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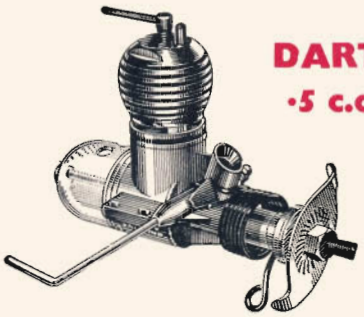

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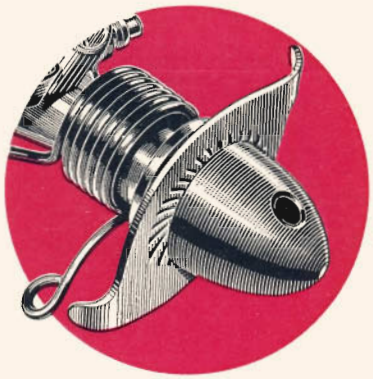

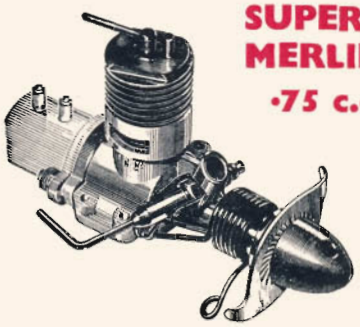

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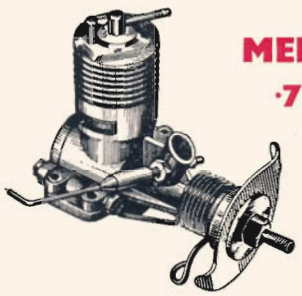

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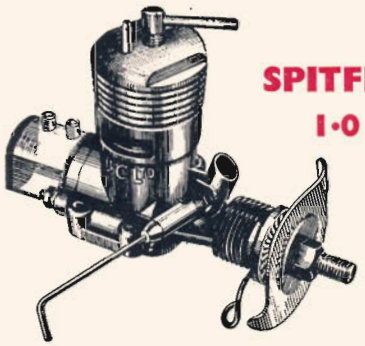

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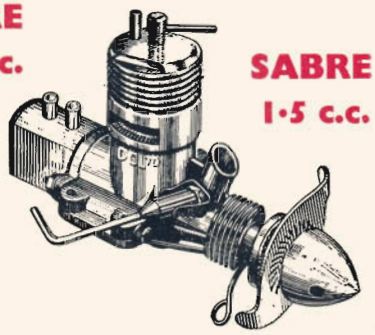

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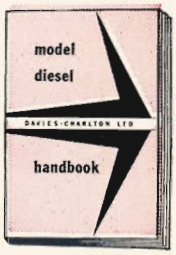

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AERO MODELLER

MAP HOBBY MAGAZINE

other modelling angles . . .

January 1964 sees the introduction of the new enlarged, bigger and better, 'Radio Control Models and Electronics'. Now to be produced same size as 'Aeromodeller', R.C.M. & E. will contain a full-size model plan every month, beginning with "Ti-Dee". This is an 18 in. span model we have built and tested with Cox .010 engine, Otarion receiver and Conquest escapement. The all-sheet structure makes it easy to build and ideal for small field flying. Modellers keener on larger aircraft are catered for admirably by a practical feature on multi installation. Vehicle enthusiasts will find interest in a radio controlled model of the 'Centurion' Tank and a new form of boat control makes its appearance. East African radio controlling and other fascinating features are lined up for your reading in this new size edition.

January 'Model Maker & Model Cars' features the Dunkirk vereran "Medway Queen" on the cover with additional pictures and notes inside. Dick Priest's latest marblehead yacht design "Bewitched" is bound to be a great success following on his earlier designs and power boat enthusiasts will like the "Aquafoil, which opens up a new field of thought in model boating. For cars there are drawings of the F1 Brabham, one of the major Grand Prix contenders of 1963, and as contrast the 50-year old, 200 h.p. "Blitzen" Benz. A car subject much in the news is automatic braking of electric models, and a fully detailed article explains how to do this simply and efficiently. Other articles to interest readers are on the subjects of American R/C hydroplanes, warship boats, "H.M.S. Diamond", spoking 1/32 scale wheels, steam blowlamps, small craft, etc., etc.

January 1964

VOLUME XXIX No. 336

contents

cover

Not since the days of Arne Ellila and his successive Wakefield World Championship wins, and the successes of Max Hacklinger and Rudi Lindner in the A/2 class has there been so great a champion as Erno Frigyes of Hungary. The story of his latest "Taltos-II" design will be found, together with detailed drawings on pages 16 *and* 17 *of this issue. This truly natural colour photographs, taken after his winning flights at Wiener-Neustadt, Austria, last August is a most typical portrait of a master modeller and the world's best performing power duration model.*

next month

FULL-SIZE plans for what we know is going to be an absolute favourite among the sport flyers. Bert Striegler returns with **Ebenezer Tripe,** a profile all-balsa, semi-scale Fokker DR1 World War I Fighter, which takes scarcely an evening to make and gives whole weeks of fun. The 1963 season showed increasing popularity of the ½A power duration class and Martin Dilly's **Vindaloo** 45 in., 245 sq. in., design is right up to date with all the latest features. Yet another 'retractable undercarriage,' this time for scale R/C, and full gen on how to make those high performance 'solid balsa wing' contest models as used in Austria and Germany as well as the U.S.A. are among the many fine supporting features. Look for the full colour cover showing the **SAAB Draken** Swedish Jet Fighter in flight. 1/72nd fully detailed scale drawings of the Draken variations will more than satisfy scale enthusiasts who also have 'Squadron Markings' and our new 'Signpost' colour detail feature to look forward to in our February issue—out January 17th.

Editorial and Advertisement offices

38 Clarendon Road, Watford, Herts

Telephone: **Watford 32351** *(Mon.-Fri.)*

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VERON

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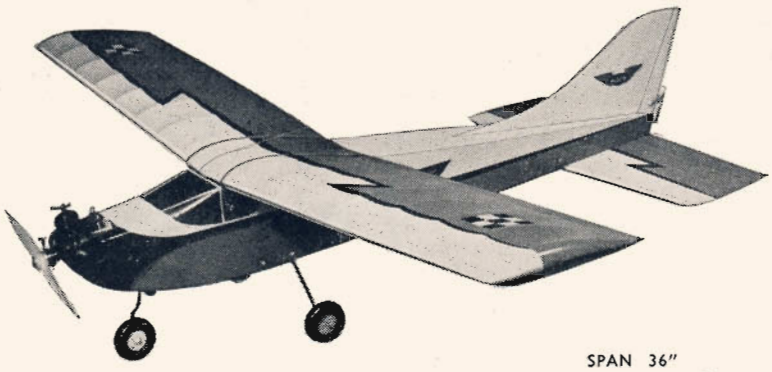

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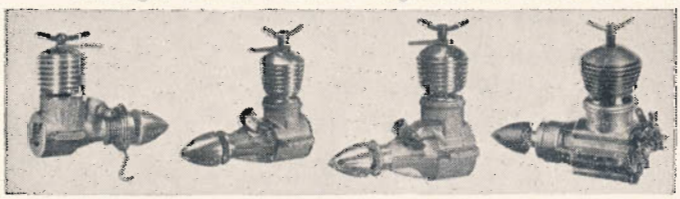

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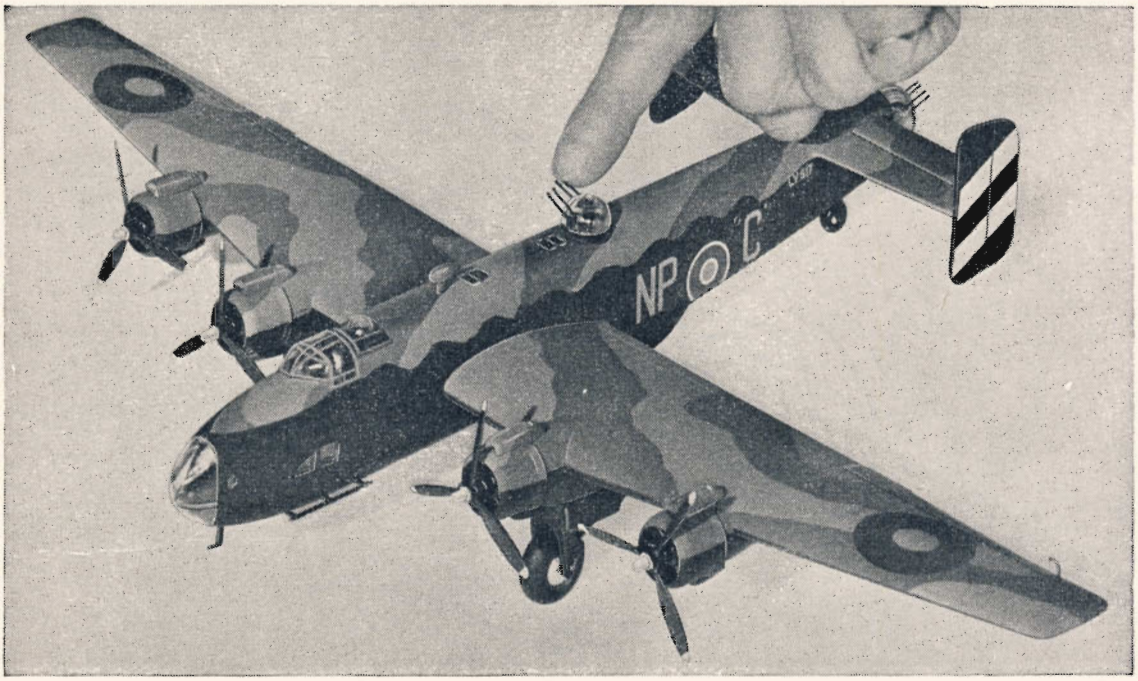

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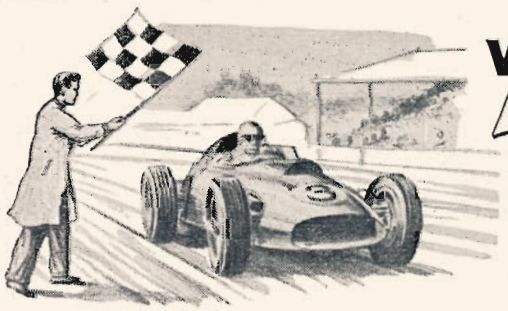

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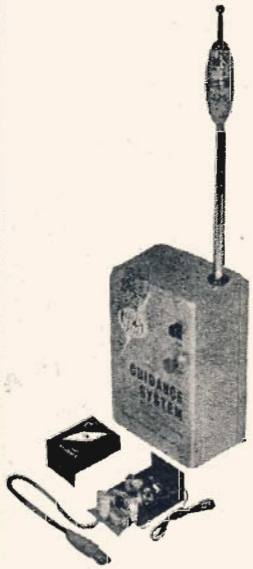

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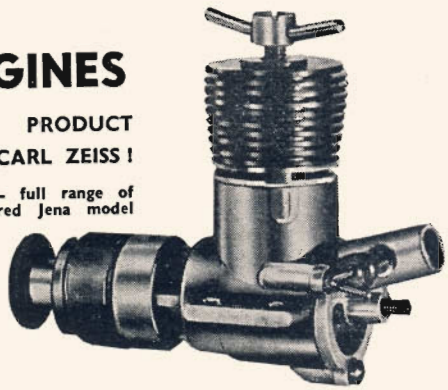

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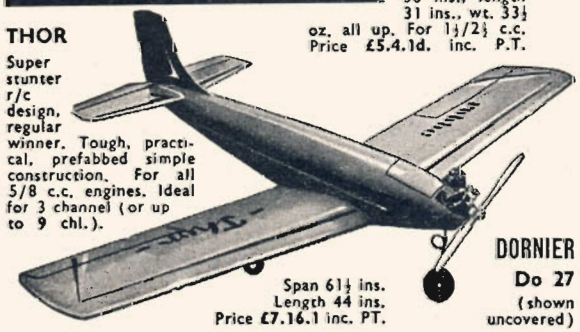
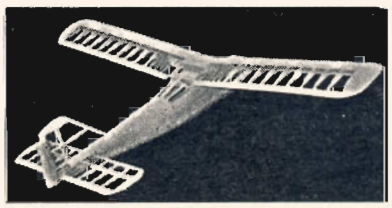


Span 61½ ins.
Length 44 ins.
Price **£7.16.1** inc. PT.

DORNIER Do 27

(shown uncovered)



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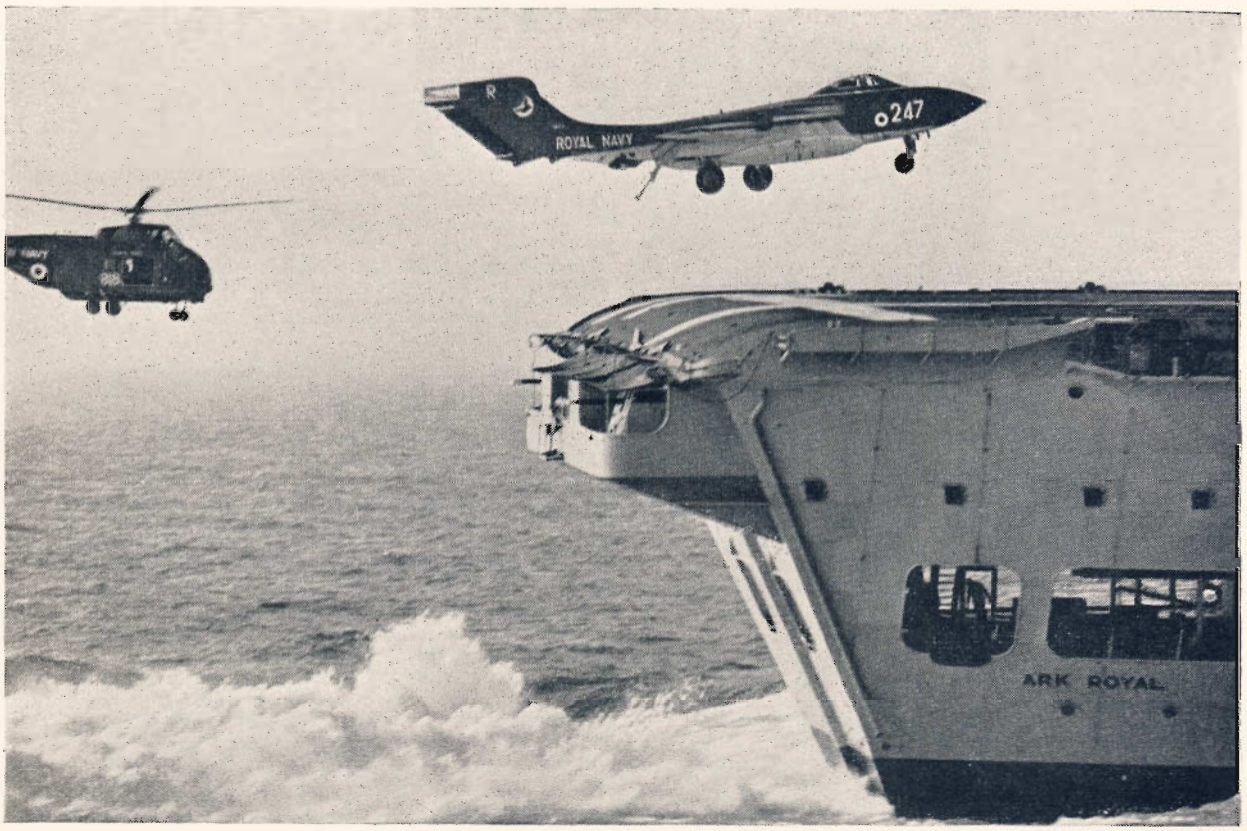

A SEA VIXEN about to touch-down on H.M.S. ARK ROYAL

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Heard at the Hanger Doors

This is how so many aeromodellers will remember A. F. ('Alex') Houlberg—as Chairman on so very many festive aeromodelling occasions, when he cou'd always be relicd upon to say the right thing in his own inimitable manner.

Half a Century of Service †

Aeromodellers throughout the world will mourn the death, aged 68 years, of A. F. ("Alex") Houlberg, on the eve of completing so many years of unbroken service as Chairman of the Society of Model Aeronautical Engineers, and 50 years of active association with the aeromodelling movement. Almost his last act was to send a telegram of regret to the S.M.A.E. Annual Dinner at York on November 30th, when a presentation to him was discussed.

Mr. Houlberg first became interested in flying models when he visited the British Aero Show at Olympia in 1909. Two years later he found a job with E.W. Twinning of Hanwell, making models for the trade and in the following year he set up a British duration record of 89 seconds at 100 Acre Field, Greenford. Following his election in the K. & M.A.A., Mr. Houlberg raised his duration record to 127 seconds with a flight at Hendon. Then came a suspension of activity during the great war years until 1920, when he was elected Chairman of the re-formed "London Aero Models Association."

It was from an amalgamation of the K. & M.A.A. and L.A.M.A. that the Society of Model Aeronautical Engineers was created in 1921 and Mr. Houlberg was Chairman of the newly instituted S.M.A.E. from 1922 to 1924 when a move to Oxford caused him to relinquish the chairmanship.

However, he was not to be denied office for his services were much appreciated and in 1925 he was elected Vice President of the S.M.A.E. In 1928 his office was to change to Vice-Chairman, in 1930 he became Chairman once more and he held this office for no less than 33 years with a break only in 1935/6 when Vice-President, until retirement.

Nor were his services restricted to domestic affairs. From that critical post-war period in 1946 over 12 years to the end of 1958, he was also President of the Models Commission of the Federation Aeronautique Internationale. His duties in this connection took him to many countries in Europe, including the U.S.S.R. where he enjoyed the unique privilege of being one of the very few outside visitors to the famed modelling institute at Tushino. Under his Presidency, the basis of international championship competition rules were established and it was largely his guidance which steered the efforts of the F.A.I. committee into its present form. Stability of international model specifications and the conduct of model contests to a standard pattern of rigid organisation are very much to be credited to the efforts of Mr. Houlberg. In turn, the success of the international system reflects on his influence within the S.M.A.E.

By his valued counsel with high authority, the establishment of those renowned early international events at the College of Aeronautics, Cranfield, the issue of Model Byelaws by the Home Office, the use of Royal Air Force airfields and so many other facilities gave the S M.A.E. a reputation for organisation excellence that was envied abroad.

In recent years Mr. Houlberg suffered from poor health, but despite this, he maintained the closest possible contact with the Society. The greater part of his efforts on behalf of the aeromodelling movement have gone unsung. Long chases across the country-side to establish venues for the British Nationals, the administrative trips abroad and at home were always at his own personal expense.

In 50 years Mr. Houlberg saw the rise of aeromodelling from those early pioneering days, through the enthusiasms of the late 30's to the flourishing post-war years and now to the present day difficult period with model flying restrictions imposed by loss of model flying fields and the reduction of numbers of clubs. His magnificent record of service and wise counsel will be his lasting memorial.

Our deepest sympathies are extended to his widow Rene, who was always his constant companion at model meetings and functions everywhere.

Feathered Ornithopters

A news item in the *Belfast News Letter* was drawn to our attention by Urlan Wannop, now resident in Northern Ireland, and concerned the remarkable 89 year old James Cordner. Claimed to be the first Ulsterman to build and fly his own aeroplane, to

possess a motor car and to be the inventor of a water-bicycle, Mr. Cordner is now active at Dundonald with some unusual ornithopters. He utilises wings from pigeons, rooks or seagulls' with rubber drive to make them flap.

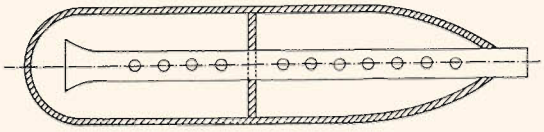
Champion-Again !

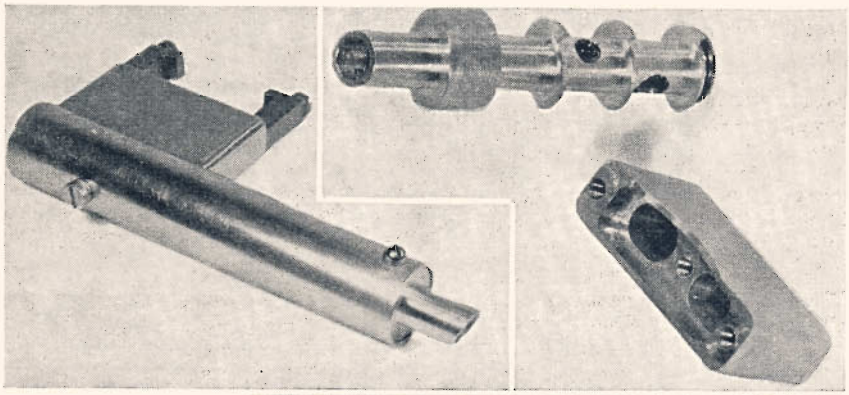
By making a gross total duration of 187 minutes 8 seconds in official contests during 1963, John O'Donnell yet once more has made a successful claim for the British Senior National free flight Championship. There were a total of 15 F.A.I. and 21 Open events in the programme and John flew in 25 of these. He was closely chased by D. Wiseman of York, only a few minutes behind and who also made his mark in the area and club organised rules. Maybe next year John will have tougher competition !

By virtue of his performance in the centralised control line meetings in the speed categories, Mike Billinton of Brixton became 1963 control line champion.

Above : Mr. J. Cordner holding his rubber powered bird wing ornithopter. Surely he is one of our oldest active aeromodellers at a very youthful 89. An engine is to be used in the next experiment.

NOT an instrument of torture! Glen Lee's geared mono-line handle for F.A.I. use with which he has flown at 127.24 m.p.h. (Super Tigre G20). Commercial brass gears provide 171:1 ratio, all shafts run on ball bearings and plus and minus 30 deg. handle movement gives 40 control wire turns (see page 34).

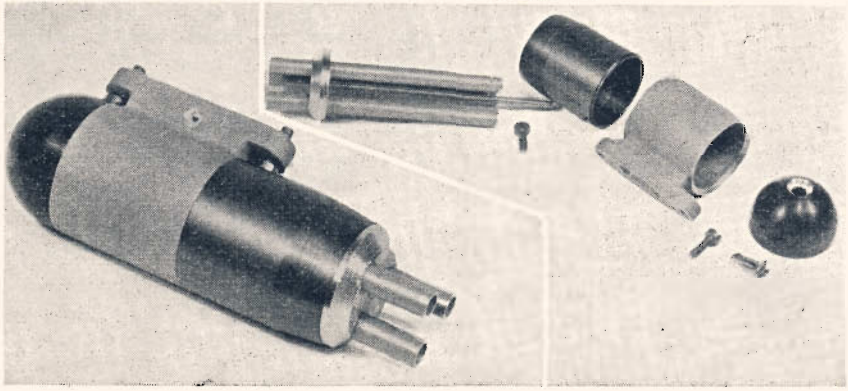


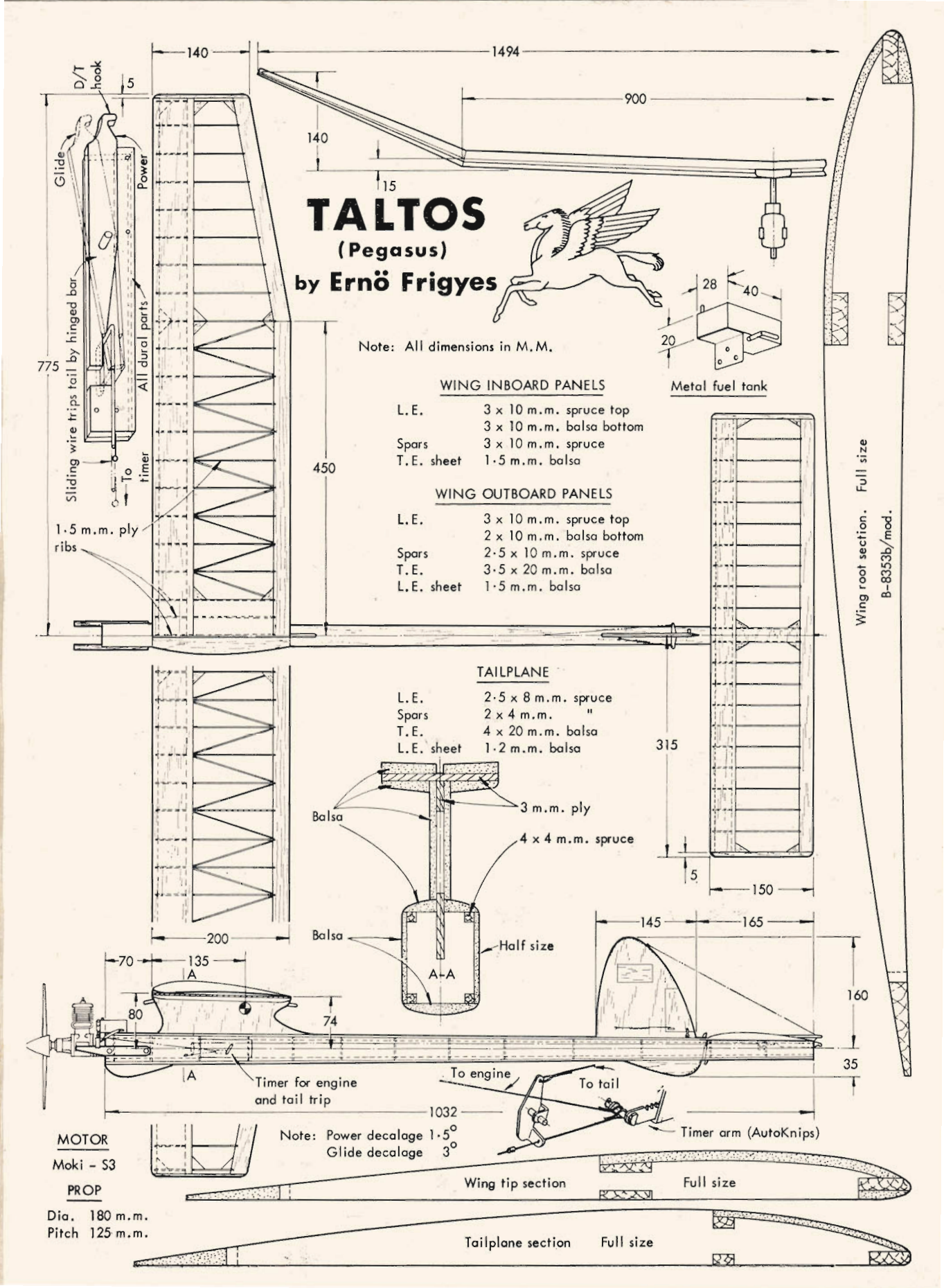


Above, interesting Swiss conversion of OS silencer by Bernherd Huber with tube insert, reduces sound level.

At left : N. Buckenham submitted this excellent silencer with novel baffled tube insert and neat exhaust adaptor for early Fox 35. Weighing 1¾ ozs., and checked by us with r.p.m. loss only 2 per cent, it reduces noise level appreciably. Could be made with range of similar adaptors for popular motors at about 50/-. Interested enquiries can be forwarded to sound out commercial possibilities.

Right : attractive rocket like silencer now marketed by Werner Koelliker of Zurich in collaboration with Swiss power modeller Ruedi Schenker. Central casting (note priming hole) in this case is arranged to fit direct to Enya 45 exhaust. Front and rear sections are anodized black and red respectively whilst triple outlet pipes are rigidly mounted in rear cover to enter the expansion chamber. Altogether a most commendable effort which works well and even enhances engine appearance.




140
1494
900
D/T hook
5
Glide
Power
140
15
TALTOS
(Pegasus)
by Ernö Frigyes
28
40
20
Metal fuel tank
Note: All dimensions in M.M.
775
All dural parts
Sliding wire trips tail by hinged bar
To timer
450
1·5 m.m. ply ribs
WING INBOARD PANELS
L.E. 3 x 10 m.m. spruce top
3 x 10 m.m. balsa bottom
Spars 3 x 10 m.m. spruce
T.E. sheet 1·5 m.m. balsa
WING OUTBOARD PANELS
L.E. 3 x 10 m.m. spruce top
2 x 10 m.m. balsa bottom
Spars 2·5 x 10 m.m. spruce
T.E. 3·5 x 20 m.m. balsa
L.E. sheet 1·5 m.m. balsa
Wing root section. Full size
B-8353b/mod.
TAILPLANE
L.E. 2·5 x 8 m.m. spruce
Spars 2 x 4 m.m. "
T.E. 4 x 20 m.m. balsa
L.E. sheet 1·2 m.m. balsa
315
Balsa
3 m.m. ply
4 x 4 m.m. spruce
5
150
200
Balsa
Half size
A-A
145
165
70
135
A
80
74
160
35
A
Timer for engine and tail trip
To engine
To tail
Timer arm (AutoKnips)
1032
MOTOR
Moki - S3
PROP
Dia. 180 m.m.
Pitch 125 m.m.
Note: Power decalage 1·5°
Glide decalage 3°
Wing tip section
Full size
Tailplane section
Full size

Model on the Cover!

Story of the World's No. 1★ power modeller Erno Frigyes of Hungary and his latest design

★ WORLD CHAMPIONSHIPS PERFORMANCE

1958 1st : 1959 No contest : 1960 Equal 1st (technical 8th in fly-off). 1961 2nd : 1962. No contest : 1963. 1st (after three fly-off rounds).

IT WILL BE A SURPRISE to many that Erno Frigyes designed FM-70 Taltos II early in 1963 and completed construction only two weeks before the World Championships. He certainly made good use of experience with his Championship winning FM-58, together with the original *Taltos* (FM-67).

It is well known to all those who deal with free flight models that a satisfactory solution of the two aspects of power flight is not an easy task.' In the interests of obtaining a fast climb it seems advisable to use slightly cambered airfoils which are set at small angles of incidence. The disadvantage of this is the faster descent. Better gliding calls for a higher curved section and higher incidence angle. But in such conditions the climbing speed deteriorates, consequently one has to be content with a moderate altitude of climb.

In earlier contests when a power time of 15 secs. was permitted, the use of such compromise sections seemed satisfactory. Erno succeeded in improving the capability of his models to over four minutes average. In January 1961 the power run of the engine was reduced to 10 secs. and it had an immediate result of diminishing of the possible average efficiency. The official flight time of 3 min. was only possible for those models which had sections of highest efficiency, trimmed with great care, and using high power engines.

Analysing power and gliding flight of free flight models with a view to further improvements of efficiency it seemed best to Erno to establish separate optimum conditions. That is to say, to make power flight with a small incidence angle so that drag is less and the model can reach a higher speed ; and in the glide a larger incidence angle is applied which results in a better descent. On this basis Erno made long tests and succeeded in producing a simple mechanism which made possible any difference of incidence angle between the wing and the tailplane at any time. (Based on V. Hajek's Czech system).

At the 1961 World Championship in Leutkirch each Hungarian competitor's model was furnished with the angle setting mechanism. In this contest—beside helping to win the Team Championship for the 3rd time Erno won second place with *Taltos* FM-67, using a Moki S-1 glow-plug engine.

In the Autumn of 1962 he had the possibility of making accurate measurements of altitude with Taltos FM-67. The measurement was made in good atmospheric circumstances at sunset by sportplane with a sensitive altimeter. In three launches the average altitude reached was 460 ft. with 9.5 secs. power run.

The gliding measurements took place early next morning, weather was fine this time, too and six launches were made. Power flight time discounted, the duration was 245-250 secs. Supposing the altitude obtained was the same as the previous day, the descending speed of the model about 1.9 feet/sec.

In earlier models Erno used the original B-8353b section. This gives good effect under conventional conditions. Its only sensitive point is the tapering depth of the rear portion, where—especially in case of a balsa rib, the frame of the wing can easily crack and deform near the trailing edge. Because of this and for theoretical reasons the upper part of the section was modified. The highest camber point was moved backwards and this made possible the use of a thicker tailing edge.

Gliding properties of the experimental wing having the modified section improved slightly. One could not notice any deterioration. The wing of the new *Taltos II* was built with this modified section, at the same time its surface was increased with area taken from the tail.

Test flying took place a week before the Championship in Austria. Trim was established during four days in changing weather conditions over nearly sixty flights using the new powerful glow plug Moki S-3 engine. On flights made early in the morning, times of 270-280 secs. were made. Two days before departure, the team held a test contest for training. This time Erno succeeded in reaching 900 secs. in five successive flights, repeated of course in the Champs.

Technical description

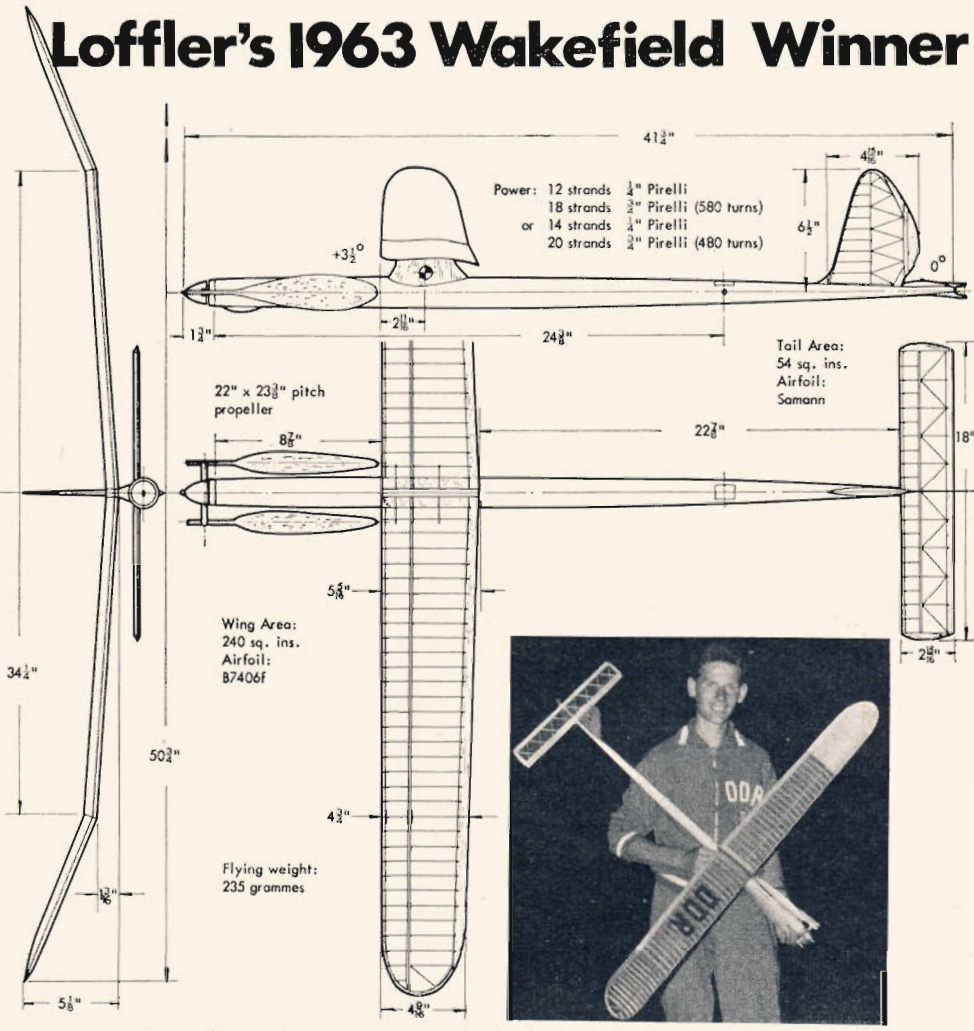
The model was produced mainly out of balsa, only the strongly stressed parts are of spruce or plywood. The right wing has slight wash-in. Covering is Japanese tissue. The wings weigh just under 8 oz., the tailplane 1⅜ oz., and the fuselage, with engine, 17¾ oz.

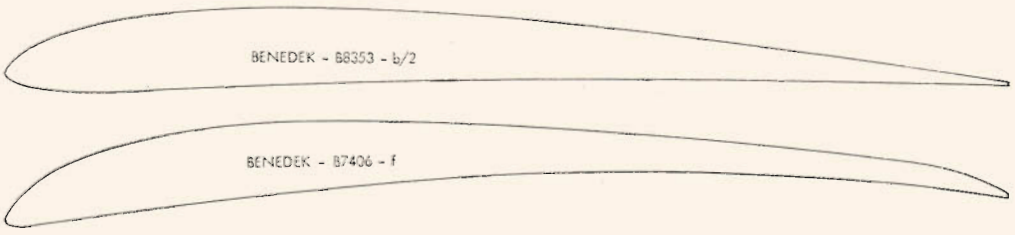
The incidence angle mechanism is built in the end of the fuselage. This mechanism—together with the rudder and motorstop—is operated by an Autoknips. During power flight the angular difference of the wing and tailplane is 1.5 deg. this increases to 3 deg. for the glide. At the extreme tail there is a 'sandwich' of dural. The centre plate is hinged and incorporates the lower (or fuselage) tail retaining hook. A sliding wire which comes from the timer to a slot in the outer halves of the 'sandwich,' will hold the centre plate in its 'neutral' position. When pulled forward, the centre plate is free to drop at the front, and it does because of the rubber band tension on the rear hooks and the d/t band at the front of the tail. Thus the tail is controlled to give two positions by timer action.

Assembly of the engine to the fuselage is resolved in an almost superficial manner by dural side plates. A gravity feed tank serves the carburrettor without pressure. Propeller diameter is 7⅜ in. and pitch 5 in. The fuel formula is nitro methane 45 per cent, Methyl alchohol 25 per cent, Castor oil 20 per cent, nitro benzine 10 per cent.

Loffler's 1963 Wakefield Winner

WHEN 23 YEAR OLD engineering student Joachim Loffler from Eberswalde became the World Champion for free flight rubber driven models at the World Championships, Austria, August 1963, he was also a member of the first representatives team from East Germany to enter this F.A.I. event. Consequently his country is very proud of his effort at such first time success. Of retiring and quiet nature, Joachim has been a Wakefield flyer for four years and took two quite different models to the Austrian meeting The one he used, as drawn and seen here in the photograph, had a wound balsa tubular fuselage with ball race supported shaft in the circular plug-in nose block. His slight advantage in the fly-off against Hakanson of Sweden, Murari of Italy and Wagner of Austria was in his longer motor run, using less power certainly than most British Wakefield enthusiasts employ. His choice of airfoil, like that of power champion Erno Frigyes (*see previous page*) are from the Benedek family and since these are likely to be of interest to many who like to design their own models, we are reproducing both the basic airfoil as employed by Frigyes and Loffler's wing airfoil, together with tables of ordinates, below.





% Chord	0	1.25	2.5	5	7.5	10	15	20	25	30	40	50	60	70	80	90	95	100
	B-8353-b/2 (Nose rad : 0.6)																	
Upper	2	3.5	4.4	5.5	6.25	6.9	7.6	8	8.2	8.2	7.8	7.0	6.0	4.7	3.3	1.9	1.15	0.4
Lower	2	1	0.6	0.2	0.05	0	0.2	0.35	0.5	0.65	0.8	0.0	0.9	0.8	0.6	0.3	0.18	0
	B-7406-f																	
Upper	0.9	2.95	3.95	5.6	6.6	7.4	8.55	9.2	9.55	9.65	9.3	8.6	7.7	6.65	5.4	3.95	2.9	0.5
Lower	0.9	0.1	0.1	0.45	0.8	1	1.5	1.95	2.4	2.8	3.4	3.8	3.75	3.4	2.65	1.6	0.9	0.

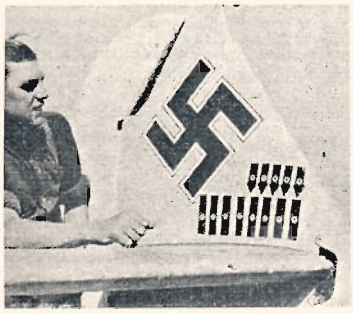
SIGN POST

A MONTHLY ENQUIRY SERVICE

Each month, *Aeromodeller* and *Air-Britain* combine forces to answer interesting questions sent in by readers. Postcards, please, to "Sign Post" c/o Aeromodeller, 38 Clarendon Rd., Waford.

The One That Didn't

Can you supply the colour scheme and markings of the Messerschmitt Bf 109E (especially the unit badge) which Oberleutnant Franz von Werra was flying on Thursday, 5th September, 1940. There are two photographs of his Bf 109E opposite page 16 in "The One that got Away" by Burt & Leasor (Collins with Michael Joseph, 1956, 16s.). The top photo shows the 109 after it had landed with wheels up in a field to the east side of Winchet Hill, near Curtisden Green, Maidstone. The bottom photo shows a close-up of the fin and rudder. Above the tailplane there are two rows of "victory" stripes. The upper row has miniature roundels just above downwards-pointing arrow-heads while the bottom row (five and eight respectively) has the roundels centred on oblong (black?) bars. — *J. M., Sheffield.*



ANSWER: Von Werra's Bf 109E was painted in the scheme introduced after the Polish Campaign in 1939, namely: (upper surfaces) light and dark green in large, irregular patches (underneath, and fuselage up to the base line of the cockpit) "powder blue." This also included the vertical tail surfaces. Identifying the Adjutant of II./JG 3 "Udet," based in the Pas de Calais, von Werra's Bf 109E had the II Gruppe (27 Bf 109Es) fighter crest half way up the fuselage just forward of the windshield. The II Gruppe shield was of black and white motif with thin red band containing the whole. The triangular segments were alternate: e.g., black (12 to 1 o'clock), white (1 to 3 o'clock), black (3 to 5 o'clock), white (5 to 6 o'clock), etc. The spinner, incidentally, was segmented, red and white, indicating it to be a Bf 109E of the 1st Staffel (three Staffeln to each Gruppe and three Gruppen to each Geschwader). To the rear of the cockpit, placed in front of the massive-size Balkenkreuz, was the chevron identifying Staff Officer aircraft—in this case the black chevron, with white and black borders, indicating von Werra's status as Gruppen-Adjutant. The horizontal black bar to the rear of the Balkenkreuz, also outlined in white and black, served to indicate identification as II Gruppe (No. I Gruppe was not identified while III Gruppe had a wavy, snakelike black line; at one time thought by some to be applied to aircraft serving on the Eastern Front only). The "victory" marks on the fin were in black although occasionally they were applied in red. (See "Kent Messenger" photos).

Motorised Sailplane

What is the colour scheme of the French ultralight prototype, the single-seat Alpavia RF-3 (F-BKQV) which was on display at the 1963 Paris "Salon de l'Aeronautique"?

R. S., *Merseyside.*

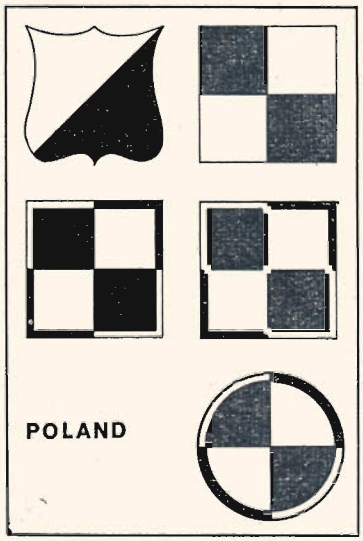
ANSWER: On the overall glossy white, a red trim has been applied, covering the motor cowling and sweeping in a thinning line to the rudder. Red is also applied to the wing leading-edges. The registration F-BKQV is also in red. The designer is Rene Fournier and the Alpavia works, established six years ago, is at the aerodrome of Tallard (Hautes-Alpes). The RF-3 was first flown in April 1963 by test pilot Bernard Chauvreau, and was awarded its type certificate two months later. Series production is under way. (See "Aeromodeller" photo).

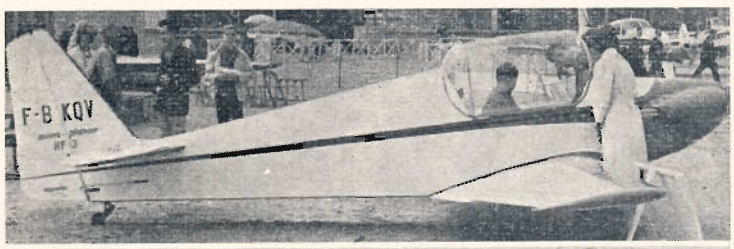
Polish Markings

Have there ever been any variations to the familiar red and white chequerboard markings of the Polish Air Force? Certainly they seem to be no different from pre-war markings, proving the exception to the rule for communist-dominated countries.

—*C. T., Barking*

ANSWER: Certainly Polish air force insignia have altered remarkeably little since some time during the war of 1918-20 between the Poles and the then "independent" Ukraine. In "L'Aeronautique en Pologne" (published in 1935 by the Polish Aero Club under the editorship of its Secretary-General, Lt. Col. B. J. Kwiecinski) there appears an excellent photograph taken at Warsaw on 16 December, 1918, which shows an ex-German LVG C.II (C. 4607) which wears what must be the earliest Polish Air Force marking—the red and white shield in the above drawing by our artist, Bruce Rigelsford. The plain red and white chequerboard appears on Fokker D.VIIs and Rumpler C.Is in 1919 while the now traditional red and white bordered square is shown on wing, fuselage and rudder of a Bristol F.2b Fighter (2030) which took part in the last big offensive on 18 August, 1920. The circular marking has appeared only once, on the stabilising fin of a single-seat, ultralight helicopter, the Gigant 2 of 1957. Nothing more has been heard of this jet helicopter (the power being supplied by miniature ramjets, one on each of the two rotor blade tips, providing a total of 44 lb. thrust.) This must be regarded as merely a novelty and nothing else. Finally, there is the traditional chequerboard of today which differs from its predecessors only in the way illustrated. These small squares provide proof positive that the markings are applied by stencils and that these small squares are simply the strengthening supports for the cut-out design.





SWEDEN. Pouring rain and strong gusty winds marred the Swedish Nationals at Upsala, North of Stockholm on 13th October, but still did not prevent a fly-off in Wakefield when Hakansan and Flodstrom tied. Hakansan was the winner, to emphasise his 2nd place in the '63 world champs. It was significant that the leading flyers in the Winter Nationals, Hermansson and Berglin should repeat their 1st and 2nd places in A/2 glider in similar bad weather conditions. "Man" of the meeting was undoubtedly 13 year old Morgan Zetterdahl (see picture) with a total of 794 secs. to make him junior champion, which would have been good enough to have placed him 5th in senior, immediately behind the renowned Rolf Hagel.

SOUTH AFRICA. Sad warning note in Western Province M.A.C. newsletter concerns piano wire. Club Captain Denis deWet had the misfortune to have a wire splinter lodge in his eye. when wire bending, calling for an operation to save his eye. Take note !

PORTUGAL. Control line and free flight Nationals held at Lisbon on 5th-6th October drew enthusiasts from all parts of the country where the host club were team leaders in most categories. Classes were all F.A.I. plus combat and flying scale.

AUSTRIA. Solid sheet balsa construction and sheet surfaced wings are becoming even more predominant. At '63 Championships, Wiener-Neustadt October 12-13th conditions were similar to those of the World Champs. Top three Wakefielders all came from St. Polten, near Vienna and each used fully balsa sheeted spariess wings. Keinrath was power leader with same high thrust-line all-sheet design used at the World Champs and Zitko used a Horst Wagner conventional structure model to win A/2 ahead of the sheet balsa wings.

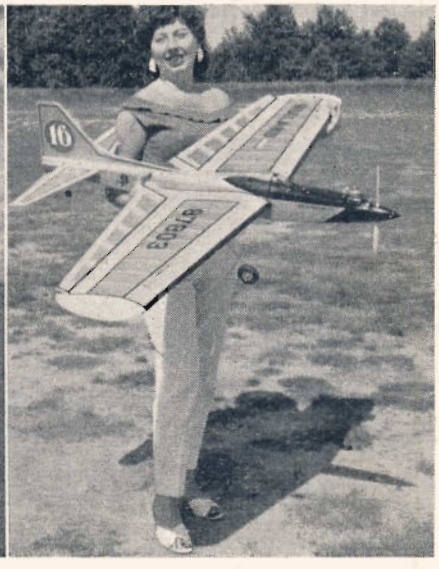
AUSTRALIA. Artmill Balsa sponsored a television boosted model contest at Moorabbin Airport, Victoria, on December 8th. Exhibition flying was given by the V.M.A.A. experts, whilst juniors flew hand launch and catapult gliders and rubber powered Bimbo's in age groups of 9, 10, 11, 12 and 13 years. Prizes were flights in Cessna aircraft.

CANADA. Mike Segrave, team manager for the Canadian team at the '63 World Champs rightly points out that it was a fully co-operative effort that produced such good lift picking in power and Wakefield classes, making few mistakes. Ernie Avory's prominent proboscis (see page 42) misled us into believing he was thermal sniffer in chief! Credit should also go to the other lads in one of the most closely knit groups on the field.

Postal international between Vancouver G.M.C. and York M.A.S. this year gave York a victory by handsome 2,834 to 2,422 secs. Each had rough conditions with rain in Canada and strong winds in Yorkshire, but the "Migrator" shield now comes across Canada and the Atlantic to rest for a year at York.

Proposed rules for ½A proto-speed are now under study period for three months according to the V.G.M.C. newsletter "Hot Head". This calls for maximum engine size .049, minimum dimensions 18 in. span, 12 in. fuselage, 45 sq. in. wing, all models to have two wheel landing gear, clear cockpit canopies and carry racing colours. Engines must be stock production without modifications and make a timed run of half mile from a standing start. Sounds like a very good all-comers event.

U.S.A. Indoor scale modelling is very much the concern of the N.A.A. Flightmasters of Los Angeles calling for 24 in. maximum span, maximum propellor size 35 per cent of span and 50 secs. maximum flying time added to a maximum of 50 scale points at one point per second. Interest is increasing in this class and rules will be developed further. Another event which is "new" is the annual Buckeye *two-thirds* F.A.I. contest held at Reynoldsburg, Ohio, on October 13th. Idea is to keep the models on the field. Power runs are 6.7 secs., Wakefield motors 1.2 ozs. and A/2 towlines 105 ft. with maximums at two minutes. Flights are made otherwise under F.A.I. procedure and general consensus of opinion is that this is no easier than the normal system but makes retrieving easier.



Above: 1963 Swedish junior power champion was Morgan Zetterdahl from Gothenburg who flies a shoulder wing "Pladuska" design (3-view published January 1963 issue). Right: is one time A/2 champion, Gerry Ritz of Chicago with his latest "Westwind" A/2 glider featuring a turned aluminium nose into which the light balsa boom is inserted with a snap fit. Note ultra short nose, taper wings, straight dihedral. Timer fitted in centre section. Ex reme right: is Joyce Van Dorp of Holland with her husbands's "Genk Special" stunt design flown in the Criterium of Aces with Enya 45. Quite an attractive pair of models !

Reader's Letters

All balsa success

DEAR SIR,

Three weeks ago I built your free plan *Simpleton* (Jan. '63, AEROMODELLER) reinforced the nose, and mounted a new D.C. Merlin with silencer up front. The result was impressive. Glide tests in a 25 m.p.h. wind showed a good glide straight off. I then launched on half power. She dropped earthwards several times like this, so, in impatience I gave her full revs. She climbed stably and apparently unaffected by the turbulent weather to a terrific height, taking a minute and a half. This, by the way, should have been less than half, and descended somewhere over Epsom. Talk about first time success, *anyone* could fly it, and although simple, it's all weather performance is comparable to any "advanced" power type I've flown. If anyone's seen a white *Simpleton* with R.A.F. insignia . . . .

A. SIMMONS.

Norbiton, Surrey.

Go gliding!

DEAR SIR,

At the beginning of September I spent a fortnight on a course with the Kent Gliding Club, which I saw advertised in the AEROMODELLER and can sincerely say that it was a wonderful experience. The club members, far from considering people on a course merely as providing more money for the funds, really tried, not to make us feel as visitors, but to persuade everyone to actually join their ranks.

The gliders used for training are T21's and T31's and the club winch must surely rate as the finest in the country. The site, at Challock, near Ashford, is excellent and enables ridge soaring to take place at one end of it.

I expected, and in fact, found several other aeromodellers besides myself on the course, but one thing I was not prepared for was to find that my instructor was none other than Charlie Dance, who will be remembered for his epic race through the Kentish countryside with Wally Skeels to capture the World Radio Control distance record in 1959. Unfortunately, his gliding commitments now restrict his activity on the modelling front, but he asked to be remembered to his many friends in the movement.

Except for the fact that I have recently moved up to Derby from London, I should most certainly have joined the Kent club, but I have no hesitation in recommending it to any prospective glider pilot, and in this I am joned by fellow-members of Esher & D.M.F.C., whose example I followed in the first place in taking up gliding.

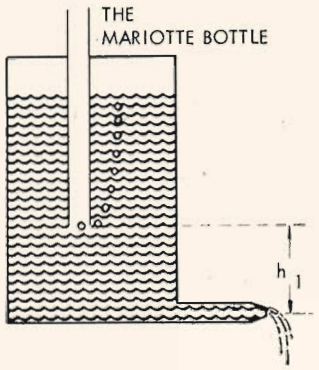
S. FUREY.

Kedleston Road, Derby.

Tank suggestion

DEAR SIR,

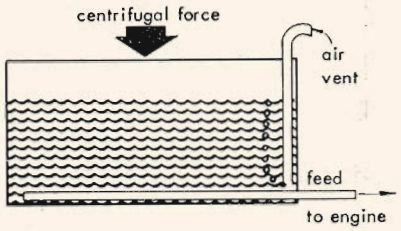
AEROMODELLER features on various tanks such as the chicken hopper or—latest—Edmond's *Reguflo* tank show how much brainwork is spent on the problem of fuel regulation by suction fuel tank specialists.



I wonder why none of them has made use of a principle known for 300 years. You will find it in any compendium of hydrodynamics under the name of *Mariotte bottle*. It keeps the speed of efflux of water from a bottle constant as a $\sqrt{h}$ function of surface height.

Speed of water is constant and equal to that of surface height equal to h_1 until the surface reaches the lower end of the air tube.

Explanation is simple: Constant pressure at the end of the tube is one atmosphere, no matter what the actual surface height is. Convert the idea to a control line tank.



The limit of the principle is that pressure of fuel "above" the end of the air tube must be below one atmosphere.

Take a 20 g. centrifugal acceleration and a heavy fuel of 1 gramm/c.cm. and tank width has to be 50 cm. to stop it working!

I think the principle is worth an air test.

R. MIEBACH.

Cologne, W.Germany.

Users of the Palmer stunt tank will find this a familiar feature, especially those who have found that blanking off the vent which just enters the tank on the inboard side produces a more constant feed. Thanks to Rolf Miebach we now realise that there's nothing new in tanks!—Ed.

New book on markings

MARKINGS AND CAMOUFLAGE SYSTEMS OF LUFTWAFFE AIRCRAFT IN WORLD WAR II by Karl Ries, Jnr., Verlag Dieter Hoffmann (Publishers), Mainzerstrasse 47, Postfach 8, Finthen bei Mainz, W. Germany. Price: DM. 27.80 plus postage, DM. 0.70. Size: 9¼ x 6¼. 110 pages. Weight: 17 oz.

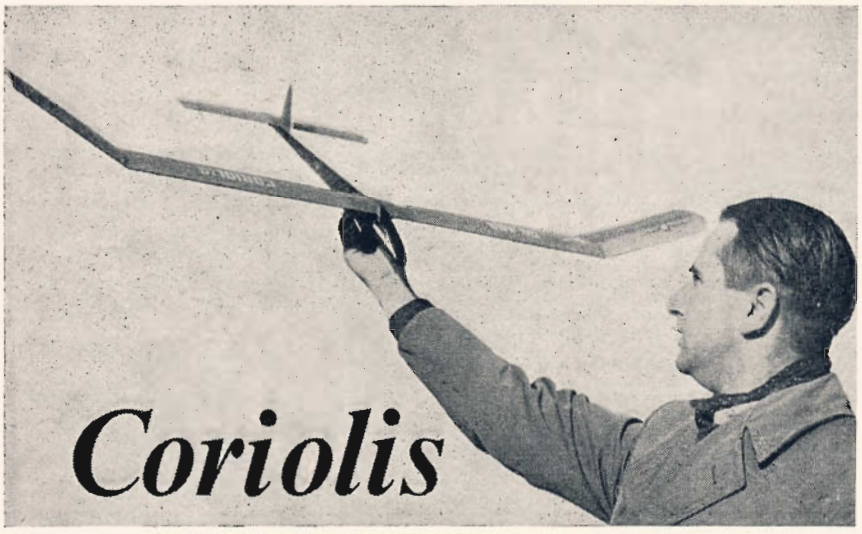
Is it any wonder that the only "title" embossed in silver on the light blue, "hard" cloth cover is the emblem of the "Hindenberg" Geschwader and its identifying code of "V4 + FR"?

The author, Karl Ries Jnr. freely admits that he is not claiming an exhaustive coverage of "the coat of many colours." It is a beginning, a pioneer work and all credit to Herr Ries and the publishers for pursuing this "work of art." For "art" it is, despite the fact that a more practised artist would have given the perspective views just that finishing touch which a work of such high standard certainly warrants. But to make more of this point would be to lose sight of the "Alladin's Cave" of treasures: the 86 fighter and night fighter unit (and individual) emblems, the Spanish "Blue Division" markings, the 8¼ in. long perspective views of Bf 109s., Fw 190s, Bf 110s, He 111s, Ju 88s, yes, and even a float plane He 59. There are pages devoted to spinner markings, location and meaning of emblems and codes.

There is a loose leaf page of correct colour panels which will aid modellers and artists and the text is in creditable English. All-in-all, anyone with a scrapbook or collection of WW.2 photos of Luftwaffe aircraft is going to spend many long hours *correctly* identifying hitherto "mysterious" code letters and numbers and unit crests. Herr Ries, as author/artist, may have merely scratched at the surface of the vast subject, but he has scratched to good purpose. The excellent printing and the very large illustrations are most appealing and soften the blow of the price which is, technically-speaking, not unreasonable. A second volume from Karl Ries Jnr. is now a "must."

—C.W.C.

(Note: We learn that this book may now be obtained in England at 57s. plus postage of 1s. 6d. from G. K. Scott, Bookseller, 84 Grosvenor Road, Muswell Hill, London, N.10 — Editor.)



Coriolis

Something simple, yet with a contest pedigree is this 45½ in. A/1 spec. glider by

K. COMAN

THE ORIGINAL *Coriolis* was built in July, 1961. It flew well but lacked competition performance, averaging only around 110 secs., and tended to be unstable in winds over 5 knots. The next version had a slightly shorter moment arm, and a new wing and tailplane planform was tried. This greatly improved the stability, but the duration was not appreciably changed. The aim was a duration of 130 secs. under "no lift" conditions.

This was finally achieved at the beginning of 1962 by changing the wing section to M.V.A. 301.75 and the tailplane to a reduced Clark Y. Flat air durations of 120-150 secs. were commonplace and 130 secs. average duration over 125 flights satisfactory. With the slightest lift about, *Coriolis* is set for a maximum. The model won practically every contest entered, including several club contests, a R.A.F. Model Aircraft Association Postal Contest and on two occasions, the Murray-Crump Memorial Trophy awarded to the winner of the A1. Glider contest at the R.A.F. Model Aircraft Association Annual Meeting. As for its aesthetic appeal, it took a 3rd place in the RAFMAA "Concours D'Elegance," after having flown over 150 times!

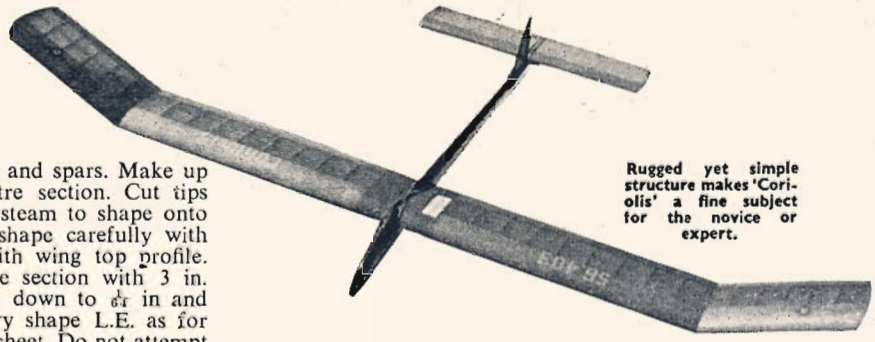
Simple structure

Construction is straightforward but keep the weight to an absolute minimum. Building an A1. strong and yet as near 5.05 oz. as possible is essential. 5½ oz. is the heaviest of the models built so far and it is considered that 6 oz. is the absolute maximum if *Coriolis* is intended for competition work.

Cut the main nose section spine from $\frac{1}{16}$ in. ply, then shape 2 oz. of plumbers solder to fit in the cut-out section. Cut two sides from $\frac{1}{4}$ in. sheet medium balsa and "sandwich" ply and lead, cementing liberally. Carefully cut the tongue at rear end to take $\frac{3}{32}$ in. sides and $\frac{1}{16}$ in top and bottom. Cut the sides and top and bottom to shape and make up into box section. Note that the top stops at fin L.E. When dry, cement box section to tongue of nose section checking over the plan that tailplane platform and wing platform are exactly at angles shown. Allow to set for at least 24 hours. The fin is built over the plans and sanded to streamline section when dry, then add the rudder with linen hinges as shown. Sand fuselage to section, rounding off the corners of the box section. Sand the $\frac{3}{32}$ in. sides well towards the rear to lighten the tail end as much as possible. Add wing and tailplane platforms made from $\frac{1}{16}$ in. ply and $\frac{1}{8}$ in. wing dowels. The $\frac{3}{32}$ in. tailplane stops are intended to knock off in the event of a heavy landing, twisting the tailplane so preventing damage to tailplane L.E. They are, however, sufficient to prevent the tailplane slewing when D/T'd. Fit D/T snuffer and 20 S.W.G. tailplane retaining hook—bind with gauze. Make up two line hook from 20 S.W.G. wire. The fin can be cemented in place before covering.

Make wing centre section in one piece packing up front of T.E. $\frac{1}{16}$ in. except for the lower spar. Remove from plan and fit lower spar. Sand the $\frac{3}{32}$ in. sheet well before fitting, tapering thickness to $\frac{1}{64}$ in at tips. Cement sheet carefully into place using P.V.A. adhesive, When dry sand L.E. carefully to shape. Cut a card template of rib L.E. and use this to give correct shape—this is the most important part of a contest model. Now cut out dihedral braces and

Off on a flying start to a winning flight at the 1963 R.A.F. Model Aircraft Ass. Championships, 'Coriolis' proved exceptionally stable in the very strong winds, gusting up to 40 knots.



Rugged yet simple structure makes 'Coriolis' a fine subject for the novice or expert.

cement to centre section tip ribs and spars. Make up outer wing sections as for centre section. Cut tips roughly from $\frac{1}{16}$ in. sheet and steam to shape onto tip rib. When cement is dry, shape carefully with sandpaper block to blend in with wing top profile. Cement outer sections to centre section with 3 in. dihedral. Sand $\frac{1}{32}$ in sheet L.E. down to $\frac{1}{64}$ in and add to outer sections. When dry shape L.E. as for centre section and blend tip and sheet. Do not attempt to sand sheet after fitting. Let in $\frac{1}{16}$ in. sheet top and bottom of centre ribs. Shape scrap $\frac{3}{16}$ in. sheet to fair in with fuselage and cement to centre section.

Make tailplane as for wing centre section. Now fit the tips and blend in as for wing outer sections. Sand down $\frac{1}{32}$ in. sheet to $\frac{1}{64}$ in. and fit using P.V.A. When dry, sand L.E. carefully to profile. Now pin tailplane on to plan and cement $\frac{1}{16}$ in. x $\frac{1}{32}$ in. braces into place and allow to set thoroughly. Fit D/T hook and gussets—cement gauze into place.

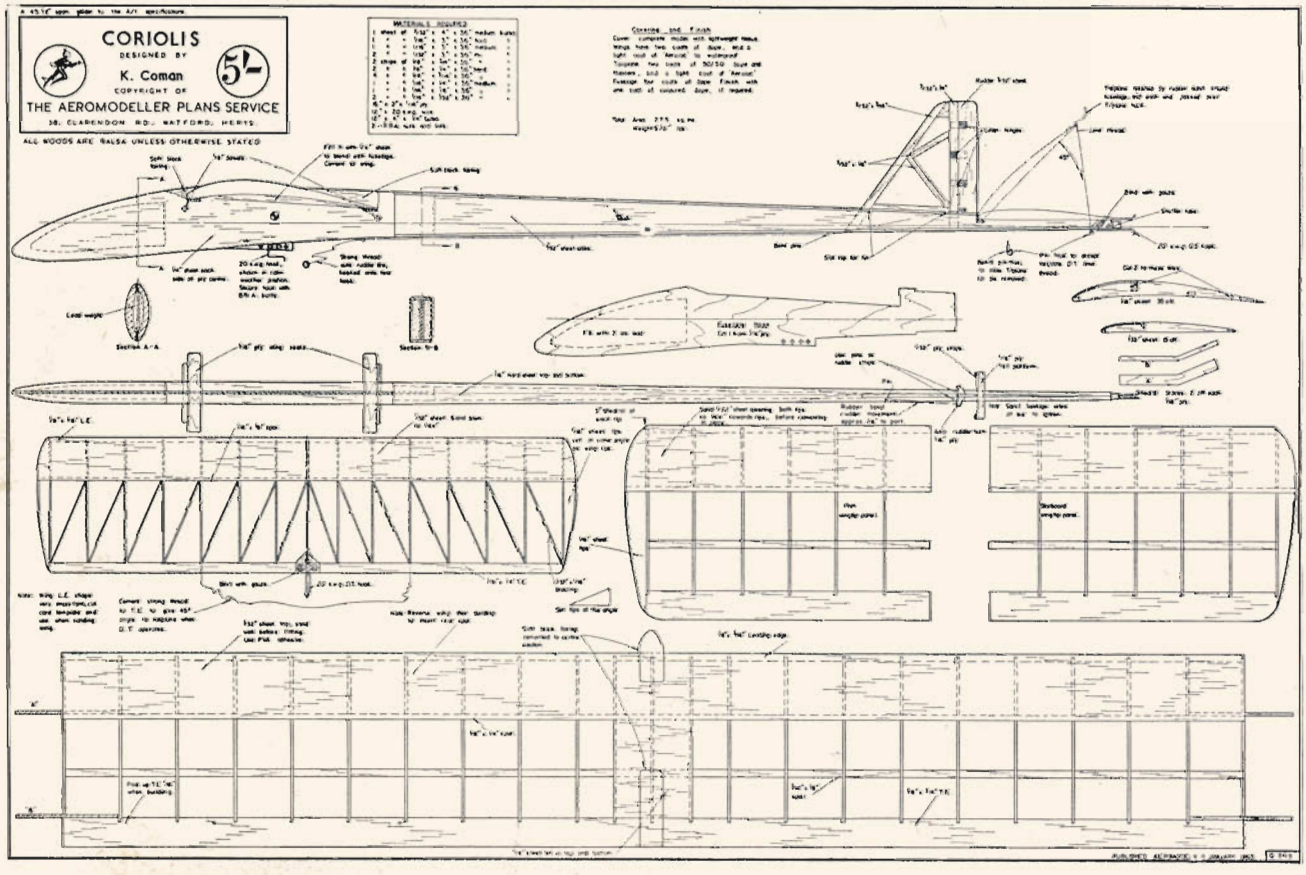
Cover whole model with lightweight tissue. Give wings two coats of dope and a light coat of "Aerolac" or varnish to waterproof. Give tailplane two coats of 50/50 dope and thinners and a light coat of "Aerolac." Give fuselage four coats of dope and sand well down towards rear. Finish off with one coat of coloured dope if desired.

Check that the C of G is in position shown on plan and that the tow hook makes an angle of approximately 15° with the vertical through C of G. Add auto rudder line and thread through bent pins pressed into fuselage sides. Tension L.H. side of auto-rudder with a rubber band to a pin in fuselage. Fit a ring to hook end of auto-rudder line and adjust line until rudder is straight when ring engages with tow hook. (Use pins as rudder stops). When rudder line is released rudder should move over to port $\frac{1}{8}$ in.

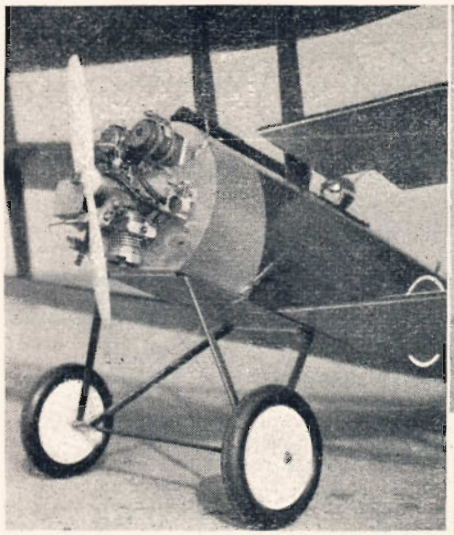
To secure tailplane, put two light bands round fuselage in front of tailplane platform, put tailplane in position and pull bands back over T.E. hook. Set tensioned tailplane to 45° and add restraining thread to correct length cementing ends to top of tailplane T.E. A pin having an open loop form at one end is cemented into position on underside of rear fuselage and the restraining loop is wound into it.

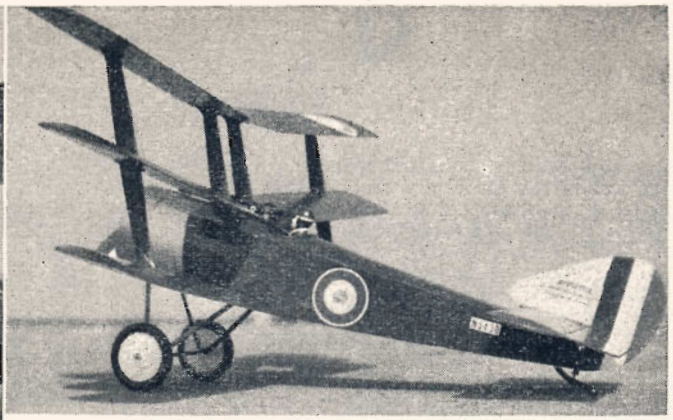
Glide test on a calm day. Correct glide if necessary by packing L.E. or T.E. of tailplane. When a long, flat glide is attained, attach tow line then fit auto-rudder loop. Any tendency to yaw on the line should be corrected by altering rudder stop pin position. The model should have no yaw tendency at all on the line if trimmed correctly. Adjust the turn in flight to give about an 80 ft. diameter circle. Finally, trim model to as near stall as possible without actually stalling by adjusting tailplane packing. Use thin card for packing—the model is very sensitive. Do not forget to put your name and address on it and light the D/T fuse every time too! The designer had a three mile cross-country trek on the first air test for not doing it!

FULL SIZE COPIES OF THIS 1/5TH SCALE REPRODUCTION ARE AVAILABLE THROUGH A.P.S. AS PLAN G.848, PRICE 5/6d. INCLUDING POST

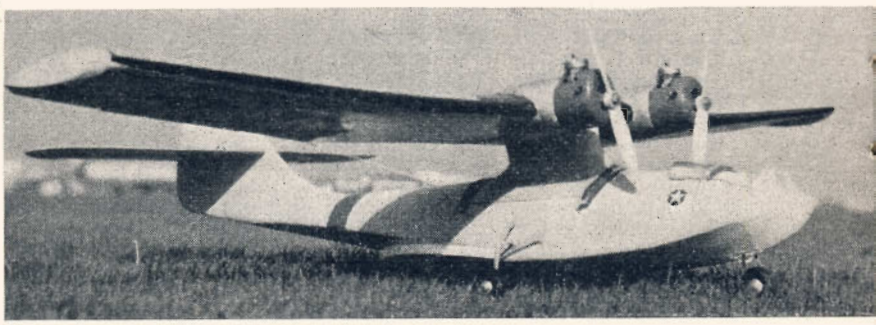


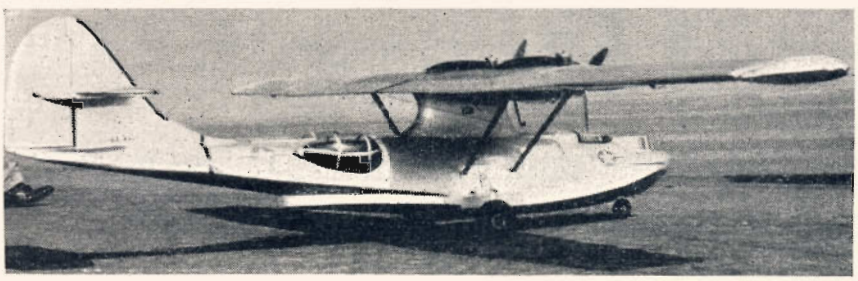
SCALE MODEL NEWS





Enlarged from "Aeromodeller" 1/72nd drawings to 1.8 in. = 1 ft., SOPWITH TRIPLANE above by J. M. Tschirgi of Woodland Hills, California, uses Orbit 4 channel with rudder and "up" elevator, useable only with extreme throttle positions via switching circuit on Annco motor servo. Note packed DEAC's above Enya 19 to maintain balance. Flight characteristics good, though directional touchy. Steerable tailwheel gives great satisfaction for ground steering. Fine effort Mr. Tschirgi!





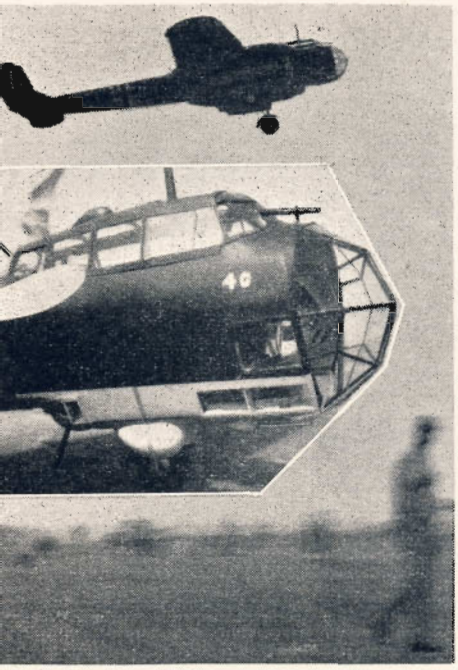
3 dg. dihedral, 40 per cent C.G. position, enlarged tail surfaces and 10 channel F & M converted this A.P.S. 63 in. CATALINA above, from control line to R/C in Holland! De Lely and Van de Made of Rotterdam fitted two Fox 15's, used 6 channels and had seven fine flights before elevator failure caused disaster for this magnificent effort.

Making a habit of it, PBY CATALINA at left, by Frank Johnson of Los Angeles is twice the size of the Dutch one with 124 in. span, weighing 18 lbs. for two Super Tigre 56's, Orbit radio gear and Bonner transmites. Another really fine effort, calling for great modelling skill and expert control.

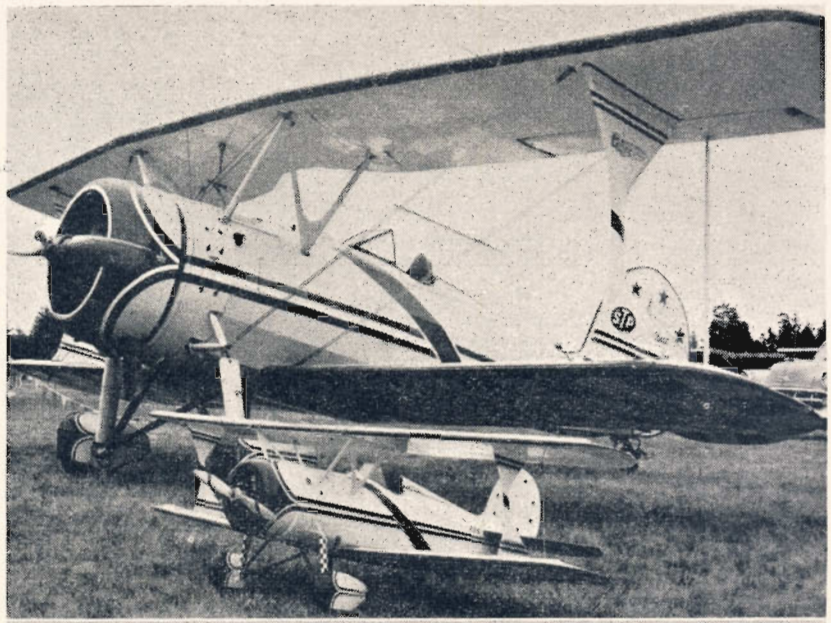
Beautiful MOONEY MITE (left), by Bud Atkinson of Blue Springs, Missouri, placed 2nd in 1963 U.S. Nats using Orbit 12 and K & B 45. Weight is 9 lbs., span 74 in., extra channels used for flaps, retractable undercarriage and lights!

Seems a tremendous shame to speak of some of these models in the past, especially Bill Murphy's magnificent "full house" multi channel scale Chance Vought F4U-4 CORSAIR (above), with Super Tigre driving four blade prop. Couldn't miss using this one in view of plans on page 38. Maybe it will inspire others to tackle this very suitable subject with generous dihedral.

Avro 511 ARROW SCOUT (left), by V. Harden of Los Angeles is a remote subject but took 4th place in open free flight scale at U.S. Nats. Some idea of size can be gauged from hand operating compression extension for Quickstart Dart .5 cc. diesel.

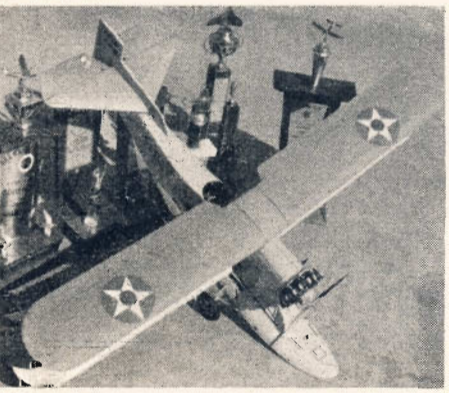


Gordon Madison, who photographed much of the U.S. Nats for us and is a scale enthusiast, reckoned this DORNIER DO 215 built by Dr. Linton Keith of San Jose, California, the prettiest model he has ever seen. Made from A.P.S. plan CL.627, the 44 in. model weighs 4½ lbs for two Fox 15's and uses the Roberts 3-line control system with full throttle control. Perfect scale finish includes full interior detail (as on plan) and model is seen in action above with close-up nose detail. In twelve contests gained 12 1st's, was 2nd at '63 U.S. Nats by mere 1½ points.



John Burnett of Portland, Oregon scaled up our "Famous Biplanes" drawing for Harold Krier's GREAT LAKES SPECIAL to make a ¼ scale full multi channel replica using a Hassad Blue Streak 65 engine. First flown with five channels operating, the model weighs 10½ lbs. without radio and uses an old aluminium kettle in the cowling whilst wheel spats are made up from laminated balsa. John had the opportunity of posing his replica in front of the actual machine at a recent air display. We have always fancied the Japanese KAWASAKI HIEN "Swallow" as an ideal subject for multi channel radio scale and one above was made by Dick Riggs of California, using a Merco 49, Orbit 10 channel and Bonner Transmites.

Dennis Thumpston's DE HAVILLAND 9 (above), is to 1/7th scale for Orbit 10 channel, making it 72 in. span with Veco 45. Extraordinary well detailed, complete with rigging the D.H.9 weighs 7 lbs and Dennis hopes to have it entered for the 1964 British Nats.

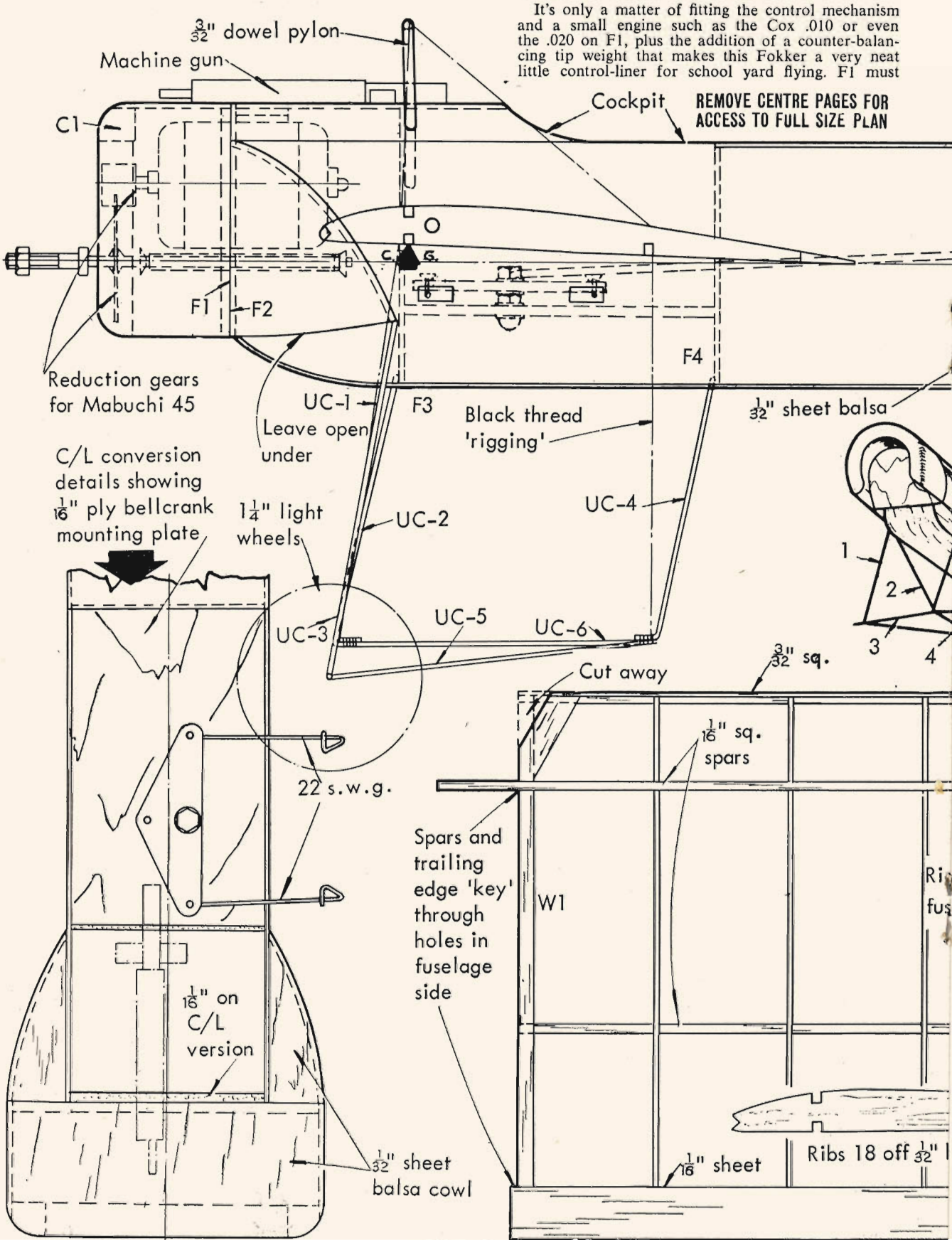


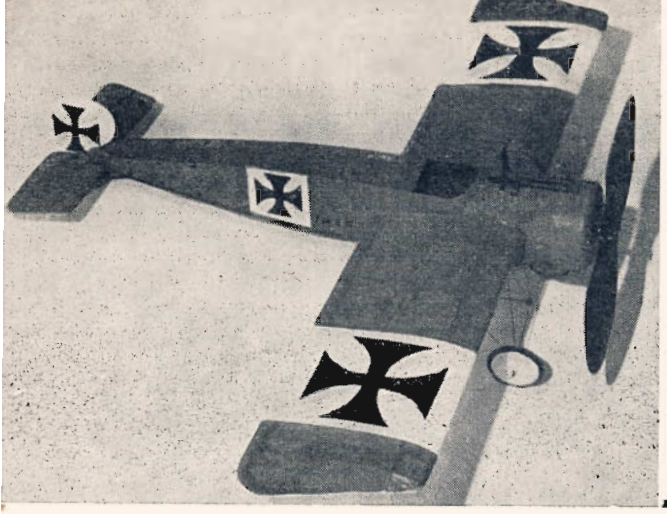
Another model from G.B. is PIAGGIO 166 (above), from A.P.S. plan CL. 824 by S. A. C. Holland of R.A.F. Henlow and Luton D.M.F.C. Realistically photographed, this 42 in. model placed 1st in Tech. Training Command Handicraft Exhibition and 3rd in a world wide R.A.F. Handicraft exhibition in London.

Tommy Meyer, son of "Little Toot" designer from Corpus Christia, Texas, has now won six 1st place trophies with his A.P.S. LOENING OL-8 (at left), plan FSP, 650.

Control line conversion

It's only a matter of fitting the control mechanism and a small engine such as the Cox .010 or even the .020 on F1, plus the addition of a counter-balancing tip weight that makes this Fokker a very neat little control-liner for school yard flying. F1 must





Have fun in the clubroom with John Simmance's 22" round-the-pole electric flyer—also fine for control-line

Scale FOKKER E-III for R.T.P. or C/L

THE PRACTICABILITY of *electric* powered R.T.P. models seemed to be cropping up more and more often as a subject of conversation during Club night bull sessions; so often in fact that the Wharfedale club finally decided to do something about finding out for themselves!

First step was naturally enough the provision of a pylon and D.C. power supply: these were done on a "Club" basis, several of the lads agreeing to combine efforts on these items so that individual attempts could then be made to provide models. The pylon was easy, just a simple "slip ring" disc from printed circuit board mounted on a central bearing, with a couple of brushes from piano wire on a 16 s.w.g. rotating arm to pick up the current. The power supply unit was rigged up from a transformer, rectifier and wire wound potentiometer to give a variable output of 0-12 v.

The models were next on the list, the *Fokker E.III.* being the first choice for simplicity.

During the bull sessions John had aired some positive views on electric R.T.P. flying, and since he was now "in for a penny" it might as well be "for the pound," so *exact* scale was adhered to for a span of 22 in. Although rib spacing was kept fairly close in order to maintain a good scale appearance, construction is very simple indeed, so that any modeller who wants a crack at electric flying can start with every confidence.

However, the one thing that must be borne in mind during construction is weight. If you remember this at every stage, you can't go wrong. Select absolutely top grade very light but reasonably stiff balsa (not the "blotting paper" variety of soft balsa so often found in kits) and build exactly as the plan using a minimum of cement, which should be of the non-shrinking variety. The plan is self explanatory, but the following notes will be a help to construction: Commence by cutting out the basic fuselage sides, assemble to formers 2-6, and join at rear by paper tube rolled around $\frac{1}{16}$ in. tissue wrapped dowel. Make up complete U/C wire assembly and cement to formers 3 & 4, slitting and notching sides where necessary. Add bottom decking and top decking rear of cockpit, noting grain direction. Add turtle back forward of cockpit, facing off flush with former 2. Cement on former 1, and when dry, cut out 1 & 2 and fit motor. From then on all is plain sailing, provided you keep remembering the weight and note

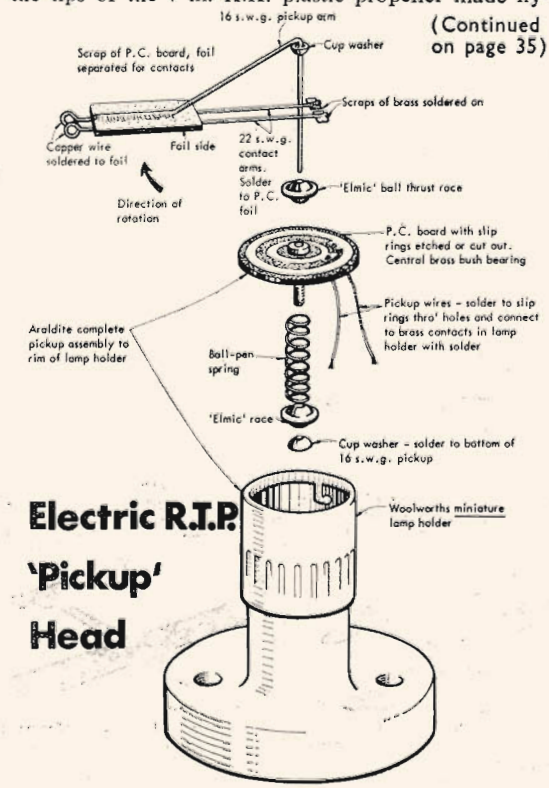
the following general comments:

The wire U/C is very strong and is not too heavy provided that all binding and soldering is done carefully with no blobs or accumulations of solder. Only cement to formers—binding adds weight.

The motor is an easy adaption from the Mabuchi 45 or similar. The metal mounting foot is removed, a 3:1 reduction ex-Alarm Clock pair of gears is fitted as shown on the plan, the brass bearing tube for the 16 s.w.g. prop shaft being Araldited to the motor case. An ordinary screwed bush is then soldered to the shaft to accept the propeller.

Cover the wings before assembly to the fuselage (not forgetting to install the power lead-in wires in the starboard wing before covering!) and cover the tail-plane after assembly. Do not cover the fuselage or rudder. Water-shrink the Jap tissue and dope very sparingly as indicated on the plan. If colour dope is used to finish the model, this must be applied in strict moderation, although the original model, with all upper surfaces and fuselage sides colour doped by brush weighed in complete at 4.18 ozs. less lines. This was admittedly done in an effort to prove that colour dope could be employed, and power was marginal as shown by the fact that trimming $\frac{3}{4}$ in. off the tips of the 7 in. K.K. plastic propeller made fly-

(Continued on page 35)



Graupner

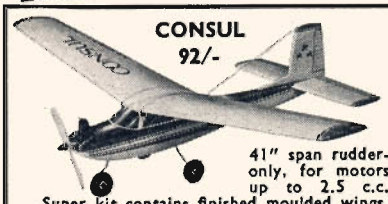
The world's finest range of DE LUXE QUALITY model kits — absolutely complete, including MAGNIFICENT PLANS, wheels, cement, transfers, shaped parts, etc. . . . and such wonderful value for money !

SEE THEM AT YOUR LOCAL MODEL SHO

Graupner R/C KITS

Superb models SPECIALLY DESIGNED and FLIGHT PROVEN—and each kit is absolutely complete down to wheels, cements, hardware, etc.

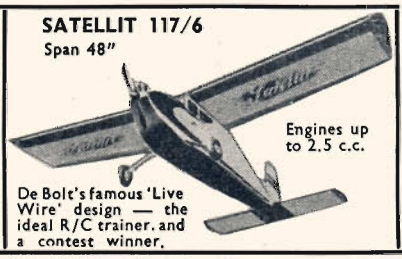
CONSUL 92/-



41" span rudder-only, for motors up to 2.5 c.c. Super kit contains finished moulded wings, fuselage, tail in toughened foam plastic, all hardware, wire parts, wheels, etc

SATELLIT 117/6

Span 48"

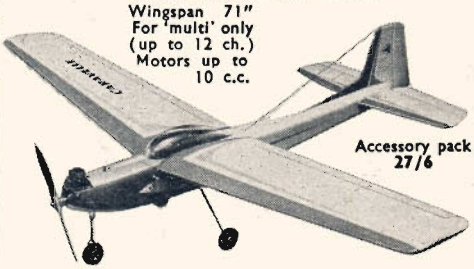


Engines up to 2.5 c.c.

De Bolt's famous 'Live Wire' design — the ideal R/C trainer and a contest winner.

CARAVELLE Price 179/6

Wingspan 71"
For 'multi' only (up to 12 ch.)
Motors up to 10 c.c.



Accessory pack 27/6

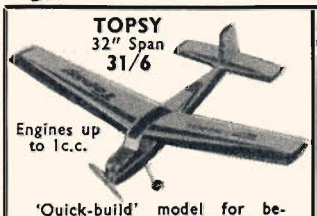
Fully aerobatic contest-proven design for 'full house' multi. Wonderful de luxe kit.

Graupner F/F KITS

Tough, sturdy construction, easy assembly and good looks are features of these modern models. Each one (except Atlas) also suitable for R/C.

TOPSY 31/6

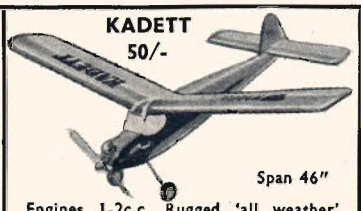
32" Span



Engines up to 1c.c.

'Quick-build' model for beginners, sport or R/C. Fully prefabricated kit throughout.

KADETT 50/-



Span 46"

Engines 1-2c.c. Rugged 'all weather' sports or R/C model a pleasure to build and fly. Extremely stable.

ATLAS 46/6

Span 51"

Engines up to .09. Special high performance model with a rocket-like climb !

KAPITAN 53/6

Span 43"

Engines up to 2c.c.
Modern biplane design for sport or R/C. Fully prefab. kit includes die cut ribs, fuselage sides, etc.

Graupner F/F SCALE

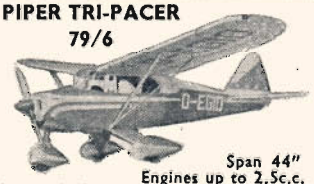
Absolutely authentic in scale detail and scaled from full size works plans these models are equally suitable for free flight or R/C.

PIAGGIO P149D 105/-

Span 44"

Engines up to 2.5c.c. Fully prefab. kit includes wheels, canopy, shaped wire parts, etc. A concours winner.

PIPER TRI-PACER 79/6



Span 44"
Engines up to 2.5c.c.

A wonderfully authentic model with sprung nosewheel, all scale details, etc. A de luxe production. Extras 17/11

CESSNA 180 65/-

Span 44". Engines up to 1 c.c. Superb scale model, easy to build and a wonderful flyer. Plenty of room for R/C.

BOLKOW JUNIOR 62/6

Span 33" Engines 1-1.5c.c.

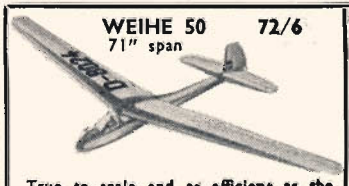
Authentic in detail and a delight to fly—sports or R/C. Nothing has been spared in this kit !

Graupner GLIDERS

A range of MODERN DESIGN gliders and sail-planes covering Scale, Sport and Contest. Amigo and Filou are also adaptable to optional auxiliary power, and with WEIHE 50 ideal for R/C.

WEIHE 50 72/6

71" span



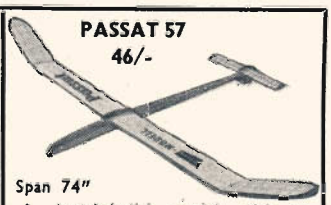
True to scale and as efficient as the full size craft. Kit includes finished foam plastic fuselage. Ideal for R/C.

AMIGO Kit 48/-

Pylon Pack 7/6

Span 69½"
High performance towline or slope soaring model, optional power egg installation and R/C.

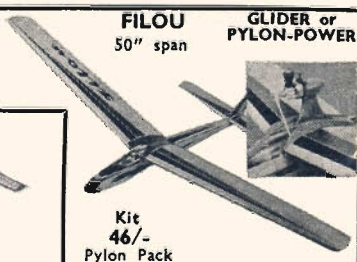
PASSAT 57 46/-



Span 74"

A 'quick-built' model with a top performance for contest work.

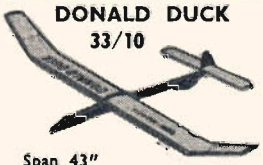
FILOU 50" span GLIDER or PYLON-POWER



Kit 46/-
Pylon Pack 13/-

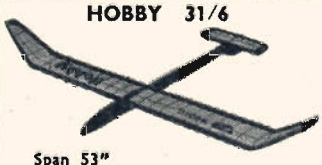
Sleek, high performance glider with convertible power-pylon format. For sport or R/C.

DONALD DUCK 33/10



Span 43"
An easily built model specially designed for the advanced beginner.

HOBBY 31/6



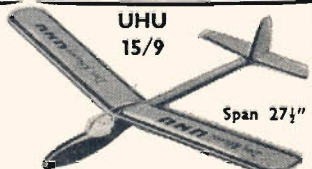
Span 53"
Popular high - performance glider for sport or contest work. towline or slope soaring.

BEGINNER 25/6

Span 38"

Easy to assemble, very good performance. A perfect trainer.

UHU 15/9



Span 27½"

Contest performance for the novice ! Specially designed for easy construction and flyability.

Graupner C/L SCALE

Absolutely the world's best for realism, accuracy and authentic 'full size' performance. Each kit is wonderfully complete with all 'hardware', etc.

MEW GULL 62/6

27½" span
Engines: 2.5c.c.
Kit is absolutely complete with many spindled and moulded parts, hardware, wheels, etc.

Graupner SUPER KITS

at your model shop

Each kit is full of the finest selected materials and the quality of the cutting is second to none. The completeness of each kit and prefabrication provided is outstanding.

FOCKE WULF 190 74/9

Span 39"
Engine: 2.5c.c.
Kit includes moulded cowl, intakes, etc., and 4-sheet plan.

DORNIER Do 27 62/6

31½" span Engine: 1.5c.c.
Kit includes moulded cowl and wing tips, many die cut parts, shaped wire parts, etc., etc.

MUSTANG 49/6

Span 30"
.15 engines
'Quick-built' semi-scale model completely prefabricated, and extremely easy to build and fly.

ME 109H 52/6

Span 25½"
.15 engines
All the hard work already done in this kit—an ideal 'first' scale model.

KLEMM 52/6

Span 28½" .06 Engine
Wonderfully detailed scale model in 'Quick-built' kit form for easy and accurate assembly.

Graupner SUPER KITS

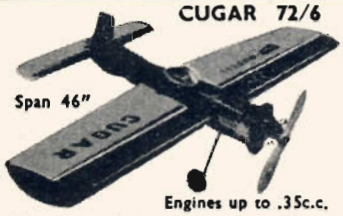
at your model shop

The clarity and detail of the plans, and the completeness of the instructions are a revelation with Graupner models! Please ask your local dealer to show you the kit of your choice—we know you will like it!

Graupner C/L STUNT

These two models have been specially chosen to present the ultimate in stunt performance and developed through years of flying experience.

CUGAR 72/6



Span 46"
Engines up to .35c.c.
Here is a stunt model par excellence, with prefab. kit for easy, quick assembly.

WHEELS

Record
1½" 5/– pr.
1¾" 4/4 pr.
2" 5/– pr.
2¼" 7/– pr.
2½" 11/– pr.
3¼" 17/9 pr.

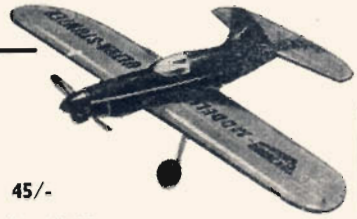
SPINNERS

1¼" 2-bl. 2/6
1½" 2-bl. 3/–
1¾" 2-bl. 3/6
1½" 3-bl. 4/3
1½" 3-bl. 4/9
1½" uncut 6/–

Graupner TANKS

10cc. T/R 6/–
28cc. T/R 7/6
22cc. stunt 6/8
30cc. stunt 6/8
45cc. diamond 8/6
Fuel Filler 2/9

ULTRA-STUNTER



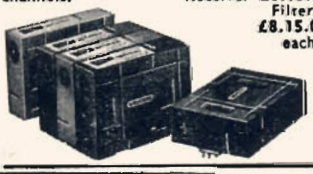
45/-
Span 35½"
Engines up to 1.5c.c.
Sleek modern lines and performance to match! Another 'quick-build' kit.

GRUNDIG RADIO CONTROLS

Unique all-transistor 'plug-together' GRUNDIG units represent the ultimate in de luxe radio control equipment.

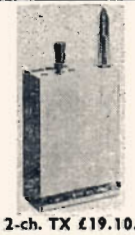
All-transistor Pre-tuned Receivers

Basic receiver unit with plug-on 2-channel filter units giving up to 8 channels.
Receiver £8.15.0
Filters £8.15.0 each.



GRUNDIG RADIO

Yes, all you've ever dreamed of and hoped for in one set—the ultimate in R/C for simplicity, reliability and complete control! From 2 to 8 channels in plug-together two-channel stages, made by the famous Grundig company to suit you and your model.



2-ch. TX £19.10.0

Crystal stabilised all-transistor hand-held transmitters with chrome telescopic aerial and lever control switching. 12 volt battery supply only.
The 4-channel Tx can be adapted to 8-channel (simultaneous) with the Conversion Unit £10.15.0

4-channel TX £31.10.0
8-channel TX £39.10.0

Graupner ACCESSORIES

Maintaining the same high quality of production, the GRAUPNER range embraces a wide range of engines, servos, fittings, etc. — a 'quality' product to meet nearly every modelling need!

CONTROL LINKAGES etc.

Rudder/elevator horn (nylon) 2/3
Moulded linkage (set) 2/11
Metal linkage (set) 4/3
20" extn. rod (5 or 7mm.) 2/4

R/C CLUNK TANK
100c.c. 10/9
200c.c. 11/6

SERVOS

There is a complete range of Graupner motorised servos to match Grundig and other R/C receivers and for all actuator applications.

UNIMATIC single-chan. 59/6
DUOMATIC 6v. 2-chan. 105/–
BELLAMATIC II 2-3v. 2-ch. 112/6
MOTOMATIC 2-ch. progr. 117/6
KINEMATIC 1-ch. comp. 57/6
SERVOAUTOMATIC 2-ch. progressive 65/–

ENGINES

World famous Graupner engineering quality and design is exemplified in this fine range of engines.

HOBBY 1c.c. 79/9
HURRICAN 1.5cc 98/6
TORNADO 2.5c.c. 102/6
BLIZZARD 2.5c.c. 118/6
ZYKLON 2.5c.c. 119/6

GRAUPNER BOOKLET

This 16 page booklet in full colour describes and illustrates all the Graupner range of kits, engines, etc.

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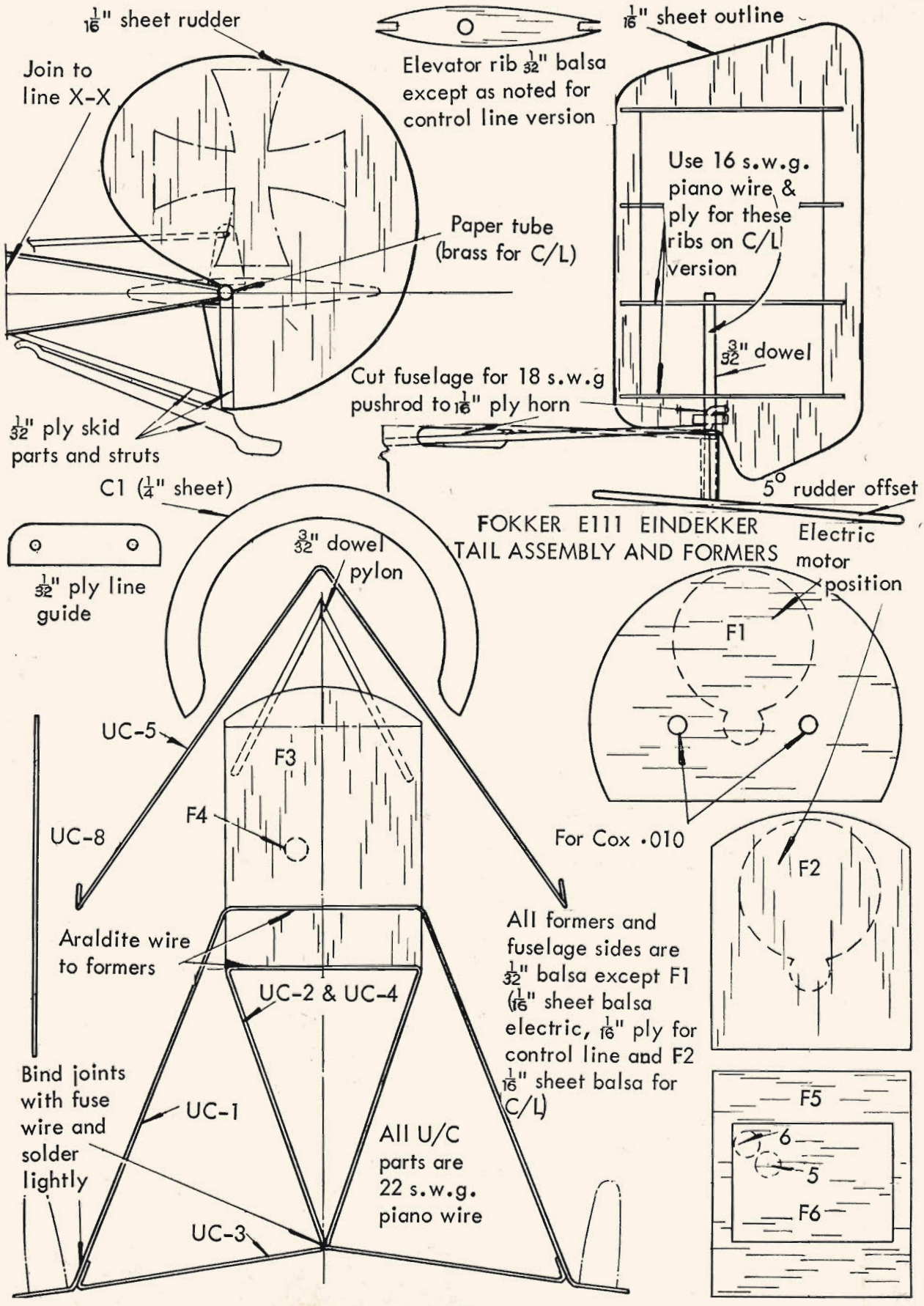
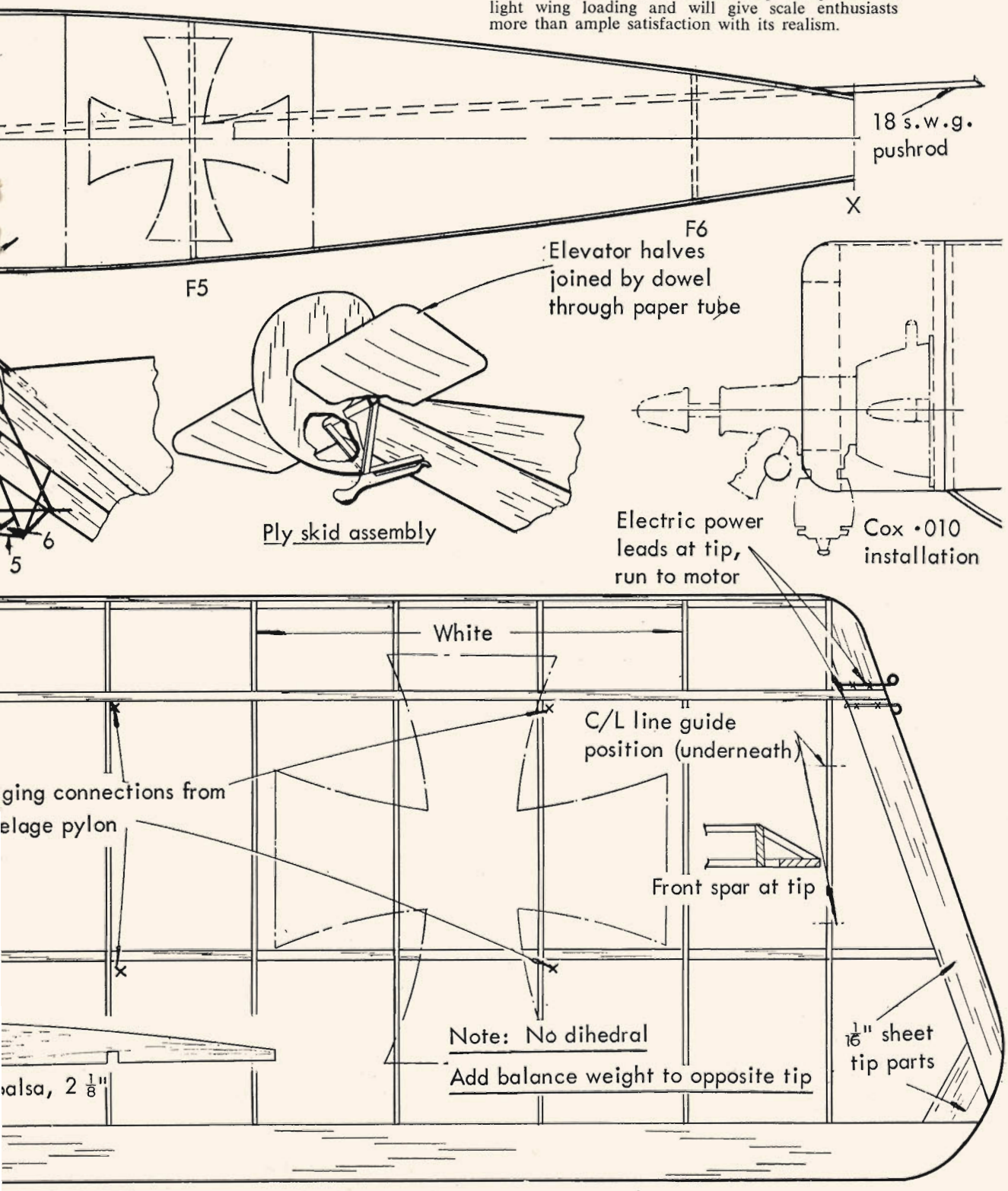
GRAUPNER — THE WORLD'S FINEST MODEL KITS AND ACCESSORIES


1/16" sheet rudder
Join to line X-X
Elevator rib 1/32" balsa except as noted for control line version
1/16" sheet outline
Use 16 s.w.g. piano wire & ply for these ribs on C/L version
Paper tube (brass for C/L)
3/32" dowel
Cut fuselage for 18 s.w.g pushrod to 1/16" ply horn
1/32" ply skid parts and struts
5° rudder offset
C1 (1/4" sheet)
FOKKER E111 EINDEKKER
TAIL ASSEMBLY AND FORMERS
Electric motor position
3/32" dowel pylon
1/32" ply line guide
F1
UC-5
F3
F4
UC-8
For Cox .010
F2
Araldite wire to formers
All formers and fuselage sides are 1/32" balsa except F1 (1/16" sheet balsa electric, 1/16" ply for control line and F2 1/16" sheet balsa for C/L)
UC-2 & UC-4
Bind joints with fuse wire and solder lightly
UC-1
All U/C parts are 22 s.w.g. piano wire
F5
6
5
F6
UC-3

now be made from $\frac{1}{16}$ in. plywood, and a $\frac{1}{16}$ in. ply bellcrank mount fitted between formers 3 and 4. The piano wire lead-outs come through the fuselage side and the 18 s.w.g. push rod runs through holes in formers 5 and 6, to come out of the upper rear fuselage and connect to a $\frac{1}{16}$ in. ply elevator horn. This is cemented firm into the starboard elevator half and a 16 s.w.g. wire connects the two halves of the elevator which pivot in a brass tube at extreme rear of the fuselage. When the model is assembled, but prior to covering, add sufficient weight to the outboard wing tip to just counterbalance the weight of the lines and controls.

Flying with an all-moving elevator can be sensitive but the small tail area compensates. Even so, if you have *no* previous experience, get a well practised control line flyer to make that first test flight for you. The *Fokker Eindekker* should loop easily with its light wing loading and will give scale enthusiasts more than ample satisfaction with its realism.

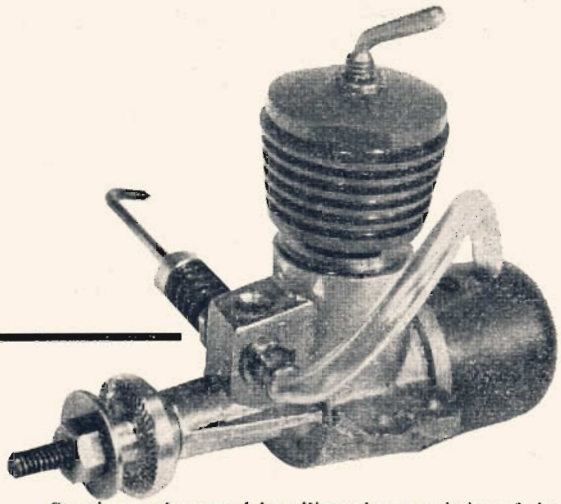


ENGINE ANALYSIS No. 118

by R. H. Warring

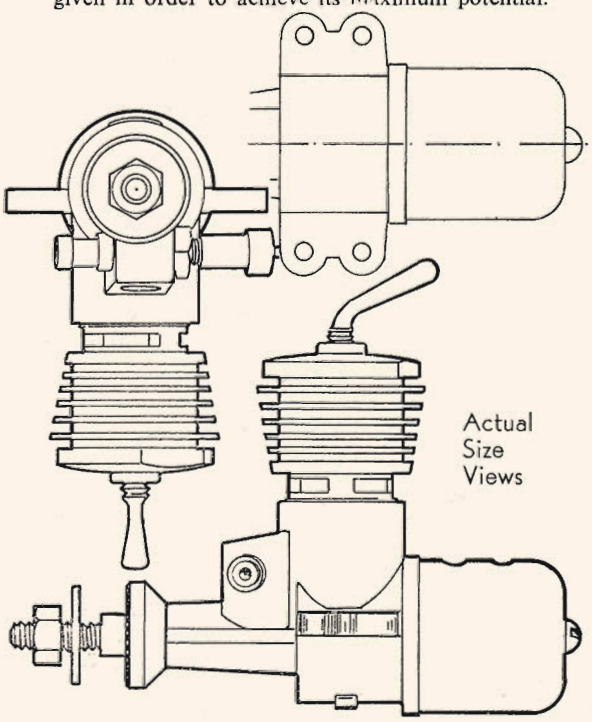
ZA·92

NEW 1 c.c. CLASS DIESEL



THIS INTERESTING NEWCOMER to the British engine market first appeared about a year ago as the "Griffon" when we had the opportunity of running a pre-production model. We were most impressed by its exceptionally easy handling characteristics and sparkling perfo mance. The present production model differs in detail only, and that mainly in a modification of the crankcase casting to provide wider spacing (transversely) for the mounting bolts so that an adequate width of bearer can be accommodated without notching. This was necessitated since the rear of the crankcase te minates in a narrow flange to the back of which is fitted an integral fuel tank of $\frac{13}{16}$ in. diameter. Thus whilst the actual crankcase clearance dimension is only $\frac{11}{16}$ in. an extra $\frac{1}{8}$ in. bearer spacing is necessary in order to clear when mounting.

One immediate attraction of the Z.A. 92 is the price—only 49s. 2d. including purchase tax—but its virtues extend far beyond this. It is of excellent design, if strictly conventional, well made and very nice to handle. Performance-wise it is one of those engines which might vary a bit from model to model for it would appear that the major components are produced en mass and engines then individually fitted and assembled. The particular example received for test, for instance was distinctly tight and could have done with a lot more running in than it was actually given in order to achieve its maximum potential.



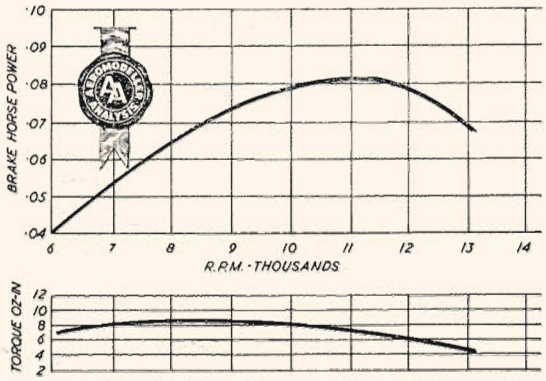
Actual Size Views

Starting and general handling characteristics of the Z.A. 92 are extremely good and even tend to improve over the first 30 minutes running. It will start readily both on finger choking and priming, but the latter is more positive for instant starting. If partially flooded the engine can still be started and cleared by backing off the compression. The general characteristics are so near "classic" diesel behaviour that one can readily find the correct compression setting by backing right off and advancing a little at a time until the engine fires. The contra piston fit was just about right—snapping back readily when released and holding compression settings at all speeds without getting tight. The needle we did not find so handy to adjust. Although this is angled back slightly, and terminates in the conventional bent-up wire, adjustment by the thimble is difficult because it is plain and cannot easily be gripped by oily fingers. Needle valve setting is, however, essentially non critical although if turned down too lean the engine cuts abruptly.

Overall size of the Z.A. 92 has been kept to a minimum. The crankcase casting is quite thin walled and weighs less than $\frac{3}{8}$ oz. The intake tube is drilled through a rectangular section which, if rather plain engineering in appearance also serves the very useful function of bracing the bearing length strongly. This section is offset, which again does not help appearance, but results in the needle valve being conveniently angled back. This also means that the needle thimble must be assembled on the right hand side, which is not the best position for sidewinder mounting since it brings the needle into a highly vulnerable position.

The crankshaft is of surprisingly small diameter for a full 0.9 c.c. engine—only .2175 in. o/d tapering down to a .137 in. diameter threaded length. This shaft is of hardened EN 32 steel with a plain disc and finished by grinding over the journal length and crankpin. Central hole is a little under $\frac{1}{8}$ in. in diameter with a similar size of port opened up oval with a chamfered entry. The shaft runs in a Manganese bronze bearing in the crankcase unit. The propeller driver is turned from dural and locates on the shaft taper. It has a protruding boss of .211 in. diameter, setting the required size for the hole in propeller hubs—and annoyingly just that much larger than a standard $\frac{3}{16}$ in. diameter which means that standard prop. hubs have to be reamed out to fit.

The cylinder is a straightforward EN 202 steel turning with no exhaust flange but threaded for a short distance above and below the port openings cut in the wall. Three semi-circular transfer passages are cut on the inside of the lower cylinder, terminating in the pillars separating the exhaust ports. Although not excessively thick walled the cylinder is



strong and of "balanced" proportions and should be quite free from distortion. The cylinder is hardened all over and the bore finished by honing.

The piston is a very simple cast iron turning with quite thick walls and a semi conical top. Wall thickness is constant from top to bottom, leaving the connecting rod with a large potential for sideways float, although in fact this is restricted to a nominal amount by the back cover. The connecting rod itself appears a little crude and is simply cut from Hiduminium, leaving only a minimum of metal around the big and little end bearings. This could be a potential weakness. Personally we would have prefered to see much more metal round the two ends, although there is virtually no room for any more at the bottom of the big end. Engines already in service have not shown weakness.

The crankcase back cover is a straightforward turning, screwing into the back of the crankcase and sealing on a gasket. The integral metal tank appears to have been spun from aluminium and attaches via a single central screw to the back cover. The tank actually butts against the rear face of the crankcase casting and not the back cover. No gasket is employed, but we found the joint quite fuel tight during the whole period the engine was test run.

The cylinder jacket is another conventional turning from light alloy and, like the tank, anodised red. It screws onto the cylinder, butting against a recess in the head for location. Cylinder length seems to have been cut to a minimum, for with the compression setting in the running position the top of the contra piston is actually standing proud of the cylinder by nearly $\frac{1}{16}$ in. However, there was obviously enough depth of contra in the cylinder for compression settings which were positively held at all running speeds.

Despite an unbalanced crankshaft and a relatively heavy piston, vibration level is quite moderate, probably due in no small measure to the relatively short stroke. It should not be enough to trouble an escapement if used as a power unit on a small R/C model, although a relay receiver might be adversely affected. The Z.A. 92 has definite attractions for small R/C work because of its small size and generally consistent running.

For free flight or R/C a 7 x 4 or even an 8 x 4 propeller would appear about right. For control line, logical size would be a 7 x 6. Some improvement in performance if required—e.g. for contest work—would probably arise from reducing the diameter of the standard spraybar by "waisting," although this could have an adverse effect on the starting characteristics. Suction lift is quite good, so that tank position is not likely to be critical on a free flight model—the standard tank as fitted being suitable for free flight sports but not large enough for R/C.

Summarising, the Z.A. 92 is undoubtedly very good value for money, offering a good performance without frills and easy handling characteristics. It is a pleasant enough engine for the beginner or sports flyer, yet has enough potential to interest the contest minded aeromodeller as well. It has been built down to a minimum weight and size, and hence its power/weight ratio is exceptionally attractive. Whether this low weight has been achieved at the expense of cutting certain things a little too fine (e.g. the crankshaft diameter) remains to be seen.

Workmanship throughout is very good and the fits and clearances just about right. The performance of an engine of this size and type is generally directly related to the quality of the crankshaft bearing which on the example run appeared to be carrying most of the load on the front and rear of the journal with the centre portion largely free of rubbing contact. With no signs of local overheating, this set-up should give a long trouble-free life whilst maintaining freedom from "rocking" as is often so evident on small engines deliberately set up with "slack" bearings. Piston and cylinder fit was good, but definitely on the tight side at the top of the bore which would probably call for several hours running to free completely. With more freedom here we would anticipate a considerably better peak power figure, possibly approaching 14,000 r.p.m. on a 6 x 4 propeller.

This is an engine which should enjoy a long and steady demand. When the opportunity arises for revision we would like to see a modification of the crankcase design and tank diameter permitting "snug" beam mounting which could, incidentally, also improve performance by adding to crankcase rigidity when installed in a model. The whole quality of production, too, is far better than the present connecting rod, which is something else we would like to see changed—plus the provision of a knurled thimble on the needle valve. But notwithstanding any present limitations in these respects the Z.A. 92 is a worthwhile and welcome addition to the present range of British production diesels, and one which a lot of people will be buying and getting good value.

Specification

Displacement: .9262 cc. (.062 cu. in.)
Bore: .438 in.
Stroke: .375 in.
Weight: 2 oz.
Max. power: .082 B.H.P. at 11,800 r.p.m.
Max. torque: 9 oz.-ins. at 8,500 r.p.m.
Power rating: 0 089 B H P. per cc.
Power/weight ratio: 0.041 B.H.P. per oz.
Material specification :
Crankcase: light alloy pressure die casting.
Cylinder: hardened EN202 steel.
Crankshaft: hardened EN32 steel.
Main bearing: Manganese bronze bush.
Piston: cast iron.
Contra piston: cast iron.
Connecting rod: Hiduminium.
Cylinder jacket: turned dural (anodised red).
Tank: turned dural (anodised red).
Spraybar: brass.
Back cover: turned dural
Propeller driver: dural.
Manufacturers: De-Za-Lux Developments Ltd., 231 High St., Brentford, Middlesex.
Retail price: £2 9s. 2d. (Including P.T.)

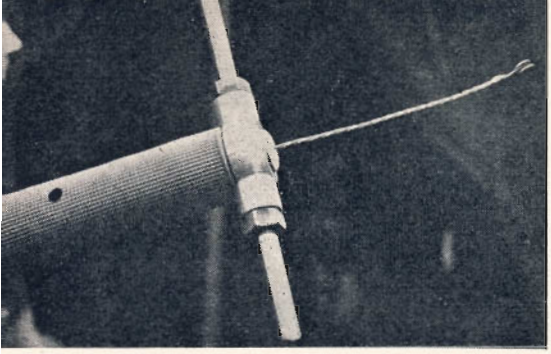
Propeller—R.P.M. Figures

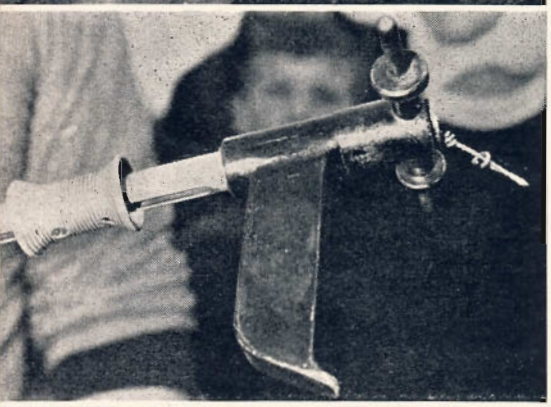
Topflite	9 x 4	5,950
	6 x 4	13,000
	7 x 4	10,250
	8 x 4	9,400
Trucut	8 x 4	9,200
	7 x 4	10,100
K-K nylon	7 x 6	8,300
	8 x 4	8,550
	7 x 4	10,600
	6 x 4	12,900

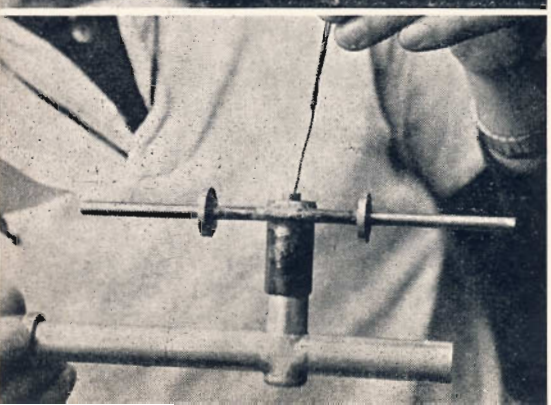
Fuel: Mercury No. 8.

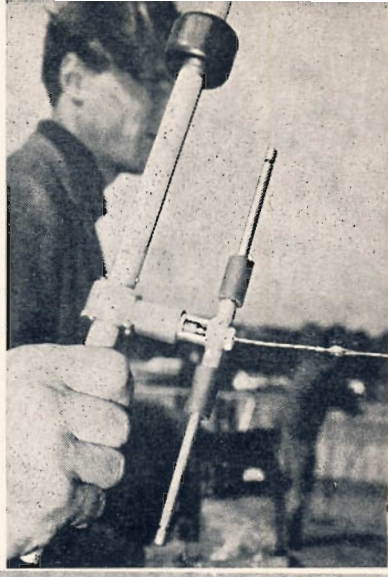
UNILINE VARIETY

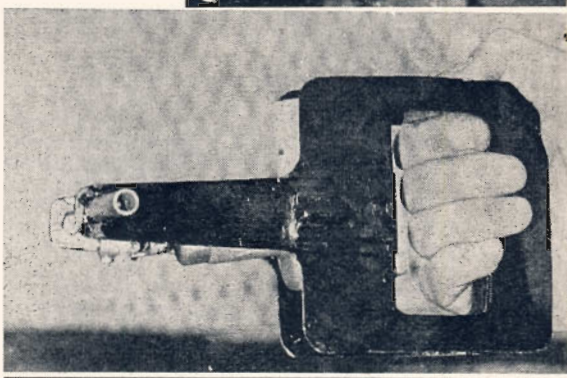
When, as an anti-whipping procedure, the F.A.I. instituted a rule requiring that the control mechanism for single line systems be operated *behind* the pylon fork, speed control line flyers were set a task to test their ingenuity to the utmost. These photographs shown nine of the variety of control systems employed at the Criterium of Aces, Genk, Belgium, last August.

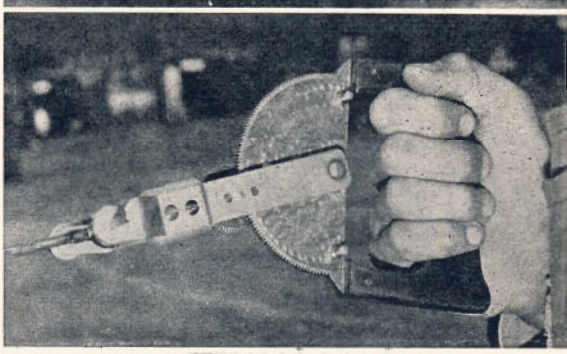


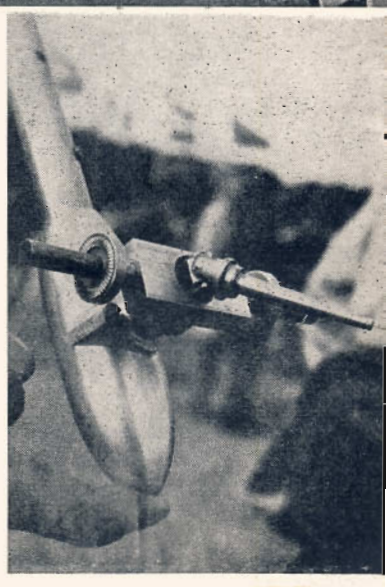








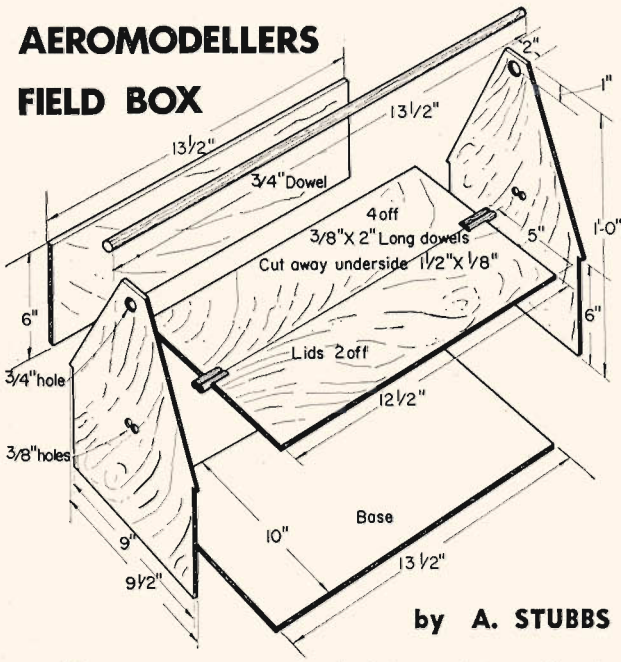




LEFT COLUMN, top to bottom, 'straight-through' bicycle pump style handle with multi strand cable lead-out through nylon rubbing bush. Horizontal bar locks on to pylon fork and minimises all possibility of whipping. This one used by U.S.S.R. modellers, Turkin and Natalenko (2nd). Lateral slide action used by Gaya of Spain has involved (Spanish Bull ??) arrangement for horizontal bar and universal joint connection for control line end. Lahtinen of Finland made beautifully turned handle in central picture for 'straight-through' action using Stanzel parts (4th). Grandesso's handle has a pistol grip (Beretta?) and differs from most by its pivoted piano wire connector engaging a swivel joint. Enzo Grandesso placed 1st and also loaned this handle to British modeller, Peter Drewell. Bottom of column is Kjellberg's handle from Finland using lateral sideways action with multi strand flexible wire to connect with control line, plus a lengthy horizontal bar to engage the pylon fork.

RIGHT COLUMN, top to bottom, Kouznetsov of the U.S.S.R., also uses lateral sideways action with a lengthy bar to engage the fork and a flexible lead-out wire. This bar was actually pulled out of shape by his record holding 10 cc. model! Miebach of Germany produced a multi geared handle, actuated by vertical motion but did not display perfect control. Next photo shows the most promising form of handle used by Sebestien of Hungary, based on the "Uniline" handle by O'Dwyer, described in April 1963 'Aeromodeller'. Vertical action on handle drives a small gear attached to a bevel with further reduction ratio on the final line drive. Control was adequate in strong wind. Note the stops on the well finished brass main drive gear to limit action. Bottom ; involved turning with curvateous French lines by Jean Magne with internally geared lateral control handle and universal joint for line connection. Note the knurled engine propeller drivers used to engage the horizontal bar with the pylon fork.

AEROMODELLERS FIELD BOX



by A. STUBBS

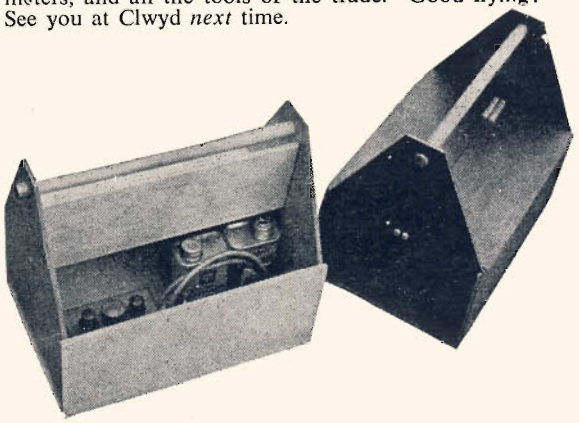
THIS FIELD BOX was inspired by a visit to Clwyd Slope Soaring competitions at Moel Fammau. Not being a radio modeller and being without a glider I was able to wander around and inspect everyone else's gear. Everything from multi channel jobs to chuck gliders were having a field day—it was really grand.

Some of the equipment lying around must have cost in the region of hundreds of pounds! But to come to the reason for this article. Most modellers carry their gear around in some sort of container, the variety of which depends on what is about when loading up for the day:— "Tuf" shoe boxes (must have had 'em on to climb those mountains!). Cycle saddle bags, well filled with empty cement cartons (packing, we presume): tin boxes containing cement and a packet of crisps (stick to your ribs these). Anyway—to the box which can be modified to suit your requirements.

Material is ¼ in.—6 m.m. exterior ply (aircraft type) ¾ in. and ⅜ in. dowel. Start by cutting parts to the dimensions given. Ends need a little extra care. These light projections could be left off; but they help to position the sides. The ⅜ in. holes are bored with their bottom edges level with projections 6 in. up from the base. Make the lids, rounding one edge and fixing two ⅜ in. dowels with glue and two panel pins bent over. Assemble the ends on lids Using your favourite hardwood glue, P.V.A., Cascamite, Aerolite, etc., attach the sides to the ends with ¼ in. projection using 1 in. fine panel pins. Mark a *line* ⅜ in. from the ends to help you keep the pins central.

Next, after sanding all the edges of base, place part complete top on it and mark all round, inside and out. Now drill 1/16 in. holes 2 in. apart for the pins. If you don't, you'll get *them* protruding inside and out. Glue and fix the base. The ¾ in. dowel carrying handle can be slipped through, with a little glue on completion of box. Make sure it is a good fit. Most ¾ in. dowel bought is a little under size. A good rub down with fine sandpaper and a coat of brush polish to protect it from dirt and oil finishes the job.

A few odd transfers or S.M.A.E. numbers would do no harm for decoration either. Battery leads can be led out through the ends, thus keeping the accumulator from accidentally being knocked over. The 6 in. height is sufficient to take ½ pint fuel cans upright (*and* carry the empties home), glider winches, meters, and all the tools of the trade. Good flying! See you at Clwyd *next* time.



FOKKER E-III (continued from page 27)

ing impossible. It is felt that a slightly bigger prop would improve things, but this has not yet been tried. Certainly, if the model is built as the plan, and if the all-up weight is kept to 4 ozs. maximum, and preferably to 3½ ozs. or so, success is assured.

The weight distribution works out fairly well, no ballast should be needed—indeed should be avoided if at all possible. It does not matter very much if the C.G. is a little forward of the position indicated on the plan, and flying trim is very easily arrived at by twisting the tailplane which is of course not cemented in its paper tube mounting.

The leads from the motor may be connected to the leads from the starboard wingtip, and the loose ends tucked away out of sight in the cockpit. Note that model is arranged for *clockwise* flying.

A final gesture to detail is added in the form of a simple soft balsa machine gun inked black, while black thread "sewn" through points on wing marked 'X' on plan from pylon and U/C crutch pieces provides simple yet effective rigging wires.

Flying is just fun all the way: just hook up from the model to the centre pylon head with a pair of insulated lines — lightweight R/C hook-up wire is just the thing here—to give a radius of about 5/6 ft. With the variable resistance knob on the control box, the motor can be spun up or idled at will, the little *Eindekker* taxied a lap or two, and then given the gun, when she will be airborne within a lap!

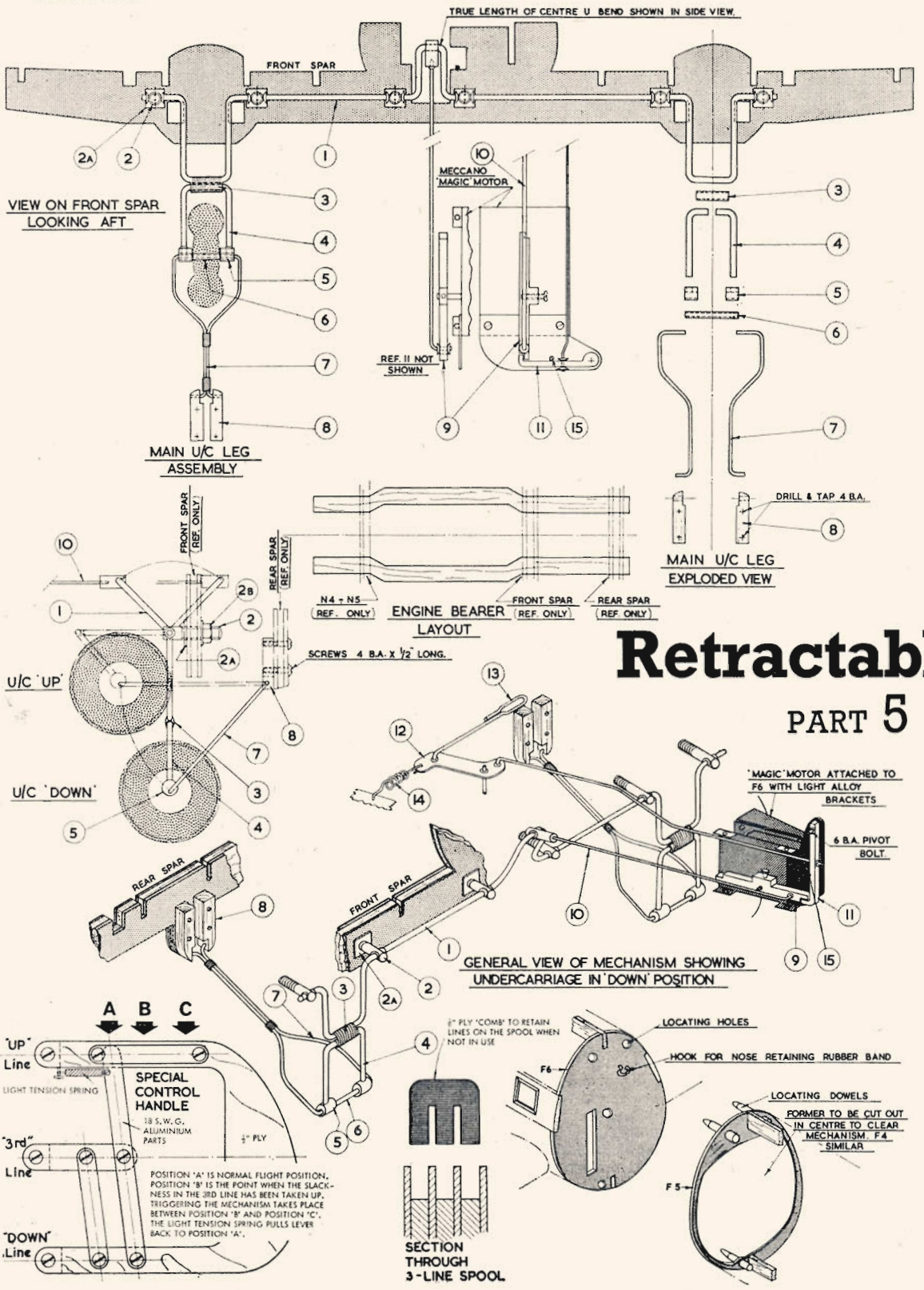
So—if you have the space for an 11ft. or 12 ft. diameter circle, with a bit of clearance, two spare evenings for a little unhurried building, and a few odd shillings for the few materials needed, why not try this fascinating and easy approach to scale modelling? You'll have a ball!

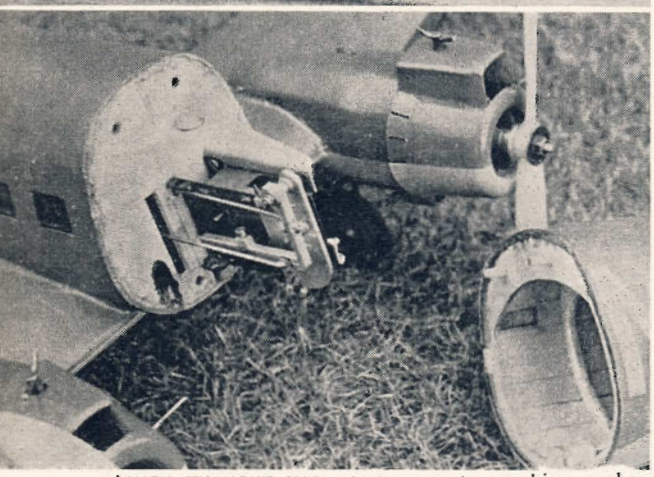
Materials Required :

1 sheet 1/32 in. x 4 in. x 36 in. very light balsa ; 3 strips 1/18 in. x 36 in. light balsa ; 1 strip 3/32 in. x 36 in. hard balsa ; Scrap Light 1/16 in. sheet balsa. 36 in. of 20 s.w.g. piano wire 6 in. x 1/16 in. dowel. Jap Tissue. Thread, Scrap ⅛in. sheet balsa. Suitable motor, screwed bush, brass tube for bearing, cup washers, 16 s.w.g. wire for shaft. Scrap 1/16 in. ply. Scrap 22 s.w.g. wire. 12 in. of 18 s.w.g. wire. Scrap 1/32 in. ply.

Retractable

PART 5 P. L.





MUCH THOUGHT HAS BEEN given to working undercarriages for various types of aircraft amongst members of the Blackburn Aircraft Model Flying Club and with the introduction of the *Dakota* into the AEROMODELLER design range, this seemed a "natural" for a simple reliable system. The main points regarding simplicity to favour the Dakota (Plan A.P.S., C/L 765) were in having a fixed tail wheel thereby only needing to consider the mainwheels (protruding

Undercarriages

SPENCER'S CLOCKWORK UNIT

wheels when retracted—this to save damage to the underside if the gear collapsed) and a fairly capacious fuselage to accommodate the actuating mechanism. As two 1½ c.c. diesels wouldn't give an abundance of power, a clockwork arrangement was considered more desirable than electric actuation to save the extra weight and bulk of a reduction gear-box and batteries. Rubber drive was dismissed as being too fast in operation.

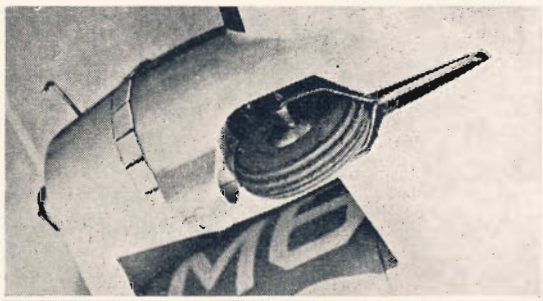
The motor eventually used was a standard Meccano *Magic* Motor utilising the square winding spindle as the crankshaft and removing the Meccano driving pulley wheel. This motor is cheap, reliable, readily available and gives plenty of torque from the winding spindle. With the friction from the tested assembly this power allows about six complete operations per winding and in taking approx. three seconds to move the gear either up or down, adds to the realism. Incidentally the *Magic* Motor has plenty of ready drilled mounting holes and lugs.

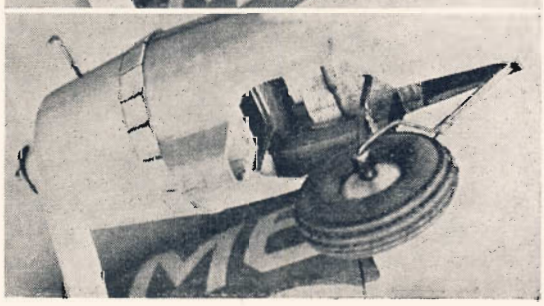
The main modifications to the A.P.S. structure consists of cutting formers F.5 and F.6 from ⅛ in. ply and making cranked engine bearers as shown to form a wider wheel bay, but noting that the spacing for the engine bearer cut-outs in the front spar, rear spar and nacelle formers are as drawn on the A.P.S. plan. Formers F.24 and F.25 were omitted. The nose is detachable forward of F.5 in order to gain access to the motor for winding which is bracketed to F.6. The nose assembly is held in position by a strong rubber band between hooks on F.3 and F.6. Locating dowels and holes in F.5 and F.6 ensure alignment of the nose on to the main structure.

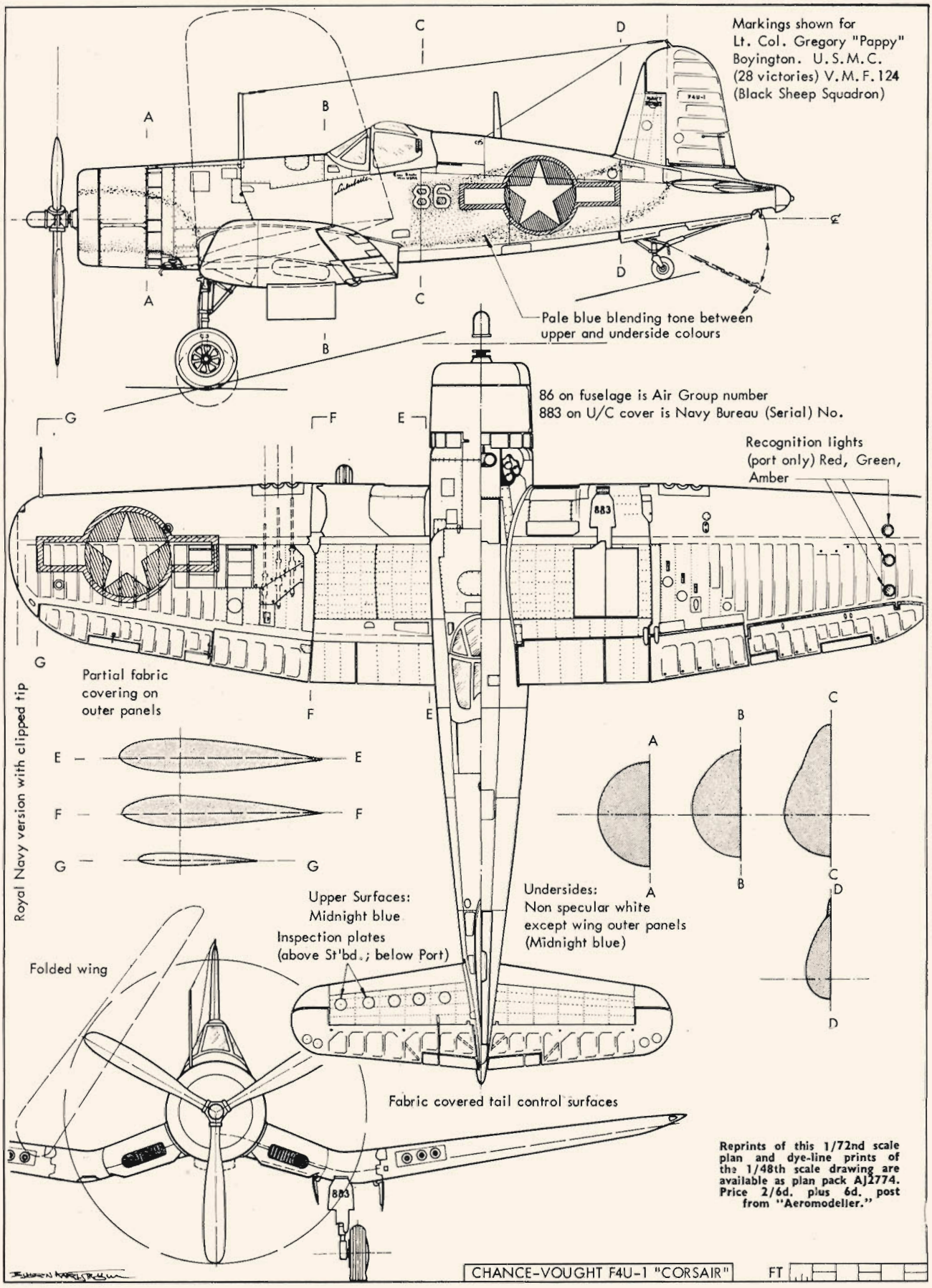
Accuracy is, of course, essential with these modifications especially in the wire bending. The main shaft **(1)** is bent from one length of 12 s.w.g. piano wire. The shaft bearings **(2)** are made by drilling headless ¼ in. B.S.F. bolts with a $\frac{7}{64}$ in. dia. drill and, with cup washers, must be threaded on the wire in correct order before commencing each successive bend. This bending must be formed over a steel plate which has a radiused edge to prevent cracking the wire. Ensure that the centre 'U' bend is 135 deg. to the outer 'U' bends on the main shaft **(1)**. The shaft **(1)** can now be assembled on to the front spar —F7A, F8 and F7B with the ⅜ in. square tapped ¼ in. B.S.F. 18 s.w.g. light alloy plate **(2A)** on the forward face and washers and locknuts **(2B)** on the rear face. The spar slots of the wing ribs which are positioned after installing the shaft **(1)** will have to be enlarged to clear the wire and then filled with scrap balsa to maintain the under-surface contour. Bind the 12 s.w.g. bore brass tubes **(3)** to the outer 'U' bends of shaft **(1)** with fuse wire and solder well. The 'U' bends form the upper sections of the main legs. The lower parts of the legs are from 'L' shaped 12 s.w.g. wire **(4)** and these locate in the tubes **(3)** to produce the knuckle joint. The axle bearings **(5)** are made by sawing electrical terminal connectors in half and opening out the existing tapped hole to take the 'L' shaped wires **(4)** which are soldered in. These also serve to centralise the wheel between the legs. 16 s.w.g. bore tube **(6)** makes the axle and the 16 s.w.g. wire radius arms **(7)** fit into them with the axle bearings **(5)** over the tube **(6)**. Each pair of radius arms **(7)** are fuse wired and soldered together, the rear ends of which fit into light alloy blocks **(8)**

(*Continued on page* 42)

Top left; the 47½ in. Dakota Mark III made from A.P.S. plan CL. 765 looks fine in invasion markings. Next photo clearly illustrates detachable nose unit removed to expose the Meccano "Magic" clockwork motor with the push-pull rod (10) and the trip (11) in the wheels "down" position. Below: the two extreme wheel positions, "up" and "down" show how well the unit fits the design. The undercarriage also incorporates torsional springing through the 12 s.w.g. brass tubes (3) giving a "knees bend" action.





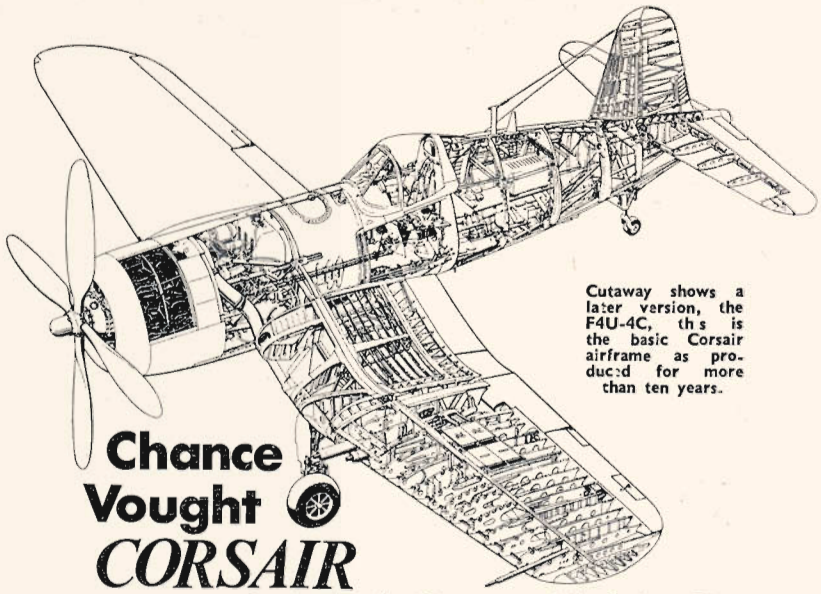


Reprints of this 1/72nd scale plan and dye-line prints of the 1/48th scale drawing are available as plan pack AJ2774. Price 2/6d. plus 6d. post from "Aeromodeller."

CHANCE-VOUGHT F4U-1 "CORSAIR" FT

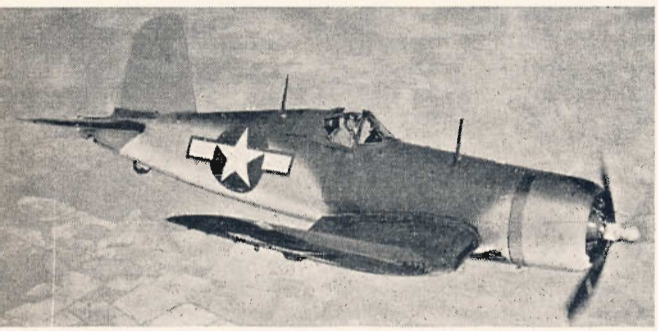
Aircraft described No. 128 drawn by Bjorn Karlstrom

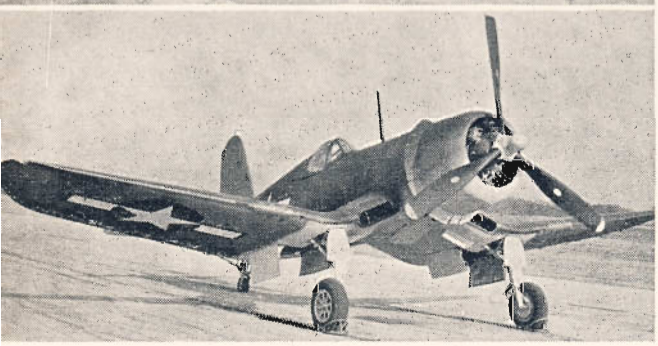
Chance Vought CORSAIR



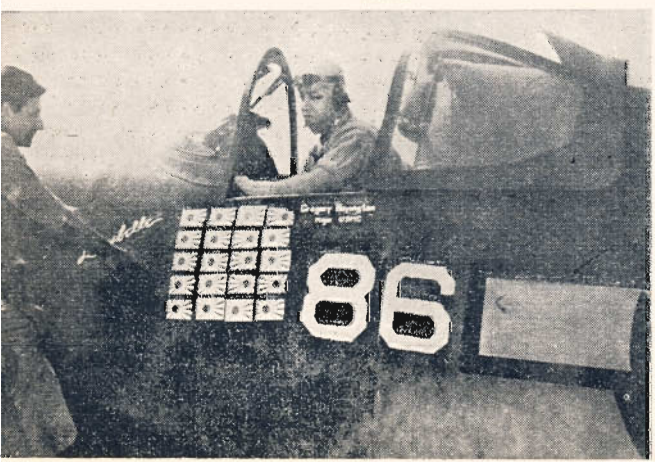
Cutaway shows a later version, the F4U-4C, this is the basic Corsair airframe as produced for more than ten years.

OVER TEN YEARS of continuous production, with 12,571 aircraft issued to many different Naval air arms, and a long series of notable actions to its credit, from Guadalcanal to Viet Nam, make the Corsair one of the World's most notable piston engined fighters. Initially designed in 1938, the gull wing configuration was chosen for aerodynamic cleanliness, reduction of folded wing height and most important, to utilise a large diameter airscrew, at the same time preserving reasonable undercarriage leg length. It was one of the first machines to employ a spot welded skinning, and this gave the very smooth rivet free fuselage finish while fabric covering on the outer mainplanes further reduced drag.





Above : Brewster built F3A-1 on test shows smart new camouflage in three tones. Below : Ray DeLeva, Vought field rep. with Ace "Pappy" Boyington in Corsair specially decorated for the photo. Note inverted flags ! No such decor was carried in action otherwise Aces would soon have been singled out for special attack.

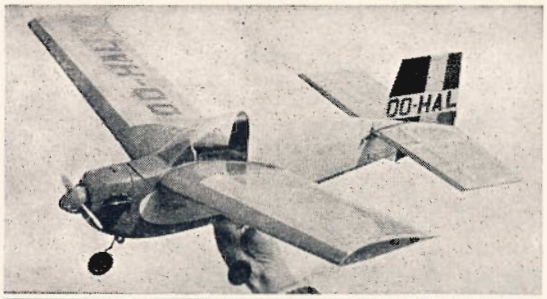


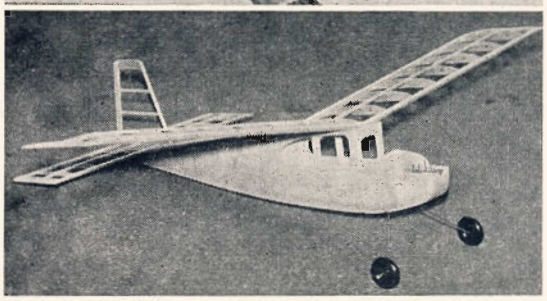
First flights in May 1940 indicated a high speed of over 400 m.p.h. but many detail changes were made for production aircraft including a 40 in. fuselage stretch, extra span and removal of fuselage guns to two banks of three in each outer wing. Two years elapsed beore the first F4U-1 left the line in June '42. Deck landing trials on USS "Sangamon" decided that the F6F Hellcat was to be the standard U.S. Navy carrier-based fighter and the Corsair went to the U.S. Marines at shore bases and to the Royal Navy.

Initially these were used for R.N. training, then the Corsair 11 with clipped tips and longer u/c leg shock travel, revised tailwheel assembly and cockpit hood went into Royal Navy carrier service. Oddly enough, first Corsair actions were almost coincident. R.N. Corsairs escorted Fairey Barracudas into the Tirpitz action in Alten Fjord, Norway on 3rd March '43 while the famous "Black Sheep" Sqdn. of the U.S. Marines began ops from Guadalcanal in February '43. They arrived at a time when the Zero was proving a complete master of the Wildcats, Lightnings and Warhawks. Landed at Esperitu Santo from an unescorted passenger ship, VMF-124's Corsairs were quickly reduced to 18 planes through early mishaps. These flew a nine hour run north to the forward base at Guadalcanal and within five minutes of landing, were called into action as escorts to a Catalina rescue mission. Next day another long range escort duty, previously out of the question for Marine fighters, brought first contact with a Zero ; but all he wanted to do was to fly alongside and admire the new shape ! The story of VMF-124 on Guadalcanal and other primitive bases is one filled with heroism and ingenuity. Parts of Invaders, Lightnings, Avengers and the old Seagulls went to keep the valued Corsairs in the air and on one occasion when tyres were short, three pilots took Wildcats off to Esperitu Santo and returned with canopies open and a tyre around each neck in lifejacket fashion.

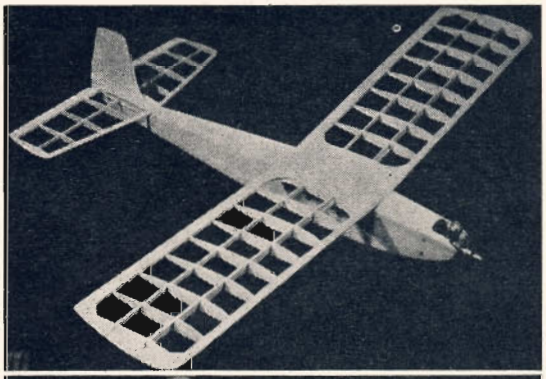
Corsairs were the mounts for the top scoring marine aces, Lt. Col. Boyington (28) Major J. Foss (26) and 1st Lt. R. Hanson (25).

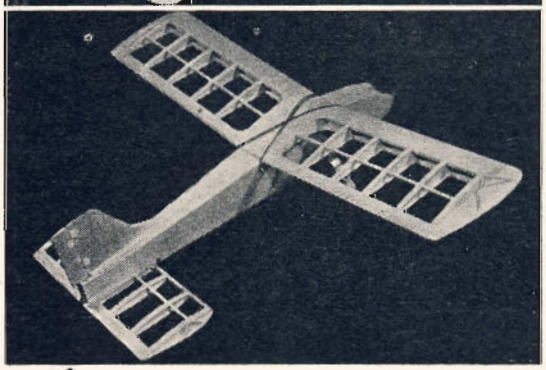
Modified in many ways, to suit all duties from night fighting to dive bombing, the basic shape of the Corsair remained unchanged except for the Goodyear developed F2G-1 version with teardrop hood—of which significantly only five were made.





MACS MODEL SHOP at Hayes has recently been enlarged and now carries a fully comprehensive stock for boat and aeromodellers including a range of hardwood. Mac's is the shopping ground for Hayes club members and they work in close co-operation for rally transport and prizes, etc. A fine selection of kits and accessories made an impressive display on our visit (see photo).



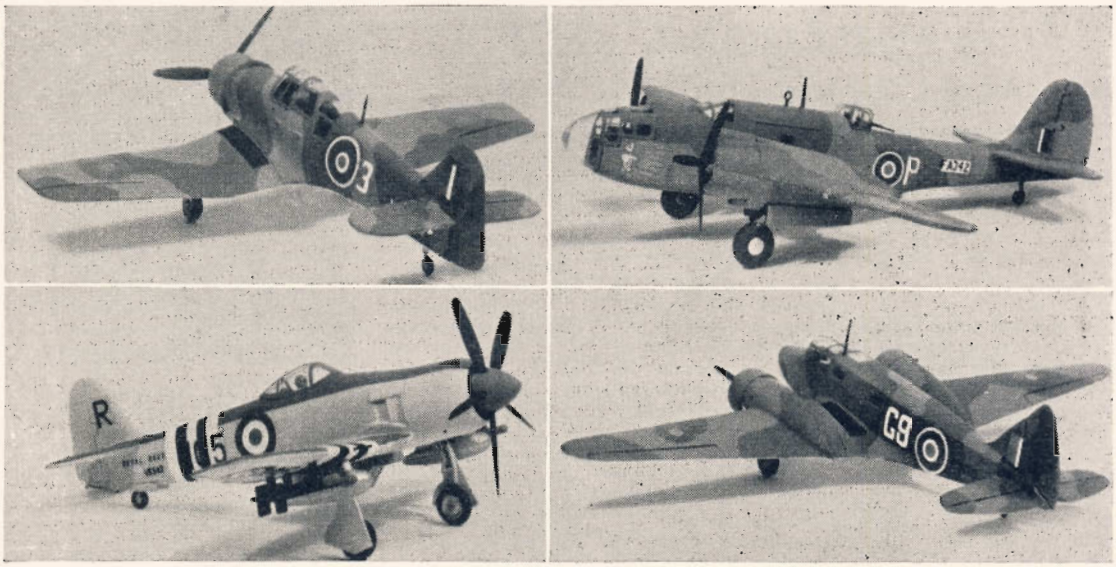


Flying tests of the **Veron** *Tipsy Nipper* are now complete, and the verdict is a definite No. 1 pass. The wing tended to drop very quickly in a turn but this can be corrected by a quick corrective push on the R/C button. Spanning 34 in. our test model was powered with a Quickstart Merlin and the colour scheme taken from the special Genk issue of our Belgium contemporary "Model Avia." For 63/6d. this is a very nicely prefabricated kit with lightweight wheels included. It builds up into a very attractive scale model suitable for most lightweight single channel radio gear ; ours used a Macgregor kit set.

The **Mercury** *Wizard* is now off the building board, and the slight inaccuracies found in our test model are to be corrected in future kits. Two points we did not like, were the rather weak wing tips and the method of holding the wings on, by passing elastic bands around the fuselage and connecting with an S hook on top of the wing. For 27/- this 32 in. sportster will give many hours of flying and with sheeted leading edge and fin, converts to R/C. For 38/-, the 37 in. **Carl Goldberg** *Junior Falcon* imported by **Roland Scott** represents excellent value for money if you want a sporty high winger for single channel gear and an .049 engine. Construction is simple and very rugged. Wings could be silk covered to give extra strength but don't forget to pin them down or they'll warp for sure ! An unusual feature in this size of model is the semi-symetrical wing section.

B.M.P.'s *Sky Stinger* makes an ideal model for an introduction to R/C, up to four channels can be

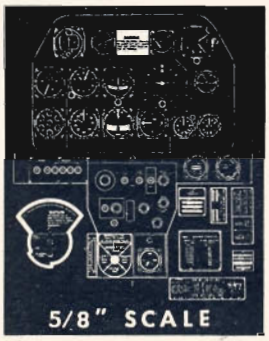
Top left : Veron Nipper in Belgian colours has been radio test flown with Macgregor gear, most satisfactorily. A fine prefabricated, comp'ete kit. Below it is Mercury Wizard framework, soon to take the air, a neat sportster. Left: above American Junior Falcon framework from kit supplied by Roland Scott, is like a scaled down multi channel design, for .049 engines, here with Cox. Bottom left : B.M.P.'s Sky Stinger, a purposeful and very tough model now fitted with Enya .09, 45 in. span and suitable for up to 3.5 cc. Heading shows impressive interior of kit packed new shop recently opened at Hayes, known as Mac's Model Shop.



Four recent additions to the Frog 1/72nd plastic range, the Miles Master III, Martin Baltimore (which we have decorated as famous "Wacky Wabbit" which made 174 operational flights with 21 Squadron S.A.A.F.), Hawker Sea Fury, which can have folding wings and Airspeed Oxford. Scale criticisms are of minor nature though still not excusable in view of production costs, but we'd like to see more attention given to Frog airscrew hubs.

used. Spanning 45 in. and costing 69/6 we would say it is good value for money, despite the standard of the kit parts in general. Ours has an Enya .09 pulling and the cap strips were made ½ in. wide for greater strength. Suitable for 1.5-3.5 cc. engines the Sky Stinger looks very attractive when colour finished and has a very tough framework.

In an American club newsletter we noted that glass reinforced self adhesive tape was being used along the leading edges of slope soaring and similar models, and for sheathing the nose of models to make them extraordinarily strong. The **Minnesota Mining and Manufacturing Co.** (*3M Company*) sell this "Scotch" brand pressure sensitive tape as No. 898 in their range. It is reinforced with glass fibre, is only .007 in. thick, is almost transparent and so strong that a standard demonstration is to use it as a towing rope for a disabled car. The 1 in. wide tape seems ideal for leading edge strengthening and we confirm the findings of American modellers that this does, in fact, add considerable strength to a leading edge and is the simplest method of glass fibre reinforcement.



Hamilton Scale Products of Ann Arbor, Michigan, U.S.A., have introduced 2nd World War Fighter type instrument panels, printed silver on gloss black background in variety of scales, one of which is reproduced exact size at right. Costs range from 30 cents to $1.25 each. They add authenticity to all types of models.

Variety of O.S. miniature lightweight escapements received for test (see R.C.M. & E. January issue) indicate careful attention to detail. These provide a variety of 2, 4 or compound positions with quick blip. Note yoke for converting motion to push-pull Fast in action, they can be cascaded, use 3 volts. Centre : readers Toplis and Willey of Derby, recommended mixing these two proofers by Aero-Glas and H.M.G. to obtain a matt proofer over camouflage finish. It works but tends to craze. Calls for experiment. Right : new 7/9d. glass fibre pack by Bondaglass is ideal for Aeromodellers, includes special winter mix additive and bubble pack can be used for mixing the resin.

Thermalnose A/2

Ernie Avory's near-winner added to A.P.S.

WHEN ERNIE AVORY'S *Migrator* was introduced to AEROMODELLER Plans Service in our November 1962 issue we were pleased to be able to quote its high contest performance in postal international events between the Vancouver (British Columbia) and Halifax (Yorkshire) model clubs. Migrator has enjoyed considerable popularity because it appeals to British modellers with its simple construction and many practical aspects, not to mention its performance potential.

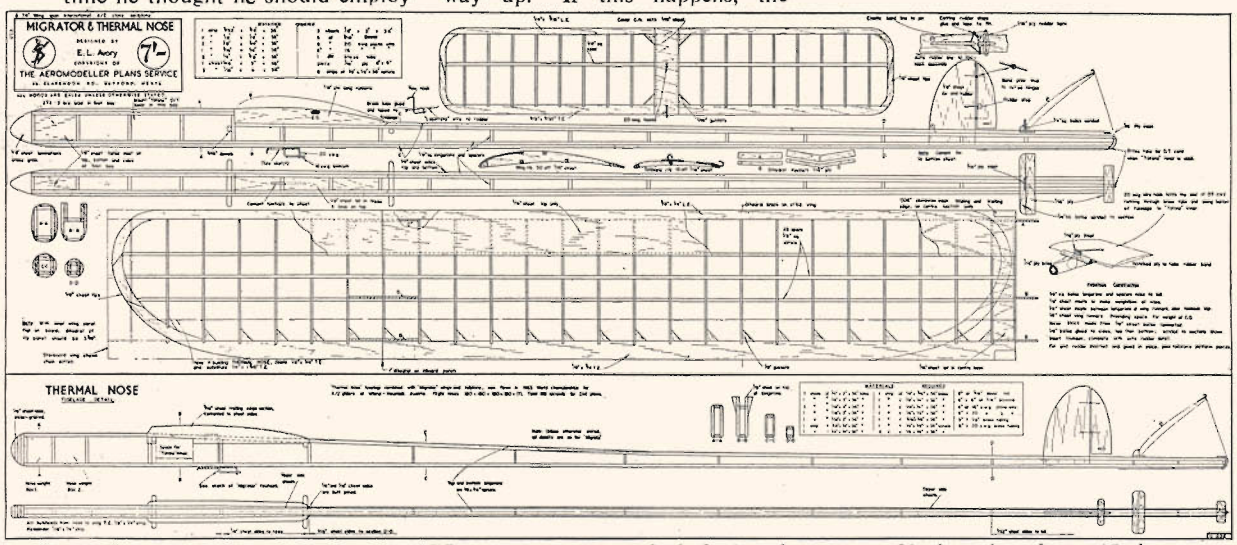
At the 1963 World Championship for gliders, Ernie Avory failed by a mere nine seconds to gain an equal first place, this time with a development of Migrator, incorporating a shorter nose and longer tail moment. It is our pleasure to announce that Ernie has provided full details of the revised fuselage and small alteration to the wing construction which are now incorporated in the A.P.S. at no extra charge, as reproduced below.

Thermalnose fuselage was designed by the method of trial and error, though Ernie admits the errors were small. For a long time he thought he should employ a longer tail moment arm, and a slightly shorter nose moment, and presumed that this would require a much smaller tailplane. After experimenting with smaller area tailplanes he came to the conclusion that the Migrator wing and tailplane were near ideal. In using the longer tail moment arm one must be very careful in choosing the right weight of wood for the rear of the fuselage, the rudder and the tailplane. The secret of performance is in building as light a tail as possible. The model employed in Wiener Neustadt, had four tailplane spares and each of them weighed ¼ oz. The auto-rudder and dethermaliser lines are purposely kept on the outside of the fuselage. It is easier to replace a line in case of stretch or breakage.

If *Thermalnose* is built correctly according to the plan, and all flying surfaces are true when assembled, no difficulty should be encountered on the tow. Do not tow your model up too fast, one can walk *Thermalnose* to the top of the line. It is better to take it up slowly and so stand a chance of feeling a thermal pull on the way up. If this happens, the model will rise much faster, and the last trick is to lead the model round carefully into its natural circle, this helps enormously in not stalling the model off the line, with consequent loss of height.

By developing a series of models and flying them frequently to watch closely for various faults, then using past experience and knowledge to apply corrections, one is able to develop a stable design such as this one that is straight on the tow, and capable of winning contests. *Thermalnose* has more than proved its capability in *that* direction!

FULL-SIZE COPIES OF THIS 1/6th PLAN ARE AVAILABLE FROM AEROMODELLER PLANS SERVICE AS DRAWING G826, PRICE 7/6 INCLUDING POSTAGE.



RETRACTABLE UNDERCARRIAGE

(Continued from page 37)

bolted with 4 B.A. screws to the forward face of rear spar F9A, F10 and F9B. It will now be seen that, when retracted, the upper part of the main leg is horizontal and parallel to the radius arm **(7)** after moving through 90 deg. The 'U' bend in the centre of shaft **(1)** also moves 90 deg., i.e., from 45 deg. forwards to 45 deg. backwards and this movement must be accurately measured as it is twice the distance from the centre of the crank **(9)** to the push-pull rod **(10).**

The amount of movement of the trip **(11)** to release the crank **(9)** is fairly small so a spring

(Continued on page 44)

International 1,000 lap Class B Team Race 1963

THE 1,000 LAP CLASS B TEAM RACE held at Rufforth on September 27th, was efficiently organised by members of the Wharfedale Club. Results of all competing countries are not known at present, but reports are that a Brazilian team have flown the distance in close on 55 min. flying a Fox .29 powered model, and an Australian team have covered the distance in 62 min. 44.5 sec. using an O.S.29.

THE FIRST OF THE 200 LAP heats got underway at 12 o'clock with the Horton/Humphrey team flying their 122 m.ph. Dalesman III for a time of 10:36 with two extra stops when dirt found its way into the fuel line. Heat 2, and the Place/Howarth team went off to a flying start using a Howarth Special 2·61 c.c. motor circulating at 100 m.p.h. for 120 laps. The motor which had only been finished on the Friday night was based on an ETA 15, but with lots of mods. Flying against Laurie of Novocastria they turned in a very good 10 : 36.2. Laurie was also in line for a place in the final with 11 : 12.8, but pranged his machine.

After the two fast times put up in the previous two heats, heat 3 promised plenty of excitement with last years winner Bullock of Halifax still faithful to his two wheeled Dalesman against the newer model of the Hampson/Yates team and the 10 year old two wheeled Thunderbird of Wharfedale's Adam/Lee team (proxy flown by Lee, Secker and Hilyard). Came 40 laps and the end of the line for Bullock. Yates/Hampson finished on'y .5 sec. behind Dick Place's time with 10·36.7 and Lee two minutes behind at 12:41.8.

Heat 4 came and went with Nixon/Ellis finishing in 12:22.

Came round two and again Bullock could only manage 57 laps before spinning in. Lee reduced his previous time to 11.49 with a pit stop ¼ lap from home, and Hampson/Yates rocketed round at 70 laps per tank for 10 mins. dead.

Horton was worried as to whether his Dalesman III (which was suffering from the after effects of a very bad fire), would last 1,000 laps at 120 m.p.h. he decided he had better lose a bit of speed, and after attaching heavy-weight Laystrate it dropped to an acceptable 113 m.p.h.

Place and Hampson had range at respectable speeds and Lee was just hoping his model would stay in one place.

A Le Mans start was used for the final, with all mechanics grouped in the pilots' circle before the signal to commence was given. A stampede to the mode's then followed, four motors burst into life instantaneously and the race was on. One lap went and Horton was down due to a tap not being closed on the tank. A quick-re-start and they were in the running again. A couple of minutes later Hampson landed for a pit-stop and had his lines chewed up by Lee's Thunderbird. No damage done to models, so the lines were quickly replaced. 250 laps saw Horton 30 laps behind leader Place after having suffered two fires in one pit stop. 500 laps came and went at a blistering pace with Horton excitedly signalling his pilot that they were now on'y 10 laps behind Place. 700 laps and Hampson in trouble again with a broken tank valve which caused his lappace to drop alarmingly to around the 25-30 mark. Horton now a couple of laps in the lead but sti'l anybodys' race with Place keeping a consistent 100 m.p.h. for 120 laps. Quick calculations showed that the race should be won inside the Brazilian time if all went well. Unfortunately Lee ran into Horton's lines at a pit stop, losing important seconds.

So it was Horton's Dalesman III. winner of many a race including the Scottish Nats.

RESULTS

(1) J. Horton, J. Humphrey, M. Bellamy 32 pit stops, Time : 55 min. 41.2 secs. Heat Time : 10:36. Model : Dalesman III. Motor : ETA 29.

(2) D. Place, D. Howarth, 13 pit stops. Time : 58 mins. 30 secs. Heat Time : 10:36.2.

(3) Yates, Hampson, 23 pit stops. Time : 70 mins. 42.2. Heat Time : 10 mins.

(4) Lee, Secker, Hilyard. 40 pit stops. Time : 76 mins. 38 secs. Heat Time : 11 mins. 49 secs.

Surbiton Gala

Blessed with perfect weather conditions at Chobham on October 27th, fly-offs were the order of the day in all events. Results were : Open Power, 1. J. West (Brighton) + 5:01. 2. G. French (Essex) +4:32. 3. A. Young (St. Albans) + 4:18. Open Rubber, 1. F. Boxall (Brighton) + 6:24. 2. A. Wells (Hornchurch) + 6:02. 3. D. Paveley (Hornchurch) + 5:58. ½A Power, 1. G. French (Essex) 4:43, 2. J. Boxall (Portsmouth) +4:22. 3. G. Cornell (Croydon) + 3:46. Open Glider, 1. D. Wotton (Hayes) + 2:53. 2. A. Wisher (Croydon) + 2:43. 3. M. Dilly (Croydon) 8:25. Gala Champion, D. R. Wotton (Hayes).

Nomads take L.D.I.C.C.

Strong contingent of North Kent Nomads wandered to Chobham on November 3rd for the final round of the L.D.I.C.C. against Croydon, which they won. Bill Hubbard (Rubber) managed three max's, Alan Service (Power) dropping two seconds for 8 : 58 and John Giffen (Glider) two max's and 1 : 10. In the St. Albans gala on the same day Bill Hubbard and Alan Service were both in the fly off Bill 6th and Alan 5th. The gala was blessed with good weather and perfect flying conditions, as evidenced by 14 in the rubber fly-off. Results were Open Rubber, 1. J. Blount (Croydon) 9:00 + 7:49. 2. Bailey (Oxford) 9:00 + 7:07. 3. Wotton (Hayes) 9:00 + 7:02. Power, 1. G. French (Essex) 9:00 + 6:08. 2. J. West (Brighton) 9:00 + 5:27. 3. Wardell (Harlow) 9:00 + 5:25. Glider, 1. J. Wright (Northern Heights) 9:00 + 3:08. 2. J. Baguley (Hayes) 9:00 + 2:14. 3. A. Wisher (Croydon) 9:00 + 2·14. ½A Power, 1. G. Head (Portsmouth) 9:00 + 8:40. 2. G. Cornell (Croydon) 9:00 + 8:22. 3. Digby (C.M.) 9:00 + 8:15.

North Kent Nomads winning team in the L.D.I.C.C. were L to R : Bill Hubbard, John Griffen (A.P.S. "Patches"), Ivor Bittle Comp. Sec., Alan Service (A.P.S. "Eureka"),

CLUB AND CONTEST NEWS

Boobed !

An association of names caused us to make an erroneous statement last month in connection with the new British team race records set up by Pick Place in the ½A and F.A.I. classes. His partner in the team is no longer Burley, but Don Howarth, due to the original partnership being separated by Royal Air Force postings.

As a matter of fact Arthur Burley is now posted at R.A.F. Cottesmore and is anxious to team up with another pitman to resume competition activities.

Other correction concerns our description of the Folkerts racer in November issue, where we stated that the Folkerts was the first aircraft to raise the 1932 speed record of 252 m.p.h. This should have read the first "American" aircraft since the Caudron C-460 was several m.p.h. faster than the Folkerts and was racing at 264.261 m.p.m. in the same year, 1936.

SOUTH OF SCOTLAND MODELLERS arriving at Abbotsinch for the Frog Junior Cup were greeted by Ministry of Aviation Police with dogs! Entry is still permitted on the production of S.M.A.E. or S.A.A. membership cards. Glasgow Hornets hope to extend their membership to East Kilbride where they have obtained the use of a tarmac C/L circle. Attention, loose Scots, send three shillings for a year's subscription to "Scottish Aeromodelling" and for details of the S.A.A. A.G.M. to be held at Stirling on January 12th to W. Neil Cliff, 32 Bellevre Crescent, Ayr.

Pete Drewell's unorthodox 2.5 c.c. speed model seen at R.A.F. Debden. Straight through air ducting and built up wings, C.C.S. powered. Wing span 13½ in., length 12½ in., weight 11¾ ozs.

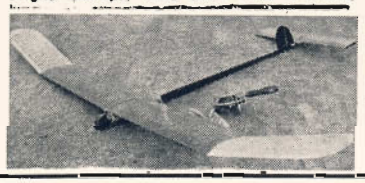
Half Gallon prime

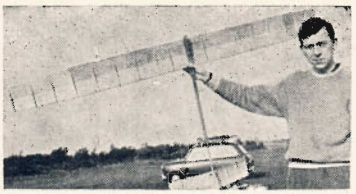
St. Albans' annual engine starting comp. was won again by R. Scales their greatest prop slammer. The Hon. Sec. washed everyone in fuel but failed to start in 3 mins. in spite of using nearly half a gallon of fuel on a Mills .75 ..... (perhaps it was flooded!). In keeping with popular opinion they are holding a vintage and A/1 comp. at Chobham on January 26th. Brief rules 20 sec. engine run on power jobs. 164 ft. towline for gliders. Sole permissible mods., Modern props, timers, autorudders, D/T's allowed on all classes but no timers of clockwork type allowed, except for engine runs. Evidence must be produced that full constructional details of the plan or kit were released before 31st December, 1949.

All F.A.I Area Do's

Both the Northern and East Anglian Areas have run their all F.A.I. contests. For the East Anglian postal decentralised contest held on November 3rd the weather was pretty good. This was an all in contest and it is interesting to note the winners used power, glider and rubber models in that order. Results were 1st. A. Spurr (Teeside) 15:00 + 3:19, 2nd J. Baguley (Hayes) 15:00 +2:54, 3rd G. L. Roberts (Lincoln) 15:00 + 2:50. At the 3rd Northern Area centralised F.A.I. meeting held on the 17th October at Elvington, attendance was very good with fine weather. Yet there were no entries in radio at all! Power was dominated by the World Championship team taking three out of the first four places. Odd man out was John West and he seemed to have the most potent and simple model there (not taking anything from George French's **Night Train**). Dave Posner was clocked off twice at 2:59!

Dave Wiseman's A/2 design by Dave White was runner up in 1963 Free Flight Champs, note short nose moment.





York member, Brian Smith, with O/D all-sheet A/2, 19 per cent tail, C of G at 63 per cent, has yellow finish.

Loss of Wanstead Flats?

The main news from Wanstead Warhawks is the sudden membership surge. 20 in a week! Wanstead Flats are the subject of a local noise complaint which has been given considerable publicity in the local press, against and for the club. Glow motors above 2.5 cc. and diesels above 3.5 cc. must now be silenced and flying must not commence before 10 a.m. The lads have imposed these rules upon themselves. This may mean the ending of the popular Wanstead control-line rallies. Founder member Dave Platt is now with the club again and his latest projects are an R/C Auster A.O.P.9 with F & M 10 channel gear and a C/L Fokker DXXI for three line operation by a Merco 49 R/C. Some other projects by various members are 2 A.P.S. Sea Kings, Delta 707, and a 10 channel D.H. Gipsy Moth, not forgetting Bill Foresters C/L Fokker EIII with 'spot welded' (!) fuselage construction as on the real job.

Blackheath Gala

Blackheath club welcomes all interested local modellers to their club meetings at Kane Hall, Perry Vale, Catford. Gala results on 20th October at Chobham were: Rubber, 1st D. Woods (St. Albans) + 7:15, 2nd J. Blount (Croydon) + 6:24. Glider, 1st J. Blount (Croydon) 8:58, 2nd J. Baguley (Hayes) 7:47. Power, Equal firsts G. Head (Portsmouth) and V. Taylor (St. Albans) with same fly-off time of 3:58. 2nd M. Gaster (Surbiton) +3:56. ½A Power, 1st D. Hipperson (Croydon) +5:17. 2nd J. Boxall (Portsmouth) + 3:35.

RETRACTABLE UNDERCARRIAGES (From p. 42)

loaded 8:1 bellcrank **(12)** is used to give some feel on the control line handle trigger. This bellcrank **(12)** is mounted on a piece of ply *above* the flying control bellcrank in such a position that the lead out **(13)** is over the flying controls bell crank pivot bolt. This is to keep equal line tension when triggering the 3rd line in flight.

The handle similarly has the 3rd line connected centrally between the two flying lines. All three lines are of equal length.

A tension spring **(14)** is attached between the undercarriage bellcrank **(12)** and the airframe both to keep the trip **(11)** in position on the crank **(9)** and to pull it back to its stop **(15)**—a 6 B.A. bolt—after triggering ready to engage the crank **(9)** as it completes a 180 deg. turn. Prior to finishing the sheet covering of the model in the region of the mechanism, all nuts and bolts, etc., should be checked for tightness and all bearing surfaces well lubricated.

Independent torsion springing is achieved by this arrangement by virtue of the stored energy of the clockwork spring holding the crank **(9)** against the trip **(11)** and the length of the wire between either undercarriage leg and the centre 'U'.

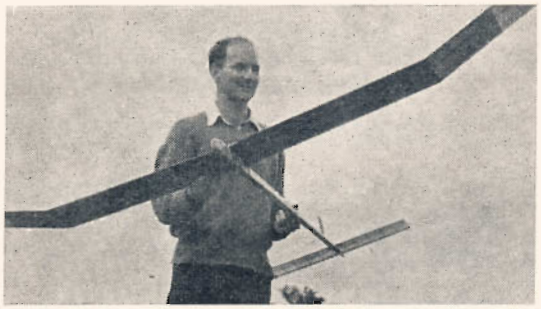
A disadvantage of this mechanism when winding up the motor—using crank **(9)** as the key, is that the undercarriage retracts and detracts as well.

The handle is a very simple device—being made from plywood and 18 s.w.g. light alloy. The parallelogram arrangement is only to keep the 3rd line anchorage point from swivelling about and this spring loaded anchorage is allowed to protrude forwards slightly to provide some slack in the third line when the triggering operation is not required.

In conclusion the point must be emphasised that only 'kitchen table' tools were used in the manufacture of the system and the foregoing modification to the A.P.S. Dakota only increased the model building time by about two days. The arrangement shown, although devised for the Dakota, is adaptable to other scale models—for instance—the *Anson*.

The ruggedness of the gear has been proved on a number of occasions when the 51 ozs. model has landed heavily due no doubt to pilot handling, but on one particular flight both engines overheated and the model stalled at about 15 ft. altitude. The result after the 'splatt' landing was that the radius arms **(7)** had swung ou of the hollow axles **(6)** on impact thus avoiding damage due to rigidity and within minutes the gear was serviceable again.

The designer's final words are, that *if* the mechanism had seemed difficult to produce he wouldn't have attempted it!



Tony Young's record breaking A/2 glider, model features all sheet upper flying surfaces.

Unique Rubber Comp.

At Tern Hill on the 6th October a N.W. Area Restricted Rubber Contest took place for the English Electric Trophy. The restrictions were that the model must carry ballast equal in weight to that of the lubricated motor. John O'Donnell took first place using an "Open" fuselage with 'Coupe d'Hiver' wings, tail and prop. Six strands of ¼ in. x 1/24 in. Pirelli were used to turn the 16 in. x 20 in. two blade folding prop. Scores were 2:14, 2:32 and 2:51 to give a 7:37 total. Second place went to Dave Wolstenholme of East Lancs who flew a normal diamond light structure pylon model. He had appreciably more than half the normal rubber and therefore a higher flying weight. This, plus some trouble with a sticking single blade featherer produced a rather poor glide. Third place went to Ron Brownson of Timperley who added rubber to a 'Coupe d'Hiver' model but suffered from a lack of trimming.

History of this event goes back to publication in Aeromodeller of John O'Donnell's suggestion on a method of restricting rubber performance, though adequately discussed and supported by award of the trophy by English Electric M.A.C., the event has not received a great deal of attention from enthusiasts, particularly in the North West where it is located.

S.M.A.E. Results

White Cup. (Decentralised). November 3rd, 1963.

The following made maximum scores of 9:00 Fly-off times :— 1. P. Woodhouse (Sheffield S.A.) + 5:59. 2. J. West (Brighton) + 5:27. 3. E. Jepson (Rotherham) + 5:10. 4. D. Welch (Brighton) + 5:05. 5. M. Bayram (Lincoln) + 4:51. 6. R. Salmon (York) + 4:37. 7. P. Manville (Bournemouth) + 4:25. 8. T. Payne (Northampton) + 4:21. 9. J. Borrill (Boston) + 3:52. 10. G. Lowe (Wallasey) + 3:40. 11. D. Wiseman (York) + 3:09. 12. L. E. Sladden (Canterbury Pilgrims) + 2:54. 13. J. Taylor (York) + 2:45.

Frog Junior Trophy.

1. J. McNammee (Wallasey) 8:41. 2. F. Ballardie (Scotmac) 8:21. 3. A. Abbs (Norwich) 7:51.

Senior Champion : J. O'Donnell (Whitefield).
Junior Champion : A. Abbs (Norwich).

Contest Calendar

December 26	*Farnborough Boxing Day Rally.* Chobham Common. Open G/R/P ½A.P.
January 19	*Northern Area Winter Rally.* R.A.F. Elvington (Provisional). Open R/G/P/½A and Combined F.A.I. classes event. Combat, Rat Racing (2.4-10 cc.), ½A T/R.
January 26	St. Albans Vintage and A/1 Rally, Chobham Common. Pre 1950 models only.
February 2	*Bristol and West Winter Rally* (Provisional). Blakehill Farm Airfield Open R/G/P, ½A Power. All F.A.I. event (R.G.P. combined).
February 16	*Croydon D.M.A.C. Winter Gala.* Chobham A/1 ½A Power, and Coupe d'Hiver.

Found

Roughly built Mercury Magna, Bantam 0.49 motor found in Wanstead. Has badly warped wing. Owner must identify colour scheme. Apply c/o "Clubman."

John O'Donnell, 2 Hilltop Avenue, Prestwich, Manchester, has a damaged but repairable slab sided, tip dihedralled Wakefield with free-wheeling folder propeller, minus identification, collected from a farmer adjacent to Barkston Heath—loser please contact.

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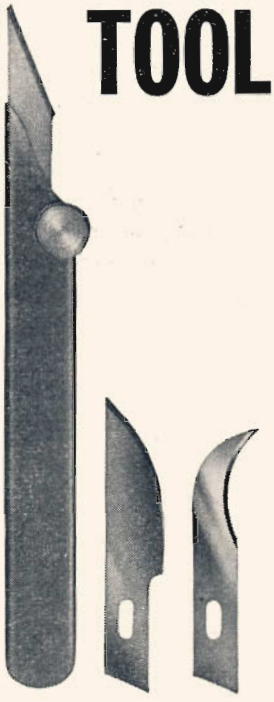

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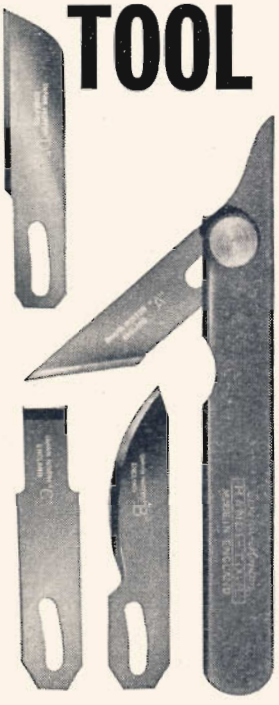

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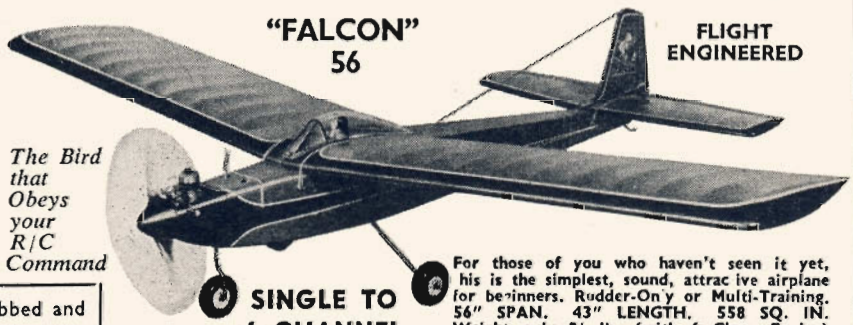

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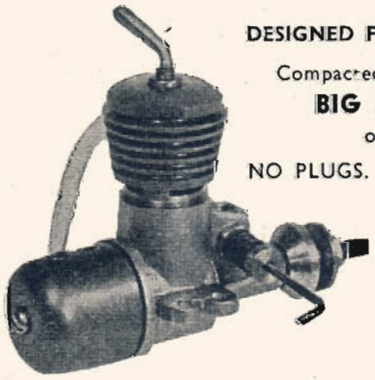

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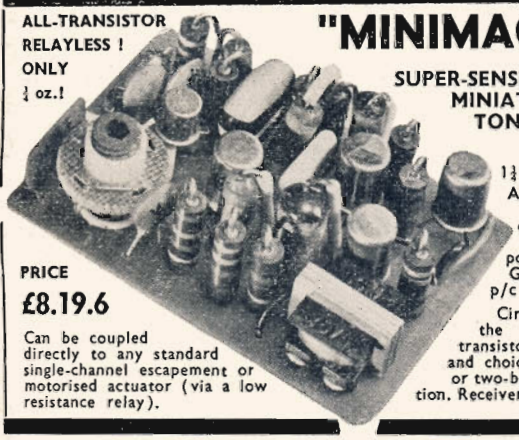

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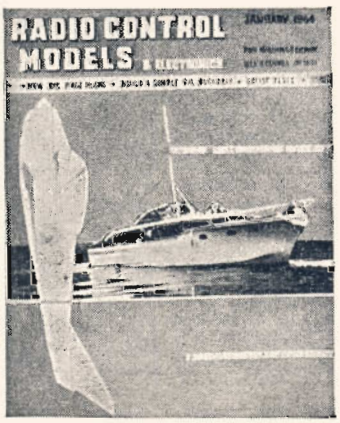

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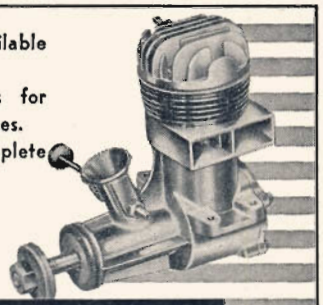

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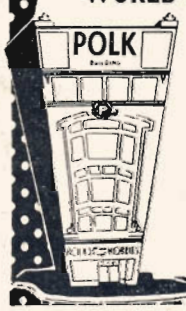

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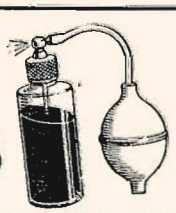

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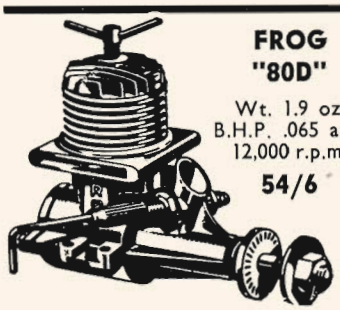

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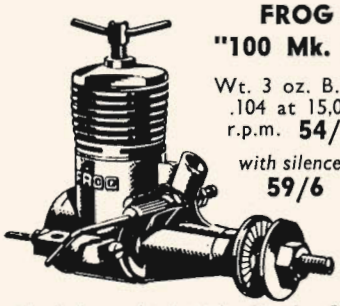

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Ideal 1 c.c. beginner's diesel. Sturdy construction, exceptionally easy starting. Ultra high performance (over 100 B.H.P. per litre). Very reliable.

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Wt. 3 oz. B.H.P .122 at 13,000 r.p.m. **55/-**

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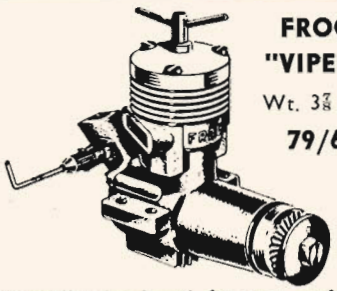
The ideal 1.5 c.c. engine for "sport flying". Extremely low fuel consumption. Will run in either direction. Vibramatic inlet valve gives great flexibility. An outstanding power unit.



FROG "VIPER"

Wt. 3⅜ oz.

79/6

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54/6

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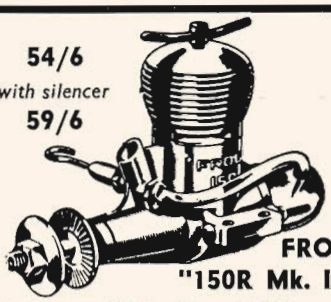

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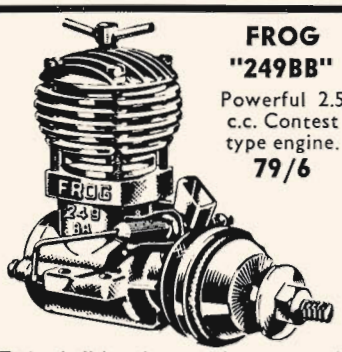
Wt. 3.1 oz. B.H.P. .15 at 14,500 r.p.m. A really "hot" 1.5 c.c. Contest engine especially suitable for ½A Team racing. Very low fuel consumption. Easy re-starting for minimum "pit" time.



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Powerful 2.5 c.c. Contest type engine.

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Twin ball-bearing, with outer rubber seal. Special super performance version. B.H.P. .295 at 15,500 r.p.m.

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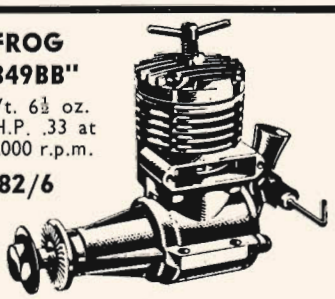

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Wt. 6½ oz. B.H.P. .33 at 12,000 r.p.m.

82/6

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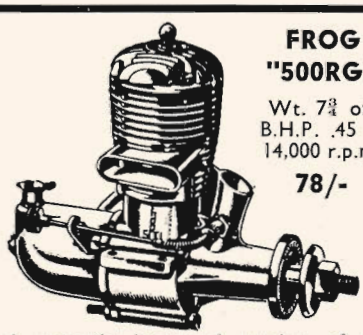

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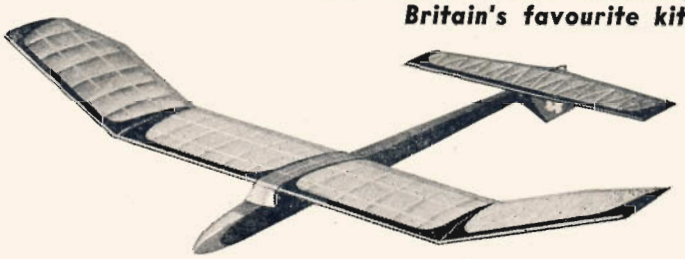

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