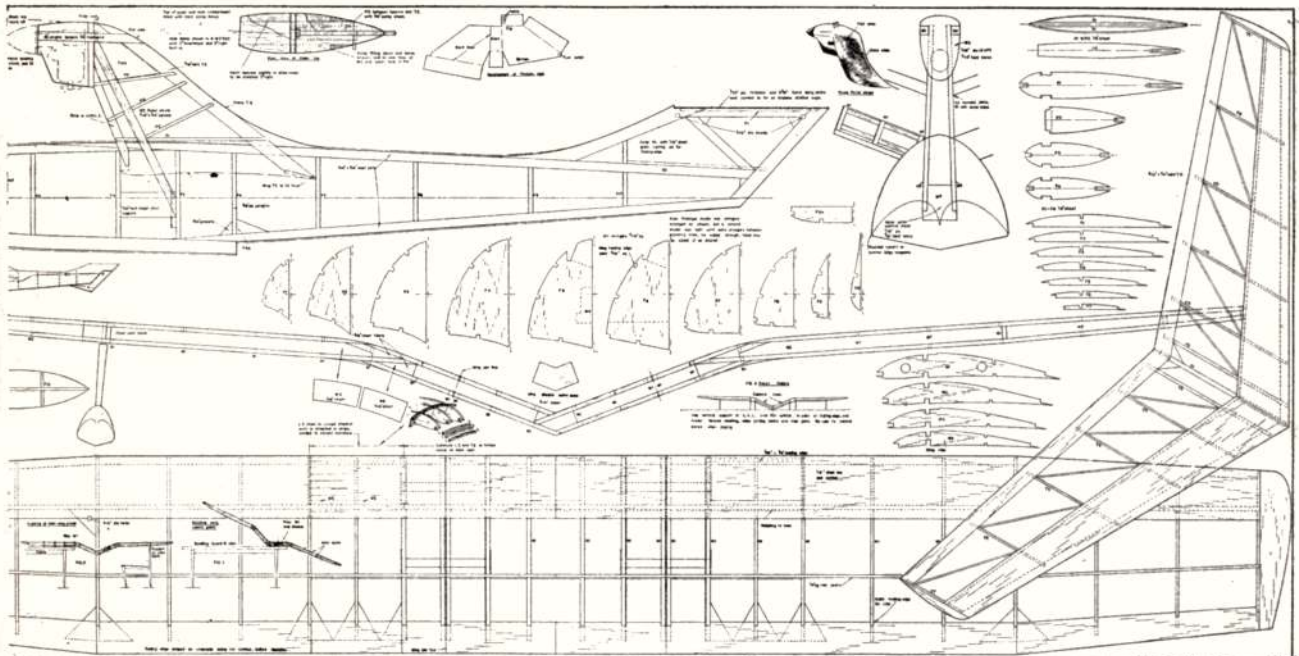
Glide trim is best obtained by ballasting rather than by altering tailplane incidences the usual way. The wing and tailplane settings on the plans are necessary for water take-offs, so in order to obtain a stall-free glide, add more ballast to the nose. Bore a hole in the solid nose piece and fill with solder. Do not be afraid of moving the c.g. forward of the location noted on plans, as that shown is the ultimate possible rearward position.

To control the glide angle, move to a high bank-side spot to launch. The short glide resulting from a launch standing in a boat is not sufficient.

Directional instability in water, wing tipping and heavy bouncing before final take-off are caused by wrong



Tenth in the series and incorporating the wealth of experience from previous designs "Gull" meets the demands of many aeromodelers who want a goodlooking, steady flying boat. Structural photograph above shows how it breaks down for transport. Full-size plans with building instructions and R/C conversion for rudder control are available from AEROMODELLER PLANS SERVICE price 10s. post free for this 63 in. span model (see 3-view above)



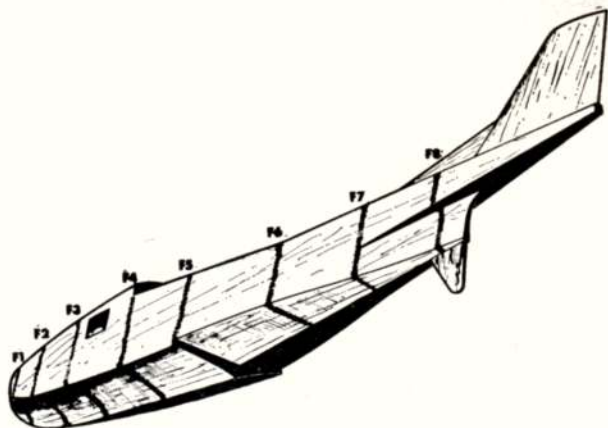


thrustline settings. Add more upthrust. These flying boat designs have drag centres well below the engine thrustline, thus giving the models a natural tendency to dive under power, if not compensated for by 3 degrees upthrust. The propeller torque is corrected by right thrust.

Contrary to normal practice, the model is positioned on water the nose pointing *downwind*. Lower the model down on to the water surface and let go. *Do not push*, as this most certainly would cause wing tipping. Some practicing may be necessary before the modeller is able to quickly set the model on the waves with the engine running. The secret here is to hold with left hand on the pylon while starting the engine, then grab with the right hand somewhere in order to move the left hand to the stern post *under* the tailplane. If one grabs the fuselage between wing and fin, *You* are locked in . . .

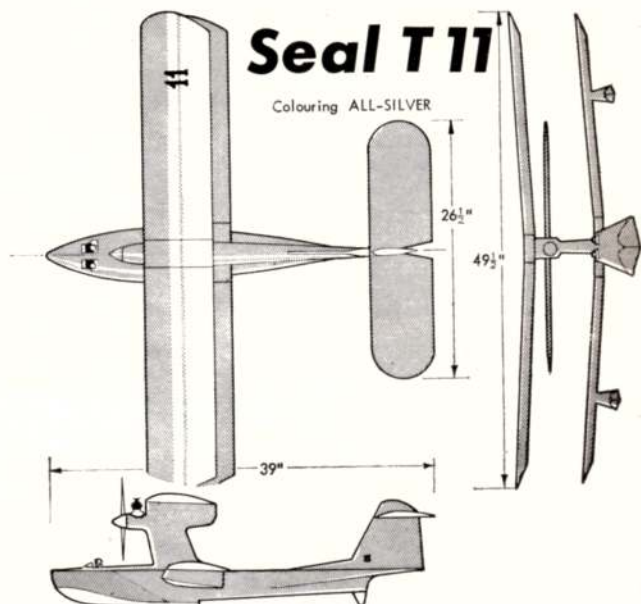
Each flying session is started with a short flight to ensure proper power-on trim. The damp air and water may cause the shims under flying surfaces to swell or compress, thus causing trim change.

For an unusual approach to sport flying in the vicinity of a suitable lake, nothing can beat this free flight flying boat hobby. As yet this kind of sport is not yet sufficiently appreciated, not even in the author's country, Finland, where there are innumerable lakes offering ideal conditions. There are no flying space problems and the endless thrill of watching flying boat take off from water is incomparable—what better way to enjoy *your* next holiday!

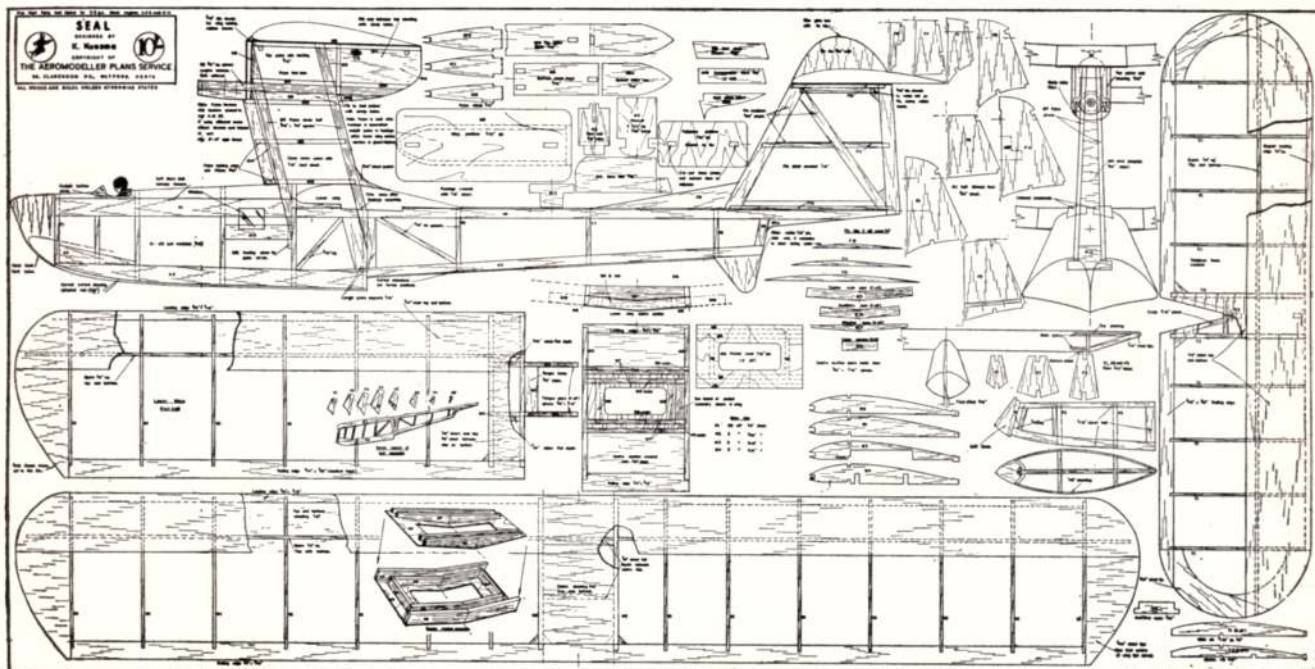


Seal T 11

Colouring ALL-SILVER

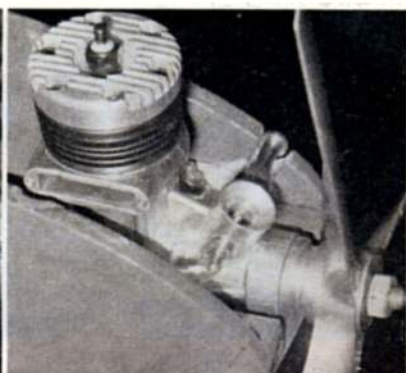


Biplane approach offers unique stability and is very simple to make. Like all its predecessors, the prototype was powered by an Alag 2.5 c.c. diesel. Full size plans, complete with building instructions are available from AEROMODELLER PLANS SERVICE price 10s. post free



Motor Mart

Top left, the world record holding 10 c.c. Kouznetsov racing glow engine, which holds the world speed record at 316 Km/h (196.36 m.p.h.) Straight suction feed is used from the metal tank to the rear disc induction. Right, the new Australian Glow-Chief 35 BB in Performance Kits Biplane test model.



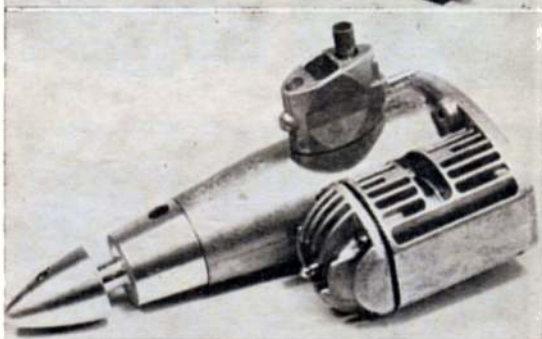
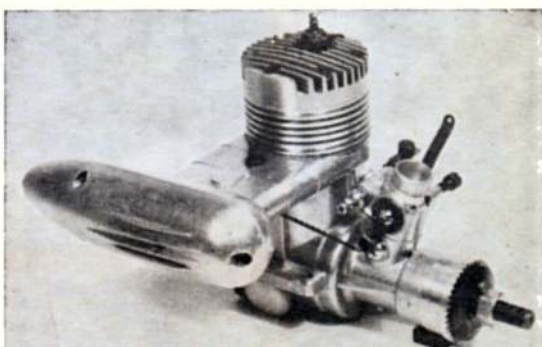
WITH NO LESS than six new engines on the bench this month, the neighbourhood is beginning to get used to the sound of prolonged running-in! First to come, in time for October stop press and certainly most unusual is the Aero 35, horizontal piston engine. Ron Warring now has this on the Dynamometer for a full horse power check and review to appear next month. Suffice to say at this stage that it is a remarkable engine with several unusual attributes, now distributed in Britain by Performance Kits at £22 10s. 9d. They also provided first sight of the next new engine to appear, the Glow-Chief ball race version of the 35, which O. W. F. Fisher has been testing in one of his Biplane stunters. A very smooth runner, this Australian engine will sell through Performance Kits at £6 8s. 9d.

Next to come were a pair from E.D. Engineering. The 1.5 c.c. Hawk made to E.D.'s specifications in Germany, has a sparkling, neat crankcase of obvious Webra genesis, selling at £3 5s. 6d. Initial test figures give 10,000 on a 8 by 4 in., 10,500 on a 7 by 6 in. The other arrival was not entirely new, being the revised version of the 1 c.c. Cadet, which comes equipped with silencer for £3 3s. 0d. First prop test is 7,000 on a 7 by 6 in. and we find the engine prone to flooding. Though designed for easy starting, in our opinion the silencer creates a need for quite a different starting technique, which in our case took some time to master.

Fifth new engine is one we "collected" at Genk. It is the "Temp 35", made by two keen Kiev modellers in a short series for leading stunt flyers. Carrying a blend of Fox and McCoy features, it has been turning up good figures comparable with the best of the plain bearing motors and, as can be seen in the photograph below, has a stubby intake for a relatively short shaft port.

Completing the collection is a very pleasant new 1 c.c. diesel known as the ZA 92, being produced by De-Za-Lux Developments Ltd., of Brentford, Middlesex. Prop figures on this one include 9,750 on a 7 by 4 in. so the potential is obvious and we understand, that the throttle and marine versions are projected. Fitted with metal tank and delivered with compression and needle settings indicated on a card, the ZA 92 sells at 49s. 2d.

Above, right, extended exhaust on the silencer shows how, with 6 B.A. brass studding, one can fit the extensions to the 0.5.49 R/C having exhaust control and silencer. Horizontal piston in the Aero 35 and sideways, streamlined carburettor offer futuristic lines on this remarkable piece of engineering. Bottom, left to right, latest from the U.S.S.R., the Temp 35 stunt engine; centre, internally modified E.D. 1 c.c. Cadet; right, the new E.D. 1.5 c.c. Hawk with parts made in Germany.





1. Joan Schwickrath with her outstanding Grumman TBF "Avenger", using a 2-speed McCoy 60. Joan, one of the few women contestants, handled her plane like a real veteran and chalked up several good landings. She comes from Redwood City, California



Stars of the 1963

**U.S. NAVY IS HOST
MODELLERS WITH
35 EVENTS AT LOS
FOR 32nd ANNUAL**

photographed by

2. Frank Vidmar of Euclid, Ohio chose push-pull centre-line thrust for his Bramco Apollo 10 channel 72 in. multi entry, weighing 8 lbs., for two K & B 45's. Appropriately called "Push-Pull"

3. Manuel D. Andrade of Walnut Creek, California with Commander P. M. Boyer of NAS Los Alamitos, discusses his first winning A/I glider. Manny also won open rubber and was 4th in Wakefield. 4. Claude McCullough of Ottumwa entered a 8th scale, 87 in. 14 1/2 lb. Northrop C-125 "Raider" in Air-Sea Rescue colours. Powered by a Fox 59 in the nose and two S. Tigre 23's in the wings, it was 5th in Scale. Two separate throttles, one for the centre engine and one connecting the other two, are controlled from the Min-X 12 Tx. Even with triple power, the bulky heavyweight model had difficulty in making a qualifying flight, but we must congratulate Claude on a fine enterprising choice of subject. 5. Carl Goldberg holds his new twin engine, multi R/C after competition, Carl put it through a complete stunt pattern on both Cox .09's and then on single engine, using an F & M 10 channel transmitter with 5 Anco servos. "Skylark" weighs 4 lb. 6 ozs. 6. Carl Taylor of Thousand Oaks, California with latest own design Canard aptly titled "C-Bird". This one weighs 4 lbs., has 1300 sq. ins. wing area and is powered by Super Tigre .29 for "B" free flight and a Super Tigre .40 for Class C. Unfortunately, the hot weather gave engine bothers, on previous day he made a 5 hour, 10 miles flight! 7. Bell P-63 "Kingcobra" by Maxey Hester of Des Moines, Iowa, placed first in R/C scale. Powered by a Fox .59 R/C and guided by Orbit 12, it features retracting gear, operating flaps, plus full house controls. Built to 1 1/2 in. = 1 ft., the plane spans 71 1/2 in., weighs 10 1/2 lbs. It also features a special, very realistic, matt finish. Maxey also placed 4th in multi stunt with a Taurus using Orbit radio and Yeco 45 engine, so he is no mean pilot!





8



9

U.S.A. Nationals

TO AMERICAN
3560 ENTRIES IN
ALOMITOS, CALIF.
NAT'L CHAMPSHIPS

Gordon D. Madison

8. A beautiful Cessna 336 by Bob Welch of Tracy, California, in green and white, with two Fox 15 R/C engines complete with throttles actuated by handle. Was 1st in Senior C/L scale



10

10. This Roland C-2 took first place in Junior Control line scale for Rick Stice (15) of Arcadia, California. Powered by a Fox .35 and light blue in colour it is finished in intricate detail right down to the pilots. Rick actually performed a few aerobatics with it. A minor failure caused him to have a near fatal crash, but he only lost a portion of the landing gear. When fuel finally ran out, his perfect emergency landing brought praise and applause from crowd and judges alike. Weight 2 lb. 7 ozs., 33 inch span, 1 in. = 1 ft. scale. 11. Jack Garcia of the "Circle Burners" with F.A.I. racer based on Ken Long's "Tigress" (ETA 15) was 4th in F.A.I., took 1st in Class B racing for 2nd year running. (Nicholas Risi photo). 12. Frank Johnson's Boeing B-17F, full house R/C job, started only seven weeks prior to the Nats. Arriving late, Frank was unable to make a qualifying flight because time ran out with one engine still not running. Model is basically a Cleveland Master model kit with minor mods, beefing up bulkheads, 1 in. stringers instead of 1/16th and sheet covering. Powered by 4 K & B 19's. Weight is 9 lbs. 3 ozs. with 77 inch. span. Unhappy about not being able to fly, Frank moved to "Mile Square" and got all four engines running with one of the top R/C men at the controls. Built-in incorrect tail incidence, caused a fatal loop and spattered the B-17. Frank's comments? Good, now I can go home and get started on my B-36! 13. Stan Hill of Santa Barbara and high-thrust 96 in., 1300 sq. in. "Vector Director II". Flew like a dream but not entered, similar model had Aero 35 horizontal piston engine. 14. Stunt Champion Bob Gialdini of Milwaukee, Wisconsin holds his beautiful white and blue original "Sting Ray." Bob could also have taken first place in design, finish and showmanship. Powered by Merco .35 (spares for which were rushed just prior to contest, within 7 days of request much to Bob's gratitude), spans 55 ins., 648 sq. ins. weighs 48 ozs.

9. Air Force Master Sgt. Jim Kirkland took first place in Multi R/C Stunt with his "Beachcomber" powered by O.S. Max .49. He used a Sampey 404 proportional Transmitter and receiver. He also won the King Orange Championship in Florida. Has 66 in. wingspan, full span ailerons, and weighs 6½ lbs.



11



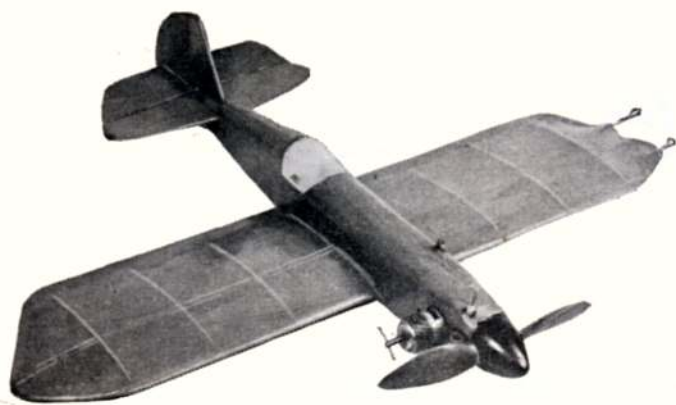
12



14



13



Full-size plans on centre pages for this 19-in. stunter (.8-1.5 cc.) by A. Gee and S. Bevan

HATCHET

GOT A SPARE .8 to 1.5cc motor just itching for an airframe? You have? Then why not try this very fast little stunt model that's cheap, quick and easy to build. You can build it either with a large or small elevator, depending on just how zippy you want it to be! Interested?—then dig out that motor and start building.

First cut out 8 ribs (4 with $\frac{3}{8}$ in. dia. holes for leadout wires) from hard 1/16 in. sheet balsa, trimming two of these down to the dotted lines for the centre section. The bottom $\frac{1}{8}$ in. square hard, 18 $\frac{1}{2}$ in. balsa spar can now be pinned in position over the left wing plan and the $\frac{1}{8}$ x $\frac{1}{2}$ in. T. E. strip notched to receive all ribs and cut to 15 $\frac{1}{2}$ in. length. Using scraps of $\frac{1}{2}$ in. balsa, pack up trailing edge and pin in position. Then cement in left-hand panel. Cut tip pieces from $\frac{1}{8}$ in. sheet and cement in position, again packing up with $\frac{1}{2}$ in. scrap. When dry, lift from plan, turn over and line up over the plan so that right panel can be built upside down. Add ribs and tip parts to right side, fitting in with the spar. Lift from board, add remaining spar and leading edge. Notch and crack upper and lower spars at last rib and cement ends down onto tip pieces. Add gussets. Cut and drill 1/16 in. ply and with bellcrank, leadout wires and push-rod soldered in position. Carefully fit the complete assembly into the wing sheet centre section top and bottom, leaving a small cutout on top to clear push-rod. Bind and cement $\frac{1}{2}$ oz. lead weight into outboard tip and stick two pieces of brass tube onto inboard tip as leadout guides.

Cut out formers F1-F6, laminating F1 and F2 from 1/16 in. ply and 1/16 in. sheet balsa. Cut out two fuselage sides from 1/16 in. hard sheet balsa and cement, box fashion, to formers. Cement bearers ($\frac{1}{4}$ in. square hardwood) in position, choosing length and spacing to suit engine used—we used a D-C Merlin .74cc on the prototype and bearer position on plan corresponds with this motor. Fit a small Mercury stunt tank into space behind F1 and cement and wedge securely—this will be a tight but really lasting fit—drilling F1 to accept the fuel feed pipe. Next, sheet (or plank—whichever you find the easier) back from F1 to the instrument panel (scrap

1/16 in. sheet balsa) and from F5 to F6. Carefully cut away fuselage side pieces under wing opening between F2 and F3 and put these aside—they go back into position once the wing has been located. Slip wing on to fuselage, check that push rod does not bind and cement the two assemblies together and allow to dry. Replace underwing fillets and sheet underside with 1/32 in. hard sheet.

Give nose around bearers a good coat of fuel proofer and wrap on celluloid cockpit cover holding with pins until set.

Cut out fin, tailplane and elevators from soft $\frac{1}{8}$ in. sheet balsa. Crack rudder and cement to tailplane with correct offset. Bind wire coupling piece joining elevators together and, using linen hinges, carefully fix elevators to tailplane. Secure a commercial elevator horn to offside elevator. Cement complete tail assembly to rear fuselage and fair in fin with scrap $\frac{1}{2}$ in. square balsa. Allow to dry. Hook up push rod to elevator horn and check for free movement. Bolt engine securely to bearers and cowl to suit. A $1\frac{1}{2}$ in. spinner finishes off the line of the fuselage.

Covering and Finishing

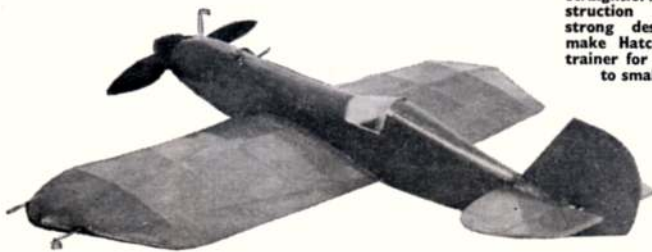
Before covering give the complete model four coats of sanding sealer, sanding down between each coat. Cover entire model with tissue and brush on one coat of clear dope. Then, give the wing a second covering of tissue, brushing and smoothing down onto first layer. Give the wing a couple more coats of dope and the fuselage another one. A few dabs of colour dope here and there do not increase the weight too much, so go ahead, decorate it. Finish off with a good coat of fuel proofer—double around the nose section, and that's about it.

Flying

This should present no problems if you've followed the construction notes. On about 25 ft. lines (35 ft. if you are using 1 $\frac{1}{2}$ cc motor) this little model really goes. Just hold her neutral from a hand launch and you're away. If your friends build one too you might even like to try a spot of "A" combat—and that's when the fun really starts!

Materials List

1 1/16 in. x 4 in. x 36 in. hard balsa sheet
1 1/32 in. x 2 in. x 36 in. hard balsa sheet
1 $\frac{1}{8}$ in. x 3 in. x 36 in. hard balsa sheet
1 strip 3/32 in. x 3/16 in. x 36 (L.E.) hard
2 strips $\frac{1}{8}$ in. x $\frac{1}{2}$ in. x 36 (spars) hard
1 strip $\frac{1}{8}$ in. x $\frac{1}{2}$ in. x 36 (T.E.) hard
1 piece ply 6 in. x 4 in. x 1/16 in.
8 in. of $\frac{1}{8}$ in. square hardwood bearers
16 s.w.g. wire
20 s.w.g. wire
Small commercial bellcrank
Small Mercury stunt tank
2 sheets light weight tissue
Silk scraps
Celluloid scraps



Straightforward construction and good, strong design features make Hatchet an ideal trainer for those limited to small engines

BEECHCRAFT 17 DIMENSIONS

An experiment for scale modellers

HAVING EXPERIENCED the problem of enlarging a 1/36th scale drawing to flying model size, we welcomed an offer from George Cox to produce a large-scale aircraft "geometry" to accompany his "Famous Biplanes" article on the Beechcraft 17.

As far as we know, this is the first time that such a service has been made available to the modelling world—a plan which simplifies the technical drawing aspect but which still leaves the important structural designing of the model to the builder. Here then, is a helping hand from the scale drawing to the flying model.

It is not always possible to provide a dimensioned drawing; in too many cases, no works drawings or example of the aircraft exist. There are many occasions, however, where basic dimensions are available in the form of a measured General Arrangement drawing, but without fuselage sections. The Beech 17 is such a case, and here the work of the technical artist becomes extremely demanding, when the sections must be deduced from other dimensions and data.

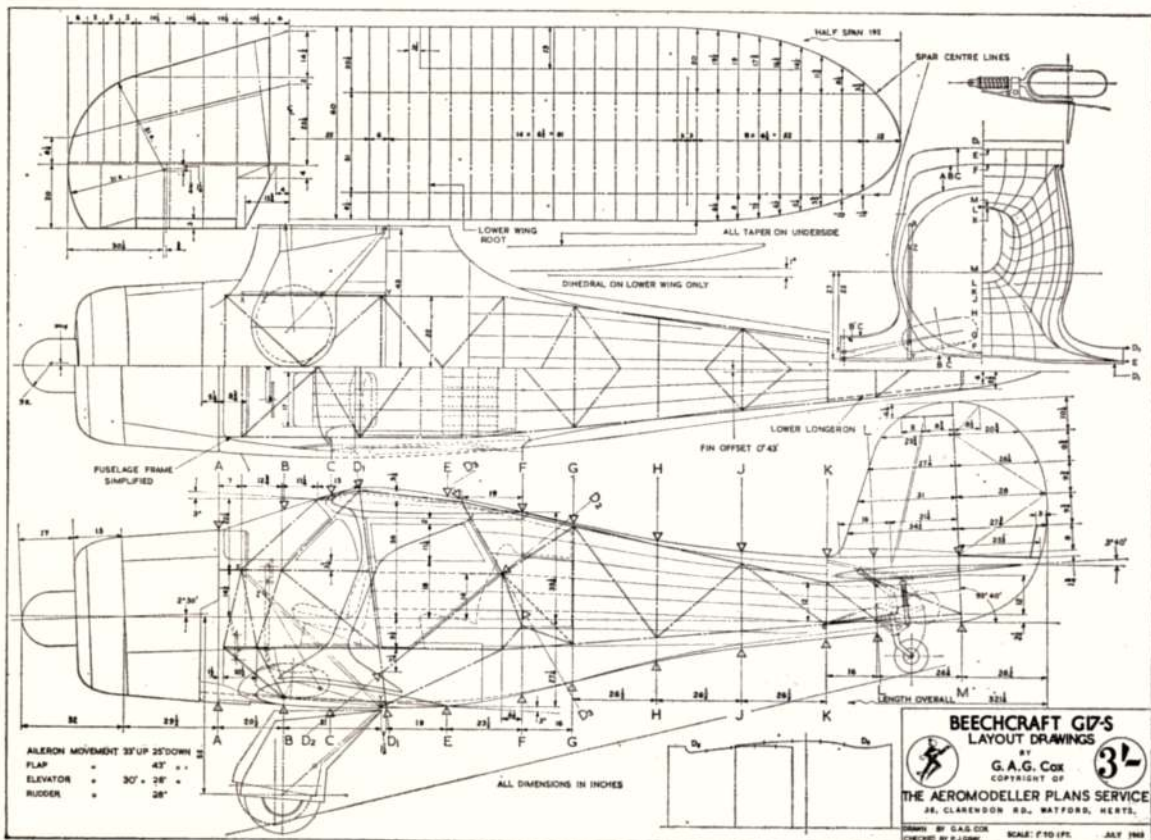
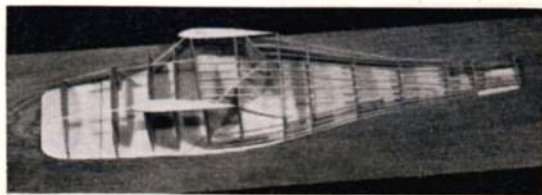
For such sections to be of any use at all, they must be carefully checked in three dimensions to ensure that the fuselage form as well as the profile is accurate. In this respect we are confident that the drawing is unique. The photograph shows a test model specially built to check the accuracy of the fuselage sections and stringer positions.

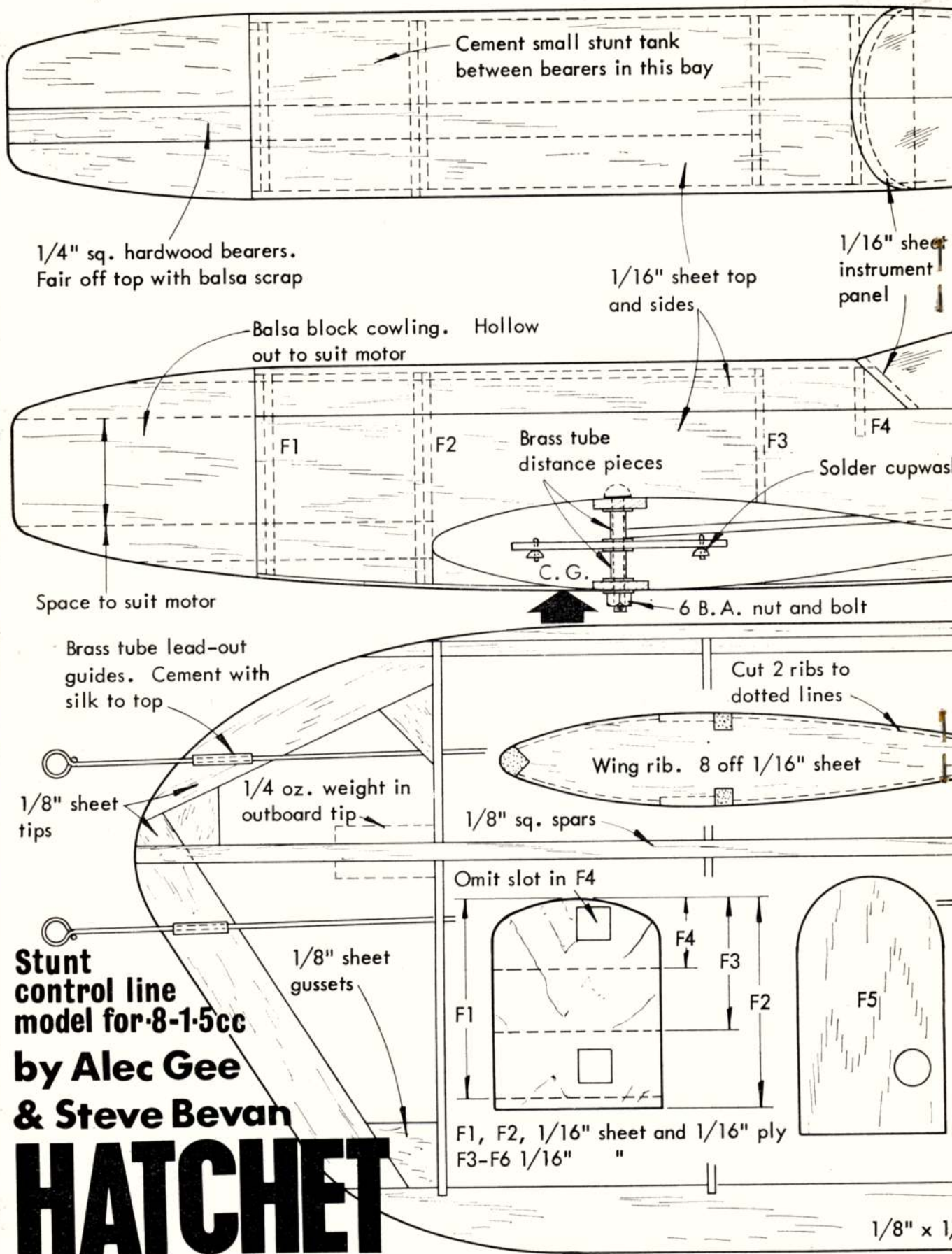
It is particularly fortunate that George Cox has chosen the Beech 17 as his first geometry subject, for it appears

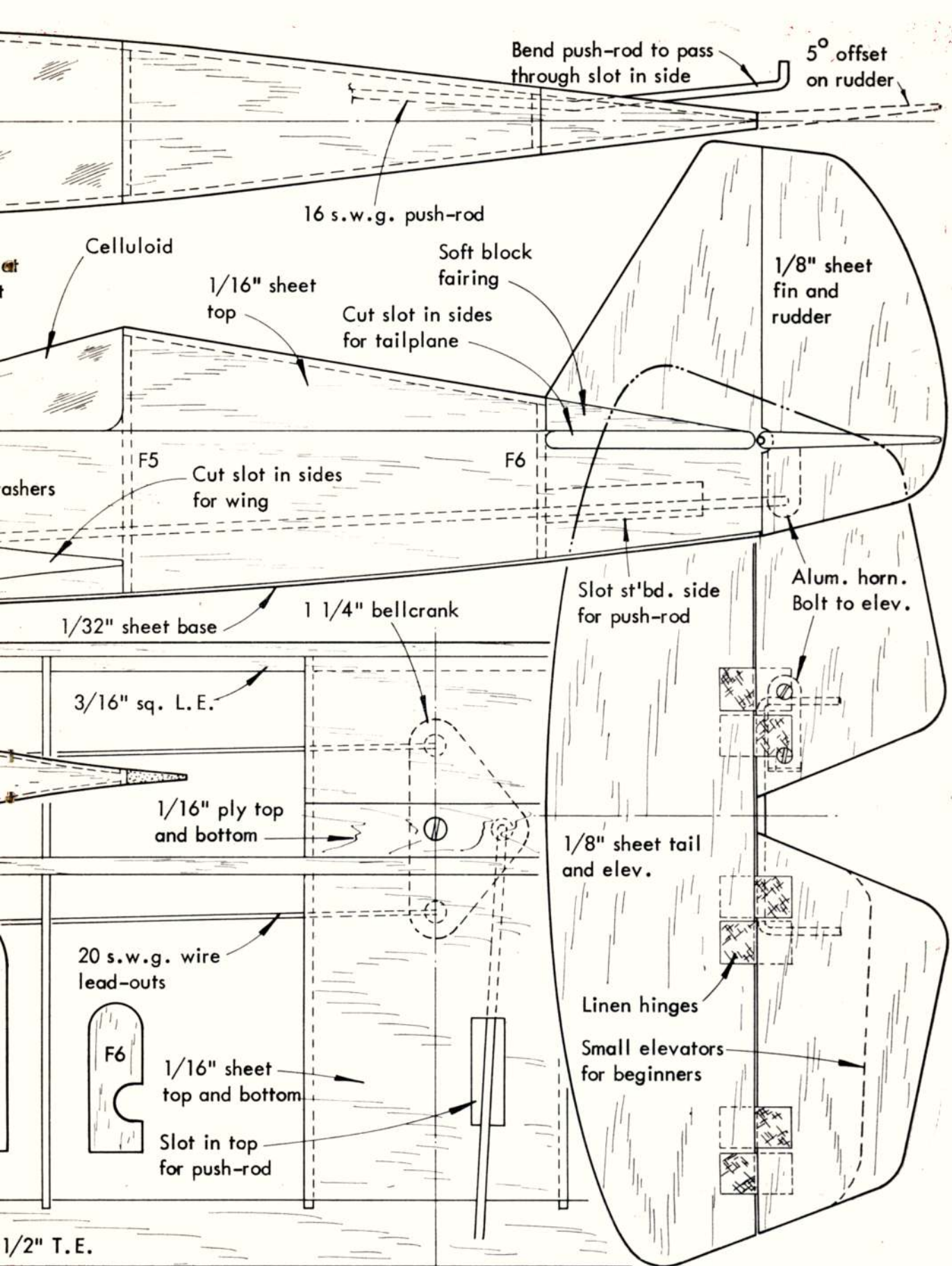
Above: Ross Hadley's red, white and blue D-17s, raced as No. 44 to fifth place in the 1938 Bendix Trophy at an average speed of 181 m.p.h. over 2043 miles. (William Larkins picture). Below: the test model, made to prove G. Cox's drawings, one-fifth scale reproduction at bottom. 1/12th full-size drawing is 3s. 6d. including post from A.P.S.

from our searches that no accurate drawing of this type has before been published. Evidence of this is the forward tilt of the rudder post on this machine, a fact overlooked even by the Beech draughtsman preparing the G.A., but discovered by George Cox and since confirmed by Mr. R. T. Smith in America.

Contributor George Cox asks us to apologise for an error in his drawings of the Beechcraft 17. The factory drawing specifies dihedral in the lower wing only, a fact duly recorded in our scale plans. Close examination of a photograph has since revealed a small degree of dihedral in the upper wing also, and this too was confirmed by Mr. Smith as being 1½ inches at the wing tip.







The reservoir used was two Aerosol cans feeding a common pressure line to the selector valve. They were pressurised by means of a standard Schrader car valve

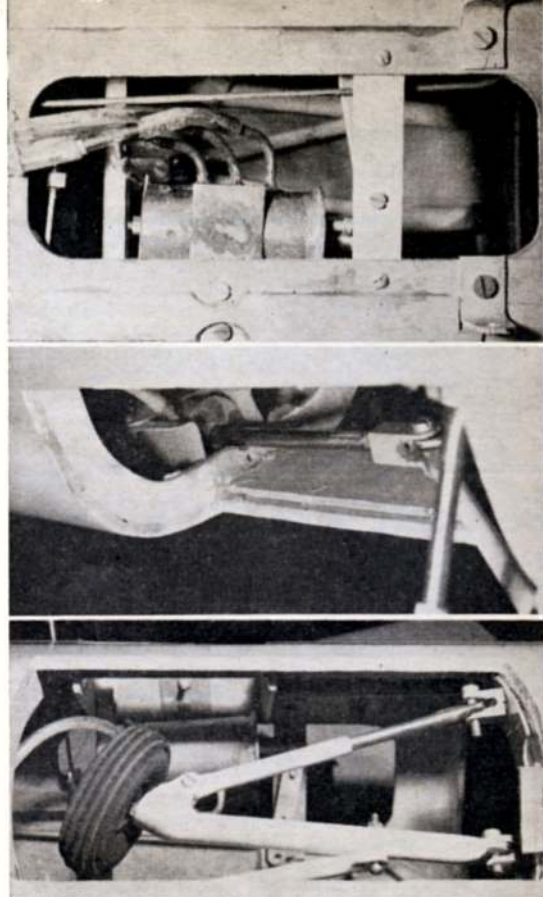
Close up views at right show selector valve at top, jack ram (centre) and retracted leg below. At bottom two views which emphasise the neat details of the Crusader. Dynajet unit is 14 years old!

assembly soldered into one of the cans and pumped up with a car pump. The capacity thus obtained was sufficient for three complete undercarriage retracting cycles when pressurised initially to 40 p.s.i. The cans themselves are of light weight and capable of carrying the required pressure safely. The pressure in the reservoir can be measured with a standard car type pressure gauge.

The selector valve required special attention at the assembly stage to ensure the minimum of friction. This was done by polishing the bore of the tube to a very smooth finish using metal polish. Also, lubrication with hydraulic brake fluid (Girling or Lockheed depending upon make of seal) will reduce the friction even further. From Fig. 3 it can be seen that the friction force exerted by the two seals against the walls of the tube has to be overcome before the valve will move, hence it is desirable from the control point of view to keep this force to a minimum. In the case of the operating jacks the friction is not important as it is much less than the force exerted by the jack. In practice it was found that a force of about 2—3 lbs. was sufficient to move the valve.

All pipe runs were made with standard $\frac{1}{8}$ in. bore neoprene tube which will safely withstand 50 p.s.i.

In the *Crusader* the undercarriage was locked in the down position by spring loading the selector valve. (Fig. 1). Undercarriage 'Up' was effected with a Roberts Flight control unit, the third line connected to the operating lever overcoming the spring tensioner and moving the valve. Similarly on the release of the 3rd line the spring returned the undercarriage down.



Retractable Undercarriages PART THREE

It is absolutely essential when the jacks are installed in the model that they must 'bottom' before completing the available travel of the undercarriage system, otherwise the model will be torn asunder!

In practice it was found that the undercarriage retraction time was of the order of 0.2 sec. this however can be varied by fitting a restrictor in the pressure line from the reservoir so that retracting time nearer to scale.

All materials can be obtained from car dealers breakers yards and builders merchants. However as the foregoing notes are only intended as a guide it can be seen that the size of the jacks can be made to suit individual requirements. Also anyone with machine facilities can really go to town. The only limitations of the system are the size of seals available.

Notes on Construction of Jacks (Figs. 2 and 3).

Cut 1 in. tube to length, clean up and fit $\frac{1}{8}$ in. dia. feed pipes. Ensure that bore of tube is smooth. Use metal polish if necessary.

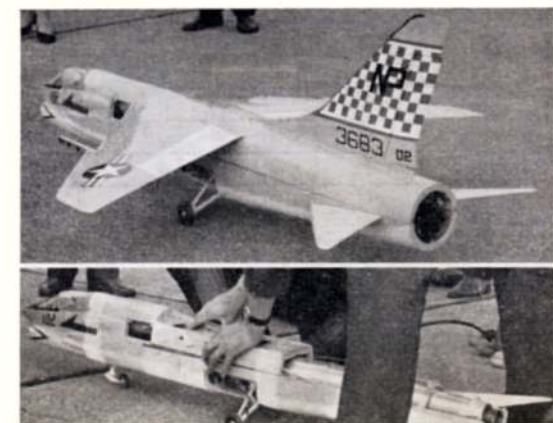
Cut piston rod to length and tap undersize 4 B.A. thread (i.e. tight) to give degree of locking for bolt. Tap other end of rod to suit installation. Make 20 S.W.G. washers, punch $\frac{5}{32}$ in. dia. holes in car seals, cut and solder on stop to underside of washer (Araldite if light alloy is used), assemble all parts and seal with small amount of 'Osotite' or similar sealing compound. Do not overtighten 4 B.A. bolt or distortion of seals will occur. Clean off excess sealer with cellulose thinners—allow sealer to completely harden for two days.

Cut out clamping plate and end plate, also rubber seal, (shown in detail 'B' and section 'A'). Drill as an assembly for $\frac{3}{32}$ in. rivets or bolts. Assemble clamping plate, seal and end plate in that order (seal is forced onto shaft to give shape shown). Rivet up—Do not remove

assembly from shaft subsequently as it will not be possible to put it back on without damaging seal. Solder complete rod—and seal assembly to tube (Note. Rivets must be sealed with sealer on assembly). Solder opposite end plate on with 6 B.A. stop. Lubricate with small amount of hydraulic brake fluid through feed pipes. (Pressure test to 5 p.s.i. If there are any leaks increase test pressure to 40 p.s.i. If leak persists dismantle jack and check seals). If reasonable care has been taken during the build the jack will be 100 per cent. leakproof.

The selector valve is made in a similar fashion (Fig. 3), except that a rod seal is not required. However, before assembly, polish bore of 1 in. tube with metal polish until a smooth surface is obtained. The distance between the feed pipes governs the travel of the valve and can be made to suit individual requirements.

Note. Bind all Neoprene pipe joints in the circuit with "Selltape" and fuse wire to stop them blowing off under pressure.

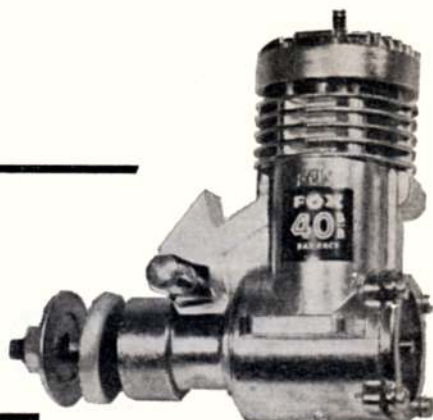


Data**SPECIFICATION**

Displacement: 6.49 c.c. (.394 cu. in.)
 Bore: .800 in.
 Stroke: .790 in.
 Weight: 8 ounces.
 Max. power: 76 B.H.P. at 15,600.
 Max. torque: 55 ounce-inches at 12,000 r.p.m.
 Power rating: .117 B.H.P. per c.c.
 Power/weight ratio: .095 B.H.P. per ounce.

PROPELLER—r.p.m. figures

Propeller	R.P.M.
Top Flite: 9 x 6	14,200 (15,300 on Fox Blast)
10 x 6	12,400 (13,200 on Fox Blast)
9 x 7	13,300
Keilkraft: 8 x 6	16,800
9 x 6	13,300
9 x 7	13,600
Frog nylon: 9 x 6	15,300
Fuel: 30 per cent nitromethane	
All B.H.P. curve figures extracted on Fox Blast fuel (50% nitro)	



ENGINE ANALYSIS No 116 by R. H. Warring **FOX 40 BB**

THE FOX 40 BB is a real "man's" engine specifically developed for rat racing and to the maximum displacement permitted by the AMA Rat Race Rules. Like all Fox engines it has a general look of ruggedness and honest model engineering, despite an overall "gold plating" externally applied as a further distinguishing feature. This, in fact, only serves to emphasise rather than mask the "engineering" finish of the castings on what is essentially a "workhorse" of a power unit rather than a sleek production for mass appeal. Performance-wise the Fox 40 BB is quite capable of speaking for itself, almost literally by its noise level, and by power output.

Although essentially a specialist engine for the more enthusiastic modeller the Fox 40 BB is by no means difficult to handle. The fantastically large induction port coupled with complete absence of effective suction demands a pressure fuel feed (or gravity feed for bench running), but starting characteristics are very good. With a pressure tank, starting from cold can usually be accomplished in two or three flicks at the most, following a generous prime. Re-starting with the engine hot is almost immediate without priming.

With a gravity feed set-up for bench running flooding is a distinct possibility unless provision is made to shut off the fuel supply until a moment or two before starting (and immediately on stopping again). The most satisfactory answer in this case is a tap in the fuel line or a pinch-type clip used on flexible (neoprene) fuel tubing and a similar device is, in fact, recommended by Fox for inserting between the pressure tank and the spraybar in a typical model installation. Closing the fuel line then prevents any possibility of flooding the engine when refilling the tank at pit stops.

Like a good many "racing" glow motors designed to run on high-nitro fuels the Fox 40 BB is pretty hard on

plugs. Long reach plugs are specified and it is very much a matter of finding which particular plugs will stand up best to the fuel being used. On low-nitro fuels plug life is fairly reasonable but with high nitro fuels a plug blown per run is not unusual, although having found a plug which will stand up to a run or two it will usually last for some time. The surest way of blowing a plug seems to be leaning the mixture right out for absolute peak performance. The power loss adjusted for a slightly richer setting is negligible—and certainly less expensive.

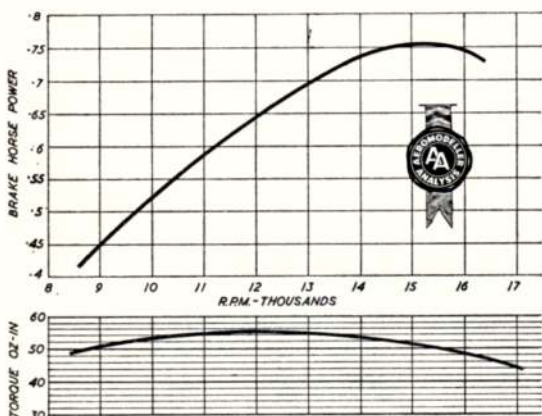
Two handling features we did not particularly like, both relating to matters of detail design. The propeller driver, we feel, is too coarsely knurled and it is difficult to get a tight enough grip on the prop. hub. As a consequence we found prop slipping relatively common when starting. The other "fault" lies in the needle valve which is somewhat difficult and almost painful to adjust (with adequate spring locking tension) due to the small knob.

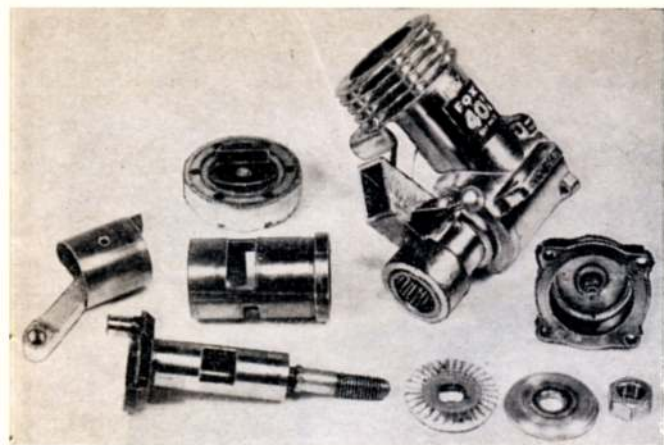
Another limitation from the handling point of view is that with the very high power output and almost "explosive" starting certain types and sizes of propellers can only be regarded as unsafe to use with the Fox 40 BB. This, in particular, limited the number of test propellers we felt it safe to use, especially as many have by now been subjected to considerable hard wear. Duke Fox also mentions that certain propellers (e.g. the Tornado 8 x 8) have a habit of shedding blades.

Logical prop sizes for rat racing are 8 x 8 or 8 x 9, which should allow the Fox to turn some 13,000 plus r.p.m. on the ground and reach peak r.p.m. (about 15,300) in the air. Fuel makes quite a difference to performance, the design being more or less "balanced" to a 50 per cent nitro content (e.g. Fox Blast), giving some 1,000 r.p.m. up to a 30 per cent nitro mixture on an 8 x 8 or 9 x 6 prop. The Fox 40 BB, rather surprisingly, starts and runs quite well on a straight methanol:castor mixture, although holding nothing like the same peak.

Design-wise the 40 BB follows very much the layout of the earlier Combat Special, and is largely conventional except for the very large square intake with parallel section. The crankcase unit is a single, substantial pressure die casting incorporating the induction tube, cylinder and race housing. Porting is conventional, with a single transfer passage on the left side and a diametrically opposite exhaust opening nearly 180 degrees.

The cylinder liner is of soft steel, extremely thin walled for an engine of this size and with enormous rectangular port openings. Transfer opening almost completely overlaps the exhaust. Both ports are approximately 170 degrees wide and the transfer port is 5/16 in. deep, leaving very little metal carrying the upper part of the liner. The liner is, however, very well supported in the crankcase unit. The liner is held down by six screws through the finned (die cast) head of substantial mass for heat retention, the combustion chamber being contoured in "racing" fashion for most efficient gas flow—at some





expense, we feel, to increasing the mechanical loading on the glow plug element.

The piston is of cast iron machined away to very thin walls as well as being scalloped on the skirt. Top is flat but with a high, narrow deflector, slightly chamfered to the edges. The fully floating gudgeon pin is hollow, of hardened steel, with brass end pads. Certainly liner and piston appear to have been taken down to limits of material thickness for lightness and with particular attention given to port development and gas flow.

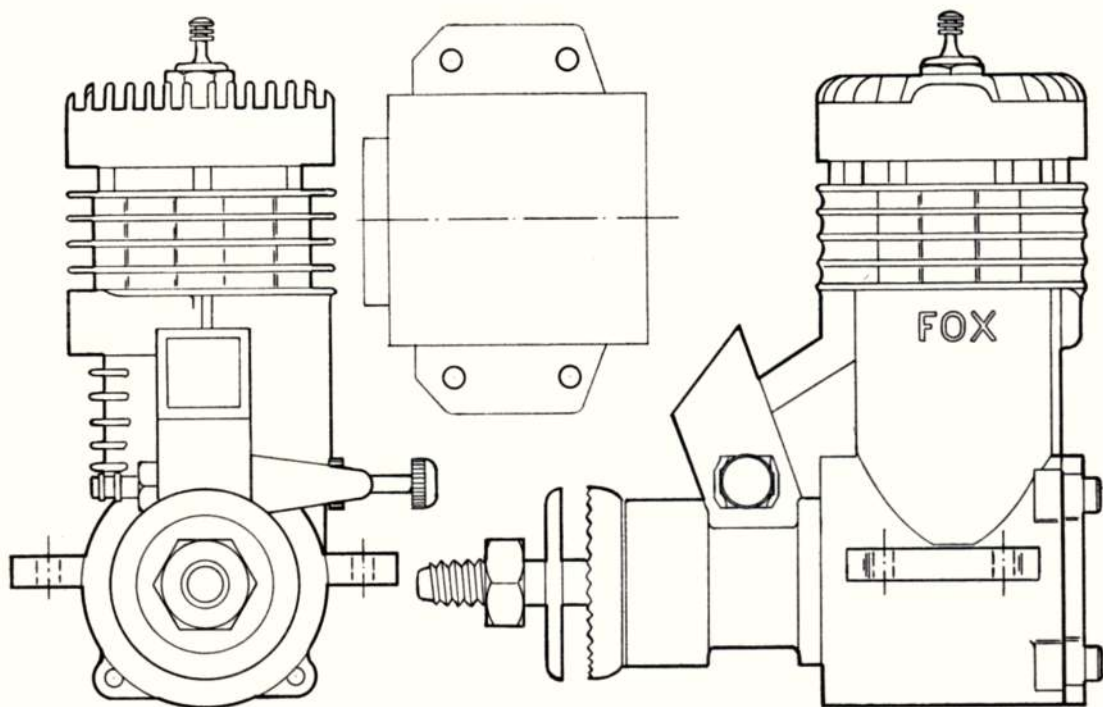
The $\frac{1}{2}$ in. diameter crankshaft is of steel, hardened over the journal length and crankpin but soft over the forward $\frac{1}{2}$ in. diameter threaded length and crank web. It is carried on a $\frac{1}{2}$ in. ball race at the rear and a $\frac{1}{2}$ in. roller race at the front, the latter being of the cageless type with the rollers simply retained by end flanges. This permits a minimum diameter housing. The main rear race is also unusual in having rather wide ball spacing. The plain length between the races is only lightly rubbed by the shaft and provides an oil seal.

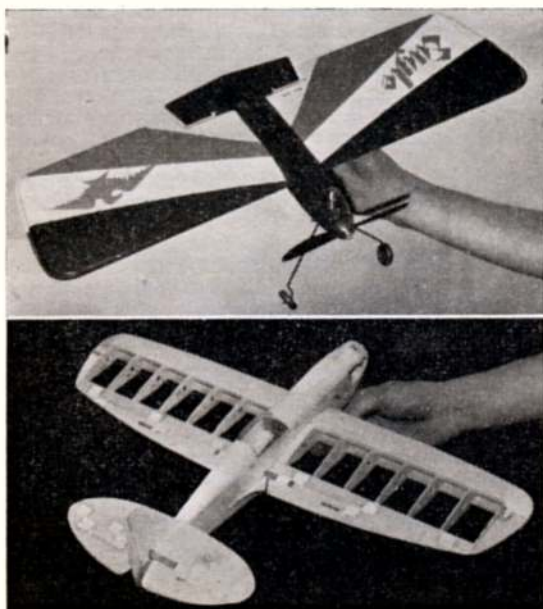
Shaft port opening is $\frac{3}{8}$ in. square, entering a $\frac{3}{8}$ in. diameter shaft hole—an effective entry area of 0.11 sq. in. Finish over the journal length is ground but showing some evidence of fretting at the race positions after about three hours running. Immediately in front of the journal length the shaft steps down abruptly to $\frac{1}{4}$ in. diameter on

which is formed the castellated key for the prop driver and then the standard thread for the prop nut. Relief of hardness is taken right back to the square front of the $\frac{1}{2}$ in. diameter length so that in a bad crash the front shaft could, presumably, bend instead of break. The crank web is quite thick, but heavily chamfered and cut away for counterbalance. Sharp edges are also taken off on the rear face. Crankpin is 0.215 in. diameter. The connecting rod appears to be a light alloy die casting, machined around the big end to reduce to a satisfactory clearance size.

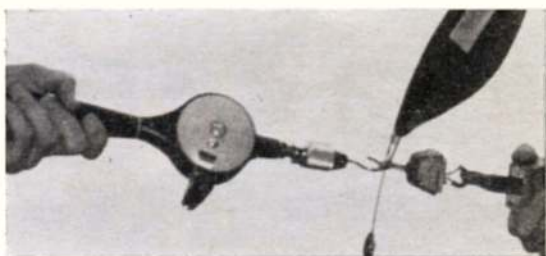
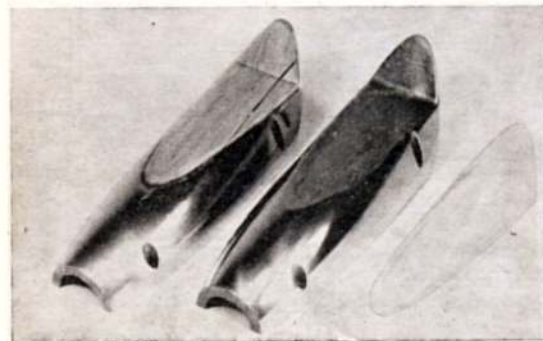
The crankcase rear cover is a light alloy pressure die casting attached by four Phillips head screws and sealing on a gasket. The centre is drilled and tapped for a brass pressure nipple fitting. The spraybar is of brass with a steel needle and integral thimble, the whole unit being a little on the flimsy side for an engine of this size and duty (it is difficult to tighten it up properly without fear of stripping the threads holding the retaining nut, for example). The needle end features the Fox-originated spade protrusion to centre the taper needle against vibration. The propeller driver is of steel, with a shaped hole to lock on the shaft. A standard nut and washer complete the assembly.

Altogether, the Fox 40 BB is a more or less orthodox design of engine with somewhat exaggerated porting, especially on the induction side, demanding that fuel be fed to the engine rather than be sucked in by it. It relies for its performance on inducting and consuming a vast quantity of fuel, and using it efficiently—which is where Fox "know how" comes into play with regard to details that make all the difference. The 40 BB, in fact, exemplifies just what can be done through years of experience and development in the matter of extracting more B.H.P. per c.c. from a basic engine layout and tailoring an engine to a particular requirement; and whilst we may disagree with certain details, results speak for themselves. Relatively few designers other than Duke Fox would have got anywhere near the same figures.





ONE SOUVENIR ACQUIRED at Genk from the distributors for "Precisia" kits of Lyon, as the *Espadon* (Swordfish) F.A.I. team racer. This is a first class kit of the model flown by designer Jean Magne of France at the Criterium of Aces. Most unusual feature is the pre-shaped wing and tailplane with a $\frac{3}{8}$ in. deep slot around the circumference to accept hardwood leading and trailing edges, all of which are cut to the outline curve. Balsa seems to have been very carefully selected for each part, leadout tubes are a hard P.V.C. type material, and a pan as well as the dural mono leg, moulded cockpit cover and silver soldered elevator horn assembly are included. Only grumble we have is the single bolt holding the pan down. This could easily come loose and cause the pan to chatter against the hardwood crutch. Motor installation is shown for a Micron 2.5 with extension shaft so the pan will have to be cut back to fit the ETA or Oliver. Cost in France is approximately £4-10-0. **Keil Kraft's** *Wisp* is a 20 in. span glider for 7/6d. and makes into an attractive simple beginner's job, basically a chuck glider with built up flying surfaces. A tow-hook is provided for line-launching. Also new from **Keil Kraft** is the *Radian*, a 22 in. span sport C/L stunt model for 0.049 motors selling at 19/4d. This features wing flaps and a nice thick section. All parts are die-cut and contents include stunt tank, formed canopy,



TRADE NOTES

bellcrank, etc. The full-size plans are very clear and this will make a nice first control line stunt model. Flaps are unusual in so small a type but they play their part most effectively.

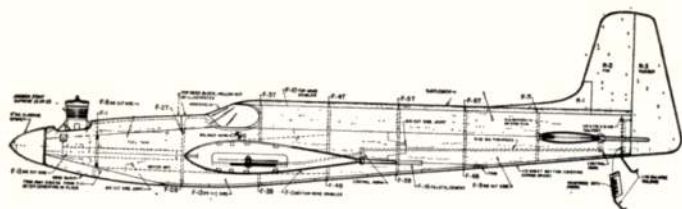
From **Mercury** comes the 32 in. span *Wizard*, a simple free flight cabin model with slab sheet sides slotted to take the matching fuselage former keys. Kit includes formed u/c, wheels die cut ply and balsa parts, and is just the job for Sunday flying with .8cc engines at 27/-.

Roland Scott now imports from the U.S.A., the **Mid-west Omega**, *Cougar*, *Delta Hustler XD-7* and **Carl Goldberg's** *F.A.I. Viking*. Omega is a 33½ in. span 330 sq. ins. 0.35 combat wing and lays claim to being a one-night building task. Construction differs from normal practice by featuring a sheet type leading edge and main spar, though we doubt the value of the flat spar arrangement. Kit is die-cut and includes tissue, bolts, etc., for 29/-. The *Cougar* for 85/- is a 555 sq. ins. 54 in. span, 38 in. long 0.35 flapped control line stunter designed by Hi Johnsons of Dynamic Models Inc., and has a touch of his old Ken Hi Cougar in its outline. This kit includes a pre-formed u/c, with fixing brackets and all parts are die-cut.

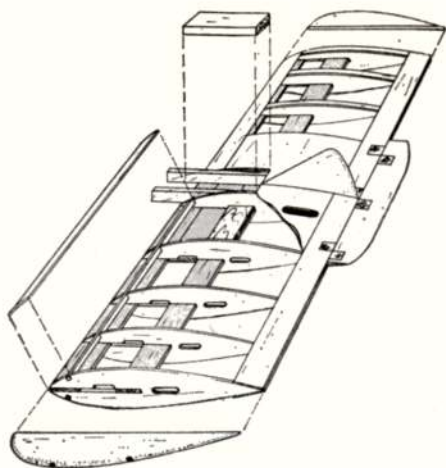
One of the most famous, R/C Delta models is the 44½ in. span, 31½ in. long *Hustler X-7*. This is a very fast, fully aerobatic design ideal for a 0.29 engine and four channel gear on elevator and aileron controls. As a speed model, performance speaks for itself with 126.9 m.p.h., using a McCoy 60 to claim a new world record. Construction is very simple with good quality die cutting, while accessories in the £9-10-0 kit from R. Scott include formed u/c legs, nylon bellcranks and elevator horns.

That industrious caterer for speed and team race control-liners, **Paul Pomadi** has added an F.A.I. T/R pan to fit the A.P.S. *Fresco* racer, published in September issue, to his already large range at 16/6d., including a moulded canopy. As with the rest of the range, this is a very well finished pan, weighing only 1½ ozs. It has four hold down bolts and takes a 1½ in. spinner. To aid model designers, Pomadi has produced two sheets of drawings to show all the cast pans full size, the Speed sheet is priced at 4/- and team race 3/-. Other A.P.S. designs for which Pomadi pans are available are *Miss F.A.I.* by Kjell Rosenlund and the speed model *Gin Mill* by Gus Johnson which comes in two versions, thin lightweight and extra strong with reinforcing ribs.

Top left: Wen-Mac "Eagle" Flying Wing with new engine at £5 19s. 8d., ready-to-fly. Keil Kraft "Radian" framework completed (from kit on page opposite), is below. To the right, the new Stanley all enclosed light alloy drill on test—a great improvement. Bottom left: Pomadi pans for A.P.S. "Fresco" team racer, come with moulded cockpit. Right, the new "Minidrill" distributed by Skol-Kits, size No. 8, powered by 12-13.5 v. with a variety of polishing mops, burrs and cutters at 87s. 6d. Dental burrs and cutters are available in a large variety of accessories. Does a fine job on engine cleaning, re-working, etc., also for working printed circuits



Midwest "Cougar" C/L stunt profile shows some changes from original KenHi design. Right, is Midwest "Omega" combat model for .35 cu. in. engines with horizontal spar arrangement to accept impact loads. Both distributed by Roland Scott



Two new catalogues announced this month and each supplemented with useful tables, features, etc. are the *Gremlin Handbook* price 1s. 6d. from **Bradshaw Model Products** and *Gamages Model Book*, still only 1s. despite its crammed 128 pages. This is real value for money.

The new **Stanley Handdrill** with enclosed aluminium body, finished in black and yellow for 35s. 6d. and with a chuck taking up to 5/16 drills, will be a boon for all rubber modellers. No longer is there a risk of excess gear wear when the winder is hurriedly discarded on the flying field to pick up grit and dirt on the teeth and bearings. Ratio is 3.5:1, and our tests give it a grade A1 pass for conversion as a winder for rubber motors.

New plastics this month include a *Miles Master* at 2s. and the *Martin Baltimore* at 4s. 6d. from **International Model Aircraft** in the *Frog* range,—two more unusual subjects which have been a distinct appeal. The *Airfix 1/72nd Lockheed F104 Starfighter* is now fully distributed to all model shops and next to come is the Russian *Yak 9D*. Having busted the curtain, can we now hope for a "Stormovik"?

For six box ends from the **Revell 2s. 11d.** World War II Fighters series, plus 6d. in stamps, one can now get a handsome 12 page booklet known as the *Revell History of Flight* with full colour reproductions of the W.W.II kit box labels and excellent histories by Bruce Robertson.

Still on the plastic theme, **A. A. Hales Ltd.** have produced an excellent free leaflet "Learn to Fly Control Line Models". It is aimed at all purchasers of the *Triang-Cox* range, and dealing in the main with the PT-19 ready-to-fly trainer, which retails at £5 5s. 0d. This is an excellent approach and will, we hope, guide the prospective R.T.F. pilot on to the right track.

Latest **Wen-Mac** ready-to-fly, distributed by **Keilcraft** is the *Flying Wing* series at £5 19s. 8d. Each identical but with differing colour schemes, the *Thunderbird*, *Bat*, *Hawk*, *Albatross* and *Eagle* are vacuum formed flying wings with a high degree of manoeuvrability and the new Mark V "Hot Shot" .049 engine with revised crankcase and cylinder. Not exactly an ideal recommendation for the absolute novice, these Wen-Mac wings have a Combat performance and the choices of colour and markings are an attractive novelty.

Below, kits of the month headed by the attractive French "Espadon" by Precisia, completely pre-cut parts for a top notch team racer. Keilcraft's "Wisp" 20 in. glider and the Radian 22 in. C/L stunter go together well and Mercury "Wizard" at bottom is a Sunday flying sportster, which will have a wide appeal for the popular small engine range from .32-.8cc



AIRCRAFT DESCRIBED
NUMBER 126

BY J. H. ROBINSON

FOLKERTS SK-3



CLAYTON FOLKERTS FOLLOWED the redesign of his Mono-Special of 1930 with the SK-2 *Toots*, a cantilever mid-wing monoplane with retractable undercarriage and a four-cylinder Menasco engine. At the 1936 National Air Races, *Toots* won three races, placed second in two and was fourth in the Thompson Trophy Race.

Built to the order of Rudy A. Kling, whose 150 flying hours included the 1936 Greve Trophy Race, the SK-3 closely resembled *Toots* except for its six-cylinder Menasco Super Buccaneer engine and a four inch increase in wingspan. Design and construction were entirely by Folkerts, who shared material expenses with Kling. The fuselage was a triangular section truss of welded steel tubing, with two upper longerons carrying wing and tailplane and extending forward to form the engine mounting. A single tapered longeron formed the lower fuselage outline, reducing weight and simplifying undercarriage retraction. The structure was faired to an oval section with ply formers, spruce stringers and fabric.

Two fuel tanks, each of 11 U.S. gallons capacity, were mounted over the wing with the main 27 gallon tank and an auxiliary of 12 gallons immediately behind the cockpit. The oil tank was mounted high in the rear fuselage, and the oil cooled by running flow and return lines along the lower longeron.

The one-piece wing was built about a single wide-flanged spruce spar with a spruce auxiliary spar carrying ailerons and landing flaps. Ribs were of $\frac{1}{4}$ in. plywood with spruce cap-strips and the $\frac{1}{4}$ in. plywood skin was fabric covered at the leading edge and tips and superbly finished. Ailerons were cable operated by external horns, and like the manually operated flaps were built about a single spar with plywood ribs and covering.

The all-spruce tailplane was built about two solid spars with an auxiliary spar carrying the elevators, a laminated leading edge, $\frac{1}{4}$ in. plywood covering, and four bolts attaching both it and the steel tube fin structure to the upper fuselage longerons. With its steel tube fin post integral with the fuselage, spruce ribs, and leading edge faired with balsa, the fin was fabric covered as a single unit with the fuselage.

Each main undercarriage truss was pivoted to a secondary truss pivoted in turn to the fuselage structure. A handwheel was connected by chain and sprocket to a system of pulleys and cables attached to the rearmost point of each main truss. After disengaging the down locks rotation of the handwheel raised the wheels towards the aircraft centre line to strike a knee-jointed tube pivoted to each undercarriage door and draw the door closed behind the wheel. Six loops of rubber cord to

Heading emphasises the small dimensions of this fast racer as it is pushed away with trolley to support the tail skid (From John W. Caler collection). Below are views of the opposite side showing small main wheels on retracting gear and irregularly placed exhaust ports. (Gilbert Winkler photos). Reprints of the 1/48th scale drawing opposite and dye-line drawings of the 1/24th scale original are available through AERO-MODELLER Plans Service as Plan Pack AH 2771 price 2s. 10d. inc. post

each main truss absorbed landing shocks, giving a travel of approximately five inches.

Kling, an expert engine mechanic from Lemont, Illinois, personally set valve clearances and balanced the crankshaft of the SK-3's Menasco engine, and with special dope fuel of about 95 octane and a small high-pitch propeller its power was increased from 250 h.p. to approximately 400 h.p. at 3,300 r.p.m. Lack of time prevented systematic testing of the SK-3, although longitudinal balance was improved by adjustment of the oil tank. At the 1937 National Air Races at Cleveland, a minimum of oil was used for each race so the engine ran hot at maximum revs and landed practically dry.

After a close race in high wind, Kling won the Greve Trophy Race at 232.272 m.p.h., just two seconds ahead of veteran Steve Wittman's *Chief Oskosh*. Despite this success and a qualifying speed of over 240 m.p.h., Kling and the SK-3, proudly named *Jupiter Pride of Lemont* were hardly considered for the Thompson Trophy Race on September 6. From an awkward take-off Kling moved to seventh position at the scattering pylon, and flying high and wide continued to move ahead until by the fifteenth lap he was lying fourth. Steve Wittman's D-12 powered *Bonzo* led until the seventeenth lap when his propeller struck a bird, leaving Roscoe Turner and his Brown-built *Meteor* to lead Earl Ortman's Rider R-3.

Entering the twentieth lap Kling received a pre-arranged signal from his ground crew to go all out, then Turner turned back at No. 2 pylon, mistakenly thinking he had missed it, and Ortman, believing Kling to be in only his nineteenth lap, appeared a certain winner until after the final pylon. Then from his superior altitude Kling dived at full throttle and passed Ortman almost opposite the judges stand in the closest finish of any Thompson race. Kling's time was 46 mins. 42.5 secs. and his speed 256.910 m.p.h.; Ortman's figures were 46 mins. 43.1 secs. and 256.858 m.p.h.

Jupiter was the only Menasco-powered aircraft to win the Thompson Trophy Race, and the first to raise the 1932 record of 252 m.p.h. set by the Gee Bee R-1. But success for Rudy Kling, Clayton Folkerts and Al Menasco was shortlived. At the Miami Air Manouvers, on December 3, 1937, in appalling weather conditions, *Jupiter* was caught in a violent gust at the scattering pylon for the day's main race. After a sudden side-slip one wing tip struck the ground, the aircraft cartwheeled at least twice and was completely destroyed. Kling was killed instantly.

The author gratefully acknowledges the patient co-operation of Mr. Clayton Folkerts, and the help of Mr. C. H. Boas who provided details noted on the drawing and numerous particulars of structure.





Two of a Kind

from the new series of 14 "Modern Aircraft" titles.

"*Racing Planes Guide*" by Joe Christy, Modern Aircraft Series, 12s. 6d., Graham K. Scott, 84 Grosvenor Road, London, N.10. The 140 small pages of this "guide" contain no reference to the Coupe Deutsch de la Meurthe events or any King's Cup machine. The text gives sketchy coverage to the period 1909-1962 and contains little that is new, but is supplemented by handy tables of pilots, placings, and speeds. The account of post-war racing in the U.S.A. is more consistent and a useful record of Goodyear-type events.

As the text is too little about too many (despite omissions) so the illustrations are too many, too small (over 200, three to a page). Reproduction is generally poor, but many are excellent photographs or, of considerable interest, such as the Verville VCP-R, Navy-Wright "Mystery", and Lowell Bayles in the cockpit of the Gee Bee Z.

A pleasing feature is the frequent naming of designers as well as pilots, but this is offset by the many inaccuracies. H. C. Baird, Northrup, Farrarini, Bennett Cup, Thomas Black and countless others are simply not good enough. Most references to Curtiss racing types are hopelessly inaccurate and misleading, and include the usual mistake over the 1921 Pulitzer winner extended to the 1923 Schneider. Care commensurate with the evident energy and enthusiasm that produced this book could have made it a real contribution to air racing history.

—J. H. Robinson.

"*Classic Biplanes*" by Robert T. Smith, Modern Aircraft Series, 12s. 6d., Graham K. Scott, 84 Grosvenor Road, London, N.10. A better title for this book might have been "Three Classic Biplanes", for the substance of it is devoted to a description of only three out of a multitude of worthy subjects

Book Reviews

produced in America between the wars. It is rather an historical account of the establishment of the Travelair Waco and Beech companies with their principal products, a task which the author has performed creditably despite an unsophisticated grammatical style which can be irritating.

For those interested in this period of American aviation, this account of the early ventures of Walter Beech, Lloyd Stearman and Clyde Cessna provides interesting reading. It is not generally known that all three were at one time employed by the Travelair firm in Wichita.

The booklet is generously illustrated by photographs and two rather bare drawings of Travelair machines.

One can forgive Mr. Smith for concentrating on the three American machines which form the subject of this book because in a publication of this size narrow specialisation is demanded, and the author has obvious expert knowledge of those subjects. It is difficult to understand, therefore, why almost as an afterthought, he should preface the book with five Curtiss Jenny and DH4 photographs and provide at the end an odd assortment of photographs including just one military machine, the Curtiss P6-E and just one "foreign" biplane, the Tiger Moth. There is a suggestion here, which was obviously not intended, that in comparison with Beech, Travelair and Waco machines, others, and particularly non-American aircraft are hardly worthy of mention.

Potted History

"*The Wright Brothers*" by C. H. Gibbs-Smith, 2s. 6d. H.M.S.O. When writing this book the author had the task of condensing into 32 pages the fascinating story of the Wright Brothers' work during a period of twelve years. Mr. Gibbs-Smith has selected his facts wisely, giving an account not only of the brothers' experiments leading to the 1903 flights, but also of their subsequent triumphs with improved machines, and the influence which these had on the development of aviation in Europe. It is a pity, however, that space would not permit more than a mention of the early experiments with aerofoil sections in a wind tunnel and on a bicycle. Neglected too, is the designing and building of the Wrights' own aero engine—an achievement almost as important as their airframe inventions.

Nevertheless, the author has succeeded in presenting lucidly the essential facts, and in whetting the reader's appetite for further study. Printed on good paper with 56 illustrations, this is good value for 2s. 6d. and is recommended as an essential item in any aeronautical library.

Sabre, Fury & Dog

"*The North American Sabre*" by Ray Wagner, 35s., Macdonald & Co., London. Third in the 10 in. by 7½ in. well produced Macdonald Monograph series, this relates the development and service history of the first swept-wing U.S. jet fighter, from initial examinations of German wing research data right through to Korean action and the Canadian and Australian variants. The Korean section includes a list of war aces and a detailed comparison between the Sabre and its main foe, the faster climbing MiG 15. Each variant has been fully detailed, including those used in the Air National Guard of today. Naval Furies and the Sabre-Dog are not neglected so that this multi-service fighter, still first line equipment in many Forces and a mount for aerobatic teams from Italy and Greece at the 1963 Paris Aero Show is given full display in no less than 300 photographs and six three view tone drawings.

Tale worth telling

"*The Story of the British Light Aeroplane*" by Terence Boughton, 42s., John Murray, London. There are categories of author. Pot-boilers produce quickly, deriving their re-toiled works from unquestioned sources and at the opposite end of the scale, the perfectionists who slave at personal research checking each word, seeking original facts and collecting them in readable style. Terence Boughton is quite clearly one of the latter, and we venture to suggest a Peer among the few so qualified. This is a book which reveals so much that has been forgotten by the diehard pioneers, and remains unappreciated by those who take today's light plan for granted. Here is the story of the 1922 Itford Hill trials, the 1923 event which produced the Wren and Hummingbird, the two seater events of 1924 and so on to the establishment of Flying Clubs (a licence for £20 with 8 hours dual and 3 solo) and the coming of the Moths, the Avian, the Praga, the Bluebird, the Poux and all their contemporaries.

Records, the great Percival Gull flights and such adventurous tours as John Grier-son's flight through the U.S.S.R. with the ex-Glen Kidston Gipsy Moth (half red, half black) are recounted in such lucid style that our interest forgives the author for including only eight drawings, none of which are sufficiently complete for scale modelling. 321 pages include many useful appendices with tabulated data on all types from the 1927 Avian to the 1958 Nipper, plus all the entries in the historic Itford and Lympne trials. Definitely one for repeated browsing, and the reference shelf.

Into Cosmos

"*Space Craft Models*" by Ray Malmstrom, 15s. Arco, London. Model rocketry is the rapidly advancing hobby which has absorbed the interests of so many youthful enthusiasts in Europe, the U.S.A. and the U.S.S.R. The approaches vary, and are naturally tempered with caution. Ray Malmstrom takes the line that Space Craft and futuristic models form a subject for both amusement and education. His long experience with modelling enables him to produce subjects that are practical to make and at the same time his fertile mind has created ingenious designs that possibly forecast future full-size development. A book to recommend to anyone of creative talent, and certainly well worth the investment of 15s. by any aeromodeler with a taste for the unorthodox. Jetex and T.D. engine saucers and delta's are among the powered model plans.

continued opposite



"Hawker Hurricane" centre page plan

Reader's Letters

DEAR SIR,

After reading Mr. Gould's letter in August AEROMODELLER I cannot help thinking that he has his C/L wires crossed somewhere.

He criticises Combat flyers and says they don't create a very good impression for the public. My clubmates specialise in Public Displays and up to now the Combat lads have always drawn the biggest crowd of spectators. During these displays some of us ask for opinions and without a doubt Combat is the firm favourite. As a general rule after a couple of flights by a Stunt or Scale model, the general public begin to find it a bit monotonous unless one is willing to risk said Stunt or Scale model, in balloon bursting, or something equally hair raising.

I don't like flying, or building Combat models myself, but I do believe in letting people please themselves. One main reason for the popularity of Combat is that these "so called little wings" are cheap and easy to build and give many a junior, endless hours of flying fun that he couldn't afford if he had to build other types.

C. W. GREEN,
Mansfield, Notts. P.R.O. Sutton in Ashfield

Mustang Markings

DEAR SIR,

I would like to make a statement concerning the caption on the P-51D *Ferocious Frankie* in your May 1963 issue.

U.S.A.F. photo 53858 AC states that *Frankie* was flown by Lt. Col. Wallace E. Hopkins, who was the 361st F.G. Executive Officer. The name, code B7—and kill markers are visible in the photograph.

It appears that ranking officers usually had an alternate aircraft, and also quite often used their own initial on their aircraft hence the H(bar). Whenever the alternate aircraft was not needed it would be flown by other pilots, evidently in this case it was Lt. Richards.

Ferocious Frankie was named for Col. Hopkins' wife.

JAY FRANK DIAL.

Texas, U.S.A.

The "Air Britain" specialist on such information, Roger Freeman offers the following comment:—

"It is true that ranking officers sometimes used their initial on personal aircraft. Such pilots frequently made use of other machines in the unit when their regular mount was not in commission. On these occasions a pilot usually had a preference for a particular alternate aircraft, although the dearth of Mustangs during the greater part of 1944 precluded any one pilot laying claim to two personal aircraft. When the first examples of a new model arrived at a station they were nearly always assigned to unit commanders and air leaders, who relinquished their former mounts to other pilots. One famous Eighth A.F. ace had no less than three of his "cast offs" still flying in his squadron at the same date. Nicknames and victory symbols were retained.

The first B7-H marked Mustang was serial 42-106655, a P-51B and personal machine of (the then) Major Hopkins. Mustang 44-13704 was one of the first

P-51D models to reach the 361st F.G. and apparently Hopkins forsook his original '51 for this. At the time the photograph refers to was taken (July 1944) another B7-H was in use; also a P-51B and numbered 42-106942. This aircraft was definitely not a personal machine of Lt. Col. Hopkins! It would appear that he was using B7-H (bar) only.

One source gives *Ferocious Frankie* as Lt. Richard's personal plane and it is probable that he inherited it from Lt. Col. Hopkins. However, as Richards is also known to have flown B7-M and B7-R on many occasions, and in view of Mr. Dial's information, it seems more probable that "F.F." was purely an alternative for Lt. Richards.

It is interesting to note that "F.F." survived the war and was still to be seen at Little Walden in May 1945. She was the only H (bar) Mustang in the 374th F.S. although there were several with plain H during the course of operations."

Help wanted

DEAR SIR,

I would like to take this opportunity of replying to Mr. Gould's letter published in your August issue.

The one and only reason that the E. J. Riding Memorial Trophy event was not held at the 1963 Open Meeting was that was no one to organise it. Past experience has shown that at least fifteen people are necessary to control the crowds that the event always draws.

Every event that the North Western Area organises is arranged at Area Committee meetings, for which every Area Club is notified. The arrangements for the Easter Open Meeting were made at the February Committee meeting, due to the short time left to us after our loss of Woodford. We were, therefore, left with the not unusual state of affairs where if we had no volunteers we could not run an event.

Arrangements have already begun for the 1964 Easter Open Meeting. The E. J. Riding Memorial Trophy event will certainly be held—provided that there are plenty of volunteers. We look forward to seeing Mr. Gould at a future Area Committee meeting.

D. J. MILLACHIP (Hon. P.R.O.)
Birkenhead, Cheshire. N.W.A.

Bargain price

DEAR SIR,

I was most interested to read in the October issue Mr. So Chung's comments on the Yin Yan 2.47 c.c. diesel I lent you for test earlier this year. As regards prices, I am sure Mr. Chung will be the first to agree that prices in Hong Kong are almost infinitely variable, and that Europeans pay more for a given article than Asians, while Americans pay more than anybody! The difference between initial asking price and actual cash paid is also a complex function of one's bargaining ability and staying power. Even though my motors (I bought two as well) cost more than Mr. Chung's, I am more than satisfied with them, and they pull an A.P.S. Mosquito around remarkably well. As Mr. Chung says, the Yin Yan is supplied with mounting bolts and a bicycle-

various stages of development. It seems a pity that the plan view in particular seems to have "grown" slightly over scale, a difficulty which besets ourselves when endeavouring to cope with stretch and shrinkage of tracing materials in the production of our own scale drawings. The situation becomes even more confused when one checks quoted leading particulars and we have a strong feeling that the 28 ft. 10½ ins. quoted for the basic fuselage length should, in fact, be 12 ins. less—at least both our own and the Kookaburra drawings agree on this point. For the scale modeller there are three excellent views showing the cockpit



type pressed steel wrench. The snag is that the spinner nut fits only one "hole" in the wrench, the other "holes" fit nothing at all—unless one also has a Chinese made bicycle. I haven't.

Lt. Com. A. D. BRIGGS, Royal Navy.
Plymouth, Devon.

Railroaded E. D.

DEAR SIR,

I am forwarding my former E.D. 2.46 Racer. This very good motor was installed in a *Yeoman Dixielander*. With many a max to its credit, finally as all models must, it came to an end.

This started when we, lost our timer, our friend "J. Conway" lent us a timer that didn't time. Alas! another kill to (Northwood) it soared into the heavens above with two minutes fuel on board. It finally landed on the main Euston-Glasgow express line. As we were fleeing o'er Northwick Park at full speed so was the mid-day express no further than five hundred yards down the line. To our horror we watched its death firmly wedged between rails and terra-firma.

One last word readers, keep you, models away from POWER LINES. (photo above).

MESSRS. P. BLAKE & W. HAMMOND,
Harrow, Middlesex.

Quick work

DEAR SIR,

The Crawley Club were forced to change the date of their Rally at very short notice, due to the very late harvest. S.M.A.E. offices were phoned, and the names and addresses of the active clubs in the area were requested, and the new date given. Immediately the date was checked and approved by a female voice, now known to be Mrs. M. G. James. Also we were promised a set of envelopes, addressed to the active clubs in Britain. These duly arrived within a couple of days, during which time we drafted and duplicated a letter to be sent to the clubs.

The promptness and helpfulness of the S.M.A.E. made our task the easier, and saved many S.M.A.E. members a fruitless journey. For this the club thanks them. So also should the aeromodellers who were to attend.

R. FLAIN.

Crawley, Sussex.

Hurribus

"The Hawker Hurricane" by Francis K. Mason, A.R. Ae.S., 7s. 6d., Kookaburra Technical Publications, Victoria, Australia. This 16 page monograph is the first in a series of technical manuals to be produced by two Australian enthusiasts currently resident in England. The technical details of the famous Hurricane from prototype to Mark XIIa are incorporated within 16 pages of heavyweight, glossy surface paper, giving very fine block reproduction. Centre pages are occupied by a 1/72nd scale spread giving multiple views of the Hurricane in its

interior and the photo selection has been widely chosen to depict a variety of colour schemes as well as types. It is satisfying to see that one of the most remarkable episodes in its Service career is recalled by the author. This was the safe deck landing on "H.M.S. Glorious" by 46 Squadron during the withdrawal from Norway when not one of the pilots had previous deck landing training nor were the aircraft equipped with arrestor hooks. The Hurricane lost much in terms of glamour to its contemporary, the Spitfire; but this handy manual will help to retain its glory in the reference files of aviation enthusiasts.

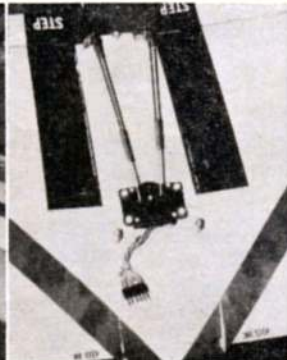
Championship technicalities

Highlights of the World Championships for Free Flight and Radio Control Multi-Channel models, plus the International "Criterium of Aces" held during August in Austria and Belgium.

Support for the United States team by visiting spectators was notable at both venues,—distant travellers including the Bell's from Miami, Joe Daniels Jr. from Illinois, who gets around everywhere, and Doc Brooke's pal all the way from Seattle, plus of course some of the teamsters wives, who came to see a little of Europe but possibly only saw model flying fields! British supporters were perhaps to be expected in fair numbers. Croydon's Martin Dilly became unofficial team manager for Turkey's sole representative Rone Koen at Wiener Neustadt, while Pete Waters of Port Talbot actually had the distinction of being both accepted and rejected at Genk with one official flight to his credit in the radio champs. Others fulfilled less spectacular but equally valuable cheer leading, model recovery and transportation duties.

Hurrah for S.M.A.E. Competition Secretary, Sam Messom! Who else would pay his own way along with the team, carry out all the management duties ensuring that all interests of the team were looked after, and then go on to win a rather special team manager's championship after the banquet. Slightly unstable but nevertheless outright winner in the unique duration event, Sam did at least make sure that we came back with the honour of one first place in Austria.

No wonder there was consternation when advances were made for Gerd Erichsen's winning design. It was identical in all aerodynamic respects to Andreas Mederer's original "Vulture", winner of four events in 1961, including the Zell am See international. We shall be publishing data on the all-balsa structure and Mederer M3 airfoil in later issues through the courtesy of *Der Bartabschneider* newsletter for the Modellflugjugend Munchen, West Germany, which has carried many specialist features on high performance A/1 and A/2 gliders using this structure.



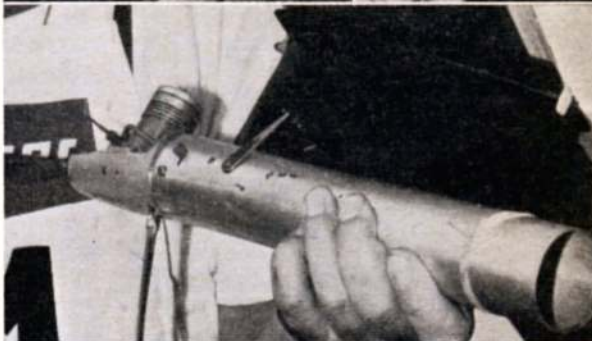
Finnish modellers Pentti Aalto and Harri Raulio featured "Cow Horn" curved dihedral on their Wakefield and Power model designs. Structure is Jig built with laminated outlines, no tremendous advantage being evident over normal polyhedral—though it looks good. Harri also had swept tail surfaces and a speed cowl over his Super Tigre G.20. Almost universal feature of gliders this year was application of the clockwork dethermaliser timer. Many and varied were the methods of tripping the timer by release of the towing ring, but undoubtedly the neatest of all was Bo Modeer's completely internal arrangement.

Surprise feature of East German power models was absence of rubber bands for attaching wing halves to the pylon on power models. Simple hook and snap device seemed to work admirably.

Increasing use of light alloys in all three free flight classes was evidenced by Duralumin spine cum wing mount on all three Sokolov influenced Russian A/2 gliders, tubular forward fuselages on Yugoslavian power models and Dave Kneeland's American Wakefield.

Asked why he preferred to use an imported motor, finalist Doug Galbreath of U.S.A., declared one of his home products "It burns glow plugs like they were going out of fashion".

Bruno Murari who was eventual 3rd in the fly-off, takes our award both for one of the most interesting models of the meeting and for his calm, well practised techniques. For example he suffered a motor break in the last moments of one fly-off round and rather than panic into using the reserve, which was ready and waiting, chose to patiently dig out the bunched knots, fit a new motor and launch as the round concluded. Model featured a perspex nose block with ball bearing supported shaft, egg-box rib structure with multi spars, wound balsa and glass fibre tubular fuselage with ultra lightweight plug-in rear end and tail surfaces.



Far left: original hand built Lee 45 engine has exhaust on left side as seen on Dr. Ralph Brooke's 21 per cent., 72 in. wing "Centurion", with inset ailerons, not flown due to windy conditions. Next to it is aileron servo installation for Orbit proportional indicating simplicity with push-pull bars taken direct from rotating disc, this on one of Gerry Nelson's reserve R/C entries

Most interesting aspect of proportional R/C at Genk was the manner in which it was flown. Brooke and Nelson appear to push on excess control to start the servos then take off stick movement to the desired setting. Sticks were also pulsed in the manner of reed levers during several manoeuvres and trimming out of control centres appeared necessary on some flights.

Below, Left to right: Drazek was 2nd in final with streamlined natural balsa finish team racer, having unusual metal pan arrangement in the engine cooling intake. Centre, not used; but interesting Belgian Nery Bernard's made-to-measure tank, which fits around inverted Oliver Tiger shaft bearing and becomes part of the model! Right, M. Lahtinen Finland placed a creditable 4th in speed among trade and state supported entries with self much-modified Super Tigre, featuring a Cox glow plug let into the head

A.P.S. design. With level air speed approximately 80 m.p.h., the all-syrene (with balsa skin) Delta, equipped with pulsed Grundig Varioton 8 channel on throttle for the O.S.35 and Elevon controls went through a series of high speed manoeuvres that would not disgrace a full-size "Farnborough". We shall be publishing more details of the construction and control system. Many thought this model the best performer on the field. Hans Gast of the German team stated it would go through the full F.A.I. schedule but whether the large radius loops would appeal to the judges is another matter.

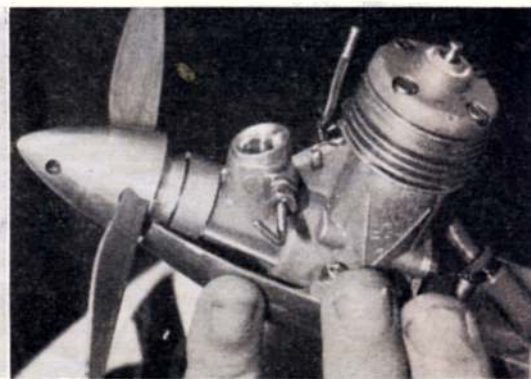
To the uninitiated, a striking impression was that very few R.C. entries, including those with highest reputations, could execute a spin. Inside loops seem to be well placed in general but outside loops were usually distant and downwind.

Downfall for British team race entries was undoubtedly their introduction to really strict circle administration. 30 seconds warm-up period was not enough to prepare the engine for a fast, long range run.

Winning Russian modellers overcame the warm-up problem through a two-bottle starting system, one fuel for priming and warming up, using extra Nitrate, the other for flying. Similarly, Russian expertise at pit stops and model catching showed evidence of long practice to earn them their success.



Above, neat and very light box for two equally fine Wakefields, held by Norma Hermes, flown by husband Carl



Technically the 1963 R.C. meeting was free of the gimmicks, obvious in '62. Practically all the gear was commercial, only variations being in installation, while no less than 17 out of 39 entries chose the same Taurus design.

During lunch break and after the meeting, some of the most spectacular flights seen at Genk were made by F. W. Biesterfeld's Delta 707, developed from his original

All three team race finalists used identical propellers, made of multi-ply laminate (Hydulignum), which would not break except on hard ground contact. They were of Czechoslovakian design.

Attempting to beat his world speed record of 316 km/h, Kouznetsov made a run of over 180 m.p.h. during which the Tee bar across the handle actually bent under the pull of the model and was dragged through the pylon yoke. Subsequent loss of control sent the model crashing without damage to the remarkable Kouznetsov engine.

Jet speed attempts were made by that intrepid Italian, Franco Marcenaro—after dark by the light of car and motor cycle headlamps. Starting was frustrated by warped valves.

Innovation for stunt design seen on Dr. Egervary's model were the triangular leading edge spoilers as on full-size machines such as Chipmunk, to break up flow over the wing roots at low speeds and high angles of attack.

After many crashes through failures, the Russians have discarded the button system of connecting Monoline to the Plane Unit. They now build up a key on the end of the line and engage this directly into the unit itself, so obtaining better torque for transmission and eliminating a possible weak point.

Centre column: top to bottom, East German K. Braasch placed 8th with a fascinating model using Oliver Tiger driving folding blade prop. Wing fixing is by two wire hooks pulling back over small platform and snap fitting at trailing edge. Next, vertical ply mount in Keirath's solid balsa winged Austrian model (7th) has timer, tank and glow plug Bugl 2.5 engine fitted as a simple power pack. At the side is nose of Modeer's A/2 model showing internal timer for tail tip which is tripped by release of line. Nose is elegantly carved from hard wood. Below it, the tubular front section of Vilim Kmoch's typical Yugoslavian model with pan mounted Super Tigre on front, protruding wide sweep timer indicator and hole at rear to accept tail section. Bottom, glass fibre was extensively used by Doug Galbreath on his "Jai Fai", featuring 10 deg. downthrust, shallow pylon and simple dethermaliser timer set-up

Below: 2-bottle system evident for starting as used by winning team race entrant Zolotovch (U.S.S.R.) with very streamlined, coloured tissue decorated model





Round the RALLIES

THE SPATE OF rallies from late July through August and the beginning of September, has done its best to keep the competitive side of the hobby well and truly alive. Here are all too brief reports on four of the biggest.

On July 21st, Chester M.F.C. ran their annual Slope Soaring event at Clwyd in North Wales with 28 entries in R/C and a fine lunch-time break demo by three Superhet equipped Larcas models flying simultaneously. Free flight classes were also well supported, Open event being taken by D. B. Spencer of Ashton with 12:40, his model being similar to a *Caprice*, landing only $\frac{1}{4}$ mile away. Terry Toolan set an early target in A2 with 5:48, which remained unbeaten and in Junior, M. MacNamee of Wallasey put up a fine flight of 7:59. Increase of entries indicates a demand for extra Clwyd events and date suggestions are invited.

The 9th Northern Gala was held on September 1st in magnificent conditions at R.A.F. Church Fenton. The full length of the main runway was employed for various classes and all free flight events ended in fly-offs for the generous cash prizes which were supplemented by American kits donated by Veco through the good offices of Commander Green, U.S. Navy, now resident in this country. All in all, this was a great effort with the area clubs playing their part supplemented by excellent Royal Air Force co-operation with furniture. Fastest time of

Top left at Clwyd, new British duration record claimant, Barrie Purslow with A.P.S. "Hoverking", showed his skills by winning the nominated time contest. Right: D. England of Leicester flew an unusual sheet winged model with deep camber holding fences. Uses two timers, one for rudder, and one for tip-up tail.

the day for F.A.I. team racing was established by the Place/Howarth team from Wharfedale at 4:24.6 in the first round of heats eventual winners of the final being Cooper/Allen with 10:20. Yates/Hampson of Leigh reeled off five miles in 3:03 in Class B for the Eta trophy which was collected by Dugmore & Bell at the record time of 6:08.6 for 10 miles. To complete the round of fast times, Alan Dell of Hayes made fastest $\frac{1}{4}$ A team race heat of 4:02.8. Bill McGarvey flying for Stevenage (and Auckland!) topped Open Glider with a fly-off time of 2:01, Sue Allsopp of Cambridge (and now happily Mrs. Miller) won Open Power with a fly-off time of four minutes and Ernie Thorpe of Lincoln took rubber with a final flight of 6:47. Regrettably, there only appeared to be three entries in single channel radio control for the Taplin Trophy—for which there is no rhyme nor reason.

S.E. Area had the good fortune to pick a perfect day for the South Coast Gala on September 22nd, held for the first time at that universal site, Chobham Common. Entries for $\frac{1}{4}$ A power exceeded those for open power, indicating the new trend in F/F contests. With the excellent conditions a large number of triple max's were expected and made. A grand fly-off session at the conclusion made an interesting climax to the day, with fly-offs for all classes except tailless and chuck glider, although in the latter Tony Young recorded a flight of 9:48!

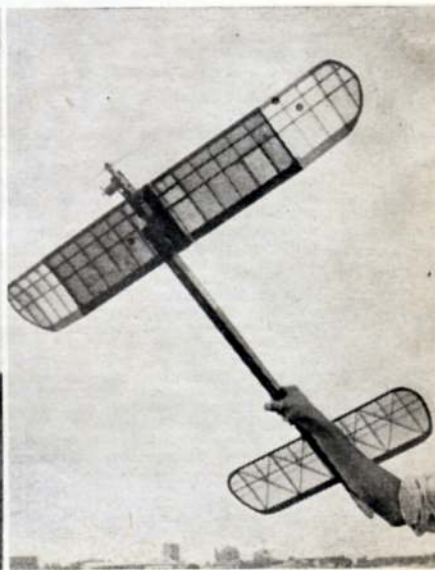
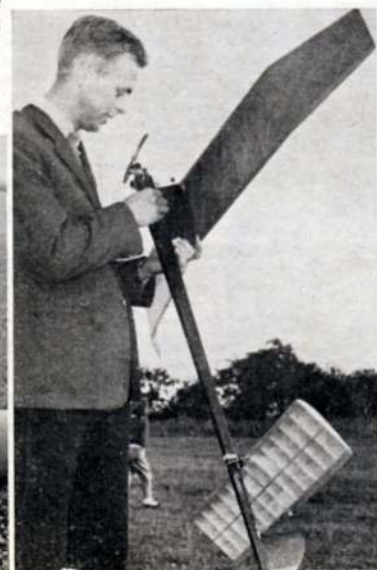
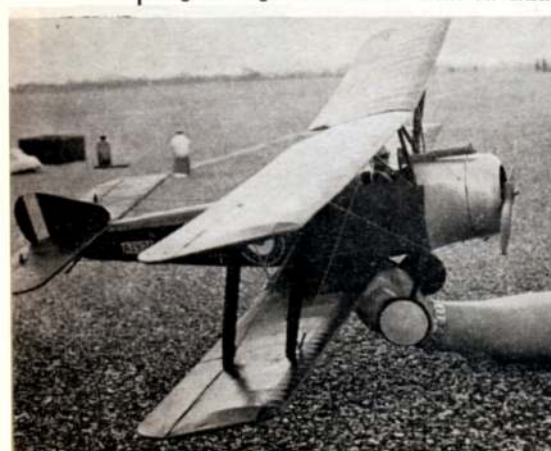
There were 15 in the power fly-off, eventually won by Dave Posner (4:40), 7 in glider, won by Mike Burrows of St. Albans (3:11) and 14 in Rubber, won by Laurie Barr of Hayes with 6:23. Among the encouraging entry of 43 in $\frac{1}{4}$ A Power, 8 qualified for the fly-off taken by George French of Essex with a final 6 minute flight.

September 8th was the date for the annual South Midland Rally at Cranfield and after a very wet start, ideal conditions set in for the most enjoyable meeting yet held at this venue. Once again multiple fly-offs concluded the rally with Derl Morley (on the cover this month) leading open rubber with an eye-straining 5:56, narrowly beating Ray Monks of Birmingham who also took second place in the glider fly-off. This was won by the youthful D. Wiseman of York at 5:08. Wiseman also took 3rd place in the power fly-off for both the open and the $\frac{1}{4}$ A classes so he had quite a field day!

Three classes were flown in radio control according to the new American A.M.A. system of rudder only, rudder/elevator and full multi classes. Country member S. Robinson from Stafford was a clear leader in class 1. Galloping Ghostlies dominated class 2 led by Eric Faulkner proprietor of R.C.S. and Ed. Johnson was winner of multi. In team racing, Dave Balch set up a new fastest time for a five mile $\frac{1}{4}$ A heat at 4:03 then went on to win the 10 mile final at 8:31 (Oliver Tiger Cub). F.A.I. racing was equally fast in the first round, but standards diminished in all directions to the extent of borrowed models being used. Yates and Hampson of Leigh came through an eventful final to win class B at 7:28.

As ever, last event to conclude was Combat. The orange pullovers of Leicester were distinctive through to the end and Mushett's victory over Degg of the Outlaws made a welcome change with tailplanes back in usage among the winners!

Left, Eric Coates of Blackburn Aircraft M.A.C. won scale at Northern Gala with this fine Sopwith 1½ Strutter. Using a Mills .75 diesel, it flew for 3:21 r.o.g.—as good a performance as many a duration model! Power fly-off winner with 6:04 flight at South Midland Gala was Peter Manville of Bournemouth, using Cox 15 Special. Right, Martin Cliffe of Cheadle placed 9th at Northern Gala with "High Step" a design with stepped fuselage and high thrust line for P.A.W. 149 diesel



CLUB NEWS

WHAT DOES ONE GET for many years of unselfish devotion to the hobby, practically all of which is for the particular benefit of others, at considerable sacrifice of personal interests in the hobby?? We hear many a jibe at S.M.A.E. officials, some perhaps justified but most of them very hollow as they come from people who are not prepared to lift a finger to help anyone but themselves. The administrator is always the scapegoat. His mistakes are magnified and good works quickly forgotten by the majority.

One who saw so much of this was Doug Gordon, whose retirement is just announced after fifteen years' service as secretary of the West Essex Aeromodellers. A founder-member of the club when it was formed in 1947 from old Woodford and Walthamstow clubs, Doug was also, for many years, a secretary of the S.M.A.E.

Happily, the WEA lads have made sure that Doug had something to remind him in his retirement, of the appreciation of past and present members of the West Essex crowd. They have given him a car radio as Doug says that he is too old for 10 channel multi now. Happy listening Doug!

In the NORTH EAST, Novocastria M.A.C. report a new class B T/R record of 6:08.7 at the Northern Area Gala by the Dugmore/Bell team. That'll take some beating. The same team put up a 3:04.5 heat at Cranfield for the S. Midland Gala. 1027 Sdn. Jarro M.A.C. tell me they were surprised to hear of another club with 200 members in their area from October Club News. Senior membership is on the increase again with Phil McAloy flying his *Marsden Rattler*, much dreaded in area contests during the early '50's. They took all four places in the Area F/F scale contest. 1st place went to Norman Smith's pendulum rudder *Moth Minor*. 2nd was Walt Robinson's *D.H. Humming Bird*, both models R.O.G. and flying very well. 3rd was Alan Clark's *Nieuport 17*. As if this interesting scale collection were not enough they also have a *Blackburn 1912 Monoplane* 36 in. *Chester Jeep* and a *Spitfire* on the stocks.

Clayton M.A.C. of Newcastle in Staffordshire have (to my regret) decided, as have Five Towns M.A.C. also in the MIDLANDS, to leave the S.M.A.E. insurance and take up a private cover, main benefit according to them being the much lower cost to juniors 12/6d. p.a. too much?—and what happens when they want to use S.M.A.E. facilities to enter an airfield? The *Old Timer* meeting to be held by Walsall M.A.C. on November 10th starts at 10 a.m. with three classes for spark ignition, diesel free flight and a Concours event, for models designed prior to 1950. The event is to take place in the vicinity of the Banner's Gate Entrance of Sutton Park, Nr. Sutton Coldfield, Warwickshire.

Heanor D.M.A.C. attended the Northern Gala and the following week sent a bus load to Cranfield. A static and R.T.P. exhibition is being planned in conjunction with the local library, as one of their winter activities. Leicester M.A.C. have been making enquiries to the City Council for a C/L circle in one of the city parks or playing fields, so far with little success. Bruntingthorpe airfield is to become semi-operational, so things don't look too good for the local lads. Peterborough M.F.C. was another club to pay an annual visit to Cranfield. Recently the main interest has been F/F with a few members trying R/C. Club meetings are held on Friday evenings at 7.30 at the City Youth Centre and new members would be very welcome. Hinckley D.M.A.C. diverted their interests and made an 80-foot long man-powered monster for the local carnival, gaining 2nd prize for their efforts and a nice amount of free publicity. All

five members of Handsworth M.A.C. who flew in combat at Cranfield fell in the first round and to add to their woes a gallon of ETA 15 combat fuel was "lifted" from their pit.

In the EAST MIDLANDS, Wigsley M.A.C. flushed with the success of their rally in July, now has a fairly constant membership with a few experts in all branches, the free flight boys taking club honours this year. Mr. Ward's giant yellow R/C job is now airworthy again. Peter Anderson is retiring his Cessna 172 after having done the rounds with it for three years. He's now shifting to the H aristocracy with 10 channels.

From the SOUTH MIDLAND Area, Bedford Eagles say they enjoyed Cranfield and would like to help out next year. They'll have to join up with the S.M.A.E. and the S. Midland Committee. Interest is shown in all types, although combat and small free fighters log far more air time than any other. Long Crendon & D.M.A.C. are changing their name to Airtech M.F.C. This is because so many of the members are employed by this Company and through successful negotiations have the use of the private airfield at week-ends and transport. They also have a snack bar all through joining the Airtech Social Club at 15/- p.a. as well as the S.M.A.E. Several members attended the Northern Heights Gala with the president losing his *Inchworm*. They are running an open indoor rubber team race and scale event on Saturday, December 7th, in the canteen (open for refreshments), starting at 2.30. For further information write to Mr. P. Richardson, Holly Farm, Long Crendon, Bucks. Buckaneers M.C. organised class II and III Radio Control at the South Midland Area rally. After a very wet and miserable start, some fine flying was enjoyed in ideal conditions. The club is now firmly established and club meetings are held on every third Thursday of the month at 97 Bletchley Road. Main interests are R/C and C/L. A club competition is being arranged using the *K.K. Achilles* as a one design event to encourage the youngsters. Keen new members are always welcome.

Abingdon D.M.F.C. held a half-hour F/F scramble on Port Meadow. The winner Steve Marriot returned a time of over 14 mins., no times of less than 15 seconds being recorded. More members are required for the club and any modellers in the area will be welcome at the Church Hall, Abingdon, on alternate Mondays for club meetings. Luton D.M.A.C. had the calmest of days for their very carefully planned rally on September 22nd—only trouble was they wanted wind for slope soaring! In consequence a "down hill" spot event took place with Kidderminster Aces well to the fore and combaters collecting free flight. Multi R/C went to I. J. Fellows (*Kidderminster*) with brother M. Fellows 2nd. Single R/C order was I. R. E. Moore (*Enfield*), 2. T. Clark (*Luton*), 3. J. Fellows (again!). Open Glider, 1. P. Tribe (*Northwood*), 2. C. Hunt (*Weston*), 3. J. Fellows (again!). M 1. P. Tribe (*Northwood*), 2. C. Hunt (*Weston*). Chuck Glider, P. Freebrey (*Northwood*), Spot Landing 1. J. Fellows (yet again!), 2. E. Faulkner (*W. Middx*).

From EAST ANGLIA Norwich M.F.C. say although members have not won any major S.M.A.E. events this year, they have been placing high in the results with M. Woodhouse 4th in Wakefield and B. Halford placing 5th in Wakefield and 6th in A/2 at the team trials. D. Oldfield placed 4th in the Pilcher Cup. S. Bowles did well in the club open glider scoring 9:00 to win. They are very fortunate in having R.A.F. Horsham St. Faith for their flying ground, but it does not seem to stimulate interest as much as it should. New members are very welcome. Fortnightly meetings are held at the Civil Service Club in St. Giles, write to M. Woodhouse, 33 William Street, Norwich, for further details. (continued on page 574)

RALLY NEWS

Croydon Gala held on Chobham Common on August 25th was blessed with wind and rain, times suffering accordingly. Winners were Power 1. P. Manville *Bournemouth* 8:05, 2. D. Cook *Canterbury* 8:00, 3. T. Payne *Northampton* 7:32, 4A Power 1. D. Hipperson *Croydon* 8:00, 2. G. Head and J. Boxall of *Portsmouth*, both with 6:00. Open Rubber 1. E. Thorpe *Lincoln* 8:34, 2. R. Godden *Cambridge* 8:15, 3. D. Latter *Croydon* 8:01. Open Glider 1. M. Burrows *St. Albans* 7:19, 2. J. Russell *C.M.* 6:10, 3. J. Baguley *Hayes* 5:29.

The Devon Rally at Woodbury on August 11th suffered from high winds and heavy showers. Chuck Glider was the first event away with Al Wisher and Tony Young chucking their way to the top. Unlucky man in power was Peter Manville who did 3 "maxes" on test flights then had an overrun on his comp. flight flying skyhigh on a 30 secs. run. Another novel "twist" came when B. Bow and J. Nosworthy had to fly-off for second place in rubber. Second place 4A power man was Sanders flying a T.D. 0.049 powered standard *Dixielander*. No doubt flushed with surprise, Mr. Sanders did not collect his prize—we'll soon put him in touch with the money-bags! After objection was laid against 3-man pit crews, using electric starter for Hatfield Club, nature played her part by flattening the batteries and the engines would not flick start. Results as follows:—Power 1. G. Bunney *Bristol* & *West* 7:55, 2. R. Cummins *Bristol* & *West* 7:12, 3. M. Gaster *Surbiton* 6:22. Rubber 1. J. Clappitt *Bristol* & *West* 8:06, 2. J. Nosworthy *Plymouth* 8:01 + 3:05, 3. B. Bow *Bristol* & *West* 8:01 + 2:48. Glider 1. A. Young *St. Albans* 6:50, 2. A. Wisher *Croydon* 6:15, 3. P. Newell *Surbiton* 5:24, 4A Power 1. D. Hipperson *Croydon* 7:13, 2. Sanders *6:44*, 3. Hopgood *5:02*. Chuck Glider 1. A. Wisher [*Croydon* 2:42, 2. A. Young *St. Albans* 2:23 Combat 1. A. Dell *Feltham*, 2. Hills *Tiverton*.

Northern Heights Gala results (photos were in September issue), where fly-offs were the order of a magnificent day. Queen Elizabeth

Cup F.A.I. Power. 1. A. D. Cook *Canterbury Pilgrims* 9 + 2:57, 2. N. Willis *Essex* 9 + 1:58. Flight Cup (Open Glider). 1. H. James *Maidenhead* 9 + 5:00, 2. A. Armes *Hayes* 9 + 1:34. Fairway Cup (Open Rubber). 1. Derl Morley *Lincoln* 9 + 9:26, 2. L. Barr *Hayes* 9 + 7:55, 3. N. Elliott *Croydon* 9 + 7:13. De Havilland Trophy (Open Power). 1. G. Fuller *St. Albans* 8:48, 2. B. Eggleston *Bristol* & *West* 8:35, 3. D. Posner *Surbiton* 8:31, 4A Power. 1. J. Deeming *Coventry* 8:44, 2. C. Strachan *Exmouth* 8:39, 3. R. Cox *Wigsley* 8:36. Thruston Helicopter Trophy. 1. F. Boreham *Southampton* 2:08, 2. R. Bail 2:02. R.A.F. Flying Review Cup (R/C Spot Landing). 1. J. Ralph *C.M.*, 2. E. Smurthwaite *L.A.R.K.S.*, 3. V. Redfern *Market Harborough*. Keil Combat Cup. 1. M. Kendrick *West Bromwich*. 2. S. Holland *Northwood*. Aeromodeller Challenge Cup Gala (Champion). J. Deeming *Coventry*.

Lincoln and Wigsley Rally took place in perfect conditions on July 28th at Wigsley. Lift was erratic to start with but had calmed down by the inevitable fly-off. J. O'Donnell forgot his thermal detector and could not find lift the old way! Re-entry proved popular and did not upset the balance. R/C provided a record turn out for Single and Multi. Locals from Lincoln put up a very strong team in Multi and Stewart Foster and Peter Waters of *Port Talbot* had to fly-off for first place. Results as follows: Multi R/C. 1. S. Foster *Lincoln* 1731. 2. P. Waters *Port Talbot* 1633, 3. M. Elmer *Lincoln* 1499. Single R/C. 1. T. Cooper *S.C.R.C.M.A.C.* 498, 2. J. R. Rimmer *R.A.F.* 424, 3. A. H. Thomas *S.C.R.C.M.A.C.* 409. Open Power. 1. M. C. Bayram *Lincoln* 9:00 + 3:50, 2. D. J. Wiseman *York* 9:00 + 2:12, 3. K. Harrison *Tee-Side* 9:00 + 1:26. Open Glider. 1. G. W. Gallagher *R.A.F. Cranwell* 9 + 8:56, 2. P. M. Smith *Peterborough* 9 + 7:46, 3. G. Freeston *Sheffield S.A.* 9 + 7:30, 4. B. Salmon *York* 9 + 6:52, 5. A. G. Young *St. Albans* 9 + 6:35, 6. B. Richmond *York* 9 + 6:20, 7. K. Coman *R.A.F. Newton* 9 + 3:51, 8. H. Warburton *Littleover* 9 + 3:15, 9. A. Wisher *Croydon* 9 + 2:06. Open Power. 1. N. Elliott *Croydon* 9 + 8:25, 2. E. Thorpe *Lincoln* 9 + 6:56, 3. G. L. Roberts *Lincoln* 9 + 3:55, 4. S. Marsnal *Boston* 9 + 3:28, 5. R. Clements *C/M* 9 + 3:20. Best Junior B. Richmond *York*.

LONDON Modeller this month carries a report on all three Championships in August. Contributions are solicited, contact Kevin Lindsey, 53, Guildford Ave., Surbiton, Surrey. The London Area C/L champs will be held at the Hayes Circuit on October 20th for S.M.A.E. combat, 1/4A and F.A.I. T/R. Two flying displays put on by Sidcup A.S. have been well received by the audiences and organisers alike, which has resulted in enquiries for future displays, as well as an increase in club funds. Competition-wise they have fared well with Pete Dwell winning speed events. They also took first and fourth places at Hayes with A. Greenland and P. Gillow. A one design building and flying contest for an indoor R.T.P. team race was won by T. Crout with A. Andrews and J. Wood coming second and third. Interested modellers in the area are asked to contact the secretary, P. Noble, 32, Nottingham Road, Mottingham, S.E.9. **Richmond D.M.A.C.** can claim one "first", C. P. (Willy) Williams, their social secretary, won the major prize in the S.M.A.E. mid-year lottery. **Wanstead Warhawks** have six members flying single channel radio control. Main interests are still combat and team race with a few members interested in glider. Dave Bolt flew himself out of the first round in a 1/4A power model with his B T/R whilst sorting it out for the finals. The 1/4A job owned by fellow clubman Geoff Barnett was in four pieces. The B racer crashed and bent all the controls up, as was seen in the final, the elevators frequently jamming solid. A very nice Fokker D.8 free flight model for 0.75cc engine has been made by a junior member, scale guns, the lot. His first ever F/F model too. Flying takes place at Wanstead Flats every Sunday. Club meetings every Friday 7.30-10.00 at Highlands School, Highland Road, Ilford, Essex. Phone (Wanstead 2168) for further details. **Hayes D.M.A.C.** team members had mixed luck at the Championships. Jim Baguley found F/F conditions very foreign in Austria and could only get 2 maxes and 12.05 total for 38th place. The speed trio found Belgian conditions too bumpy for their monoline speedster, but took 8th with the 2 line job at 127.5 m.p.h. Back in England the 1/4A T/R boys have been rather mopping up the opposition, taking 1st, 4th and 7th plus the British ten-mile record at the Northern Gala and 1st, 2nd, 4th and 6th plus an even faster ten-mile record at the South Midland Area Rally. Dave Balch and Alan Dell being the chief prizewinners. Dave Balch also took 3rd in F.A.I. after "borrowing" Dick Edmonds' pilot Mike Smith. The **Blackheath** Gala date has been changed, it will now be on October 20th, not the 13th. Venue is Chobham Common and events as before. Following Sunday, October 27th, is date for the **Surbiton** Gala (Open Power, Rubber, Glider and 1/4A). **St. Albans** report a good turnout at most of the recent comps. On the way to the Croydon Gala the comp. sec's. car sheared its propshaft, leaving Mike Burrows to hitch-hike the last ten miles in the rain. Mike came first in glider, so he could afford the fare home. Two members attended the Northern Gala, Mike Burrows reaching the glider fly-off and Tony Young placing in P.A.A. load. At the South Midland Area rally Mike Burrows took third place in the glider fly-off and Bruce Rowe second in Chuck Glider. Digby Woods and Pete Putnam managed the Rubber fly-off but did not place. Don't forget the **St. Albans** Gala, November 3rd, at Chobham and bring plenty of fireworks along. With all these Galas the Chobham will soon get acceptably worn down to an earth surface!

Sea Dogs, the **SOUTH EASTERN** Area newsletter includes plans for John Whitaker's slope soaring glider. The basic instructions and flying notes seem to be just the thing for the newcomer to gliding. Some members of **Farnborough M.A.C.** have been attending the rallies this year and intend to get their own back by holding the **Farnborough Boxing Day Rally** for Open G/R/P and 1/4A. Power on Chobham Steppes. (Oh—yet another!) Club membership is now around the twenty mark, and meetings are held at the Town Hall Committee Rooms. In **Leatherhead D.M.F.C.**, Stuart Tucker gained first prize with his **Fokker E IV** at the Vickers-Armstrong's Sports Day and Model Exhibition on June 29th. **Leatherhead** have a stand at the Model Railway and Engineering Exhibition being held at Dorking Hall, Dorking, from October 3rd-5th. Exhibits planned included electric R.T.P., engine running demonstrations, even a 1914 compressed air engine, sectional R/C and C/L models showing all working parts and, wonder of wonders, a 1/5th scale working model Gnome Rotary engine! Static display included part of the clubs' aircraft-carrier flight deck, home-made silencers, sectional engines, plus a good selection of finished models. To see just where and how the exhibits could be placed a 1/12th scale model of the stand was made and therefore 1/12th scale models of the models! Half a dozen **Bald Eagle** Club members attended the second S.E. Area Slope Soaring Meeting held at Wilmsington on September 1st. Weather conditions were ideal, heavy rain and a gusty wind blowing in the wrong direction! Despite this, five members recorded good flight times. R. Bray came first, M. Hill-Smith 2nd and J. Hansen 3rd in R/C. R. Lelliott came 2nd and R. Cooper 4th in F/F. On August 18th **Brighton D.M.A.C.** members concentrated on the Team Power Event to help their lead in the Pluggie Cup. Dave Welch was top scorer with 8.31 despite the adverse conditions. The club came second in the final result of the Keil Trophy. Ken Winstanley scored 7.06 in Glider on the same day. This was enough to gain him 5th place in the C.M.A. Cup. At the South Midland Rally John West and Dave Welch reached the Power fly-off, Dave having an over-run but the model was located no less than 2 miles downwind. **North Kent Nomads M.C.** have found a power converted glider. The owner walked away saying he would never see it again! So would he please contact Ray Parker, ERTH 33170. On the evening of August 29th at Epsom Downs, **Crawley D.M.A.C.** flew their leg of the 2nd Anglo-American *Coupe d'Hiver* postal contest. The seven entries made their comp. flights in 1 1/2 hours. Top men were P. Cameron with 269 secs.,

J. Wilson 243 secs. and J. Darby with 231 secs., giving a team total of 12 min. 28 secs. The first and third men flying own designs.

The **SOUTHERN** Area, **Southampton M.A.C.** went to Hayes and were beaten in the first round with a sheared crankshaft. They also attended Cranfield in force. John Dumble had R/C model tank position trouble, while 1/4A Team Race proved disastrous. Derek Coffin showing his combat flair and chopping up another model. The glider entry, a *Sans Egal*, went O.O.S. **Southern Multi Flyers** claimed the first twin-engined scale multi-channel R/C model flown in this country, the *Miles Monitor*, then the *B-17 Fortress*, and now on September 22nd Chairman, Harry Brooks, checked out his new 6 ft. wingspan model with K & B 35's. The model was light by general standards for a twin, 7 1/2 lb., and the two engines really made it a very fast job.

The **WESTERN** Area Centralised Contests held at Blakehill Farm Airfield on August 18th had the poorest attendance so far this year, a total of eight entries in the three events!! Weather seems to have been the main reason for this. Gordon Bunney of Bristol and West, had a most suitable combination for the prevailing windy conditions, an ETA 29 powered *Countdown*. In Wakefield Dick Cummings of Bristol and West managed to lose his *Pandora* in a gigantic thermal despite D/Ting at 2:50. **Glevum** club approached their local M.P. for his support to obtain use of Morton Valence Airfield. Their efforts in the direction of Brockworth Aerodrome have fallen through as it is under the plough. Bristol and West M.A.C. travelled from Bristol to the Devon rally in a veteran 1934 Alvis Speed 20 (17 m.p.g.). Once on the heath Jack Clampitt launched a completely untrimmed rubber model made up of odd bits. The result was an initial prop stall and finally a reasonable glide with a near max. He went on to win the event using a feathering propeller model in the final flights. Third place went to Brian Bow. In Power Gordon Bunney took first with his ETA 29 *Countdown* and was followed by fellow club member Dick Cummings. Four members attended the South Midland Rally with Gordon Bunney and Jack Clampitt reaching the power and rubber fly-offs respectively. Gordon finished 5th and Jack 9th.

Bury M.F.C. is a new club affiliated to the **NORTH WESTERN** Area S.M.A.E. Main interests are in C/L and R/C. Membership stands around 25. New members should contact J. Entwistle, 309, Bury Road, Tottington, Nr. Bury, Lancs. Prescott and D.M.F. & S.C. were formed on September 13th. A local model shop provides a club room and new members would be very welcome. Contact J. Cruix, Rodney, Mill Brow, Eccleston, Lancs.

From **SCOTLAND** we hear that the weather for the S.M.A.E. Area events at Abbotsinch on August 18th could not have been better. They have discovered the phenomenon of a comp. sec. who enjoys running competitions, and heard proposals for limiting the motor runs on rubber jobs. The S.A.A.'s insurance scheme now has well over 200 adherents. Congratulations to Francis Ballardie on winning the Frog Junior Cup. Area modellers had a successful day the following weekend at the Angus and District Rally. A rather damp and windy morning dried up nicely, and Buddon Links proved an ideal F/F venue. McLaughlin (Scotmac) won Power, Ballardie (Prestwick and Scotmac) Glider and Wannop (late of Edinburgh now in N. Ireland) reached the Rubber fly-off to place 2nd. The sudden closure of R.N.A.S. *Condor* saw the C/L events shifted to Caird Park, Dundee, where Johnstone of Leuchars won Rat Race with half a model and Carson (Glasgow Hornets) won combat, leaving the Forfar lads to clear up T/R. Once established, and given a few more entries this comp. should do much to unite modellers in the North and South of Scotland. These recent contests have seen the emergence of a new club Scotmac, an all S.M.A.E. group of leading F/F boys. New names for old faces seems fashionable at the moment, the Cadzow club appeared at the Northern Gala in the guise of *Ecurie Treo* (Team Race Enthusiasts Only). Scottish success at the Northern Area Gala were limited. Neil Cliff of Scotmac made the Rubber fly-off and George McCree of **Glasgow Hornets** was 6th in 1/4A T/R. Anyone who saw a strange animal with one bright eye racing along a Yorkshire lane at midnight some Saturdays ago need not be alarmed—just Bruce Flockhart's R/C Go-Kart out for a test run. *Scottish Aeromodelling* tells that a member of the Hornets was severely burned when flying a C/L near power lines, this is the second report of this type of suicide attempt in the month. Be warned—stay clear of Power Lines, they can kill.

THE CLUBMAN.

Pen Pals

Wanted by I. Mauller, Nymburk, Draheice, 58, Czechoslovakia, would like to exchange magazines. M. Shanmugam, 28, Jalan Majid, Batu Pahat, Johore, Malaysia, would like to correspond on Power, Stunt and Combat. Age 17 years. Desmond Brough of Kennedy St., Geraldine, South Canterbury, New Zealand, wishes to correspond with an American aeromodeller aged 14-17 years. Phillip Christophersen of The Aerodrome, Mt. Maunganui, Bay of Plenty, North Island, New Zealand, age 16, would like to correspond with an English modeller on C/L stunt and T/R aged 15-17.

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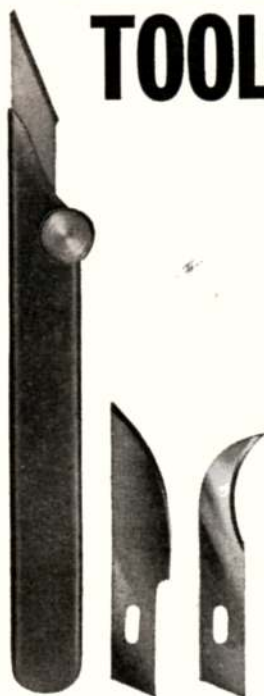
Roughly built *Keil Kraft "Halo"* power model, colour scheme blue and yellow. Probably lost from Wigsley aerodrome some months ago. Now at South Clifton Police Station, near Newark, Notts. Model appears undamaged. Will the Northern Area member S.M.A.E. 32385 contact P. Anderson, 60, Beacon Hill Road, Newark, Notts. Usual proof required.

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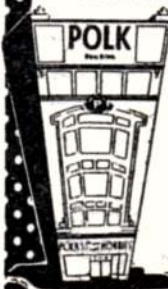
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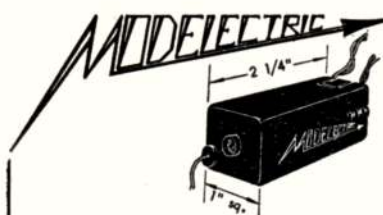
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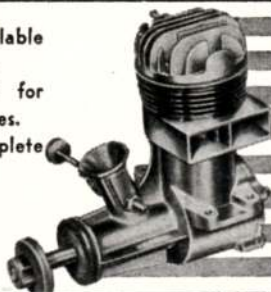
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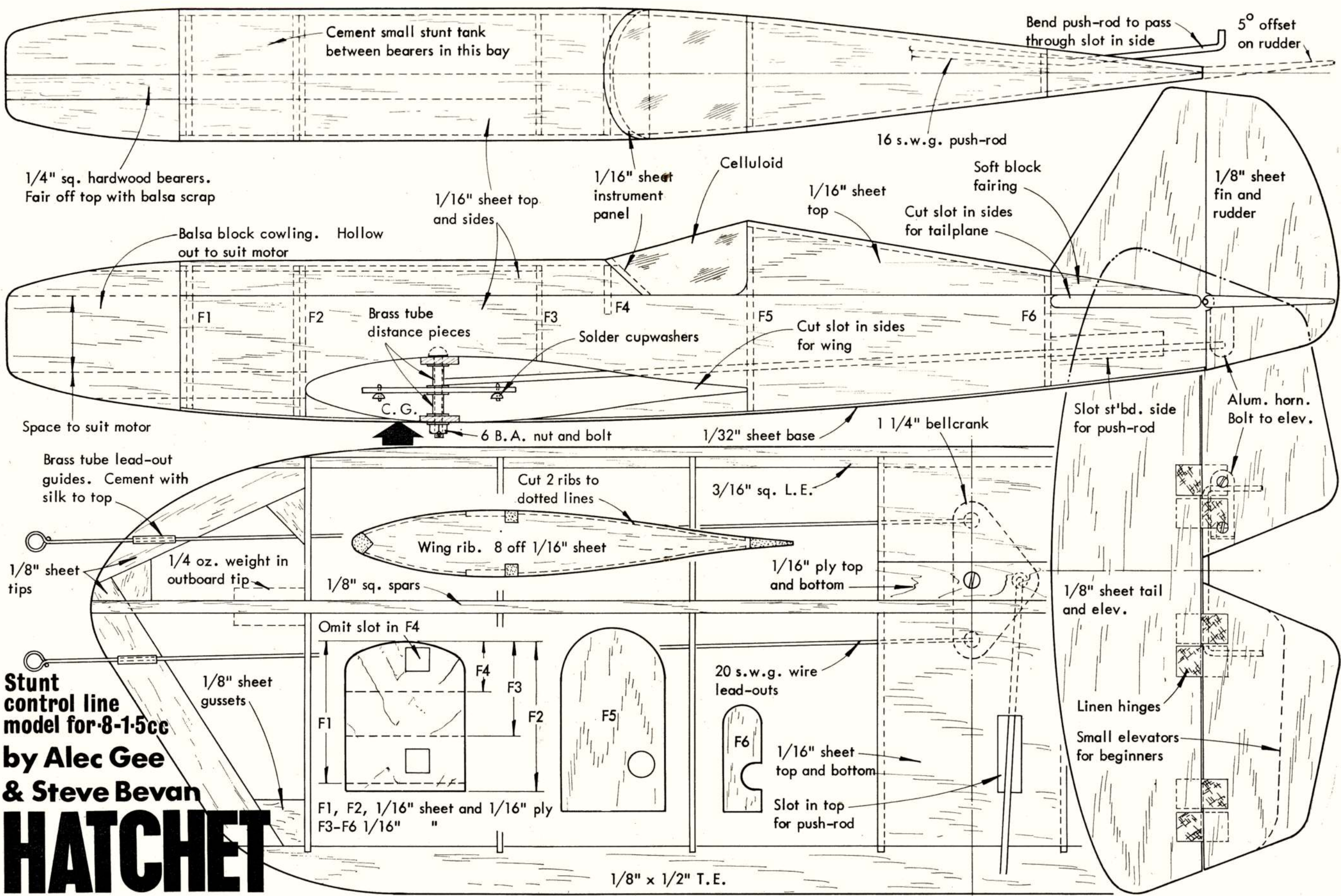
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