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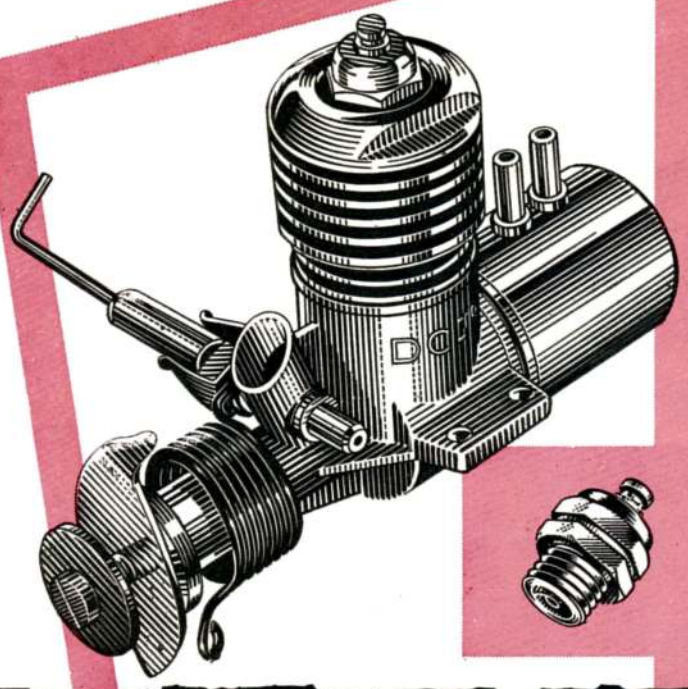

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QUICKSTART EG 98 GLOWPLUG
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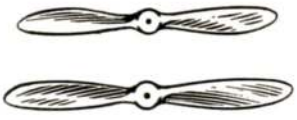
4/2

Get out and fly with a QUICKSTART BANTAM

. . . and these *QUICKSTART* accessories



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AERO MODELLER

MAP HOBBY MAGAZINE

other modelling angles . . .

Constructors of home built equipment will find plenty of interesting material in September issue of *Radio Control Models & Electronics*; a multi-filter receiver represents an innovation in our constructional offerings, and is intended for use with relayless servos. This means the elimination of all troublesome relay contacts. Simple Proportional Servos are clearly explained. Some facts and figures show how much power is needed from a servo, and a spot of "Tugboat Trickery" in a model featured on the cover shows just how much can be done with simple single channel transmitters and receivers. The Latest News from overseas, "*Pic. Page*", "*Gadgets & Gimmickry*" combine to make an interesting issue for aircraft and boat modellers.

One of *Model Maker & Model Cars*' most popular contributors, Norman A. Ough, makes a welcome return to September issue with the first of two articles on his magnificent dry dock model, photographs of which have deceived high-ranking Naval Officers. This first part includes drawings and brief notes on H.M.S. "*Dorsetshire*", the ship in the dock. Always sure of a warm welcome are drawings of cars, and in this issue appear drawings of the current FI Cooper G.P. car and the famous old Vauxhall Prince Henry, which carried many a staff officer in the 1914-18 war. Other drawings include two merchant ships and a floating dock.
In plans there is a new boat for Hydrojet propulsion, and an article on a reversing mechanism for water-jet units is also a feature. New electric car equipment, charging and handling Deac accumulators, making glass-fibre yacht hulls, a remote control system for electric boats, more on steam engine building, etc.

September 1963
VOLUME XXVIII No. 332

contents

cover

Flying Officer G. R. Denny of R.A.F. Cranwell made this Bell P-63 King Cobra from an American Sterling kit. The model weighs 10 lbs. and has a McCoy 60 engine which gives it a very high speed, although with excellent control, using a Merco 49 throttle. Radio equipment is Johnson 10 channel with Bonner Duramite Servos fitted with Johnson amplifiers.

next month . . .

World Championship report number—with complete pictorial review of the triple free flight championships at Wiener-Neustadt, Austria, *plus ! !* a special free extra insert in every copy covering hot last moment news before we go to press of the World Radio Championships held at Genk, Belgium and the Criterium of Aces control-line International. Sport flyers need not be disappointed for we shall have full size plan for "*Hexy*", a remarkable all sheet flyer of positively unique apperance that you can make in an evening, and fly all next day to your heart's content on small engines. Novices will like Betty Bell's "*Floridian*" A/2 glider which she flew in the 1961 World Championships. With a tremendous list of American contest successes, it is very easy to build A/2, is just the type of model British enthusiasts like to build, especially for local events. George Cox the renowned fine detail and spot-on accuracy draftsman returns with another famous biplane, the Stagger-wing *Beechcraft D-17* complete with sketch page, this is a result of a tremendous amount of research. The second part of retractable undercarriages will show one as fitted to a model *Canberra*. Rally reports and all the regular features add to another great issue out on September 20th. We suggest you reserve your copy of this bumper issue *now*.

Editorial and Advertisement offices

38 Clarendon Road, Watford, Herts

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

CORRESPONDENCE anticipating a reply to addresses within the United Kingdom must be accompanied by a stamped and self-addressed envelope. News reports should be submitted to arrive not later than the 15th of each month for publication in the next immediate issue. Photographs should be accompanied by negatives where possible and can only be accepted for use on an exclusive basis for British copyright.

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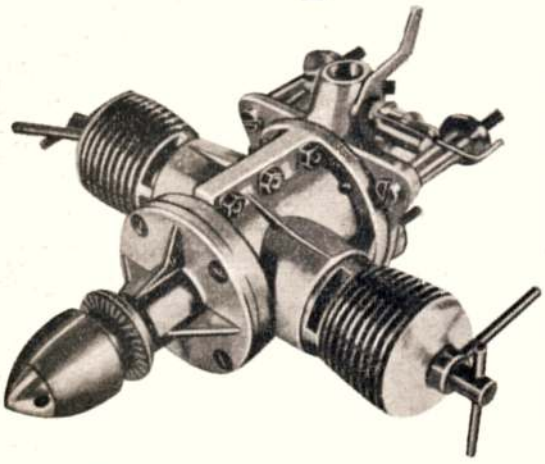

A SPECIAL THANK YOU!

To modellers everywhere who have borne patiently with us during the past few months whilst we have been testing the market strength. We are now more than ever confident in the great future of robbe and telecont. We already stock a good selection of products and these are being stepped up enormously in both quantity and variety, so that we look forward to supplying you every need quickly and efficiently!

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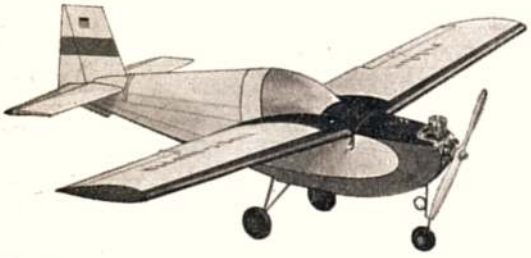

TIPSY NIPPER Popular Belgian light aircraft is a "must" for the radio control scale modeller. This simple robust design combining latest plastic and conventional techniques is just the thing for the "middle brow" modeller in search of something different but within the ordinary man's skill to build and fly.

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

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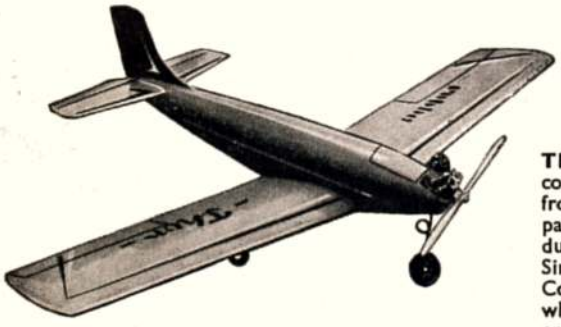

THOR Super stunting low wing radio control model that can be flown on anything from three-channel upwards. Goes through the pattern easily, and within weeks of its introduction was winning contests for its builders. Simple stout construction for speed building. Comprehensive kit of parts, including rubber wheels and other accessories. Suitable for engines 5 to 8 c.c. Span 61½ ins., length 44 ins., should average about 46 ozs, bare.

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Example: to find the weight of $\frac{3}{16}$ in. sq. strip in 10 lb/cu.ft. Balsa. Second column indicates that the table gives the weight of 2 strips. Corresponding weight in 10 lb/cu.ft. column is .234 ounces. Therefore weight of 1 length is .234/2 — .117 ounces. To find the *number of strips per ounce*, take the *reciprocal* of the table figure and *multiply* by the number of strips shown in the second column.

Example: to find the number of $\frac{3}{32}$ x $\frac{3}{16}$ strips per ounce at 8 lb/cu.ft. density. Table weight is .188. The reciprocal of this is 5.32 Multiply by number of strips in column 2 = 4 x 5.32 = 21.28 strips per ounce.

SIZE 36" X	No. OF STRIPS	BALSA DENSITY POUNDS PER CUBIC FOOT 6	8	10	12	14	16
1/16" x 1/16"	16	·125	·167	·208	·250	·292	·333
3/32"	16	·188	·250	·312	·375	·438	·500
1/8"	8	·125	·167	·208	·250	·292	·333
3/16"	8	·188	·250	·312	·375	·438	·500
1/4"	4	·125	·167	·208	·250	·292	·333
3/8"	4	·188	·250	·312	·375	·438	·500
1/2"	2	·125	·167	·208	·250	·292	·333
3/32" x 3/32"	8	·141	·188	·234	·281	·328	·375
1/8"	8	·188	·250	·312	·375	·438	·500
3/16"	4	·141	·188	·234	·281	·328	·375
1/4"	4	·188	·250	·312	·375	·438	·500
3/8"	2	·141	·188	·234	·281	·328	·375
1/2"	2	·188	·250	·312	·375	·438	·500
1/8" x 1/8"	4	·125	·167	·208	·250	·292	·333
3/16"	4	·188	·250	·312	·375	·438	·500
1/4"	4	·250	·333	·416	·500	·583	·667
3/8"	2	·188	·250	·312	·375	·438	·500
1/2"	1	·125	·167	·208	·250	·292	·333
3/16" x 3/16"	2	·141	·188	·234	·281	·328	·375
1/4"	2	·188	·250	·312	·375	·438	·500
3/8"	2	·281	·375	·469	·563	·656	·750
1/2"	1	·188	·250	·312	·375	·438	·500
3/4"	1	·281	·375	·469	·563	·656	·750
1"	1	·375	·500	·625	·750	·876	1·000
1/4" x 1/4"	1	·125	·167	·208	·250	·292	·333
3/8"	1	·188	·250	·312	·375	·438	·500
1/2"	1	·250	·333	·416	·500	·583	·667
3/4"	1	·375	·500	·625	·750	·876	1·000
1"	1	·500	·667	·832	1·000	1·166	1·333
3/8" x 3/8"	1	·281	·375	·469	·563	·656	·750
1/2"	1	·375	·500	·625	·750	·876	1·000
1/2" x 1/2"	1	·500	·667	·832	1·000	1·166	1·333
1"	1	1·000	1·333	1·666	2·000	2·333	2·667
3/4" x 3/4"	1	1·125	1·500	1·875	2·250	2·625	3·000

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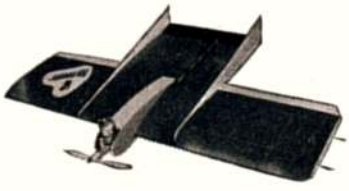

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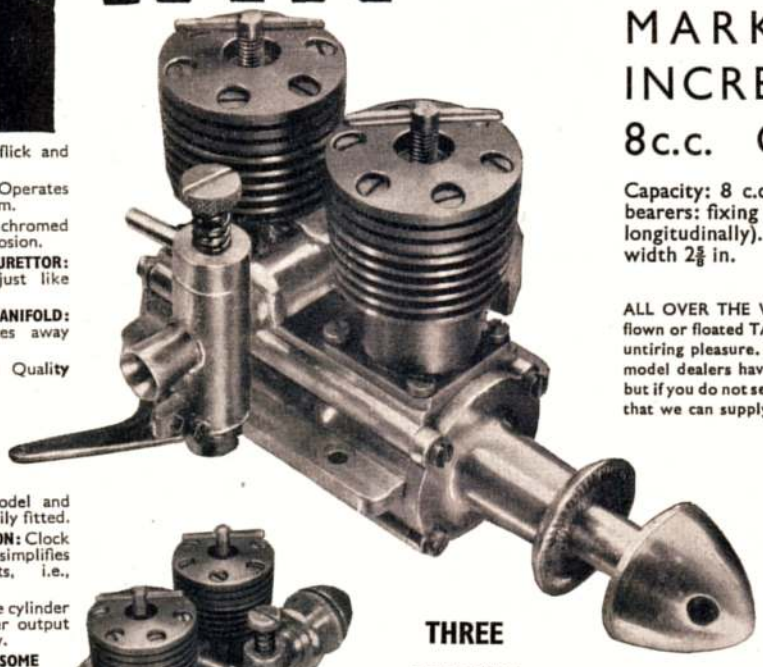

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Heard at the HANGAR DOORS

On pages 450-453 of this issue we present semi-scale plans for the Messerschmitt Bf 108 and remark upon its similarity to the wartime Bf 109 fighter. This French registered Bf 108 F-BFYX was one of two brought to R.A.F. Bovingdon in late July and camouflaged in distemper for the film "633 Squadron", in which they represent Bf 109's for wartime scenes. Other aircraft involved in the film are six Mosquito's and a B-25 Mitchell flown over specially from the U.S.A.

Now Open

We are pleased to be able to announce that two especially interesting sources of information for the scale modeller and particularly the vintage enthusiast are now open on exhibition to the general public.

The Shuttleworth Collection at Old Warden Aerodrome, Biggleswade, Beds., is open every Saturday and Sunday this summer from noon to 6.00 p.m. Charges are 3/6 for adults, children 1/6, and no charge for children under 5. There are no car parking charges. The Collection includes many re-built and flyable World War I aircraft, and has in store components for several rare types pending restoration. One suggestion—avoid disappointment on September 14th—when due to exhibition committments, the Collection will be reduced to two aeroplanes!

In London, at the Science Museum, Exhibition Road, South Kensington, the National Aeronautical Collection is now on open exhibit in its special gallery. Visiting hours are 10.00 a.m. to 6.00 p.m. Monday to Saturday and 2.30 p.m. to 6.00 p.m. on Sundays. There is no charge for admission, and with such impressive exhibits as Amy Johnson's *DH Moth*, the Transatlantic *Vimy*, an *Me* 163, etc., among the 20 full-size aircraft on view there is every recommendation for aero enthusiasts to see this new display of a world famous collection which includes more than 70 engines and 200 models.

New Records - Control Line

Several interesting details became known to us when recently we visited the F.A.I. Bureau in Paris and were shown (on request) the dossier for the world speed record flight by Anatol Kouznetsov established on September 30th at Leningrad at 196.36 m.p.h. The model was flown on 0.4 mm. single cable (0.016 ins.). It was powered by Kouznetsov's own engine of 9.81 c.c. driving an 8 in. by 12 in. propeller. Wing section was N.A.C.A. 23012.

This record is being strongly challenged by Bob Lauderdale of Huntsville, Alabama, U.S.A. who is very keen on F.A.I. record trials. Using a McCoy 60 in his well-known "Dizzy" series for class 3, Bob has already flown at 187 and 194 m.p.h., terminating his attempts with a flight estimated to be *over* 200 m.p.h. To use Bob's own expression "I couldn't hold on to the model and fly it at the same time. It finally hit the asphalt and disintigrated."

Bob reckons that 214 m.p.h. should be possible with his new model.

In the 2.5 c.c. class Bob has already established a remarkable 170.12 m.p.h. using his "Dizzy Bug", the same model as flown in the World Championships at Kiev. This was on 0.012 single wire with "This is it" fuel in a temperature of 84 deg. F., humidity 32 per cent.

Bob Lauderdale and Tom McDonald of Huntsville, Alabama, after their F.A.I. 2.5cc record flight of 170.12 m.p.h. using a Super Tigre G.20/15

New Records - Radio Control

A special record attempt meeting was organized by the D.C./R.C. Club of Washington, U.S.A. at the Naval Weapons Lab., Dahlgren, Virginia over the weekend of July 4/5th. Naval radar equipment was used to make attempts on the world altitude record, and special tracking devices established to record flight through the 200 metre speed course. The meeting was an unqualified success, no less than *four* flyers exceeding the Russian held altitude record of 7,380 ft. Maynard L. Hill, who is president of the D.C./R.C. Club managed 13,320 ft. on July 5th after having reached 12,960 ft. and 11,940 ft. on July 4th. We are most indebted to the A.M.A. president, John Worth for the following verbatim account of the momentous meeting:—

"Walt Good, using his old faithful *Multi-Bug* and TTPW, twice topped the record: 10,080 ft. on July 4th and 8,160 ft. on July 5th. Howard McEntee, with *Kickin' Duck* in his K.D.III, got to 9,210 ft. on July 5th. William Northrop, with his *Honest John biplane*, also topped the record with 7,470 ft. on July 4th.

"Also beaten was the U.S. held R/C Speed record, 116 m.p.h., which was topped by C. R. Scott, with an average speed of 126.9 m.p.h. Scott was flying a 582 sq. inch *Hustler* type Delta with a McCoy 60 for power. His flight is also being processed for acceptance as a new world record.

"All altitude flights flown with proportional gear—Sampey for Hill, Kickin' Duck for McEntee, TTPW for Good, Quadruplex for Northrop. Engines: Fox 59, both Hill and Northrop, Merco 49 for Good, Super Tigre for McEntee.

"Model pilots used govt. loaned optical trackers, which provided them with 30 power binoculars which were kept constantly on the model target by a tracker operator who controlled the motor driven tracker assembly. The tracker operator had lower power binoculars to use, sufficient to keep the model centred, but with a wider range of vision to prevent loss of model

Far right: Frank Ehling, AMA Technical Director, congratulates Maynard Hill. Note Mylar streamer trailing from model. At left: Walt Good operates R/C Transmitter from the pilot's seat on primary optical tracker—his binoculars have a turret assembly with lenses of 33, 52 and 72 power. Only the 33 power was used. The tracker operator is Tom McCraw, who served as Altitude Event Director at the Trials. His binoculars are 20 power. Capt. Sellars observes. (Note D.C./R.C. member Ken Curtis was tracker operator during Maynard's 13,320 ft. flight)

image. The pilot's optics had only one-half degree field of coverage, permitting largest possible model image to aid control, but requiring premium tracking to keep on target.

"Various members of the D.C./R.C. Club acted as tracker operators, including Walt Good. It must be appreciated that tracking had to be exceptionally good as loss of model image over approx. seven or eight thousand feet would be impossible to recover—like trying to locate an orbiting satellite without knowing exactly where to look. On only one occasion was the image lost and this is a story in itself.

"On one of Walt Good's flights, the model made a series of uncalled for gyrations, apparently by interference or internal model troubles. As a result the model became extremely difficult to track, changing direction too rapidly and too often. The image was lost by the pilot's tracker, but fortunately not by the radar tracker (also manually directed). After much relaying of tracker elevation and compass bearing angles, the image was regained by the pilot's tracker, after considerable loss of model altitude.

"Meanwhile, the model had drifted quite far away, easily well over the mile wide Potomac River thousands of feet distant. However, Walt Good was able to keep the model gliding back toward the field until it finally disappeared as a speck below tree top level.

"Almost immediately, the radar operator gave the range and compass bearing. These were plotted on a map of the area and indicated that the model would be right on the river bank, probably one hundred yards or so from the water. In about ten minutes a retrieving crew came back with the model—they had located it within a hundred feet or so of the plotted position! Considering that the last known bearing was at tree top level, the accuracy of the radar went unchallenged!

"Note that Walt's biggest concern was not for the ancient Multi-Bug airframe, but for the Merco 49 which is his pride and joy!

"Maynard Hill's model was brand new. He had demolished an earlier model only a week before, had built a new one from scratch in barely over two days! In fact, by the model's 8th flight, it had already been over 10,000 feet on three flights—out of naked eye sight for almost 50 per cent. of its flight life at that time!

"All models used aluminised Mylar (same as the Echo satellite balloon material) to aid Radar reflection. Big patches were secured on the model, plus 10 to 15 foot streamers trailing behind.

"To minimize drag, undercarriages were removed and hand launching employed. Flights average about 30 minutes; Hill's highest was only 25 minutes and one of the quickest accomplished, ending only 25 yards away. Weather was perfect: no clouds, low humidity, steady wind which permitted steady head on climbs with little manoeuvring.

"The speed flight was the culmination of several days of progressive increase in power and gradual trim changes. Working with Don Jehlke, noted Control Line flyer, Scott started with a .15, progressed through several engines until the allout McCoy 60 effort. Average time each way through the 200 metre course was only 3½ seconds! He had only a 5 oz. fuel tank and operated full power from take-off to engine cut! Scott used original multi-reed gear on elevator and ailerons only."

In John Worth's opinion, flying above 14,000 feet is probably beyond the range of the type optics employed. Helicopter chase by the model pilot may be a suitable alternative; conventional aircraft chase seems doubtful. To chase would require extremes in manoeuvrability and visibility for the pilot.

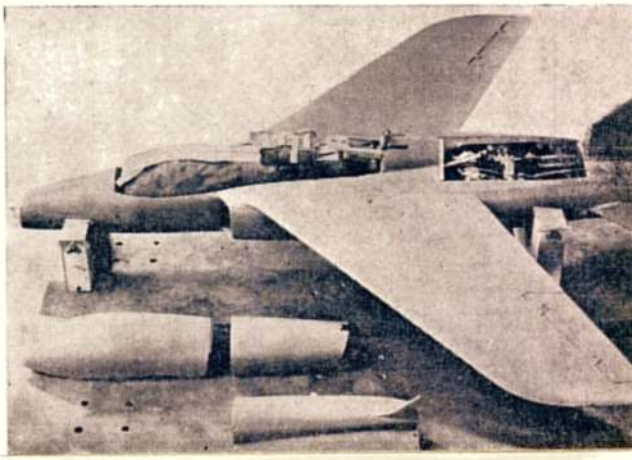
Dynamic Models

One aspect of professional model making which has the advantage of producing a working result is that of free-fall dynamic models. This technique was developed several years ago when mysterious accidents were happening to aircraft such as the Gloster Javelin. Little was known of spin recovery technique for Delta aircraft and some experiments with the full size machine met with disaster. In consequence, several true scale models were made, that is to say, scale in *weight* as well as shape. They were dropped from a tethered balloon and controls radio operated to eventually devise a means of recovery which worked on the full size machine.

Incidentally these very heavy models produced a shattering glide when they recovered from the induced spin!

It is now common practice to produce similar dynamic models for all new projects. Modern techniques utilize helicopters instead of tethered balloons and instead of wooden structure, the models are mainly glass fibre with foam filling. Controls are cam-operated mechanically through a pre-determined sequence. This starts with the spin entry configuration, followed by spin recovery, then glide, during which the canopy or hatch is jettisoned and the model descends by parachute.

A recent experiment has concerned the Folland Gnat Trainer, now in service, see photo below.



Dynamic model of Folland Gnat, made to approximately 1/5th scale in glass fibre with foam filling by the Wind Tunnel Model Shop of Whitworth Gloster Aircraft Ltd. Flying controls are cam operated and include parachute release under cockpit canopy

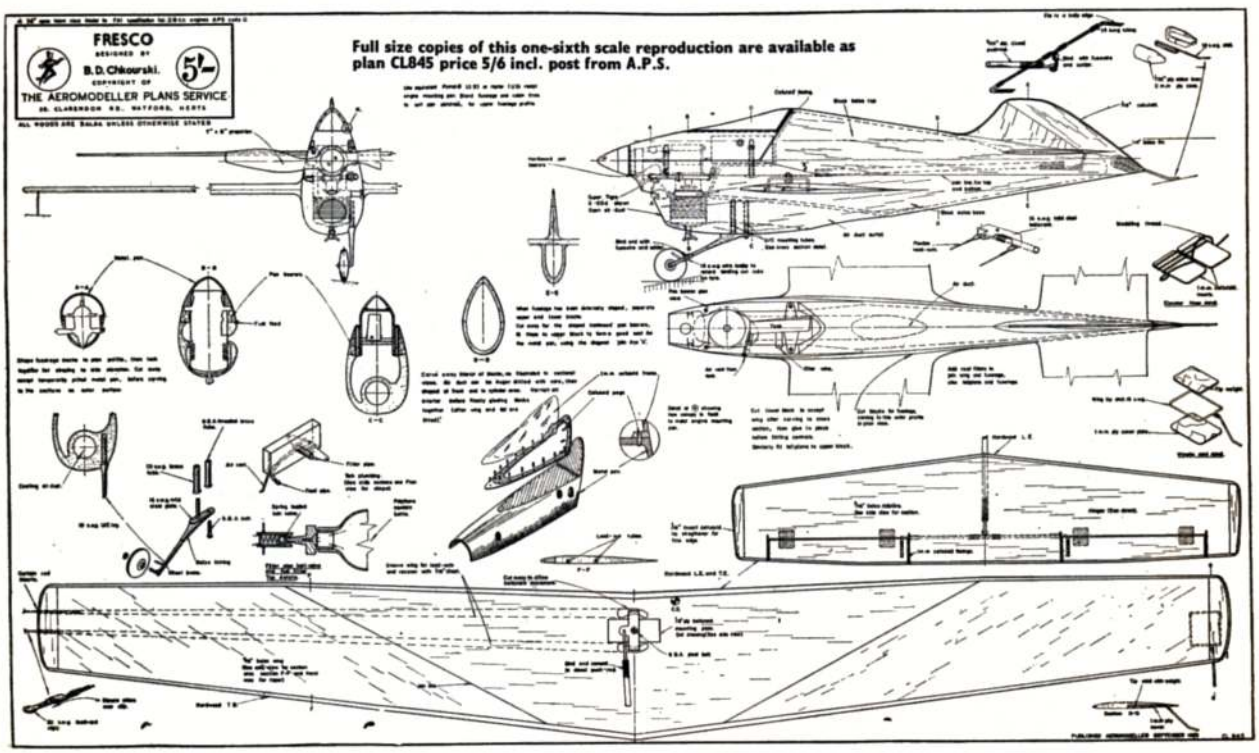
Control Line developments

Geoff Higg's "navalised" Nobler at the Nats sported his own design silencer. No noticeable effect on performance, and a very impressive reduction of noise make it one of '63's better achievements.

RECENT YEARS HAVE seen great advancements in control line flying, most impressive of which must be the popularity of the two events that have been adopted. *Rat Racing* now seems to have a firm hold on the clubs and it is good to see the juniors having a go. *Class B or .35 combat* also seems to be picking up after the efforts of Wanstead M.A.C. in the last few years. These two events call for a large powerful glow motor and high price fuels but even this does not seem to deter the really keen contest modeller. Glow motors are also gradually spreading into S.M.A.E. combat, favourites seeming to be the well tried Veco, Fox and O.S. 19's. Mechanical starters are also seen in increasing numbers in combat, but we feel this is quite unnecessary even with the most reworked engines. Reworking or tuning as some people call it also seems to be on the increase, with an increasingly larger number of manufacturers giving "Hop-up" books with their engines, Fox and Johnson being the most popular. The main modifications carried out are polishing the insides of the crankcase and shaft. Fox sells "Lusterox" polishing compound for accellerated running-in. Squaring off the base of the venturi also helps with an increase in port cross sectional area if pressure is being used. Crankcase pressure supply to the tank seems to be popular on both diesel and glow.

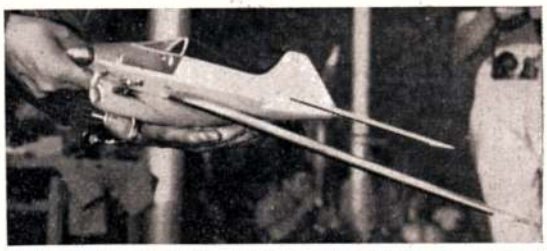
Fancy formula team race fuels have always been a source of trouble for the newcomer. Even in expert hands these long range 70 lap brews are still tricky to use as the safety margin is only about 3 or 4 laps and a slow start could soon absorb the advantage. On the other hand, mechanical improvement in F.A.I. T/R has come with the new ETA 15-II making new records for speed, laps and race times. Only marginally more powerful than the Mk I, it offers remarkable consistency and can achieve 90 m.p.h. for 50+ laps providing a rangebar is fitted even in novice hands. The fastest F.A.I. T/R time to date of 4:13.8 by Stockton/Jehlick of U.S.A. was set using the new ETA and their red painted low aspect ratio racer. Their pit stops are said to be extremely quick and this comes to the whole point of T/R which is team work. Quite often a slower model wins just because the team practice more, and practice makes perfect.

The 1,000 lap team races are rapidly gaining in popularity following mention in *World News* and have become international (by post). The 1 hour 'barrier' has already fallen and Japanese engines have largely dominated. A sad point is that Team Racers all seem to look

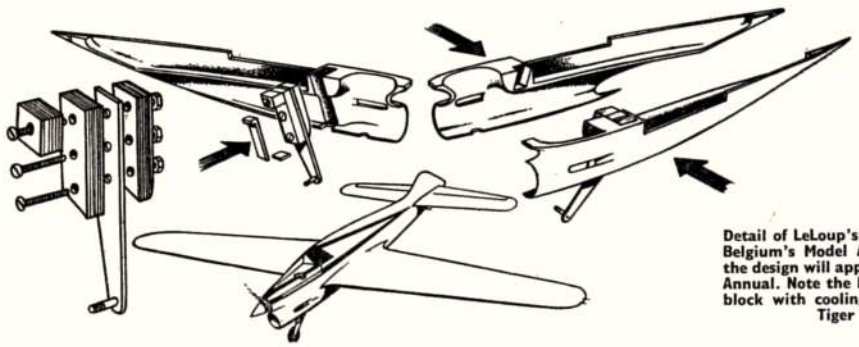


the same these days as though they were all from the same plan. The originality that came when the S.M.A.E. adopted F.A.I. rules seems to have disappeared in English T/R. Continental countries are still making great advances towards stream-lining as shown on Roger Leloup's *Hi-Fi* model. The French Bador brothers are now using electrically retracting monolegs to push the speed up. Greatest English advance has been in tanks and engines. Ron Lucas, a keen "chicken hopper" flyer has used them in his A & B T/R's with success, for quite some time. Dick Edmonds has used his *Reguflo* tank to the same end but with greater and extraordinary simplicity for success in F.A.I.

Speed flying seems to be on the upswing once again with plenty of juniors having a try, largely through the encouragement of special centralised meetings. Mono-Line is still not as accepted as it could, or should, be with quite a few of the top men still flying on two lines. Perhaps the few special own-design mono-cable handles we've seen will influence more interest. Jet also is gaining in popularity, Dyna-Jets are mostly used and a few Rossi and O.S. examples have been seen around and have flown well. But ouch! That noise is definitely to be reserved for faraway places!



The "Fresco" racer by Chkourski had a slightly different noseleg and no intake cowl when it won at Kiev. Much modified Super Tigre has entirely new carb; sloping forward.



Detail of LeLoup's "Hi-Fi" from excellent plans by Belgium's Model Avia magazine. Reproduction of the design will appear in forthcoming Aeromodeller Annual. Note the leg mounting in left side fuselage block with cooling air duct in right side. Oliver Tiger is used in original.

U.S.S.R Team Racer

This model won the 1962 World C/L Championships for Sirotkin and Chkourski at Kiev with times of 4:38 and 4:48, powered by a modified Super Tigre G.20D turning 102-105 m.p.h. for 30-33 laps. The construction is radically different from that used on most English team racers and incorporates a lot of fresh ideas and a high degree of streamlining. It must be remembered that without the stimulus of commercial competition, the Russians are in the main handicapped by a lack of the latest equipment as available to the English modeller. Russia has yet to develop a high performance engine, and modellers therefore rely upon self modification of often dated motors.

The pan is specially made, though close to some in the Pomadi range and employs a neat method of riveting the canopy in place. Note that the tank fills from the ball valve on the side. This valve can be made by turning a tube from brass with a blind end, drilling the filler hole and then putting the ball bearing inside the tube. Then insert a steel rod onto the ball bearing and tap it firmly with a heavy hammer to make a good seating.

The fuselage is carved from block balsa and is split into upper and lower parts as shown. The pan is mounted on a $\frac{1}{2}$ in. hardwood crutch and the u/c is made from piano wire bent through the M.S. plate as shown. The other end of the plate is drilled for a 6 B.A. bolt to fix it to the threaded tube in the fuselage. Great care must be taken to leave enough balsa around the side of the air duct to obtain a strong mount. The fin is made of two pieces of balsa sandwiched over a ply or celluloid core.

3/16 in. balsa sheet is used for the tailplane with a hardwood leading and trailing edge. Tips have 1.5 mm. plywood inserts and cross grain balsa sides while the hinges are 1 mm. plywood plates bound over with thread. Great care must be taken when the link bar is fitted into the tailplane to make sure it does not bind in any way. Ends of the elevators and the tailplane are faced with 1 mm. plywood. The push-rod is made in three pieces with a bellcrank adaptor, the hardwood dowel centre section and the elevator horn adaptor, all being bound and Araldited together. Control connections are made at a late stage, when upper and lower fuselage halves are formed and joined together, completing the model.

Paul Tupker of Holland and his "Stilleto-3". Note the very wide spread of the landing gear with long streamline spats. Engine cowl has a long cooling duct leading out to right side.

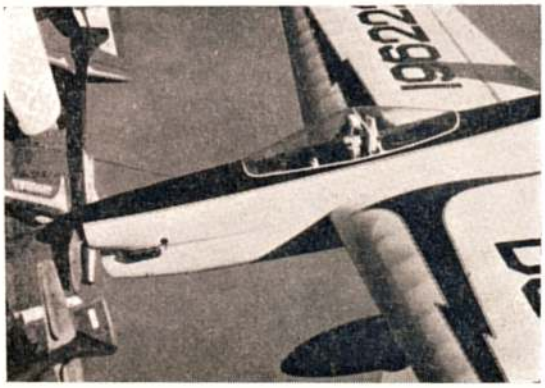
Wing construction is fairly straightforward, the only deviations from normal practice being the use of diagonal grain direction at the tips and the sweep on the centre section. Local strengthening is as on the tailplane. Slot the wing through lower fuselage *after* carving to section. Our modified bellcrank ends (the original has "pulley" control) should be bent down as shown and now bolted to the $\frac{1}{8}$ in. plywood mounting platform which is Araldited into the wing. Tip skid on the starboard wing panel is a wire frame with a lead tip weight inside, the whole assembly being let into the wing and covered with a plywood plate. Leadouts are of flexible Bowden type cable and are recessed into the wing. At the tip there is a self wound tapered coil spring like flexible curtain wire to prevent the leadout from getting twisted or bent in transport. Wing roots should be carefully faired into the fuselage with plastic wood or soft balsa.

A normal sanding sealer/tissue/colour dope finish can be used but for those who like to have the latest we advise the following: Three coats of *Bondaglass* glass fibre resin on the bare wood rubbing down between each coat with wet and dry paper, followed by two coats of polyurethane marine paint. If the surface of the glass fibre resin remains tacky, wipe it over with a rag soaked in methylated spirits. Polyurethane paint is completely fuel proof against glow, diesel, and even raw nitro, and can be obtained from most large boating shops in a large range of colours, also in clear.

Spinner and wheel brake are both optional extras and can be omitted if so desired, and the standard British cycle brake skid used instead at the rear.

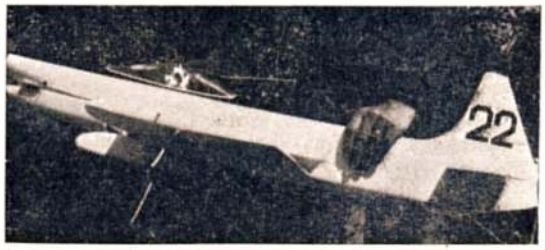
Fresco remains a fast design, introducing new techniques and though the victor in a controversial final, has much to commend it for British modellers.

Photos show the distinctive lines of "Spacehound" and the very neat nose, including spacepilot in the cockpit. Scheme is black and white. At Top, Chkoursky and Sirotkin confer with Russian engine designer Gajevski—probably asking him for a hot 49 !



Sirotkin's Stunter

The deep bellied U.S.S.R. stunt designs which have rapidly zoomed to leading places in various International Championships are exemplified by Juri Sirotkin's "*Spacehound*". The vivid black and white colour scheme used by the Russian Stunt Champion enhances this sleek, up to date design which has achieved so great an International reputation. Sirotkin was eighth in the 1960 World Championships at Budaors, Hungary; second to Grondal in 1961 at the XIth Criterium of Aces, Belgium; and suffered the ignominy of mixing up the schedule when a clear leader in the 1962 World Championships at Kiev, Ukraine. Dame fortune should by rights smile more kindly upon him this year at Genk, for which he has been practising intensely. Flying slowly, with a fast revving fine pitch propeller, Sirotkin has a manner of manoeuvre presentation that has made him the most



serious rival to Belgium's Louis Grondal. The model has large block areas in the fuselage; but our version of Juri's plan carries sectional bulkheads to permit planking. Similarly, it might be preferred to alter the spar arrangement and rib fretting. Whatever minor changes are made, this is a most impressive model, both in appearance and performance. It adopts the proportions of a Nobler and has the refinements of engine cowling and widespread spatted wheels which make it so attractive for the experienced control line stunt flier.

Modern stunt trends — By Noel Falconer

Stunt models are growing bigger—again. Bigger, noiser, heavier, more awkward and expensive, and vastly more difficult to transport. The "45" is becoming normal equipment in big-time stunt and as radio control demand makes even larger motors readily available these too will become the fashion.

What advantage does the big job offer? It is tremendously impressive in the air, and judges are not unaffected

by this. A very realistic model is possible and a heavy, elaborate finish can be employed. But does it fly any better? So far, the giants have only been used by top fliers whose ability could compensate for minor design defects.

On the second day of the 1961 Nationals, Brian Horrocks generously and bravely allowed several of the stunt crowd to fly his Glo Chief "49" winner. We found it sluggish to the extent that nobody was completely happy with it, and more than one well-known flier found it impossible to complete a full pattern. This fault is common to every mammoth I have flown. It is a basic fact of the design, for response rate is always adversely affected by heavy weights far from the centre of gravity.

Line tension is a problem. My experimental Fox "59" job gave me a very painful arm and back in calm conditions. I never dared fly it in a wind.

About a "35" seems to be the natural limit. Anything much bigger cannot be held in one hand when building and will not fit easily into a normal car. Fine motors are available and it concedes little or nothing to any opponent, whatever its size.

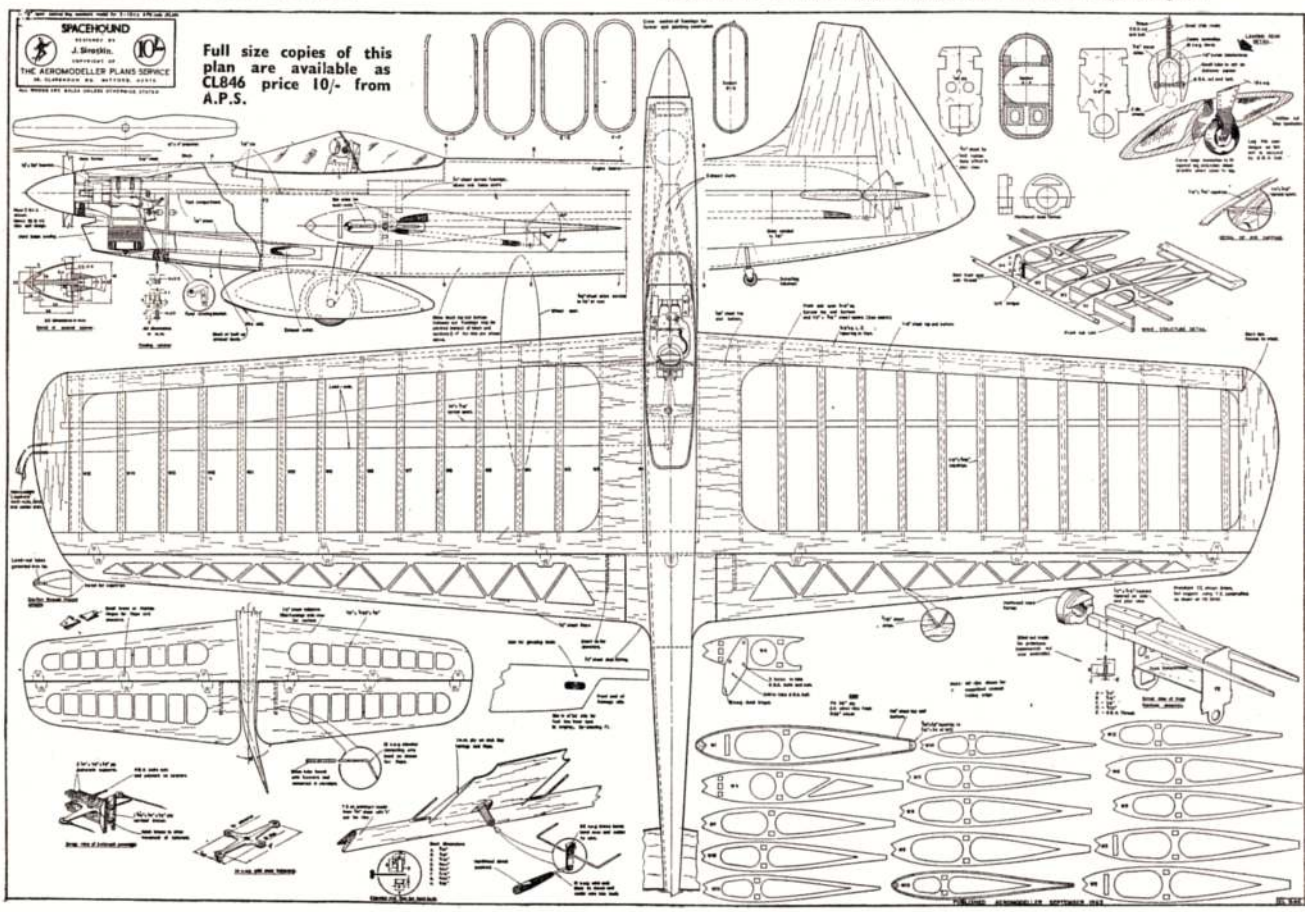
I think we have been close to the ultimate ever since the *Nobler* appeared, refining and developing but too often just chopping and changing for the sake of something different. The challenge—the present schedule—has been answered. Yet more difficult manoeuvres, diamond eights and the like, look most odd and unattractive. So what can we do?

Now precision stunt is an international competition class and it would be wrong to handicap our team by putting restrictions on the models they can fly in British contests. However, there appears to be a case for a "Formula 2" stunt class, restricted to 1.5 c.c., straight fuel and 50 feet line length.

Proving he knows what he is talking about, Noel Falconer with his BIG scale Fletcher Utility stunter. Has bonded rubber landing gear springing and unique wing structure which we shall describe in a later issue.

Such small stunters are able to fly the full pattern but they demand much more of their pilots, and the basic design must be good. For all this they are highly suitable for novices, a most important point in a branch of the hobby that desperately needs new blood. The experience gained would be very useful when framing F.A.I. policy, and we would be well placed if this class were accepted internationally.

Stunt is choking itself on its own excellence. Entries are dropping because modellers are not willing to invest a vast amount of time, money and effort in one of our modern monsters, for a miserably small chance of breaking into the major league. We need a class to give



Trend to realism is evident in Willy Van Dorp's Enya 45 powered semi scale Crusader with kneeling noseleg from Holland.

the new hands an entry and I think these handy little models may be an answer: and improving them to match the capabilities of today's big stuff would be a real challenge to the aces.

So I'm a heretic! I *don't* think we're on the right track with the mammoths.

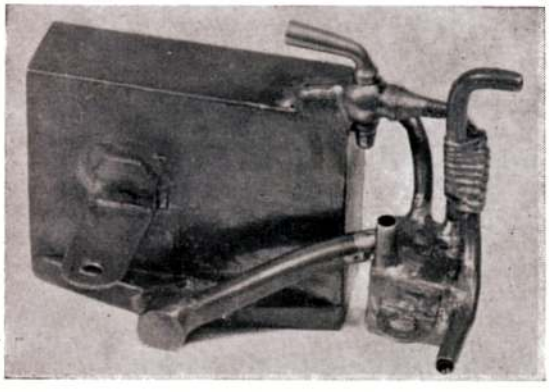
A revolutionary new fuel tank

It has always been the desire of every control-line flyer to have a fuel system that does not fluctuate. With the normal type of tank, there is always a variation in the mixture strength supplied to the needle valve, usually starting off rich with the tank full and ending lean as the tank empties and centrifugal effect is reduced.

This is caused by the decreasing weight of fuel acting upon the feed pipe in the tank. Team Race models are particularly affected due to their limited tankage. Every cubic centimetre of fuel is called upon to give maximum performance. Without doubt, bad fuel systems have meant the undoing of more good Team Racers than any other single factor.

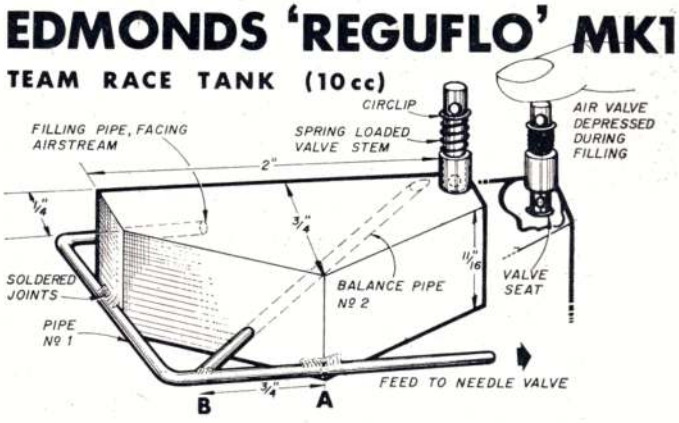
The basic principle of the constant feed system is not new, it is based upon the chicken feed hopper and has been used as two cell tank for speed and team racing over the years. The "*Reguflo*" tank eliminates the need for separate cells joined together with lots of plumbing. In place of the small tank as used in the chicken hopper

Enfield M.A.C. style two cell team race "Chicken Hopper" tank, with on-off tap. Compare with Dick Edmond's identical function "Reguflo" in sketch.



system there is only a length of brass tubing. In the case of a Team Race type tank a length of $\frac{1}{8}$ in. brass tubing is connected to the apex of a wedge shape tank and at this point a hole is drilled through the tubing and the tank to form a fuel feed (A) another length of $\frac{1}{8}$ tubing is then joined to pipe No. 1 at point (B) not less than $\frac{3}{4}$ in. from joint (A) this joint must be well soldered to allow an unrestricted passage of air between the tubes. The inside end of the first tube is connected to the needle valve, the other end is taken outside the model and placed in a convenient position for filling and preferably facing in a forward direction so as to ensure maximum air pressure. A spring loaded air release valve is located in the tank as far forward as possible. To fill the tank this valve is opened by depressing and fuel is fed through the outer end of pipe No. 1. Air is then forced out of this valve. When closed, this valve *must* be perfectly airtight. The slightest leak will ruin the system.

The whole feed flow works as follows:— Fuel is drawn by the motor connected to the inner end of pipe No. 1, air then passes along this pipe from the open end until it reaches point (B). It then passes up into the top of the tank via pipe No. 2. Fuel is then allowed to pass from the tank into the feed pipe via hole (A). As the flow is greater than that required by the motor this pipe is



filled until it reaches point (B). On reaching here the supply of air is then shut off so the flow of fuel out of the tank is also stopped. The cycle from here on is then repeated.

It is clear from this that the varying weight of fuel acting upon point (A) has no effect on the mixture strength, and the *only* head of fuel acting on the motor is contained in the short length of tubing, thus allowing absolutely constant feed of fuel to the motor.

In practice this really works. If the needle is set as weak as possible for ground running, this setting is *maintained* throughout the flight without any hardening off or leaning out at the end of the run. With this set-up, maximum range at optimum speed can be achieved. 50 laps with an F.A.I. Team Race is now relatively easy, in fact as many as 79 are possible with an E.T.A. 15 Mk II and special long range fuel; but that is another story. The same principle has been applied to a Stunt tank and the results were excellent, the setting was maintained throughout the run, all manoeuvres could be performed without any bother, including overhead 8 and squares, etc., Anti surge baffles are not needed.

We understand that a ready-made F.A.I. Team race tank (10 cc) *and a Stunt tank will shortly be introduced for sale by Dick Edmonds.*

The Rev. A. J. Stally prepares to launch his "Kurzellensittich" (from Aero Annual 60/1) at Sandakan, North Borneo before an interested local audience. Has an airfield on the doorstep; but no model shop. Can't have it all ways!

World News

BORNEO. Have we found the ideal spot for model flying? The Rev. A. J. Stally has a fine grass airfield at his disposal having few interruptions by visiting Twin Pioneers and Dakotas. Mornings are calm till noon, it rains for only eight weeks of the year and temperature hovers around 90°F. By the way, it usually rains at night. Only snag is that the nearest model shops are in Singapore or Hong Kong.

HOLLAND. Only two teams participated in the A/1 and Tailless International at Ypenburg near The Hague on 28-30 *June. These were from Germany and the host country. A visiting Swedish modeller joined in. Fortunes swung back and forth, with almost equal matching in Tailless; but the Dutch were far superior in A/1 glider, van Wolde scoring* 779 *seconds to clinch individual lead, and the team victory for Holland in that class. Elsewhere, the Dutch selected strong teams for the August World Championship meetings. As holders of the A/2 team award, they'll be closely watched at Wiener-Neustadt.*

ARGENTINE. Week long National Championships for all classes of free flight and Control-line plus indoor and radio control showed continuing rise in modelling standards in South America. E. Arance, with F & M equipped Stormer (Veco 45) put up a great show in multi channel r/c. For once, the Noblers and T'birds gave way to Favale's own design which won C/1 stunt, followed by Haban's Shark—another of those "big" models. Pictures indicate a neat tartan pattern wing and tail decoration on the Shark. Now how about that you S.A.S. types up over the border?

HUNGARY. Under restricted ceiling height of Debrecen University Hall, Hungarian Indoor model contest found a new rival for the Champion, Otto Roser who still held his lead with 22 *minutes* 39 *seconds. Chasing him was Lehel Lerf at* 22 *minutes* 29 *seconds to make it a close finish. Perhaps not quite as close and regular as the team racing times returned by Katona and Purgai (who were World Champs finalists in* '62). *They have not been slower than* 5 *minutes this year, and have done the* 100 *laps in* 4:39, 4:41, 4:44 *and twice at* 4:46, *all in competitions. They'll be at Genk for sure. With such a background, everyone will be watching their technique with the Moki TR engined racer.*

FRANCE. Bador brothers will be airing their retracting gear model possibly at the Criterium and well backed up by the Magne-Malfait team. Jean Magne's also doing well in F.A.I. speed, establishing a new French record at 205 km/h (127.3 m.p.h.) on straight fuel, with a Super Tigre G.20/15, which is a sure sign that mono-cable control is bringing up the speeds. He has done one unofficial 215 km/h flight.

CHILE. International postal contests attract the Agrupacion Concepcion Aeromodelistas, Casilla 2537, *Concepcion, Chile who fly Wakefield and A/2. Contact them if you can field a team sometime during their "season" of March to August.*

SWEDEN. Team elims for Sweden climaxed a four-contest programme which provide fifteen finalists in each class. Five rounds on the evening of May 25 and five more rounds on the morning of May 26 were held in good weather at Angelholm, Southern Sweden. Wakefield produced the highest times, Sundin, Hollander and Hakansson making up a strong team, each with nine max's in the elims. In Power, Hagel is still the maestro, using variable tail incidence trim, he will be backed up by Carlsson and Lundin while in A/2, the traditional "Nordic" class, we find the '61 finalist Gunnar Kalen eased out into fourth place by Skold, Alm and Bo Modeer who each collected 5 max's.

AUSTRIA. 500 *lap marathon for F.A.I. team racers was held as part of the inter-city challenge event held in Vienna. Team of Uhl and Ilg from Stuttgart, Germany, were the winners in a time of* 23 *minutes* 50 *seconds which certainly isn't hanging around in anyone's language. But the "news" doesn't end there—for the model was a flying wing Distance flown is* 50 *kilometres, five times the normal distance.*

Luisa de Fernandez Diaz, who competed in the Wakefield class at the Argentine National Championships.

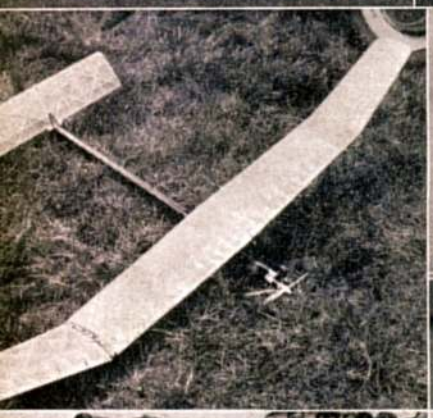
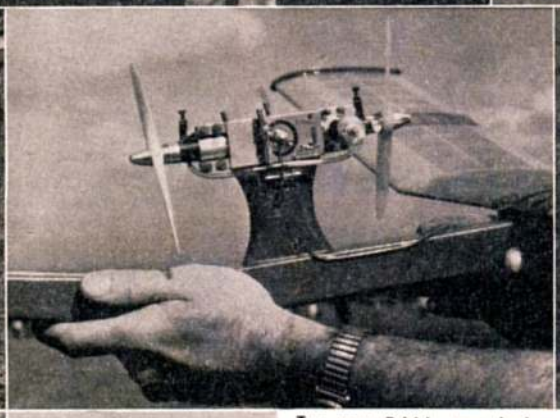
GERMANY. The Walldorf International takes place on September 8 at Walldorf, near Heidelberg in the delightful Rhine valley. Holiday making modellers will be welcome to participate in any of the nine events, ranging from A/1 and 1 cc. power to all the F.A.I. classes.

ITALY. Too late to let you know: but just the same a most impressive programme was arranged for the Europa Cup for slope soaring at Rovereto, Folgaria on August 4*th. Wish we had known earlier, for we'll bet that a number of British modellers would have liked a "Clywd" meeting among the charming slopes of the Italian Dolomites.*

UNITED STATES. Team racing takes place at the Cox Centre in Los Angeles. Typical times by "Circle Burners" members are 5:24 with the Burke/Mocniak team, and get this—in strong wind and extreme heat. So it can be uncomfortable in California! A 500 lap rat race at the Los Angles Model Airport resulted in a 24:25 win by Jones and Tautz. 140 laps is ten miles so you can work it out! Latest in the circling game is a special set of shoes that "Doc" R. E. Nichol has had made for dashing around to pit work, etc., etc. They have a heavy tread grip sole with a half inch wedge on the outstep of the right and instep of the left shoe. Easier on the feet says "Doc"! Latest too is "Slow" combat. Takes profile model, like the semi-scale Warhawk and Zero in July issue, and all use a 10 x 6 prop. on 29-35 size engines. Said to be more fun, and suitable for the average flier.

Winning team from Germany in the Tailless International, J. Kolshorn. S. Heinig (individual winner), Team Manager H. Jung and H. Maack, Event flown 28-30 June at Ypenburg.

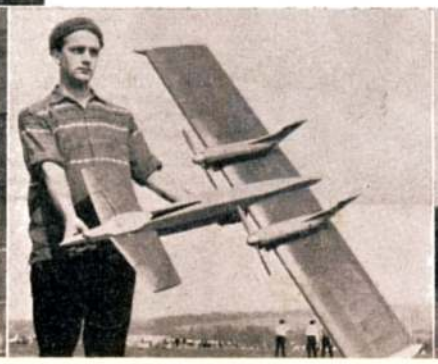




Top row: British team leaders, Bruce Rowe (St. Albans) Wakefield, Mike Green (Lincoln) Power and Mike Burrows (St Albans A/2 glider. Above left: J. Moseley' taperwing ½A power model with Cox TD .049 at Newcastle, alongside Jim McCann's pushpull pair of TD.049's on Canard at same event. This eliminates torque problems!


Far left: is Dave Walker and twin K. & B. 45 Me 410 with deBolt retract-gear at Bristol R/C rally. Above and right: at U.S.A.F. meet. Class 2 R/C winner was D. R. Eby with Livewire Rebel using Fox 15 and Marcytone gear with J. Worth Simple Simul pulser. Enormous Fox Buzzard kit glider weighs only 3½ lb. has Orbit 4 on rudder/elevator and has flown three hrs. 45 mins. for builder C. Thomas. Bob Miller won Combat with Blackhead Fox 35 Voodoo and above Trophy trio went O'Donnellwards for free flight. Below and left: at Northern Heights. C. A. Rippon, modelling since 1909 and still with it, judges A. Clements' fine Halberstadt D III F/F with Mills .75. Mrs. Eileen Knight of Addlestone Models near Weybridge, holds hubby's A.P.S.Pteranodon twin Canard freeflight and centre, Neil Webb of Abingdon surprised many with his 65-in. 750 sq. in, 5 lb. Twin C/L Canard with OS 35's. Also has retractable monowheel and throttles, stunts well. In corner, George Fuller collected open power with 'E'' type Dixielander (Eta 29).


Round the Rallies

FOREMOST IN IMPORTANCE and beginning with the first of ten rounds on June 22nd at R.A.F. Barkston Heath, were the **FREE FLIGHT TRIALS** to select the "self-supporting" unsponsored teams to represent G. Britain at the World Championships. Wind, as ever, was sufficient to take a 3-minute flight well beyond the airfield boundary, beginning with it, the usual recovery problems. As it happened, only Dave Posner managed a perfect score, to lead the *Power* class, closely followed by P. Manville and G. French. In *Wakefield*, John O'Donnell held a convincing lead of 47 secs. over D. Latter, despite having only three max's and East Anglians Woodhouse (Norwich) and Godden (Cambridge) filled 3rd and 4th places. For *A*/2 it was a London Area sweep. Those tough conditions at Chobham have bred all-weather models for Chris Jackson (Surbiton), Mike Burrows and Jim Baguley and indoctrinated a towline technique that scores in windy weather. At the second stage, on July 14th, again at Barkston, four more rounds went by and still the A/2 and Wakefield order remained unchanged for the leading three. In Power, the order completely tumbled. Much of this was due to a most violent vortex of air which hit practically every model launched near the lee of a hangar. Manville, Spurr, Glynn, French and Green all had models "wind-in" with one big looping spiral. For some this was disastrous. French was forced into desperate repairs and Manville also lost a complete flight. There seemed hope for Neville Willis, hovering in 4th place in glider and now 3rd in power. But Neville became the "bridesmaid—and never the bride" as they say, when Green Posner and French all max'd on their tenth flights, Only slight change of order came with the last A/2 flights so that the London trio led right through, and then in Wakefield came complete change as once more that vortex caught some vulnerable models. Bruce Rowe, whose new models had been steadily improving throughout the rounds, scraped out of danger on second attempt for both his last flights and had the only full maximum score. Thus he led Latter and O'Donnell in the finish. Results page 468.

U.S.A.F.—U.K. Meet

The **U.S.A.F. United Kingdom Model Airplane Championships two-day meet** (to give its full name), was this year open to all A.M.A. and S.M.A.E. members on June 15/16th. Organisation by the 81st Tactical Fighter Wing from R.A.F. Bentwaters and R.A.F. Woodbridge, through modelling officers Major Reisinger, Capt. Van Horn and Capt. Harrison, resulted in a really fine job.

Surrounding forest did not help the free flight boys one bit, but once again the "regulars" came through to win with D. Hipperson taking ½A with his Holland Hornet model, totalling 7 : 4.1. The B. and C. f/f were combined and D. Parker came out first with his McCoy 29 powered *Ramrod*. Towline glider was also a story of flyaways with K. Smith taking A/1 at 5 : 02.2 and M. Burrows A/2 with 7 : 33.4. Bows and arrows, portable canes and assorted tree climbing apparatus were in regular use.

Combat got off to a slow start with only 11 of the 38 entries showing up. The Hatfield club were once again in action with their electric starters which assisted A. Britton into 2nd place against winner Bob Miller (*see* photo). Fastest model was that of F.A.S.T.E. member H. Nixon, who was using a much filed K. & B. 35 running on a pen bladder which unfortunately burst in flight.

In Rat Racing the winning model by R. Gedge was powered by a K & B. 35 series 61 running on pressure. Second place man was Tony Carpenter with his Fox 40 B.B. powered profile fuselage model.

Sunday brought overcast skys and some rain, in free flight scale only two models showed up. Doc Hawkins taking first place with his *Shiragiku* after making a most realistic R.O.G. just over the car park, and behind some tents, making enough points to lead J. Simmance with his *Sopwith Snipe*.

Ed. Johnson took first place in Multi with his Merco 61 powered *Taurus* using 10-channel Orbit gear. Flight contrasted with touch and go landings across the two sandy circles and the rocket climb with that Merco 61. Boyd Van Horn was also flying a *Taurus* and during a low pass he lost control and crashed into John Dumble's car, now the only one with a concave bonnet.

Radio Scale was won by Jack Morton, flying his well-known *P51 Mustang*. The take-offs were superbly realistic with great clouds of dust and sand billowing in the slipstream. Second place went to D. Bryant with his superb *Macchi Castoldi MC* 202.

Control line Scale was damped down by fairly strong winds. Bruce Randall crashed his superb *Blackburn YB*-1 soon after take-off due to a sudden power loss. First place went to Tony Day with his renowned *Fokker D VIII*. Second was D. L. Henderson with a *Ryan ST*-22 powered by a McCoy 19. This had a very nice deep red finish and was built from a Sterling kit. In third place was J. G. Martin with a Top-Flite *P47N* powered by a K. & B. 19.

Control line Stunt attracted 14 entries and was won by F. Warburton flying his *Tony*. Second place went to D. Day and third to a new name in stunt circles— Dick Place (of ½A T/R fame).

The speed boys flew all day in Class A, Pete Drewell came out tops with 127 m.p.h. leading Ralph Gould at 121.7. Class B had a very good winning time of 149.1 m.p.h. by Hank Nixon. He was flying a much modified Fox 29X in a nice polyurethane finished Mono-line job. Twenty-two m.p.h. behind came second place man I Roffey, with 127 m.p.h. Class C also had a good winning speed of 166.9 m.p.h. by M. Billington, flying his McCoy 60 mono-line model. Second place went to W. Kelsey at 165.7 m.p.h., he used a Carter Dooling 61 in an aluminium winged mono-liner. During the flight the torque tube pulled out but luckily it only bounced lightly!

Trophy presentation and banquet was held at R.A.F. Bentwaters N.C.O. club, This was very well laid on and some 204 modellers enjoyed the free meal, beer and cigars!

At Newcastle

Coincident with the second day at Woodbridge was the **RUSH TROPHY GALA** on June 16th at Newcastle Town Moor. One intrepid modeller, who shall remain nameless for the sake of his girl-friend's mother, managed to cram in 700 miles of motoring and lots of model searching at *both* the Northern and Southern venues! After overnight rain, a 16 m.p.h. breeze with very strong thermals took some jobs over the housing. Tom Stoker got his ½A model back with a Police lost property label attached! Handsome prizes rewarded the winners after a good day of flying.

POWER: 16 entries
1. T. Stoker—Baildon 9 : 00
2. E. Jepson—Rotherham 7: 55
3. M. Proctor—York 7 : 40

RUBBER: 13 entries
1. G. L. Roberts—Lincoln 9 : 00 & 1 : 45
2. C. Rennie—Tynemouth 9 : 00
3. P. Verity—E. Lancs. 8 : 30

COMBAT: 16 entries
1. M. Boon—Ashington 100 pts.
2. R. Wilson—Tynemouth 8 pts.

½A POWER: 11 entries
1. G. Stringwell—Rotherham 8 : 01
2. T. Stoker—Baildon 7 : 52
3. R. Salmon—Halifax 6 : 13

GLIDER: 24 entries
1. D. Wiseman—York 8 : 15
2. R. Salmon—York 7 : 21
3. R. Swindon—Tees 6 : 51

RUSH TROPHY:
1. R. Swindon—Tees 218.6 pts.
2. T. Stoker—Baildon 198 pts.

In Ireland

Held at Baldonnell Military Aerodrome for the first time in five years, the '63 **IRISH C/L NATS.** at Baldonnell Airfield on June 30th, exceeded all expectations due mainly to the very fine organisation of the M.A.C.I., and to the biggest entry at an Irish contest in many a long year.

The "Gentlemen's" event Stunt, was popular for once, most people having a go, though entered in other events. Tony Stewart of Dunlaoire won as usual, flying the best overall pattern with his well worn Veco 35/Thunderbird, beginning to show the cracks. Combat will have to look out next year, as already there is talk of dropping this in favour of some other event. With the largest entry it soon becomes a terrible headache to run. Gerry Hand of Dunlaoire chopped his way through the field to beat fellow clubman Brian Harpur in a very close final. Team race events were a clean up for the North Dublin team of Paul Brennan/Peter Bedell. Though not always the fastest in the air, their teamwork was excellent and resulted in a treble victory. Their Class B heat time of 3.55 on standard Methanol/Castor fuel, was notable. During all this C/L the radio was being held well away down wind and entertaining it proved to be. Henry Dagg of Dublin gave a polished performance to win the Multi, while McKenzie of Belfast took the single channel honours.

Scotland

The Met. man's promise of sunny periods and moderate winds for the **SOUTH OF SCOTLAND GALA** at R.N.A.S., Abbotsinch on June 30th, turned out to be accurate.

Effect of the breeze was to be seen at the radio event, when Ron Fraser's O/D multi equipment put up a most impressive performance against 2nd and 3rd place men, using Terrytone and Minimax respectively. The morbid amongst the many spectators were treated to two spectacular prangs as a result of the operation of a cladestine S/C transmitter. There was also little left of the *Peacemaker*, which went F/F from the combat comp., where the final developed into a hammer and tongs battle. Coup de grace came when the winning model, coming in to land, neatly removed its opponent's pitmans' hat.

The far-travelled entrants from Stanley made their trip worthwhile with a win in ½A T/R. Third place man, Marchbanks of Dunbarton, retired, along with the elevator of his model. This was not Dunbarton's lucky day; many interesting adjectives were heard after their F.A.I. finalist was run over by a car before the race. Nor did its absence help the other two finalists, both of whose engines were off tune and failed to equal their best heat times. The Class B T/R event was the best subscribed for some time, but the winning delta model (doing 33 laps/tank) remains unchallenged with a long list of successes.

An obvious free-flight favourite was W. Lee's *Ramrod* 750 with K. & B. .35 (30 ounces all up). Trimmed to perfection, its size and bright colouring presented no difficulties for the timekeepers. Well deserved second place was gained by junior F. Ballardie, flying a T.D.·049 model. Glider winner J. MacNeill lost a model in the process and Martin of Kirkcaldy had a busy day, winning rubber and taking 3rd in glider.

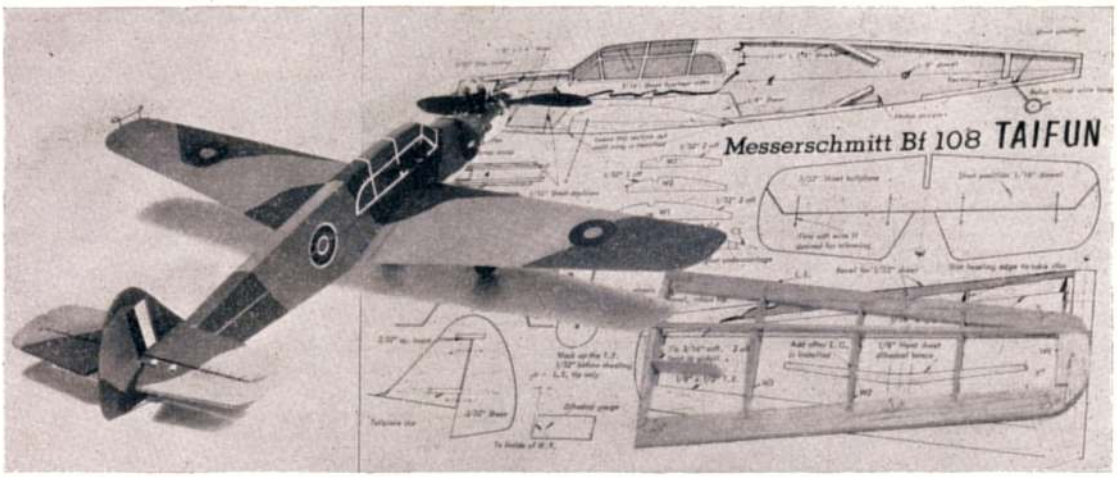
In the West

Typical rally weather on July 14th at R.A.F. Hullavington—strong winds and heavy showers, marred **BRISTOL R/C** 2nd rally.

The single channel models were at a disadvantage. T. Cooper did well to win by a substantial margin. What was surprising was that such a small model as Burton's 32-in. span Graupner *Topsy* should have been able to cope with the conditions, let alone take 2nd place.

In the multi event Ed. Johnson (*Taurus*) for Bristol, won in his usual style with a comfortable margin ahead of three Lincoln visitors. Jack Morton's *Little Toot* just scooped the scale event, narrowly beating D. Bryant's magnificent *Macchi* 202.

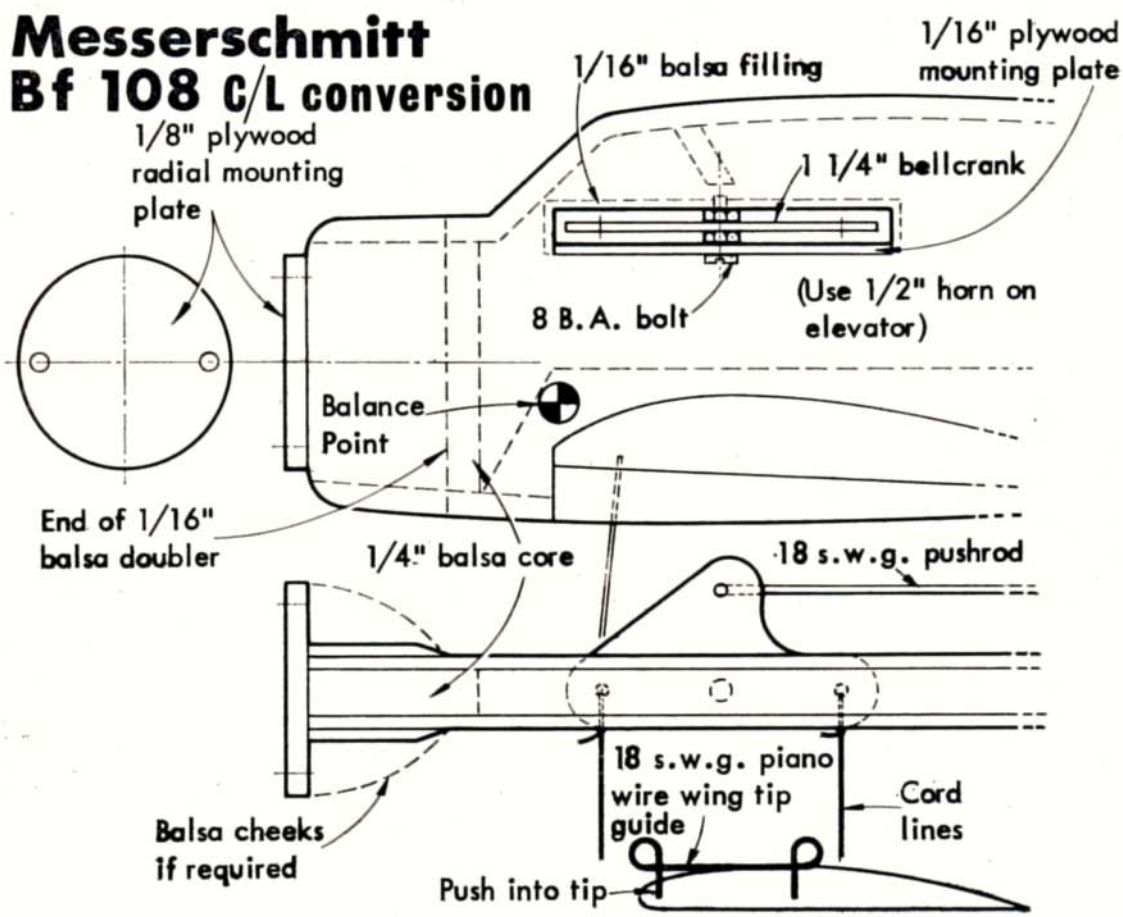
Space runs out—and the two "best weather" events, Hayes Gala and Northern Heights remain unreported. For the moment, all we can say is if you missed them, then you missed a treat! They were each magnificent



TWO MODELS IN ONE the rubber powered version shown as on the full-size plan, can be converted to a control line flyer for the Cox TD.020.

The full-size aircraft was designated Bf 108 after the original title of the Messerschmitt Co., the Bayerische Flugzeugwerke and was the forerunner of the well known Bf 109 fighter, the flying surfaces being similar in planform. It is not general by known that the Bf 108B Taifun operated as a communications aircraft with the R.A.F. It was then known as the Messerschmitt Aldon and had a top speed of 187 m.p.h. They carried usual service markings with green and brown camouflage and a yellow underside; as can be imagined this caused some confusion for aircraft spotters.

Start construction by building the left hand wing panel over the plan. First pin down the $\frac{1}{8}$ in. x $\frac{3}{8}$ in. L.E. and the $\frac{1}{8}$ in. x $\frac{1}{16}$ in. T.E. Notch out the L.E. and T.E. and add wing ribs making sure WR is true by the use of the dihedral gauge. The $\frac{1}{8}$ in. dia. hole must be drilled in WR before it is cemented in. Add $\frac{3}{16}$in. tip blocks



D. E. Garrett's rubber model with our Controline conversion for the Cox ·020

and leave to dry. At this point remove all pins except the ones at WR and insert the $\frac{1}{32}$ in. packing under the T.E. at the wing tip. Cement $\frac{1}{16}$ in. x $\frac{1}{8}$ in. spar in and $\frac{1}{32}$ in. L.E. sheeting. When the assembly is dry remove from building board and sand smooth. The right-hand wing panel is built in the same manner, the only difference being Wi and W3 change places with WR and the tip block. Now cement CS ribs together and drill U/C binding hole. When dry cement both wing panels to CS and leave to dry. Add the dihedral brace, sand L.E. and T.E. to section. The U/C should be bent from 18 s.w.g. piano wire as shown and bound through the hole in WR and CS, it is also advisable to rub cement into the thread to make a secure joint.

The fuselage sides should be cut from medium $\frac{1}{16}$ in. balsa and pinned directly above the plan as shown. Then add the $\frac{1}{8}$ in. x $\frac{1}{4}$ in. formers and longerons. (Experience has shown that $\frac{1}{8}$ in. x $\frac{3}{8}$ in. gives better motor clearance). The wire tail wheel is inserted through to lower longeron and the $\frac{1}{8}$ in. x $\frac{1}{4}$ in. block cemented on top of it. When this is dry the vertical former is added to lock the wheel assembly in. The $\frac{1}{4}$ in. sheet wing mount is then cemented in and left to dry. The other fuselage side should now be cemented on. Add $\frac{1}{16}$ in. sheet nose doublers and drill $\frac{1}{8}$ in. dowel locating hole. The nose plug is laminated from two pieces of $\frac{1}{8}$ in. sheet and $\frac{1}{4}$ in. sheet core. Note that the $\frac{1}{8}$ in. wide plates only extend to the dotted line shown on the side view. Now drill the $\frac{3}{32}$ in. hole for the 18 s.w.g. bush and press fit in. Beads are used as a bearing for the propeller shaft, when the final assembly is made.

All tail parts are cut from $\frac{3}{32}$ in. sheet, the fin and rudder having the grain run vertically. The control sections are shown separately as the rudder was sanded to a left lifting section on the prototype for torque connection. Pin all tail surfaces whilst the cement sets, so that they remain square to the fuselage. The wing should now be cemented onto the fuselage and the $\frac{3}{8}$ in. filler block under the centre section cemented on.

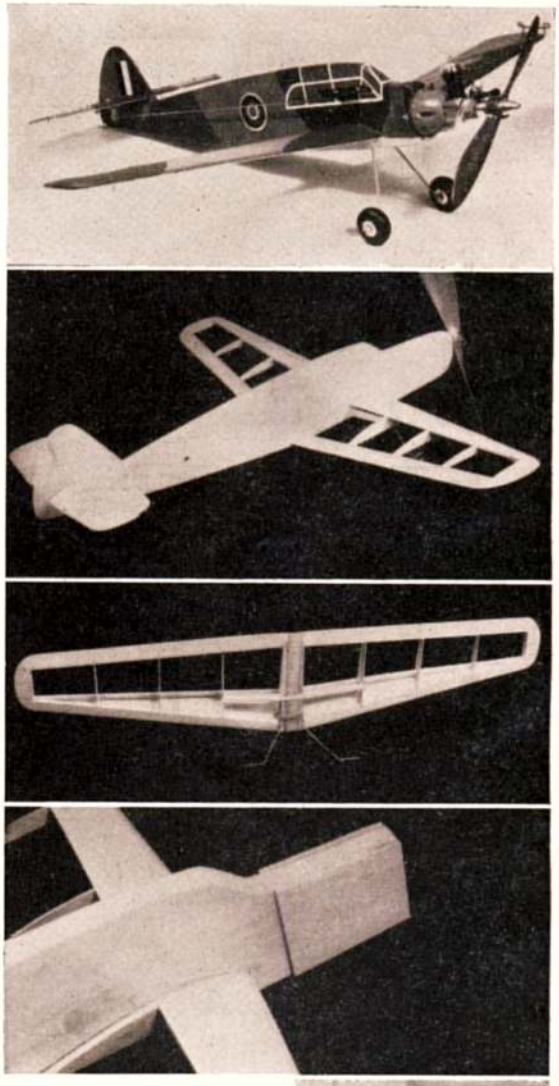
Give the whole model a good rub down with fine sandpaper and cover wings with light-weight tissue. Give two coats of 50/50 thinned dope and decorate with colour. The motor is two loops of $\frac{1}{8}$ in. flat rubber and should be about 2 in. longer than the distance between the prop shaft and dowel.

The balance point of the model is about $\frac{1}{4}$ in. in front of the middle vertical cabin frame or 50 per cent. of the rubber motor length. Great care must be taken to achieve best flying results and a fairly flat glide should be obtained from test glides.

C/L operators can modify as follows: Cut the nose back as shown and install a radial mount plate of $\frac{1}{8}$ in. plywood. Prototype used a Cox T.D. .020. Balsa fairings are then packed in behind the mounting plate to give some extra strength. A wire lead out guide should be push fitted into the wing tip and the elevators joined and taped on. The bellcrank should be installed by cutting a slot out of the fuselage and cementing an $\frac{1}{16}$ in. plywood mounting plate in. Balance point should be approx. on the front line.

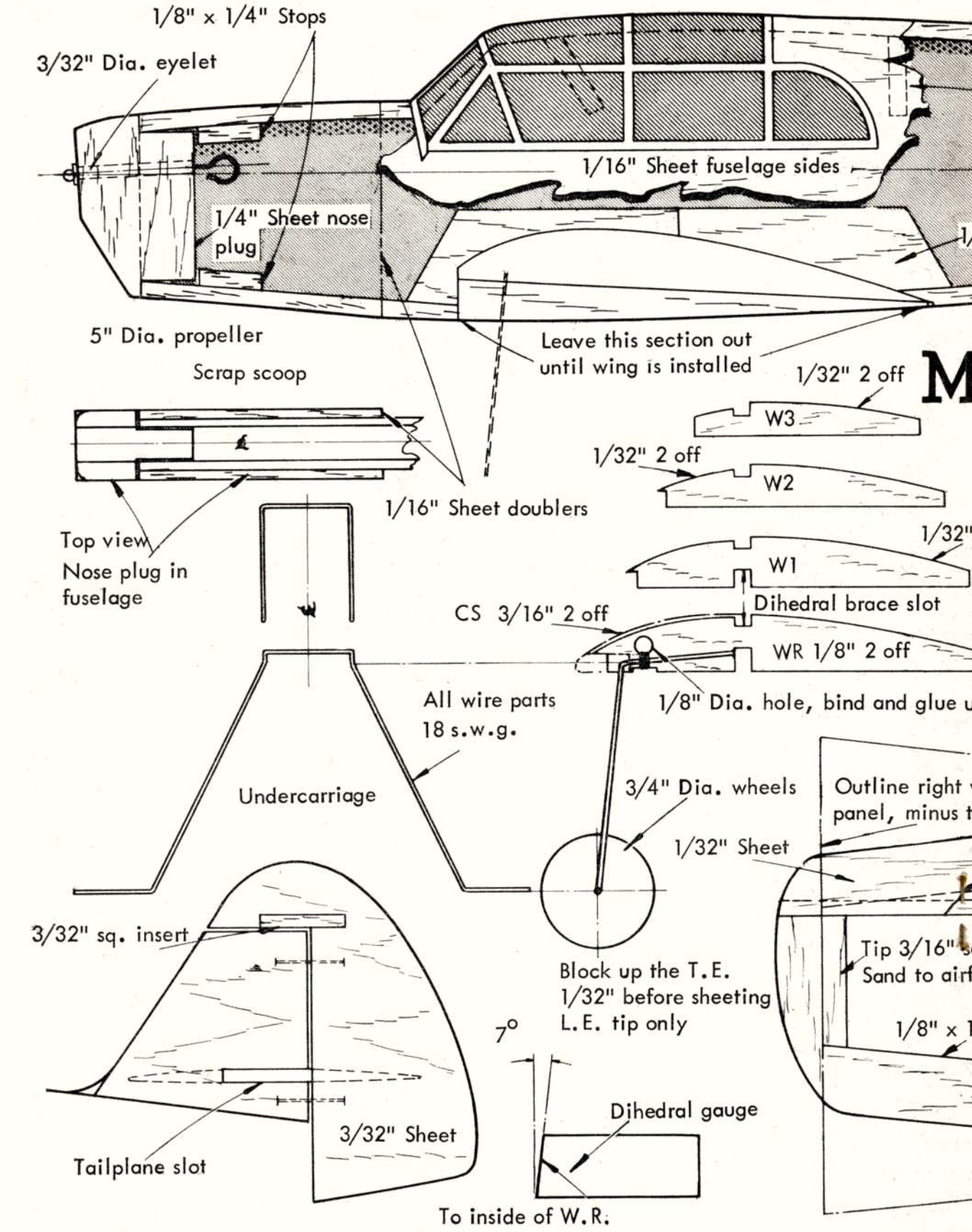
Materials Required

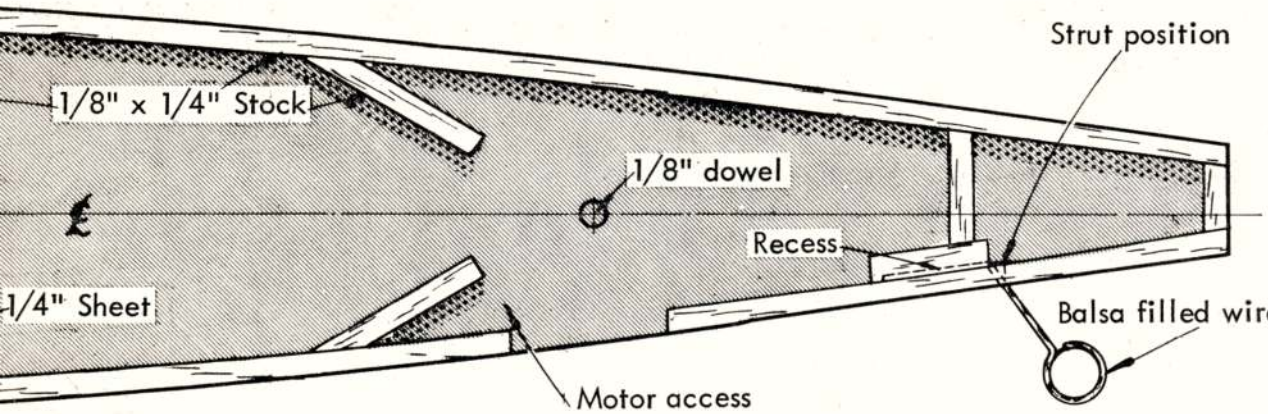
1 sheet 1/16 in. x 3 in. x 36 in. balsa, 1 sheet 3/32 in. x 2 in. x 18 in. balsa, 2 strips $\frac{1}{4}$ in. x $\frac{1}{2}$ in. x 36 in. balsa, 1 strip 1/16 in. x $\frac{1}{8}$ in. x 16 in. balsa, 1 strip $\frac{1}{8}$ in. x 5 in. x 16 in. balsa, 1 strip $\frac{1}{8}$ in. x $\frac{1}{2}$ in. x 16 in. balsa, 1 length 18 s.w.g. piano wire, 2 $\frac{3}{4}$ in. dia. plastic wheels, 6 in. soft iron wire, Scrap $\frac{1}{8}$ in. 3 /16in. and $\frac{1}{2}$ in. sheet balsa, 1 18 s.w.g. bush, 5 in. dia. plastic propeller, 40 in. of $\frac{1}{4}$ in. flat rubber, 1 sheet light weight tissue and $\frac{1}{8}$ in. dowel rod $\frac{1}{8}$ in. long.



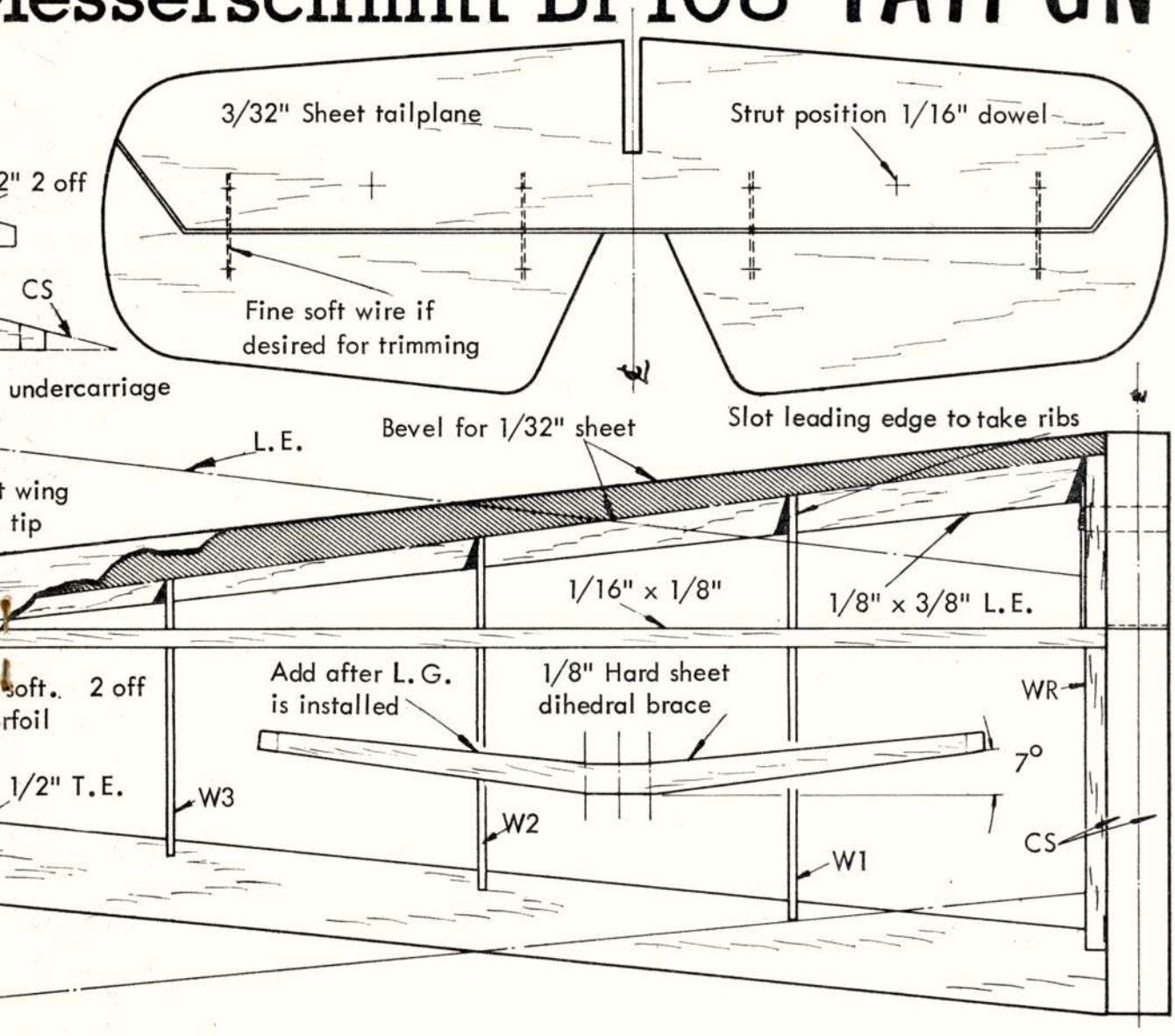
Heading opposite does not show a Messerschmitt in miniature ! Picture of completed model is superimposed over plan showing the wing assembly stage with all parts of the starboard side pinned down and cementing. Above are views of control-line and rubber versions. Top of column is the camouflaged finished model with Cox .020, next, the uncovered unpainted frame of the rubber version (with oversize prop). Then close ups of the wing underside structure, the nose side plate strengtheners and at right, the undercarriage binding.

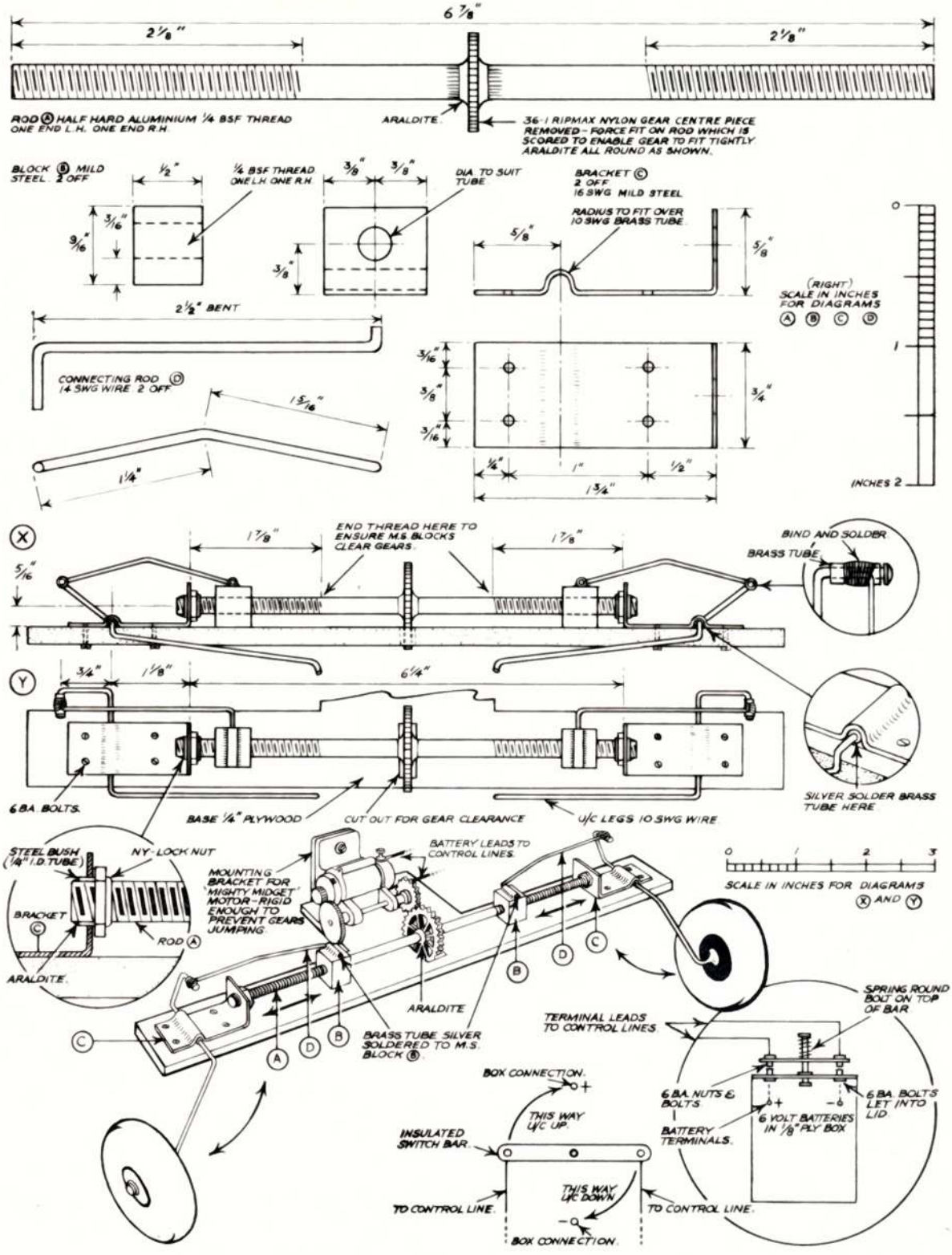
Full size plans overleaf


1/8" x 1/4" Stops
3/32" Dia. eyelet
1/16" Sheet fuselage sides
1/4" Sheet nose plug
5" Dia. propeller
Leave this section out until wing is installed
Scrap scoop
1/32" 2 off
W3
1/32" 2 off
W2
1/16" Sheet doublers
Top view
Nose plug in fuselage
W1
Dihedral brace slot
CS 3/16" 2 off
WR 1/8" 2 off
1/8" Dia. hole, bind and glue u
All wire parts
18 s.w.g.
Undercarriage
3/4" Dia. wheels
1/32" Sheet
Outline right
panel, minus t
3/32" sq. insert
Block up the T.E.
1/32" before sheeting
L.E. tip only
Tip 3/16"
Sand to airf
1/8" x 1
7°
Dihedral gauge
3/32" Sheet
Tailplane slot
To inside of W.R.

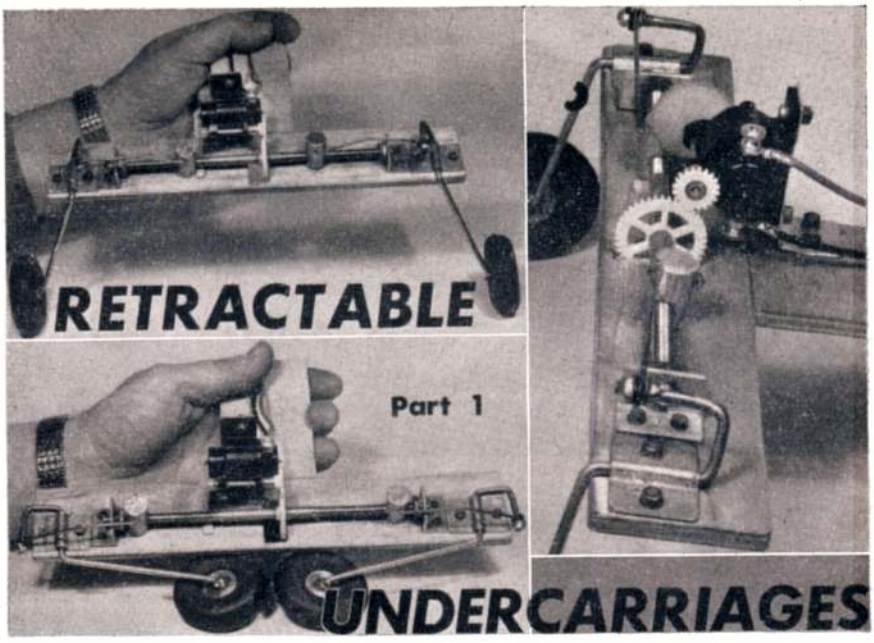


Messerschmitt Bf 108 TAIFUN




6 7/8"
2 1/8"
2 1/8"
ROD (A) HALF HARD ALUMINIUM 1/4 BSF THREAD ONE END L.H. ONE END R.H.
ARALDITE
36-1 RIPMAX NYLON GEAR CENTRE PIECE REMOVED – FORCE FIT ON ROD WHICH IS SCORED TO ENABLE GEAR TO FIT TIGHTLY ARALDITE ALL ROUND AS SHOWN.
BLOCK (B) MILD STEEL 2 OFF
1/2"
1/4 BSF THREAD ONE L.H. ONE R.H.
3/8"
3/8"
DIA. TO SUIT TUBE
BRACKET (C) 2 OFF 16 SWG MILD STEEL
RADIUS TO FIT OVER 10 SWG BRASS TUBE
5/8"
5/8"
3/16"
3/16"
3/8"
(RIGHT) SCALE IN INCHES FOR DIAGRAMS (A) (B) (C) (D)
0
1
INCHES 2
2 1/2" BENT
CONNECTING ROD (D) 14 SWG WIRE 2 OFF
1 5/16"
1 1/4"
3/16"
3/8"
3/16"
3/4"
1/4"
1"
1/2"
1 3/4"
(X)
1 7/8"
END THREAD HERE TO ENSURE M.S. BLOCKS CLEAR GEARS.
1 7/8"
5/16"
BIND AND SOLDER BRASS TUBE
(Y)
3/4"
1 1/8"
6 1/4"
6 B.A. BOLTS.
BASE 1/4" PLYWOOD
CUT OUT FOR GEAR CLEARANCE
U/C LEGS 10 SWG WIRE
SILVER SOLDER BRASS TUBE HERE
STEEL BUSH (1/4" I.D. TUBE)
NY-LOCK NUT
BRACKET (C)
ROD (A)
ARALDITE.
MOUNTING BRACKET FOR MIGHTY MIDGET MOTOR – RIGID ENOUGH TO PREVENT GEARS JUMPING
BATTERY LEADS TO CONTROL LINES.
0 1 2 3
SCALE IN INCHES FOR DIAGRAMS (X) AND (Y)
ARALDITE
BRASS TUBE SILVER SOLDERED TO M.S. BLOCK (B).
TERMINAL LEADS TO CONTROL LINES.
SPRING ROUND BOLT ON TOP OF BAR
BOX CONNECTION.
THIS WAY U/C UP.
6 B.A. NUTS & BOLTS
6 B.A. BOLTS LET INTO LID
6 VOLT BATTERIES IN 1/8" PLY BOX
BATTERY TERMINALS.
INSULATED SWITCH BAR.
THIS WAY U/C DOWN
TO CONTROL LINE.
TO CONTROL LINE.
BOX CONNECTION.

Beginning a fascinating new series of features on really practical approaches to an ages-old problem in scale models



FROM A. G. NOBLE of Leicester comes this very simple electrically operated sideways retracting undercarriage, which has been used in a control line *Texan*, and has proved most successful.

Mode of operation depends on transmission of electrical current from a pilot-held battery box, through insulated (shellac painted) control lines to a Mighty Midget motor in the model. The motor is geared to rod **A** which has two steel blocks riding on it. Thus, when the motor turns the shaft, the blocks either move together or apart. The blocks are in turn connected to the undercarriage.

Polarity of the current is switched by an insulated, spring loaded bar on the battery box from the centre of the circle, and the undercarriage action can then be selected at will. When the undercarriage is to be brought down, polarity is reversed to change direction of the Mighty Midget motor. It was found that 24 volts were needed to operate the original on 40 foot heavy weight Laystrate Lines. The current loss over this distance is considerable!

When operating the undercarriage, the lines should be kept apart if possible, to avoid shorting out. Photographs show a development test rig. Any difference between it and the plans indicates attention to the amount of lost linkage present on the test rig. The plan shows all bearings with brass bushes instead of previous drill fits.

Commence construction by die-cutting Rod **A** to ¼ in. B.S.F. thread as shown. One end *must* be a left handed thread, and the other right handed. Drill out the boss of a 36—1 Ripmax nylon gear to ¼ in. and push fit over Rod **A** to the centre, smearing plenty of Araldite around the base. Blocks **B** can now be shaped and tapped ¼ in. B.S.F., one left hand and one right hand. They should be a very free fit on rod **A** and should on no account bind. Next bend brackets **C** from 16 S.W.G. mild steel, radiusing the bend so that it fits nicely over the 10 S.W.G. brass tube undercarriage leg bearing, and then drill the four 6 B.A. clearance holes for the anchor bolts. The hole to take the steel bush over the end of the shaft should now be drilled, to suit the outside diameter.

Connecting rod **D** is made of 14 S.W.G. piano wire and should now be bent to shape making sure that the two bearing ends are both in the same plane, otherwise they will bind up. The actual undercarriage leg can now be bent from 10 S.W.G. piano wire, the length depending on the type of model.

The base board should now be marked out and all the holes drilled for attaching brackets **C**. ¼ in. plywood makes a rigid base if the weight can be afforded.

Assembly should begin by running blocks **B** on to the shaft **A** to the extremity of the thread nearest the centre gear. Make sure they are equidistant from the free ends of the shaft. Now run a Nylock nut (¼ B.S.F.) over the shaft ends to act as a running stop. Slip steel tube over the shaft ends and Araldite as sketched. This becomes the idle bearing in bracket **C**. Push Brackets **C** over the shaft bearings, and then bolt to the base with the undercarriage legs in position under **C**.

The vital connecting rods **D** should now be linked to blocks **B** by silver soldering brass bearing tubes on top of the blocks. Some measure of adjustment is possible when making this joint.

When assembled, check all of the brass bushes for accuracy of adjustment as they must run freely. The drawing shows where to bind them for extra strength.

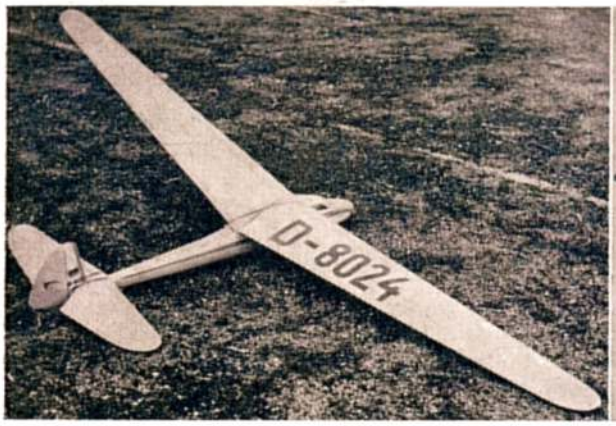
A Mighty Midget motor should now be mounted on its bracket and installed as shown to drive the 36—1 gear.

The battery box switch is self-explanatory with just a spring loaded switch bar moving across the terminals.

Naturally the bellcrank and handle used must be made of an insulated material with plastic covered, flexible wire leads coming onto the lines at the handle and off the bellcrank in the model, to the electric motor.

Using a screw jack system like this, the undercarriage is positively locked at all intermediate positions. This is therefore one of the safest methods of retraction. Furthermore, the independence of the leg bearing under bracket **C** allows the leg to accept hard landing knocks without affecting the mechanism.

Next month—another retracting gear—with pneumatic operation.



Trade Notes

WITH THE INCREASING popularity of glow plug ignition there has been an extra demand for dry batteries able to supply the right amount of current. Our personal recommendation is the larger cylindrical "Flag" cell, but that enterprising model shop, **Henry Welch Ltd.** of Preston have now arranged through their local *Ever Ready* battery supply representative for a battery with brass terminals, but of smaller proportions, which is called the R1302. Selling at 9/0d., the battery has stood up to our own tests and appears to be a near equivalent of American batteries specifically produced for glow plug boosting.

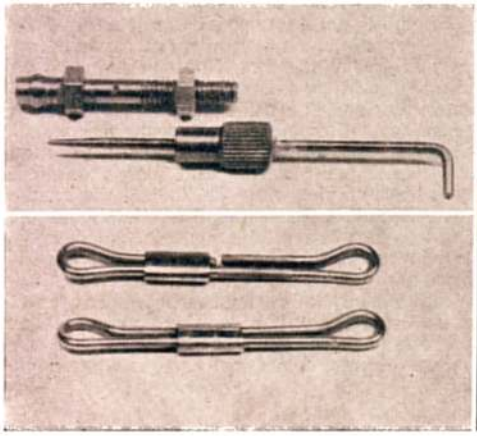
Received from **D. Sebel & Co.** is the latest *Jetex* "Triple" kit for three all-sheet balsa semi-scale profile models of Dart, Delta and Diamond shape. The kit sells at 21/0d. and this price includes two 50c type *Jetex* motors, 20 fuel pellets, wick, cement and transfers, the main advantage of having two motors being to allow quick change-over on the field while one motor is cooling This 3-in-1 kit provides a variety of a fully aerobatic model in the Dart, a high climber in the Delta and super stability with the Diamond configuration.

A new pack of **Aerolite** glue is now coming on to the market for general distribution at 6/0d. and will be supplied in two packs with a can of Aerolite 306 synthetic resin and a polythene ribbed container of hardener. This extra-strong Urea-Formaldehyde glue is particularly recommended for those joints where extra strength is required.

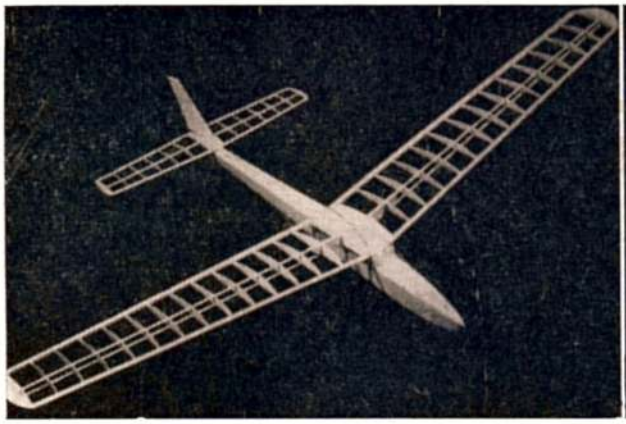
Another new item which might not ordinarily come to your attention has been announced by **Evode Ltd.** and is known as *Evostik Twinstik*. This is a double-sided, transfer tape, which has certain very useful modelling applications where temporary fixings are required during construction. The tape is sold in 60 ft. rolls in widths from ¼ in. to 24 in. and is protected with a wax paper strip. When this is removed one has a transparent sticky film which remains permanently tacky on *both* sides. We can think of one particular use in the application of cockpit furnishing where use of ordinary adhesive maybe messy.

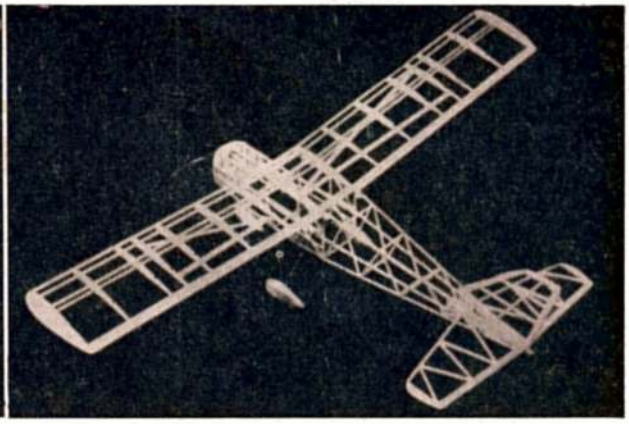
Continuing their range of unusual subjects in the 1/72nd scale plastic model "Blue" series, **Frog** have introduced the *Fokker D21* and *Dewoitine D520C*, each a 2/0d. kit and in Dutch and French markings respectively. We must congratulate International Model Aircraft on their enterprise in tackling these lesser known subjects and hope that sales will justify their bold move. With such novel types coming into the "Blue" series we wonder if we can expect to see *Brewster Buffalo* before long ?

There is still plenty of room for small accessories on the market and we are sure that the steel replacement needle valves and spraybars introduced by **Pollock**



Above left: The Graupner "Weihe 50" distributed by Ripmax Ltd., has made up into a most realistic and impressive near scale model with 71-in. wing span from the 72/6 kit. Fuselage is in moulded polystyrene, strengthened with longerons. At right, just completing full flight tests with R.E.P. Dekatone, is the Robbe "Thor" multi-channel model. Our test model weighs exactly 6 lbs. with a Merco 35 R/C, flies best on 10 x 6-in. prop. and looks fine in navy blue, pink and white decoration. Qualifies for training description also, has been deliberately flown on only aileron control. At left: steel needle valve assemblies are marketed by Pollock of Woking, Surrey, selling at 1/9 each for the replacement spraybar or replacement needle. They are inter-changeable with most units in British motors and will stand up to considerable punishment at a small sacrific in extra weight. Below them are swivel hooks for control line connections at 7d. per pair, marketed by Williamson Models of Glasgow, using the slide-over clip system so popular over the years with American modellers. At right, the plastic battery box put out by Cosmic Hobbies, which we mentioned last month, selling at 4/-, takes four pen-cells.

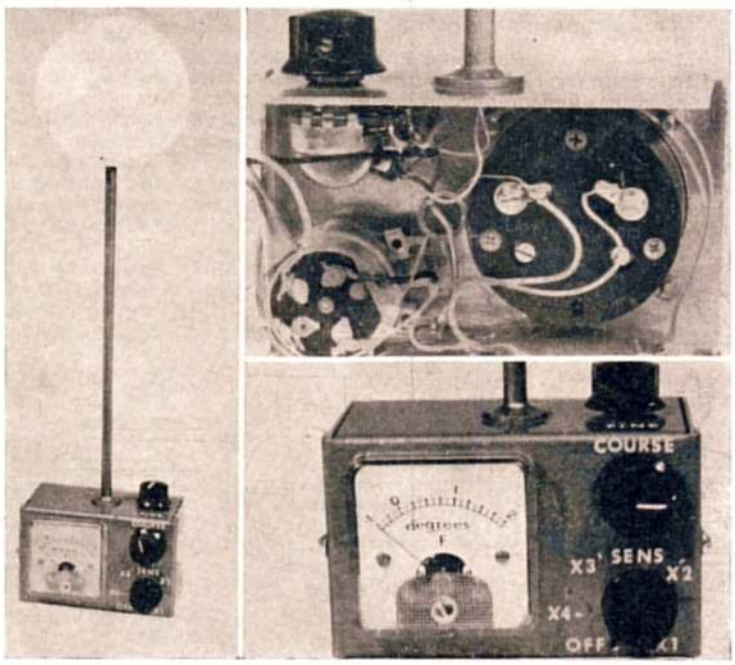




Engineering and the swivel hooks by **Williamson Models** (see photos) will be popular. Trade supplies for the swivel hooks are through Javis Manufacturing of Stockport. We will be pleased to forward enquiries.

The *Beagle-Auster Airdale* 26 in. rubber model by **Performance Kits,** which comes in attractive silk screen printed box complete with plastic prop, wheels and thrust button has now been made up into a very nice and attractive model. We were somewhat mystified by the wing rib slots for a spar not shown and found the piano wire supply not quite enough for the undercarriage of 20 s.w.g. instead of 18 s.w.g. specified on the plan, also, the undercarriage dimensions shown on the drawing are taken to awkward decimal dimensions rather than the customary fractions. Other than these points, the "*Airdale*" makes up well and the informative instruction booklet will be found most useful by novices The kit sells at 13/11d. and is readily adaptable to power conversion for free flight.

Now that we have had an opportunity of checking out our *Thermal Sniffer* made by Max A. Parkhurst, we can provide some opinions on its operation. Credit for the original should go to U.S. International Team members Dave Kneeland and Carl Perkins who actually used it in the team eliminators during September, 1962. Several months were spent working out the difficulties so that units could be made to order by Max. The unit consists of a temperature sensitive thermistor, which is mounted about 10 in. above the metal boxed unit containing the electronic circuit, potentimeters and microammeter. The pots are used to control the scale of reading according to conditions and the meter indicates a rise and fall of the normal temperature for the day which can be set to a neutral reading by the pots. Any rise in temperature will be shown on the meter with a sensitivity of about 2° centigrade upwards and 1° downwards. Field tests show sensitivity of the unit is very good indeed. In fact one has to be very careful to protect the thermistor. It is also subject to providing spurious readings with changes in temperature due to variations in wind strength or passing cloud shade. For application, the unit is placed upwind of the launching area over a time-scale distance which would allow the model launch to coincide with the passing thermal. Ovbiously this demands considerable practice in technique and simply will not work in 30 m.p.h. wind conditions such as experienced in British team trials ! On a calm day, the Sniffer *could* easily provide a guide to continual max's *provided* the human element remains infallible. For this reason, fast talk of banning the Sniffer is nonsense at this stage of development.



Above left: The Graupner "Filou" framework. Some parts need trimming and care taken with cockpit cutting. Top right: Performance Kits Beagle-Auster "Airdale", 26-in. span rubber driven model framework, which makes an attractive subject, sells at 13/11 and could easily be converted to small engines for free flight power. Right: the "Thermal Sniffer" which is made to special order in the U.S.A. for $26.95 by Max A. Parkhurst. A minute temperature sensitive thermistor is protected by a polystyrene ball on mast. Electronic circuit is "potted" for protection underneath the meter in internal view.

WEBRA PICCOLO
Specification
Displacement: .78 c.c. (.047 cu. in.)
Bore: .415 in. (10.5 mm.)
Stroke: .354 in. (9 mm.)
Bore/stroke ratio: 1.17
Weight: 1.6 ounces
Max. B.H.P.: .062 at 13,500
Max. torque: 5.2 ounce-inches at 9,000 r.p.m.
Power rating: .08 B.H.P. per c.c.
Power-weight ratio: .039 B.H.P. per ounce
Material specification
Crankcase unit: light alloy pressure die casting
Cylinder—hardened steel
Cylinder jacket: anodised dural
Crankshaft: hardened steel
Piston: cast iron
Contra piston: cast iron
Connecting rod: dural
Crankcase end cover: turned dural
Propeller driver: turned dural
Spraybar assembly: nickel plated brass
Crankcase bearing: plain
British Agents
Model Aircraft (Bournemouth) Ltd.
Price:
£3 8s. 6d. (including Purchase Tax).

Double ENGINE ANALYSIS Nos. 113 & 114

Webra PICCOLO

WEIGHING JUST A fraction over 1½ ounces, the 'Piccolo' is an extremely compact diesel of squat form, made possible by the very short stroke. Since it first appeared circa 1954 the design has undergone some detail changes. Externally these changes are seen in the new crankcase casting, now with lugs for beam mounting rather than radial mounting as standard on the original, and a longer intake tube. The single bent compression screw has given way to a tommy bar and the screw is also fitted with a locking lever. A spring starter is fitted as standard and the needle valve is now extended and angled back, the end of the wire being fitted with a plastic knob as a finger grip.

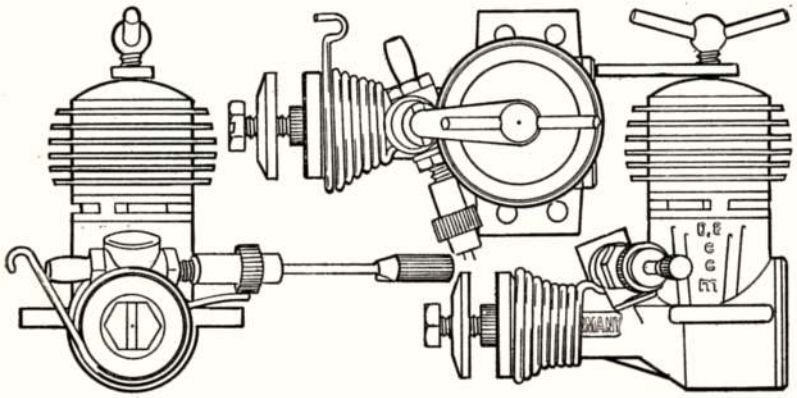
Internally the changes are mainly detail improvements and simplification from the production point of view. Construction is orthodox, with a hardened steel cylinder screwing into the crankcase unit, surmounted by a screwed on finned dural jacket. Exhaust ports are cut through the cylinder flange whilst three arc shaped transfer passages are milled up the inside cylinder walls, spaced 120 degrees apart. Tops of the transfer passages are angled and tapered and overlap the exhaust opening slightly.

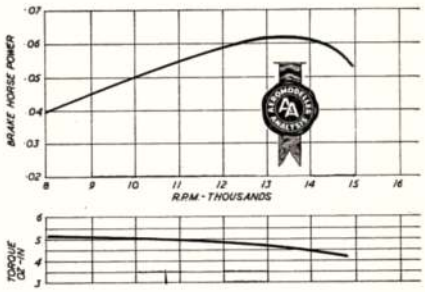
The piston is of cast iron, quite shallow in depth and perfectly plain (cylindrical) in form. The hardened steel crankshaft has a plain (unbalanced) web. The connecting rod is a light alloy die-casting or forging. Crankcase volume is reduced to a minimum by the back cover which screws in virtually up to the end of the crankpin position. The dural propeller driver is pressed onto a knurled section of the shaft, the shaft terminating just in front of the driver. The propeller shaft is a .118 in. diameter (3 mm.) screw.

The needle valve assembly is comparatively massive and is angled back some 20 degrees. All components, with the exception of the steel needle, are of nickel plated brass. The fuel pipe fitting is large for an engine of only .8 c.c. and requires the use of fairly large bore fuel line. The shape of this fitting is more consistent with the use of neoprene or soft fuel tubing than the usual British standard.

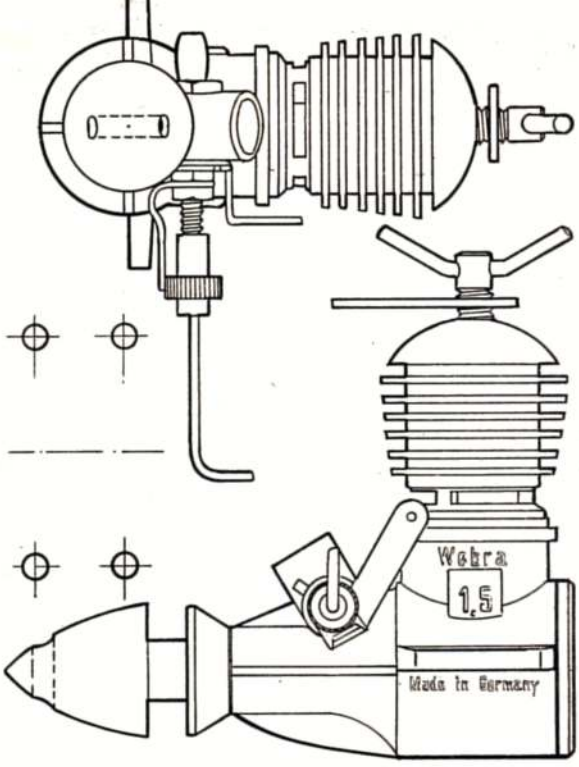
We found the 'Piccolo' definitely fussy as regards starting, although relatively easy to adjust once running. It appears to need a higher-than-average ether content in the fuel for easy starting and is much better to handle when the ether content is 45 per cent., although this fuel ratio produces some loss of power and a tendency to slight inconsistency when running at high speeds. A minimum ether content of 33 per cent. appears to give best power performance, with the addition of a little amyl nitrate to smooth the running. With less ether the 'Piccolo' is distinctly reluctant to start at all. For use as a sports engine, therefore, we would definitely recommend the higher ether content (45 per cent.). With less ether the 'Piccolo' is very prone to flooding before it fires, when starting is impossible before the engine has been cleared. The engine will also flood readily if the needle valve is opened too far for starting—e.g. more than three turns.

The 'Piccolo' is a well made sports engine which, once familiar with its handling characteristics, is easy enough to handle. It is definitely an engine for running on small propellers—nothing bigger than a 6 x 4, which should be about the ideal for almost any matching size of model. Vibration level is fairly high, so the compression locking bar is useful, although not essential on the engine we tried where the contra piston fit was very good. Both compression and needle controls are easy to handle and conveniently placed. The spring starter is as much a 'gimmick' as anything, although it is sensibly designed and works quite well provided the engine is correctly primed. For general handling we found it easier, if anything, to flick start since this is not an engine characterised by 'first time' starting.





New versions of old favourites tested by R. H. Warring



& RECORD R/C

THE PRESENT WEBRA Record II R/C, represents a complete re-design of the original 1954 model which featured beam or radial mounting (one of the first European engines to follow this fashion) and a bore of .5 in. against a stroke of .45 in. The current 1.5 'Record' is for beam mounting only and of comparatively long stroke. The cast intake tube is designed to accommodate a barrel throttle and it was this version which was available for test.

The crankcase unit is a clean and lightweight pressure die casting into which screws the cylinder and back cover. The plain bearing length is comparatively thin walled but well braced both by the curved taper section and full length external webs. An unusual point is the formation of a thrust pad consisting of three separate segments against which the crankshaft web bears—the space between these thrust segments presumably being to ensure oil flow to the shaft as well as reducing the actual rubbing area.

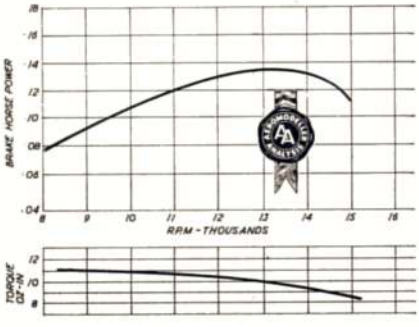
The crankcase is of hardened steel .315 in. diameter with a plain web and front taper to accommodate the prop. driver. The front of the shaft is stepped down to a .191 in. diameter threaded length. Intake port in the shaft is extremely small and angled backwards. Finish is generally excellent, produced by grinding all over after hardening.

The cylinder is of comparatively lightweight construction for a diesel, but of fairly conventional form. It screws into the crankcase, seating on a flange. Exhaust ports are cut through the walls above this flange. Six shallow transfer passages are machined on the inside of the lower cylinder walls terminating at the level of the flange and well below the bottom of the exhaust ports.

Piston is of cast iron with a conical top and fairly substantial length. Connecting rod is a dural forging. Gudgeon pin of silver steel is of small diameter and press fitted. Like the cylinder, this assembly is also of lightweight construction. The contra piston is of cast iron and the cylinder assembly is completed by a turned dural jacket screwing onto the upper cylinder. This carries the compression screw, which is fitted with a locking arm.

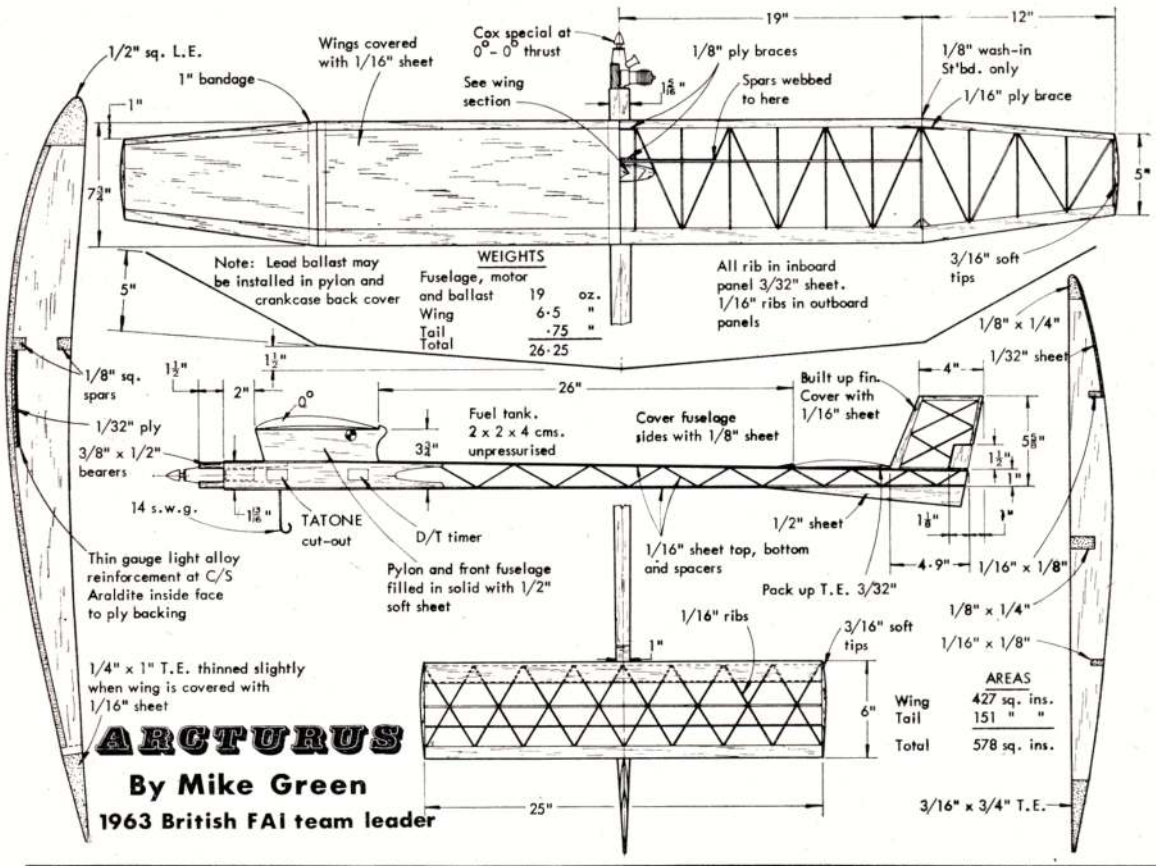
The barrel throttle is of conventional type,rotating independent of the spraybar (i.e. the spraybar does not rotate with the barrel). This is achieved at the expense of a rather loose assembly, relying on a Bellevieu washer to provide contact pressure for a gas seal on the suction side. We found, in fact, that this unit was prone to air leaks, interfering with suction, unless tightened up until the throttle is quite stiff. Throttle response is quite good, but basically 'two speed', i.e. 'fast' or 'slow'.

Like its smaller stablemate, the 'Record' appears to prefer a fuel with a high ether content for easy starting. Otherwise, however, it is a reasonable enough engine to handle, with a power performance putting it in the 'sports' category. Its chief attraction in this respect is that it is a compact and light 1.5 c.c. engine, which could be particularly useful for radio control work. The ounce saving over a more rugged 1.5 c.c. diesel could account for a secondary actuator to operate the throttle. As a radio control power unit, however, it does suffer from a fairly high vibration level, although this can be offset to a considerable degree by finding the 'optimum' position in which to lock the propeller.



WEBRA 1.5 c.c. RECORD
Specification

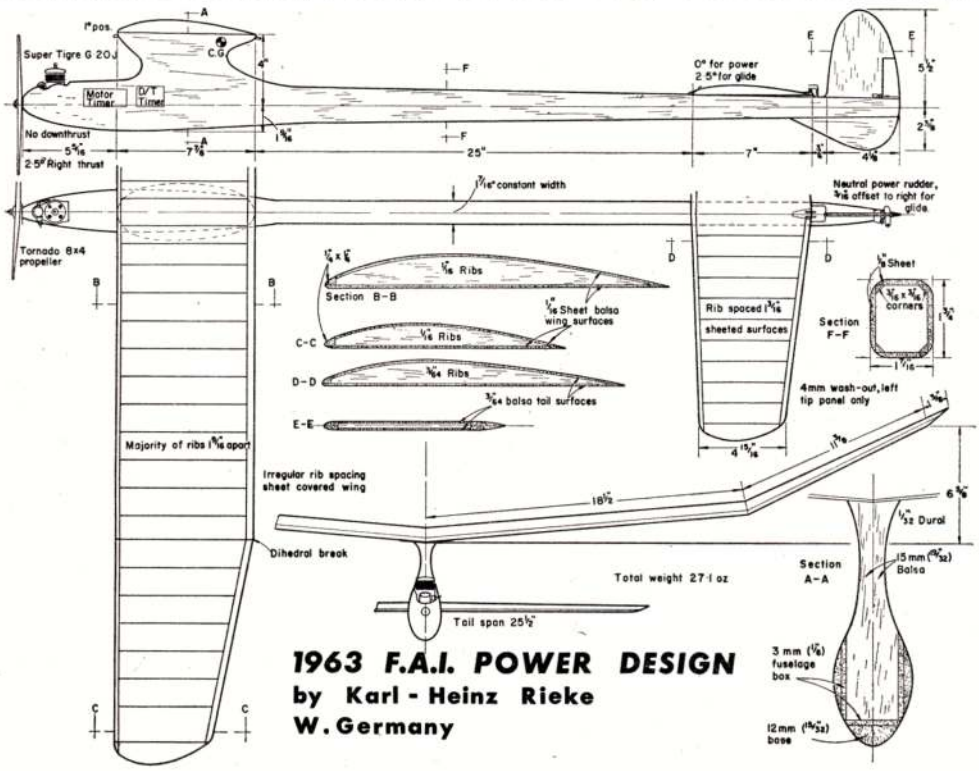
Displacement: 1.47 c.c. (.09 cu. in.)
Bore: .472 in.
Stroke: .512 in.
Weight: 3¼ ounces
Max power: .134 B.H.P. at 13,000 r.p.m.
Max. torque: 11 ounce inches at 9,000 r.p.m.
Power rating: .09 B.H.P. per c.c.
Power/weight ratio: .041 B.H.P. per ounce
Material specification:
Crankcase: light alloy pressure die casting
Cylinder: hardened steel
Cylinder jacket: dural
Piston: cast iron
Contra piston: cast iron
Crankshaft: hardened steel
Connecting rod: dural forging
Spraybar assembly: nickel plated brass
Crankcase end cover: turned dural
Main bearing: plain
British Agents:
Model Aircraft (Bournemouth) Ltd.
Price:
£4 4s. 1d. (Including Purchase Tax).
£3 14s. 5d. (without throttle).



ARCTURUS

By Mike Green

1963 British FAI team leader



1963 F.A.I. POWER DESIGN

by Karl - Heinz Rieke

W. Germany

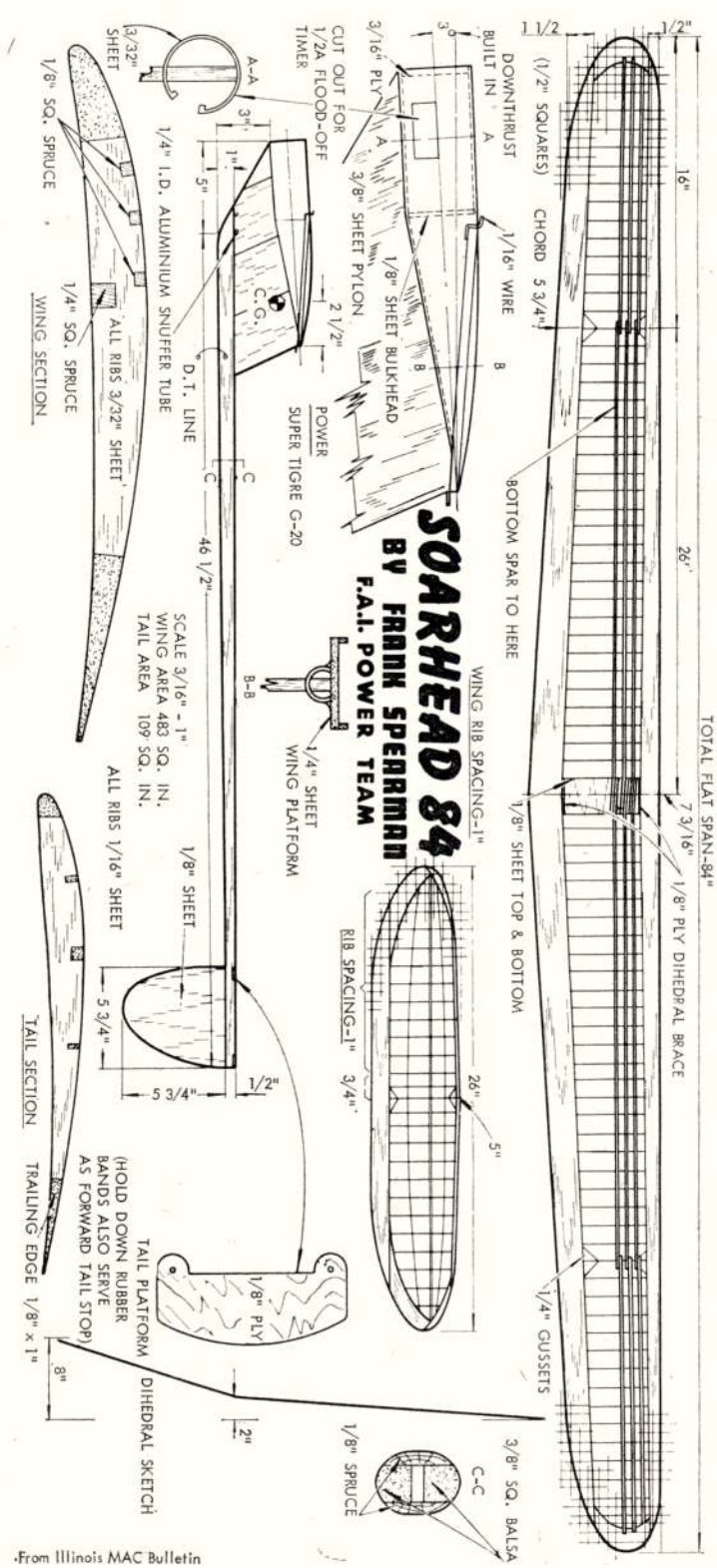
F.A.I. Power Trio (at the World Championships)

IT IS OUR PLEASURE to present these detailed drawings of 3 of the world's finest power models to the *Federation Aeronautique Internationale* specification.

Arcturus by Mike Green (whom we forecast as Britain's power modeller of the year in our report on the British National Championships) is a very original design in this age of near-copies and similar models. The sheet surface on the top of the wing and thick section sheet covered rigid fin plus a low pylon are main features; but one thing we like about the model is its lack of gimmickry. Mike came through from a relatively low 7th place in the first British trials to be the outstanding leader in the British team selection, where this model was used for most of the flights. The centre section reinforcement is a novel protection against rough weather and heavy d/t landings.

The name of Karl-Heinz Rieke is perhaps better known to British modellers for outstanding prowess in the International indoor model sphere where Karl happens to be reigning World Champion. In his own country he is a power modeller of considerable repute, in fact he was 9th in the last World Championships at Leutkirch. His models are extraordinarily clean and streamlined, a direct contrast to the functional lines of the majority and he has been one of the pioneers of sheet surfaced wings. In this model, which gained the absolute maximum performance in the 1963 German team trials, Karl used sheet on top and bottom surfaces of both wing and tail so that the entire model is, in fact, balsa covered. The tailplane and the rudder are triggered for glide setting as the motor stops.

Soarhead is perhaps the most unusual F.A.I. power model we have yet presented in this series of contest designs and again this is one with a great reputation for high performance glide. High-aspect wings of very strong structure, the high-mounted engine and underslung fin all provide refreshing differences for design study. Frank Spearman certainly has the right type of model for a contest in Austria with this one.



From Illinois MAC Bulletin

OVER THE WAVES

Sqdn. Ldr. Crampton's sporty looking little little Frog Diana glider, converted for radio control work. A Kraft K3V receiver was installed, two U-7 pen cell power supply placed in the nose, and a Citizenship PSN escapement fitted to operate rudder. Power is a Cox .010 atop the pylon.

This month we have an interesting selection of modellers' experiences to relate, and it is by no means insignificant that two of them deal with conversions of gliders into low power cruise type models. These are rapidly gaining popularity through the ability to fly over rough ground, having no need for a clear take off. We open with Sqdn. Ldr. J. Crampton's account of his experiences of a venture into multi-channel aerobatics.

"Orion" and "Diana"

AFTER HAVING SEEN and admired several "Orions" I finally decided to build one myself.

I use a Merco 49 engine and cannot speak too highly of its qualities. My R.E.P. ten channel radio equipment is harnessed to four Duramites, and the throttle servo is a Climax Servomite.

Flying this machine is a most breathtaking experience at first and it requires time to accustom oneself with the speed and sensitivity of the model. Very fortunately a friend allowed me to fly his "Orion" for short two-to-three minute spells on several occasions so I was not completely unversed in the art, especially as I had previously enjoyed eighteen months flying a "Super Sixty" equipped with R.E.P. six channel radio equipment. (See *Over the Waves*, March 1962).

But the "Orion" is a very very different flying machine to the inherently stable 'Super Sixty'. Unlike the Masters of this Art who roar their multi channel masters off the ground and almost instantly start a ten minute session of stupifying aerobatics desperately close to the ground, I climb my "Orion" for height and when at a healthy altitude throttle back to cruising R.P.M. and stooge around in a very pedestrian manner. For one with considerable experience of full size flying where there is a natural feed-back, as it were between the pilot and his aircraft there is a great deal of "unlearning" necessary to be happy when flying a remotely controlled model—where there is no 'feed-back' between the pilot and the model. The old devil of putting on opposite aileron when the model is flying towards you is ever present (I wrote off an 'Uproar' *completely* by this terrible mistake once upon an awful time).

It is indeed all too easy to damage one's model in a terribly short time unless the greatest caution is exercised and I confess to having shovelled up all too many pieces of damaged models—due mainly to pilot error.

Now "Diana" is quite a different case. This little model is kitted by 'Frog' and basically it is a lightweight sailplane with a span of 36 inches. Into the hollowed-out nose piece I placed two 1½ volt pencells—into the cockpit went a tiny Kraft 3 volt relayless receiver and a Citizenship rubber powered sequenced actuator was positioned behind the cockpit. Finally a Cox .010 engine was mounted on a pylon over the wing centre section, all for a total weight of 7 ozs. The result was very pleasing. This little machine climbs to such a height that it is difficult to hear when the engine cuts!

Cascaded Servos wiring diagram

NOT OFTEN DOES one find much on the use of two different brands of servos together. Manufacturers (rather naturally) prefer to provide wiring diagrams for their radio equipment limited to their own particular range of units. C. P. Atkins of Sutton Coldfield came right up against it when trying to use a Min-X Compact all transistor relay receiver to switch a Climax Unimite single channel servo for rudder control and a cascaded Graupner Unimatic servo for engine control. Eventually, after considerable trial, he arrived at the two circuits shown here.

Fig. 1 will work with the control sequence as follows:—

Right: Press (holding signal)

Left: Press, Press (holding second signal).

Change engine speed: Press, Press, Press (holding third signal).

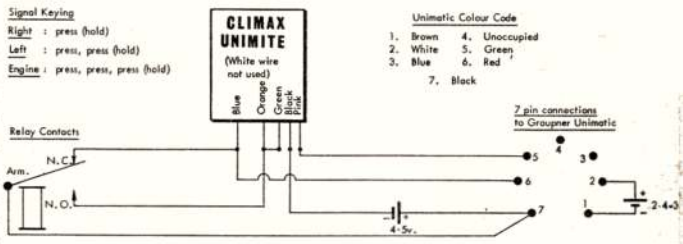
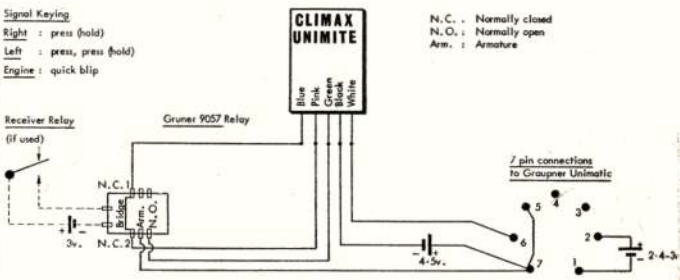


Fig. 2 has exactly the same sequence of signalling for the first and second controls, but engine speed change via the Unimatic servo uses a "Quick Blip" signal.



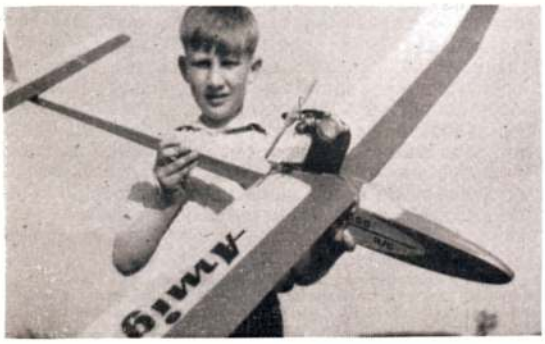
In each case the Unimatic servo used switching disc *Number Three*. Another important point in *Fig.* 2 is the use of a relay with two Back contacts (Normally closed contacts) which eliminates most. However, the Gruner 9057 relay is so fitted. Butchering a receiver to change a relay is not everyone's cup of tea, in which case the Gruner may be switched like an escapement as indicated by the dotted part of *Fig.* 2. Fortunately the Gruner 9057 is housed in a plastic case and can be conveniently taped to the side of the receiver box. It is also possible to switch the Gruner direct from a 3v or 4.5 volt relayless receiver.

An Inexpensive R/C "Amigo"

The Graupner Amigo A/2 may be flown either free fllight or with radio but its pod-and-boom fuselage was obviously intended for the Graupner R/C equipment. Cheaper units on the market are generally too bulky for the slender fuselage.

The solution found by C. Kershaw of Stafford costs only £17 complete (Tx, Rx, Battery-Box and escapement) using standard British ready-to-fly equipment, and is easily wired up.

The actuator installation is the main problem. A servo *can* be positioned in the pod, but if economics demand a rubber-driven escapement must be placed somewhere along the slender rear fuselage in order to have a reasonable length of rubber. There simply isn't room for a rubber motor *and* a torque rod down the back end, so the rubber must run forward. An alternative is to run the rubber from the rear end of the pod to the tail, with external controls to the rudder via yoke and threads, but this is vulnerable and looks untidy. The only escapement yet found which will fit inside the tiny boom is the Fred Rising Lightweight (a Citizenship SE-2 compound might also) at 25s. "Reptone" was the least expensive commercial Tx/Rx unit at the time. The box contains a heavy and rather bulky servo, which was disconnected and put aside. The actual receiver was encouragingly light and measured only 3 in. by 1 in. by 2 in. when extracted and boxed in balsa for protection.



The original Reptone battery-box fits neatly in the nose of "Amigo" hard up against the second former. Extra: one five-pin plug and length of wire. The two-pin socket in the side of the Reptone Rx unit (intended for a quick-blip engine connection) can be removed and used with the two-pin plug and lead provided with the outfit. The relay has three tags for servo operation, but for the Rising escapement only the bottom two are required.

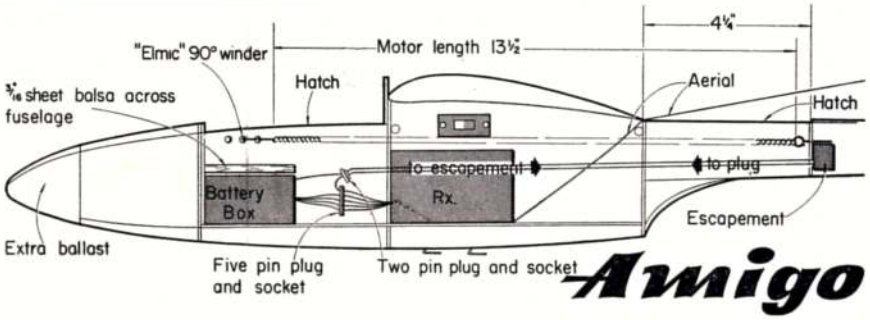
There's no room for sponge rubber at the *sides* of the Rx but sponge rubber padding can be placed below and fore-and-aft. Sawing a small piece from the escapement's paxolin mounting-plate enables it to be positioned several inches further aft. An "Elmic" 90 deg. sidewinder mounted above the battery box completes the set-up. As the fuselage sides are thin it is advisable to reinforce with a piece of 1/16th ply at the winder. "Amigo's" longerons and sheeting are frequently spliced, sometimes in inconvenient places. There is a butt joint just aft of the wings, and as it happened, the fuselage broke in two at the slightest provocation. Strengthening the joint with balsa or ply on the inside cures this. With plenty of Humbrol enamel the finished model weighed only 16 oz., which is normal for many *free-flight* A/2's although the plans suggest up to 27 oz. Control in this model is purely sequential, which some people think too dangerous for a rudder. But "Amigo" is so docile that if one forgets which control comes next and gets right instead of left, there's always time to release and press again.

One other comment on flying "Amigo": she's prone to zoom and stall after a turn. The tailplane is "contest" sized, and though the suggested C.G. is reasonably well forward, recovery is not brilliant. It is easier on the nerves to fly her under-elevated by free-flight glider standards. Still, if you stall her off the line it's a comfort to know you can spiral her out of it, providing there is enough height. Average flight is 1:45 from 120-foot line, but for duration keep your finger off the button as each turn loses several feet. For those who dislike towing, a pylon-mounted engine ("Dart" 0.5 c.c.) solves the duration problem.

Tank Troubles

How many engine failures can one attribute to incorrectly aligned or badly positioned fuel tanks? Quite a number we would think, judging by a particular problem which bedogged some local multi channel fliers recently. Persistent engine cuts made deadstick landings with a 8½ lb. low-winger just a little tricky. Not until all manner of "cures" had been tried was the fuel tank hatch removed to discover the fuel tube twisted practically in knots. Engine vibration had caused the fuel tank to *revolve*. To prevent this in the future, the polythene bottle tank cap outlet tubes were keyed into the firewall. This one sounds a very long chance, but it actually happened so its worth checking next time your engine cuts mysteriously.

Above, Graupner Amigo displaying power pylon which mounts a D.C. Dart, 0.5 cc. engine. Right, equipment layout in Amigo fuselage. Note how the rubber drive for the escapement is arranged, converting the design from motorised servos.



MIGNET 'Pou du Ciel'

AIRCRAFT DESCRIBED No. 125 by G. R. DUVAL

THE H.M.14 POU-DU-CIEL made its first flight in France on September 6th, 1933. Designed by M. Henri Mignet, and of highly unconventional layout, the Pou was intended by simplicity and low-cost production to bring flight within reach of those who believed in flying for fun, but could not afford the high cost normally involved.

Virtually a "flying slot", the machine was controlled in pitch by a variable incidence front wing, and in yaw by a large rudder, both functions operated by a single control column, with fore and aft movement for the front wing, and sideways movement for the rudder. Turns were made by rudder alone, there being no ailerons, dihedral stability preventing a spiral dive. To assist would-be constructors, M. Mignet's book "Le Sport de L'Air" contained instructions and drawings.

Interest in the Pou proved to be world-wide and immediate. In Britain, the Air League of the British Empire sponsored the machine, selling six thousand translated copies of Mignet's book in the first month and further, succeeded in freeing the Pou from air-worthiness regulations, replaced by issue of Permits to Fly against Third Party insurance.

The first British machine flew on July 14th, 1935. Built by Mr. S. V. Appleby at Heston and registered G-ADMH, it was fitted with a 30 b.h.p. Ford car engine modified by Sir John Carden for aviation use.

By April, 1936, some eighty Flying Fleas, the name delicately mis-translated, were complete or under construction in this country. Many of them were sadly under-powered, with impossible C. of G. positions, and failed to fly, but a few, properly built and with good engines, performed reasonably well. Among the latter, Mr. Appleby's G-ADMH was probably the most efficient, for minor crash damage gave the noted sailplane designer, Mr. L. E. Baynes, an opportunity to analyse and remedy its design defects. The modified 'MH was rebuilt by Abbott-Baynes Aircraft at Farnham, Surrey, and flown by its owner at Heston on October 2nd, 1935. The Carden/Ford engine was retained, the most obvious changes being an increase in front wing span from 17 feet to 22 feet, a slightly lengthened fuselage and a faired-in nose. The Abbott-Baynes Flea was advertised at £198 ex-works and air tested, or as a kit of parts for less than half this figure.

On April 20th, 1936, disaster struck. G-ADVL dived into the ground at Renfrew, killing its pilot. Two weeks later, a Royal Air Force pilot lost his life in G-AEEW, and on May 21st, a brother officer was killed in G-AEBS at Digby.

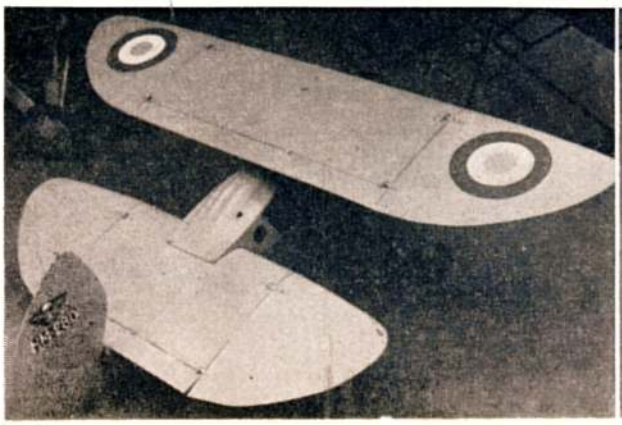
Blind enthusiasm chose to ignore these accidents. Three examples of an improved Abbott-Baynes machine were built and flown at Heston. Known as Cantilever Poux, these machines were strut-braced, push-rod controlled and utilised the reliable Carden/Ford power unit.

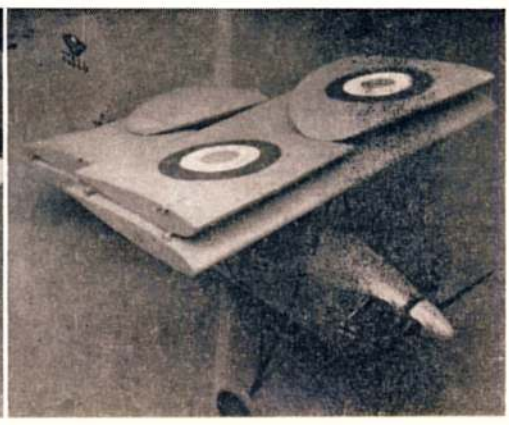
On September 20th, 1936, yet another fatal accident at Dyce, brought matters to a head. Full scale wind tunnel tests at R.A.E. Farnborough, and at Villacoublay in France, proved without doubt that a design fault had led to the accidents. By virtue of its layout, the Flea's flight attitude was roughly parallel to the ground at all times. This, combined with low forward speed, induced experienced pilots to put the nose down to prevent a stall. In so doing, the front wing incidence was reduced towards a critical angle, where the vital slot-effect vanished and the elevator function became ineffective. The result was an out of control dive into the ground.

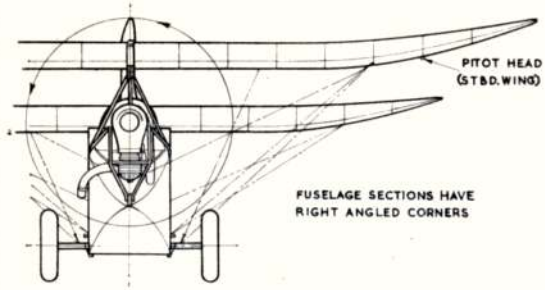
M. Mignet took immediate steps to correct the design, but it was too late. His improved designs met scepticism, and in Britain the machine was finally banned. For all this, Mignet continued to design and build his machines. Modern Fleas now exist in America, France, Japan and elsewhere, while in this country non-flying relics of the "Flea Craze" are still to be seen in odd corners.

Continued on page 466

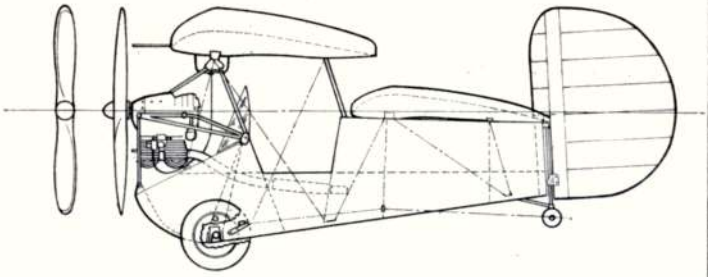
Top Left: Frank Easton's U.S. Flea with Continental A-40 engine which has been seen at many "Fly-in" meetings of the Experimental Aircraft Association etc. Top right: "Flight" photo of the Cantilever Pou which had struts replacing main bracing wires and unbraced rear wing. Below is the fascinating folding wing H.M.280 recently presented to the Musee de l'Air, Paris by its owner who operated throughout the war with the Maquis. Colour is light blue overall with French cockades. Co-operation of the Musee de l'Air, A. J. Jackson, Maurice Bayet and K. W. Hamilton, U.S.A. is gratefully acknowledged for preparation of this feature



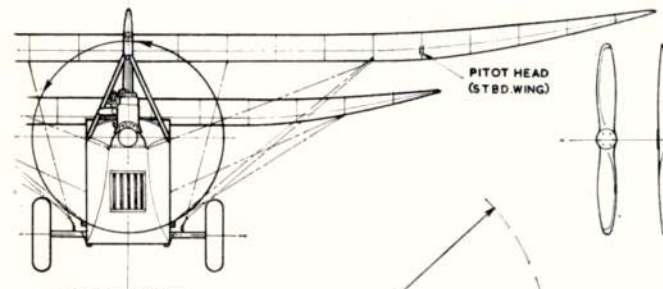




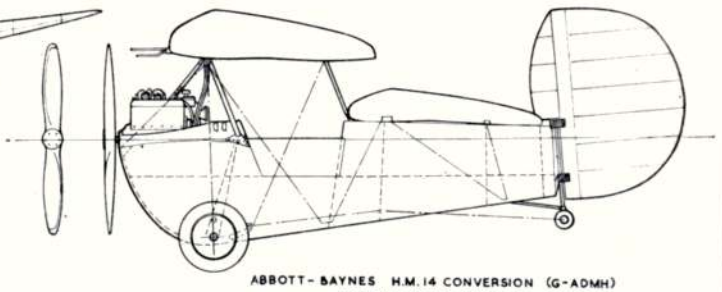
H.M. 14



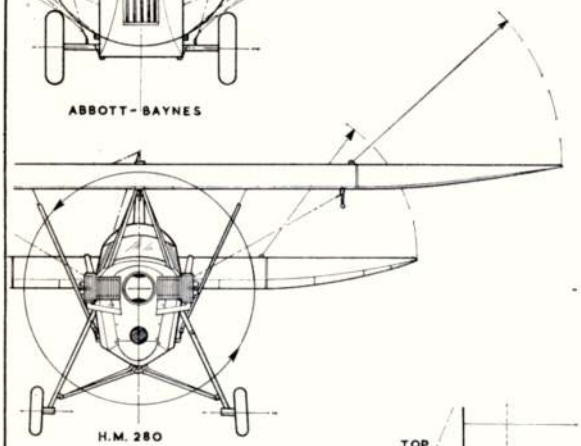
TYPICAL H.M. 14. - SCOTT SQUIRREL ENGINE (G-ADXS)



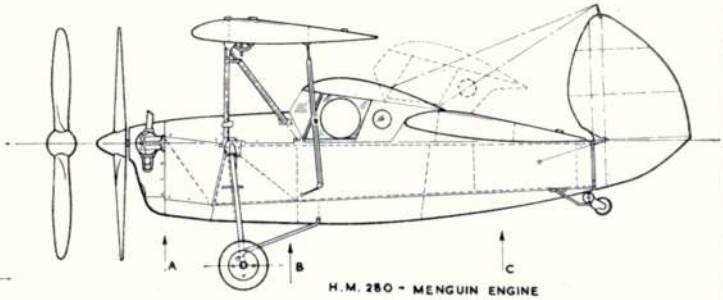
ABBOTT-BAYNES



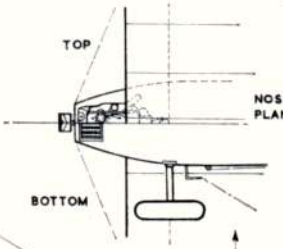
ABBOTT-BAYNES H.M. 14 CONVERSION (G-ADMH)
CARDEN-FORD ENGINE



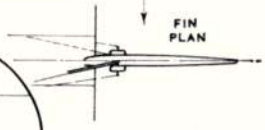
H.M. 280

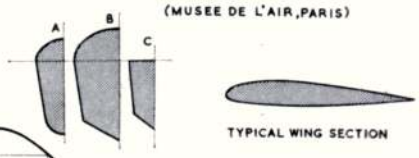


H.M. 280 - MENGUIN ENGINE
(MUSEE DE L'AIR, PARIS)

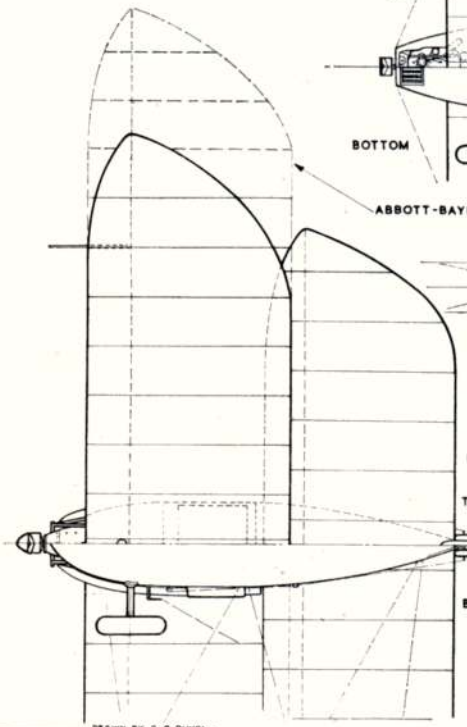


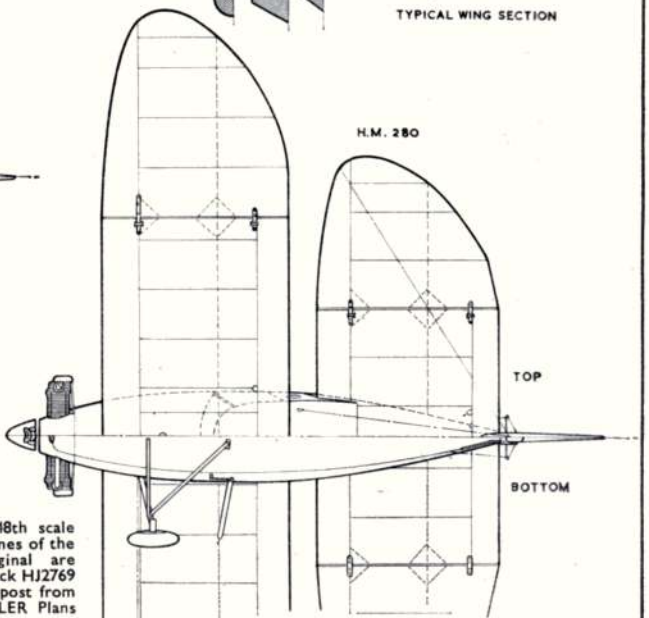
ABBOTT-BAYNES





TYPICAL WING SECTION





Copies of this 1/48th scale drawing and dye-lines of the 1/24th scale original are available as plan pack HJ2769 price 2/6 plus 6d. post from the AEROMODELLER Plans Service.

DRAWN BY G. R. DUVAL.

THE MIGNET "POU DU CIEL" (H.M. 14 & 280)

FT.

Readers' letters

DEAR SIR,

The flying of a power model in the Women's Cup at this year's Nationals seems to have caused quite a stir—both at the time and in your report.

The proposal to incorporate power flying in this event was put forward via the Northern Area Committee (and with their full support) in the usual way. The idea was to (contrary to your "unbalanced" statement) make the event fairer—based on the following reasoning:

rubber models—highest potential, hardest to operate.
power models—medium potential, fairly hard (for a lady at least) to operate.
gliders—lowest potential *comparatively* easy to operate.

Therefore the power model is really at no special advantage over the other two types, balancing ease of construction and handling (my sister—Mrs. Jepson has a two-inch scar on her fore-arm inflicted by her ETA 15D to prove that there are certain "operating snags") against performance.

We also have the written statement of no lesser authority than J. O'D to say:—"*even a rather rough rubber job can do comparatively easy* 3's". On this basis, it is the rubber model which unbalances a three cornered contest—not the power job.

Your phrase "now *curiously* incorporating power flying" intrigued me. The decision was made at a S.M.A.E. Council Meeting, passed on to the Area by our Area Delegate (Mr. E. Coates) and then to clubs via the Club Delegate to Area Meetings. Is this not the correct system? If other ladies did not know of the decision, it is their Club and Area organisations which are at fault. Certainly no attempt was made (or come to that, could have been made) to conceal the decision.

In conclusion, I should like to trot out the old, and I feel very appropriate chestnut "It ain't what you fly, it's the way that you fly it." I think if top class modellers of all classes got together and switched models, the "right" man (or woman) would still top the list.

GEORGE E. STRINGWELL.
Hon. Sec. Rotherham P.G.

Near mess

DEAR SIR,

It is regretful that the Me109G, the subject of your article in July, 1963, issue will not now fly. I was one of those fortunate ones who saw this machine in action at Leavesden about 1944. It was one of about seven captured German machines on a visit for the local R.O.C. unit. The others were an Me110 two JU88s, an FW 190, I cannot remember the other two. This particular Me109G nearly came to a sticky end at this time, on take-off. The engine stalled about 12 ft. off the ground. Fortunately the pilot had enough room to stop. He restarted and then made a good getaway. The fate of the other machines I do not know.

Bushey, Herts. R. C. HUGHES.

Above left: the "Appleby Pou" with Carden Ford 28 h.p. motor, announced "Ready to fly away" for £198 from Heston in October, 1935 ("Flight" photo). Above right: one of many plan-built "Fleas", this one with an Austin 7 engine and chain reduction gear seen at the famous Ashingdon "Flea" Rally and built by Cooper's Garages Limited, Surbiton, currently renowned for somewhat better road holding four wheel racing vehicles (A. J. Jackson photo).

Flying Flea (continued)

The H.M.280 illustrated, is a good example of the design corrections employed by Mignet. The combination of bi-convexed airfoil section, greater gap and stagger, plus auxiliary elevators, ensured a tail-heavy pitching moment with any increase in speed.

This particular H.M.280 resides in the Paris Musèe de L'Air, with a story all of its own. Presented by General Eon, it was employed almost daily throughout the Occupation on Resistance liasion duties, without the Germans discovering its whereabouts. It was equipped with radio and the folding wings made it roadable, also assisting concealment.

The Mignet "Pou-du-Ciel"
General Data

	H.M.14	Abbot-Baynes	H.M.280
Span	17 ft. *	22 ft.	17 ft. 9 ins.
Length	11 ft. 10 ins. *	12 ft. 3 ins.	12 ft 5 ins.
Height	5 ft. 6 ins.	5 ft. 6 ins.	5 ft. 6 ins.
Weight Loaded	350 lbs. (approx)	550 lbs.	530 lbs.
Max. Speed	50-65 m.p.h. (approx.)	70 m.p.h.	100 m.p.h.
Engine	Various †	30 h.p. Carden/Ford	38 h.p. Menguin
Initial Climb	100 ft/min. (max.)	300 ft/min.	1000 ft/min.
Range	50-100 mls.	200 mls.	250 mls.
Wing Area	119 sq. ft. (17 ft. span)	140 sq. ft.	105 sq. ft.
Take-off	100-200 yds.	100 yds.	100 yds.

* Length and span varied slightly according to individual construction. This also applies to weights and performance.

† Examples:—Anzani, Carden Ford, A B C Scorpion, Austin Seven, Bristol Cherub, Scott Squirrel, Douglas Sprite, Menguin, Poinsard, Praga B, Aubier et Dunne.

Colour Schemes

G—ADXS Silver overall, black registration letters.
G—ADMH (both versions) Silver overall, black outline registration
G—AEHM (In Science Museum store) Blue fuselage, Silver wings and rudder.
H.M.280 Pale blue undersurfaces, was camouflaged upper surfaces (probably brown/green), French Air Force roundels on upper and lower surfaces of front wing only.

Wings Single mainspar, spruce leading/trailing edges and tips, plywood ribs holed for lightness, fabric covered and wire braced. H.M.280:—Main and rear spars fitted. Leading edges boxed with one sixteenth inch plywood. Semi-cantilever, single lift wires only.

Fuselage "Packing case" construction, spruce longerons and vertical members, plywood covered. Axle straight through, shock absorbing by rubber cord binding to lower longeron. Engine bearer struts plate-mounted to fuselage. Rear wing bolted directly to fuselage top. H.M.280—More sophisticated cross-section, ply-covered spruce members, metal front cowlings and engine bearers. Metal tubular undercarriage struts, split axles.

Rudder Spruce/plywood frame, fabric covered.

N.B.:—On some H.M.14s, front wing was swivel mounted at pivot point, and could be rotated through 90 degrees to facilitate moving the aircraft in confined spaces.

Handsome club publicity for Heswall (Cheshire) M.A.C. was gained by this enterprising exhibition of their efforts

WELL THEY'VE DONE IT AGAIN! **Northern Heights** gala day was blessed by its traditional weather condition in spite of being a month later than usual—and lucky Clywd enjoyed the same change of date. British weather has been so awful this season, these exceptional weather days are rare indeed. Perhaps the S.M.A.E. should borrow the Northern Heights crystal ball for 1964?

News from **LONDON AREA** includes a new club, started in **Finchley.** Main interests are in C/L flying and new members could be welcome at club meetings, 7 o'clock each Tuesday, Summerside School, Schoolway, Finchley, N.12. *London Modeller* is the new area publication now launched with the intention of making known the contest successes of the various London clubs and spreading news of London Area S.M.A.E. meetings, we'll wish it success and hope it brings the clubs closer together.

From the **Worthing Bald Eagles** in the **SOUTH EASTERN AREA** we hear 17 members attended the Area Slope Soaring meeting. Wind increased to near gale force, and strong models were a pre-requisite, Jerry Hansen and Mick Hill-Smith both entered Radio but only the latter recorded a time, finishing third with his single channel O/D 8 ft. span model. **Tunbridge Wells A.C.** have issued a challenge to the **Eastbourne** and Worthing Clubs on Slope Soaring. Winner will be the club whose member records the longest timed flight at Wilmington before Christmas 1963. The two losing clubs have to forfeit one gallon of best bitter beer each. Needless to say many thirsty bods are now carving balsa like fury.

Brighton D.M.A.C. had John West in the lead for Gamage Trophy results at Ashdown on June 30th. He came out with three max's and a 1:18 in the fly-off but nowhere near enough for the National results where he was 20th. Ken Winstanley came second in the local Pilcher results with 8.4 **Crawley D.M.A.C.** tell of a C/L display they gave at a local fete. The highlight being the flight of a 'V2'. The inter-club chuck glider comp. was won as ever by Pete Cameron. At the **Hayes** rally they took 2nd place in ½A power with Jack Darley at 5:01 in the fly off with his *Half Crown* model. Don Plunkett took 5th place in open rubber with 8:16 in the fly-off losing his model in the process. *Sea Dog* the South Eastern area Newsletter has to our knowledge the first club issue dve-line printed plan with it this month, —a nice looking A/2 called *Xema Mk. IV* by Colin Burbridge of **Leatherhead M.F.C.**

The **Cosmo Demonstration Team** have performed for A.E.I. Ltd. of Woolwich and at the Horton Kirby School's open day. Flying included a twin Oliver Cub *Lightning* by Ron Tames. Also helping out was Stan Robinson with his Merco 35 powered *Crusader*. The club will shortly have its own lapel badge.

North Kent Nomads M.C. gained a bye into the next round of the L.D.I.C.C.C. as the **Canterbury Club** did not appear. The team of Bill Hubbard, rubber, Bob Amor, power, and John Giffen glider flew between showers. Bill Hubbard entered as an Essex clubman in the 'Gamage Cup' flew three max's but failed to find lift in the "fly-off"; he was 19th. Bob Amor flew ½A and did a max plus 3½ mins. due to a faulty D/T and lost his model! John Griffen flying an *A.P.S. Patches* only managed 6:43 due mainly to a bad tow. Off the flying field, Ivor Bittle (Comp. Sec.) has been making silencers which offer little loss of power. The noise problem has forced the Nomads to stop flying before 9 a.m. of complaints from local residents.

SOUTHERN Area's **West Hants M.A.** tell of their 400 mile round trip to the Nats. in a small and very cramped car and so were unable to take any models! Here's a chance to double your pleasure—Holiday-makers are invited to visit Meyrick Park, **Bournemouth** on Sunday afternoons (2—5 p.m.) **Southampton M.A.C.** have been actively interested in pulse jets lately, the main trouble being all the hard work needed to start the jet. One by one the members collapsed exhausted after innumerable 'pumps'; but their efforts have been rewarded with a few interesting flights. They were pleased to help in the Duke of Edinburgh's Award scheme by judging Aeromodelling at a local school.

Reigate and Salfords M.A.C. now have a grass C/L circle prepared by the local Council. It is available at *any* time and *anyone* living in the area is welcome to use it. For details of location contact the Secretary, K. Mackellow, 7 Sandhills Road, Reigate.

The **WESTERN** Area **Swindon M.A.C.** tell us they are very much alive and have been putting on plenty of flying displays recently. They constructed a 10 ft. span, 13 ft. long mock biplane for the N.P.Y. carnival and called it *Independent Deterrent*. Power behind the prop was provided by a ¾ H.P. electric motor. They now have two flying grounds one for C/L and one for F/F by kind permission of a local farmer and the Borough Education Officer.

Bristol and West M.A.C. say that frequent showers marred the days flying for members who completed in the 4th Area Rally on June 30th at Blakehill farm. However the wind was very light and flying conditions otherwise very good. In the Gamage, John Cartwright (who collected his fee—he's not in the results?!) managed three maxes, only just making the first after 4 strands had slipped off the prop. Then the fuselage collapsed when launching for the final "fly-off" flight! Elton Drew was the top man in the Area Pilcher (again—what *did* happen to the Western area results?)

From the **MIDLAND** area **Handsworth M.A.C.** report that they have formed out of a split in **West Bromwich M.A.C.** They have a nucleus of four keen contest types with combat and T/R as their main interests. Flying takes place at Perny Hall Playing Fields on Sundays and they meet at Westminster Road School, Handsworth, on the first Tuesday in every month. Prospective members should write to G. Bryant, 61 The Broadway, Handsworth, Birmingham, 20. **Heanor M.A.C.** tell of a rise in membership and an effort to get the club back onto its old footing. Their F.A.I. T/R are now turning 50 laps at 93 m.p.h. combat boys are also doing well. They also like the *Wildcat* kit very much. The R/C section is still plodding along. After losing their flying ground they now have *two* new one's (lucky chaps). From **Cannock Outlaws M.A.C.** we hear that Tony Degg was runner up in combat at the Wharfedale rally and won a 1. 5c.c. Snipe. At the Midland Area rally they ran a combat event for the first time. Highlight of the final was Roy Lockley's *Garter Knight* floating through the circle with both finalists more intent on a cut on the *rubber* model than on each others streamers! Mick Davis won the club all-rounder competition by collecting 1st in Concours. Rat-Race, and Stunt. Mick David and Co. have recently completed a trailer to transport models to rallies. **Leicester M.A.C.** are having trouble with radio flyaways and are trying to make their members

S.M.A.E. Contests

August 18	Keil Trophy (Team U/R Power)	*Area*
	C.M.A. Cup (U/R glider)	*Venues*
	Rubber (F.A.I.)	
August 18	F.A.I. T/R, Combat, Stunt, Speed	*R.A.F. Debden*
September 1	Northern Gala	
	Hamley Trophy (U/R Power)	
	Caton Trophy (U/R Rubber) (U/R Glider)	
	Taplin Trophy (R/C Mono)	*R.A.F.*
	Selby scale Trophy	*Church*
	P.A.A. Load Class A	*Fenton*
	Budapest Trophy (T/R Class ½A)	*Nr. Leeds*
	Wharfedale Trophy (T/R Class A	
	E.T.A. Trophy (T/R Class B)	
	C/L Stunt	
	Speed	

Contest Calendar

August 25

Croydon Gala, Chobham Common. Open G/R/P, ½A Power, R/C Spot Landing. Entry 2s. 6d.

Angus D.A.L. Gala. Free Flight, R/G/P at Barry Links, Nr. Dundee. Control Line, F.A.I. Combat Stunt and Rat Race. Pre-entry C/L only to G. Bell, 10 Ballindean Rd., Dundee.

September 8

South Midland Area Rally. Cranfield. All classes. Details D. W. McQue, 6 Laburnam Grove, Bletchley, Bucks. 2s. 6d. Pre-entry (C/L & R/C) to N. Rogers "Basildon" Chorley Rd., West Wycombe, Bucks.

Munster C/L Champs. Details C. Wilkins, "Valden" Mount Farran, Assumption Rd., Cork City, Ireland.

September 15

Scottish Nationals. R.N.A.S. Abbotsinch. Open G/R/P, ½A, F.A.I., B T/R, Combat, R/C Scale. Pre-entry 5s. to W. Douglas, 3 Dudley Drive, Glasgow, W.2.

Crawley Rally. Great Bucksworth Farm (on A264 Road). Open G/R/P, ½A Power, Chuck Glider. Combat, Pre-entry 2s. 6d. to N. Tidey, 64 Reigate Rd., Brighton 5.

September 22

Leinster C/L Champs. Details P. Brennan, 39A Castle Ave., Clontarf, Dublin 3.

South Coast Gala. Chobham Common. F/F, G/R/P ½A Power, Chuck Glider and Tailless Glider.

Luton Slope Soaring Rally, Ivinghoe Beacon (B489) R/C, F/F Start 10.30. Pre-entry. D. W. Bateman, 14, Ridgeway Drive, Dunstable, Beds.

South Bristol M.A.C. Vintage Model Contest, R/G/P (Pre-1949). Details from A. D. Henton, 77 Berkeley Road, Bristol 7.

September 29

Wanstead Warhawks C/L Rally. Wanstead Flats, E.11. 0.40 Rat Race, Class A & B combat, Senior and Junior events. Pre-entry 3s. to J. Franklin, 82 Grove Hill, South Woodford, London, E.18. (Closing date September 15).

October 6

Barnstormers Rally, R.N.A.S. Abbotsinch U/R R/G/P. Entry Fee 3s. Seniors, 1s. 6d. Juniors

October 13

Hornchurch M.A.C. Chobham Common. Rally. R/C/P. ½A P. Chuck Glider.

fit either smaller tanks or timers until the model has been fully flight tested. They also have a scale *Mustang* and a *Spitfire* in operation.

From the **EAST MIDLANDS, Foresters M.F.C.** report on the novel radio comp. held on June 30th. Each competitor was allowed 10 mins. in which to put in as much flying as possible. The main requirement being that the model *must* land and become airborne again at least twice. In this event a single channel hand launched model should be able to put as good a time as any, but in the contest the first flick starting of Geoffery Pike's *Orion* more than compensated for his long take-off run. His winning time was 9:03 (only 57 seconds lost for 2 landings and take-offs). Runner up Alec Brown, with a single channel job which put up a hectic 7:45. It was quite a change for the radio fans to be using a stop watch again.

The **NORTHERN** Area **Huddersfield D.M.A.C.** went to **R.A.F.** Rufforth for the Wharfedale Rally and Martin Whiteley entered the ½A T/R in which he managed to place 2nd after some sporting help from the winner. **Tudhoe D.M.A.C.** put a flying display on recently in which the combat seemed to be the largest crowd puller. The

10 ft. span and most definitely not flying, this biplane was made for the local carnival by Swindon M.A.C. and named "The Independent Deterrent". Propeller is electrically driven.

stunt display was marred by the number of people who wandered into the circle whilst flying was proceeding. A **Baildon M.F.C.** junior has built an own design *Coupe d'Hiver* model that climbs vertically at an alarming rate for the first 8 seconds of the 25 second motor run, and is so light as to snag the slightest puff of lift. It makes those regulation 2 min. maxes look very easy, the model has inspired interest with at least two more members, and it looks as though they will be more entries in next years international events.

The **Sheffield S.A.** Bi-Annual news-letter *Red Cap* contains ten pages packed with notes on club gen, a library list, services to members, engine tuning, thermals and three plans, including Graham Freeston's A/E. Copies are 6d. each plus S.A.E. from L. C. Foster, 82 Rural Lane, Sheffield 6.

News from the **NORTH EAST** comes via the County model shop in Jarrow. Proprietor, G. A. Nixon started a model club two months ago above his model shop, and now has 200 on the books, with fine voluntary instructors. All beginners are given lessons on how to build and fly models. They also have started giving demonstrations at local fetes free of charge. **Novocastria M.A.S.** have been very busy with inter club comps. lately. The C/L section had a good day at the Wharfedale Rally with Wallace/Laurie taking 1st place in F.A.I. T/R, with a record time of 9:22 for 200 laps. Class B T/R was won by Dugmore/Bell/Roughead with 6:41 after a bad start.

In the **SOUTH MIDLANDS**, plans are well and truly laid for a fine day of flying at the College of Aeronautics Airfield, Cranfield near Bedford on September 8th. This is by tradition a very pleasant meeting with all interests catered for, including inner man's need for refreshment. Once more, single channel R/C will be for the genuine button pushers and not converted multi's. Make this one a date to complete your September rallying.

From **SCOTLAND** the **Hornets** and **G.M.A.C.** report that the Caledonia Shield on May 19th saw the largest entry for years with twelve clubs flying on the day. They will soon be having a new club transfer and they are also trying to uniform members by asking them to purchase boiler suits.

Cork M.A.C. from **EIRE** tell of a 40 membership with still further hopes for more. The club is organising the **Munster C/L Champs.** on September 8th and intend to make it a major event on the Irish contest calendar. Perpetual trophies will be awarded for ½A and B T/R, stunt, combat, and scale. Entry forms from Club Sec. C. Wilkins, "Valden", Mount Farran, Assumption Road, Cork City, Ireland. The club has managed to publish a weekly report on club activities in the local paper since last December. A display team has also been organised to gain further publicity in surrounding districts. Club members had a good chance of winning in ½A and A at the Irish Nats. on June 30th but tyre trouble beat them. Hope it doesn't beat *us* in our travels to the World Champs in Austria and Belgium this month!

THE CLUBMAN.

S.M.A.E. Results

May 19th, events.

S.M.A.E. Cup	*(F.A.I. Glider)*	103 *Flew*
1. A. Wisher	Croydon	13:46
2. J. Baguley	Hayes	13:45
3. L. E. Moore	Leamington	13:41
4. C. Peters	Coventry	13:05
5. C. I. Rennie	Tynemouth	13:02
6. T. Young	St. Albans	13:01
Weston Cup	*(F.A.I. Rubber)*	41 *Flew*
1. R. C. Pollard	Tynemouth	15:00 + 2:41
2. A. Wells	Hornchurch	14:17
3. L. Burrows	Blackheath	13:47
4. R. Cummins	Bristol & W.	13:15
5. A. Lawrence	Chichester	12:59
6. J. O'Donnell	Whitefield	12:58
U/R Power		39 *Flew*
1. D. Wiseman	York	9:00 + 3:09
2. G. Fuller	St. Albans	9:00 + 3:00
3. K. Glynn	Surbiton	8:45
4. B. Eggleston	Bristol & W.	8:35
5. A. Young	St. Albans	8:30
6. S. Savini	Wallasey	8:27
Plugge Placings		
1. Brighton	566.172 Points	
2. St. Albans	520.243 Points	
3. Whitefield	497.284 Points	
4. Stevenage	456.699 Points	
5. Birmingham	407.600 Points	
6. Norwich	387.324 Points	

June 30

Pilcher Cup U/R Glider (93 flew)		*Area Centralised*
1. J. Wright	Hornchurch	9:00 + 5:20
2. D. Rose	Grantham	9:00 + 4:40
3. B. Picken	Wigan	9:00 + 2:48
4. D. Oldfield	Norwich	8:54
5. M. Burrows	St. Albans	8:50
6. J. Baguley	Hayes	8:49
Gamage Cup U/R Rubber (47 flew)		
1. R. Paveley	Hornchurch	9:00 + 9:22
2. A. Wells	Hornchurch	9:00 + 8:50
3. D. Furbank	Lincoln	9:00 + 7:12
4. R. Monks	Birmingham	9:00 + 7:05
5. I. Hydon	Coventry	9:00 + 6:49
6. G. L. Roberts	Lincoln	9:00 + 5:35
Quickstart Trophy ½A Power (35 flew)		
1. P. Bayram	Lincoln	9:00 + 2:21
2. G. Fuller	St. Albans	8:35
3. P. Lauson	Baildon	8:11
4. I. Hydon	Coventry	8:09
5. G. Cornell	Crayclon	7:58
6. R. Monks	Birmingham	7:56

July 13/14 2nd F/F Trials

A/2 Glider (29 flew)		*Total of 2 Trials*
1. M. Burrows	St. Albans	26:10
2. J. Baguley	Hayes	25:59
3. C. Jackson	Surbiton	25:07
4. N. Willis	Essex	24:29
5. A. G. Young	St. Albans	23:01
6. B. L. Halford	Norwich	23:00
Rubber (20 flew)		
1. B. V. Rowe	St. Albans	27:19
2. D. Latter	C.M.	26:56
3. J. O'Donnell	Whitefield	26:52
4. M. J. Woodhouse	Norwich	26:01
5. B. L. Halford	Norwich	24:50
6. R. L. Bailey	Oxford	24:42
Power (19 flew)		
1. M. H. Green	C.M.	28:30
2. D. Posner	Surbiton	27:08
3. G. R. French	Essex	26:25
4. N. Willis	Essex	25:12
5. P. Manville	Bournemouth	24:57
6. S. Savini	Wallasey	24:14

Pen Pal

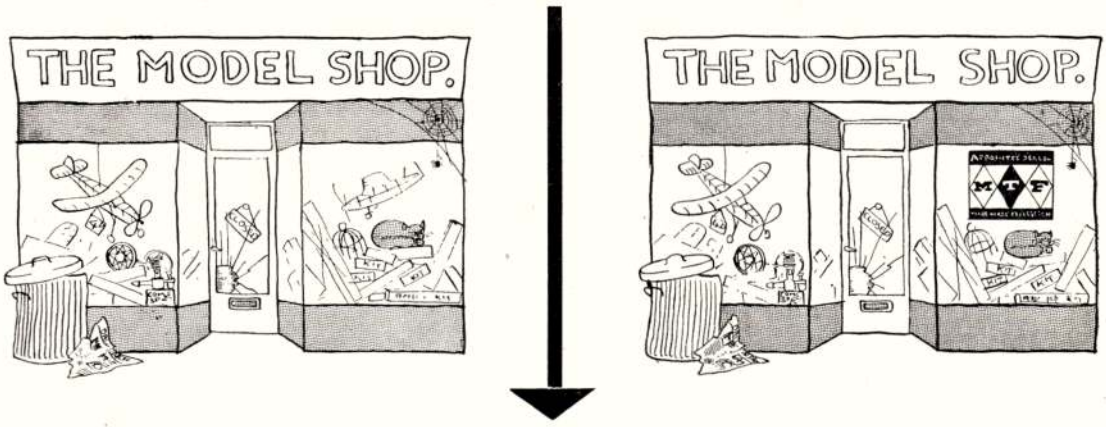
Wanted by Jan Bartovic, Rooseveltova 51, Piestany, Czechoslovakia. Would like to swop magazines. Main interests A/2 and R/C, corresponds in English.

Found

Vicinity of Bovingdon, Herts. Tatty Keil-Kraft *Caprice* glider beautifully trimmed. Owner must identify colour scheme. Apply c/o "Clubman".

WAKEFIELD enthusiasts are invited to R.A.F.M.A.A. Champs. September 29th. for the Thurston Trophy, at R.A.F. Debden.

IS YOUR MODEL SHOP LIKE THIS OR THIS?



Is it an old fashioned "den" that has everything in stock if only they could find it, or is it a chromium plated palace? No matter—"it's the service that counts" you may say, and quite right too.

Any model shop that shows the M.T.F. sign will give you this service, and will back it up with a comprehensive range of stock and spares. When you are out looking for that new engine or that multi set, look also for the M.T.F. sign—it's your guarantee.

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Maybe not the first . . . but the best

THE NEW MACGREGOR ALL-TRANSISTOR CRYSTAL CONTROLLED TRANSMITTER

With the ever increasing demand for all-transistor equipment, we would like to have been able to offer this new transmitter much sooner. During the past twelve months however, much experimental work in this direction did not, in our opinion, give satisfactory results comparable with our valve transmitters. The main difficulty is an economically priced output transistor. Those currently available would not give adequate range without the use of a centre loaded aerial and extra sensitive receiver. Furthermore, any attempt to use these transistors to their full extent resulted in the transmitter becoming sensitive to any great change in the temperature. In hot weather this could damage the transistor. Likewise transmitting with a retracted aerial or holding the aerial proved to have the same effect. We came to the conclusion that there was only one answer, to use a far more expensive transistor, a device where the specifications were beyond our actual requirements but more than capable of overcoming the aforementioned problems. We have obtained such a transistor selected exclusively, and our new product is offered with every confidence and more than justifies the delay. This is not a toy, but an instrument.

- **SILICON PLANAR EPITAXIAL OUTPUT TRANSISTOR.**
  A transistor to military specifications as used in guided missiles and space probes. The incorporations of this robust device in our transmitter not only produces reliable operation under varying temperature conditions but there is no fear of damage if transmitting with a shortened aerial for testing purposes.
- **FULLY RETRACTABLE AERIAL.**
  The R.F. output of this new transmitter is such that ground range in excess of 600 yards is obtained without the use of a centre loaded aerial, and in consequence the 4 ft. telescopic aerial can be fully retracted inside the metal case when not in use.
- **18 VOLT OPERATION AT 15 M/A.**
  The battery compartment accommodates standard flash lamp batteries costing a total of 5/–, giving satisfactory operation over long periods.
- CRYSTAL CONTROLLED
- CASE SIZE ... ... 7" x 6½" x 1¾".
- WEIGHT with batteries Under 2 lbs.
- THE PRICE ... ... £10/19/6 including Purchase Tax.

Plus . . . THE MINIMAC RECEIVER

A 5-transistor relayless receiver which may be coupled direct to a rubber or clockwork driven actuator, servo motor or a single channel motorised actuator via a low resistance relay.

SPECIFICATIONS.

Overall case size	...	...	...	2" x 1⅝" x ⅝"
Weight	...	...	...	1 oz.
Receiver voltage	...	...	...	3—4½ volts maximum
Receiver current	...	...	...	1—5 m/a
Actuator voltage	...	...	...	1½—6 volts maximum
Actuator current	...	...	...	500 m/a maximum

★ By the use of a unique 1 or 2 battery system the Minimac Receiver becomes practically immune from pulse interference by relay contacts and electric motor commutators. It is, therefore, ideal both for marine and aircraft use.

★ THE PRICE ... **£8/19/6** including Pur. Tax.

THE COMBINATION OF THIS TRANSMITTER AND RECEIVER LEAVES NOTHING TO BE DESIRED.

Now . . . the TERRYTONE II

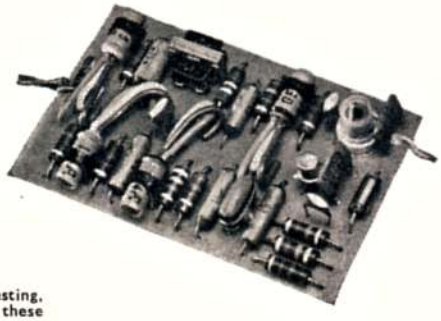
A new version of the all-transistor single channel Tone Receiver

The original Terrytone Receiver was designed primarily for use in model aircraft coupled to a rubber or clockwork driven actuator. Whilst an excellent receiver for the purpose intended, its use however, was restricted.

This new version, whilst similar in size and appearance, employs entire new circuitry, much easier construction, and above all is more versatile than the original. By the use of a unique one or two-battery system the Terrytone II Receiver as before, may be coupled direct to a rubber or clockwork driven actuator but in addition will operate without modification, a small servo motor or with a low resistance relay, a motorised actuator designed for single-channel operation. The new receiver has the advantage of being practically immune from pulse interference by relay contacts and electrical motor commutators, for marine use, where a large 12-24 volt electric motor is used for the main drive, little or no interference will be experienced providing the electric motor is suppressed as recommended by the Manufacturer, and the receiver—together with aerial—placed away from the electric motor. The Terrytone II receiver is not subject to swamping and will operate equally where a transmitter has constant carrier wave or carrier and tone are keyed simultaneously.

Construction of the new kit is extremely simple, requiring the insertion and soldering only of the components into a printed circuit panel. The panel is clearly marked showing the position, value and outline shape of each component. The printed circuit conductors are pre-tinned to facilitate soldering, and as seen by the photograph, the components are well spaced giving ample clearance between each soldered joint. Component recognition is made quite clear by parts list, stating values, together with a colour coding. The tuning and aerial coil normally the most difficult operation for the beginner is supplied wound already assembled and soldered to the printed circuit panel.

A twelve-page illustrated instruction booklet fully covers the step-by-step assembly, testing, wiring and tuning of the receiver. Providing these instructions are carefully followed, the receiver can be connected to the batteries and ancillary equipment, tuned for operation without the use of any test meters.



CONVERSION

For those constructors who already have an existing Terrytone Receiver, a modification set of parts is available comprising a new printed circuit panel, additional transistors and components together with a new instruction booklet, so that they may re-build it to the new Terrytone II Receiver configuration.

THESE PARTS ARE AVAILABLE ONLY FROM MACGREGOR INDUSTRIES LTD. AT **25/–**.

SPECIFICATIONS

Approx. size overall	...	3" x 2" x ¼"
Weight	...	1¼ oz.
Receiver voltage (single battery)	...	3—4½ volt maximum
Idling current ...	...	1—5 m/a.
Actuator voltage (two battery) ...	...	1½—6 volts maximum
Actuator current	...	500 m/a maximum
Temperature stability	...	30—120F.
Recommended actuator coil resistance	...	8—14 Ohms
Recommended relay coil resistance ...	...	30—100 Ohms

THE PRICE REMAINS UNCHANGED AT **£5/19/6**. Including Purchase Tax.

MACGREGOR INDUSTRIES LTD · STATION WHARF · LANGLEY . BUCKS

CLASSIFIED ADVERTISEMENTS

PRESS DATE for issue OCTOBER 1963, AUGUST, 19th, 1963
ADVERTISEMENT RATES:
Private **Minimum 18 words 6/- and 4d. per extra word.**
Trade **Minimum 18 words 12/- and 8d. per extra word.**

Box Numbers to count as six words when costing.

All replies to be sent care of Advertisement Department, Model Aeronautical Press Ltd., 38 Clarendon Road, Watford, Herts.

Copy received after first post on the 19th will be held over until the next issue, unless cancelled in writing before 10th of following month.

FOR SALE

1 Octone Tx., and 10 channel relayless Rx complete with batteries. 3 Transmites and 500 DK2 Deac and charger, £50 o.n.o. Brand new Merco 49 R/C. £8 10s. 0d. o.n.o. Frog 3.49 R/C, just run in, £3 o.n.o. R. Clarke, 5 The Pastures, Cheriton, nr. Alresford, Hants.

R.C.S. Pulser Receiver Servo Harness, never used, cost £20. Bargain £15 Tribe, 5 Ronaldshay Drive, Richmond, Yorks.

E.D. Racer 36s., just rebored. A.M. 35, Two A.M. 15's, 28s. each, A.M. 10, A.M. 25 25s. each, modified Frog 500 18s., Elfin 2.5 14s. or the lot £9 5s. 0d. 18, Grove St., Higham Ferrers, Wellingboro', Northants.

Two A.M. 10's, 35s. each. Keilkraft Cobra 25s. G. Haller, 44, Princes Park Avenue, London, N.W.11.

New T.D. 020, A.M. 15, 40s. each. Wanted 3.5 R/C Engine. Pringle, Hayden Lodge, Gloucester Road, Staverton, Glos.

Orbit 8 channel receiver perfect condition, used 6 flights, now flying superhet, Reasonable offers accepted. Wilfred Jones, 19, Knighton Drive, Four Oaks, Sutton-Coldfield, Warwickshire.

1 Octone Tx, and 10 channel relayless Rx, complete with batteries. 3 Transmites and 500 DKZ Deac and charger £50 o.n.o. Brand new Merco 49 R/C £8 10s. 0d. o.n.o. Frog 3.49 R/C, just run in £3 0s. 0d. R. Clarke, 5, The Pastures, Cheriton, Nr. Alresford, Hants.

R.E.P QUADRATONE. As new. Latest model. 9 volt Rx Relays. £25. Henry J. Nicholls Ltd., NOR. 4272 308, Holloway Road, N.7.

Cox Tee Dee .15 new, will exchange for Super Tigre G20 or offers, Element, 17 Whitgreave Street, West Bromwich.

E.D. Super Fury, bench run only, £2; D.C. Merlin, 15s.; Frog 349 BB, £2 5s. 0d.; ETA 29 VIc, £4; all in good condition. Strang, 2b Cherryhill View, Larkhall, Lanarkshire, Scotland.

Min-X 6 volt 10 Relay pack £13, unused OMU 6 volt 8 channel Receiver relayless £15, 6 volt single channel Receiver £8 10s. 0d. Remtrol relayless Rx £5, Aeromodeller Tone Receiver £2 10s. 0d., 3 REP Unimatic servos 35s. each, M.K. Multi servo £3, new Anco Servo £2 10s. 0d., Minitron Compound Escapement 37s. 6d., 4 channel Joystick 15s., Bramco Apollo 10 Rx, £17 10s. 0d., Cobb Micro Multi Servo £2 10s. 0d., Cobb Ouncer Servo £2 10s. 0d. Waters, 20 Heol Fawr, North Cornelly, Pyle, Glam.

AEROMODELLERS February 1953—February 1963; 10s. per year. *Model Aircraft*, May 1961—September 1962; 10s. *Air Pictorials*, July 1956—April 1961; £2. Good condition. Richardson, Gleads Moss, Withington, Macclesfield, Cheshire.

Selling up: unrun Cox Special, 110s.; Fox 35, 100s.; P.A.W. 2.49, 60s.; both hardly used. Mercury Cobra, Monarch half-built, each 20s.; everything o.n.o. Hume, Balwearie Road, Kirkcaldy.

Cox Tee Dee 049 £3. Unmade K.K. Caprice 10s. AEROMODELLERS and AEROMODELLER Annuals, *Model Aircraft*. Offers? Ball, 89 Daniels Lane, Up Holland, Wigan Lancs.

Good D.C. Spitfire, 32s. 6d.; AM 0.49 minus starter, 15s.; O.K. .09 glow, spare piston c/shaft assy., 35s.; unflown well-finished detailed Frog Tempest, suit AM 25/35, 45s.; Woodward, 73 College Hill Road, Harrow Weald, Middlesex.

Orbit 10 channel relayless outfits—one with built-in transistor inverter—5 Bonner transmites (2 trim)—Richie pack. AEROMODELLER Annuals 1947-63. Sensible offers to Wingate, 48 Langdale Avenue, Chichester, Sussex.

For Sale: Six channel E.D. remote control transmitter and receiving set. Bargain £15. Slogrove, 441a Brighton Road, South Croydon.

Tee Dee 15 £4, Cox Olympic 15 £3 10s. both brand new; O.S. Max 19 pressure, needs spraybar £3; Tuned Rivers 3.5 II £4 10s. Tee Dee .010 less glowhead £2. Westwood, 80, Grange Road, Alloa, Clackmannanshire.

Top grade equipment: Hill tone Tx, Graupner Mikroton Rx, Telematic 'B' servo, 6v Deac, £10. Microton Rx, Servo Relay escapement, 6v. Deac £5. Wright carrier Tx, £3. Pulse rudder and engine servo £1. Taifun Hurrikan R/C. version £3. Price, Haytor View, Marldon Cross, Paignton, Devon.

Octone simultaneous transmitter and receiver £30. Also sextone simultaneous transmitter and receiver £25. Both in excellent condition and working order. Offers Box No. 703.

C.L. aeroplane, .49 engine used only 2 hours, as new £3 o.n.o. Mutter, Fairclose, Buckland St. Mary, Chard, Somerset.

Min. X Transmitter 10 channel Spare Pot Box. Receivers Orbit, Bramco 10 Relayless, Orbit, Electra S/channel, R/C Engines, S. Tigre 51. Merco 49, 35. Enya 60, 29, Frog 349 etc. 8 Transmites, 500 DKZ Deacs, Multi Aircraft, Smog, Astro, Super Sixty etc. Immaculate unflown Orion, several controliners accessories airwheels. Reasonable offers. Box No. 705.

BUSINESS FOR SALE

For Sale: Well known model shop in Lancashire. Write for details to: Box No. 700.

Wanted: 5-10 c.c. petrol engine. In good running order. With or without electrics. Box No. 704.

E.D. 8 Channel Transmitter required. Crystal or Simul, not necessary. Brassington, 3, Sutherland Drive, Westlands, Newcastle, Staffs.

BOOKS

American Magazines. Year's subscription *Model Airplane News*, 39s. Full catalogue free. Willen Ltd., (Dept. I), 9 Drapers Gardens, London, E.C.2.

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Discounts—Radio Control, Single Channel, 10 channel, all model engines and supplies—24 hour service. We stock everything. Send Bank Draft certified Money Order. Add 50c. for special handling and insurance, plus 10% of complete order. 25c. for catalogue, refundable first order. Also free Prize Card. Win a Transmitter or Receiver, Watch, every month. Globe Model Co., 3007 Ocean Parkway, Brooklyn 35, N.Y., U.S.A.

Mighty Midget Motors. Brass geared 10/6d. Nylon geared 9/9d. Post 1s. Henry J. Nicholls Ltd., NOR, 4272. 308, Holloway Road, N 7.

Ex-Government Stop Watches, 45s Illustrated leaflet on request Charles Frank, 67-73 Saltmarket, Glasgow, C 1.

Portsmouth and Southseas Hobby Shop is "Robin Thwaites", 28 Arundel Street, Portsmouth. Both our manager Mr. F. J. Till and proprietor Mr. R. Thwaites are active modellers.

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Tatone Timers—Standard or ½A Fuel Shut-Offs and D-Ts. 30s. each post free from Dave Posner, 61b Canfield Gardens, London, N.W.6.

Rossi 60, 10 c.c., £17; G.20 Super Tigre Rossi, modified, £8; G.21, 5 c.c. modified, £10; Speed pan for G.20 with spinner, £1; G.21 pan, £1 5s. 0d.; G.20 etc. team race pan, 13s.; 4 grades glow plugs, 4s. each; Vulcan jet, £12; 6 x 8, 6 x 9, 6 x 10 speed props, 3s.; 7 x 8, 7 x 9, 7 x 10, 3s. 2d.; Rossi, Via Pace 13, Brescia, Italy.

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Wanted AEROMODELLER copies good condition 1959 January, February, March and May. 5s. each offered. Taylor, Laurel Mount Bungalow, Keighley Yorks.

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1/144th and 1/72nd scale plans of British military and civil aircraft, especially flying boats from 1912 to 1963, to E. Bridge, 99 Lindbergh Road, Ipswich, Suffolk.

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Cabin sports model for .8 to 1 c.c. engines—and large enough for light weight radio control on 1-1.5 c.c. engines. Span 39".

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Radio control cabin model for 2.5 to 3.5 c.c. engines. This outstanding kit includes all wood parts die-cut or shaped, dural u/c, wire parts, wheels, hardware, etc. Span 60".

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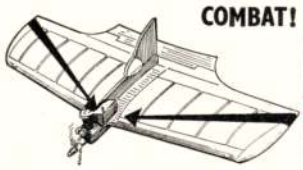

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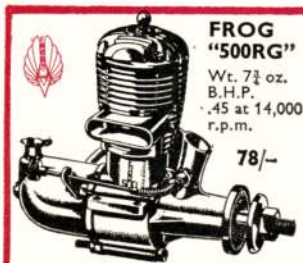

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A recently improved version of an old-established favourite. Particularly suitable R/C, stunt and C/L models. Ball-bearing thrust race.

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R/C version with throttle and exhaust manifold **96/–**

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Powerful Contest type engine. Twin ball-bearing, with outer rubber seal.
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54/6
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Recess
1/4" Sheet nose plug
1/4" Sheet
Balsa filled wire loop
Motor access
5" Dia. propeller
Leave this section out until wing is installed
Scrap scoop
1/16" Sheet doublers
Top view
Nose plug in fuselage
1/32" 2 off
W3
1/32" 2 off
W2
1/32" 2 off
W1
Dihedral brace slot
CS 3/16" 2 off
WR 1/8" 2 off
CS
1/8" Dia. hole, bind and glue undercarriage
All wire parts 18 s.w.g.
Undercarriage
3/4" Dia. wheels
1/32" Sheet
3/32" sq. insert
Block up the T.E. 1/32" before sheeting L.E. tip only
7°
Dihedral gauge
To inside of W.R.
3/32" Sheet
Tailplane slot