

AERO

Full size data

2.5 - 3.5 c.c.

Combat model

MODELLER

JUNE 1963

TWO SHILLINGS

U.S.A. & CANADA 40 Cents



Slope Soaring feature

48" RADIO SPORTSTER

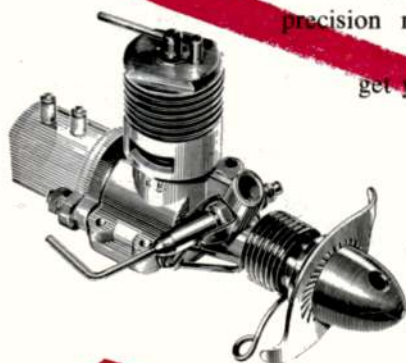
Construction Hints n'tips

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AERO MODELLER

MAP HOBBY MAGAZINE

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D. J. Laidlaw-Dickson

EDITOR

R. G. MOULTON

other modelling angles . . .

RADIO CONTROL MODELS & ELECTRONICS covers an interestingly different subject in the form of radio controlled submarines. Explanations of inside details are given for those readers who have enquired into the mysteries of controlling this type of model. A useful gadget for the radio builder's workbench, is a really miniature electric drill. Use of Transfilters, a recently introduced component, is described by J. H. Brunt to encourage more experiments. Three view plan of the month is Gustav Samann's *Caravelle* and it has been expanded to incorporate some interesting installation details with vital information to be lapped up by modellers starting multi. Continuation of a sub-miniature receiver feature, shows how to construct a small reed bank to suit. For those who prefer filters, a large feature on the latest, and in its way revolutionary, application of filters is to be seen in the review of a new commercial system for the beginner in single channel radio.

In June **MODEL MAKER AND MODEL CARS** there will be by popular demand, a scale sailing model, a smack/yacht, which will be a big feature, together with full-size constructional plans for a 1963 *Auto Union 1000* saloon. Another car plan will be the 5-litre Bugatti, *Black Bess*, and power boatmen of the limited-water class will like a 28-in. model based on the ferry *Scottish Coast*. All the usual range of articles and drawings will also be appearing. Both magazines are the same price . . . 2s. per copy. If your hobby shop or newsagent does not carry stock, send 2s. 4d. for return post delivery from address below.

June 1963

VOLUME XXVIII No. 329

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cover

Magnificent model of the **Boeing P-26A** by Jerry Worth, won first place in the Open Class for control line scale at the 1962 U.S.A. Nationals. It seems remarkable that this is only the second model Jerry has ever made. Some idea of the size can be appreciated by the apparently diminutive OS 49 R/C engine in the radial cowling. Jerry comes from Harvey, Illinois, and is to be congratulated on for the outstanding finish, although we are still a little mystified by the grey fuselage, since we had always been given to understand that the P-26 had a blue fuselage!

next month . . .

A control line stunter for 2.5 to 3.5 c.c. engines with semi-scale Curtiss P.40 profile fuselage and 38½-in. wingspan, will be a popular addition to our Plans range. This *Flying Tiger* was designed by Mr. H. C. Quek from Singapore. We shall also be extending our **Aeromodelling in . . .** series to cover Singapore in July. Despite its relatively small area, this is a most active centre of aeromodelling with a very high standard of performance, and general capability. In fact, there is so much news from Singapore it will be difficult for us to contain it in the space available! **Squadron Markings** returns for the scale fans and the main centre-piece will be yet another masterpiece by D. H. Cooksey in the shape of the renowned **Mitsubishi A6M5 Zero**, type 52 or Zeke, Japanese World War II Fighter. This joins his already renowned Spitfire and FW. 190. We shall also be carrying a **survey** of all the many **plastic kits** which have been made of this aircraft in its various forms. Another popular **full-size plan**, **Contest Designs**, **Hints 'n Tips** on A/2 glider design, are other attractive features to be included in July issue, out June 14th.

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Watford, Herts

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MODEL AERONAUTICAL PRESS LTD

VERON RADIO CONTROL CALLING...



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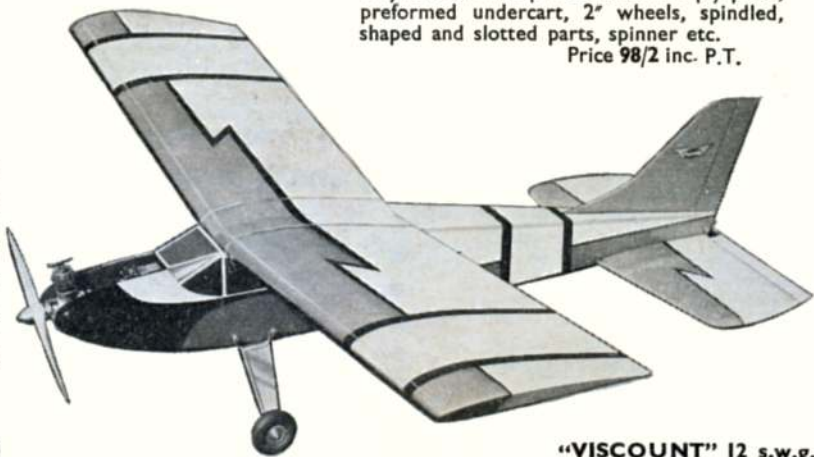
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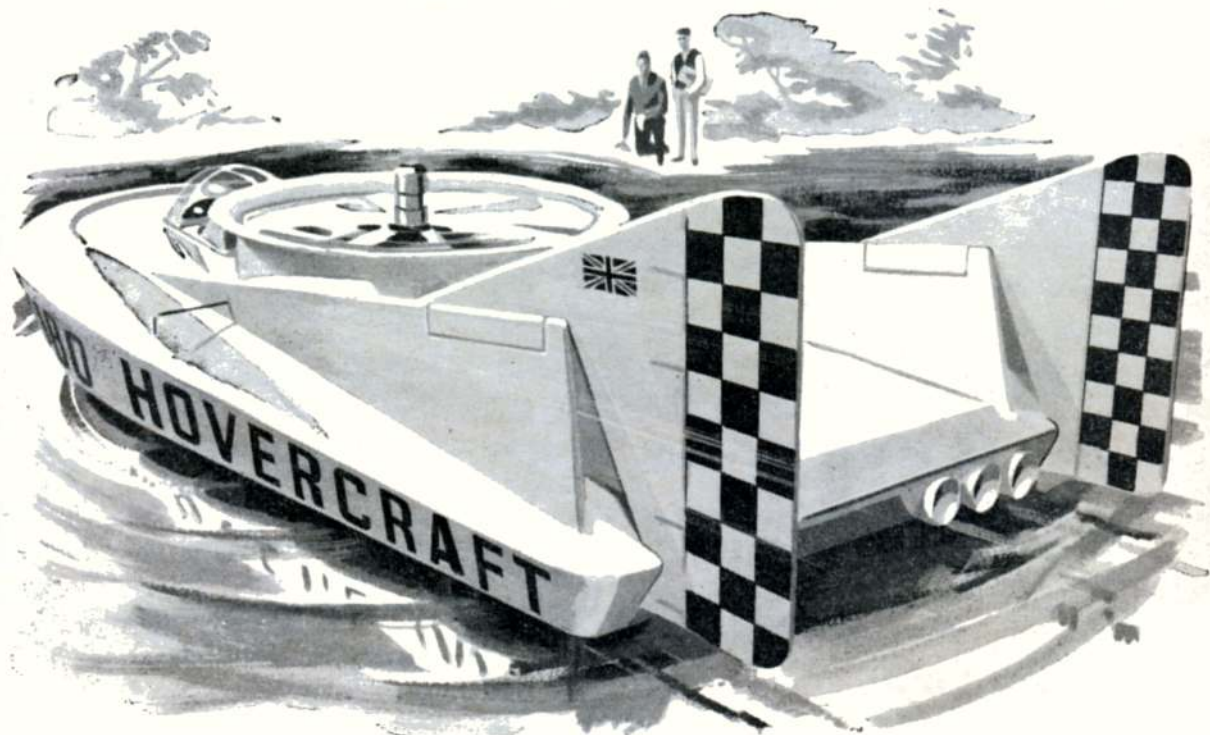
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The Royal Air Force



Squadron Leader John Barwell is a test pilot stationed at Boscombe Down. A fighter specialist, his most exciting experience to date was flying this new P 1127, the revolutionary, supersonic, vertical take-off aircraft. Recently he visited California and Florida to test-fly fighters of the U.S. Air Force. He joined on a short service commission, but has since been selected for a permanent commission.

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BRITISH PATENT
No. 747742

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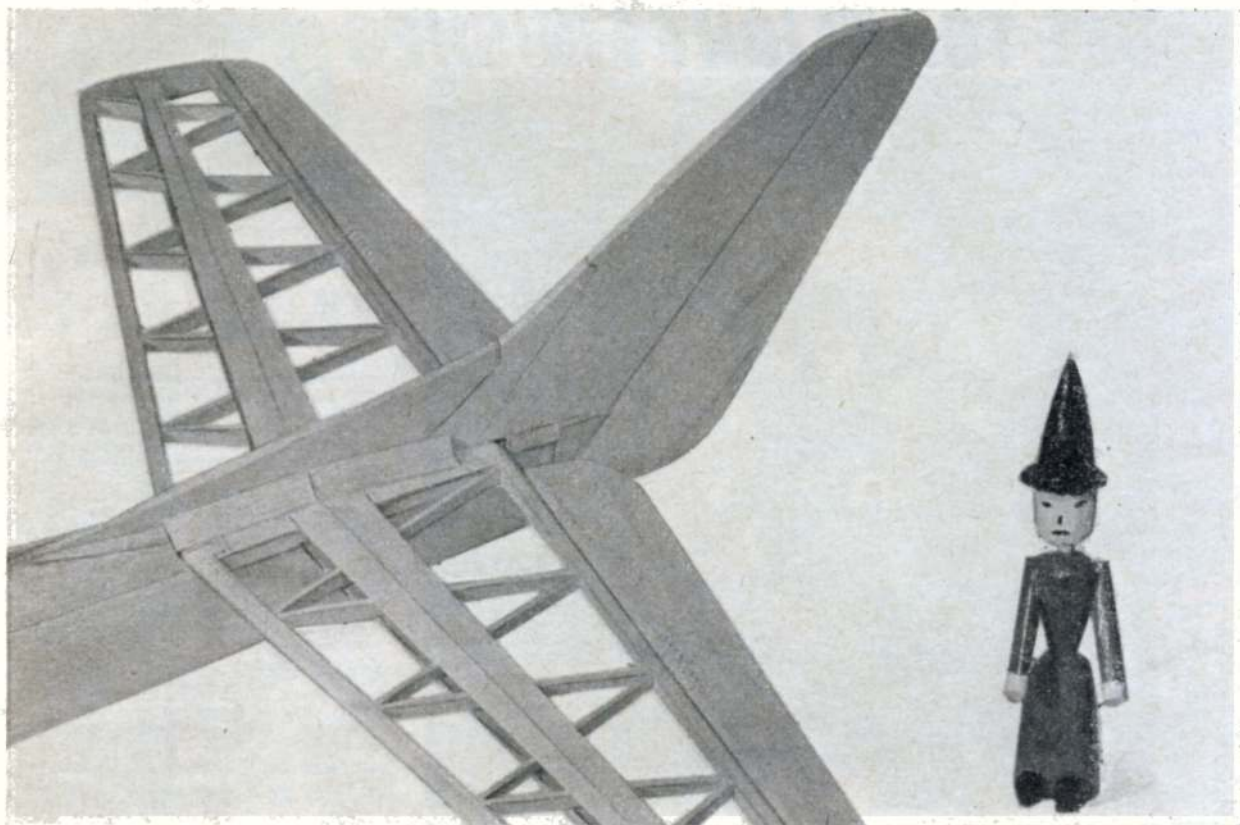
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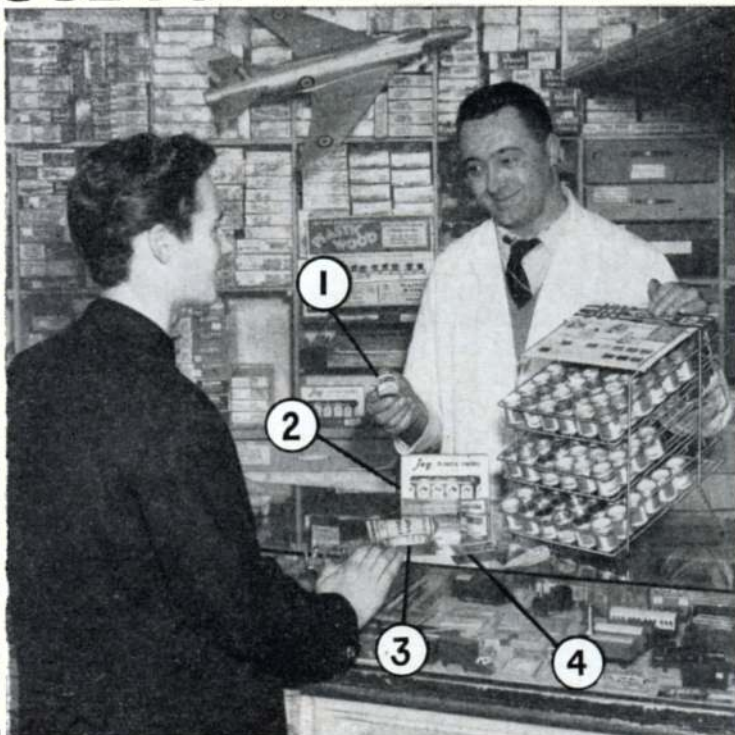
What's the witch doing in the photograph? Well she, too, happens to be made of SOLARBO Balsa—only in this case not designed as a flying model!

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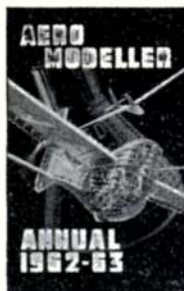
experts cover the most usual sources of difficulty, and deal with model boat, aircraft, yacht construction, elements of R/C, glider launch, and hosts of other useful subjects, items of practical value, etc. 160 pages, size 4½ by 7½ in., illustrations and descriptions of nearly 1,000 models.

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This is the fifteenth annual appearance of this ever-popular volume. Cover shows man-powered Puffin against the starry sky and space capsule Friendship VII. Articles include electric free flight power, man-powered experiments, attache case models, light weight rubber, theory facts and fallacies, control surfaces, anti-warp methods, Italian Schneider Cup models, R/C prototypes, small transistor R/C receiver, plus a wealth of model plans from all over the world, fully dimensioned, engine analysis, contest results, etc., etc. 160 pages, size 8½ by 5½ in., covering the world of aeromodelling printed on high quality gloss paper with modern colourful board cover.

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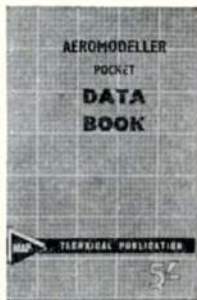


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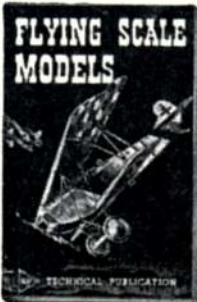


SIMPLE RADIO CONTROL



This is the famous book by Harry Handley which sold some 40,000 copies, and has now been brought right up-to-date in line with modern practice by Tommy Ives. It has been written as a practical guide to radio control for those aeromodelling enthusiasts who wish to make their first attempt at this fascinating modern medium. Bound in stiff card with two-colour photo cover, 96 pages size 8½ by 5½ in., profusely illustrated with line drawings; plus eight art plates showing equipment and models; appendices covering battery equivalents and sockets, colour code for resistors and capacitors, etc.

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R.A.F. technicians making a two-thirds fullsize model of the Prestwick Pioneer for use in the Royal Tournament. Drive is by electric motor on the port wheel and the aircraft is fully steerable though never likely to become airborne! See "Royal Tournament" news item, below

Rally Lost

THE SALE OF R.A.F. Booker has effectively removed a very popular annual control line rally from the Contest Calendar in 1963. High Wycombe M.A.C. announce this with considerable regret, particularly because no suitable alternative site can be found in the locality. The High Wycombe rally was initially held on a playing field area but noise complaints now preclude its use and so the movement suffers yet another loss. It is significant to note that if silencers were made obligatory, then there would be no question of restriction and all objection to such a rally in the High Wycombe district, would be removed.

Selected Landing

John Lawton of Chaddesden, near Derby, almost gave up hope of seeing his multi channel radio model again when it flew off at about 1,500 feet. He hired an Auster from the Midland School of Flying to help in the search; but without success. Some days later he was happily notified that a model bearing his identification marks had apparently made a perfect landing on Castle Donington airfield. Not many of us are quite so fortunate to possess models with so valuable a homing instinct.

Amateur Rocketry

Our description of model rocketry in the U.S.A. brought forth heavy correspondence from all parts of the country and it is clearly evident that not many people realise the legal obligations concerning the use of explosives.

In simple terms, model rockets are defined as explosives. In Section 3 of the Explosives Act 1875, explosives may only be manufactured in those factories specially licenced by the Secretary of State for this purpose. Thus the manufacture of rockets by amateurs is illegal.

Her Majesty's Inspector of Explosives has very good reason for close surveillance of the Explosives Act as it concerns model rocketry, as can be seen in the recently published report on the order ending 31st December, 1961. Illegal manufacture was the cause of 26 accidents, resulting in one fatality and injuries to 26 persons.

Among the accidents quoted are those which concerned loss of hands and serious abdominal and leg injuries. In almost every case, metal tubes were being used to hold "schoolboy" mixtures. We cannot possibly over-emphasise the enormous risks to life and limb which are involved when enthusiasts with limited knowledge of the subject endeavour to make rocket propellants.

The American National Association of Rocketry only recognises authorised, commercially made rockets of safe standards and until manufacture of similar rockets is licenced in the British Isles, rocket enthusiasts are urgently requested to curb their impatience and *not* endeavour to make their own.

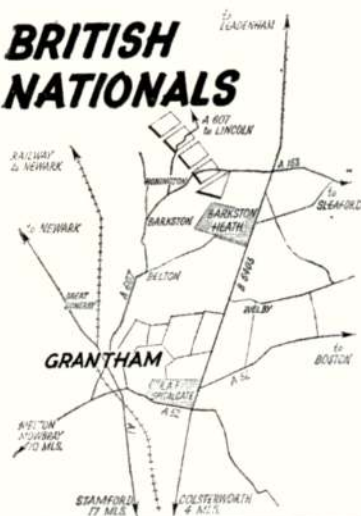
Royal Tournament

Each year the three armed Services vie with one another in their endeavour to put on the most spectacular display of activity during the Royal Tournament at Earls Court Arena, London. This year's Tournament takes place from 12th to 29th June and as far as the R.A.F. is concerned, will have a "model" interest. The limitation of Earls Court is that aircraft have to be of small size in order to pass through the entrance to the display arena. Similarly, if the Royal Air Force is to demonstrate the work of transport or bomber command, then full-size machines are out of the question.

Consequently there has been considerable burning of the midnight oil by a devoted band of volunteer enthusiasts, drafted to R.A.F. Northolt where they have made a one-quarter scale Armstrong Whitworth Argosy and a two-thirds scale Prestwick Pioneer. Together with the tail section of a Comet, these are to be used in a "Winged Ward" scene to demonstrate how the R.A.F. evacuates casualties by air from the Far East and brings them home to hospitalisation in Britain.

As can be seen in the heading photograph, the models are large and have permitted liberal use of scrap material. The Pioneer has Dexion longerons, motor drive on the main wheels, is fully steering but, regrettably, not airworthy. It will carry crew and casualty in spite of its reduced dimensions, while the Argosy in miniature will also be crew equipped for steering. All of which promises to be another fine display of skill and pageantry.

BRITISH NATIONALS



what's on...

June 2nd

Thurston Cup (U/R Glider)
 Lady Shelley Cup (Tailless)
 Women's Cup (U/R Glider/
 Rubber)
 S.M.A.E. Cup (R/C Multi)
 Scale (Radio Control)
 Knokke No. 2 Cup (C/L Scale)
 Super Scale Trophy (F/F Scale)
 Gold Trophy (C/L Stunt)
 Davies A. Cup (T.R. Class A)
 Combat (Prelim. Heats)
 Speed (Class 1, 2, 3)

June 3rd

Sir John Shelley Trophy
 (U/R Power)
 Model Aircraft Trophy
 (U/R Rubber)
 Short Cup (P.A.A. Load)
 S.M.A.E. Cup (R/C Multi)
 R.A.F. M.A.A. Cup
 (T/R Class A)
 Davies B Cup (T.R. Class B)
 Combat (Finals)
 Speed (Class 4, 5, 6)

Thanks to the goodwill of the Officer Commanding, all roads will once more lead to R.A.F. Barkston Heath, Nr.1 Grantham, over the Whitsun holidays for the British National Championships. There was a time during mid April when this popular location was said to be not available for the meeting and this gave rise to considerable speculation. We were even informed that the 1963 Nats had been "cancelled"! Fortunately for the S.M.A.E., less faint hearted followers of the hobby were soon able to round up no less than five suitable alternatives should negotiations for Barkston Heath have completely failed.

However, a personal note from Group Captain Reid of Royal Air Force College Cranwell, relieved all concern and need for emergency measures on April 21st, when permission to use the airfield was given to S.M.A.E. officials.

One thing is certain, all aeromodellers should be on their best behaviour and *must* leave the airfield clean, tidy and free of litter when they depart on Whit Monday. This small way in which they can express a measure of appreciation for the co-operation of the Royal Air Force will go a long way to maintaining the excellent relations between the S.M.A.E. and the Service.

We must not let this occasion pass without thanking our friends at other R.A.F. and U.S.A.F. Stations who offered fullest co-operation in the provision of the alternate sites at very short notice—See you at the NATS!

Fund Raiser

Tickets are now in circulation for a mid 1963 fund raising draw on behalf of the Society of Model Aeronautical Engineers Ltd. They are being sold in books of 25 with tickets at 1s. each and prizes of £100, £50, £25 and five consolations of £5 each will go to the fortunate ticket holders who come first out of the draw on Whit Monday at the British National Championships, R.A.F. Barkston Heath. Has your club secretary asked YOU if you want to buy a ticket? Here's your chance to support the S.M.A.E. in building up its funds for the benefit of organised aeromodelling.

Balsa Tea Chests

There is never a dull moment on the island of Corfu (Greece) in the sunny Mediterranean, as modeller A. Stamatopoulos found when a U.S.A.F. F-84 Thunderstreak whizzed past him on the runway for the first jet (emergency) landing on his flying field. Incidentally, the F-84 had to use take-off rockets to get out again!

There is a small, but keep group of flyers on Corfu and they are able to obtain imported material from Britain, Germany and the U.S.A. Of particular interest is their discovery that "Canary" brand tea chests, imported from Ceylon are not made of the traditional plywood, but appeared in most respects to be made of balsa. They now make considerable use of the wood, which comes in $\frac{1}{2}$ in. thickness and from the example we have been able to examine, is undoubtedly of a hard grade balsa. Darker and stained, so that it has a distinctive appearance, this is most probably the result of a war-time experiment when an effort was made to establish balsa plantations in Ceylon, to cope with the demand for aircraft production.

Climatic conditions influence the quality of balsa immensely and whilst it is generally accepted that Ecuador is the place most suited in the world for balsa production, it is, nevertheless, interesting to learn that Ceylonese wood is in use.

Coupe d'Hiver

An international postal contest was run in March

Several members of No. 56 Squadron, R.A.F. Wattisham, Suffolk, which provides Fighter Command's aerobatic team—"The Firebirds"—this year, are keen aeromodellers. In this picture, left to right, are the Commanding Officer, Sqn. Ldr. David J. Seward; Flt. Lt. Peter M. Jewell, and Flt. Lt. Robert E. Offord, with a selection of models in the squadron's markings. See details of their new insignia on page 297

between the Timperley and Illinois model clubs for combined A/1, A/2 glider and *Coupe d'Hiver* rubber model classes. Timperley proved to be the winners by a matter of almost 200 seconds, but out of this news items stems an obvious international interest in the *Coupe d'Hiver* class. In fact, the April edition of *Model Aviation*, official publication of the A.M.A., draws attention to the *Coupe d'Hiver* event, which will be part of the 1963 New England championships as a replacement for one of the P.A.A. classes. It is quoted that *Coupe d'Hiver* offers much to many who might not have flying space for Wakefields.

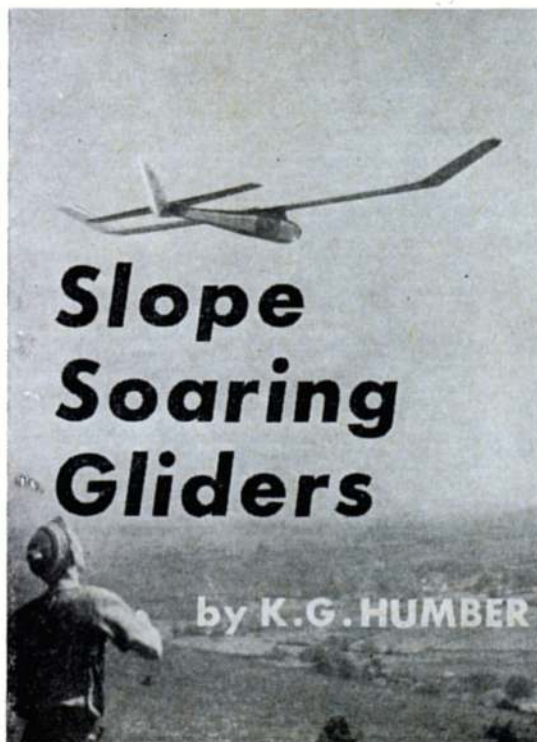
Mustang

Last month we mentioned a book of special interest to Mustang enthusiasts, just published by Morgan Aviation Books of Dallas, U.S.A. We are now informed that this book is available through J. Beaumont, the well known aviation book specialist at 21/- per copy. We can recommend the many helpful drawings and photographs in this publication as being of particular value to all modellers of this famous aircraft.

Reminder

All S.M.A.E. members are eligible for entry in the 1963 Annual U.S.A.F. Championships to be held on June 15/16th at R.A.F. Woodbridge, 15 miles north east of Ipswich, Suffolk. Pre-entry is essential prior to May 27th and must be directed to Captain R. A. Hanson, 91st T.F. Squadron, R.A.F. Bentwaters, Suffolk. This promises to be a most interesting "international" weekend with many events to the A.M.A. regulations.





ON THE Isle of Wight there are very few flat areas, so it is a natural consequence that thought should turn to slope soaring. Luckily there is an excellent soaring site within a mile of the Shanklin Clubroom. The hill is 600 ft. high and is flyable from West, East and North, in fact the North slope is virtually a cliff and so with a 15 m.p.h. wind blowing up this face, one can put a good soarer up to 300 ft. above the crest in about 3 minutes. Sometimes when the cloud is low, there are hectic moments of pulsing down elevator to keep out of the cloud. Longer flights range up to 1 hr. 40 mins. but 40 minute flights are quite usual.

Regarding manoeuvres; loops and stall turns are very pleasant. There is nothing comparable with a model sailplane as it goes over on its back at the top of a loop and then makes a clean pull out as the pilot pulses like a madman on his elevator button. All sizes of model have been tried ranging from 6 ft. to 12 ft. span, but size has been more or less finalised at between 8 ft. and 9 ft. span, 9 in. chord and an aspect ratio of 11 or 12-1.

Tail moments are about $2\frac{1}{2}$ chord length, nose moments are short, roughly $1\frac{1}{2}$ to $1\frac{1}{4}$ chords. Long nose moments seem to restrict response to control and hard to stop when they do get moving. All the surfaces are arranged to knock clean forward with nothing in the way. Fin

and rudder are always *behind* the tail plane. Regarding dihedral, ordinary Vee or tip dihedral is probably the most satisfactory though one perfectly good model has Gull wings. Admittedly the gull was exaggerated slightly and the tips were light but the model is very stable and quite difficult to spin. Weight ranges in the region of 5 lb.—6½ lb. 5 lb. is considered "light" but is much better for aerobatics. Wing sections are Gott 532 or 387, tail sections either symmetrical or Clark Y. Tail areas 25 per cent. or more with fin areas at 12 per cent.—15 per cent. of wing area. Models are rigged with 3 deg. on wing, 0 deg. on the tailplane.

Constructionally, many methods have been tried, ranging from hollow log carved balsa fuselages to "bread and butter" $\frac{1}{2}$ in. sheet balsa laminations and from ply fuselage sides to 1/16 ply skin over hardwood longerons and spacers. Two latest forms of construction are the $\frac{1}{2}$ in. sheet bread and butter for streamliners or 1/16 ply clad box for slab side fuselages. From the flying angle the hardwood box types are best and more durable. Battery compartments are lined with Glass Fibre in both cases—this is an absolute must.

Wing construction calls for a straight centre section with tip dihedral and knock off tips, detaching at the break.

Radio control gear used is E.D. 6 channel with Duramite servos, one for rudder, one for elevator and a third on progressive trim. This trim servo is an absolute boon. To be able to tap on a little "down" trim or "up" when needed without having to land and retrim is essential for long duration flights. The trim servo is used to get penetration as needed. Good battery reserves are essential and B119 HT and D18 LT plus two 4.5 v. flat batteries for the servos are employed. This is partly because they have a very good capacity and also because weight is needed in the short noses. Most important part of all is the technique of flying.

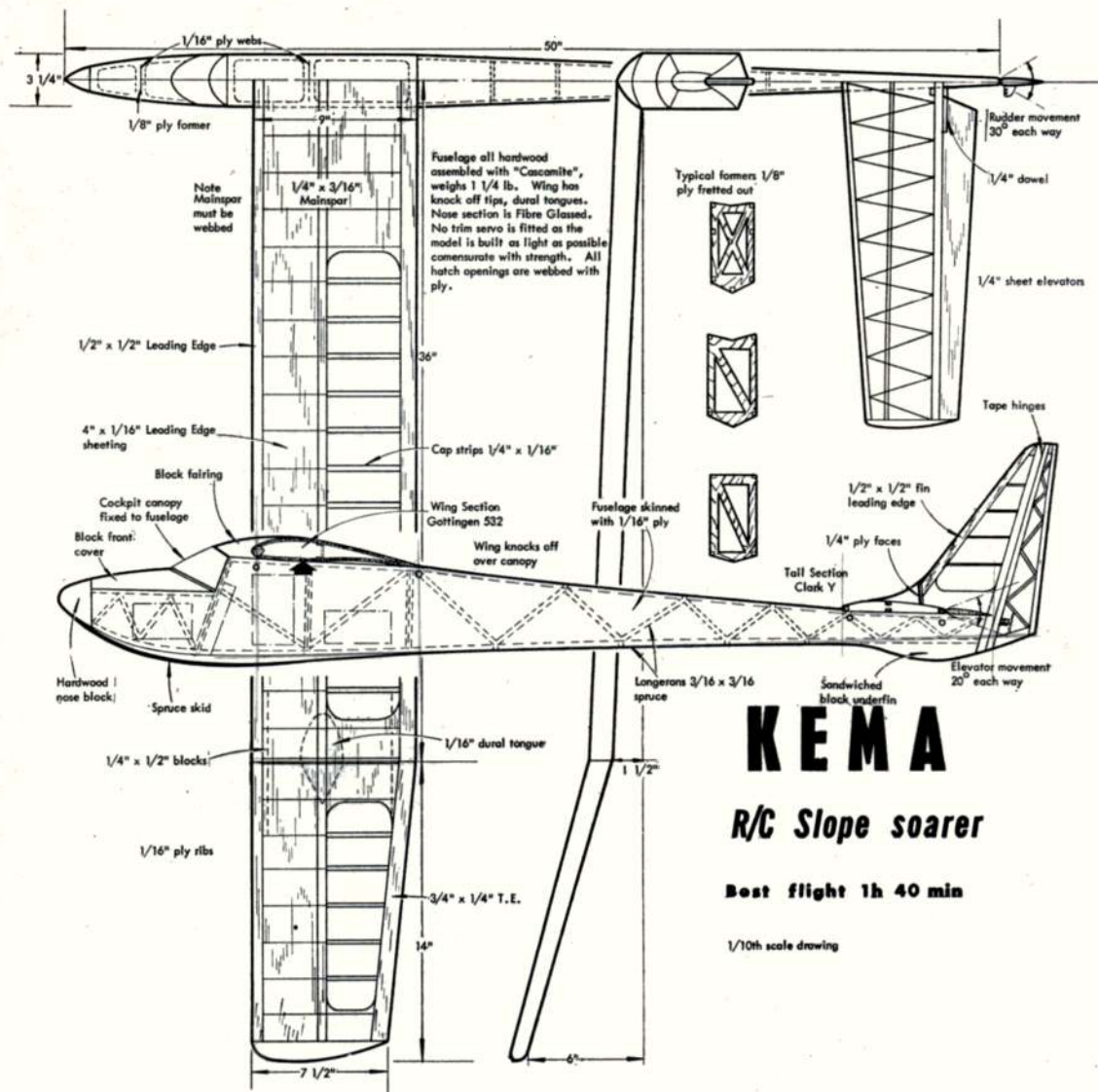
Use of the wind

The soaring site allows soaring in winds ranging from 5 m.p.h.—25 m.p.h. For "light" weather, the model is launched from the top of the slope with a fair amount of



Heading shows the author making a low level pass with *Kema*, as drawn on page opposite. Model is not usually so close to the operator as in this picture by John Wood. Right, twice size A.P.S. *Ivory Gull* just after launch by builder, John Hitchman—an ideal soarer. 14 ft. 2 ins. span giant is Mr. Ginger's *Mistral* for R.E.P. Octone using Gott 532 wing section, and showing a large tail and canopy. Was made during 9 months trip to the Far East on H.M.S. "Ark Royal" has appeared on Australian TV and weighs 14 lbs.





KEMA

R/C Slope soarer

Best flight 1h 40 min

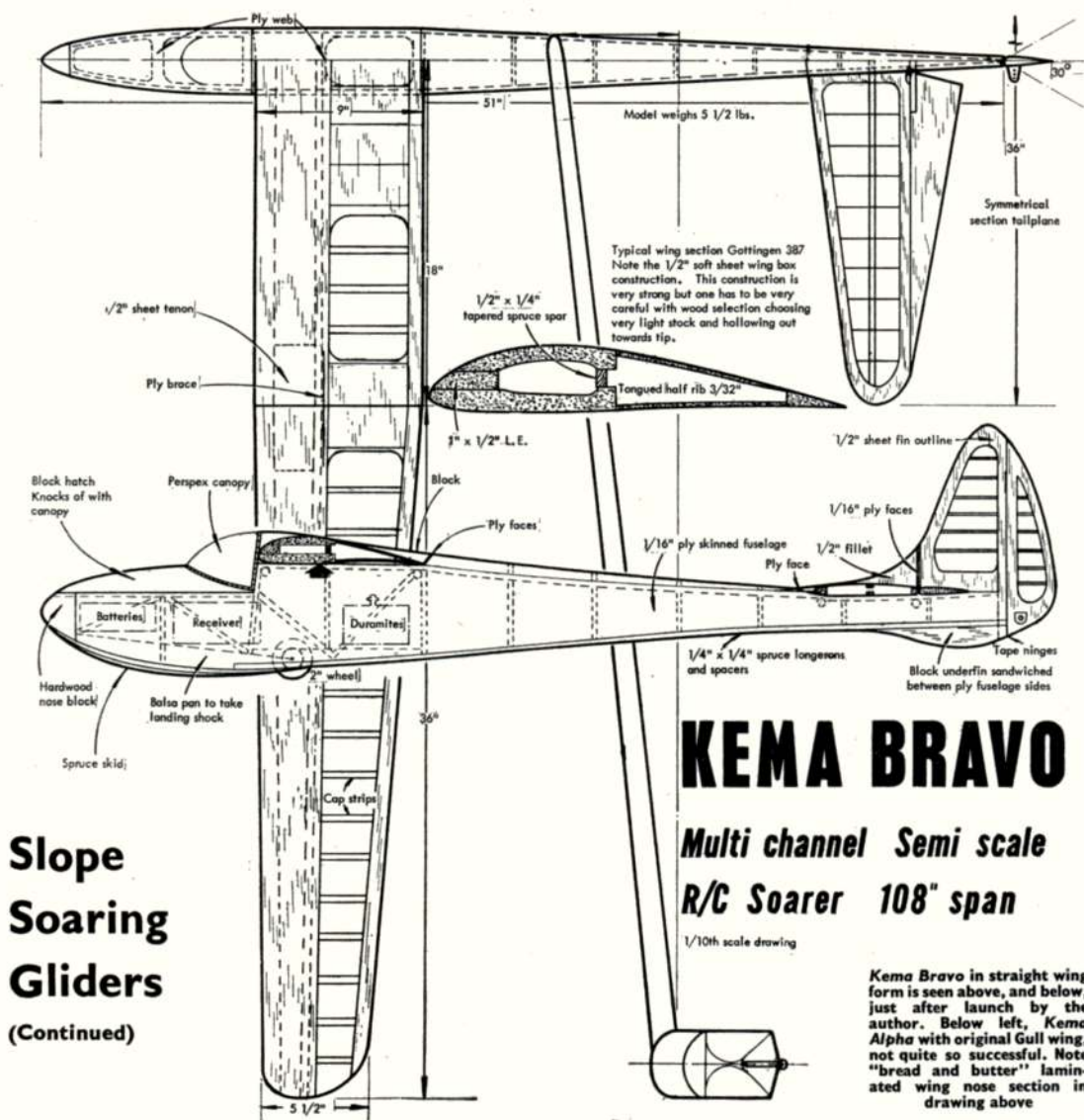
1/10th scale drawing

"up" trim, enough to be almost on the stall. The model must be flown as delicately as possible, otherwise one can precipitate a stall which progressively increases until it is impossible to recover. One endeavours to fly close to the ridge face and beat backwards and forwards along the crest. This can be exciting. A single mistake,—and you have to get your model somehow from the foot of the cliffs! It is also an ideal occasion for action photography. Windy weather calls for an entirely different approach. The model is launched from a quarter of the way down the slope with a neutral trim. Down elevator is pulsed to push out from the slope. It is essential to get away from the ridge turbulence as quickly as possible. When the model is well upwind, turn back to the slope until the model is within 60 yards of the face. The model is then turned in to the wind and it will climb like a lift on an even keel right up into the standing lift wave. Once there it will soar in the rising current almost indefinitely. If one feels adventurous, a loop or stall turn is easy. Give "down" elevator and start a fairly

steep dive for about 40 feet then full "up" and over she goes. As the model pulls out, one must be ready to pulse "down" or the nose will soar and the model may stall instead of making a clean pull out. It should be stressed that for most of the time the pilot is *pulsing* the buttons, he only needs to hold a signal in an emergency or if he has a very docile model, which is a rarity.

One final and most important point is of course the landing and approach. The pilot has to position his model by flying back over the hill. As the model goes over the top, turn it back, into wind, and it will lose height rapidly as the pilot "fishtails" the model down, keeping into wind *all* the time. With practice one can land almost at the feet. A touch of "up" at the last moment and a perfect landing is the result. Avoid thermals and low thunder clouds. A perfectly good *Sunspot* which was rudder-only was lost when obliged to spin down out of a strong thermal. She snapped a wing tongue at 300 feet and the pieces were spread over a very large area!

continued on p. 230



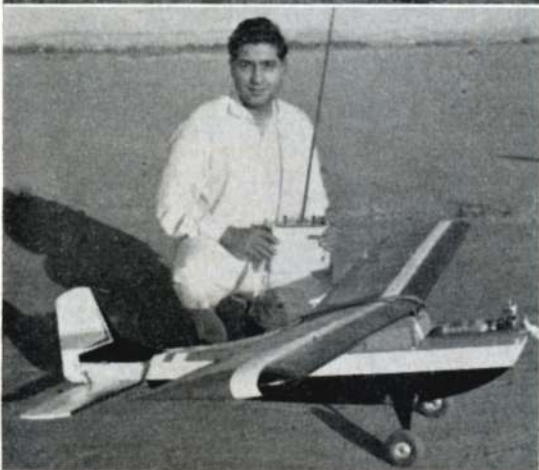
Kema Bravo in straight wing form is seen above, and below, just after launch by the author. Below left, Kema Alpha with original Gull wing, not quite so successful. Note "bread and butter" laminated wing nose section in drawing above

Solent Heights M.F.C. (very appropriate name) has now completed four years of model slope soaring and they have had some tremendous fun and really enjoyable afternoons on "the hill"—Why not join them in their enthusiasm for the thrills of silent flight?



WORLD NEWS

ADVANCE NEWS from the Zell-am-See F.A.I. International in Austria, April 19-21st, happily tells us that John West (845 secs.) and George French (820 secs.) were 1st and 3rd for Great Britain in the power event. German teams dominated at the delightfully positioned Alpine glider 'drome and the Austrian hosts more than lived up to their national reputation. The English contingent returned much impressed by first class organisation. Dave Welch of Brighton was unfortunate in cracking up his model during a test flight but was able to help the other two. More details and pictures next month—



other winners were Wakefield, Dreier (Germany), A/2, R. Blacher (Austria), whilst in 2nd and 4th places of power were Seelig (Austria) and K-H Reike (Germany).

Highlights of the South African National Championships, April 12-15th, were the invasion of the C/L scale event by a parachutist in trouble, using an emergency chute. New concrete circuit at Rand Airport, Germiston was inaugurated by this meeting. Durban, Maritzburg and Cape Town modellers travelled long distances to the Rand where the hosts, more used to their high altitude conditions, carried off the majority of the awards. More details next month.

Haarlem M.A.C. Holland, have taken the initiative and organised a 1,000 lap team race for the 1/4A class. Six teams competed on March 31st in two separate thousand lap heats. To encourage participation pilots and mechanics were allowed to swap duties during the race and models could be retrieved from the centre circle or reserves pulled in in cases of severe damage. In the first heat, Timmers/Kaasenbrood from Haarlem finished in 75:19 after replacing their model at 710 laps. Kloot from Rotterdam was unfortunate in cracking a shaft at 954 laps. Second heat showed promise of even breaking the magic "hour" figure, when van Sutphen started off at cracking pace, but he suffered a broken line guide at 275 laps and was obliged to change the model. Even so, he recorded fastest time at 73:38 using an E.D. Super Fury, which also powered the next fastest model and the only model to complete 1,000 laps, operated by Scheepjens, with 75:19—Any international challengers?

M.V.V.S. in Czechoslovakia is usually associated with small engines. Published details of an experimental STOL model for full-size research, reveal that there also exists an M.V.V.S. "26". This large single cylinder 2-stroke weighs about 2½ lbs., operates from 10,000 to 12,000 r.p.m. using fuel with 20 per cent. Nitro. Definitely outside F.A.I. regulations (the model is not free flight in any case), but nevertheless interesting prospect with a pair of these engines remotely controlled in a model of about 5 feet span.

Noise study by Albert Roussel, well known leader of modelling in Belgium, is published in *Model Avia* and promises to establish a standard by which sound could be measured in connection with general engine tests. The renowned Phillips Company has conducted a lot of research into the question of general noise.

Christchurch M.A.C. in New Zealand rebels against the F.A.I. power regulations in their *Torque* magazine. They suggest discarding engine output to a maximum, suggested at 12,000 r.p.m. static on a standard load.—Hmmm.

Anyone fancy a new line in glider launch technique? Junior flyer in Vancouver G.M.C. Canada has made a successful relay tow with 450 ft. of line. One sprinter starts the climb, a second takes over to pull the model to the top of the tow and a third relieves to take care of the release. Their 10 ft. glider looked like an A/1 at 450 ft. and gave them the pleasure of a very long flight. Canadians are most anxious to support a team for the radio internationals in Belgium. Montreal modellers are sponsoring one of their best qualified members to attend the two eliminators in Toronto.

Radio developments in the U.S.A. continue at the rate which has never ceased to surprise Europeans. Commercially, a big news item is confirmation that *Orbit* have assumed financial control of *Space Control*, the two items retaining their independent identification and that *Min-X* now join the vast filling range of fully proportional radio control manufacturers. Smaller models are also coming. Dick Rehling has 10 channels in a 50 in. low wing model, weighing only 4 lb. 3 oz. thanks to lightweight gear and *Ancco* relayless servos. Twin engines, retractable undercarriages add variety; but for sheer audacity, we offer congratulations of the month to Canadian modeller Stan Wellington, a Toronto hobby shop proprietor who is building a 9 ft. 7½ in. scale *Convair B-36D*! Four Frog 3.49 diesels will push this beauty along with Graupner 10 channel radio equipment. Mr. Wellington still has four jet nacelles and two spare engine nacelles ready in case more power is needed—Wow!

Top: Tuyen and Cuong Quang Ru of Saigon, VIETNAM with Cox powered *Saracens* from December issue. Next, winners of first 1000 lap 1/4A T/R marathon in HOLLAND, G. van Sutphen and pilot van Konningshoven. Bottom, Habib M. Habib from PAKISTAN has not forsaken A/2 since his fly-off performance in 1959; but has turned to R/C as seen by his Graupner-Grundig equipped Hog in the vast flying area at Karachi. Right: Don Pinkert, ex F.A.S.T.E. club, now in Texas, U.S.A. is having success with Rat Racing "back home." Fox Combat Special in model based on Tyrant



AIRCRAFT DESCRIBED No. 123

by DARIO VECINO

Polikarpov I-16

DURING THE SUMMER of 1936, Russian aircraft arrived in Spain. One of them was the *Rata*, a Nationalist designation that prevailed. The Republican forces named it the *Mosca* (Fly). It was in fact, the I-16, type 6. First action by a large number of *Ratas* was made on the Madrid front early in November 1936 and they were manned by Soviet pilots. Then in the Autumn of 1938, the Russian crews were replaced by Spanish pilots, some trained in Spain, and the majority in the U.S.S.R.

Nikolai Milhailovich Polikarpov designed the original ZKB-12 which first flew in November 1933. It was equipped with the M-22, 480 HP, engine (Bristol "Jupiter" under licence) and production began in Moscow and Gorki with the factory designation ZKB-12bis, military I-16. The maximum prototype speed was 360 Km/h., but the production type slightly surpassed 400 Km/h. with the more powerful M-25, 725 HP version of the Wright "Cyclone", driving a two bladed all-metal propeller. The *Rata* which went to Spain from Russia was the earlier version.

The basic aircraft had a low, cantilever wing, with large root fillets, two chrome-steel spars forming a box structure with duralumin ribs. It was fabric covered except for the duralumin leading edge. The wing was built in three sections, the centre section integral with the fuselage. The long ailerons were hinged on supports carried by a false spar, the tail unit was an all metal fabric covered structure, the offset fin was detachable, and the tailplane could be trim adjusted only on the ground. Control surfaces were unbalanced.

Most renowned feature of the *Rata* was the short fuselage of rugged monocoque structure with diagonal bands of birch plywood covering. The enclosed cockpit had a hood which arranged to slide forward and was provided with light armour plates to protect the pilot. Nevertheless the main fuel tank remained between him and the engine.

The undercarriage has retractable main wheels and tail skid. Shock absorbers and brakes were not very effective and the retraction was effected by means of a manual control using a hand crank which operated cables from the cockpit. It was necessary to turn the handcrank 44 times, and the last turns were fairly difficult. Undercarriage lowering required careful action, to avoid injury to the pilot's hand. Equipment included a cable cutter which enabled the pilot to cut the cables in an emergency.

Armament consisted of two 7.62 mm. Shpitalny-Komaritski machine-guns in the wings, with 750 rounds each to fire at 1,500 r.p.m. The gunsight was a tubular collimator type, which passed through the sliding windshield.

In the Republican air forces, the type was officially named "CM", and after the 1937 re-organisation they were assigned to the 31st Fighter Group, with seven Squadrons with fifteen aircraft each. The total number of *Ratas* supplied was 475 of which 415 were shot down.

Its enclosed cockpit was not favoured, and a modification was made in the field; the originally enclosed cockpit with the windshield incorporating the hood was removed

by the pilots, and the canopy cut, leaving a fixed windshield.

Subsequently a new open cockpit type with a simple curved windshield arrived in Spain. This was the type 10, with an extra pair of synchronized guns in the nose. Repairing facilities for *Rata* were located near Alicante and there, parts were made by copying the old ones since there were no drawings. Later on, production of the two-seat version was started and about ten units were made after 1937. A batch of single seaters of the new type 10 were also produced, but only some 15 or 20 were assembled and flown before defeat.

In the last war stages, because of the successful Nationalist blockade, the Russians resorted to sending the airframes to Le Havre or Bordeaux, from where they were transferred to Catalonia by rail, and equipped with original "Cyclone" F-54, 775 HP, more powerful than the M-25 Russian engine.

War ended, and a Nationalist Group was formed with 18 captured *Ratas*, that were afterwards integrated into an Air Regiment with another fifteen planes assembled in Jerez de la Frontera. In the Regiment at Seville the *Rata* was again modified; in some aircraft the curved windshield was replaced by flat panels, this change obliged modification of the headrest. Another mod. was the introduction of an oil cooler in some aircraft.

The *Rata* was very strong and rugged, although the construction details were rather crude. It had an excess of power, and it was not generally attractive for the pilots, mainly owing to its bad handling on the ground, aggravated by the rigid shock absorbers and ineffective brakes. Once airborne, and after the bad moments of undercarriage retraction, it behaved like a good aeroplane, speedy and manoeuvrable. In the landing, after the difficulty of lowering of the undercarriage, the *Rata* had a dangerous tendency to bounce and adopt a most dangerous nose-up attitude, prone to stall. It was necessary to push the stick forward, once on the ground.

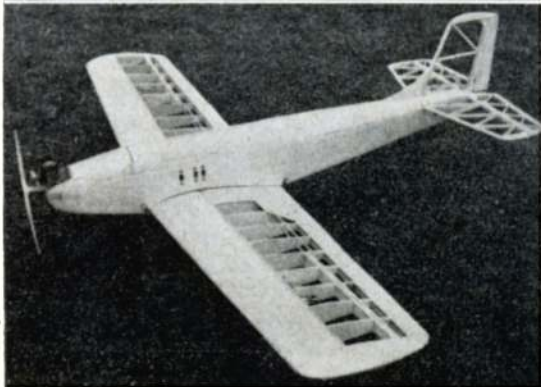
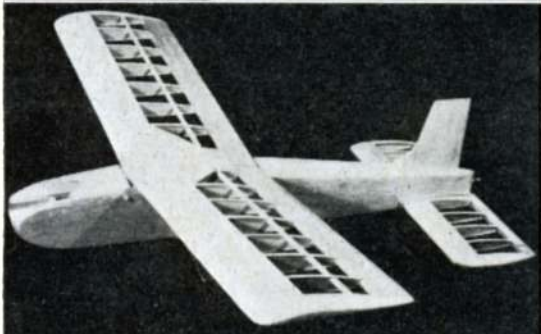
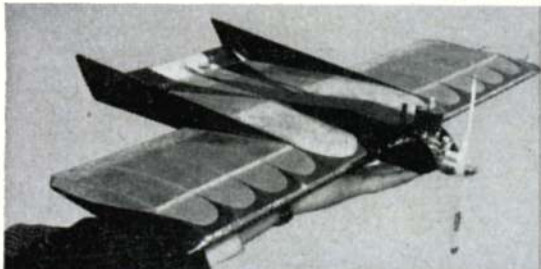
The last *Rata* in Spain, C.8-25 ended its service flights as recently as June 1952.



Upper picture shows the sliding cockpit canopy in aft position on Republican Air Force I-16 type 6, aircraft IW-1. Below is a type 10 aircraft in Nationalist markings, showing the fuselage mounted guns and fixed windshield without cockpit cover

TRADE NOTES

WE HAD THE PLEASURE of co-judging 25 finalists in the contest organised by E. J. Heraud Ltd. of Enfield Wash for models made from kits purchased over the previous six weeks. General standard reflected well on the 13-15 age group, which was by far the best subscribed section of the three classes. Photo at right shows



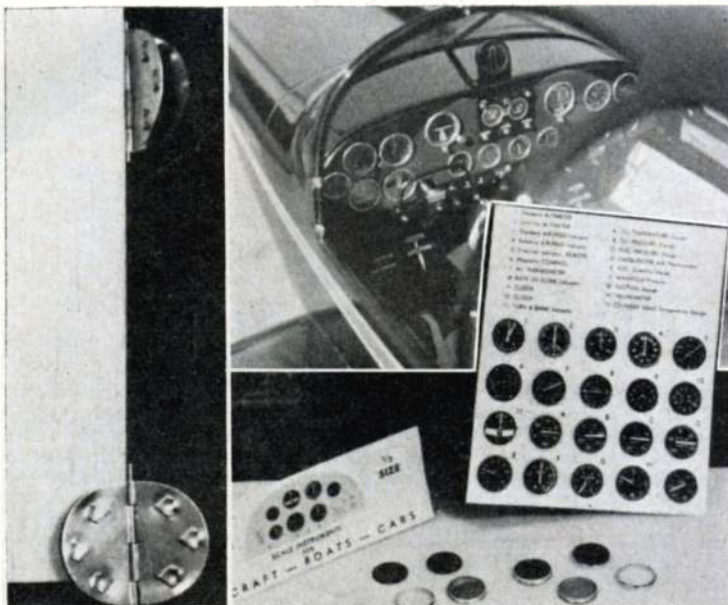
finalists with shop manager C. Stout, whose enterprise has encouraged modelling further in the Enfield district.

Flight tests this month have involved the **B.M.P. Lancer** and **Wildcat**. At 99/6d., the **Lancer** is remarkable value for a 49 in. span, purely functional single channel model. This is definitely a contest performer that will roll in either direction with rudder only. Test builder/pilot, Bill Hockey reports full satisfaction with Roland Scott's design and the extensively pre-fabricated kit. Similarly, the **Wildcat**, as a combat model or stunt sportster, goes together well and apart from vulnerable fins, which are not terribly important anyway, gives one a lot of fun. Ours will fly tight on the lines directly overhead, but tends to buffet in its own slipstream. Incidentally, other kits from B.M.P. include Dick Place's successful $\frac{1}{4}$ A **Team Racer**, Frank Warburton's **Tony** semi-scale stunter and two more radio jobs for multi channel. Their range of accessories includes some very useful clunk tanks of capacities from 2-8 ozs., using polythene bottles with neat venting. We also like the range of Gremlin tanks, no less than 13 different kinds, from 3/6d. to 9/6d., including Frank Warburton's "Special". Also their brazed control horns with lengthy piano wire prongs for engagement in the elevator or flaps—most useful for larger models and an accessory which has been wanted for some time.

A slight case of association of ideas caused us to misname the **Veron Robot** as the **Orbit** last month. No sooner had May issue appeared than Model Aircraft (Bournemouth) Ltd. were being pestered for the "new" design, which we said was being used by Chris Olsen of R.E.P. to test the new **Gemini** radio control outfit twins. Sorry about that one—Phil Smith now has a name ready-made for his model **after** next. Scheduled for immediate production is another Veron kit, for which success is assured. This is a semi-scale **Tipsy Nipper** for lightweight radio control or free flight, engines up to .8cc and 34 in. span. The prototype is to be tested with R.E.P. Gemini and the kit include spinner, pre-formed coiled nose leg, extensive spindle moulded cowling and fuselage parts for very simple assembly, plus a "best-ever" canopy moulding to fit over the one piece wing. Altogether a most practical project which we hope to see soon.

Top left: B.M.P. "Wildcat" has T plan view, flies well on test with Taipan 2.5 c.c. diesel. Next is B.M.P. "Lancer" framework less rudder, now fully air tested. Frog Dart Herald kit makes up neatly in Jersey Airlines insignia, provided with transfers. No—we haven't lost the ailerons—they've drooped under heat of photofloods! Bottom is Robbe "Thor", now being prepared for 8 channel check with Merco 35, R.E.P. Dekatone gear. Pre-fabricated kit assembles easily. Top right: Finalists in Enfield model shop contest include prize-winning "Talisman" being admired by manager C. Stout, 2nd left. Among 25 kit models there were no duplicates. Shows that tastes vary

Latest Tatone products from San Francisco include hidden hinges in brass with keying spikes to grip wood when glued in place. Simply pierce wood and stick in as at top. Cost is 29c. pair in U.S.A. Instrument sets with 20 choices for 6 metal cases and glasses make life easier for ardent scale fans. Full possibility seen in John Tatone's Meyers 145 cabin at top right. Cost is \$1.75 per set in U.S.A., any of 5 scales. Below is the Aurora-K & B S.E.5a with 1 c.c. glow plug Tornado engine. Yellow moulding may not be correct, but certainly looks good on this ready to fly W.W.I. Biplane



Whilst down on the South Coast we must also mention that that popular establishment, **Arthur Mullett Ltd.** is moving address from the famous "lanes" of Brighton to 21 Castle Street, Brighton, where larger space will permit more stock to be carried.

Chatting with Dick Edmonds at the team race trials, we found he is using the Italian *Super Record* 7 in. by 8 in. prop, as imported by **Henry Nicholls** along with the full range of sizes. These beech props are hard, stand up to a sharp flick and with up to 70 laps per tank at over 90 m.p.h.—who can grumble?

Incidentally, we also recommend the excellent new large stunt size **Mercury** tanks, 100 or 125cc, expressly designed and made to high standards for large stunt models, with integral baffle, at 7/6d. each.

The **Martin Marauder Mark II** has been introduced to the **Frog** 1/72nd scale plastic kit range "orange series" at 6s. Moulded in fawn, which is a good grounding for desert camouflage, the kit has over 80 parts, including three crew and moveable controls. Last month we were misled by a news announcement from Lines Brothers and mis-quoted the prices for the "blue" and "red" series, which are 2s. and 3s. respectively, not 2/11d. and 3/11d. as quoted.

The first scale biplane ready-to-fly plastic model comes from **Aurora-K & B** in the U.S.A. We have had loads of fun with their **S.E.5a** powered by a 1cc glow-plug **Tornado** engine. The model introduces many new features, including sprung undercarriage, screw together assembly for replacement of spare parts, a four blade prop for show, two blades for flying, most comprehensive flying instructions and above all, good handling and attractive appearance. Others to come in this range include the **Fokker D-7**, a fully Metal-Klad **P47 Thunderbolt**, twin engine **B.25 Mitchell Bomber** and three

Goodyear Trophy racers; all exciting projects to enhance the ready-to-fly market.

Also from the U.S.A., **John Tatone** has sent us samples of several new items he has just introduced. Being a most astute modeller himself, John appreciates what a modeller wants in the way of unique accessories. His **hinges** for any type of moveable surface whether R/C, C/L or even static model, are clever indeed and his scale **instrument kits** in five different sizes, will have an immediate appeal to all scale modellers. Each set contains six turned and plated model instrument cases, separate dials and glasses and a selection of 20 typical instruments with a panel background and instructions. Among the many other Tatone products is a series of **tank mounts** for the Cox Tee Dee engines, moulded in light alloy, vented and complete with screws for mounting on free flight or R/C models. Tatone also produces plain **radial mount** conversions for many engines ranging from the Tee Dee O49 to the Merco 35, ready drilled and with self tapping screws ready to cut threads in prepared holes in the beams. We like the line in the Tatone advertising literature—You name it, we'll drill it.





**48 inch wingspan
for 1.5—2.5 cc engines
to take all types of
single channel radio
control equipment.
Designed and proven
through hundreds of
flights**

by G. L. HARBER

L U M P E R S

THIS 48 IN. toughie for single channel is the result of 3 years of development with the aim of producing the ultimate in simplicity and reliability. The original of this final design has, in 7 months, made over 230 flights with each flight averaging some 7 minutes, that is a total of some 26 hours airborne.

Visits to typical rough Common land pointed to the need for a really reliable R/C job which could be carried in a balsa box strapped to the back of an enthusiastic lad on a bicycle:—Hence the detail of the two piece wing shown together with the detachable fin. With this 2 piece wing the "give" in the rods connecting the two halves allows an increase in dihedral, but this, and the small extra weight have little adverse effect on performance.

Until the advent of *Terrytone* a *Kraft* was installed, both sets proving very reliable. The *Tommytone/Terrytone* pair give a range that is all that can be desired—still working perfectly with the plane a mere speck in the sky. The *Bonner Varicomp* is driven by 3/16 in. rubber which certainly gives a greater range of turns than the recommended 1/4 in. rubber. 400 turns are normally applied to the rubber, which gives a safe number of 300 movements.

The conditions under which "Lumpers" is sometimes flown include over elephant grass country in Uganda where the blades are more like bamboo sticks and the leading edge to the wing needs some extra re-inforcement. The nylon "whaleboning" stocked by haberdashery shops as stiffening for corsets proves ideal for the purpose.

Commence construction by carefully cutting the formers from 1/8 in. plywood. Cut out piece N 1 from 3/8 in. sheet balsa and engine bearers to length. Place the cabin side of F 2 on greaseproof paper on a flat surface and apply P.V.A. glue to this, N1 and the bearers where necessary, to join and place together. Drop in F 1 for use as a spacer, but do not glue at this stage. Make sure that the bearers are square to F 2 between them and leave the dry whilst pieces N 2, 3, 4 and 5 are cut to shape.

Next, the pieces N 2 are glued to the insides of N 1 and F 2, and F 1 is glued into position, and again sufficient time is allowed for the P.V.A. glue to set whilst other tasks such as cutting fuselage sides and wing ribs proceed. The rugged nose assembly is then completed by screwing in the 8 B.A. screw through F 2 and bending this as shown and then glueing into position N 3, 4 and 5 followed by pieces of hardwood "chin". Triangular pieces of 3/8 in sheet are glued into position forward of F 1 and underneath the bearers.

The fuselage sides having been cut, the top and bottom parts are cemented together, placed over the plan and the positions of the formers and actuator carefully drawn on to them. Then all the reinforcement doublers are cemented into position, checking that the space left for the actuator on its panel is of the correct width to stop it moving about. Continue cementing pieces to the sides until the sides appear as sketched.

With Bulldog clips, fasten the two side pieces with the outsides together, and ensure that the two sides are identical in every way, then drill all dowel holes. Now glue the sides to the nose and before pinning into position pull the tail end together to ensure that the sides really are parallel. F 3 can also be fitted at this stage. Next the tail end is chamfered and joined. F 4 can be glued into position together with the 3/16 in. square spacers.

Place the actuator into position and temporarily pin on the 1/4 in. sheet underneath keeping the sides straight between formers 2 and 3. Add ply to reinforce the dowel anchorage where shown, also fix the tail skid.

Glue short pieces of 1/4 in. square balsa to each end of the four pin socket using P.V.A. or *Evostick*. Connect the two and four pin sockets together with a short piece of red wire soldered on, doubled back and tied to the tags; put the 2 pin plug in its socket and using this unit as a guide for position cut a hole through the fuselage side just large enough for the plug to pass through. Solder suitable lengths of wire to the folded down tags of the sockets, double them back and tie firmly to prevent the soldered joint being moved.

Glue sockets into position. Solder the two wires black and green, to the actuator.

Glue the wires along the route to be followed with blobs of P.V.A. glue.

Prepare the winder hatch cover from a small piece of hardwood (bearer) and ply and cut a suitable hole in the fuselage side to accommodate it.

Cement the top of the fuselage, cut from 1/16 in. sheet. Glue on the ply undercarriage platform and the balsa pieces forward of this leaving them rough at this stage. Drill a 3/32 hole through the tail end to take the rudder actuating rod and prepare the complete torque rod as shown in detail on the plan. Place this rod into position, slip a short length of "whalebone", with a 1/16 in. hole which forms the bearing, on to the rear wire and glue to the tail end. 1/16 in. ply may be used for the bearing instead of the nylon whalebone if preferred. Bend the rudder actuating rod as shown.

Add all the balsa forming the underside of the fuselage with the exception of the 1/4 in. piece which is left pinned in position; the *Bonner Varicomp* actuator cam follower must be well soldered to the actuating rod before this last piece of the fuselage floor is glued in.

Tie a reef knot in the ends of a 36 in. piece of 3/16 in. rubber and pull tight. Place into position in fuselage and put about 200 turns on to take up the slack. Clip the battery wires to a 4 1/2 volt battery, plug in receiver and shorting plug switch and check that the whole assembly is working smoothly with no friction anywhere when a signal is received. There is little in this layout to cause trouble except for the cam follower which must be absolutely square in its groove to prevent binding. The *Elmic Commander* escapement would act equally as well.

When all is checked, remove the battery and switch (plug), remove the cam follower from the groove in the cam to enable the torque rod to rotate freely—this is to prevent undue strain—and remove the rubber drive. Cover the actuator with a piece of rag and start sanding to shape. Aft of the wing the fuselage may be sanded at the corners until the square strainers appear, when quite a slim looking fuselage results.

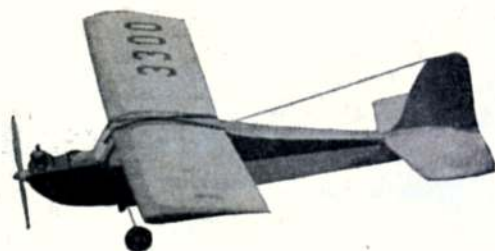
Drill the undercarriage retaining dowel holes and holes for the wing retaining dowels. Remove the dowels. Cement two pieces of $\frac{1}{8}$ in. sheet together and fabricate the "windshield". The wing retaining bands will hold this in place and the windshield in turn will hold the fuel bottle firmly in position when the time comes for operations. Dust the fuselage well and give a liberal coat of sanding sealer on the outside surfaces.

The main plane construction is in deBolt style. Cover the plan with greaseproof paper and lay the wing portion over a dead flat surface into which pins may be pushed *ad lib*—i.e. not a piece of furniture!

Pin down the bottom trailing edge sheet. Cement a 3/16 in. square spar on the edge of a 2 in. strip of 1/16 in. sheet and pin this into position, placing scraps of 1/16 in. sheet under the forward edge of the sheet. Cement on the 6, 1/16 in. wing ribs to leading and trailing edge.

Cement in the top spar. File very shallow slots into the $\frac{1}{2}$ in. by $\frac{1}{4}$ in. leading edge and cement on to the ribs and lower sheet. Cement the top trailing edge strip into position. Cement into position the 3/16 in. centre rib at the angle shown and then the top leading edge sheeting followed by the four cap strips. The centre section sheet can then be cemented on and the whole should then be left as long as possible to thoroughly dry the cement. Lift from the board and cut the overlaps of spars and sheeting so that they all finish at the centre of the 3/16 in.

Simple; but very practical LUMPERS is the perfect subject for lone-hand modelers—hence our specially detailed plan description article.



rib. Cement into position the 1/16 in. filling between the spars and the trailing edge in the inner bays. Fasten on the end plates to the spars and the end rib; sand to required shape and cover with sheet between rib and end plate. Finish the underside centre-section sheeting.

For the port wing half the centre rib (on the starboard section) is pinned at the roof position of chain dot drg. and the starboard tip rib is packed up 3 in. above the board. Repeat the procedure adopted on the first section, ensuring that the ribs and sheeting meet at the centre of the 3/16 in. centre rib, thus forming the wing.

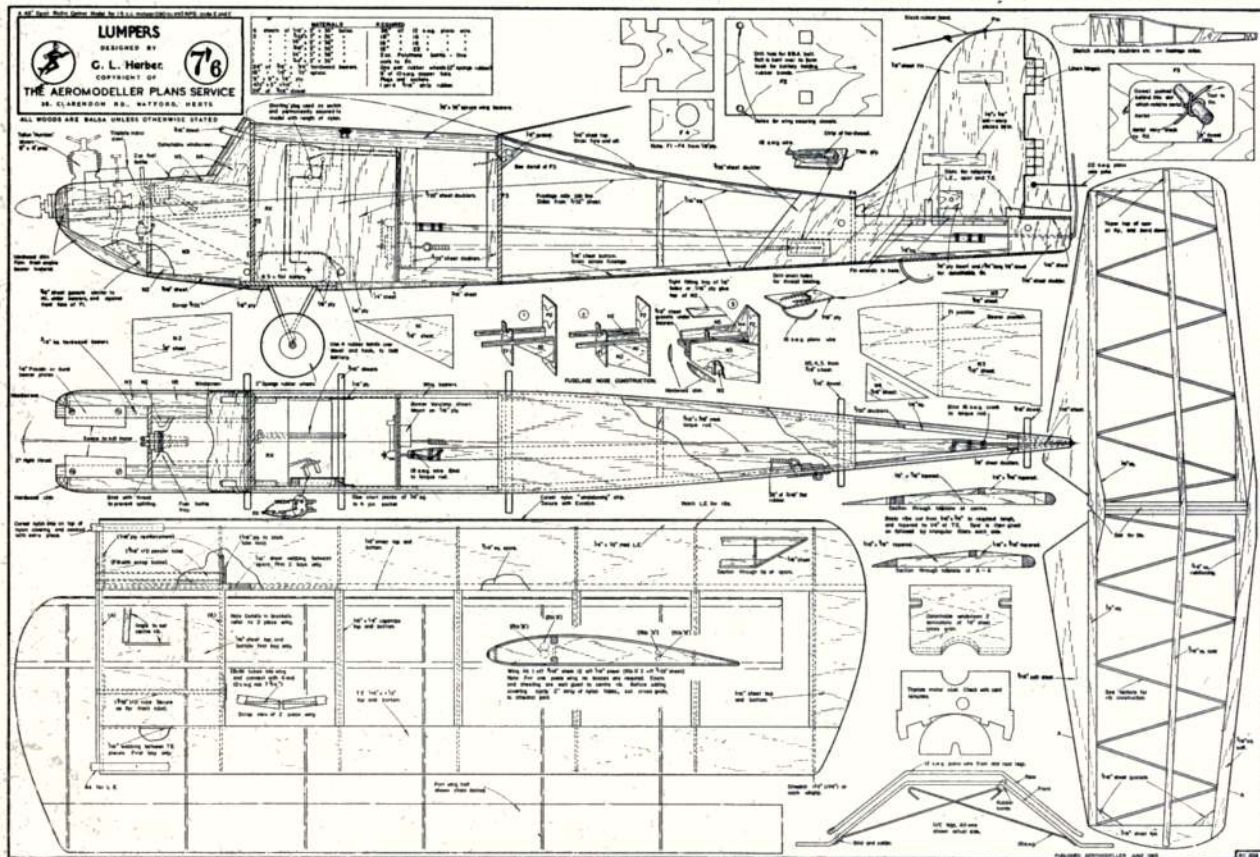
If it is desired to build the two piece wing to facilitate transportation, continue as before until the top trailing edge strip is cemented into position. The 3/32 in. centre rib is cemented and the panel allowed to dry thoroughly before it is lifted from the board. The starboard tip rib is packed up 2 $\frac{1}{2}$ in. above the board. The port wing centre rib is pinned to that of the starboard wing and building proceeds as for the latter.

The two tubes must now be fastened very firmly into position and if the smaller tube is at all flexible it must be stiffened with a piece of hard balsa glued alongside. The space between the larger tube and the web between the spars is also filled with scrapwood and glue.

Patches of plywood are fastened to the ribs to close the tubes and prevent the rods going too far in. Glue all around the spars once again before adding the top

continued on page 293

FULL SIZE COPIES OF THIS 15/TH SCALE REPRODUCTION ARE AVAILABLE AS PLAN R.C. 838 PRICE 7/6d PLUS 6d POST FROM PLANS SERVICE



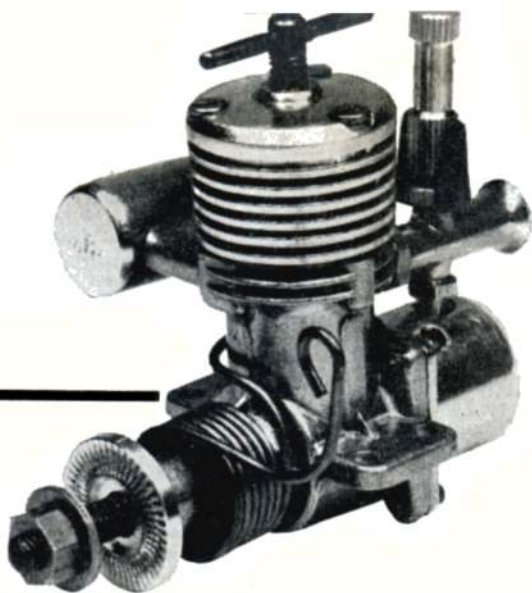
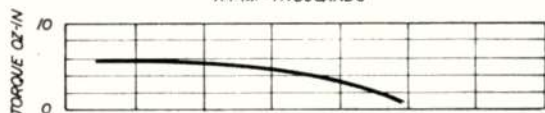
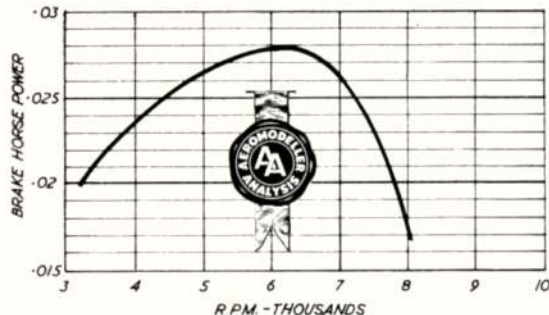
ENGINE ANALYSIS No. 110

by R. H. Warring

E. D. CADET

DEVELOPED SPECIFICALLY as a placid, slow-revving sports engine for "Sunday flying", the "Cadet", basically represents a redesign of the series II E.D. "Bee". The basic "Bee" crankcase unit has been retained, with minor modifications, but the top end is entirely new and embodies "sideport" induction (or, strictly speaking, three-port or cylinder induction, since the intake port is geometrically at the rear of the cylinder). This is a distinctly old-fashioned arrangement, rarely seen on modern production engines (the Mills .75 is another example of the use of this form of porting, but the Mills layout dates back unchanged from the very first working diesel); and one which most engine designers have forgotten, or at least completely disregarded, in the search for higher specific output. The latter trend has resulted in high-revving engines, which can be quite an embarrassment at times and not always all that efficient on practical propeller sizes for sports flying.

The cylinder-port layout is often maligned because it inherently limits the maximum revs., and thus the maximum B.H.P. figure attainable, whereas it can be just as efficient, or even more so at low and moderate speeds. It is restricted in its "breathing" capacity by its very geometry. All three ports—induction, transfer and exhaust—are cut in the cylinder or liner and timed by the piston movement. Fuel mixture is sucked directly into the crankcase by upward movement of the piston uncovering the intake port. This port must thus be lower than the exhaust port over the whole of its depth, which means in practice, that the time of induction opening is restricted. Hence the porting virtually sets a "maximum speed" limit, above which induction of a complete charge is impossible, regardless of actual port area. What must not be overlooked, however, is that up to this "limiting speed" the torque output possible to achieve can compare favourably with any other type of induction, and may even be better. At the same time fuel consumption may well be better, and also the degree of suction lift attained for easy priming and consistent running under changing attitude.



The "Cadet" is a three-port engine where "restricted" timing appears to have been carried to a degree. Peak power on test we found to be developed at just over 6,000 r.p.m., corresponding very naturally to a very modest B.H.P. figure (.028). The "Cadet" cannot be compared to other engines of similar size on this basis, however. It is the torque output which matters over the speed range, and this approaches typical 1 c.c. sports engine standards at about 6 ounce-inches. The fact that the torque falls off to virtually zero by about 8,000 r.p.m. means that the "Cadet" is not really useable above 6-7,000 r.p.m. Any attempt to make it run faster by fitting a smaller propeller, will simply reduce thrust and power, without appreciably increasing the r.p.m.

On the other hand, the "Cadet" will "potter" quite happily at about 3,000 r.p.m. on a large propeller—even a 12 x 4—and develop useful "sports model" thrust over a speed range of about 4-6,000 r.p.m.—speeds at which you can put your fingers in the prop. without suffering much worse than a hard rap! The ideal prop. seems to be an 8 x 4, on which it will run at just about peak revs. both statically and in the air; or an 8 x 5 or possibly an 8 x 6 for control line work. A 9 x 4 would also be a useful size for free flight. On any of these sizes starting characteristics are about best, too.

Starting characteristics are reasonable, provided one does not "lose" the compression setting. A three-port diesel does not have the same "feel" or handling characteristics of other types and if over-compressed, will not even fire, let alone start and you simply end up with a flooded engine. So the compression needs to be somewhere about right for starting. You cannot take the compression up until resistance is felt and back off, a little at a time to "feel" the best setting. All that this is likely to lead to is complete frustration. To be sure of being within starting range, the compression adjustment needs to be retained within no more than half a turn either way from the last running setting.

A coil spring starter is fitted as standard and is more than powerful for the duty required, wound back no more than one complete turn. If the starter spring is wound back *more* than one full turn, sooner or later it is going to break. Most owners will probably disregard the starter once they have become familiar with settings and initial adjustment and find that flipping the propeller over is, in fact, quicker and easier. But a starter is a good selling point, and many beginners and "Sunday flyers" like them.

The other good "selling" point is that the "Cadet" is fitted with a silencer as standard. This is a simple expansion chamber one inch long and 1/4-in. diameter, which bolts directly onto the exhaust stub. Whilst taking

DATA

Displacement: .984 c.c. (.061 cu. in.)
 Bore: .437 in.
 Stroke: .400 in.
 Bare weight (including tank and silencer):
 3½ ounces
 Max. power: .028 B.H.P. at 6,400 r.p.m.
 Max. torque: 6 ounce-inches at 4,000 r.p.m.
 Power rating: .028 B.H.P. per c.c.
 Power/weight ratio: .0047 B.H.P. per ounce.
Material Specification:
 Crankcase unit: light alloy pressure die casting, bright finish

Cylinder liner: hardened steel
 Piston: cast iron
 Contra piston: mild steel
 Crankshaft: hardened steel
 Main bearing: bronze bush
 Cylinder jacket: turned dural
 Tank: turned dural
 Intake tube: light alloy pressure die casting, bright finish
 Spraybar assembly: brass
 Con. rod: light alloy forging
 Silencer: 1 in. x ½ in. diameter with stub exhaust pipe.
 Price: £3-3-0

Manufacturers:
 Electronic Developments Ltd.,
 Island Farm Road,
 West Molesey, Surrey.
Propeller R.P.M.

Figures		
Frog nylon	9 x 6	5,200
K.K. nylon	9 x 4	5,800
	8 x 4	6,400
	8 x 6	5,500
Topflite nylon	9 x 4	5,400
	8 x 4	6,400
	7 x 4	7,000

out all the harshness of the exhaust note, it still leaves enough "engine" sound to be pleasing—and, incidentally, hear how the engine is running. The necessity for silencing has already been stressed and this is the first British production engine to incorporate such a unit as a standard feature. The effect on performance is quite negligible, r.p.m. being substantially the same on any propeller load whether the silencer is in position, or removed entirely. There is thus nothing to lose and everything to gain by leaving the silencer on. You could even run-in the "Cadet" indoors without the rest of the family complaining of noise—only the fumes!

Structurally the "Cadet" embodies a modified "Bee" crankcase unit (an entirely new casting incorporating a boss on the rear of the lower cylinder for the intake tube) with basically the same crankshaft as the "Bee" running in a bronze bush for the main bearing. The cylinder liner is of hardened steel and made a fairly tight fit in the casting, seating on a flange. Lower cylinder walls are approximately 3/32 ins. thick with two transfer passages scalloped out on the outside, terminating in upward angled drilled holes for the transfer port openings. The exhaust port is a rectangular hole milled through the cylinder wall and below it, and overlapping circumferentially a narrower (in depth) and wider rectangular port for the intake opening. The rear edge of this latter port uncovers the intake hole in the cylinder unit.

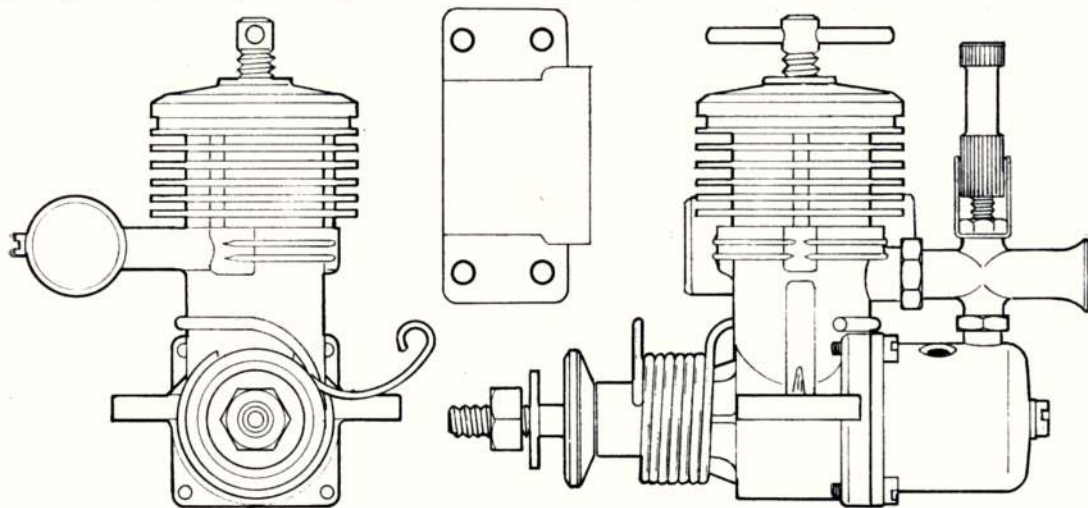
The cast iron piston is of plain form with a chamfered top and fully floating ¼-in. diameter silver steel gudgeon pin. The connecting rod is a light alloy forging with a 9/64-in. big end diameter. Crankcase volume is quite small, the bulk of this space in the casting being filled by the plain (unbalanced) crank disc and back cover "plug" section which extends well into the case. Cylinder assembly is completed by a finned jacket turned from

dural which is bolted in position by three screws. The liner is correctly positioned by three small notches in the flange clearing, and corresponding to, the hold-down bolt holes.

The intake tube screws into the boss section on the crankcase unit and is locked with a brass nut. This tube is a pressure die casting with a bellmouth entry and venturi-shaped bore. Throat diameter is quite small and practically the whole area is masked off by the brass spraybar. The latter is of conventional pattern and the fuel pick-up side is extended via a short length of plastic tubing down to the bottom of the tank. The tank is turned from dural and is fitted to the crankcase backplate by means of a central bolt.

In view of the deliberately restricted intake timing, the "Cadet" could undoubtedly be "tuned" to some extent by opening up the intake port area. Reworking the liner is not practical, since it is hardened, but for those owners who would like to try a little simple "tuning", opening up the bore of the intake tube with a drill, should have an appreciable effect on r.p.m. achieved with an 8 x 4 or 9 x 4 prop. Possibly handling characteristics may deteriorate somewhat as a consequence—in its original form the needle valve control is completely non-critical—but the cost of the experiment is only a spare intake tube.

Summarising, the "Cadet" is purely and simply a docile sports engine with especial merits for youngsters and young beginners who are often put off by the knocks and cuts they can receive from "hotter" engines. It has enough power to fly typical sports f/f model designed for 1 c.c. motors, and the fact that it will not overpower the model will make trimming easier (and the effect of warps less drastic). Its low power may be more of a limitation for control line work where even the beginner soon expects to achieve aerobatic performances.



Graupner

KITS

Quickbuild kit contains all materials plus die-cut sheets, wire parts, tissue cement, transfers and super-detailed plans

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50" span
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GLIDER or PYLON POWER for Free Flight or Radio Control. A sleek, high-performance glider with the convertible power-pylon format. Wing area 290 sq. in. Complete glider kit 46/- Pylon pack 13/-

CONTROL LINE SCALE MODELS



74/9

FOCKE WULF 190

This high altitude fighter version (TA 152 H I) has been faithfully reproduced from the original plans and is authentic in every detail. A superb performer, the deluxe kit contains selected printed sheet and ply parts, 12 diecut sheets, moulded cowl, fairings air intake, etc., all wheels, metal parts, decals and four sheet full sized plans plus elaborate detailed instructions. Wingspan: 39 in. Length: 28 in. Motor size: 2.5 c.c.



62/6

P6 MEW GULL

Based on the famous Percival racer this scale model is ideal for team racing or sport flying and has been timed at over 85 m.p.h.! All balsa construction. The kit contains many spindle moulded and turned parts, and comes complete with wheels, glue, U/C, pilot, dope, screws, bolts. Length: 22 in. Motor size: 2.5 c.c.



62/6

DORNIER DO 27

Again factory plans have been used to ensure the authentic detail for this superb low speed reconnaissance craft which is a scale modellers dream come true. Nothing has been spared in the production of the kit which contains many die cut parts, moulded cowl and wing tips, wheels, glue, wire, control plate, and all metal parts, screws, paste, decals, plus super plans. Wingspan: 31½ in. Length: 25½ in. Motor size: 1.5 c.c.



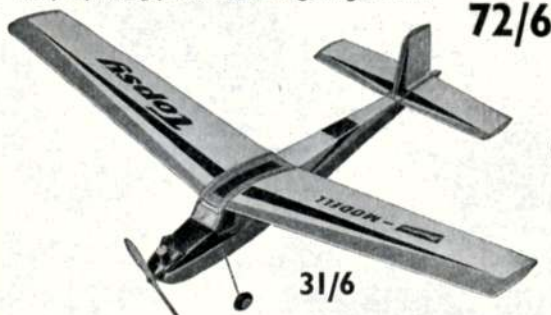
52/6

MESSERSCHMITT ME 109H

This kit contains many die cut and spindle moulded parts. All the "hard work" has been done, making it an ideal "first" for scale modelling. Wheels, wire, transfers, glue, metal parts, etc. plus 2 Sheet plans and instructions. A most popular choice. Wingspan: 25½ in. Length: 20½ in. Motor size: 2.5 c.c.

WEIHE 50 (scale)

Taken from the original blueprints supplied by Focke Wulf this high performance sailplane is ideal for the installation of Radio Control Equipment. The kit is unique in that it contains finished moulded fuselage halves to perfect scale in high density expanded polystyrene. Diecut wingribs, formers and spars, shaped LE & TE, decals, tissue, cements, canopy, etc., and 2 sheet plans. An outstanding model in every way. Wingspan: 71 in. Fuselage length: 34 in.



31/6

72/6

SAILPLANE



53/6

KAPITAN is the ultimate in the biplane giving a capacity and lower Radio. The kit includes formers and fuselage TE & LE, wheels, etc. Span: 43 in. Motor

TOPSY is a delightful "quick-build" kit, ideal for beginners and most suitable for sport radio flying in restricted spaces. With all sheet diecut, shaped LE & TE, wheels shaped U/C, cement, transfers etc., included, it can be built in a couple of evenings following the excellent 2 sheet plans and instructions. Span: 32 in. Engine size: up to 1 c.c.

Graupner

FOR GRUNDIG RADIO

A NEW CONCEPTION OF R/C!!

Yes, all you've dreamed of and hoped for in one unit! This is the ultimate in R/C—simplicity, reliability, and complete control.

From 2—8 channels in plug-together 2-Channel stages it is tailor made by the famous GRUNDIG company to suit you and your model—and is backed by a 6 month guarantee.

Superbly engineered and fully transistorised. THIS IS THE RADIO FOR YOU!!

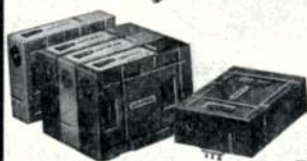
Crystal stabilised hand held transmitter with 50' chrome telescopic aerial and strap, is all transistor

4 Chan. Transmitter	... £31 10 0
4 Chan. Conversion	... £10 15 0
8 Chan. Transmitter	... £39 10 0

The last word in R/C receivers. Fully transistorised pretuned unit with add on 2 channel tone filters giving up to 8 channels. Compact, lightweight, adaptable, and completely reliable. Can be used in the smallest of models.

Grundig Tone Receiver	£8 15 0
Tone Filter Units (2ch)	£8 15 0

The New Bellamatic II has been specially designed for use with Grundig Radio, and is selfcentering using the Micromax motor. Unique clutch system eliminates limit switches, and 8 pin miniplug fits into filter units for solderless installation. Size 1½ x 1 x 1½. Weight: 1.4 oz. £5 12s. 6d. Also available are Unimatic, Motomatic, Duomatic and for boats Kinematic. See them at your local Model Shop Today!!



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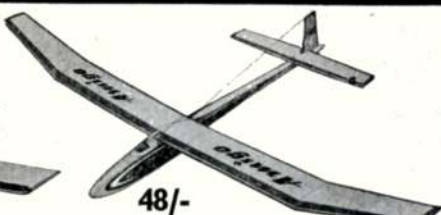
80 HIGHGATE

U.S.A.: POLKS MODEL
214 Fifth Avenue
New York, N.Y.
CANADA: G. BOCK
45 Wingfield
Toronto 19



25/6]

BEGINNER is truly the ideal model for a "first" built up glider. A Quickie kit designed for ease of construction almost completely prefabricated. To build and fly you only need a little clear dope and a few hours time to complete this fine flyer. Span: 38 in.



48/-

AMIGO combines a first class A/2 contest design with ample room for Radio Control installation, and has the added facility of a pylon mounted motor unit for powered soaring. (Pylon pack 7/6 extra). Strong but lightweight construction gives an outstanding performance in either version. Graphically clear 2 sheet plans. Span: 69½ in.



50/-

KADETT This rugged highwing model is an all weather performer and is equally suitable for F/F or Radio. Easy to build and very stable in the air. The comprehensive kit is full of specially selected printed wood, and includes wheels, dope, tissue, cement etc. Span 46 in. Engine size: 1½—2 c.c.

GRAUPNER QUALITY KITS must be seen to be fully appreciated. It is very difficult with words to do full justice to the contents of each kit, nor is it possible to describe the clarity and detail of the plans plus the comprehensiveness of the instructions. Each kit is "full" of the finest selected materials, and the quality of the cutting is second to none; whilst the accessories which are included and the prefabrication which is provided make them outstanding for value and quality. **PLEASE** ask your dealer to show you the kit of your choice—**WE KNOW YOU WILL LIKE IT!**

FREE FLIGHT-SCALE & R/C

similar to the Kadect with added attraction of being flying speed. Ideal for large sides—plus shaped dope, cement, tissue, etc. 1.5—2 c.c.

SENSATIONAL NEW R/C MODELS !!!

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62/6

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Engine size: up to 2.5 c.c.



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Wingspan: 48 in.
Engine size: 2.5 c.c.



117/6

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Left, genial owner, engine designer, production supervisor and masterly Italian speed team manager, Jaures Garofali checks some Super Tigre .56 pistons. Right, the Micromeccanica Saturno establishment at Bologna, Italy



A visit to the Super Tigre factory

by
**MANS
HAGBERG**

MICROMECCANICA SATURNO occupies a neat brick and concrete building situated on the outskirts of Bologna in northern Italy. Built three years ago, following a fire which destroyed the earlier premises, the factory consists of a main machine shop, a small office, a designing nook, and a storage shed. A staff of about ten persons is adequately disposed among the machinery to cope with the high rate of model engine production.

During our visit we were welcomed by the owner, Signor Jaures Garofali, and old friend Amato Prati of speed flying fame. In a mixture of Italian and French with plenty of gesticulation on both sides, we were made to understand the business started in 1948 with the G.9 5 c.c. diesel engine. Twenty designs later, the G (for Garofali) series of motors ended with the 1 c.c. G.32, and subsequent designs bear the "S-T" prefix.

The racing 2.5 c.c. G.20 has for many years been the best selling Super Tigre product in its various development stages, but it is well supported by a large range of motors, which includes 13 different "normal" types and no less than nine "radio control" variants, up to the latest ball bearing .56 R/C engine with ringed piston and chrome plated cylinder liner.

In the main machine shop we were confronted by an

imposing array of equipment. At an approximate count, there are five lathes, three milling machines, four or five grinding and honing machines, half a dozen vertical drills and two multiple drills. Also, there were several intriguing pieces of machinery built for special operations and, established in an outside shed, a new barrel-type wet polishing machine.

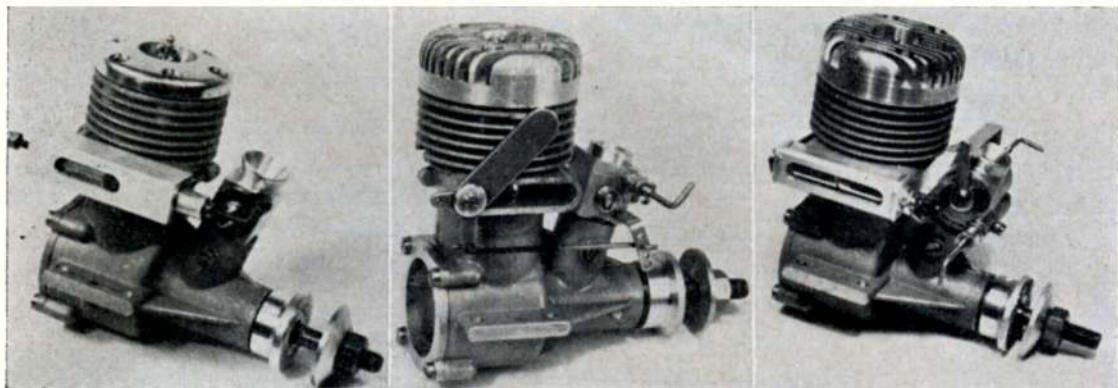
At a clean bench, Amato Prati was busy assembling some S.T. .56 throttles of the newest type having a most ingenious mechanism with a clever ball universal coupling between the exhaust valve and the two needle intake throttle. It is claimed to provide an 1,800 r.p.m. tickover as a minimum figure for bench running. A demonstration was quickly arranged, some fuel—25 per cent. castor, 65 per cent. methanol, 10 per cent. nitro + 5 per cent. petrol (certainly an inexpensive additive)—was mixed and a 12 in. by 6 in. Tornado propeller fitted. A brand new S.T.56 BB, was taken out of the nearest box and clamped to an outside test stand. Finally, the factory's one K & B RC plug was fitted. The motor started as set, on its fourth flick, ran up to 10,000 r.p.m. and slowed down to 2,200. Slight adjustments enabled 10,400/2,000 to be recorded.

Returning to the building we had a look at the other

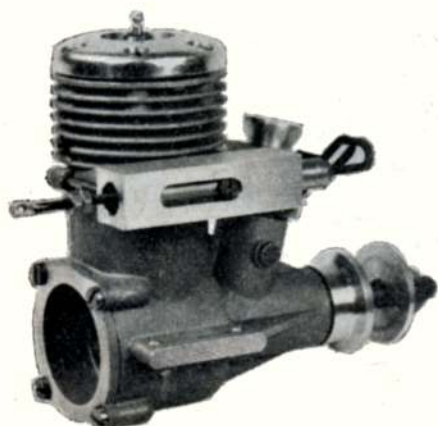


Left, a Super Tigre G.20 V in the raw. Die-cast crankcase and rear cover, forged crankshaft and rough machine cylinder liner and connecting rod. Right, well known Italian speed flyer Amato Prati at the assembly bench with deft experienced fingers which go to maintain a renowned Italian standard of workmanship





EVOLUTION OF A THROTTLE. Stages of Super Tigre radio control throttle development are shown with early S.T. 51 left and above left with exhaust push-pull directly actuated barrel choke. Centre above is experimental S.T. 56 with "chopper" style exhaust valve operating intake barrel which has two needles, one for slow speed tuning. Top right, final throttle now established throughout the range with rotary exhaust blank driven by clever ball universal coupling from throttle, which has two needle valve controls, one for idling



work going on. Production starts with bar stock, die-castings and forgings. All machining is done by hand operations. No fully automatic machines are used. Many jigs are used for the respective operations, reducing intricate work like cutting the grooves for the gudgeon-pin retaining circlips in the G20V piston to routine work. All critical dimensions are individually checked

on each component, ensuring good working fits. It is with considerable pride in his products that Signor Garofali personally double checks many of the parts.

Generally, Super Tigres have a die-cast crankcase which is machined for ball bearings, crankshaft, cylinder liner and various screws. The crankshafts are forgings and are first turned down to size, then the big-end is machined in a special jig, induction passage drilled and the intake port and counterbalancing cut. After heat treating, all working surfaces are ground between centres and dimensions thoroughly checked. Pistons, cylinder liners and connecting rods are made from bar material and sundry parts like cylinder heads and rear covers are either from die-castings or bar stock.

Summing up, the Super Tigre concern is to a great extent unique in that it is willing to change its production overnight in order to introduce modifications to existing designs. We saw a production run of the plain-bearing S.T. 56 give way to the ball bearing version, and we know that this policy of constant development is true for most of the factory's engines. Few manufacturers can claim to have 22 different model engines listed in their catalogue and none of our acquaintance would produce so many incidental alterations to further extend the variety. One cannot fail to be impressed by the enthusiasm and search for improvement which characterises the entire Micromeccanica Saturno factory in its exploitation of the front rotary valve miniature two-strokes.

LUMPERS continued from page 287

leading edge strips and sheeting to the centre sections. Allow to dry thoroughly and then sever the tubes between the two centre ribs with a razor saw. Complete the sheeting on the starboard wing panel.

If the nylon strip is to be fixed to the leading edge this should now be done, otherwise a 3/32 in. by 1/4 in. hard strip of balsa should be cemented on instead.

Sand the leading edge to shape checking frequently that the leading edge shape is being maintained. Sand wing all over, dust off, and apply a liberal coat of sealer to all parts the covering will touch.

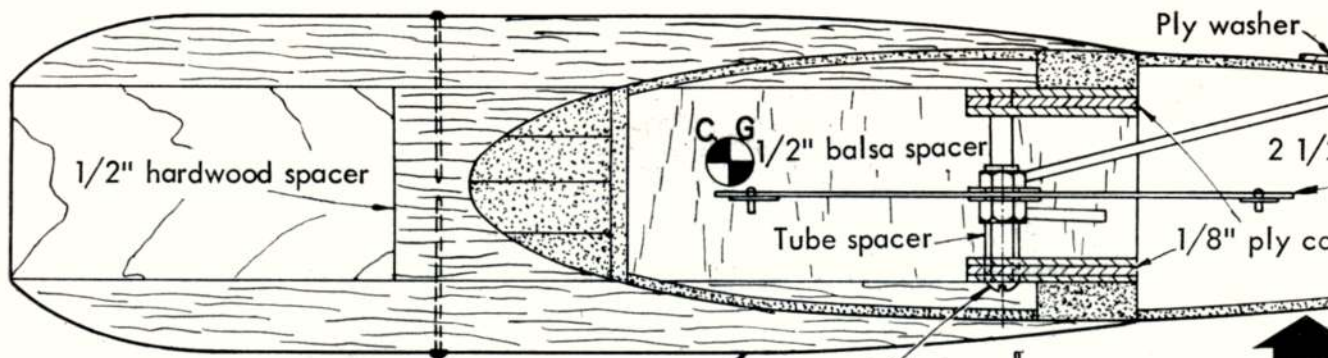
Soft balsa should be used throughout the tailplane construction, which is a built up rib type. Cover the plan with greaseproof paper and pin down the 3/8 in. square leading edge and 1/2 in. square trailing edge. Add the 1/2 in. square reinforcement at the trailing edge centre where shown, followed by the two centre ribs which are tapered from 3/8 in. to 1/4 in. in a straight line. Next add the 3/8 in. square reinforcement at the centre of the leading edge. Now cement in all the diagonal ribs, all of which are tapered from 3/8 in. to 1/4 in. Cut the tips from 3/16 in. sheet and cement into position and then cement the spar to all

ribs. Cut the dummy elevators and carry out as much shaping as is possible before cementing in place.

Next is the rather tedious business of cutting the 36 small triangular fillets from a strip of 3/16 in. by 1/16 in. balsa (1/8 in. at centre ribs).

Construction of the fin is very straightforward. The 1/8 in. ply insert is only used if the detachable fin is to be made. For its use is to anchor a piece of 1/8 in. dowel or bamboo over which the tailplane retaining rubber bands pass to hold the fin in place.

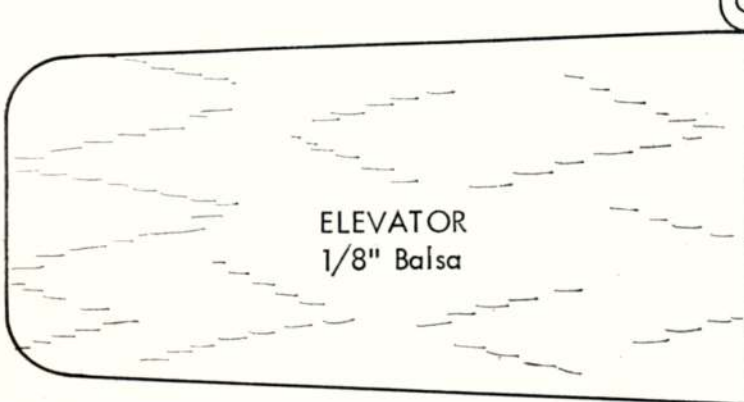
The fin and rudder are best covered with tissue but the whole of the remainder of the plane should be covered with nylon. Those "Lumpers" already flying, at 4,000 ft. above sea level, are all finished with two additional coats of dope and followed by Humbrol Plastic Enamel which is fuel proof. The total weight ranges between 2 lb. 6 ozs. for a model with a wing of lighter construction to 2 lb. 12 ozs. for one with the two piece wing. A tin plate cowl is well worth using as it keeps the plane remarkably clean. In the Uganda climate one can pack an English year of flying into a month. Here is a plane for many years use if you can resist the temptation to move on to multi!



1/2" x 3/8" Engine bearers

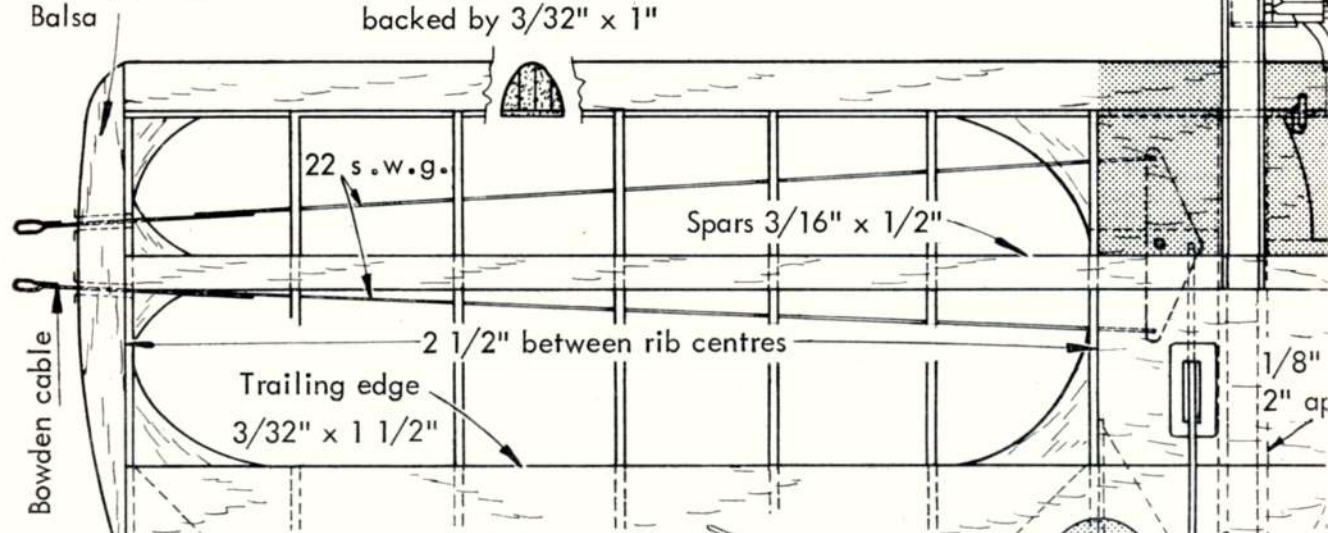
6 B.A. bolt

FULL-SIZE Bind and solder



Lamination tips from 3/8" sheet Balsa

Leading edge 4 off 1/4" x 3/4" backed by 3/32" x 1"



ELEVATOR BOOM FIXING

14 SWG. ELEVATOR BOOM.

14 S.W.G. PIANO WIRE BOOM.

CHAMFER. GROOVE.

14 SWG. I.D. TUBING ARALDITE IN POSITION AGAINST RIB.

1/16" PLY RIB.

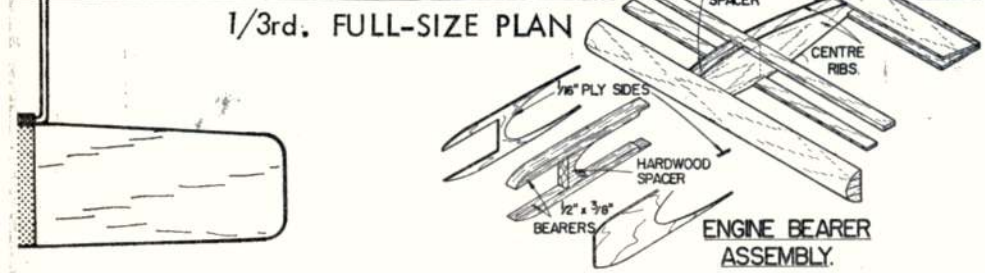
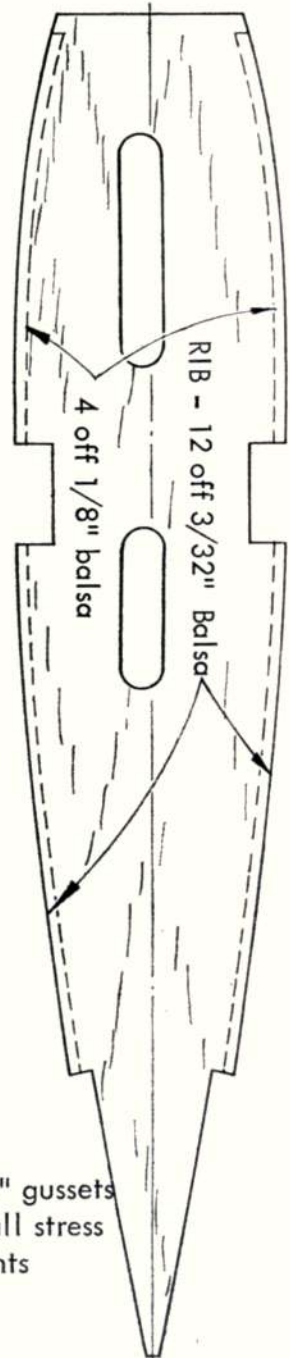
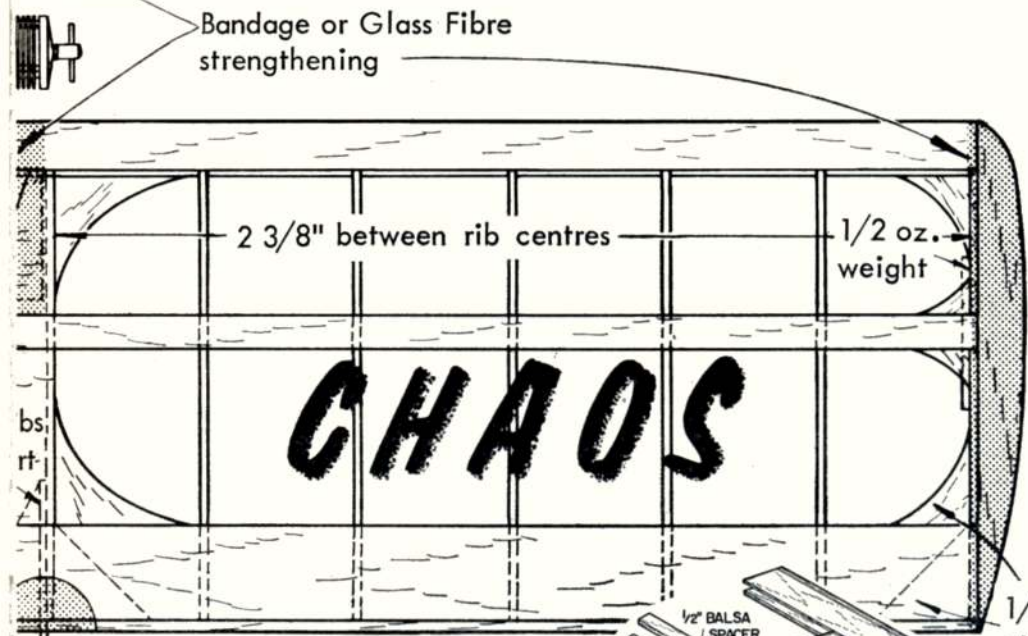
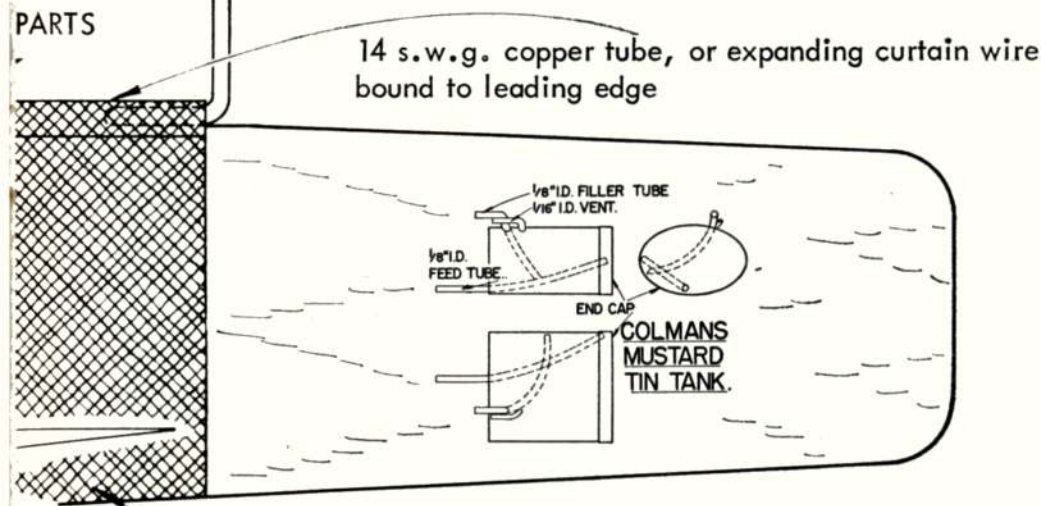
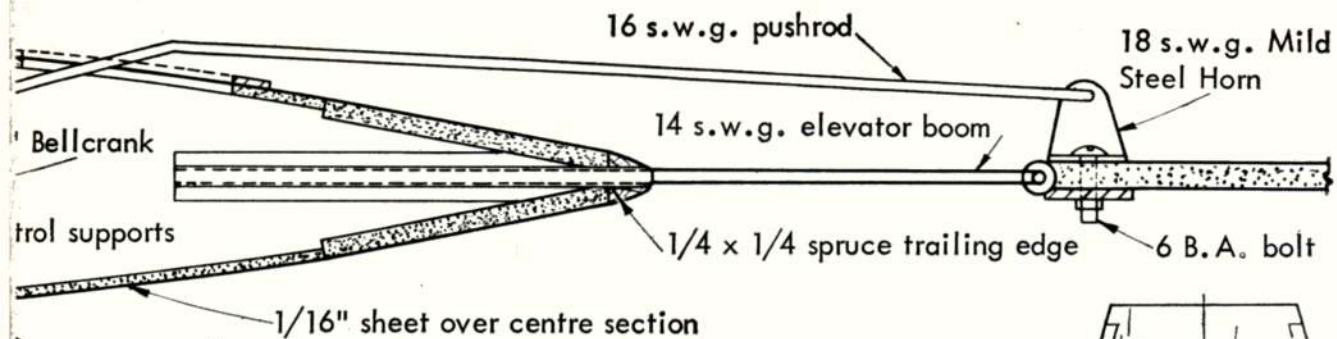
1/8" SHEET RIB GROOVED TO TAKE WIRE.

ALTERNATIVE BOOM FIXING.

Araldite booms to tubes

Pushrod retaining clip





CHAOS

Peter Freebrey's
2.5-3.5 c.c
Combat model

CHAOS

'CHAOS' HAS BEEN developed to overcome the common difficulty of slowing up in manoeuvres. It is very smooth, with no appreciable slackening of speed and can execute a tighter turn than most conventional tailplane models. Original inspiration for the separated, all-moving elevator design must be credited to Klaus Seeger's *Zack-Zack*, the 1959 European Combat Champion which was drawn in December 1959 AEROMODELLER. In 1960-1 Ray Meekins of Kenton, followed by M. Morris, of the same club, tried this type and this inspired Peter Freebrey to build a couple of similar models for the '61 Northern Heights and Ashford Rallies. Subsequent developments elsewhere, by Riley Wooten in the U.S.A. with his *Voodoo* have in turn added weight to the argument for this type against the conventional style.

The importance of weight cannot be stressed too much. For this model, one should aim at an all up weight of 17 to 18 ounces for competition work. This will give a wing loading of about 6 to 6½ ozs./100 sq. ins. Whereas the normally accepted flying wing has wing loading figures of about 8 ozs./100 sq. in. Compared with a conventional tailplane model 'Chaos' can still out-maneuvre with the added advantage of an elevator that can be quickly and easily replaced during a heat.

The tank is constructed from a standard 'Coleman's Mustard' tin costing approximately 6d. All seams are double folded and should be soldered as an extra precaution against leaks.

Start by constructing the leading edge from four laminations of ¼ in. by ¾ in. by 36 in. and one backing piece 3/32 in. by 1 in. by 36 in. When the lamination is dry, notch the backing piece at the rib spacings shown to the full depth of the 3/32 in. sheet, this will ensure correct line-up and removes all need for a full-size drawing! Then carefully carve and sand L.E. to section.

Thoroughly cement all ribs to the L.E. making sure these are square. When dry, pin bottom sheeting of the trailing edge to a flat board, marking off positions of ribs. Apply cement and attach ribs, supporting them and L.E. to ensure a good contact.

Carve the engine bearers and hardwood spacer to shape. It is important that the spacer must be a good fit to the L.E., as this ensures a very strong "fuselage."

Now attach T.E. top sheeting. Unpin from the board and fit the balsa engine bearer spacer, 3/16 in. by ½ in.

Three detailed photographs below illustrate "strong" points of Chaos construction. First; glass fibre or bandage strengthening over the elevator hinge, trailing edge, where booms protrude and centre section. This is also seen in centre view of engine bearers. Note buried mustard tin tank. Photo at right illustrates use of flexible Bowden cable attached to 22 s.w.g. lead-out wires from bellcrank. Minor differences on this prototype are weight saving measures



spars, solid balsa wing tips and ¼ in. square spruce T.E. strengthener. Fit the bearers and hardwood bearer spacer in position after pre-cementing.

The tank and control system can now be fitted. Bind and securely solder the Bowden cable ends to the leadout wires after wing tips have been carved to shape.

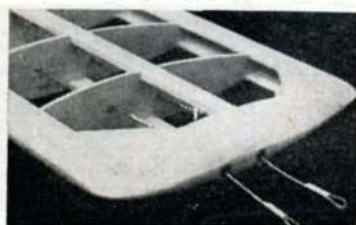
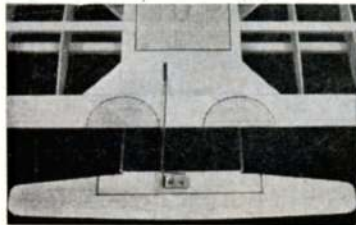
Tail booms can now be fitted. First cut the triangular pieces of ¼ in. ply, chamfering them for a snug fit into the T.E. Then groove so that the pieces of 14 s.w.g. internal diameter brass or aluminium tubing are flush with the edge of the ply. The tubes are then stuck in the grooves with 'Araldite' or similar adhesive. Carefully drill two holes through the spruce T.E. to accept the brass tubing, as shown on the full-size cross-section. The boom holders may now be cemented into place (pre-cementing first). When cement has dried, excess tubing at rear of the T.E. may be carefully trimmed off. The centre section, together with all gussets may now be added, also the 1/16 in. plywood fuselage sides, ½ ounce outboard wingtip weight and ply washer over the push rod hole in centre section sheeting. The model may now be sanded and then appropriate parts reinforced with glass fibre or cement and bandaged.

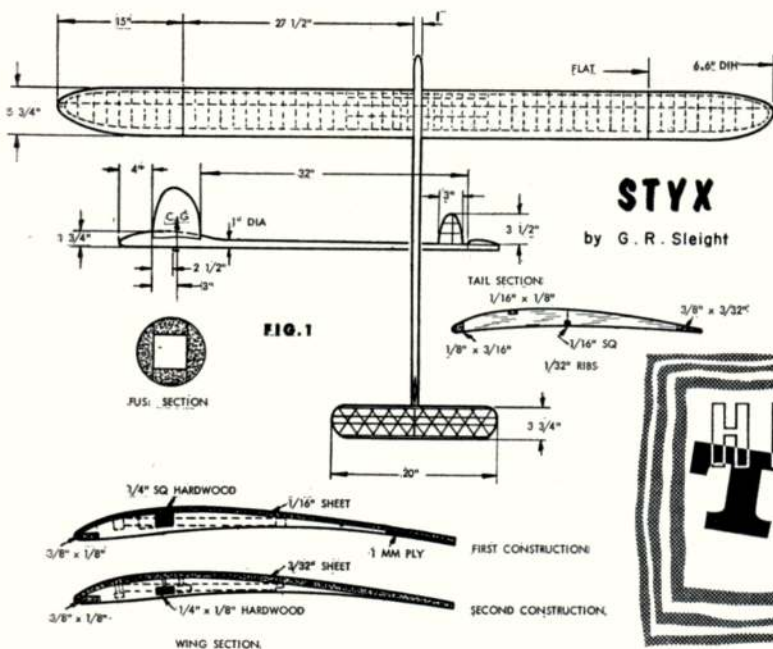
After covering and doping, the 14 s.w.g. piano wire tail booms may be Araldited into the tubes, care being taken to ensure booms are to the length shown in full-size view and square. The 90 deg. ends should be about ¾ in. long to enter hinge tube.

The elevator is quite straightforward, the important point is the hinge. This should be made from copper tubing or expanding curtain wire. The hinge must be firmly fixed to the elevator using at least two layers of 'cemented bandage' or glass fibre. Providing the C.G. is in the position marked on the plan, only about 10 deg. movement each side of neutral is necessary for the tightest manoeuvres. Fine adjustment of neutral can be made after the push rod is bent to fit the mild steel horn, by sliding the booms fractionally in or out. Then Araldite the boom to the tube to secure permanently—or your flying will be most definitely "chaotic."

Here's what you need to make "Chaos":

Two of 3/32 in. x 4 in. x 36 in. for wing ribs, T.E. and L.E. One ¼ in. x 3 in. x 36 in. for L.E. One ¼ in. x 3 in. x 36 in. for elevator and gussets. Two off 3/16 in. x ½ in. x 36 in. for spars. One ¼ in. x ½ in. x 36 in. spruce for T.E. One ¾ in. x 3 in. x 18 in. for wing tips. One 1/16 in. x 3 in. x 18 in. for sheeting. One ¾ in. x ½ in. x 15 in. hardwood engine-bearers. One ½ in. x 1 in. x 2½ in. for fuselage (depends upon engine) bearer spacing. One 1/16 in. x 3 in. x 12 in. ply for fuselage sides. One ¼ in. x 3 in. x 4 in. ply for boom and bellcrank supports. One each 14 s.w.g. 22 s.w.g. and 16 s.w.g. piano wire. 6 in. x 14 s.w.g. 1/D tube for boom supports. 6 in. of 14 s.w.g. 1/D copper tube for elevator hinges and 8 in. thin Bowden Cable for lead outs, plus covering, dope, cement, glass fibre or bandage and fuel proofers.





**Construction analysis
of an A/2 glider
gives valuable help
by JIM BAGULEY**

STYX

by G. R. Sleight

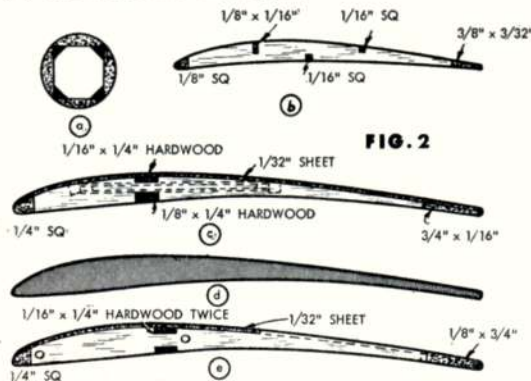


ANYONE WHO WANTS to design his own glider will soon realize that there's a little more to it than sketch work and application of first thoughts. We can analyse some of the problems which arise by study of fellow clubmate Robin Sleight's design for a model of the A/2 specification which is shown with various wing constructions of his own in Figure 1. The design has shown itself to have excellent possibilities in various contests, especially the team eliminations of 1961 for the World Championships.

Glide seemed admirable and the stability good apart from slight sideways rocking. This was due to rather heavy wings, which in any case was not in the least detrimental either to duration or durability. The impression gained by the author was that the model needed further structural development. Then it would become one of the best designs available.

Let's be critical and improve our knowledge by examining faults that showed up in flight tests.

- (a) The model proved to be rather weak if it hit an obstruction.
- (b) The location of the wings in the fuselage was not positive enough as they had a tendency to "pop out" frequently from the 1/16 recess.
- (c) The wings were very heavy but were even then sometimes subject to flutter, suggesting insufficient torsional rigidity.
- (d) The fuselage would break just aft of the wing on impact.
- (e) The fin and tailplane would readily bow and warp.
- (f) The model was overweight.



It was realised that all inferior flights were directly or indirectly the by-product of these faults.

(a) and (f) are general and should normally be cleared as the other points are corrected.

(b) Was cured by arranging that the wings were let into the fuselage $\frac{1}{8}$ inch.

(d) was cured effectively by changing the fuselage section to that shown in Fig. 2a where $\frac{1}{8}$ in. sheet was employed instead of $\frac{1}{4}$ in. sheet and $\frac{1}{8}$ in. square hardwood longerons were placed at the corners, tapering until they finished 10 inches behind the wing trailing edge.

(e) was also readily cured by re-allocating the tailplane spars as shown in Fig. 2b. By using a symmetrical fin section with a wound outline with diagonal ribs instead of a sheet joined outline and plain ribs, the fin faults were cured. Actually (f) was not cured easily because the $\frac{1}{8}$ in. sheet used for the fuselage was heavy and although trouble (d) was well and truly cured the ballast needed for the correct C.G. position produced a 20 ounce model.

This problem was rectified by an increase of nose length amounting to $1\frac{1}{2}$ inches.

So far, apart from a mistake in wood selection all modifications had been good.

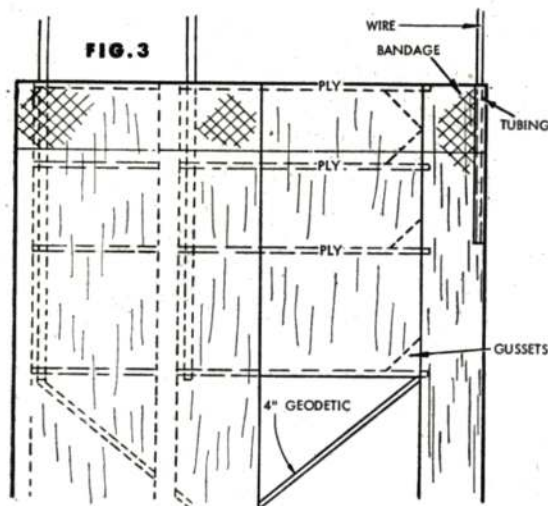
Real trouble came in the modification of the wing structure. Initially, the spars used by Robin were $\frac{1}{4}$ in. square spruce tapering off, with a 1/16 in. sheet upper surface and the trailing edge was 1 m/m ply. The final version had 3/32 in. by 3/16 in. spruce spars, with sheet upper surface increased to 3/32 in. thickness without extra trailing edge strengthening. The latter was still heavy, but was a vast improvement in all ways.

Final modification is shown in Fig. 2c. The leading edge was made in orthodox style for simplicity. Sheet upper surface was reduced to 1/32 in. thickness to allow more space for spars plus trailing edge and reasonable rear rib depth.

Ribs which were never less than 1/16 in. deep, were gusseted to the 1/16 in. trailing edge for increased rigidity and warp resistance.

The spar arrangement was felt to give better anchorage to the box and did not necessitate the cutting away of the spars to accept the box. This has been serious when $\frac{1}{4}$ in. square spars were used. The fact that the lower spar now interrupted the lower wing surfaces was not felt to be serious.

This wing was lighter and the tongue box was more



inclined to stay attached but there remained a whole heap of troubles.

First to become apparent was the tendency of the trailing edge to reflex due to the cement layer being offset in its effective 3/32 in. total depth. This was cured before covering by doping the undersurface but still caused later trouble. The 1/32 in. sheet wrinkled slightly in places and the wing warped readily. Flutter problem was still far from cured and the great torsional flexibility of the wings gave trouble on both tow and glide, especially when the model weighed 20 ounces.

Double covering over the centre section after initial flight testing effected a certain amount of cure, but it became evident that much more thought was needed in constructing a sheet upper surface wing of this aspect ratio and section if it was to be strong enough and reasonably light.

Now, consider the way of doing this starting with the airfoil section in Figure 2d.

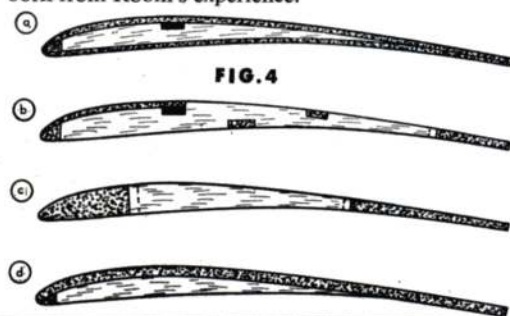
We could simplify matters immediately by forgetting

part of our sheeted upper surface. This would allow full depth ribs at the rear. We can obtain sufficient torsional rigidity by going to "Union Jack" construction and can overcome the depth problem of wing joining by using ply centre ribs and wire joining tongues. The rear of the section can also be effectively made 1/4 in. deep to accommodate a trailing edge of this thickness. This gives the result in Figure 2c. This spar system is known to be sufficient if filled in between at the centre. The upper sheeting may be continued as far back as deemed necessary. 3 wire joiners are felt to be essential. The result would in plan view be as shown in Figure 3.

It may still be necessary to make the straight ribs thicker, say 3/32 in. The possibility of a tongue box as originally used has now been discarded as impractical due to the section thickness. Other construction possibilities which occur are shown in Figure 4. All of these have their various snags, some of which could be worse than the original construction.

Even at this stage our new construction may have unforeseen difficulties; but that is half the fun of experimentation!

If we are to use even thinner sections and higher aspect ratios in the pursuit of better sinking speeds it can be seen that more problems will be encountered. Even after all the effort described with Robin's model—a car got in the way and wrecked the model to terminate its story! Such is aeromodelling life. But it is a load of fun and I hope this little story will have conveyed a few lessons born from Robin's experience.



Contest Calendar

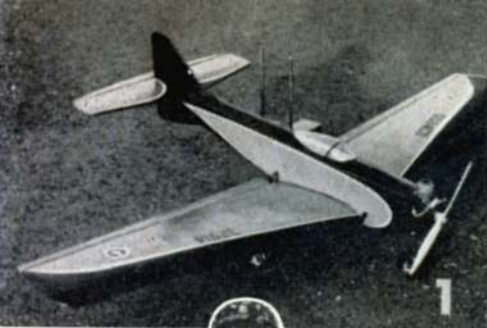
May 19	<i>Caledonia Shield</i> (S.A.A. Team event). R.A.F. Abbotsinch. Open G/R/P, F.A.I. T/R, Combat. Rat Race, R/C.
June 9	S.C.R.C. R/C Rally. Now cancelled.
June 16	<i>Kirkaldy M.A.C. C/L Rally</i> . Beveridge Park. All classes. Field entry 2s. 6d.
	<i>Rush Trophy Gala</i> . Newcastle Town Moor. Open G/R/P, 1/2A, Combat, Pre-entry 2s. 6d. per event to F. Harvey, 91 Lancefield Ave., St. Andrews, Newcastle-on-Tyne 6.
June 23	<i>Wharfedale C/L Rally</i> . Rufforth, York. 1/2A, F.A.I., B, T/R, Combat. Pre-entry to C. Secker, 33 Rookwood Road, Leeds 9.
June 30	<i>Irish C/L Nats</i> . Baldonnell. Details, M.G. Sheehy, 19, Culmore Road, Palerstown, Co. Durham.
	<i>South of Scotland Gala</i> . R.A.F. Abbotsinch. Open G/R/P, 1/2A, F.A.I., B T/R, Combat, R/C, Chuck Glider. Pre-entry 2s. 6d. W. Douglas, 3 Dudley Drive, Glasgow W.2.
	<i>Esher C/L Stunt event</i> . (Max. 15 entries). P. Wolfenden, 127 Claygate Lane, Hinchley Wood, Esher, Surrey.
July 14	<i>Bristol R/C M.A.C. Rally</i> . R.A.F. Hullavington. Multi Scale and Single F.A.I. Schedule. Pre-entry 5s. to W. Bellingier, 48 Stirlingale Road, Bath.
July 21	<i>Northern Heights Gala</i> . R.A.F. Halton. Open G/R/P, F.A.I. Power, (Queen Elizabeth Cup), 1/2A Power, Helicopter, R/C, Concours d'Elegance, Combat.
July 28	<i>Clywd Slope Soaring Meeting</i> . (No details). <i>Lincoln & Wigsley Club Rally</i> . Wigsley, Nr. Newark. Open, Rubber, Power, Glider, Open

	multi-channel R/C. Pre-entry 2s. 6d. to P. Wyatt, 1 Wharfedale Drive, Fosse Est., Lincoln. Field and Re-entry 3s. 6d.
August 4	<i>Scottish Gala</i> . R.A.F. Abbotsinch. Open G/R/P, T.R.A., B R/C, Mono control.
August 11	<i>Devon Rally</i> . Woodbury Common. G/R/P, Chuck Glider, S.M.A.E. Combat. 2s. 6d. per event.
August 25	<i>Croydon Gala</i> . Chobham Common. Open G/R/P, 1/2A Power, R/C Spot Landing, Entry 2s. 6d. <i>East Anglian Slope Soaring Rally</i> . Ivinghoe Beacon. All glider classes 2s. 6d. per event.
September 8	<i>Crawley Rally</i> . Great Bucksworth Farm (on A264 Road). Details to follow.
	<i>South Midland Area Rally</i> . Cranfield. All classes. Details to follow.
September 15	<i>Scottish Nationals</i> . R.N.A.S. Abbotsinch. Open G/R/P, 1/2A, F.A.I., B T/R, Combat, R/C, Scale. Pre-entry 5s. to W. Douglas, 3 Dudley Drive, Glasgow, W.2.

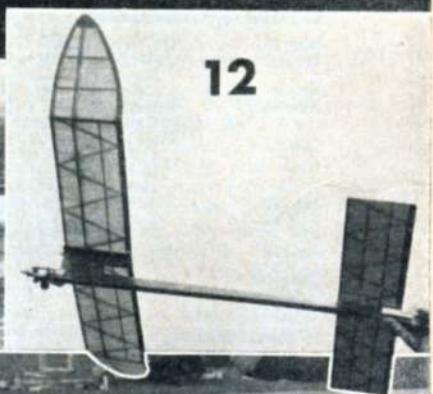
S.M.A.E. Events

May 19	Weston Cup (F.A.I. Rubber)	} Area venues
	S.M.A.E. Cup (F.A.I. Glider)	
	Power (U/R)	

2nd RADIO CONTROL TRIALS
INDOOR MEETINGS, R.A.F. Cardington.
June 15/16th July 20/21st. August 10/11th.
September 21/22nd. October 12/13th.



TEAM TRIALS. 1. Harry Brooks' new "Soraco" with underfin, Veco 45, 4th in R/C event. 2. Pat O'Shea is G. Copeman's helpmate with 40 in. resin finish racer for Eta 15. 3. P. Drewell's mono-cable speed model for new CCS has Ferrari cowl shape, has done 132 m.p.h., weighs 13 oz. 4. F. Warburton's latest is based on the "Linnet", very sleek. 5. G. Pike and long nose "Orion", first to fly full proportional in British contests (Space Control Mk. V). **AT TERN HILL.** 6. is C.L. Dornier 335 by J. Evans, Wrexham for PAW 2.5 and Frog 100, fully detailed, 41 in. span.



Round the RALLIES

HELD AT R.A.F. Tern Hill, the N.W. Area Easter Sunday/Monday "Open Meeting" was subjected to violent winds and heavy rain showers. Yet despite the elements, over 1,000 people passed through the gate on the second day.

Free flight events on Sunday were scantily supported and times disappointingly low. "Dusty" Miller of Cambridge returned three very creditable Power max's, and survived the ordeal with his Fox 15X model. R. Brownson's (Timperley) Chuck Glider gave him one flight of 1:40 and he fully earned his prize of an electric massager! Rubber was won by J. O'Donnell, flying two of his conventional "Maxie" designs, losing one and damaging the other.

In Multi Radio, A Thomas of Sutton Coldfield did well to amass 5,816 points but gave "up" during low inverted flight with the usual devastation. Single Channel entries had a tough battle to make anything of a flight due to the 30+ m.p.h. winds. Roy Lever's model was one of the few to make headway, and built up a substantial lead.

Combat was well supported and efficiently run. Eventual final between Bas. "September Warrior" Bumstead of Northwood, and Mike "Black Ghost" Kendrick of West Bromwich was very keenly fought and an example of clean flying with Bas. the clear victor. In Stunt, Dave Day of Wolves is back in full form, closely followed by R. Place of R.A.F. Hemswell. One model actually blew apart under stress of manoeuvres in the breeze! F.A.I. T/R was rather a shambles due to models crashing left right and centre. The final had to be reduced to heat length of 100 laps, and yet only one team finished!

The second day's weather was improved with only a strong breeze blowing. Glider was soon under way. D. Roche of Anglia managed 3 max's flying a K.K. Caprice. The trend shows a return to large lightweight. Martin Dilly of Croydon had a very fast model and looked like a winner of $\frac{1}{2}$ A Power from the start, interest is slowly creeping up in this tiddler class.

$\frac{1}{2}$ A T/R was very popular and the standard of flying high. It attracts the experts and has now lost the hopeful good intent toward the novice outlook with which the class started; but we hope to see some new names at the Nats.

At prizegiving, the Station Commander, Group Captain A. D. Panton, O.B.E., D.F.C., expressed surprise at the number of people in attendance, and at the standard of flying. He also hoped that the rally be held there in 1964. Excellent organisation on the larger field makes it even more popular than the "Woodford" meeting it now replaces.

Open Glider (67 entries).				
1. D. Roche	Anglia	3:00	3:00	3:00 9:00
2. P. McCandlish	Boscombe	3:00	2:50	3:00 8:50
3. J. Done	Wallasey	2:36	3:00	3:00 8:36
Chuck Glider (10 entries).				
1. R. Brownson	Timperley	0:45	1:40	0:29 2:54
2. R. Roberts	Bolton	0:36	0:37	1:35 2:48
Power (24 entries).				
1. D. Miller	Cambridge	3:00	3:00	3:00 9:00
2. V. Jays	Surbiton	3:00	2:30	1:55 7:25
3. T. Toolan	Whitefield	2:42	0:55	3:00 6:37
$\frac{1}{2}$A Power (19 entries).				
1. M. Dilly	Croydon	2:47	2:37	3:00 8:24
2. G. Stringwell	Rotherham	3:00	2:43	2:10 7:53
3. D. Law	Wigsey	1:39	2:58	2:38 7:15
4. D. Illsley	Lincoln	2:30	2:34	2:09 7:13
Rubber (11 entries).				
1. J. O'Donnell	Whitefield	3:00	2:53	2:32 8:25
2. N. Elliot	Croydon	2:15	3:00	2:54 8:09
Stunt (11 entries).				
1. D. Day	Wolves			940 pts.
2. R. Place	R.A.F. Hemswell			804 pts.
3. J. Granger	Walsall			732 pts.
$\frac{1}{2}$A T/R				
1. A. Dell	Feltham			8:57
2. Davy/Long	Wharfedale			9:44
3. Place/Burley	R.A.F. Hemswell			11:21
F.A.I. T/R				
1. Place/Burley	R.A.F. Hemswell			6:44
2. A. Laurie	Novocastria			50 laps
3. Crofts/Atkinson	Derby			1 lap
Combat				
1. B. Bumstead	Northwood			14 pts.
2. M. Kendrick	West Bromwich			1 pt.
3. R. Roome	Littleover			—
R/C Mono Control (9 entries).				
1. R. Lever	L.A.R.C.A.S.			1146 pts.
2. J. Dumble	Richmond			598 pts.
3. R. Scott	L.A.R.C.A.S.			222 pts.
R/C Multi Control (6 entries).				
1. A. Thomas	Sutton Coldfield			5816 pts.
2. B. Purslow	L.A.R.C.A.S.			4890 pts.

(Continued from page 300)

7. Dell/Balch $\frac{1}{2}$ A T/R winners and 28 $\frac{1}{2}$ in. Oliver Cub team racer. 8. Merco 35 Lark was 2nd in stunt for R. Place. 9. Semi-Me 109 uses Fox 35, endorsed by H. Dowbein of Horwich. 10. Combat finalists, Bumstead and Kendrick show contrasting designs. 11. Stunt winner Dave Day's new

ACCORDING TO A WIND METER, Barkston Heath was never calmer than 25 m.p.h. on April 21st, frequently gusting over 40 m.p.h. and with strong rain squalls to add to discomfort. So by all accounts this was a true team TRIALS for the C/L and R/C qualifiers to go (at own expense) to Genk, Belgium for the Internationals on August 21-25th.

When all was done and darkness fell, those events which did produce effective guidance to team selection clearly showed little change in either personnel or models from 1962—though performances are most definitely improved in the Team Race category. This attracted 20 entries, the majority of whom never finished or even reached their heats due to damage. Balch, Yeldham, Allen were all high potentials who crashed in practice. Much was expected of new engines and the results did not disappoint. Stalwart Dick Edmonds of High Wycombe broke all records using a new starting (and tank) technique with 4:19.4 to his and pilot Mick Smith's great credit. As Dick said—"everything went right", and the high aspect, Long Dog with new type ETA 15 never missed a beat. 52 laps per tank was the fashion of the day—some doing more and at 90-100 m.p.h. too. Second place Long/Davy team from Wharfedale fell back to using three year old "Tigress", after removing the U/C from their better model in practice, but even so—4:25 is no slouch. Third place Laurie/Wallace combination from Novocastria, the 1962 Nats winners, were not so fortunate with range in the heats as in practice. Their two-stop times with a 100 m.p.h. model make them the hares of the team.

F.A.I. speed started late after a long and wasted wait for the wind to drop. Several very neat starters made their first appearance, one having a chrome plated stand! Mono-cable was considered decidedly unsafe in the conditions. It was a case of playing safe with second string models on 2 lines. Top man G. Copeman of Hayes turned 119 m.p.h. used his own tuned Super Tigre G.20V, while N. Butcher of Croydon made 117.5 m.p.h. using a C.C.S. 2.5, as did P. Drewell of Sidcup who has an "off" needle setting for 94.3 m.p.h. These were the only flights recorded out of 8 entries and possible 24 flights—such was the weather!

As if to show how, the youthful exuberance of the Combat circles were an object lesson as Northwood M.A.C. dealt with 20 entries, each having a maximum of 2 flights. B. Bumstead of Northwood, flying his very smooth Rivers 2.5 powered "September Warrior" was surprisingly not among the finalists. With a 2.5cc limit, models were smaller, and perhaps faster. Ray Meekins used a stock Yeoman Scorchers with Oliver Tiger. Pete Tribe and Pete Perry of Northwood were each flying their latest "Razor Blades".

Eventual winner, S. Holland of Northwood, flew his very smooth Oliver powered conventional model and also a "Blade" and in second place, Pete Freebrey used a stock "wing"—saving his Chaos for better days. Darkness intervened to prevent a decision on third place so Mike Kendrick and Peter Perry, have to bide their time till a later date for a deciding bout.

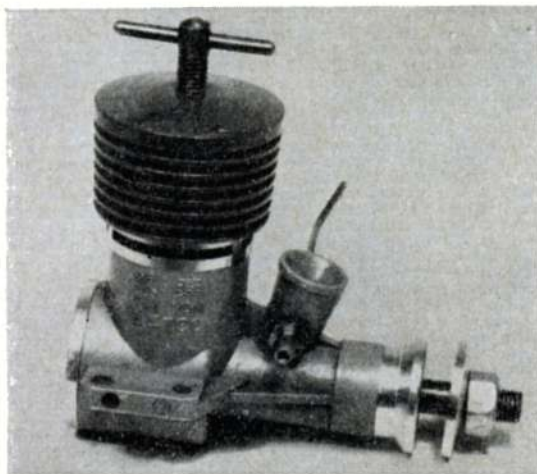
Stunt simply did not take place! Fine new models by Dave Day, Ken Day and Frank Warburton were certainly calling for high design and workmanship markings but the weather and confusion over entries called for staggering this section back to the Nats. The Stunt men will then be selected on their "Gold" Trophy performance.

Team Race				
1. Edmonds/Smith	High Wycombe	4:36.6	4:52.6	4:19.4
2. Long/Davy	Wharfedale	4:25	4:47.2	4:51.2
3. Laurie/Wallace	Novocastria	4:37	4:56	5:00
4. Northage/Humphries	Wharfedale	5:32.2	5:49	5:1.5
5. G. Copeman	Hayes	5:11.4	—	—
Speed				
1. G. Copeman	Hayes			119 m.p.h.
2. N. Butcher	Croydon			117.5 m.p.h.
3. P. Drewell	Sidcup			94.3 m.p.h.
Combat				
1. S. Holland	Northwood			2. P. Freebrey Northwood
				3. Kendrick or Perry.

At the other end of the field, 16 radio flyers battled with the elements, including Geoffrey Pike with the first proportional (Space Control) outfit yet seen in British competition. It was a case of experience coming to the top and the second trials of May 19th will really see a battle between first four places to find the odd man out. Significant factor was that apart from Chris Olsen flying all R.E.P. gear with Musclemite servos, every competitor used American radio. Many motors either cut out or ran out of fuel causing a loss of points, including Chris Olsen and Harry Brooks, as the wind called for a longer flight pattern with more ground covered than normal. The leaders displayed extreme confidence in trying conditions and the reliability of equipment emphasises how the competent multi channel flyer can cope with anything—even a rain squall in the case of appropriately named Peter Waters, up from Port Talbot.

Multi R/C				
1. F. Van den Bergh	1715.5	1830.5	Total	3546
2. E. Johnson	Bristol	1491.5	1666.6	3158
3. C. Olsen	C.M.	1472.5	1675.5	3148
4. H. Brooks	S.M.F.	1467.5	1675	3142.5

Iroquois IV has new line in appearance, seen at Barkston. 12. G. Stringwells' 2nd place $\frac{1}{2}$ A Cox TD.049 model from Rotherham. 13. Place/Burley team won FAI racing with 46 in. Nova and Eta 15. 14. One of many big 'uns, J. Parrott's 96 in. glider prior to launch. 15. Ken Wallasey juniors, McNamee at left made the glider for their first big contest



MOTOR MART

Left, Chinese "Silver Swallow" Yin Yan 2.47 diesel has red anodised head, manufactured to good standards and selling cheaply in the Far East

RETURNING FROM a spell of duty in the Far East, Lt. Cmdr. A. D. Briggs R.N., was good enough to loan us his most interesting purchase made in Hong Kong (from an AEROMODELLER advertiser too, we might note). Costing a mere 31s. 3d. (no Tax or Duty out there!), the Chinese *Silver Swallow* Yin Yan 2.47 diesel is a product of the Teh Ming sport goods factory in Shanghai. Produced to a good standard, it has most attractive appearance, although we found this particular example difficult to start. On a 10 by 6 in. it turned 7,200 r.p.m., on an 8 by 4 in. 12,400 r.p.m., which are not too bad, especially when one reflects on the price. Bore and stroke are standard accepted 15 by 14 mm. and well written, if amusing

instructions accompany the engine. We particularly like "Flip the propeller . . . and at the same time, turn the pressure adjusting rod with your left hand until you hear an explosive like sound 'PA PA' bursting out from the engine." Another personally imported and interesting engine is the K & B 35 series 63, which Frank Warburton has been trying out. Ports are altered and timing modified for stunt on this twin ball race quality engine, which now displays a new style intake. About 1½ ozs. heavier than its competitors, Frank finds the K & B easy starting, powerful and one of the smoothest of the 35's. Incidentally, the new type K & B idle bar plug is also proving a useful addition, standing up to full power and often improving performance.

Duke Fox has now announced the contest version of his .049 as an F.A.I. special and first hand accounts report high performance, though introduction is likely to be delayed following discovery of an error in cylinder production. Over 250 different cylinder and piston experiments have been conducted since last October on this little engine. The new Fox 59 R/C has a rotating upper spraybar which also act as a constrictor and a smaller, lower, needle valve to regulate fuel supply. The 59 has been re-designed internally and is to be sold as a stunt engine without throttle.

Additionally, Fox is working on a new 29X, the prototype of which is illustrated for the first time here, and an experimental 15 which has been clocked at 140.2 m.p.h. by Fox employee, Clyde Martin.

On the West Coast, Dynamic Models have announced their 1.5 c.c. Bulldog design by Hi Johnson with 498 ins. bore, 1475 stroke, giving a cu. in. displacement of .0914. It will be available in standard and radio versions, having 360 deg. porting and a lightweight Meehanite piston with fully enclosed gudgeon

Top left, Dynamic Models "Bulldog" .09 engines are 1.5 c.c., incorporate a fitted Johnson throttle and exhaust control, lightweight piston and in this case, with Auto-Pitch prop. Bottom left, is new Fox 59 R/C with twin needle valves. Top right, latest K & B 35 series 63 with new type intake for stunt. Centre, is John Brodbeck's crowd stopping fake with two additional cylinders, an extra carb. and four needles! Attracted attention at Chicago Trade Fair. Bottom right, Duke Fox's latest 29X revealed with two ball races, steel rear rotor, low set intake and remote needle, promises great performance

pin. The radio version carries a Johnson *AutoMix* throttle and specially designed exhaust restrictor. A pressure tapping is provided in the rear cover for this over-square engine, to sell at \$9.95 and \$14.95 according to version.

K & B Mfg. Corp. have now announced their new "economy" Stallion series, opening with the 049 and 35 sizes to sell at \$3.95 and \$9.95 respectively. Maintaining the traditional smart external appearance of K & B engines, they are each front rotary valve and the 049 comes complete with large capacity fuel tank, which also forms a radial mount.

John Brodbeck showed his flair for humour when he displayed a fake triple cylinder, double carburettor quadrule needle valve engine at the Chicago Fair. It proved to be a crowd stopper and not too many viewers are still sure that the triple header was really a dummy!

Rumour has it that Cox has a new motor for eventual release, but no information is forthcoming. Latest news from Cox Center is of the new series *Hi-Thrust* moulded props, each of which has been specially designed to accept the full power output of the Cox range of engines. Sold in bubble packaged pairs, these are all two blade props ranging from 3 by 1½ in. for the .010 to 8 by 4 in. for the 15.





The Mayor of Bridlington, Councillor A. R. Slade, inspecting models of the Bridlington Model Aircraft Club during a week long exhibition by the club members in connection with the annual Youth Festival of Art at Bridlington Town Hall. Members Malcolm Carr and John Ingle explain the aircraft to the Mayor

S.M.A.B. contest results

April 7th
Conditions. *Very windy, gusting 30 m.p.h.*
London Area.

K.M.A.A. A/2 Glider (113 flew).

1. P. Manville ... Bournemouth ...	13:35
2. M. Doyle ... Belfast ...	11:49
3. J. Turner ... Sheffield S.A. ...	11:15
4. J. Baguley ... Hayes ...	11:12
5. E. Davies ... Wallasey ...	11:02
6. G. W. Dallimer Stevenage ...	10:40

HALIFAX TROPHY F.A.I. Power (12 flew)

1. M. Green ... Foresters ...	12:39
2. A. H. Percival ... Grantham ...	11:45
3. J. O'Donnell ... Whitefield ...	10:49
4. G. Fuller ... St. Albans ...	10:36
5. G. Head ... Portsmouth ...	9:09
6. S. Savini ... Wallasey ...	7:15

U/R RUBBER (14 flew)

1. R. Elliott ... Portsmouth ...	9:00
	+ 2:18
2. K. Brown ... Portsmouth ...	8:39
3. J. O'Donnell ... Whitefield ...	8:21
4. T. B. Chambers Teeside ...	7:03
5. T. Stoker ... Baildon ...	6:48
6. D. White ... York ...	6:03

HIGH WINDS AND poor weather marred the first of the year's contests more than usually for our Mad March and April. Cancellation of the annual High Wycombe control line rally, due to the sale of R.A.F. Booker, and the noise problem at other sites, adds to a gloomy start to the season.

From the NORTHERN Area comes news of the Wharfedale M.A.C. C/L rally for all classes of T/R and combat, strictly to S.M.A.E. rules, at Rufforth on June 23rd. Pre-entry is essential (see contest calendar for further details). New members are invited to club meetings 1st and 3rd Fridays of each month at Salem Schoolrooms, Burley-in-Wharfedale.

A dropping membership seems to be the main problem for Baildon M.F.C. who are running a publicity campaign in the Leeds and Bradford areas to remedy this. A film show was given to celebrate the move to the British Legion Clubrooms in Norfolk Street. Prospective members should contact J. Mosely, 12, The Avenue, Scholes. Their George Cameron has been making fuselages for open rubber jobs in jigs—the only snag being that it takes longer to remove the work from the jig than it does to build the fuselage!

From the NORTH WESTERN Area we hear of some new venues. The first is on moorland by the "Cat and Fiddle" on the road above Macclesfield, location is the junction of the A.54 and A.537. The second is Sleaf airfield, two miles south west of Wem, Salop. It lies within the diamond formation of roads bounded by the B.4397, B.5063 A.5113 (from Wem), and the A.528.

The Novocastria M.A.S. in the NORTH EAST have been getting models ready for the contests and send news of the Rush Gala which is to be held at the Newcastle Town Moor on June 16th.

Bridlington M.A.C. announce that they have the use of R.A.F. Carnaby for T/R events and practice—lucky them!

The EAST ANGLIAN Area flying fields had members of Norwich M.F.C. competing for the F.A.I. free flight "Winter Cup", which helps to keep the winter flying standard up. Eventual winner was M. Woodhouse who flew in A/2, Wakefield, and cold weather.

Silencers are once again in the news this time with the MIDLAND Area at Small Heath M.F.C. where a demonstration to the City Councils Parks Dept. has been arranged by the radio and free flight power boys at Sutton Park. The control-line section are in the middle of making arrangements for various local flying displays.

Mixed fortunes have started the season for the Foresters M.F.C. Geoffrey Pike just made the "top ten" at the first R/C trials by placing 9th. The very smooth flight characteristics of the proportional Space Control equipment were rather marred by the gusty wind. The model was an Orion with the wing 2 in. further back. 17-year-old George Bradley after a promising first flight, suffered a premature engine failure on the second. Doug Bolton is continuing development on his time division multiplex R/C equipment, which is a system for giving seven simultaneous on-off channels. The object of this is to fly as many as seven single channel models together from one transmitter! So far only three have been flown together, the biggest hazard being the reaction of the designer to switch the transmitter off when the model controlled by himself has landed!

Sutton Coldfield R/C rally to be held on June 9th at R.A.F. Church Lawford, Nr. Rugby has regrettably had to be cancelled. As the committee could not inspect the site until April it was not known

until late April that the whole area apart from the runways had been ploughed over thereby rendering it totally unsuitable.

Combat seems to be the main interest for Sutton-in-Ashfield M.F.C. who now have 25 members, mainly juniors. Other main interests are C/L scale and stunt with two *Noblers*, two *Mustangs*, one *Ballerina* and five *Thunderbirds*. An "Open to Visitors" picnic day, is being planned for the summer months. Winners of their monthly combat comp were 1st T. Somerfield, 2nd J. Needham, 3rd A. Geeson—all junior members.

Radio control modellers in the Leicester area interested in club activity, may care to join in the activities of the new L.A.R.K.S. club, the Leicester Area Radio Kontrol Society. This is a strictly "No class distinction" R/C club. Those with the simplest single channel gear are as welcome as those with the most complex equipment. There is no limit to membership, which at the moment stands at 42. Only three members at present fly single channel, but for the beginner this sounds like an exceptional club where one could learn from the experts. Regular flying takes place at Market Harborough aerodrome one evening and Sundays. Prospective members should contact Geoff Franklin, 111 Jarrom St., Leicester.

In the EAST MIDLAND Area, Lincoln A.C. wish to announce that their new headquarters at the Black Swan Inn have proved most successful, also their flying fields are available again for the summer season. They would welcome new members. All enquiries to the Secretary; E. Kent, 9, Scarle Close, Hyekeham Road, Lincoln.

To finish the indoor winter programme, the SOUTH MIDLAND Area, Luton & D.M.A.S. held a *Concours d'Elegance* which was very well supported. S. A. Miller displayed a slope soarer with proportional rudder which was of special interest. The combat section is growing with 9 entries for the Nats. This year's Slope Soaring Rally has been fixed for the 22nd September after crops have been cleared.

From Long Crendon D.M.F.C. we hear activities are under way again after being dormant for the last few months. Pete Richardson intends to enter F.A.I. T/R this season with a home design racer for a tuned Rivers 2.5. Brian Lawrence has been busy building a *Galahad*, *Matador* and *Jackdaw* for 3 channel gear over the winter months.

From the Northampton news-sheet we learn of a whole string of combat models, rat-racers and free fighters being built for this year's rallies. Their first scramble of the year was held in a light breeze and won by Noel Parry with a time of 4 min. 52 secs. John Harris was 2nd. Hints and Tips they offer are both for hinges. Before doping your new-model, rub wax crayon or a candle on the hinges to prevent them becoming hard and causing stiff controls. For free flight fans, fit your auto-rudder square up to the rear of the fin, then cement a strip of tape down the side to which the rudder will turn in action. The result is a neat, strong job with the rudder readily turning the required way.

Will Pete Giggie of Stevenage M.F.C. start a new trend? He has a T.D. 049 powered F.A.I. model, with all sheet flying surfaces 62 in. span and 5 in. chord.

First news from the LONDON Area this month is from Wanstead M.A.C., steadily expanding with an influx of new members from the Dagenham, Tottenham and Laindon Clubs. Annual Wanstead Rat-Race, A & B Combat rally will be held at Wanstead Flats beside Blake Hall Road on September 29th. Pre-entry is 2s. 6d. to J. Franklin, 82 Grove Hill, South Woodford, London, E.18 (state Senior or Junior). A display team has been formed for local shows, with first booking at the Dagenham Cable Works on June 29th. Club meetings are on

Fridays at Highland School, Wanstead Park Road, Ilford and interested modellers are always welcome.

Raynes Park M.A.C. have been flying Combat during the winter months, using Oliver powered *Razor Blades*, and P.A.W. 19D powered club designs. Membership is on the increase and anyone interested should phone K. Hallaway LIB 3876 for details.

Dagenham M.A.C. has been reformed and is now strictly Radio Control and Free Flight only. Club meetings are held at Heath Park Community Hall every Monday evening from 7.45 p.m. Unattached keen and active modellers should contact the secretary Mr. D. Hughes, 22 Aberdour Road, Goodmayes, Ilford, Essex.

From the **Hayes & D.M.A.C.** we hear that their A.G.M. took place in March. The club championships based on placings in national comps in 1962 revealed C/L men filling the top four places, for the first time ever. Alan Dell headed the list for his 1/4 T/R wins, the next three all being speed men. Their C/L circuit has proved very successful, and it is hoped that many more comps. will be held there in the future. The circuit is available for the use of any London Control line modeller, who obtains a Hayes council permit, cost 12s. 6d. (including insurance), from John Taylor, 2, Long Lane, Hillingdon, Middlesex. The permit lasts for 12 months, from April 1st. If the Hayes council can be shown that one circle is going to be very busy, they will be in a strong position to have another laid at the same site.

The **Mill Hill & D.M.A.C.** also held the A.G.M. in March. Three control-line displays have been booked all in June. The first is the West Hendon Hospital Fete on the 15th, then the London Gliding Club open flying display at Dunstable and lastly the Finchley Carnival. The flying will be done with Combat, Stunt, and Scale models. Control-line flying is still the main interest but Radio is becoming very popular. New members would be welcome at their flying ground on Cophall playing fields, Tuesday evenings at 8.00 p.m. for our summer meetings.

Blackheath M.F.C. have recently moved to new premises at Kane Hall, Perry Hill, S.E.23. Anybody interested in joining should contact:— P. Crossley, 11 Broadfield Road, Catford, S.E.6.

During the poor weather **Eastcote R/C & F/F Club** have been concentrating on indoor activities. First with an auction to raise money (everything from a toothbrush without bristles, to a bargain bundle of plans), then three very interesting films on the American rocket and aircraft industry, followed by a talk from Pete Holland, editor of R.C.M. & E. Membership stands at 35 and anyone interested in joining will be very welcome at Potter Street, Secondary Modern School, Northwood, Telephone Pinner 4005. Club meets alternate Fridays.

Richmond & D.M.A.C. held a scale R.T.P. contest. Points were awarded for finish, detail, construction, take-off, lappage and landing. The event was organised and judged by John Dumble, results as follows:—

1st	Melville Lyne	S.E.5.	26 points
2nd	Alan Mills	Spitfire	25 points
3rd	Mike King	Wittman Buster	12 points

APPEAL

All clubs in the London Area, whether affiliated to the S.M.A.E. or not are requested to send their address to K. Lindsey, 53 Guilford Ave., Surbiton. The P.R.O. will then be able to send them all London Area news. Additionally, for many years individual club, displays, both static and flying have been arranged at a wide variety of locations. They show the hobby to the public and encourage people to take up aeromodelling. As audiences increase in size it becomes evident that a big crowd wants a highly organised, very varied display. They are considering combining the resources of four or more clubs per display. If put on a London Area basis so that the Area could call on the services of all London Clubs, it should be possible to show the hobby to hundreds of thousands of spectators per year, especially if at events such as football matches. Many London clubs have already pledged their support to the P.R.O. in this project but a lot more help will be needed from the end of the 1963 season onwards. Those with experience are asked to contact the P.R.O.

In the **SOUTHERN Area**, **Southampton M.A.C.** went to Beaulieu for the Southern Area F/F meeting and Bill Bessent found strange results with his *Inchworm*, due to a thorough soaking after a lake "landing". 1/4 Rat Racing is the latest club craze, the pilots, pit crews, and spectators all agree it is great fun. Most of the models are crash proof—almost!

The **Vickers Armstrong (Aircraft) Ltd. Model Club** are running their annual Sports Day and Model Exhibition at Kings Head Lane, Byfleet, Surrey. The model section committee extend an invitation to all model makers to attend and enjoy themselves, and to bring their models with them, for either competition or loan. There will be classes for Aircraft (Flying or Non Flying), Cars, Railways, Yachts, Power Boats and General Engineering with prizes in all sections. Models should arrive during Friday evening June 28th, and Saturday morning up to 11 a.m. Entry forms and further information from Hon. Sec. and Exhibition Organiser, Mr. M. A. Shepherd, 40, Chertsey Road, Byfleet, Surrey.

The **SOUTH WESTERN Area**, **Torbay M.A.C.** has now been active for over a year. Anyone interested in joining should contact the Hon Sec. Mr. A. Moore, 3 Tamar Ave., Torquay, Devon.

The April edition of the **SOUTH EASTERN Area** newsletter *Seadog* tells of high winds that damped the Wilmington slope soaring meeting. J. Hasen of Worthing made a number of brave attempts to get away. Bill Coomber's large model with a *Mini-Reptone* showed

Army Aeromodellers at Dhekelia have an active club which hopes one day to link up with fellow modellers in Cyprus for a "Forces Nationals". The R.A.F. has a club at Akrotiri. Much of the modelling is sport flying as seen in this picture of a *Frog 45* in the hands of an Army enthusiast

promise; but like a number of others ended up with considerable damage. In the circumstances John Whittaker's 55 second flight was a feat of button pressing. In the "open" event best time of the day 1:35 was with Norman Couling's 5 year old *Seraph*, using extra fin area. **Worthing Bald Eagles** were among those who left dents in the hill!

Cosmo A.C. recently held their first indoor comp. of the year, using chuck gliders and rubber powered microfilm models. The chuck glider event proved the most popular. R. Etherton was first in microfilm. In a Stunt competition, N. Kipps came out on top flying a *Frog 3.5 c.c.* powered *Peacemaker*. Flying was rather more interesting than usual with a number of juniors having a "go."

First meeting of the year held in the South Eastern Area was at Ashdown Forest where **Brighton D.M.A.C.** concentrated on the K.M.A.A. cup which counts for Plugge Cup points. Junior member Christopher Voss, topped the Area's results with 9:45 achieved in only four flights. His model being lost in very windy conditions. John West and Ken Winstanley came second, and third respectively—Well done Chris—beating the old hands.

From the **WESTERN Area Cotswood R/C Society** will be organising a spot landing competition on May 19th at Blakehill Farm, to support the Area events.

The **Bristol R/C M.A.C.** report that the winter snows did not stop John Marden and Mike Barnett, who fitted skis to their *Orions*, and had a great time. One of the first flights by Cyril Needham ended inside his car, the model passing through a shut window to get there! First twin engine model in the club nears completion. It has 12-channel Superhet and is by Roy Norris. All other information on this aircraft is "classified" until flight tests are completed (hope it's less of a "Bomb" than the P-51, Roy). Their second Annual Rally will be held at R.A.F. Hullavington on Sunday, July 14th.

In **SCOTLAND** the series of winter competitions at R.N.A.S. Abbotinch came to an end in April when winds marred performances, but several flights were recorded for the Allison, Findlayson and Montgomery trophies. The March event proved more enjoyable, and was well supported. Here, under the skillful organisation of **Glasgow M.A.C.**, U. Wannop of **Edinburgh M.A.C.** won rubber with 8:45, E. Black of **Glasgow S.A.** glider with 7:19 and W. Douglas of **Glasgow M.A.C.** power with 8:12.

Final scores in the Area T/R league showed a close battle between **Glasgow Hornets** and **Prestwick** clubs, the former winning with 61 points to **Prestwick's** 40. Individual honours go to K. Johnston of **Glasgow Hornets** in 1/4 A, J. Agnew of **Glasgow Hornets** in F.A.I., and D. Mitchell of **Prestwick** in class B.

Irvine & D.M.A.C. now have a total of 36 members. A recent count of radio models showed 15 flyable with 4 under construction. They range from single to 8 channel jobs, including a scale *Sopwith Tabloid*. The rest are high and shoulder wing types.

Across the channel comes news from the **JERSEY M.C.** that they have obtained a new flying site on an ex. War Office shooting range. Clearing, and levelling is now in progress. The main interest is in R/C following a group visit to Kenley last year. Four multi's, a *Gee-String*, *Cosmic Wind*, *Stormer* and O/D are ready to fly with two *Jackdaws* on the boards. Altogether they will have 19 radio models this season, so with the possibility of long waits between flights, Control line and free flight may yet make a comeback.

Any modellers over there on holiday are welcome at the flying site with or without models.

The **Model Aeronautics Council of IRELAND** are busy organising contests, now their insurance problem has been sorted out. The C/L Nats will be held at Baldonell Airfield on June 30th, the F/F Nats will be held at Curragh Co. Kildare later on. The M.A.C.I. offer a belated apology to all those inconvenienced last year due to a late cancellation and assure us that preparations are well in hand this year.

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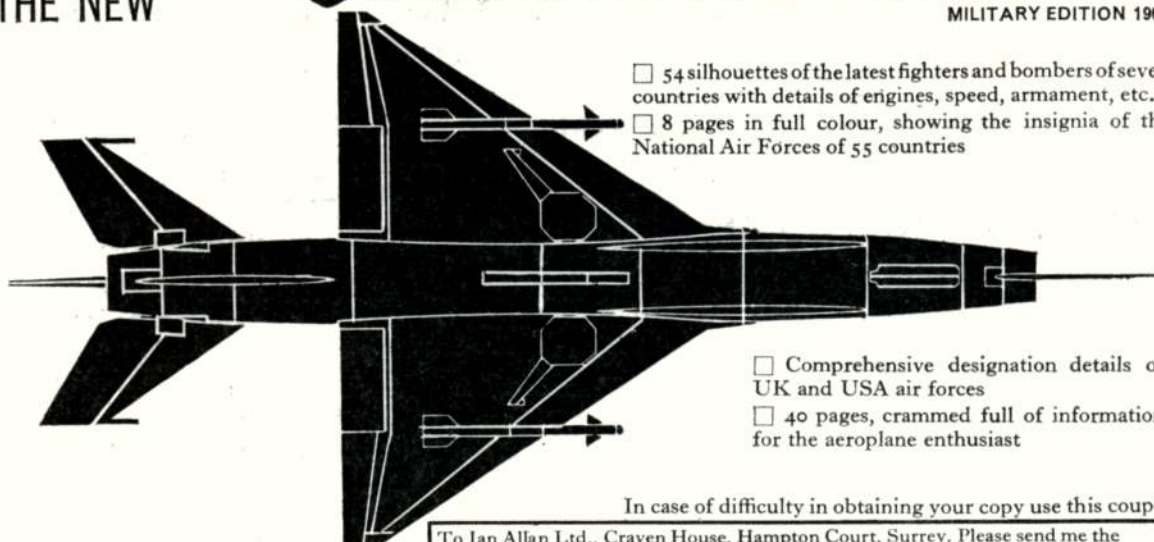
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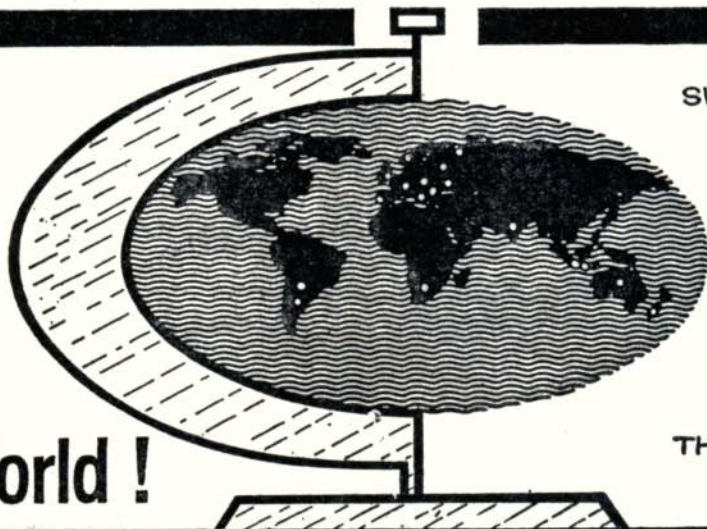
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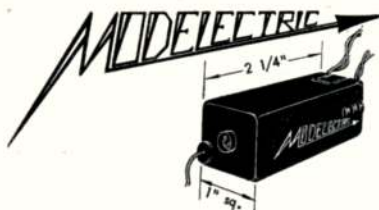
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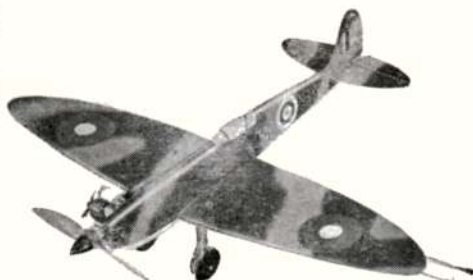
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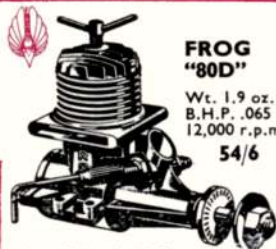


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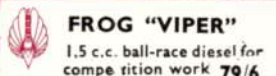
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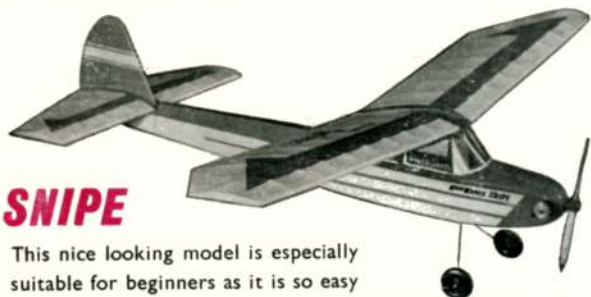
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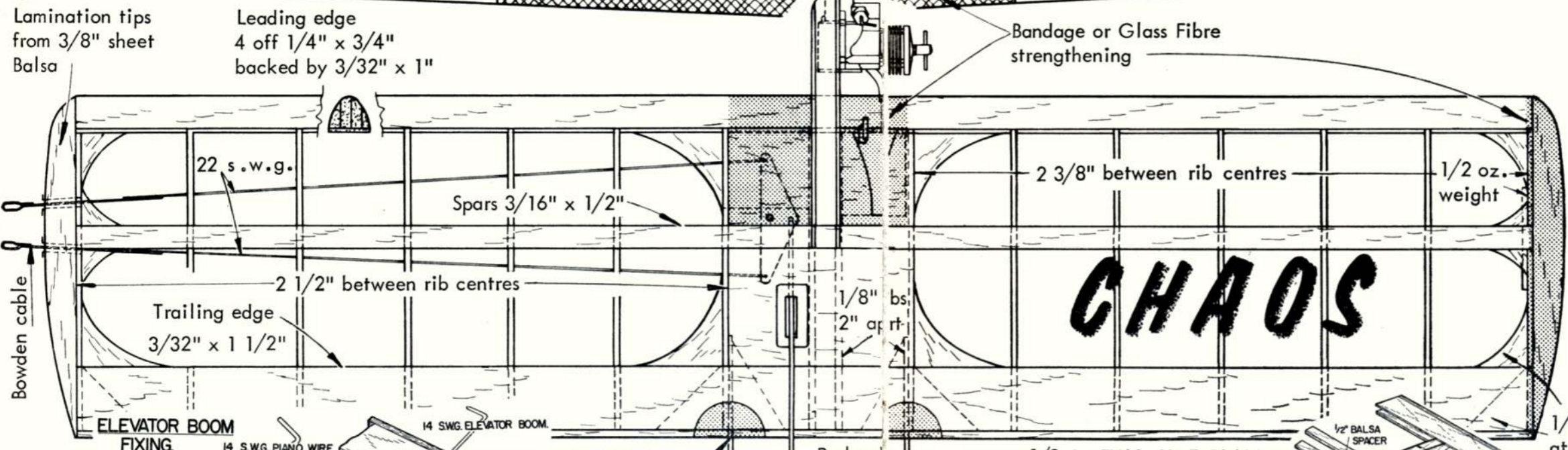
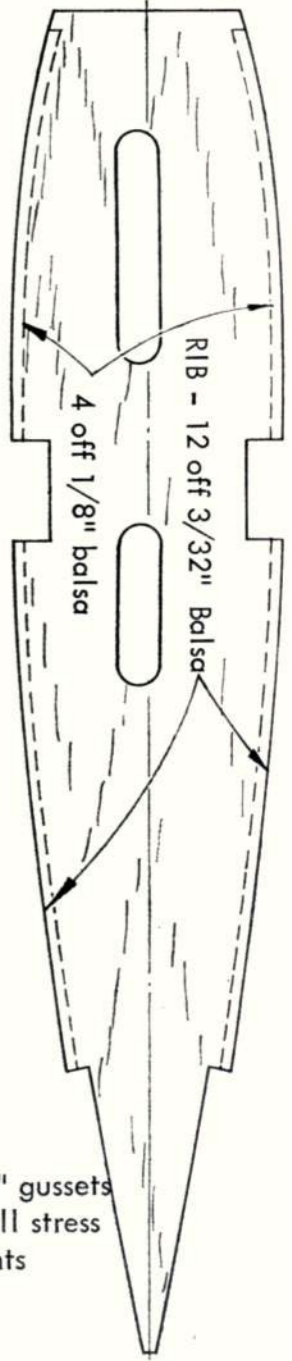
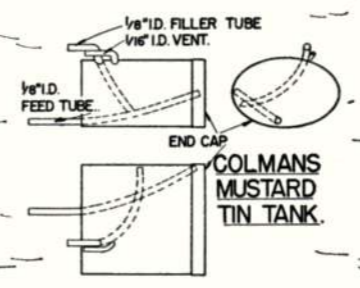
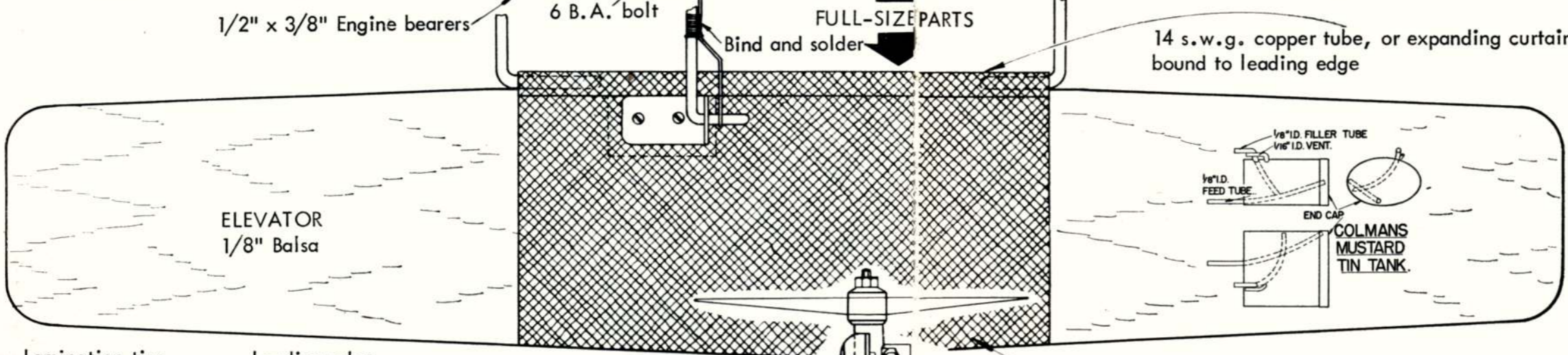
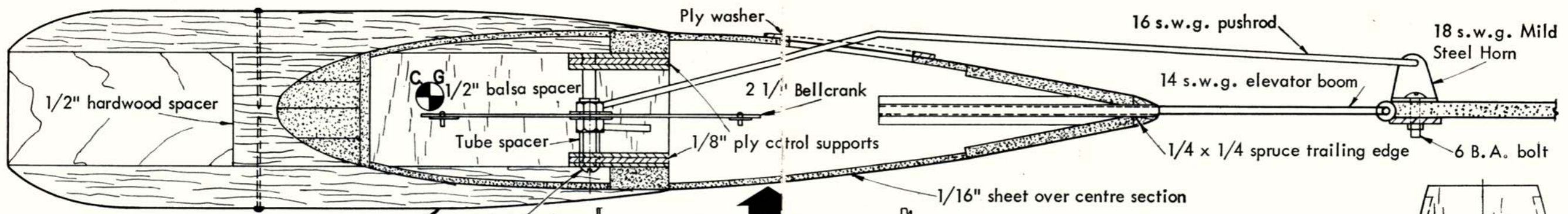
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