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MODEL aircraft

APRIL 1960

1'6

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MODEL AIRCRAFT

APRIL 1960

No. 226 VOLUME 19

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IN THIS ISSUE

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Here and There

M.A.N. Plans from M.A.

FOR years the plans produced by our American contemporary *Model Airplane News* have been a source of worry to British modellers—the worry being how to obtain them! No need to worry any more, by special arrangement MODEL AIRCRAFT has secured the sole British rights to handle these plans, which can now be obtained direct from us.

M.A.N. plans consist of a single sheet on which are printed all the designs which appeared in any one issue, and the plans available from us are those commencing with the February 1960 M.A.N., plus the designs published in the "Model Airplane News Annual." Full details of the designs currently, or shortly to be, available appear on page 126 of this issue and at only 7s. 6d. per set they are wonderful value.

A word of warning though, only limited quantities of each plan are available and once sold out they cannot be repeated, so order early. We would also emphasise that *only* the plans listed are available—*it is impossible for earlier issues to be supplied.*

Wings Club

TO say that we are gratified at the response to our Wings Club would be the understatement of the year. In addition to being inundated with membership forms, we have received countless letters of encouragement and praise from individuals and organisations all over the world.

We were particularly pleased to hear from Franz Czerny, editor of the Austrian magazine *Modellsport*, who hopes to start a similar club in Austria. Imitation is the sincerest form of flattery, so we have never been annoyed when we have seen ideas first published in MODEL AIRCRAFT copied elsewhere. We wish Franz every success and look forward to the day when there will be a world wide Wings Club movement.

Such a possibility is not as remote as it might seem, already many of our individual members are from overseas countries, and, in fact, a membership form from Hans Undin of Sweden was received by the first possible post after the Club was announced. A welcome to Hans as the very first of our hundreds of overseas Wings Club members.

Postal Internationals

OUR American contemporary, *Model Aviation*, the official journal of the A.M.A. (the U.S. equivalent of the S.M.A.E.), recently suggested that the possibility of holding competitions by post between American and British clubs should be looked into. We know that such contests have been held at various times in the past, but to put the scheme on a more regular basis would be a good idea. Events of this nature lead to an exchange of modelling problems, the forming of lasting pen friendships and often the opportunity to obtain long coveted equipment on an exchange basis.

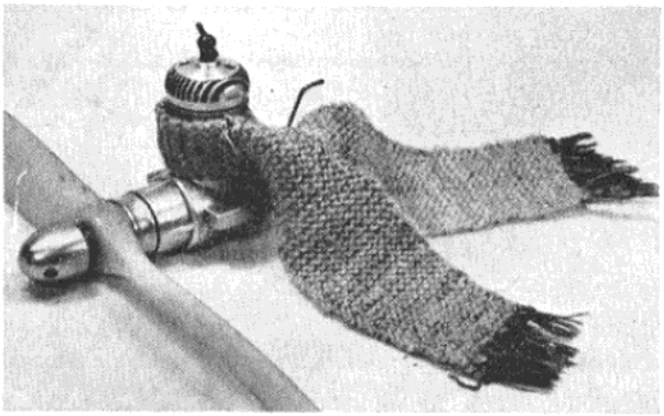
Full details would have to be worked out, but basically events would be on a club to club basis to either A.M.A., F.A.I., or such rules as would be mutually agreed. Events could possibly be run on the same day and the results swapped in the post, while a small trophy could be awarded which would, to quote *Model Aviation*, ". . . no doubt cross the pond frequently."

Any clubs interested should write to us, with their comments, and we will see that these are forwarded to the A.M.A. Should the scheme prove

successful then there is no reason why its scope should not be enlarged to include other countries.

We're Silenced!

AN early response to our "muffler" offer in the February issue of MODEL AIRCRAFT came from S. Robinson of the Cosmo A.M.C. His design is named the "Decibel Defeater Mk. 1," is suitable for all sizes and types of engine, and can be readily manufactured—from material found in any home—by "Auntie." Measuring 12 × 1½ in. the original was knitted on



approximately No. 12 needles, although none of these dimensions are critical.

To use, carefully wrap the muffler round the exhaust port or ports of the engine (for extra large engines join two mufflers end to end), taking care not to overtighten or strangulation may result, and fasten in position with a large safety pin. Power loss will not exceed 99.9 per cent. as opposed to a mere 15 per cent. for conventional types, and an added advantage is that quite a useful amount of lubricating oil can be regained by regular use of a mangle.

Toy Fair

OUR annual visit to Brighton for the Toy Fair was well rewarded this year—for the first time a 100 per cent. model wholesaler, in the (well-known) shape of A. A. Hales, was showing his wide range of kits and accessories. With more and more model shops stocking toys, and more and more toy shops stocking models, we are amazed that the model trade has consistently ignored the Toy Fair. So congratulations to Alan Hales on his initiative which, we are sure, was well rewarded, for such was the interest in his display, we had difficulty in cornering him for five minutes to find out what new items he had up his sleeve. (For details of these see "Over the Counter".)

Repeat Performance

TWO years ago members of the London Area put on a C/L display at Wembley Stadium before an audience of 90,000 schoolboys attending the English Schools Soccer International. So well received was this, that a request has been made for a repeat performance.

The last display was rewarded with a large donation, which the London Area gave to the International Contest fund, so with the heavy expense of sending a C/L team to Hungary this year, this is an ideal opportunity to again defray some of the cost.

Early Catalogues

THERE is no finer way of bringing home to one the enormous progress that has been made in all forms of aviation, than to browse through some of the early catalogues and magazines. It is a particularly fascinating study when the companies concerned are still in business, and we recently had the opportunity of examining a 1913 price list of Murray, Son & Co., who were then manufacturers of model aircraft and accessories. Some random examples of the contents are: waterproofed silk at 5s. per sq. yd. Ready drilled satin walnut prop blocks, at 1d. per in. dia. Model making nails (assorted)—6d. per packet, and finished rubber powered stick jobs of 16 in. span (average flight 150 yds.) 2s. 6d.

The proprietor, Mr. H. D. Murray, who now manufactures model engineering equipment, was building and flying models in 1910. It was in this year that he won a prize in a contest at the Crystal Palace Football ground against opposition which included C. R. Fairey (later Sir Richard Fairey of Fairey Aviation) who flew a Dunne-Fairey swept-wing monoplane! Some of the first prizes (all cash) were as high as £7.

Mr. Murray, still as inventive and sprightly as ever, shows the same enthusiasm and interest in model matters today as he did in those early days; which goes to show just how youthful modelling can keep you!

Another long respected name, this time associated with full-size aviation is that of Louis Breguet. In his catalogue for 1911, sent to us by R. C. Rogers of Bristol, are described some of his early aircraft.

Four variants are listed—The L-1 *Cruiser*, G-2 *Military*, G-3 *Colonial* and the G-4 *Racer*, all were three seater biplanes with engines ranging in power from 60 to 130 h.p. and costing between £1,320 and £1,840 each, which, for those days was very big money. Some of the aircraft specifications seem very quaint to a generation accustomed to jets and ejector seats. For instance it is noted that all prices include tool kit in leather case and patented elastic safety belt!

One of the "advantages" of the designs is "Automatic stability brought about due to the patented flexible or supple wings and tail"! The angle of incidence could be "modified with unusual ease," and the entire tailplane was "hinged at the end of the fuselage by a universal joint and does duty as both rudder and elevator, it is held in position by springs which allow it to act as an automatic balancer."

We are told that "on the *Military* models a supplementary control is fitted in the mechanic's seat to allow driving to be taken in turns." The wings could be completely folded in five minutes.

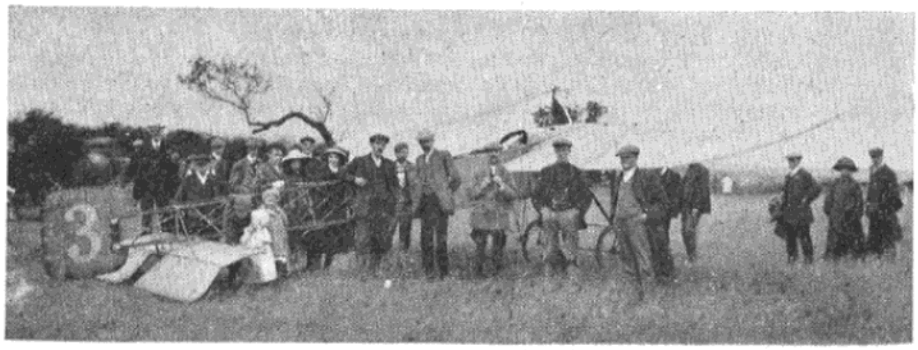
A large part of the airframe consisted of steel tubes and the maximum altitude attainable in 15 mins. was 1,000 ft. It was emphasised that the full price of the aircraft was payable before delivery! Happy days?

New date

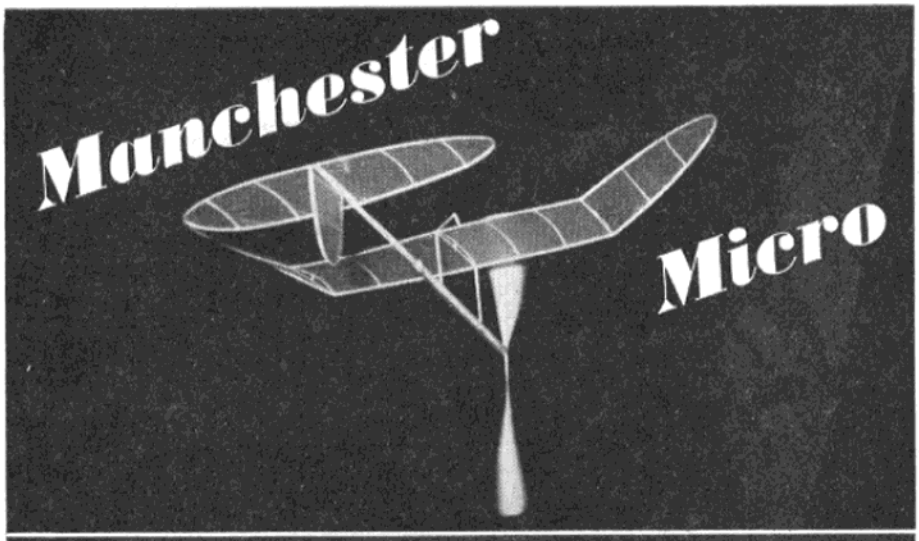
WHEN we published the International Contest Calendar recently, the date for the International Tailless contest given by the F.A.I. was incorrect. This meeting will be held at Terlet on September 17th/18th.

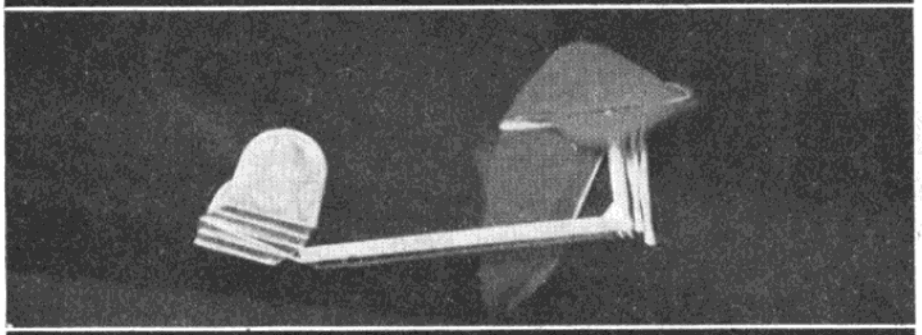
Help!

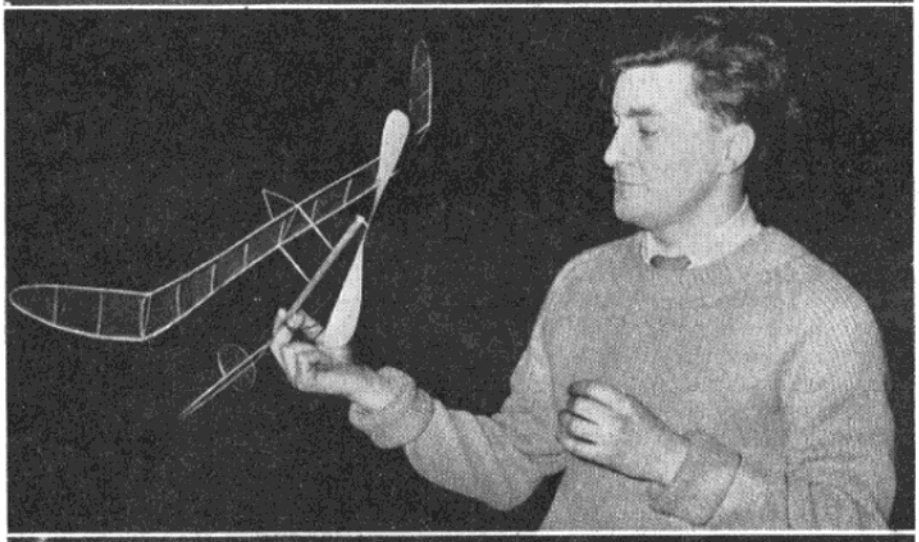
READER H. Grundy of Carlisle sent us this interesting photo of a Bleriot *Monoplane*. He has no information of the particular machine, or the people, and wondered whether any other readers could help—can you? Replies will be forwarded.



We're silenced P.S. Mr. Robinson tells us his muffler is not only a gag (sic), he actually uses it to reduce noise when bench running.







Corn Exchange again scene of quality indoor flying. Good 'warming up' session for big events to come

ONCE again, the weather did little to help the North Western Area's promotion of the Indoor Nationals at the Corn Exchange, Manchester. Many competitors must have been put off from travelling by the adverse weather reports, and conditions in the hall during Sunday's flying were, to say the least, somewhat chilly.

Nevertheless, some excellent flying was seen, no fewer than four records being put up during the meeting. (It will be remembered that the records list was considerably modified as from January 1st, so all top times can be claimed as new records.) Reg Parham brought along his usual meticulously prepared range of models, and during the meeting made a flight of 2 min. 34 sec. with a beautifully built ornithopter to set a new unorthodox record. A little later, he bettered this with a tailless "microfilmy" and a score of 3 min. 10 sec., and just to keep interest alive he pushed the tissue class indoor record up to 8 min. 8 sec. winning the tissue event in the process. Not a bad afternoon's work for Reg, all told.

Other people during this time were not so idle either, G. Parker of Tees-side set the microfilm record at 10 min. 2 sec. and J. T. Ellison of Whitefield, with the aid of a strong arm and a lot of energy got his chuck glider up for 44.2 sec.

So again, in spite of unfavourable conditions our indoor experts managed to show improvement on their previous best, a good augury for the coming meeting in the vast spaces of the Cardington hangar.

RESULTS

Microfilm class
1. G. Parker (Tees-side), 10.02.
2. J. O'Donnell (Whitefield), 8.11.
3. M. Grimmet (West Brom.), 7.46.

Tissue class
1. R. Parham (C/M), 8.08.
2. B. Jukes (Birmingham), 7.58.
3. E. Barnacle (Leamington), 7.35.

Chuck glider
1. J. T. Ellison (Whitefield), 0.38.
2. H. O'Donnell (Whitefield), 0.37.
3. J. Birks (Chorlton), 0.30.
   G. Freeston (Sheffield), 0.30.

The photos, reading from top to bottom, show: A tissue model getting away for a good flight. Reg Parham's remarkable Ornithopter, with which he set up a new Unorthodox record. "Bunny" Jukes with his tissue model which came second in its class, clocking 7 min. 58 sec. Winner of the microfilm class, G. Parker of Tees-side, just about to launch.

MODEL aircraft ENGINE TESTS

The Allen-Mercury 049

0·8 c.c. Glowplug Motor

THE third new British "Half-A" size beginners' glowplug motor to be tested in this series, the A-M 049 is, by our findings, the most powerful of the three offered to date. Using the ingenious self-engaging starter unit, with which it is equipped, the A-M 049 is also one of the simplest handling engines—perhaps *the* simplest handling engine—on the British market.

In short, this American designed, British-made 0.8 c.c. motor has the two features which most modellers look for, today, in an engine—power and easy starting.

Against this, our test sample suffered two defects. The first, a minor point, concerns the needle-valve, which, rather an easy fit in its threads, has a piece of plastic tubing over the needle and spraybar to act as a snubber. This was too loose and allowed the needle to vibrate out of adjustment. It was replaced with a tube of smaller diameter which, however, was also unsatisfactory when the engine became hot, due to softening of the plastic. A snubber tube of a material unaffected by heat and of the correct size would appear to be indicated. To facilitate accurate needle settings during tests, we fitted a coil spring in place of the tube.

The second spot of bother occured, when, after being used about a hundred times quite satisfactorily, the starter ceased to function. Upon subsequent examination, this was found to be due to the spring breaking at the point where it is riveted to the steel sleeve engaging the clutch assembly. This weakness may have been an isolated case. If not, we have no doubt that the matter is receiving the attention of the manufacturer. In any case, failure of the starter spring does not prevent the engine from being used : it can still be started by normal prop flicking.

As regular readers will be aware, the Allen-Mercury 049 is basically identical with the American Wen-Mac 049 Mk. III engine and, complete with its patented "Rotomatic" starter unit, is made in England by arrangement with the Wen-Mac Corporation of Los Angeles. Although, to the average modeller, Wen-Mac is one of the less well-known names, this manufacturer is actually one of the largest producers, specialising in ready-to-run power-driven model aircraft, boats and cars for the "toy-model" market. It was the need for utmost simplicity of engine operation, for this market, that led to the introduction of the various Wen-Mac integral recoil starter devices, of which the present Rotomatic unit, as used by the A-M 049, is one of the latest types.

The crankcase embodies both beam and bulkhead mounting lugs. The former are provided with slots instead of holes and extend well forward, bracing the main bearing housing. There is a substantial lug below the main bearing, which also aids in stiffening the entire crankcase, and provides one of the two mounting points for the pressed steel case containing the starter spring. Some small differences can be noted in the British version. The spraybar assembly, for example, is installed at a right-angle, instead of being swept back, and does not have the angled fuel line connection of the prototype. Also, the shape of the beam mount lugs and slot positions are slightly different and, perhaps, rather more practical for most applications.

The cylinder has three exhaust and three transfer ports of equal size, each transfer port being positioned immediately below an exhaust. The transfer ports are fed by two channels formed on the inside of the crankcase. The cylinder screws into the case and seats on a flange between the port belts. Two more flanges form the bottom cylinder cooling fins and a screw-on alloy barrel and head contributes a further five cooling fins. The piston is of the ball-joint type with steel con-rod.

The non-counterbalanced crankshaft has a 7/32 in. dia. journal and 3/32 in. crankpin with $\frac{1}{8}$ in. dia. valve port and $\frac{1}{8}$ in. dia. gas passage. It is splined at the front end to engage the large diameter steel driving plate which also houses the clutch assembly. This latter is entirely enclosed and cannot be easily inspected but its basic components and *modus operandi*

are similar to those of the Wen-Mac clutch described and illustrated in "Latest Engine News," MODEL AIRCRAFT February 1959. As already mentioned, the starter spring is enclosed in the pressed steel housing fixed to the crankcase nose. A steel boss or sleeve, mounted on the end of the main bearing housing and to which the inner end of the clock type spring is anchored, conveys rotary movement to the driving disc via the clutch—in one direction only of course.

At only 39s. 6d., inclusive of tax, the A-M 049 obviously represents unusually good value. The price includes the new A-M glowplug, which is very similar to the Wen-Mac plug, but appears to have a slightly finer filament wire.

Specification

Type : Single-cylinder, air-cooled, reverse-flow scavenged two-stroke cycle, glowplug ignition. Shaft type rotary-valve induction.

Bore : 0.421 in. Stroke : 0.362 in.

Swept Volume : .05029 cu. in. = 0.824 c.c.

Stroke/Bore Ratio : 0.860 : 1.

Weight : 1.85 oz.

General Structural Data

Pressure diecast aluminium alloy crankcase and (unbushed) main bearing unit, with screw-in rear cover. Non-counterbalanced, disc-web, hardened steel crankshaft. Screw-in, unhardened steel cylinder. Screw-on machined aluminium alloy finned cooling barrel and head. Hardened steel piston with truncated shallow cone crown. Hardened steel connecting-rod with ball joint small end retained in piston socket by circlip. Brass spraybar with blued steel needle. Pressed steel starter spring housing, blued and riveted to crankcase. Machined steel, blued, clutch-housing/prop-driver, sealed in unit with drive cam and rollers and pressed onto crankshaft splines. Beam and radial mounting lugs.

Test Engine Data

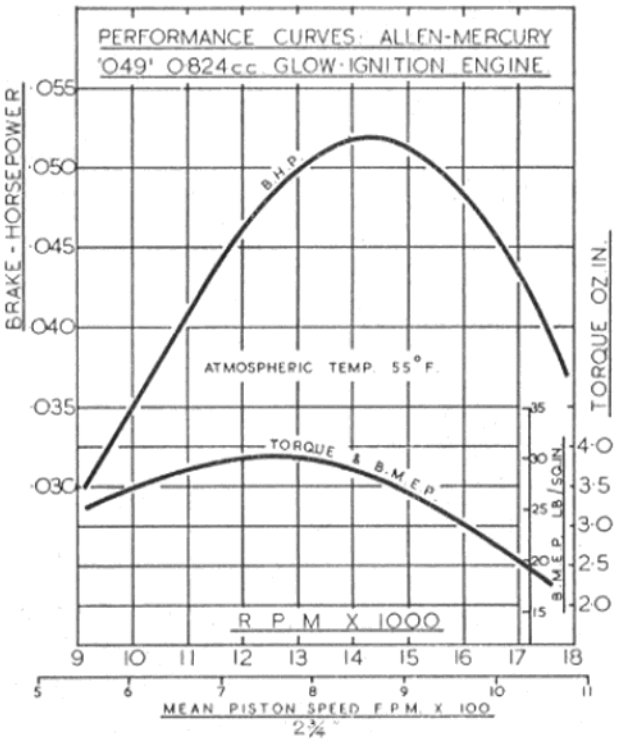
Running time prior to test : 1½ hours.

Fuel used: 60 per cent. methanol, 15 per cent. nitromethane, 25 per cent. castor-oil (Duckhams) as recommended by manufacturer.

Glowplug used : A-M type "A" short reach as supplied.

Performance

To operate the starter, one simply rotates the prop backwards 1-1½ turns. The spring is automatically engaged by the clutch and on releasing the prop, it will spin the engine over several compressions. Usually, the engine will start at the first or second attempt, provided the intake has previously been choked sufficiently to bring fuel to the jet. It is usually quite unnecessary to port prime the A-M when the starter is used. Unquestionably, the starter is a far more efficient means of starting the engine than normal hand flicking. If prop flicking is used, a fairly generous port prime is desirable to ensure a quick start.



The A-M was clearly at its best when allowed to rev at speeds in excess of 12,000. This will generally call for props rather smaller than the larger sizes mentioned in the maker's leaflet. Seven-inch props loaded the engine too much and caused power loss with warming up, even after two to three hours running time. For top performance, we would suggest aiming at operational speeds in the 13-15,000 r.p.m. bracket—e.g. 6×4, 6×3, 5½×4, 5¼×4—according to make and type. The 5¼×3½ D-C nylon, however, is a trifle too small and allowed our engine to exceed 17,000—which sounded fine but resulted in two burnt-out plugs.

On test, a peak output of 0.052 b.h.p. was recorded at between 14,000 and 14,500 r.p.m. The maximum torque of 3.9 oz. in. (equivalent to 31 lb./sq. in. b.m.e.p.) was reached at the relatively high speed of 12-13,000 r.p.m. Running was even and, apart from the slight difficulty encountered with the needle tensioning device, as already mentioned, response to the needle control was positive and non-critical.

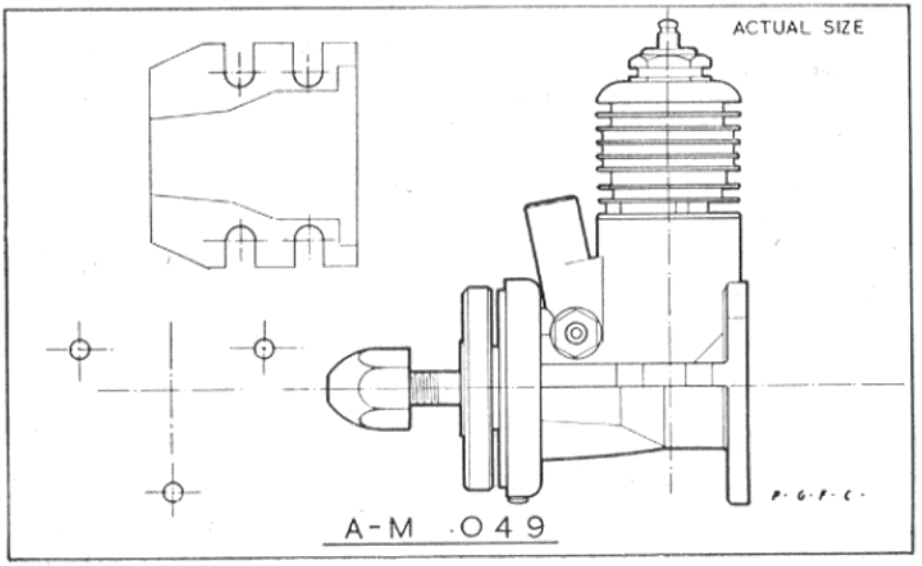
In a word, this is a likeable little engine. First class starting and low price should, alone, be enough to recommend it to the young beginner.

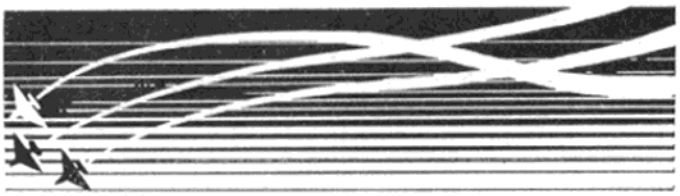
Power/weight Ratio

(As tested) 0.45 b.h.p./lb.

Specific Output

(As tested) 63 b.h.p./litre.





TOPICAL TWISTS

by pylonius

Childhood II

This being a vintage edition it's appropriate that this bewhiskered column should make its tottery contribution, even if it's only to give a few wrinkles of one sort or another.

Usually on these harrowing occasions I trot out a few hoary old gags on von Richthofen's socks and retire to a safe distance, but just lately I've been genning up on this old tyme modelling routine. I am now in a position to inform the novice that W.W.1 is not a postal district, and that anything with less than two wings is definitely a missile.

But it's not only the vintage model that's making the news these days, there's quite a bit of daddy-o publicity flying around. The great white hope of the movement is the white haired boy. Efforts to arouse Junior from his adolescent torpor having dismally failed, attention is now focused on spry old dad, gamely shaping up to his second childhood. Some old modelling timers are still going like clockwork, and other superannuated types are revving up their bathchairs for a final flying field fling.

It is hoped that many old stagers will still be piling on the turns into ripe old age—which is as good a way to wind up as any.

* * *

However, some people, with a desperate faith in human nature, keep plugging away at the younger generation. Mostly the only gluing the youngsters do these days is of the eyes to telly variety, so, with this in mind, one manufacturer has hit upon the bright idea of running a building competition on the lines of a " Beat the Clock " show. All that is required of the competitor is to state how long it took him to assemble a model kit which more or less falls together itself if you tip it out of the box the right way. Prizes are to be awarded according to age group. This means, we suppose, that those tearaway lads taking a mere 13 years will get a bigger prize than the 18 year strugglers.

But for really intensive building we have to go back a few years into the pre-telly age, when the one model per week schedulists were quite a commonplace. It was amazing how rigidly these building board bashers stuck to their weekly programmes. They might emerge a bit hollow eyed and groggy from the rigours of a radio scale job, but made up for it the following week with a recuperative geared Wakefield.

Needless to say, the finish of these seven-day wonders was of showcase perfection ; it would take a modern view-it-yourself expert seven weeks to brush on the dope.

Possibly there may be one or two of these one-weekers still surviving. Not so long ago I saw a power job bearing the legend, " Skyway Patroller XIV." But whether this meant the fourteenth mark off or had some other significance I don't know. I'm not all that well informed since I flogged the telly for a skein of rubber.

Simply Monstrous

What is a Wombat? Most of us X certificate goers would imagine it to be some sort of Draculian creature, half bat, half pin-up girl. Or, perhaps, an airborne teenage werewolf. Others, better informed, would plump for a standing still, jumping up and down type creature from the outback.

We would, of course, all be way off the beam. From no less authoritative a source than Club News we learn that a Wombat is a species of modeller which feeds upon such gruesome delicacies as fish and chips and hot dogs, and sucks its grisly nourishment from the malted tankard.

Just now it seems to have developed a sinister craving for College Pudding, Loughborough style.

Just a Sec.

Also from Club News comes this intriguing extract, " The Treasurer announced that funds had risen by about £17 and the Secretary resigned."

This, of course, is an extreme case, but it's a well-known fact that secretaries are the prima donnas of the modelling world, resigning, or threatening to resign, at the slightest provocation.

Hon. secs. are usually hard to come by and are consequently fussed over and protected like queen bees. Some clubs, however, manage to scrape up half a dozen or so between A.G.M.s, but, given a fair measure of tact and diplomacy on the part of the members, it is sometimes possible to keep one in good, non-resigning humour for a whole year.

The critical obstacle is always the A.G.M. Everything might be going swimmingly, with the secretary still intact at the halfway mark. True his hand has twitched upon his portfolio once or twice but hopes are still running high. Then, without warning, the treasurer gets a little out of line with a careless boast about the funds, and bang goes another secretary.

A Quiet Nap

Donning our breeches and deerstalker we plunge once more into the vintage past, back to those early pioneer days of the movement, when the stalwart modeller looked hopefully towards the brave new world of the future. What did he envisage? Something pretty incredible, you may be sure, but never in his wildest dreams would he have imagined a plastic kit of Napoleon as the ultimate in the model making art.

Come to think of it, though, we are just as amazed. We all know that every soldier has to carry around a field marshal's baton in his knapsack, but we are not too aware that every modeller should have his own Napoleon on the sideboard.

We could, of course, use it as a presentation for our redoubtable Major Draper, who, having flown under most of London's bridges, finally met his Waterloo at the handle of the Editor's team racer.

Would-be Nap constructors might be interested to know that the building instructions begin thus, " Stick each bone apart." All right, I'll go quietly.

Take Cover

Blokes take up modelling for all sorts of weird reasons ; to mess about with engines, mostly ; for something to do, sometimes ; and for the sheer joy of it, seldom. For the most part we don't analyse ourselves on the subject. Just as long as we can put something into the air, if it's only an aerial, we're content.

Still, some people like to do a spot of soul searching now and again, and get it off their tool chest, as it were. Only recently we had an expert scale type waxing lyrical over his pet obsession, reaching a touching climax as his metal spoked, rubber tyred wheels homed on to the tarmac. And even the ordinary bod has his moments of poetic expression, grunting out an ecstatic " whacko " or " bang on " as his model describes some unusually graceful movement, like flying straight.

All that I can say of my own model flying is that it is indescribable.

Perhaps the only modelling type of whom I am deeply suspicious is the wild eyed character who takes up the hobby for the thrill of it. He doesn't just join the movement, but descends upon it like a bomb. In no time at all he has made the flying field quite uninhabitable with his noisy and dangerous antics.

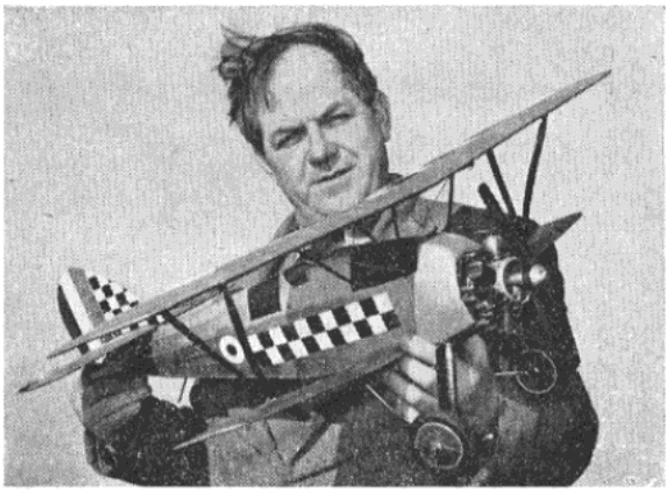
At one time his favourite trick was to whirl a livid stove pipe around on a piece of wire. Being a timid being I never got near enough to these fearsome weapons to identify their purpose, but was told by more venturesome friends that if you looked closely enough you could perceive a vague likeness to a model plane.

We must be thankful that the stove pipe brigade has now drifted off into motor cycle racing and go-karting, and we can all enjoy a brief respite before the inevitable arrival of the radio speed model.

Building a free-flight model of the plane on the cover—the

SISKIN IIIA

P. E. Norman, who painted the original of this month's cover, gives detailed instructions on how to build your own replica of his exciting model



THE *Siskin III* single-seat fighter entered service with the R.A.F. in 1924, when 41 and 111 Squadrons were equipped with it. It was an aircraft with several distinctive features, and was both liked and disliked by the pilots who flew it. Of rather gawky and angular appearance it had a slab-sided fuselage with angular decking and angular tipped wings and tail, but its most distinctive feature was its large broad chord upper wing and very small and narrow chord lower wing with "V" interplane struts.

The undercarriage, which had the then comparatively new oleo legs, was complicated and drag producing, and was rather long. This, coupled with the amount that the legs extended when in flight, gave it a rather "daddy long-legs" appearance. This tall undercarriage and the fact that the lower wing stalled easily made the machine rather tricky to land, and there are many old pilots still carrying a "Siskin nose," a distinctive feature brought about by that organ coming into rapid contact with the cockpit edge, or the trailing edge of the mainplane when the aircraft nosed-over on landing.

The engine, a 325 h.p. Jaguar two-row 14 cylinder air-cooled radial, appeared to be stuck onto the nose as an afterthought with a flatish cone spinner on the two bladed airscrew. An aluminium cone segment between the airscrew and front of the engine formed the only streamlining.

All machines were doped silver overall except for the front fuselage panels and the deck in front of the cockpit which were either dark green or black.

The red, white and blue roundels were carried on the fuselage sides, just aft of the cockpit and on the top and bottom surfaces of the top wing only, as the lower plane was considered too narrow to carry them. The rudder carried red, white and blue vertical stripes (blue forward) and the machine sported the gay and colourful squadron markings on the fuselage sides and between the roundels on the top wing (41 squadron—a red bar, 111 squadron—a black bar). The wheel discs (canvas) were painted the flight colour, i.e. red, blue or yellow.

Squadron Markings :—

No. 1. Two parallel red bars.
No. 19. Blue and white checks.
No. 25. Two parallel black bars.
No. 29. Two intersecting zig-zag lines.
No. 32. Blue band intersected obliquely with white.
No. 43. Black and white checks.
No. 56. Red and white checks.

An extensively modified version (the Mk. IIIA) was widely used by the R.A.F. and equipped Nos. 1, 19, 25, 29, 32, 41, 43, 56 and 111 squadrons, remaining in service until about 1932. The final development was the Mk. IIIB, which had a Jaguar Major engine, enclosed in a Townend ring. It had a top speed of about 187 m.p.h. at 1,500 ft., but did not see service with the R.A.F.

My original model powered by an old 1.8 c.c. Elfin radial mounted diesel, represents the *Siskin* Mk. IIIA, as flown by the C/O of No. 43 squadron. When correctly trimmed its flight with this power unit is very exhilarating, and this, coupled with a comparatively slow glide and strong construction, should well reward its builder with several years of flying.

Study the plans and the following notes carefully, and become fully acquainted with them before commencing construction with the

Fuselage and Undercarriage

Cut out fuselage formers and drill engine mount bolt-holes in former 1. Cement reinforcing strips of $\frac{1}{16} \times \frac{1}{4}$ in. balsa across formers 5 and 6 between the longeron slots at top and bottom and at centre of former 4 (this acts as pendulum stop to prevent the elevator pendulum swinging too far backwards).

Cut the four main longerons of $\frac{3}{16} \times \frac{3}{16}$ in. from $\frac{3}{16}$ in. hard sheet—cutting them slightly longer than necessary. Gently "break" and cement the two lower longerons to the correct angle shown on the plan. Assemble the two upper longerons to formers 1, 2, 3, 4, 5 and 6, holding temporarily in position with pins and elastic bands until set.

Position the two lower longerons and cement in position, checking that the formers are in their correct positions and truly square. Cut the sternpost from $\frac{1}{4}$ in. sq. hard balsa, and having cut the ends of the longerons to length, cement firmly to the sternpost holding with spring paper clips until dry.

Bend the U/C legs from 3/32 in. dia. piano wire. To form the spring-coil in the wire at the top of each leg, leave the wire in its full 3 ft. length—hold a $\frac{1}{4}$ in. dia. steel rod vertically in the vice ; mark the leg and axle length plus about 1 in. on the wire with chalk or a piece of cotton. Slip a length of stout tubing onto the wire up to approximately this position. Hold the wire firmly against the steel rod in the vice and pull the other end of the wire tightly round the rod. Another length of tubing slipped on the other end of the wire will help this operation. Measure off the distance to the second loop and repeat the operation.

Now bend the wire between the loops to form the legs but do not bend the axle angles until the wire is fastened to former 2. Hold the formed wire in position on the back of former 2, and mark the position with a pencil line. Drill small holes at intervals through the ply and sew and glue the wire firmly in position using strong carpet thread and plenty of cement. Don't forget to place wire on the front face of former 2 for final fixing.

Allow the undercarriage wire to set firmly before bending the axle angles. The axles will be too long, but they are cut to length after the wheels are fitted. The wheels are retained either by threading the ends of the axles, or by soldering washers on the axle ends.

Bend the centre-section struts from $\frac{1}{16}$ in. piano wire and bind and glue securely in place ; do not complete the outer parts of struts at this stage.

Add top fuselage longerons between formers 2 and 3, and 4 and 6, and bend a length of $\frac{1}{8}$ in. dia. cane to form the cockpit edge, cement in position. Fit the soft block balsa between formers 1 and 2, cement, and sand to shape, then cut the M.G. apertures.

Cut the $\frac{3}{8}$ in. lengths of aluminium tubing and bind and glue firmly in position on top longerons to receive the tailplane prongs. Form the tailskid from 1/32 in. piano wire and bind and cement to bottom of former 6. Slip a length of P.V.A. tubing over the skid to give thicker scale appearance.

Cut the fuselage stringers from $\frac{1}{16} \times \frac{1}{4}$ in. balsa, and cement in position, ensuring that when finally sanded they stand proud of the formers. Cement the $\frac{1}{16}$ in. ply plates between the top longerons and top stringers and against former 4, to take the elevator pendulum.

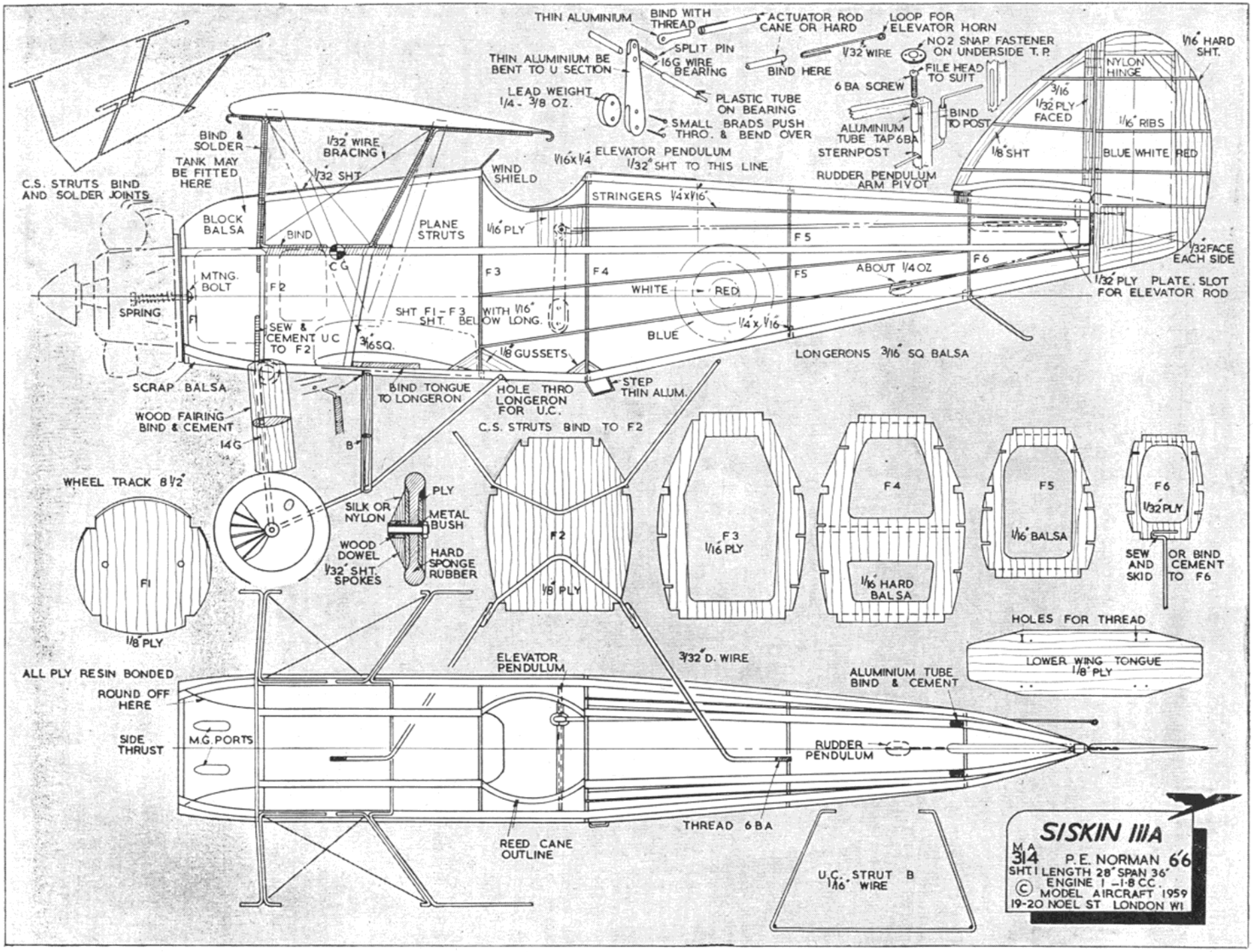
Cut the lower wing tongue from $\frac{1}{8}$ in. plywood, drill small holes for thread and securely sew and cement in correct position on top of the lower longerons.

Cover the fuselage sides with light $\frac{1}{16}$ in. sheet from former 1 to 3. Sheet all the upper fuselage to a point midway between formers 4 and 5, with 1/32 in. sheet, ensuring the grain on top surfaces runs across the fuselage.

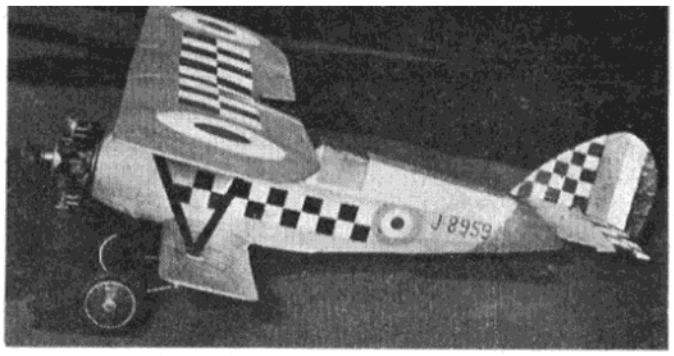
Form the rudder pendulum arm from 1/32 in. piano wire and fit a short length of aluminium tube bearing. Cut a shallow groove in the rear of the sternpost, make a small hole for the pendulum arm to pass through and ensure that this hole clears the pendulum arm to allow free lateral movement. Cut and drill a small piece of lead (about $\frac{1}{2}$ oz. will be sufficient) and slip over the end of the pendulum wire inside the tail end of the fuselage, bend over the end of the pendulum wire for about $\frac{1}{4}$ in. and hold the weights in position with thread binding and cement. Push the arm into correct position, line up the aluminium bearing in the sternpost slot and bind and cement thoroughly. Check that the arm swings freely.

Cut a $\frac{1}{4}$ in. length of aluminium tubing of large enough diameter to tap internally 6 B.A. Bind and cement to a short length of hard balsa, and cement thoroughly to the inside of the sternpost to form thread for 6 B.A. screw, which in turn is filed to fit the press snapper on the underside of the tailplane. This secures the tail in position and allows the tailplane incidence to be adjusted.

Fill in the underside of the fuselage between formers 1 and 2 with $\frac{1}{16}$ in. sheet balsa. Insert $1\frac{1}{4}$ in × 6 B.A. screws with washers into the holes



ABOVE IS A REPRODUCTION OF ONE OF A SET OF TWO FULLY DETAILED WORKING DRAWINGS, FULL SIZE COPIES OF WHICH ARE OBTAINABLE FROM YOUR LOCAL DEALER, OR BY POST FROM THE "MODEL AIRCRAFT" PLANS DEPARTMENT, 19-20, NOEL STREET, LONDON, W.1, PRICE 6s. 6d., POST FREE



in former 1, passing them through from the rear and screwing on nuts to hold them temporarily in position.

Sand the fuselage smooth and examine all joints, ensuring that there are no bumps or pieces of cement that will spoil the covered surface.

The centre section struts may now be completed by forming the bracing wires between front and rear struts and adding the top wing runners. Bind and cement thoroughly or wrap with thin fuse wire and solder, whichever you prefer.

Each oleo leg is built up from two pieces of $\frac{1}{8}$ in. balsa. Fit carefully to each side of the U/C wire, cement in place and when dry sand to a streamline section, wrap with $\frac{1}{2}$ in. strips of silk or nylon, and soak with cement.

Cover the fuselage with thin lightweight silk, applied damp. When dry, give two coats of clear shrinking dope and allow to dry.

The rest of the undercarriage is now completed using plastic cored or thin gauge plastic tubing (between $\frac{1}{16}$ in. and 3/32 in. dia.) and 1/32 in. piano wire faired with thin hard balsa glued and wrapped with silk. The cross axle is omitted to help prevent nose overs. Holes are drilled in the bottom longerons and plastic cord is passed through them from side to side to form the rear strut.

The plastic cord is now bound and cemented to the bottom of the piano wire U/C struts and then pulled forward over the axles, doubled back onto itself, and securely bound with thread.

Small details such as the wind driven generator and oil pump may be made and added. The front panels, two on each side of the nose, are cut from cartridge paper and cemented in place.

The Wheels

Method 1.

These may be built up from circular laminations of $\frac{1}{8}$ in. hard balsa and $\frac{1}{16}$ in. three-ply, sanded to section, and fitted with aluminium or brass bushes. The cone sides may be made from stiff drawing paper, cut to size and cemented in position.

Method 2.

Cut circular discs from a sorbo rubber kneeling mat, these may be purchased from Mence Smiths or Timothy Whites and are about $\frac{1}{4}$ to $\frac{3}{8}$ in. thick. Mark circles on the surface of mat with pencil compasses (using a soft pencil), then cut carefully with sharp long-bladed scissors.

If you have access to an electric grindstone the section of the tyre may now be ground to shape, ensure that you have a really strong grip on the rubber disc and rotate it slowly as the grindstone will " snatch " very strongly. If no grindstone is available, trim to section carefully with the scissors then sandpaper until they are as true as possible. The tyre section is now given two or three coats of rubber solution allowing each coat to dry thoroughly. Now stain the rubber with black leather shoe stain and allow to dry.

The two hub discs for each wheel are cut from $\frac{1}{8}$ in. 3-ply or preferably $\frac{1}{8}$ in. hardboard, drilled centrally and the edge on one side of each chamfered (this chamfer is eventually placed towards the rubber " tyre ").

The spokes are represented by slats of 1/32 in. balsa, spaced evenly round a short length of $\frac{3}{8}$ in. wood dowel which is centrally drilled and cemented to the face of the disc.

When dry the "spokes" are sanded off to the circumference edge (I used 24 spokes on each wheel covered with silk and doped); the wheels are now assembled by passing a suitable size brass bush (threaded externally 2 B.A.) through the outside covered disc " tyre," and inside disc, and then screwed up tightly with a 2 B.A. nut. These wheels are very effective, fairly simple to make, and are quite inexpensive.

The Mainplane

The top mainplane is built in one piece and is held in position on the centre section struts by elastic bands passing over the upper surface.

Make a rib section template from 1/32 in. plywood or thin card, allowing slight extra thickness at leading and trailing edges. Cut out the ribs, using the template to mark them out. Cut out the leading edge riblets using the front of the template as a marking guide. Cut all notches for leading edges and gaps in underside of trailing edges.

Make the trailing edge in one piece, ignoring the centre section cut-away at present. Cut the curved ends of the trailing edge as shown on the plan and cement. Lay the trailing edge on the plan and pin in position. Place the ribs in position on the trailing edge out as far as the sweep forward.

Trim the outer ribs from the trailing edge to fit the tapering panels. Cement ribs to trailing edge and pin temporarily. Carefully fit leading edge into rib slots and cement. Cement the leading edge riblets and wing tips in position, allow to set. Remove the wing frame from the plan and very carefully just break the leading and trailing edges at the centre rib position.

The mainspar is cut from two pieces of $\frac{1}{8}$ in. hard balsa with the centres trimmed to give the slight dihedral angle shown on the plans. Cut the dihedral braces from 1/32 in. plywood, and securely cement and pin to each side of the mainspar. Lay the mainspar in position on the plan and carefully cut out the rib slots in the underside of the mainspar. Place the mainspar in the correct position on the wing frame and carefully push it down into the rib slots, easing the wing up slightly at the ends to form the correct dihedral angle.

Mark the position of the mainspar on each rib with a cut from a sharp knife or razor blade, then remove the spar and carefully cut slots in each rib deep enough for the spar to drop down into position.

Place the spar in position and cement each interlocking joint. Carefully press the spar down into the riblets, blocking up the wing frame at the ends to form the dihedral. Trim the ends of the spar to fit the wing tips. Ensure that the spar is truly seated in position with the bottom surface flush with the bottom edges of the ribs, and allow to set thoroughly.

Cut, fit and cement the secondary mainspar as described for the mainspar. Cut away the trailing edge at the centre section and build up with $\frac{1}{8}$ in. sheet as shown on the plan. When set check the wing frame for any possible warps.

Sand the leading edge to the correct section and shape under and upper surfaces of the T.E. to give a knife-edge. Sand the wing frame carefully all over. Cut four aluminium or sheet tin pieces for the interplane strut fittings and make small slots with a knife blade in the ribs at the correct position, having previously wrapped the ribs at these points with narrow strips of silk well cemented. Insert the fittings through the ribs, bend the ends over with pliers and cement.

Cover the wing with thin dampened silk, covering the underside first. When dry, give two coats of clear dope, pinning the wing down to prevent warping. Reinforce the undersurface of the wing in the region of the centre interplane struts with 1 in. wide nylon ribbon tape dampened and doped in position with thick dope.

The lower mainplanes are constructed in a similar manner.

Make the lower wing boxes on the tongues —using 1/32 in. 3-ply for top and bottom surfaces and $\frac{1}{8}$ in. hard balsa for the box edges. Cement, pin, and bind with strong thin thread and check that they are a good tight fit on their tongues. Place the wings in position on top of the boxes, which are fitted in place on the tongues, and carefully mark the box positions on the wing root ribs.

Cut the wing root rib away to fit tightly and correctly over the boxes. Check the dihedral angle and incidence and when correct cement and pin securely in position over the boxes. Allow to dry and then remove from the tongue and add the small hook for the retainer rubber bands on the lower surface. Cover with silk as for upper wings.

Tailplane and Elevator

The tailplane ribs are each cut in one piece, the spar gap being cut away later. Pin down the trailing edge and tips and cement the ribs in position, holding them with pins. Insert the leading edge and add the reed tips. Before removing from the plan cut away each rib, to allow the full depth spars to be cemented in position. On one side of each spar cement a 1/32 in. ply facing to increase the strength.

When dry remove the completed frames and sandpaper smooth. Place the tail temporarily in position on the fuselage and mark the positions of the tubes for the piano wire prongs, and the position of the tail incidence adjustment screw, on the rear of the fuselage.

Bend the piano wire prong-piece and cement and bind it in position on the leading edge. Cut a gap in the underside of the tailplane to receive the female half of a dress snapper, and sew and cement it securely in place.

See that the tail fits correctly in position, and then cut the elevator portion free from the tail. Make the elevator horn from 1/32 in. piano wire and bind and cement it in position on the spar.

Cover the completed tail and elevator with thin silk and apply two coats of dope. Hinge the elevator to the tail with short strips of $\frac{3}{8}$ in. wide nylon ribbon, and make sure that the elevator moves freely.

Fin and Rudder

Make the complete frame as for the tail, using the same method of mainspar construction. When dry, check that the fin fits the upper surface of the tail correctly and if necessary trim carefully until it does. Separate the rudder portion from the fin, slightly round off the leading edge of the rudder to allow close fit and side movement. Cut a slot in the leading edge of the rudder to engage with the pendulum rod projecting from the rear end of the fuselage. Cement thin sheet balsa on each side of the projection to secure the wire.

Cover the fin and rudder with silk and use nylon hinges, as for the elevators. When the dope is dry, cement the fin firmly and correctly lined up, both vertically and longitudinally, on the upper surface of the tailplane.

Check that the completed unit fits squarely in position on the fuselage and that the incidence angle is adjustable, and rudder and elevator movement still free. All the tailplane components should be kept as light as possible.

The airframe is now complete and it is as well to assemble it completely to see that the wings and tail seat true, and to get the general feel of the model. You may balance it by passing an elastic band round the centre of the top wing and suspending the model from a hook. Plasticine or lead or some other suitable weight may be attached to the front bulkhead until the model balances roughly at the correct position. This will indicate how much the fuel tank, engine mount, propeller, and dummy engine should weigh. If you have the engine and propeller already available, this may be temporarily attached, thus giving a little better idea of the remaining weight for mount, dummy engine, etc.

Engine Mount

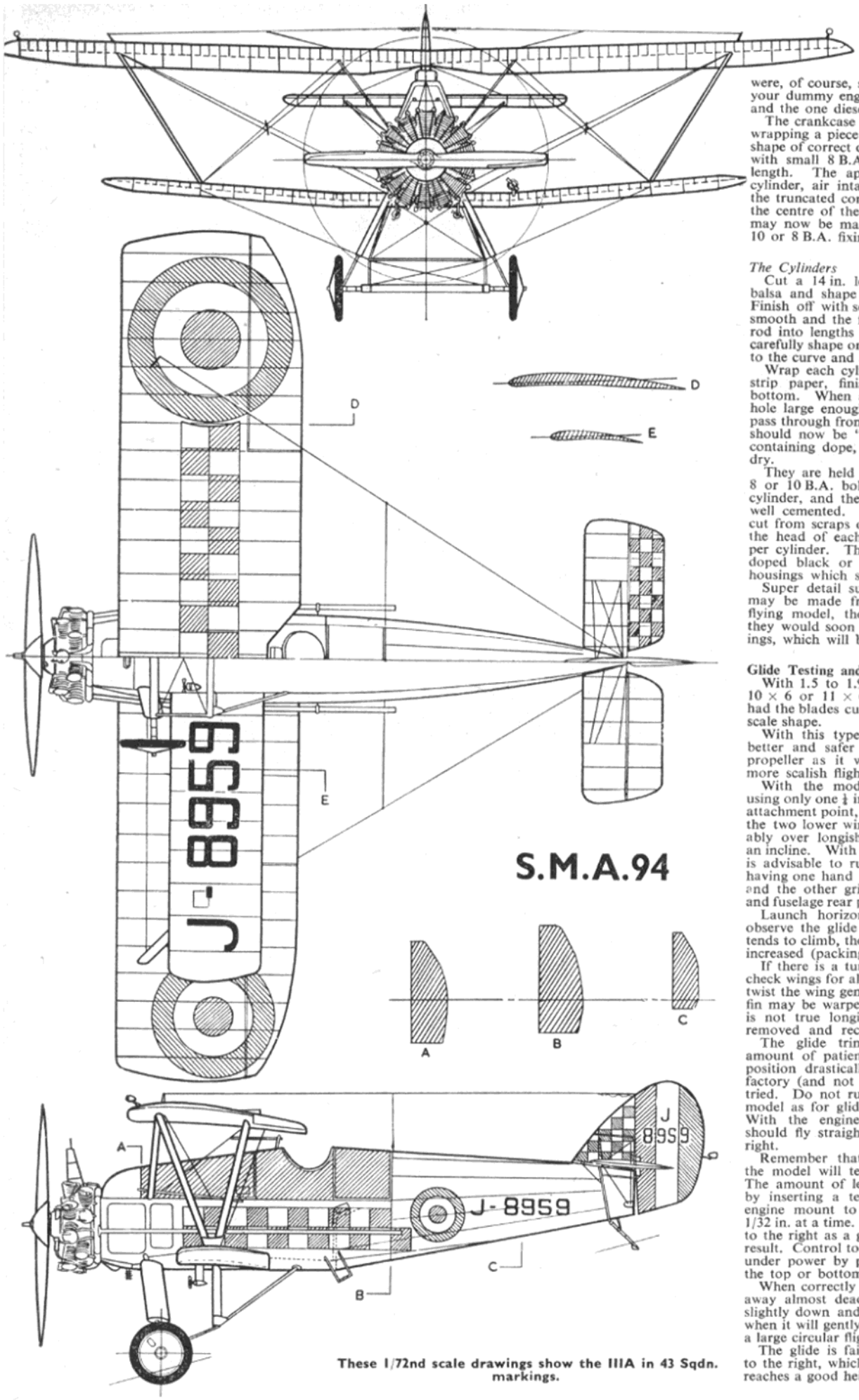
The engine mount, tank, and dummy engine are attached as a complete unit to the fuselage by my usual practice of passing two bolts through the front bulkhead and then through the mount, held by strong springs and locknuts on the screws. This method is quite rigid enough and the tension of the springs may be adjusted by the locknuts. The method permits full thrust line adjustment by inserting packing (afterwards built in) on the field during flying. The whole unit is easily detachable should the need arise, for replacement, etc. I normally use fibre for the mount but good resin bonded 3-ply will serve just as well provided it is thoroughly doped or fuel proofed against oil seepage. Plywood is not quite as strong as the fibre of course.

Cut the mounting bulkhead to the same shape as former 1 and drill holes to correspond. If you are using a radial mount engine, this may be bolted direct to the bulkhead, countersinking this on the back to allow the nuts to be flush with the rear surface. The fuel tank may be held to the bulkhead with a thin gauge aluminium strap screwed to the bulkhead.

If the engine is to be beam mounted, engine supports may be cut from hardwood, securely screwed from the back of the bulkhead, and then drilled to take the engine holding down bolts.

The Dummy Engine

The *Siskin* had a 14-cylinder double row air-cooled engine. The two banks of seven cylinders



These 1/72nd scale drawings show the IIIA in 43 Sqdn. markings.

were, of course, staggered to each other so that your dummy engine will consist of 13 cylinders and the one diesel engine cylinder.

The crankcase of the engine may be made by wrapping a piece of thin aluminium into a cone shape of correct diameter. It is riveted or bolted with small 8 B.A. nuts and bolts, filed off to length. The appropriate gaps for the diesel cylinder, air intake, etc., are now cut so that the truncated cone fits easily. The positions of the centre of the base of each dummy cylinder may now be marked out evenly and holes for 10 or 8 B.A. fixing bolts drilled.

The Cylinders

Cut a 14 in. length of 1 in. × 1 in. medium balsa and shape this into a true circular rod. Finish off with several grades of sandpaper till smooth and the final diameter is $\frac{3}{4}$ in. Cut the rod into lengths as shown on the drawing and carefully shape one end of each piece to conform to the curve and angle of the dummy crankcase.

Wrap each cylinder with a layer of gummed strip paper, finishing off neatly at top and bottom. When all are finished bore a central hole large enough for an 8 or 10 B.A. bolt to pass through from top to bottom. The cylinders should now be "soaked" thoroughly in a jar containing dope, then removed and allowed to dry.

They are held to the crankcase by means of 8 or 10 B.A. bolts passing right through each cylinder, and then secured with a locknut and well cemented. The rocker arm housings are cut from scraps of hard balsa and cemented to the head of each cylinder, two being required per cylinder. The completed engine should be doped black or dark grey, except the rocker housings which should be aluminium.

Super detail such as rocker push rods, etc., may be made from pins, but on a practical flying model, these are really unnecessary as they would soon be "lost" during heavy landings, which will be inevitable.

Glide Testing and Flying

With 1.5 to 1.9 c.c. engines I recommend a 10 × 6 or 11 × 6 Truflex propeller which has had the blades cut down in width closer to true scale shape.

With this type of scale aircraft it is much better and safer to use a large slow revving propeller as it will help stability and give a more scalish flight.

With the model completely assembled and using only one $\frac{1}{4}$ in. or $\frac{1}{8}$ in. elastic band on each attachment point, i.e. over the wings and holding the two lower wings together, test glide, preferably over longish grass and if possible down an incline. With pendulum controlled models it is advisable to run forward with the machine, having one hand under the front of the fuselage and the other gripping the base of the rudder and fuselage rear post.

Launch horizontally and not too fast and observe the glide characteristics. If the model tends to climb, the positive angle on tail must be increased (packing under the leading edge).

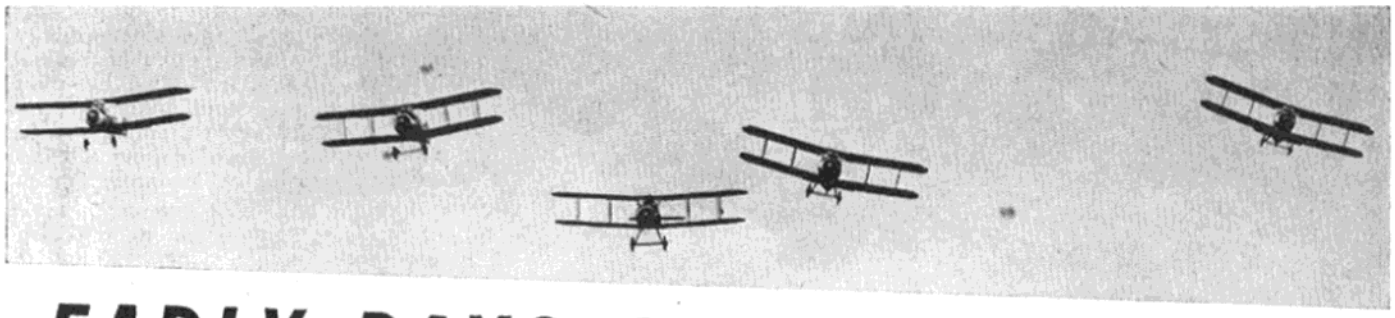
If there is a turning tendency to left or right check wings for alignment and warps. If warped twist the wing gently to coax the warp out. The fin may be warped over slightly too, for if this is not true longitudinally, it will have to be removed and recemented.

The glide trim may need a considerable amount of patience. Do not change the c.g. position drastically. When the glide is satisfactory (and not until) a power flight may be tried. Do not run the engine too fast, launch model as for gliding tests, and observe results. With the engine running slowly the model should fly straight or *very*, *very slightly* to the right.

Remember that with increased engine revs the model will tend to turn more to the left. The amount of left turn can be taken care of by inserting a temporary packing behind the engine mount to give side thrust. Only use 1/32 in. at a time. Do not let model turn sharply to the right as a gyroscopic turn and crash will result. Control too much climb or lack of climb under power by placing thin packing pieces at the top or bottom of the mount.

When correctly trimmed the model will climb away almost dead straight but with left wing slightly down and hold climb to about 200 ft., when it will gently bank to the left and continue a large circular flight pattern.

The glide is fairly slow and may be slightly to the right, which is just as well, as the model reaches a good height in a very short time.



EARLY DAYS by Major Draper

THERE is still a good deal of confusion and muddled thinking over the set-up of the Royal Naval Air Service, the Royal Flying Corps and the Royal Air Force. This story is mostly about the early days, so it is as well to get it clear.

At the time I learnt to fly, at the Grahame-White School at Hendon in the summer of 1913, there was no Royal Naval Air Service or Royal Air Force, only the Royal Flying Corps. This was divided into two wings, one naval, administered by the Admiralty, the other Military, administered by the War Office. There also existed an entirely separate establishment—the Royal Aircraft Factory at Farnborough run by the Civil Service.

By Christmas 1913 I had only completed a total of six hours' flying. In those days the instructor would walk out a few hundred yards onto the aerodrome, hold up his handkerchief and if it moved from the slightest breath of wind, wash out flying for the day. There was a very good reason for this ; it was found that the most economical methods for teaching were little hops from one corner of the aerodrome to another, turn round and hop back again. We never rose more than 50 ft. in the air at the most.

The Graham White *Box Kites* used for instruction had 50 h.p. Gnome rotary engines and there was, of course, no dual control. You sat close up behind the pilot, rather like a passenger on a motor bike, put your right arm over his shoulder onto his hand on top of the joy stick—which, curiously enough, was on the right-hand side, not in the middle—and you could then feel what he was doing. It was obviously not possible to use this method to give you the feel of the rudder. To get this you sat in the front with your feet on the rudder bar and the instructor sitting close up behind you, but keeping control of the engine to make sure you did not take off until he was satisfied you knew what you were doing.

There were no instruments only a piece of string, but this was the only "instrument" I have known that could not lie. Two or three feet of this string was tied to the trailing edge of the elevator which was fixed on outriggers in front. It blew back in your line of sight, so if it moved sideways or up and down you knew you were not flying straight!

These "kites" only flew at about 40 m.p.h. and touched down at less than half this speed, so it was not very surprising to discover that it took six weeks to complete three hours' flying and obtain the Royal Aero Club certificate. I paid the Grahame-White Company £75 for what was a tremendous thrill and had an extra three hours solo at £10 an hour. These figures make interesting comparison with the cost of private flying today.

Having come to the end of my funds I was wondering what to do next, when I ran into my cousin, Commander Bertie Herbert, D.S.O., R.N., who at once suggested I should join the Naval Wing of the Royal Flying Corps. Winston Churchill was then First Lord of the Admiralty and they were quite ready to take on qualified civil pilots.

I was a bit nervous of this word "qualified" but duly presented myself at the Admiralty and after a medical they gave me a commission as a Sub Lieut, R.N.R., don't ask me why, for I have never done any sea time as such but I have now held a commission in the R.N.R., the R.N.V.R., the R.N., the R.N.A.S., and the R.A.F. I also possess six service ties, which include the tie of the famous No. 8 Naval Squadron, (now 208 Sqdn. R.A.F.) and, to the confusion of many, now find myself dubbed a "Major," although I have never been in the army, or the Royal Flying Corps.

The answer is however, quite simple. On the 1st July, 1914, a month before the first world war, Churchill created the Royal Naval Air Service and I became a Lieutenant, R.N.A.S., with two straight stripes instead of one

Heading photo: Major Draper, in the centre machine, leads a flight of Sopwith Snipes at the second R.A.F. Air Display—Hendon 1921.

About the writer . . .

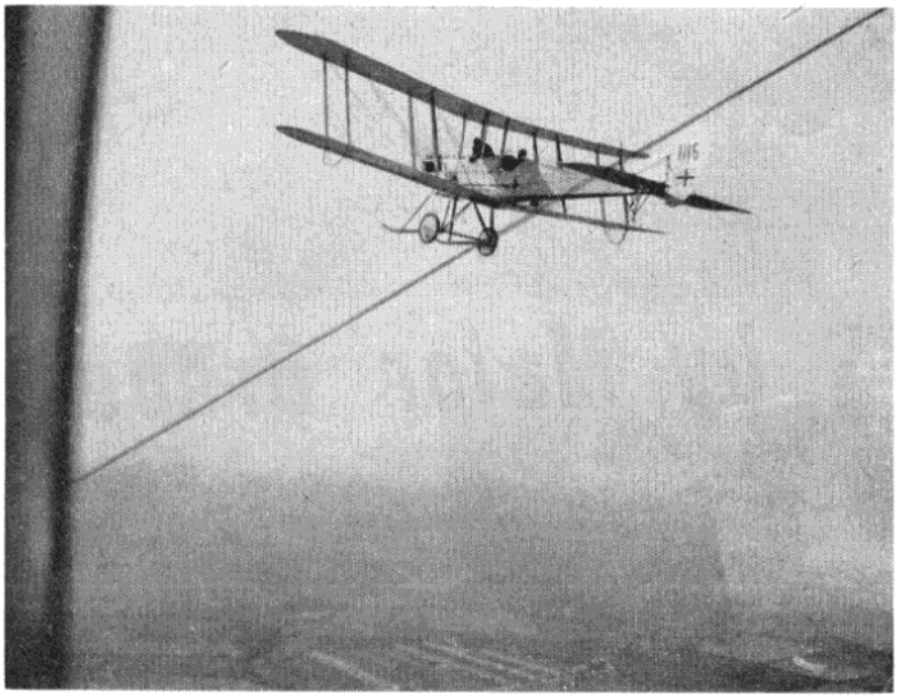
IN the "History of British Aviation," Vol. 2, page 73, the Editor wrote: "Mr. Christopher Draper who was to have a most spectacular career during the 1914-18 war in the R.N.A.S. and who was to become one of the greatest pilots of the Sopwith Camel in the world, also passed his tests as a pupil of the Grahame-White School at Hendon."—9th October, 1913.

Born 15th April 1892.

R.Ae Club Certificate, No. 646, 9th October 1913.	
Private Pilot's Licence No. 98.	
Probation Sub.-Lieut. R.N.R.	**27th Jan. 1914**
Confirmed in Rank ...	**29th April 1914**
Flight Lieut. R.N.A.S. ...	**1st July 1914**
Flight Com. R.N.A.S. ...	**25th June 1915**
Acting Sqdr.-Com. R.N.A.S.	**8th Feb. 1917**
Confirmed in rank	**31st Dec. 1917**
Major R.A.F.	**1st April 1918**
Demobilised	**15th May 1919**
French Croix de Guerre with Palm	**8th Feb. 1917**
Distinguished Service Cross	**31st Mar. 1918**
Mention in Dispatches (France)	**20th May 1918**
Short Service Commission as Sqdr.-Ldr. R.A.F. ...	**27th Sept. 1920**
Resigned	**6th Oct. 1921**
Temp. Sub. Lieut. (A) R.N.V.R.	**2nd Oct. 1939**
Temp. Lieut. (A) R.N.V.R.	**22nd Dec. 1939**
Temp. Acting Lieut-Com. (A) R.N.V.R.	**28th Aug. 1942**
Demobilised	**26th Sept. 1945**

Flying 46 years, now one of the only three pilots who were flying in 1913 and have a Pilot's licence today.

Two accidents: 27th July 1914 in 50 h.p. GnomeAvro Biplane, Salisbury; 23rd March 1920 in Bat Bantam at Hendon.



A B.E.2C over the east coast of Yorkshire, Autumn, 1915.

wiggley one ; on the 1st April, 1918, a most unpopular movement took place, the amalgamation of the R.N.A.S. with the Royal Flying Corps and the creation of a third service—the Royal Air Force. On this date from a Squadron Commander, R.N.A.S., I became a Major, R.A.F., my Flight Commanders became Captains, the Petty Officers, Sergeants, etc. It was in this rank of Major that I was demobilised in February 1919, and Fleet Street have called me Major ever since. The present day ranks of the R.A.F. were not introduced until the end of 1920.

Hoping the Medical Officer concerned is not alive, I must relate a little incident that occurred when I had that first medical board at the Admiralty. I had been deaf in my right ear ever since I could remember; this was of course discovered at once, but the M.O. just said "oh, it's only a lot of wax, have it syringed and you will be all right." I feel quite certain that if the truth had been known I would never have passed the dozens of boards I have had since.

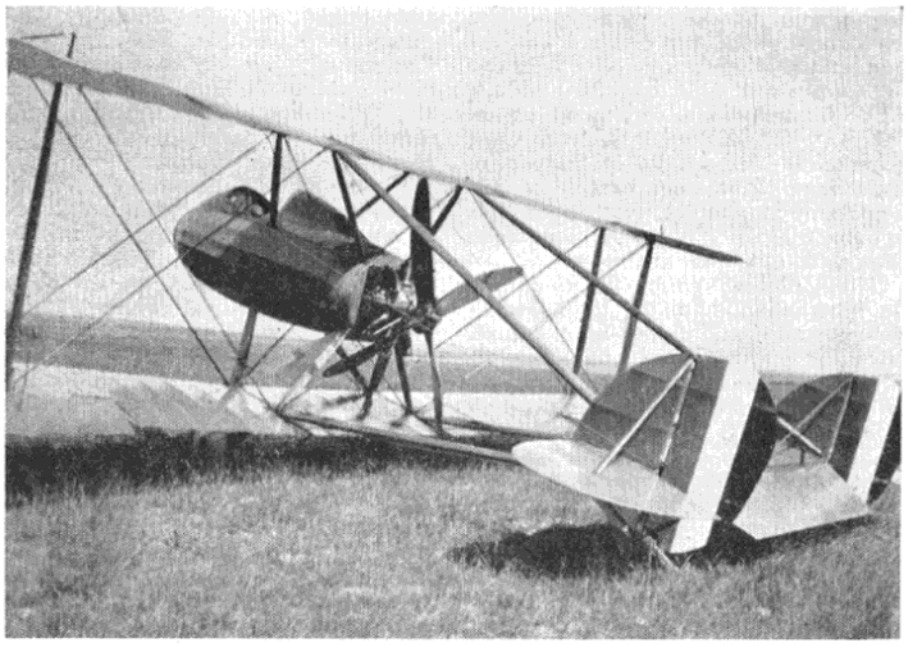
The Naval Wing of the R.F.C. was much less hampered by the festoons of red tape than their military colleagues, Churchill had given the officers a free hand to experiment more or less as they thought best and we collected all sorts of aeroplanes. Among others I remember the Deperdussin *Monoplane* with the 110 h.p. Anzani engine—a stationary radial. I found it tucked away in a hangar at Eastchurch, nobody seemed to want it, but for me anything that would get off the ground was good enough. This was in September 1914, and although we were very short of aeroplanes, even the C.O. did not seem very interested. My old log book tells me it was my first flight on a monoplane and that it took 30 mins. to reach 1,000 ft.

Then there was the Pemberton Billing *Pusher Scout* with an 80 h.p. Gnome rotary, I can only say that one short trip in this seemed enough.

The Admiralty had bought quite a number of the B.E. 2C's designed and built at the Royal Aircraft factory at Farnborough, but from a flying point of view they were not popular. I never liked anything the factory designed and built at that time and an entry in my log book reads : " 9th Feb. 1915, 15 minutes. First flight on a B.E. 2C. Don't like it!" I was, therefore, not very enthusiastic when the following April the Admiralty sent me to Beardmores at Dalmuir, Glasgow, to take delivery of a new B.E. 2C, the first aeroplane Beardmores ever built. At that time I was stationed at the Dundee seaplane base, but we were also using the land plane aerodrome at Montrose.

I find it amusing to record a couple of incidents in those early days of the first world war. When stationed at Newcastle-upon-Tyne I had not quite completed my first 12 months in the service, but found myself, as only a Lieut., in command of a small Naval Air Unit based at the factory of Armstrong Whitworth at Gosforth. One day we had a report that a Zeppelin was crossing the North Sea heading for the Tyne and the Admiralty ordered an aeroplane to go up and destroy it. It was dark but off I went on what was my first night flight. We had no W/T or guns, but my passenger was a private in the Royal Marines armed with a service rifle and four single rounds of incendiary ammunition. The Zepp. came over at 10,000 ft., it took me an hour to reach 3,000 ft. ! Immediately after this the Mayor of Newcastle asked me to make a night flight and let him know if he had " blacked out " properly, but as he had only darkened the top half of the street lamps, the whole place looked like fairyland.

Another item in the old log book tells me that on 28th February 1915, I took up for his first flight Captain Chatfield, R.N., now Viscount Chatfield who became First Sea Lord of the Admiralty before he retired. At that time he was captain of H.M.S. *Lion* which had come up the Tyne for repairs, after one of the big scraps in the North Sea. He was brought out to see our little outfit of four aeroplanes by one of the



The Pemberton Billing Pusher Scout at Eastchurch 1916.

A Sopwith Camel in flight, Winter 1917.

directors of Armstrongs. After his flight he invited me to lunch with him the following day on board the *Lion*, apologising for the list she had. I had no experience of warships and knew absolutely nothing about correct etiquette or behaviour when paying them a visit, it was very frightening but being the Captain's guest I never heard if I did the correct things. We met at the Admiralty years later when he told me he would never forget his first flight, but then one never does!

It would be at Dundee that I first acquired a taste for bridges. The Tay railway bridge over the Firth has 29 arches and it was rather fun flying backwards and forwards through them. With so many arches to choose from it needed quite a bit of concentration to keep an eye on one. The rather heavy, underpowered, Avro and Sopwith seaplanes we used for this "sport" could never get off the water unless there was some wind to help lift them a little out of the water onto the first step of the floats.

Towards the middle of 1916 when the Germans had produced the Fokker *Triplane* and we had replied with the Sopwith *Triplane*, there was still an outcry from the fighter pilots about the "blind spot." This meant a spot where you could be attacked and not see your attacker coming. This was probably the main reason for the triplane layout which meant that a much smaller wing chord could be used and so give the pilot better visibility. Koolhoven, the Armstrong designer, thought he would go one better and produced a quadruplane, it was, like the triplane, a single-seater fighter. The Admiralty ordered four and sent me to Newcastle to test the first. It had exactly the same performance and handling characteristics as the triplane, but was more costly and tricky to make, so was never adopted.

One of the most successful fighters of the first world war was, of course, the Sopwith *Camel*, which began to appear in large numbers in 1917. I had a short spell at the front with the 1½ *Strutter* two-seater Sopwith, and then took over command of No. 8 Naval Squadron, which was entirely equipped with *Camels*. At first they had 110 h.p. Clerget rotary engines and then the 150 h.p. Bentley rotary. I emphasise rotary, because the tremendous gyroscopic effect of these big engines, turning at around 1,400 r.p.m. played a large part in the flying characteristics of this machine. They were a delight to fly and had magnificent aerobatic capabilities.

I have flown over sixty completely different types or makes of aeroplane but did, I think, put in more hours on the *Camel* than any other single type. There is a complete account of the success we had with the *Camel* in "Naval Eight," the privately published history of the squadron; suffice is to say here that the R.F.C. Wing Commander, under whose operation orders we worked, said to me one day: "Draper, I am not going to give you any more operation orders, you will have a completely free hand and I leave it entirely to you to send up what you like, when you like." No squadron, especially

The Armstrong Whitworth F.K.10 Quadruplane—Newcastle-on-Tyne.

Sopwith Camels of No. 8 Naval Squadron—France 1917.

a Naval Squadron working with the R.F.C., could have had a greater compliment.

Just before the war came to an end and the *Camel* was getting near the end of its day we were re-equipped with the Aviation Transport Co., run by Lord Waring, of Waring & Gillow. Koolhoven had become its chief designer and certainly produced some interesting types, including the first airliner ever designed and built as such, in 1919. The

A Sopwith "Snipe" of 208 Sq. R.A.F.—France 1918

Sopwith *Snipe* powered with the 200 h.p. Bentley rotary. It was supposed to be superior to the *Camel* but by this time we had the Hun on the run and never really had a chance to find out what it could do. It did show off its capabilities at the 2nd R.A.F. Air Display at Hendon in the summer of 1921, when I had the honour of leading a formation of five of them, which, for the first time ever, carried out aerobatics in formation before the King and Queen.

It should be remembered that none of these aeroplanes had W/T, oxygen or parachutes. The best operational height for the *Camel* was around 14,000 ft. Its celing was around 18,000 but it lost height with the slightest turn. In addition to twin guns, we often carried four 20 lb. bombs for low straffing.

Very soon after the end of this war I became chief test pilot for the British FK 26, a biplane with a large deep fuselage, had a cabin for four. The pilot sat in an open cockpit about as far back along the fuselage as the pilot of a modern airliner is today right forward. It had a 400 h.p. Rolls-Royce *Eagle*, and a perfectly marvellous oleo undercarriage that made a bump on landing impossible.

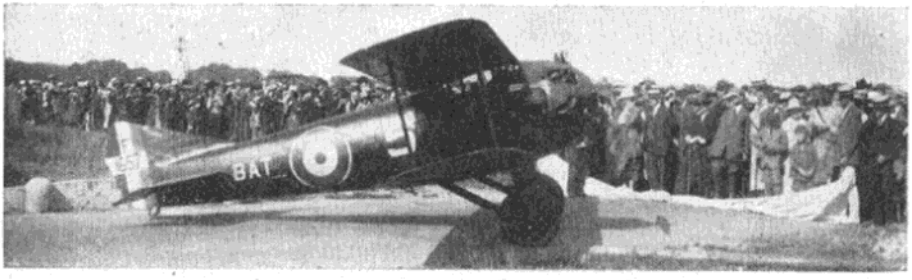
Late in the summer of 1919 it took part in the first international flying exhibition called the E.L.T.A. held at Amsterdam.

From my point of view the best single seater of the scout type was also designed and built by B.A.T.—the *Bantam*. For aerobatics it beat everything I had ever flown. Its only fault was the 125 h.p. ABC radial engine, not too reliable, though I do not remember a single forced landing with one. This said more for the maintenance staff of B.A.T. than for the engine.

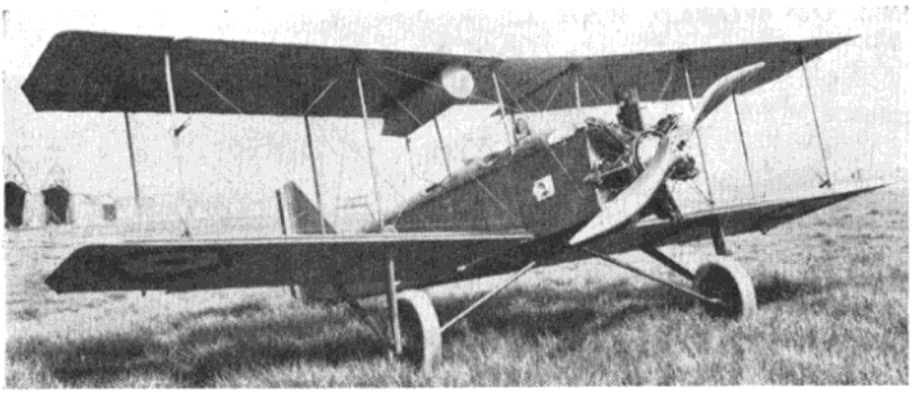
However, I had one very frightening experience with it at the E.L.T.A. in front of 90,000 people. A really low loop almost off the ground in which it was possible to finish higher than at the start was a common demonstration with the *Bantam*. On this occasion at the top of the loop the crankshaft broke immediately behind the prop, which came clean off. For a second I did not know what had happened; contrary to expectations the prop came backwards taking a chunk out of the port side top plane. Just a nice bit of luck for it to happen when exactly in the right position to complete the loop and land back on the aerodrome. The public did not realise what had happened, or else thought it just part of the show.

I feel I must mention the B.A.T. *Basilisk*, which, like the airliner, was ahead of its time. It had interchangeable rudder, elevators, ailerons, all control wires were outside, as was also the petrol tank, so that together with a typical B.A.T. undercarriage it was a perfect training machine.

Alas for my enthusiasm over the *Bantam* ; in it I was to have the one and



The B.A.T. Bantam at Hendon 1920.



B.A.T. Baboon Trainer—Hendon 1919.

only serious accident in the 46 years since I started flying. Forced landings from all sorts of trivial mishaps such as broken valves or valve springs, leaky radiators, a broken tube or pipe, cowls coming off, to say nothing of punctures, even losing a wheel, or losing one's way and bad weather, all seemed part of the show and added to the fun. I even remember one occasion after taking a brand new Bleriot *Monoplane* out of its packing case, the mechanic connected the elevator control wires the wrong way round; when I pulled the joy stick back for the take-off the machine just turned clean over onto its back. But the accident with the *Bantam* was serious.

It is very nice to be able to say that the official Air Ministry enquiry into the *Bantam* accident in March 1920 found nothing wrong with the machine. It was, once again, the poor bloody pilot, but this time the P.B.P. had fainted in the air. I had been at home in Cheshire and in bed for a week with 'flu. Feeling better and impatient with an irritating old country doctor, I got up, took the night train to London and was in the air the next day.

This *Bantam* was beautiful to look at, brand new and painted white with black fittings and linings, quite novel in those days. After a short straight flight in the morning, then lunch, I took it up to put it through its paces. I felt here was a perfect pet, something to show off. The usual loops and rolls then into a spin. I came round a week later in a hospital in Colindale Avenue. Not having recovered fully from the 'flu it is believed the action of spinning affected the heart or blood pressure in some manner and I just spun into the middle of Hendon aerodrome from 3,000 ft. Being unconscious I had no knowledge of the accident. My nerve was unaffected and I was back in the air in six months, but with a bent nose, no teeth and a fractured ankle.

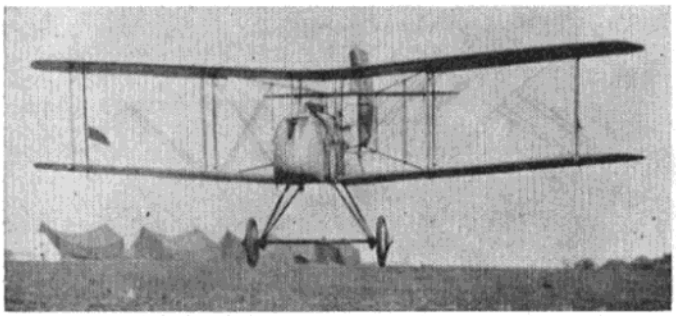
Following this there were no particular adventures until 1932, when I met Hitler in Munich. I had been invited to stay with my old enemy, now a great friend, Teddy von Schleich. During the war he made almost as big a name as the Red Knight, Richthofen, but Teddy was the Black Knight. The photo taken on the aerodrome at Munich shows Teddy in a light soft hat between Hitler and myself. I am talking to Dr. Hanfstaengl who acted as interpreter. Teddy is now dead but I still correspond with "Putzi" Hanfstaengl who quite recently has been over here to give a talk for the B.B.C. on "Men of Power." He has just published a most interesting book called "Hitler : the missing years."

It was this meeting with Hitler and my association with other Germans in London that led to my being asked to spy for Germany. How I went straight to our M.I.5 and how we double crossed them for the next six years is another rather long story, but this story is already too long and we haven't even reached the second world war, so I am afraid even that must wait for another time.

This historic photo taken at Munich in 1932 shows, from left to right, Dr. E. Hanfstaengl, Major C. Draper, Major Ritter von Schleich (The Black Knight) and Hitler.

CONTEST CALENDAR

Apr.	10th	*ASTRAL TROPHY. F.A.I. Power. S.M.A.E. CUP. F.A.I. Glider Elim. WOMEN'S CUP, U/R Rubber/Glider. JETEX TROPHY. Area Centralised.
,,	24th	Woodford Rally. Full details next month.
May	1st	HALFAX TROPHY. F.A.I. Power. *WESTON CUP. F.A.I. Rubber. Area Centralised.
,,	,,	High Wycombe C/L Rally. R.A.F. Booker. T/R 'A' & 'B,' stunt, combat. Pre-entry (2/6) to J. Elphick, 102, Suffield Rd. H.W. before 22/4/60.
,,	21st/22nd	FIRST F.A.I. C/L TRIALS. FIRST F.A.I. R/C TRIALS. Centralised.
June	5th	**BRITISH NATIONAL CHAMPIONSHIPS.** R.A.F. Scampton. THURSTON CUP. U/R Glider. SHORT CUP. P.A.A. Load. S.M.A.E. CUP. F.A.I. R/C Multi. LADY SHELLEY CUP. Tailless. KNOKKE TROPHY. C/L Scale. DAVIES TROPHY. Class A T/R. COMBAT. Prelim. Heats. SPEED.
June	6th	SIR JOHN SHELLEY. U/R Power. MODEL AIRCRAFT. U/R Rubber. SUPER SCALE. F/F Scale. RIPMAX TROPHY. F.A.I. R/C Rudder only. TEAM RACING. Class B and ½A. COMBAT. Finals. SPEED. GOLD TROPHY. C/L Aerobatics.
,,	18th/19th	F.A.I. POWER TRIALS. (2 x 5 flights). Centralised.
July	2nd/3rd	SECOND F.A.I. C/L TRIALS. Centralised. Clwyd Slope Soaring Moelffamau, Open, A/2, R/C, Junior.
,,	10th	Enfield C/L Rally (Playing fields by A10) T/R—A and B, Combat, Stunt, Handicap Speed.
,,	16th/17th	PRACTICE TRIALS. F.A.I. Rubber. Centralised. PRACTICE TRIALS. F.A.I. Glider. (five flights each contest.)
To be fixed		**SCOTTISH GALA.** K.L.M. TROPHY. U/R Power. C.M.A. TROPHY. U/R Rubber. GLIDER. U/R Glider. TAPLIN TROPHY. R/C Rudder only. TEAM RACING. Classes A & B.
July	24th	*MODEL ENGINEER CUP. Team Glider. FLIGHT CUP. U/R Rubber. Area Centralised.
July	30th/Aug. 2nd	**WORLD CHAMPIONSHIPS POWER.** Cranfield.
Aug.	21st.	AREA CHAMPIONSHIPS. Rubber/Power/Glider. Centralised.
Sept.	4th	**NORTHERN GALA.** GLIDER. U/R Glider. HAMLEY TROPHY. U/R Power. CATON TROPHY. U/R Rubber. AEROMODELLER TROPHY. R/C Multi. TEAM RACING. ½A, A & B. PAN AMERICAN CUP. P.A.A. Load (American Class). UNITED KINGDOM CHALLENGE MATCH.
,,	18th	*KEIL TROPHY. Team Power. FROG JUNIOR TROPHY. U/R Rubber/Glider. Area Centralised.
,,	25th	South Coast Gala. *Plugge Cup events.



DE HAVILLAND 2

NO. 24 Sqdn. had the distinction of being the first single-seat fighter squadron to go into action during the first world war. They were equipped with D.H.2's and commanded by Major L. G. Hawker, V.C., who was later shot down and killed in a D.H.2. by Manfred Von Richthofen on November 23rd, 1916.

The pusher layout was evolved before the advent of synchronising gear (which enables the forward-firing machine guns to fire through the airscrew arc). The pilot had an uninterrupted forward view and had his gun mounted centrally in a trough beneath the windscreen. This, combined with the excellent manoeuvrability of the aircraft gave D.H.2 pilots the edge over their German opponents flying Fokker monoplanes and contributed much to our air superiority during 1916.

Rotary engines such as the Le Rhone, fitted to the D.H.2 had a nasty habit of shedding cylinders and more than one pilot lost his life because the rogue cylinder severed the tail booms!

Another famous pilot who began his fighting career in a D.H.2 was Major McCudden, then a Flight Sergeant attached to No. 29 squadron. His machine was No. 5985, one of the first production batch.

Colour Schemes : Early machines were clear doped with natural finish nose and other metal components and varnished ply. Later, the conventional khaki-green with clear under parts became general, although the nose was often left undoped. At least one such machine, from 32 Sqdn., had both sides of the wheel discs doped red, except for a small disc left clear in the centre. A similar marking denoted a Flight Leader in 24 Sqdn., save that a small margin was left inside the rim.

Manufacturers : The Aircraft Manufacturing Co. Ltd., Hendon, London, N.W.

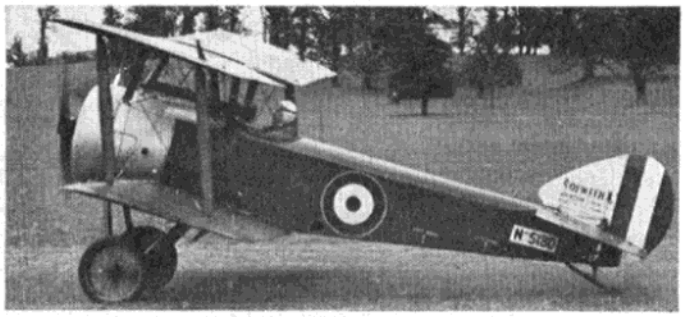
Power : 100 h.p. Gnome Monosoupape ; 110 h.p. Le Rhone.

Dimensions : Span : 28 ft. 3 in. Length : 25 ft. 2½ in. Height : 9 ft. 6½ in. Chord : 4 ft. 9 in. Gap : 4 ft. 9 in. Stagger : nil. Dihedral : 4 deg. Incidence : 3 deg. Span of tail : 10 ft. 3 in. Wheel track : 5 ft. 9¾ in. Airscrew diameter : Gnome, 8 ft. 10¼ in., Le Rhone, 8 ft. 2½ in.

Areas : wings, upper, 128 sq. ft., lower 121 sq. ft., total 249 sq. ft. Ailerons : each 14 sq. ft., total 56 sq. ft. Tail-plane : 20.6 sq. ft. Elevators : 13.5 sq. ft. Fin : 2.7 sq. ft. Rudder : 11 sq. ft.

Weights and Performances

	Monosoupape	Le Rhone
Engine		
Empty	943 lb.	1,004 lb.
Military Load	80 lb.	80 lb.
Pilot	180 lb.	180 lb.
Fuel and oil	238 lb.	283 lb.
Weight loaded	1,441 lb.	1,547 lb.
Maximum speed at ground level	93 m.p.h.	92 m.p.h.
Maximum speed at 7,000 ft.	85 m.p.h.	85 m.p.h.
Service ceiling	14,000 ft.	—
Endurance	2¾ hrs.	3 hrs.



SOPWITH PUP

TOWARDS the end of 1916 the Sopwith *Pup* with its synchronised Vickers gun firing through the airscrew began to replace the D.H.2. It was an extremely pleasant machine to fly, being rather less control sensitive than the D.H.2, and compared with the earlier machine, it was smaller, cleaner and had a much improved performance.

R.N.A.S. *Pups* helped to pioneer deck landing techniques on the converted cruiser H.M.S. *Furious*. Many were later fitted with skids instead of wheels in attempts to reduce the landing run, for the " landing space " was extremely limited. As a direct result of these early experiments an efficient deck arrester system was developed.

Colour Schemes : R.F.C.; khaki-green over entire fuselage except cowling and metal panels, also fin, wing, tailplane upper surfaces and wheels. Remaining portions : clear doped.

Major J. B. McCudden's personal machine was coloured thus on May 1st, 1917, except that it had clear doped wheel discs. By June 13th it was pale blue overall except for the cowling, etc. This machine was probably A7301.

No. 46 Sqdn. had two vertical white bars on the fuselage sides, forward of the tail, 6 in. wide and 6 in. apart. No. 54 Sqdn. had a band 6 × 42 in. along the top longeron aft of the roundel.

Sundry serial numbers were B1778 built by the Standard Motor Co., A1624 built by the Whitehead Aircraft Co. Sub-contractors' trade mark centred on natural finished inter-plane struts of B1778. The struts of A1624 were plain green, unmarked. McCudden flew A6190 and B1746 (standard) with 66 Sqdn.

R.N.A.S. Scheme 1, as R.F.C., but clear dope was continued up the fuselage sides to the top longeron. Struts green. Wing roundels inset (with outline) and elevator stripes. Finished thus were aircraft used by Sqdn./Comms. Rutland and Dunning for trials from H.M.S. *Yarmouth* and *Furious*.

Scheme 2, as R.F.C., but with clear doped fin, white handling marks and french polished ply parts. These parts were doped over on N6438 which was fitted with a skid U/C for trials on *Furious* ; identification marks as Scheme 1.

Manufacturers : The Sopwith Aviation Co. Ltd., Canbury Park Road, Kingston-on-Thames.

Other Contractors : William Beardmore & Co. Ltd., The Standard Motor Co. Ltd., Whitehead Aircraft Ltd.

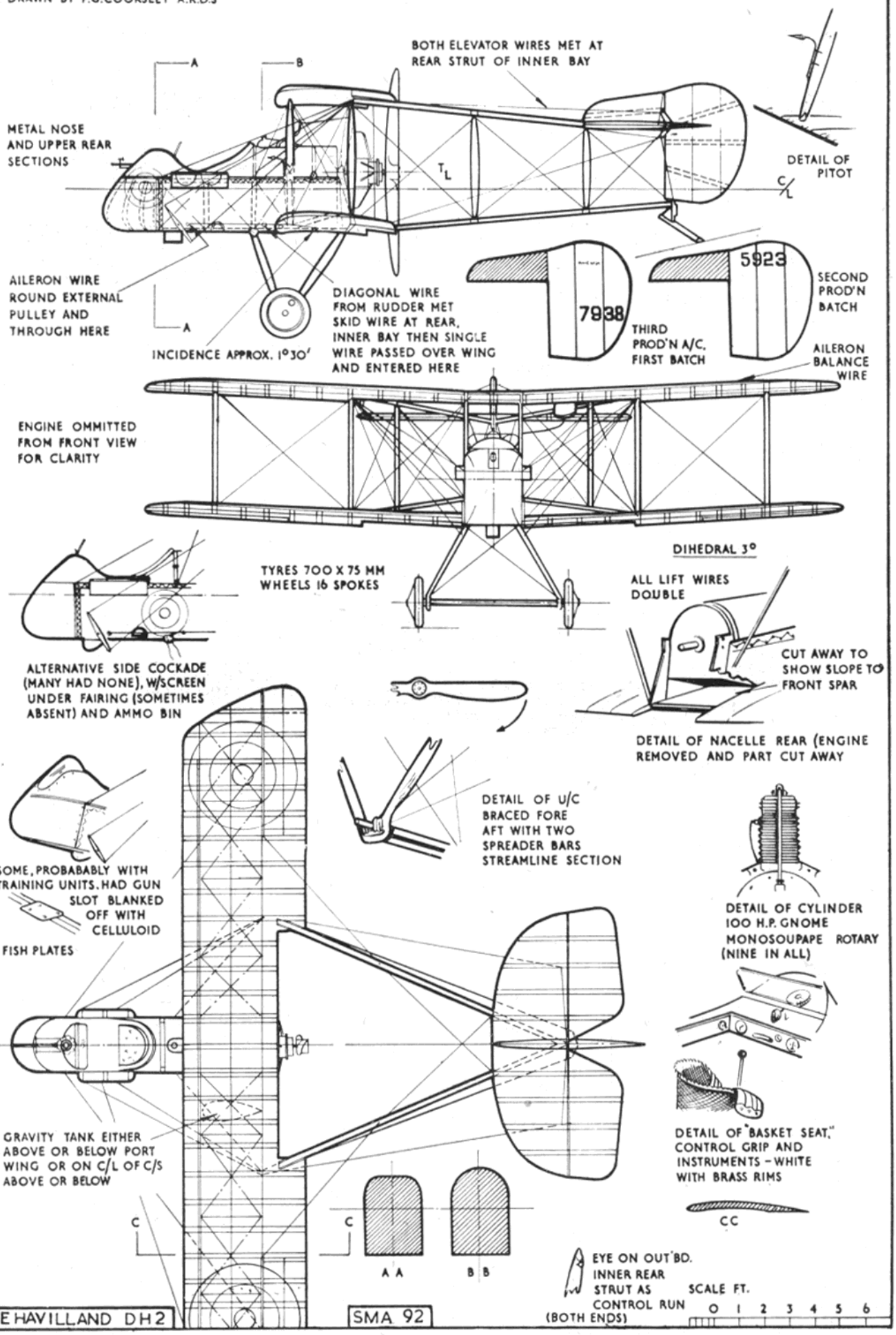
Power : 80 h.p. Le Rhone ; 80 h.p. Gnome ; 80 h.p. Clerget ; 100 h.p. Gnome Monosoupape.

Dimensions : Span : 26 ft. 6 in. Length : 19 ft. 3¾ in. Height : 9 ft. 5 in. Chord : 5 ft. 1½ in. Gap : 4 ft. 4⅞ in. Stagger : 1 ft. 6 in. Dihedral : 3 deg. Incidence : 1 deg. 30 ft. Span of tail : 10 ft. 1 in. Wheel track : 4 ft. 7 in.

Weights and Performance :

	Le Rhone	Monosoupape
Engine		
Weight loaded	1,225 lb.	1,297 lb.
Maximum speed at g/l ...	111.5 m.p.h.	110 m.p.h.
Maximum speed at 7,000 ft.	103 m.p.h.	106 m.p.h.
Service ceiling	17,500 ft.	18,500 ft.
Endurance	3 hr.	1¾ hr.

DRAWN BY P.G.COOKSLEY A.R.D.S



DE HAVILLAND DH2

SMA 92

SOPWITH PUP PLANS OVERLEAF

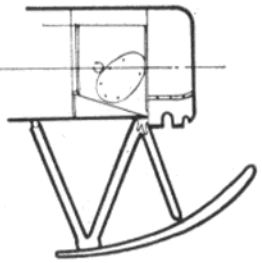
DRAWN BY P.G. COOKSLEY A.R.D.S

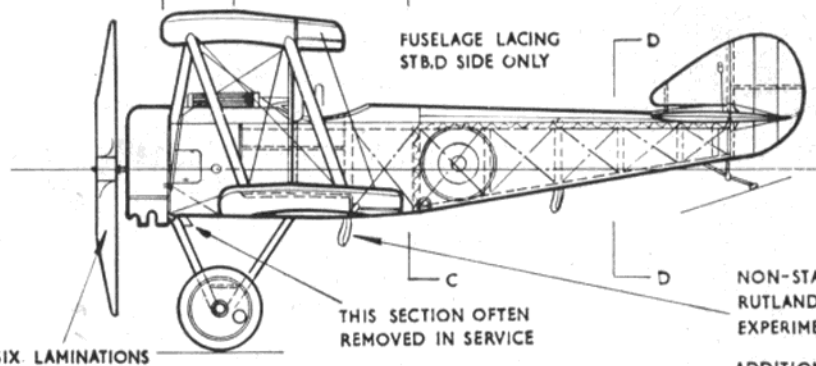
DETAIL OF TYRE LETTERING

DETAIL OF WING PITOT

INCIDENCE 1° 3'

PART NUMBERS IN 1" CHARACTERS





FUSELAGE LACING STB.D SIDE ONLY

ACCESS DOOR ON EARLY R.N. A/C ON BOTH WHEEL & SKID U/C TYPES. FRONT VIEW ANGLED AS NORMAL LEGS, CROSS PIECE AT BOTH LOWER INTERSECTIONS

THIS SECTION OFTEN REMOVED IN SERVICE

SIX LAMINATIONS

WHEELS, 15 SPOKES

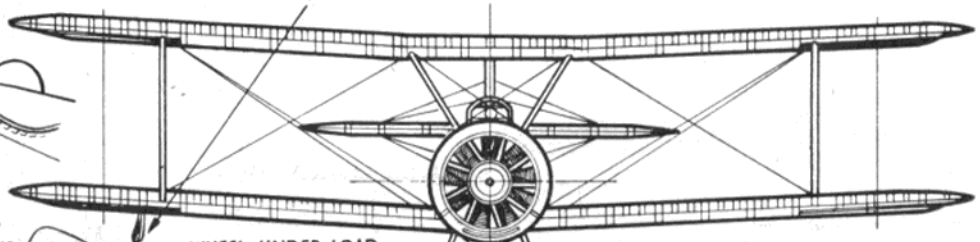
NON-STANDARD STRAPS ON A/C USED SODN. COMMS.. RUTLAND AND DUNNING FOR DECK LANDING EXPERIMENTS

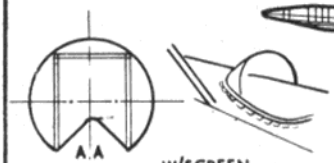
ADDITIONAL POINTS WHEREBY SHUTTLEWORTH MACHINE DIFFERS FROM STANDARD :— KHAKI – GREEN BELOW : OVAL PROFILE STRUTS : BRACED C/S CUT OUT : GENERATOR ON PT. FW'D C/S STRUT AND ELLIPTICAL TAPER A/S BLADES

DETAIL OF STEP

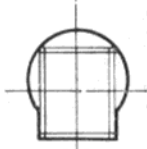
DIHEDRAL 3°

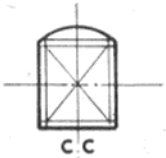
STRAP, BOTH WINGS

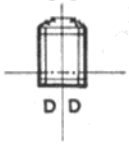


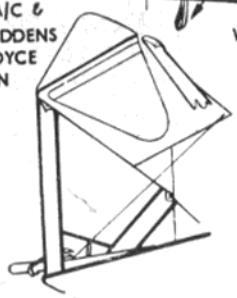


W/SCREEN ON EARLY R.N. A/C & M°CUDDENS AT JOYCE GREEN









WHEEL UNDER LOAD

CUT OUT BETWEEN U/C LEGS

RUBBER CORD ROUND BOBBINS ONE IN EACH LEG

AXLE

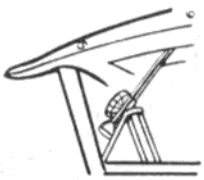
WHEELED U/C, STEEL. SKID, WOODEN. CROSS BRACED (WIRE) SKID RETAINED

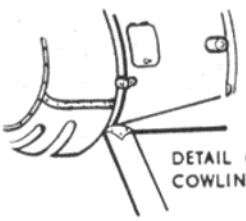
LEWIS GUN ON M°CUDDEN'S A/C AT JOYCE GREEN (NO VICKERS)

REAR OF COCKPIT VARNISHED WITH METAL BAR ALL WHITE ON SHUTTLEWORTH A/C

LEATHER PAD

DETAIL OF CYLINDER 80 H.P. LE RHONE 9 CYLINDERS (2 X FS)





DETAIL OF COWLING

PITOT ON EARLY R.N. MACHINES

NO C/S APERTURE ON R.F.C. A/C

TUBULAR BAR

C/S TIE WIRES ABSENT ON RN A/C

RECESSED BOSS PLATE

EARL R.N. A/C HAD ROUNDELS CENTRED HERE AND ELEVATOR STRIPES

DECKING BETWEEN HERE, PLY. METAL FORWARD

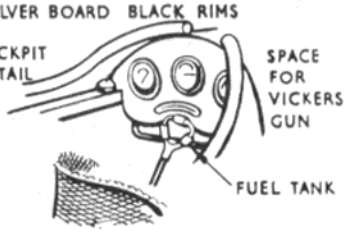
LEWIS GUN ON EARLY R.N. A/C (NO VICKERS)

NATURAL FINISH BOARD, WHITE DIALS TINNED BRASS RIMS, BRASS SWITCH BASKET SEAT, SHUTTLEWORTH A/C; SILVER BOARD BLACK RIMS

COCKPIT DETAIL

SPACE FOR VICKERS GUN

FUEL TANK



SCALE FT.

0 1 2 3 4 5 6

SOPWITH PUP

SMA 93

Peter Cooksley gives some useful hints on

MODELLING OLD ENGINES

REPRODUCING miniature rotary motors is often difficult due to lack of accurate information, as well as the "know how" to set about this "cinderella" of modelling jobs.

The main aim should be one of a clean *general impression* a "Christmas Tree" look gives too much for the eye to assimilate at a glance, and unless great care is exercised detail tends to assume over-scale proportions, thus defeating its own object. Try to use self-colour materials as far as possible, as it is only too easy to get those little jiggers gummed up trying to paint them.

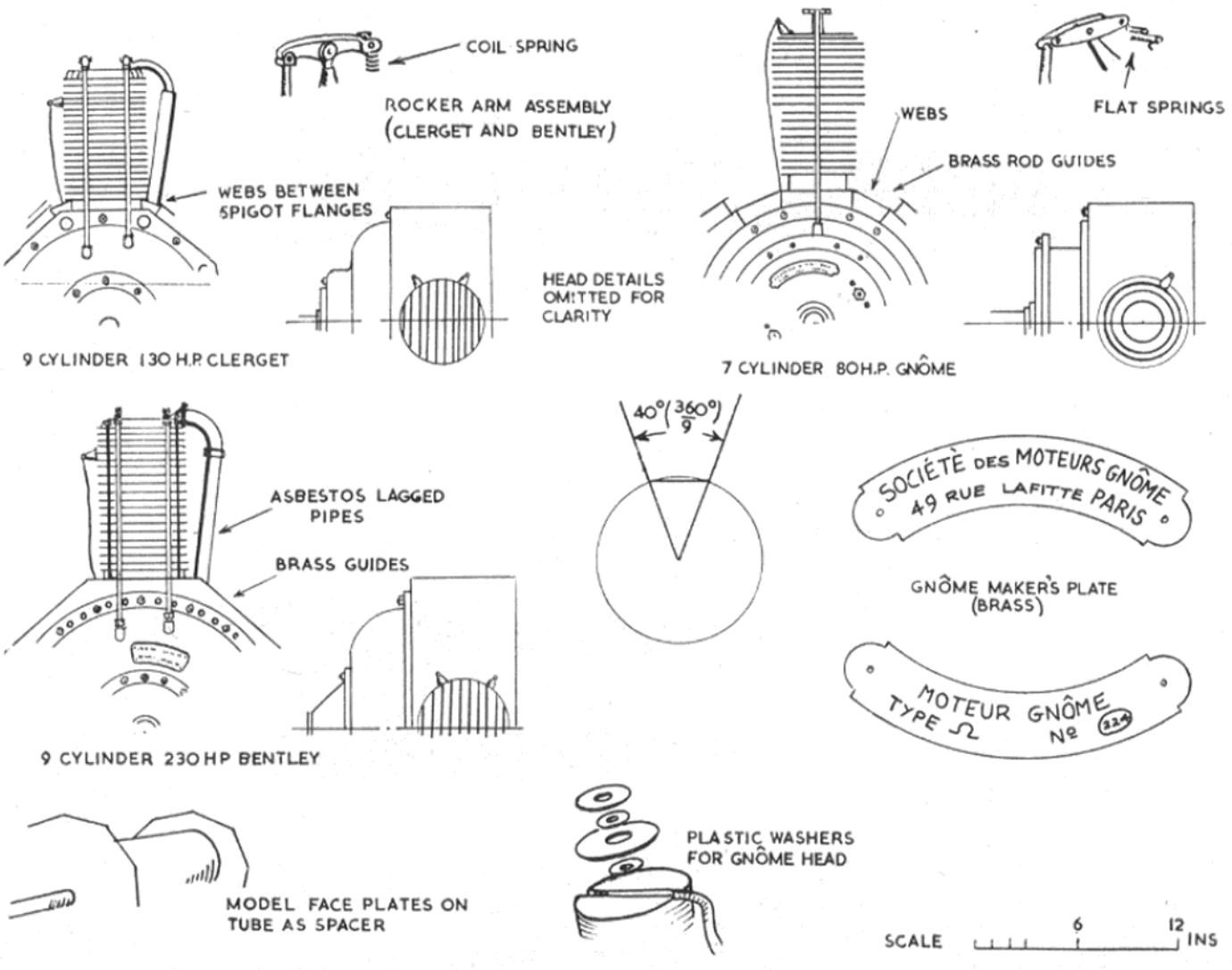
Cylinders for non-flying models can be made from plastic rod (knitting needles) of suitable diameter. Cut the slots to simulate the top fins with a small modelling saw. Cement in the centre one a length of enamelled copper wire and wind this steadily and neatly to the lower limit of the fins, passing the end through a 3/64 in. hole. Cut off the cylinder length some $\frac{1}{16}$ in. below the hole and dope this margin silver.

Crank cases were usually aluminium and the model can be made from the same material, divide the 360 deg. circumference by the number of cylinders, and cut two plastic face-plates, cement these each side of a tubular spacer and cut a series of flats to take the cylinders. The basic shape having been obtained, gear housings, etc., can usually be broken down into a series of simple shapes capable of production by simple pressing or beating in aluminium, and fixed in place after the main crankcase has been covered with metalised paper.

Rocker arms and plugs on a highly detailed model engine can usually be made from bits and pieces of wire, etc. Try to visualise rocker arms as a simple shape which can be bent up and mass-produced from thin sheet material.

These general principles may be adopted to the manufacture of engines in other scales, except that the cylinders may have to be made from slices from a plastic rod or discs cut from plastic sheet, although this latter is more tedious. Often 12 B.A. nuts and bolts can be used quite successfully as cylinders in the smaller scales.

Plastic is by far the best material for small parts, as it produces a crisp outline with a minimum of effort and without fear of splitting or excessive weight. Choose the correct cement so that the finished work becomes bonded into a strong unit. Araldite is recommended as a suitable adhesive for metal parts.



J. W. R. Taylor's

Aviation NEWSPAGE

VETERAN WITH A VICTOR B.2 (below) is Handley Page's little two-seat H.P.39 *Gugnunc*, built to take part in the Daniel Guggenheim Safe-Aircraft Competition in the United States in 1929. Powered by a 150 h.p. Armstrong Siddeley Mongoose engine, it features the girder-type wing bracing, popular at H.P. at that time, and has a variable-incidence tailplane. Even more interesting is the slottery and flappery, described in the contemporary *Jane's* as follows:

"Handley Page automatic slots are fitted in front of the ailerons, and the remainder of the leading-edge is also provided with slots, entirely automatic in action and connected to flaps at the trailing-edge, so that as these slots are drawn open by the action of the air flow at large angles of incidence they pull down the flaps behind, thus giving a further increase in lift."

This sounds fairly similar to the leading-edge devices used on some modern high-speed aircraft; but the latter cannot rival the *Gugnunc's* STOL performance. With a max. speed of 112.5 m.p.h. and min. speed of 33.5 m.p.h., it could take off in 97 yd. and land in 27 yd.

* * *

MORE FIERCE-LOOKING is the Curtiss TP-40N-10-CU, illustrated above. Only two-seat version of the *Kittihawk* family still flying, it is one of a batch of 34 trainers built by Bell in 1945. Rebuilt at the University of Michigan in 1953, it was bought last year by Paul Mantz, who is collecting aircraft for use in a film version of Col. "Pappy" Boyington's autobiography *Baa-Baa Black Sheep*.

The TP-40N is 40 in. longer than the standard single-seat fighter. It lacks the latter's fuselage fuel tank, but has an endurance of around three hours when fitted with an under-fuselage drop tank as shown. This particular machine has logged only 71 hr. 25 min. flying to date and carries a rare mixture of markings, including the civil registration N923. Originally finished in bronze overall, it has been repainted in flat green and brown on upper surfaces and light grey underneath. Pre-1942 U.S.A.A.F. markings appear on the rudder, fuselage and upper wings, with Chinese Nationalist markings beneath the wings. American Volunteer Group "Flying Tiger" markings are painted on the nose.

* * *

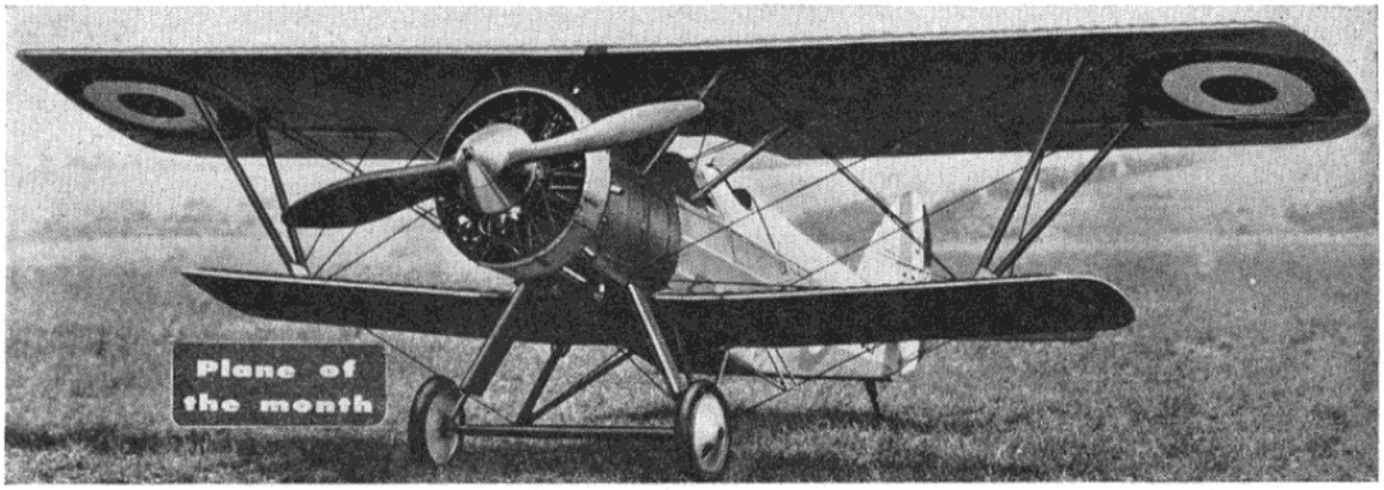
SURPRISING VETERAN to find in civil markings is this Bell P-39 *Airacobra*, registered N40A. Powered by its original 1,150 h.p. Allison V-1710 engine, mounted aft of the cockpit and driving the prop through an extension shaft, it flies regularly—which is more than the R.A.F. *Airacobras* did in 1941!

N40A has red wings and under-fuselage. The top half of the fuselage and the tail unit are white with blue trim, and there is a black anti-glare panel forward of the windshield. Registration markings are in white below the port wing and above the starboard wing, very colourful!

* * *

Finally, a **NOT-SO-OLD VETERAN** in the shape of Bristol's latest *Chipmunk Tourer* conversion, below. This machine, G-APOY, is owned by the Airways Aero Club and has been given the full treatment, with one-piece blown plastic canopy, fibreglass cowl, spinner and wheel fairings, and a rotating anti-collision beacon above the windscreen. Cruising speed is increased by about 10 per cent. to 130 m.p.h.

Heading photo shows the only remaining two-seater "Kittihawk." Top, right: A "civilianised" Allison-powered "Airacobra" still flying. Lower, right: The smart Bristol conversion of the D.H. "Chipmunk." Below: Thirty years between these two Handley Page products, the Victor B Mk. II and the H.P. 39 Gugnunc.



Armstrong Whitworth's SISKIN

THE prototype Siddeley S.R.2 *Siskin* (C4541) flew in mid-1919, with a 320.h.p. A.B.C. Dragonfly engine and the usual armament of two Vickers guns. It could out-perform most fighters of its day and was sweet to fly ; but the Dragonfly was unreliable and that was nearly the end of the story.

However, the original concept of the *Siskin* in 1916 had been based on the use of a 300 h.p. R.A.F.8 14-cylinder two-row radial. Siddeley resurrected and improved this engine. It worked well, was put into production as the Jaguar, and an early model was used to re-engine the *Siskin*. After a switch to composite wood and metal construction, the result was ordered for the Royal Air Force as the *Siskin III*.

Altogether some 70 *Siskin IIIs* were built, with 325 h.p. Jaguar III engine. The first (J6981) flew on March 24th, 1924, and the type entered service two months later. Only Nos. 41 and 111 Squadrons used this variant, and both were re-equipped with the improved *Siskin IIIA* in 1927. This had a 420-450 h.p. Jaguar IV and can be identified by the deletion of the ventral fin fitted to the *III*.

Eleven R.A.F. squadrons flew *Siskin IIIAs*, of which 388 were built by Armstrong Whitworth, Bristol and Gloster (first one J8048). No. 43 Squadron caused a sensation at the 1930 Hendon Display by performing formation aerobatics with its aircraft tied together.

There were many variants of the *Siskin*. Before it was ordered for the R.A.F., there had been two Mk. IIs. The first (G-EBEU) was a two-seat trainer, which won the 1923 King's Cup Race (as a single-seater) at 149 m.p.h. The second (G-EBHY) was a single-seat fighter and ended up on skis with the Swedish Air Force. These aircraft had parallel interplane struts, the change to V-struts being made on the III.

Two IIIs (G-EBJQ and S) had long-range tanks under the top wings and were entered for the 1924 King's Cup, JQ finishing fourth. A few experimental IIIBs were built, including a supercharged high-altitude fighter with Townend ring and one with a Panther engine. A single *Siskin IV* (G-EBLL) had a 395 h.p. Jaguar III and parallel struts, and two *Siskin Vs* (G-EBLN and Q) were similar except for their greater wing area. LQ and LL finished first and second respectively in the 1925 King's Cup Race.

Several military IIIs and IIIAs were built for the R.A.F. as two-seat trainers (first one J7000) and two (G-ABHT and U) were operated successively by the A.W. Reserve Flying School and Air Service Training.

Of the *Siskins* sold overseas, G-EBEU went to Rumania and some two-seat *Siskin IIIs* to Esthonia. Two IIIA two-seaters with ski-wheel undercarriage and other mods to Spec. C29/30 were tested in Canada as general-purpose reconnaissance-fighters; and small numbers of *Siskin Vs* went to Rumania and Esthonia.

Data (*Siskin IIIA*): Span: 33 ft. 2 in.; length: 25 ft. 4 in.; height: 10 ft. 2 in.; weights: empty: 2,061 lb., loaded: 3,012 lb.; max. speed: 156 m.p.h.; climb to 15,000 ft. in 10½ min.; ceiling: 27,000 ft.: Armament two Vickers machine guns.

Heading photo shows the experimental Panther-powered Mk. IIIB (J-8627).

Left: Trainer Siskin Mk. III operated by Air Service Training at Hamble.

Right: A Siskin Mk. V which was supplied to the Rumanian Air Force.

Left: The prototype A.B.C. Dragonfly-powered Siskin.
Below: One of the two 1924 King's Cup Mk. III Siskins.

M. F. HAWKIN'S

A scale control-liner for 5 c.c. motors

HAD the Armistice not intervened, the Martynside F.4 *Buzzard* would have had a major influence on aerial fighting. It was a very advanced design, tough, powerful and fully aerobatic, although, being larger and heavier than its contemporaries, it's turning radius was somewhat greater. The *Buzzard* was the fastest W.W.1 scout produced in this country. It was fitted with a 300 h.p. Hispano Suiza engine, and had a top speed of over 144 m.p.h. There were plans to build 1,500 of these machines in the U.S.A., but the contract was cancelled upon the cessation of hostilities in 1918.

During the post-war Peace Conference, a *Buzzard* travelled the 215 miles between London and Paris in 1 hour 15 min., setting up a new record for the R.A.F. Communications Wing, for which it was flying.

A floatplane version was built and one *Buzzard* was exported to Japan where it had a considerable influence on early Japanese fighter design.

Construction

Start by cutting out the wing ribs and binding brass or aluminium tube to R1 and R3 (12 gauge for the cabane struts and 14 gauge for the interplane struts). Assemble the wing halves then join the L.E. at the centre line, using ply brace "B"—there should be $\frac{1}{2}$ in. dihedral under each tip. Fill in the top of the lower wing L.E. centre section with scrap sheet and level off the upper surface to give a flat centre section seating. Fill in the rest of the centre section and add $1\frac{1}{4}$ oz. lead to the outboard lower wing tip.

Build up the basic fuselage structure as shown in the sketch, and at this stage bend the cabane strut wires to fit into the tubes on R1. They should be a tight fit so that there is no fear of the wing sliding off in flight. The control plate, push rod and tank may now be fitted.

Build the $\frac{3}{16}$ in. sq. framework, cement to F2 and F3 and when dry add the remaining five formers. The $\frac{1}{16}$ in. sheet floor between F4 and 5 is at just the right height to allow a class "B" team race pilot to be realistically installed in the cockpit. Now sheet the forward fuselage back to F4 and the decking to F5, and add the tailplane, which is cut from $\frac{1}{8}$ in. sheet with ply elevator horns. The elevators are not connected to each other.

Next add the 3/32 in. sq. stringers not forgetting to superimpose one down the outside of each $\frac{3}{16}$ in. sq. longeron, to raise it to the level of the covering. The tail skid is made from dowel and wire, then stitched to $\frac{1}{8}$ in. ply and let into the rear fuselage bottom bay.

Firmly attach the lower wing to the fuselage and then assemble the undercarriage. The rear member is shaped as shown on the sketch and is then sewn to a piece of $\frac{1}{2} \times 2\frac{1}{2} \times \frac{1}{16}$ in. ply which is recessed and firmly cemented under the leading edge of the lower wing. The axle is firmly bound and soldered to the undercarriage legs. The wheels are made by the sandwich method as shown on the plan and are retained on the axle by a soldered washer before the card cone is fitted.

The upper wing is now temporarily fitted and the interplane struts bent from 14 gauge wire and individually fitted. Solder the line guides to the inboard (port) pair of struts.

The cowl is made from $\frac{1}{8}$ in. sheet, the front end being $\frac{1}{2}$ in. block, and wire spring clips are used to retain it in position.

Covering and Colouring

Use lightweight tissue on sheet parts, heavyweight Modelspan on the rest. Undersurfaces of wings and tailplane are yellow tissue, the rest is done in matt green with black cylinder blocks and silver grille and exhausts, while bracing wires are made from elastic thread.

Wheels : black tyres and white hubs.

Roundels : red, white and blue with a narrow white surround except under the lower wing.

Rudder : red, white and blue, blue foremost.

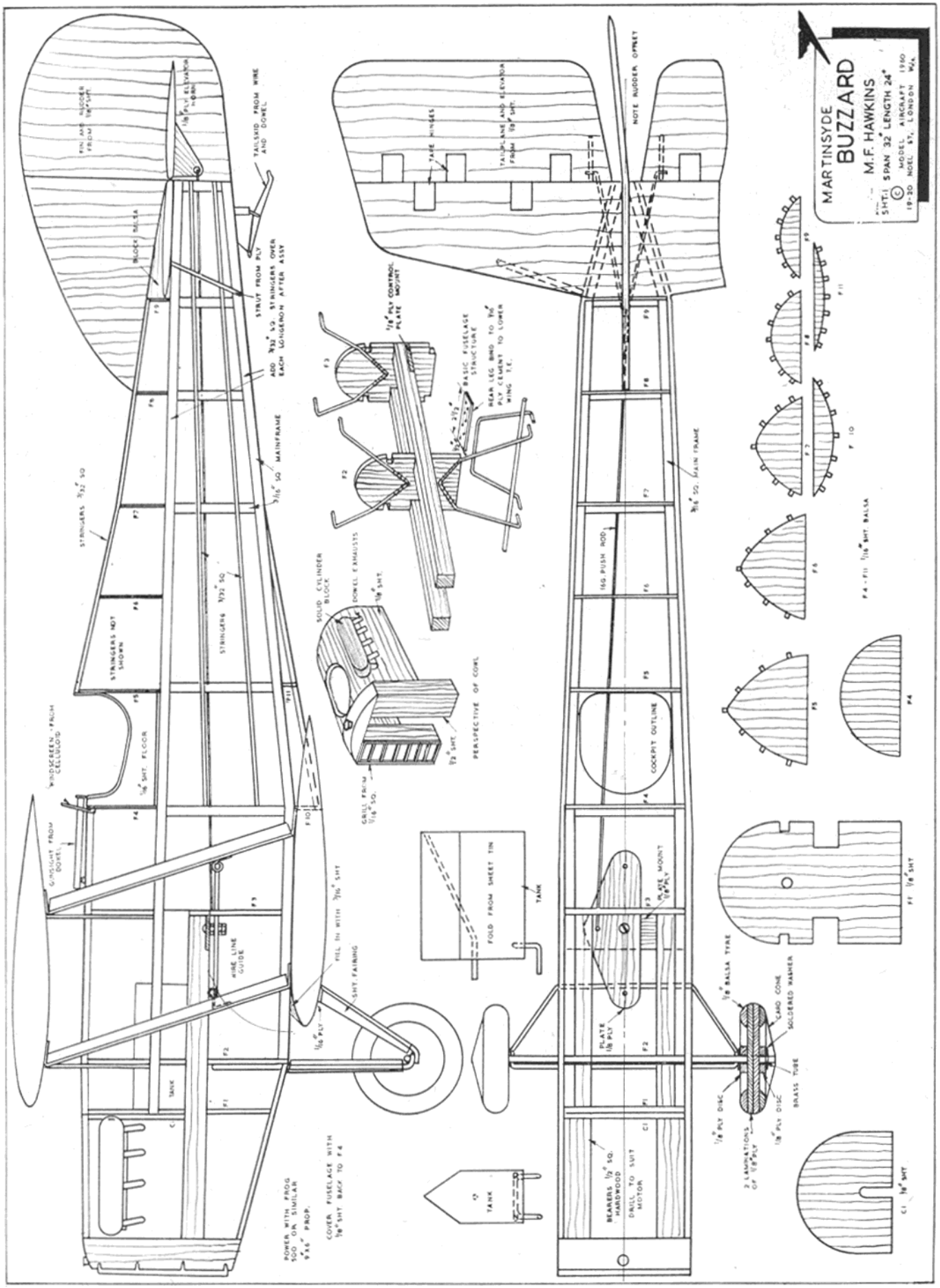
Serial No.: black on rudder, white on fuselage.

Flying

The all up weight with a Frog 500, is about 24 oz., and no ballast should be necessary to balance. With an engine of this power a 9×6 prop and 60 ft. lines are recommended.

Manoeuvres should be flown as smoothly as possible as sharp application of the elevator, while useful to get out of a tight spot, will cause the built-in headwind to have full effect and stall the model.

Fly over a smooth surface as the undercarriage is fairly far back and the model may nose over on landing.



ABOVE IS A REPRODUCTION OF ONE OF A SET OF TWO FULLY DETAILED WORKING DRAWINGS (M.A. 327,) FULL SIZE COPIES OF WHICH ARE OBTAINABLE FROM YOUR LOCAL DEALER, OR BY POST FROM THE "MODEL AIRCRAFT" PLANS DEPARTMENT, 19-20, NOEL STREET, LONDON, W.1, PRICE 5s. 6d., POST FREE

ROVING REPORT

Brings you up to date with the latest world model news

Left: The German WiK-Modell "Delta X-13," a free-flight kit design by Wilfried Klinger. See text.

RADIO flying is approximately twenty-three years old—if we take the first R/C contest (held in the U.S.) as our starting point—and a lot can be expected to happen in twenty-three years. Even so, few modellers in 1937 would have envisaged anything like today's R/C achievements : miniature Thompson Trophy racers, rocketing over speed courses at 90 m.p.h. . . . spectacular aerobatic models with ailerons, engine throttles and wheel brakes . . . dog-fights . . . closed circuit air racing with models rounding pylons in vertical banks . . . superb scale models with performance-to-match . . . ten-channel simultaneous and proportional receivers and miniature motor-servos all operating from tiny low-voltage batteries (transistors ?—never heard of them !) . . . thirty-mile cross-country flights . . . channel crossings . . . eight-hour endurance flights. Even six or seven years ago, much of this would have seemed rather remote. The progress in the last few years, particularly in California, has been staggering.

Typical is the present rapid progress in R/C speed flying. Prior to 1957, racing R/C models were unheard of. In that year, the American Academy of Model Aeronautics introduced the pylon racing event, in which models, to special rules, have to be flown five laps of a nominal 1,056 ft. course, involving ten turns around pylons placed 528 ft. apart. A recent offshoot of this has been the pure straight-line speed model and, with speeds of over 100 m.p.h. being achieved already, it may not be long before the radio speedster begins to challenge the C/L speed model—assuming, of course, that rules are not introduced to restrict the performance of such models.

Indicative of Californian interest in R/C speed models were the speed trials held by the FAST Club on October 17th and 18th last year. This was an expertly planned affair, at which accurate timing gear was provided to permit attempts to be made at establishing a new F.A.I. world speed record.

As is already known, the record was, in fact, broken (subject to F.A.I. acceptance) when Don Mathes flew his McCoy 60 powered model over the 100 metre course for a two-way average of 110.4 m.p.h. The model spanned 46 in. had a length of 50 in. and weighed 5 lb. 2 oz. Wing area was slightly under 540 sq. in. giving a relatively modest wing loading—by speed standards—of 22 oz./sq. ft. In contrast was Granger Williams' exciting near-scale Keith Rider racer which set the second highest time of 89.2 m.p.h., flown by Bob Dunham. Looking every inch the part, the model had a retractable undercarriage and was originally powered by a 0.19 engine. Fitted with a McCoy 60 for the trials, it proved fast but tricky and the pilot had his hands so full that he did not have a chance to retract the undercarriage.

Italian Wakefield Champion Silvio Taberna of Varese, left, with modeller-turned-contest-organiser Elvio Tosaroni.

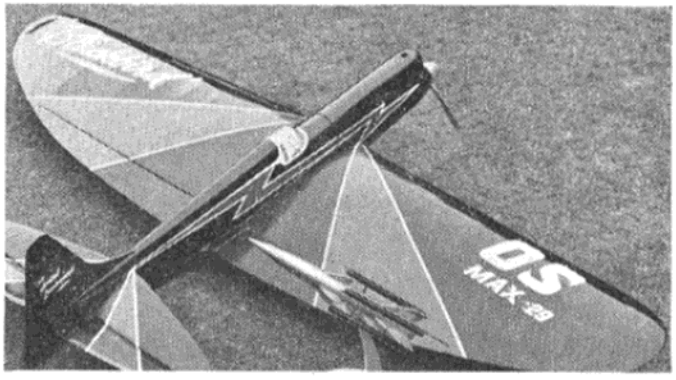
Don Mathes' best flight, incidentally, was an *upwind* one at 120 m.p.h. He failed to record an over-120 average only because the motor lost power on the return *downwind* flight.

This is only the beginning of R/C speed flying . . .

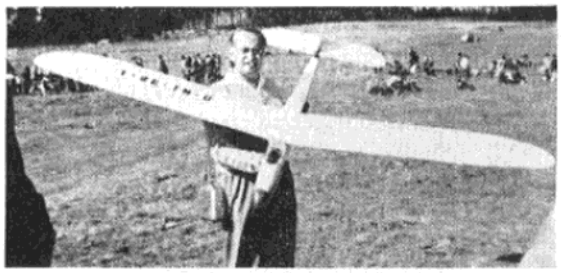
* * *

Latest developments in the American ready-to-fly plastic controliner field is the *bigger* model. In contrast to the

Stanislaw Gorski, designer of the Polish Jasolka and Sokol engines admires, the F.A.I. power model of K. Ginalski.



Winner of the stunt event at the Australian Nationals. Tony Farnan's "Blackbird," with Max 29 and chicken hopper tank. Same model placed 2nd last year.



Left: Hans Buehring of Germany and the scale Mu.118 R/C glider with which he scored a convincing win in the last European R/C Championships.

Right: Germany. Fred Militky, his Graupner Mikromax powered electric free-flight model and the Jodel light aircraft which was used to chase the model on its 23-minute flight reported in our December issue.

usual 0.049 powered (0.8 c.c.) model of around 16 in. span, the L.M. Cox Manufacturing Company Inc. of California have just announced a 32 in. Piper *Comanche* powered by their 2½ c.c. Sportsman 15 engine. This is justly claimed to be the largest and most powerful ready-to-fly plastic. The engine is side mounted and is equipped with the standard Cox starter spring. Price of this attractive looking "toy" is $25.00 (8½ gns.).

* * *

We hear that both the Champion and A-C spark-plug companies in the U.S. have discontinued production of miniature engine sparking plugs. Some stocks remain for the use of the relatively small numbers of modellers still using spark ignition engines. It remains to be seen whether, when these are exhausted, further batches will be made, or whether U.S. modellers will be obliged to import British made plugs.

* * *

The old-established Berkeley Models concern, formerly of New York and now an associate company of the Fox Manufacturing Company Inc., at Fort Smith, Arkansas, is reported to be redesigning the present line of Berkeley kits and also to be entering the balsa wood business. Fox have made great strides in the past few years. In addition to their well-known range of engines, they offer fuels, glowplugs and a special glowplug battery.

* * *

This year's German F/F and R/C Nationals will be held in late July or early August and probably at Kassel or Ingolstadt. The C/L Nationals will be at the German Aero Club Luftsportjugend training centre at Hirzenhain, the site of last year's European R/C Championships. Hirzenhain will also be the venue, at Easter, of the German R/C team selection trials for the Zurich World R/C Championships.

* * *

The *Delta* X-13, shown in one of our photographs, is a new German WiK-Modell kit designed and manufactured by Wilfried Klinger. The model is a F/F design for 0.5 c.c. to 0.8 c.c. engines. It spans 25.6 in., is 25.2 in. long and has a total area of 285 sq. in. A symmetrical wing section is used with an inch wide reflex trailing-edge, bent up approximately 7 deg. As can be seen, a profile fuselage, with the engine mounted as a sidewinder at the rear and driving a pusher prop, is used. Noted model designer and writer, Karl-Heinz Denzin, tells us that he was impressed by its performance : it is very stable, flown left or right, and has a surprisingly flat and slow glide.

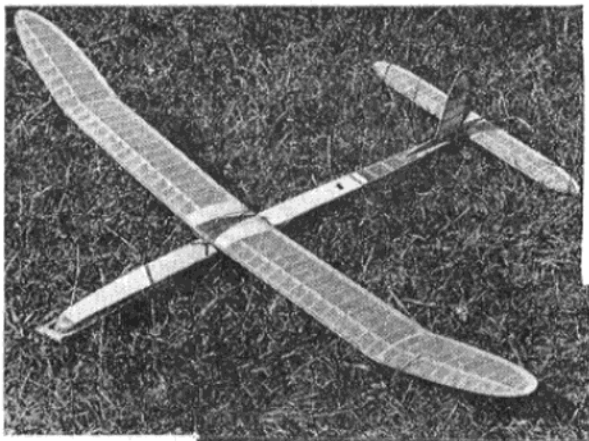
* * *

West Germany is to volunteer to run all three F/F World Championships contests in 1961. This decision was taken at a recent meeting of the German governing body and the proposal is to run the event at a German Air Force station or at Mainz-Finthen.

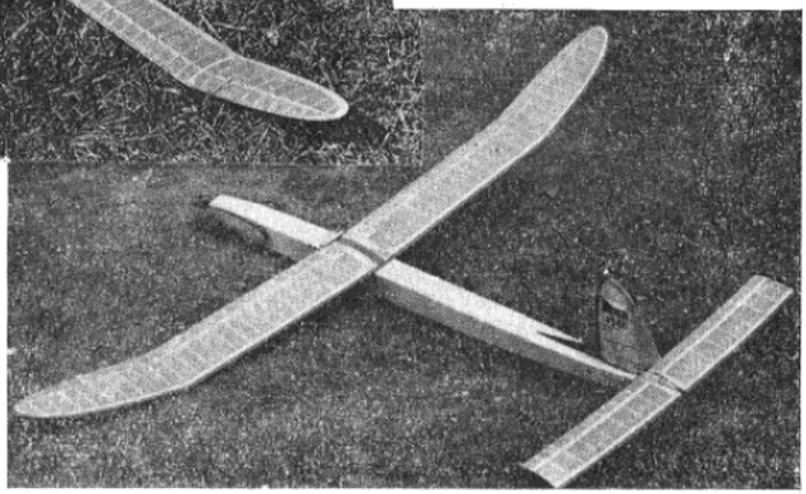
* * *

Canadian capers at the Montreal M.F.C.'s annual social included a very special prize-giving session. Among the much coveted loot distributed were a flight-time augmenter and engine recovering equipment (horseshoes and spade), a thermometer, nine combs, a plastic canoe for bath time and a cabbage. . . .

Before Pylonius begins his psycho-analysis of the foregoing, let us add that the Montreal Club really takes its modelling very seriously, includes in its ranks some top international class fliers and has one of the best monthly bulletins in the business—ably edited, we might add, by Lancashire's loss and Canada's gain, well-known "Wakefielder," Barry Haisman.



Czechoslovakia. Four years development of a Wakefield winner. Radoslav Cizek's shoulder wing 1955/6 design, forerunner of the much modified XL-56/58/59 series and (left) his latest 1960 version with Benedek section, at the World Championship. A photograph of the framework was published in our February issue.



Left: Belgium. European Team race Champion Nery Bernard's latest "Star-Tiger" is reputed to have topped 111 m.p.h. Modified Oliver motor, of course.

LETTERS

to the Editor

Dyeing tissue

DEAR SIR,—I have just been reading your latest issue in which I am surprised to find that Mr. David Miller, who has obviously given a lot of thought to "colours for contest models," makes no mention of the possibilities of dyed tissues. This bears out my own impression, gained while demonstrating at the National Models Exhibition and at numerous rallies and galas, that very few people have heard of the ease with which one can obtain any desired colour with the aid of white "Modelspan" and ordinary fabric dyes.

I write the following notes in the hope that you may "spread the news" not only to contest modellers, but to aeromodellers in general, many of whose models bear the depressingly stereotyped reds, yellows and blues that are to be found on the market today.

Over the past two or three years I have dyed many batches of tissue using simply an enamel bowl and either "Drummer," "Tintex," or "Dylon" dyes, all of which give equally satisfactory results. The dye solution is made up initially in boiling water according to the manufacturers' instructions (usually with a little common salt to fix the dye) but, whereas when dyeing a fabric the boiling is continued throughout the process, our boiling dye solution is diluted with cold water before dyeing commences. The amount of cold water added may be varied to obtain any desired shade of the chosen colour, thus widening the scope of this process still further.

I think it is wise at this point to say that enough white tissue to cover the whole model (or whole series of models if you like) should be dyed from one solution since it is difficult to obtain exactly the same shade twice and you don't want the model to look like a patchwork quilt.

Once the solution is ready and all the grains of dye completely dissolved, the white "Modelspan" is folded, one sheet at a time, enough times to reduce its size to about 8 in. × 6 in. This is done not only to get it into the bowl of dye, which in my case is only about 12 in. in diameter and 3 in. or 4 in. deep, but also to make the sheet easier to handle. The sheet is then immersed in the warm solution, remembering again that the length of time for which it is immersed will affect slightly the depth of colour resulting. Since the tissue, although folded, is very porous there is no need to stir it around unduly but it is essential to make sure that it is totally submerged.

When removing the tissue from the dye bath, still folded, allow the surplus solution to run off and then lay the tissue on a sheet of clean newspaper which should be slightly larger than the sheet of tissue in the unfolded state.

The tissue must then be unfolded immediately, otherwise surplus dye solution collecting in the folds will cause darker lines across the finished sheet.

The thought of pulling soaking wet tissue, with its adhesion to itself and everything it contacts (due to surface tension) around, may appal some people, but Modelspan is surprisingly strong in the wet state and will stand plenty of rough treatment. Once the sheet is unfolded it should be hung up to dry (a clothes horse is ideal for this) in a warm room. Whilst it is drying, and this only takes a few minutes, other sheets of tissue are put through the dyebath in the same way.

When all the tissue is dry enough not to adhere to everything it touches it should be ironed to remove any wrinkles. The iron should be little more than warm—if it is one of the automatic variety then put it on its lowest setting. This not only removes all the wrinkles but completes the drying process.

The tissue is now ready for use, and if any of you are sceptical about the possible shrinkage of the tissue during the process, then you might compare a sheet of the dyed tissue with an untreated one—mine have never suffered any shrinkage and this is borne out by the fact that such treated tissue may be used in exactly the same way as other coloured tissues. The foregoing may sound a bit involved, but I can assure you the process is very simple and takes very little time.

Thus, an almost unlimited range of colours for all types of models is available and I therefore add the kindly thought that before the new season starts I hope you all "dye"!!

I enclose some samples of tissue that I have used on A/2's and Wakefields—the orange is especially good for visibility. (*We have examined these samples and found them to be excellent.—Ed.*)

The Editor does not hold himself responsible for the views expressed by correspondents. The names and addresses of the writers, not necessarily for publication, must in all cases accompany letters.

I hope this information will prove useful and that we shall see more imaginative colour schemes on the flying field next season.

I would like to say how much I have enjoyed your recent issues, especially since model aircraft have appeared on the front cover.

Yours faithfully,
DAVID A. WILLIAMSON

Beckenham.

Camping at the Nats.

DEAR SIR,—Is it seriously considered that we should hold a Nationals at which there are no camping facilities?

Nine-tenths of the participants camp out and judging from the brief glimpse of the Scampton countryside seen last year, it will be difficult to find a suitable camping site at which there is drinking water available.

It is ridiculous to think that everyone will be able to find accommodation in Lincoln, apart from the obvious drawbacks from doing so.

If no alternative arrangements are made, there will be a very poor attendance this year!

Yours faithfully,
P. N. TRIBE

Middlesex.

Power Trimming

DEAR SIR,—Mr. Baguley's article neatly summarises the more popular trimming methods for power endurance models.

I was interested, however, to read that certain members of the great metropolis originated the wing warp, tail tilt, power trim, which is in favour as a reliable system for the control of high-powered models.

To the best of my knowledge, it was our cousins in the United States of America who invented the pylon layout, tail tilt, wing warps and, incidentally, pop-up tail d/t's.

Goldberg is attributed as the first man to popularise the pylon layout, whilst the wing warp or tail tilt systems were used as long ago as 1947 or possibly earlier in *Civvy Boy* by Gilliam, the *Climax*, the *Senator*, and probably many more American models.

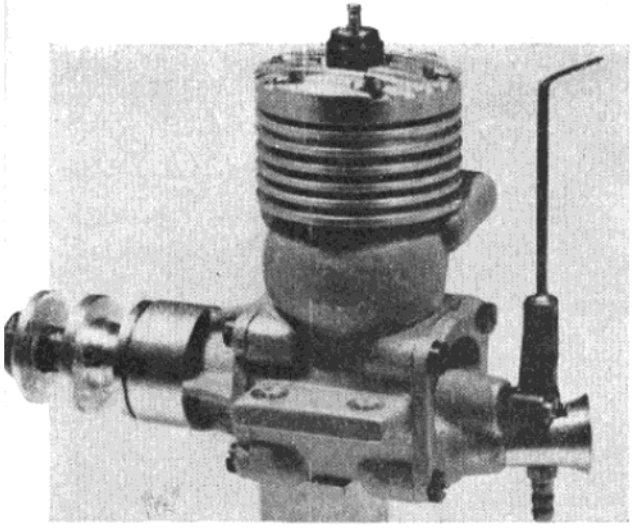
I, personally, first saw the starboard wing warp trim used by Nigel Howard to trim a 16 oz. "Halfax Rapier," Arden 0.199 petrol engine powered in 1948. The model employed 2 deg. left thrust and a wash in of $\frac{3}{8}$ to $\frac{1}{2}$ in. which seems excessive by modern standards. However, the model was capable of an average ratio of 18, and won first place at a rally in the Midlands on one flight. No doubt many people in the United Kingdom have employed this sort of trim since the war and certainly it was popular in the Cheadle club in the days of spark plugs, wheels and wooden props.

Yours faithfully,
B. T. FAULKNER

Cheadle.

LATEST ENGINE NEWS

from PETER CHINN



The Czech MVVS 2.5/1959 racing engine, showing the low carburettor intake position and the long bearing housing in the backplate which supports the rotor shaft.

IN accordance with the trend back towards larger engines due, primarily, to the requirements of advanced multi-channel R/C models, the American Fox company is bringing its "59" model out of retirement.

The original Fox 59 (then 0.937×0.860 in.=0.593 cu. in. or 9.72 c.c.) was introduced in 1947 as a disc-induction, spark-ignition engine, designed by Duke M. Fox and manufactured by the Claude C. Slate Company of Los Angeles, California. For 1951, it appeared in revised form, with rear drum induction, a bore and stroke of 0.920×0.906 in. (0.602 cu. in. or 9.87 c.c.) and glowplug ignition, and built by the present Fox company. Still later, it was marketed, for a short time, in a shaft-valve version. The 1960 model will, it is understood, be further redesigned and will sell at $45.00 (approximately £16 11s.) in the United States.

Also in the higher-price bracket, Fox is reported to have a new "15" (2½ c.c.) nearly ready which will sell at $19.95 (£7 2s. 6d.). This will be supplementary to the existing low-priced Fox Rocket 15 and is intended primarily for contest use. It is reasonable to suppose from this (and from the price tag, which is nearly three times that of the Rocket 15 and appreciably higher than any other American 2½) that something in the region of 0.30 b.h.p. plus should be available.

At the other end of the scale, yet a third new Fox is also scheduled for the coming season. This will be an 049 (0.8 c.c.), the first really small engine from this currently very active manufacturer.

Talking of small American glow engines, the first to follow Cox's lead with a "Quarter-A" size, is the Herkimer Tool and Model Works, manufacturers of O.K. Cub engines, with their new Cub 024. This, as its title suggests, is slightly bigger than the Cox Pee Wee. The motor is fitted with an integral glow head. Cub 049's are also now featuring this type of head, together with certain other modifications.

* * *

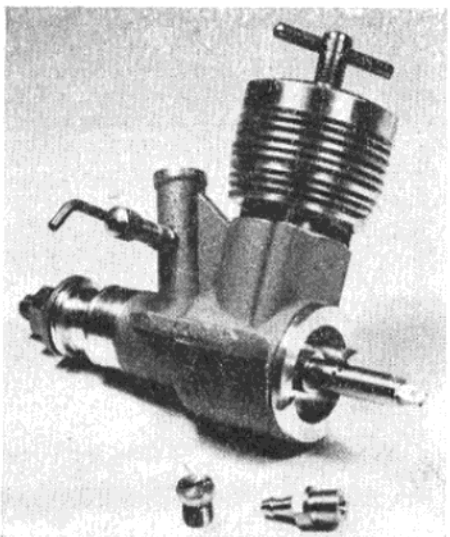
Several changes are imminent in the two Rivers models. Despite intensive testing of prototype and initial production versions of the 3.5 c.c. Silver-Arrow, which disclosed no sign of weakness, a few cases of shaft breakage have been reported from users. It has been established that this was primarily due to one batch of shafts having been case-hardened to a depth substantially in excess of the specified penetration. However, Messrs. Rivers are taking no chances and have redesigned the shaft, increasing the minimum (journal) diameter from 0.350 in. to 0.406 in. dia. and using eight rollers and eight spacers instead of seven of each as hitherto.

The maximum diameter of the shaft (i.e. at the induction port section) now becomes 0.524 in. The threaded (prop-shaft) portion of the crankshaft is now omitted and a stud type fitting used instead, in conjunction with a taper, in place of a splined, fitting, for the prop driver. The new shaft is very slightly lighter than the original type. This revised Silver-Arrow should be on sale almost immediately.

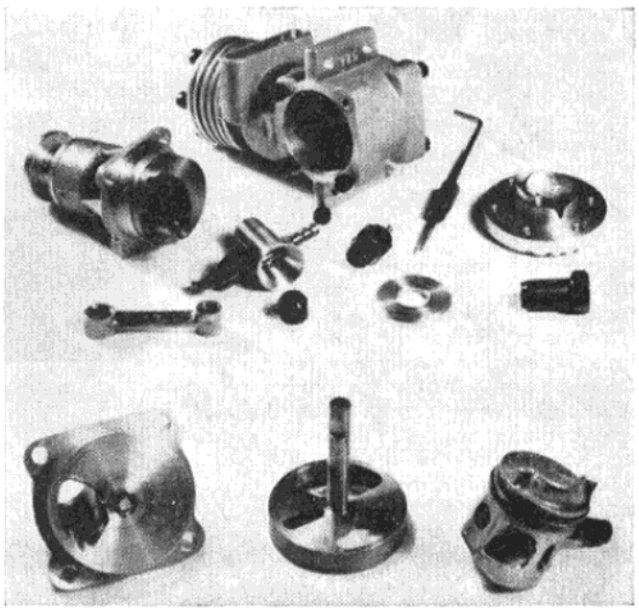
A Mark II version of the 2.5 c.c. Silver-Streak is now also in production, using a similar shaft and should become available by the end of March. This model will have a new, slightly larger diameter crankcase, with extended carburettor choke on the lines of the 3.5. Its price will remain the same as that of the Mk. I.

* * *

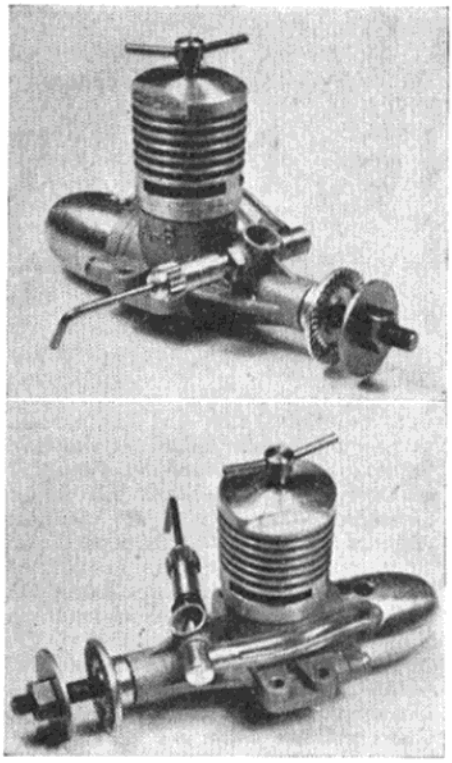
Alan Allbon's return to model engine manufacture looks like being a welcome



Left: The Rivers Silver-Arrow, fitted with the Rivers crank-case-bleed speed-control device. Also shown are the plug which normally seals the backplate and an alternative fiitting: a nipple for pressurised fuel systems.



Right: Parts of the MVVS 2.5/1959. Note, in particular, the ultra light, ringed piston and the unusual valve rotor.



The new Allbon-designed A-S 55 engine of 0.55 c.c. capacity. A well-made engine having good performance and excellent handling characteristics.

one, especially among small diesel enthusiasts. We have just been running tests on the new A-S 55, manufactured by Allbon-Saunders Ltd., of Milton, Berks., and very nice it is.

Complete with its neat bullet-shaped machined tank, this 0.55 c.c. engine weighs a trifle over 1½ oz., has an air of quality about it and handles admirably. Starting is easier than with any of the earlier crop of ½ c.c. diesels that appeared around 1950-51 and power output is comparable with the average of the new British "Half-A" glow engines.

A full report on this engine will follow shortly in M.A.

* * *

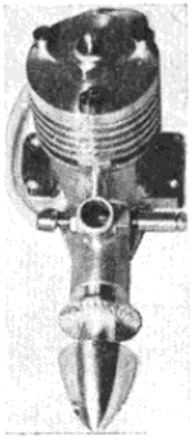
Our brief description of the MVVS racing 2.5 in the February issue resulted in a number of requests for further information on this interesting Czech engine. Therefore, pending completion of performance tests, here are some design and structural notes on the engine.

This model MVVS is, of course, of a type not manufactured elsewhere in the 2.5 c.c. size. Its nearest Western equivalent is the 5 c.c. American Dooling 29. It has the familiar Dooling pattern transfer passage, transfer of the charge being entirely via skirt ports in the piston and corresponding ports in the cylinder wall. The usual racing engine features of rotary disc valve induction, ball-bearing mounted crankshaft and light-alloy ringed piston, are also retained.

One of the more unusual features of the engine is the disc-valve design. In most rotary-disc induction motors, the rotor is of light alloy, machined, or cast and machined, or of moulded plastic, or is cut from a reinforced plastic or other non-metallic material, such as Tufnol or nylon, or may even be light pressed steel plate. In most cases it rotates on a pin, screwed, pressed or otherwise fixed in the backplate. In contrast, the MVVS rotor is machined from cast-iron and mounted on a 3.5 mm. hardened steel shaft running in a bronze bearing. Although this must create a little more bearing drag, it is obviously not subject to the wear (and consequent wobbling, increased drag and imperfect sealing) that is often experienced with the more usual type of fitting. The additional unbalance that would normally be present in such a heavy valve rotor is kept to a minimum by machining away excess metal opposite the valve segment. The segment is also re-located so that the intake aperture in the backplate is at the bottom of the usual right-hand side position. Adequate lubrication of the long bearing is assured by drilling the rotor shaft to meet an oil hole located towards its far end.

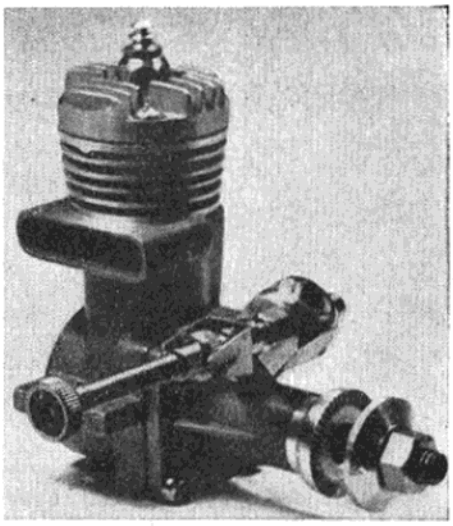
Another noteworthy feature is the piston, which is quite the lightest piston we have ever seen in a 2.5. It has two enormous ports, which occupy practically all the available skirt area on the transfer side, and a curved baffle designed to deflect the incoming charge high into the combustion chamber. The 4 mm. fully-floating gudgeon-pin is tubular with brass eyelet end-pads and a forged alloy rod with plain eyes is used. The complete piston and conrod assembly weighs under 0.22 oz. The crankshaft runs in two ball journal bearings of 7 mm. (inner) and 5 mm. i.d. respectively. The shaft itself has a fairly generous machined-in crescent balance weight but, in contrast to the MVVS-inspired Vltavan 5 c.c. dealt with earlier in MODEL AIRCRAFT, this is sufficient to balance rotating mass only.

The induction timing is a conventional 45 deg. after-dead-centre, 180 deg. period. The exhaust period occupies 130 deg. of crank rotation and the transfer 110 deg. There are five exhaust ports covering 180 deg. of the cylinder circumference and four transfers—such multiplicity of ports being necessary, of course, with a ringed piston engine. The glow-plug is offset at the transfer side.



Left: The new French 1 c.c. Drhouin Modelsport M.S.10 engine mentioned last month. It is available in both glowplug and diesel versions.

Right: The new 1960 model 1.6 c.c. O.S. Pet engine as briefly described in our March issue.



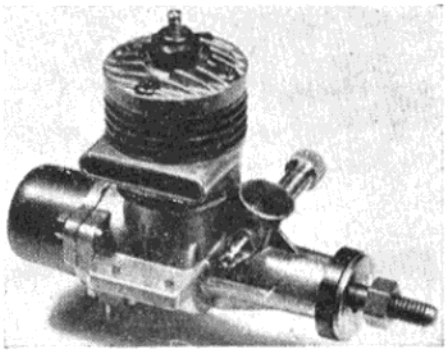
A moderately priced R/C engine of interest to builders of intermediate and multi-channel class models is the 3.2 c.c. Enya 19-3TV with variable speed carburettor.

Bore and stroke of the MVVS is the usual 15×14 mm. Continental combination. Total weight of the motor is slightly over 5 oz.

* * *

With the introduction last year of 0.15 cu. in. contest classes in the United States, it was obvious that fresh encouragement would be given, to the American model engine industry, to manufacture new high performance engines of the 2.5 c.c. size. First to respond was Cox with the twin ball-bearing Olympic 15. As we have already remarked, Fox's new contribution is expected shortly. A third will be the Johnson Bulldog 15. Pre-production Bulldog 29's have already been seen, this latter being a ball-bearing, shaft-valve design.

Here we are tempted to remark that we believe the glow 2½ is capable, with further development, of very much higher outputs than have hitherto seemed likely. For some time now, the maximum power output realised with the best production 2.5's has been pegged at around 0.30 b.h.p. Recent design analysis based on test results we obtained with a modified version of a small, shaft-induction glow engine, have suggested that 0.40 b.h.p. may not be an unduly optimistic target for designs of the future.



Hamilton Model Supplies of Gateshead are to be congratulated on their initiative in being the first British manufacturer to market a Butyrate base dope. Butyrate dope has long been favoured in America where its built-in fuel proofing qualities are particularly useful due to the almost universal use of the glowplug engine.

No additional fuel proofing is required over the dope which covers well and dries quickly (20 min), with a glossy finish. An important factor is the ability to carry out ordinary cemented repairs over the doped surface without having first to remove a stubborn layer of fuel proofer.

This dope is available in both 1s. and 2s. 6d. bottles, the former being packed in an attractive wall or counter display box containing the complete range of seven colours. Clear dope and special thinners are also available but it should be borne in mind that the clear Butyrate has practically no shrinking properties and is really a clear lacquer. All tissue surfaces must be treated with normal cellulose clear shrinking dope before using Butyrate.

* * *

Some interesting information on the use of Polyester resins is contained in two leaflets just produced by **Bondaglass Ltd.,** of 55 South End, Croydon. Fully illustrated and containing a price list of glass fibre products both these informative leaflets are free if you send a stamped and addressed envelope to the above address.

* * *

We recently received the first four of a new range of nylon airscrews marketed by **Ripmax.** They are marketed under the name of *Semo* nylon airscrews and the initial selection consists of a 7 × 8 at 3s. 6d., an 8 × 6 and an 8 × 8 both at 3s. 9d., and a 9 × 4 costing 4s. 1d.

A 7 × 4 and an 8 × 4 will follow shortly and later in the year a 6 × 5 and a 10 × 6. These are all moulded in white nylon and are very well finished. They possess a very efficient blade section and are extremely tough. The front part of the hub is drilled $\frac{3}{16}$ in. dia. and the rear half a little under $\frac{3}{8}$ in.

* * *

At the Brighton Toy Fair **A. A. Hales Ltd.** had the complete range of their Yeoman kits on display and buyers were showing a very lively interest.

Some fascinating new products are on the way from Yeoman, among them being the *Bantam Racer*, a 17 in. span C/L model featuring a simplified, tough, wing structure; the *Bantam Sportster*—an elliptical wing, 36 in. span, cabin free-flighter and a 38 in. pylon design—the *Cloudbuster*. All these will be available by June or July.

A new double-weight " heavyweight " tissue with an interlocking grain structure was shown for the first time and we were most favourably impressed by its obvious strength. When doped it has a very smooth surface and its toughness makes it eminently suitable for all models requiring something between ordinary heavyweight tissue and silk or nylon.

* * *

Two ready-to-fly C/L models powered with the 0.75 Mills diesel are produced by **Palitoy,** who, it will be remembered, made the *Challenger*, the first ever ready made model in this country. One of the models bears a marked resemblance to this earlier design and has a span of approximately 12 in. It costs £4 19s. 6d. or £2 14s. 9d. without motor. The other is larger—approximately 15 in. span and sells for £5 12s. 6d. or £3 4s. 9d. without motor.

* * *

Also at Brighton, **Sebel** products were showing the popular Jetex kits, of which two new items are of special interest because of the use of new materials and building techniques. A range of scale F/F designs for the 50 motor, using many preformed plastic parts, while the interesting new semi-scale model shown in the photograph has a moulded plastic fuselage, with the wings and tail built up from balsa but covered with a new metallised plastic material. We look forward to examining and reporting fully on these models.

* * *

Some new **Revell** kits were seen at the Toy Fair including an 11¾ in. span D.C.8 in S.A.S. colours. The release of this kit is intended to coincide with the first over the pole jet flight by S.A.S. A Lockheed *Neptune*, and a very fine N.A. B.25 *Mitchell* in R.A.F. colours have also been added to the range.

* * *

We hear from **Davies Charlton** that the 0.15 c.c. Bambi is being taken out of production. This was always a specialist's motor and in these days of mass production it is not an economical manufacturing proposition.

We have received two of the new polystyrene propellers from D.C., a 6 × 4 costing 1s. 7d. and a 5¼ × 3½ costing 1s. 6d. Although not as tough as a nylon prop., they are adequately strong for the small, lightweight models for which they are intended.

Quickstart glow and diesel fuels are now available in one pint (5s.) and half pint (3s.) screw top cans. These fuels were formulated following practical tests by practical modellers, and are produced in a new D.C. fuel plant. From a purely superficial test these two fuels appear to live up to the D.C. claim of easier starting and high power output (more on this when we have carried out a more complete test).

Many buyers of glowplug engines find difficulty in starting them, and they are returned to the factory as faulty, when, in fact, the fault lies with the modeller, who has not followed the starting instructions enclosed with the engine. To cope with these people, Davies Charlton have produced a comprehensive supplementary trouble-shooting leaflet covering every possible fault which can arise. So if you have a new Bantam and can't start it, don't send the engine back, but send a stamped addressed envelope to Davies Charlton and we are sure you will find the solution to your difficulties in their leaflet which is called " You and your Bantam."

* * *

Harleyford Publications have now printed the revised editions of " Von Richthofen and The Flying Circus " and " Air Aces of the 1914-1918 War."

The most obvious difference between these and the earlier editions is the excellent full colour reproduction of J. D. Carrick's fine paintings of W.W.1 air battles both on the dust cover and for the frontispiece.

The 12 detailed six-view drawings of Richthofen's various mounts in the " Flying Circus " volume have now been extensively revised and modellers will find them of great value. The prices of both of these fine publications remains unchanged at £2 5s. each.

MODEL AIRCRAFT WINGS CLUB

ONE of the first virtues of modelling is that it knows no frontiers. Every enthusiast who builds or flies a model can be sure that thousands of others throughout the world share his interest and would be glad to meet him—as he, on his side, would be glad to meet any of them.

Among the first objects of our Wings Club is the fostering of comradely ties between young modellers everywhere. Through these pages the beginner can find a new friend in the next street or in a different country. We want him to feel that he is part of a great movement.

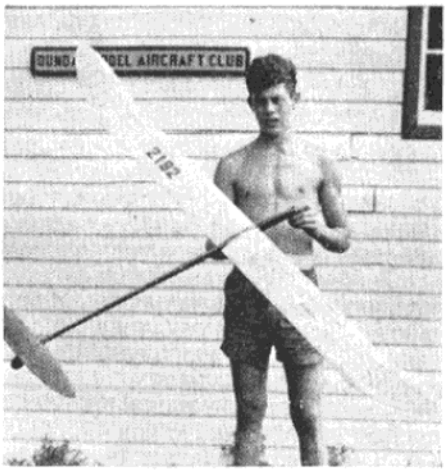
Innumerable boys and youths are modelling on their own, or as members of small groups which may, in time, become the nucleus of new clubs. They could all be helped by what the Wings Club offers them—practical guidance, pen-friendships and the opportunity of making their work known.

The cities who complain that young people today " expect everything to be done for them " should see what many of our junior aircraft modellers are doing, in the face of difficulties, and disappointments, and with previous little assistance from anyone outside. They set a fine example of self-help to their own generation—and perhaps to older people as well.

You can read on this page an inspiring story from Canada. The pioneering days in that great Dominion are over, but the pioneering spirit lives on among the resourceful young, like the boys at Dundas in Ontario, who formed a club, built a club house and are winners all the way.

The story comes to us from Bryan Kingdon of 22, Spencer Street, Dundas. Remember as you read it that we know what the Dundas boys are doing because one of them wrote to us.

You, too, may have an interesting story. If you have we will publish it and pay you for it. We want to hear from the pioneers, the self-helpers, of 1960—from all who are showing the spirit which is alive in Dundas, Ontario.—ALAN WINTERTON.



The photograph at the left shows the fine Dundas M.A.C. Club house, at the top is member David Forstin with his " Petrel " and, below, this is a group of members with their models at the Tiger Town meeting. That's David again on the far right.

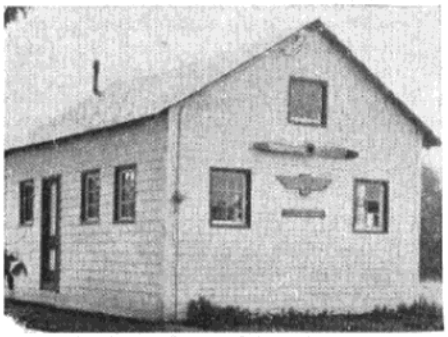
ONTARIO YOUNG PIONEERS

by Bryan Kingdon

DUNDAS Model Aircraft Club is the only junior club of its kind in Canada. It has one senior member—Mr. Wilfred Weisensee, the founder, and head instructor. Mr. Weisensee inspired the modelling spirit in Dundas and brought a few boys together into a club.

In the latter part of 1957 the boys wanted to prove themselves. They started on a venture that was at first laughed at and later praised; they built a club house—the only one in Canada for junior aircraft modellers.

It now contains a heater, a drafting board, two banks of fluorescent lights, individual cupboards for each member, and many other little things that make this pastime pleasing. The boys are proud of their modelling retreat.



Because of winter expenses for fuel and so forth, the club is at present in a financial slump, but maybe we can scrape up the money somehow.

Back in 1958, a few of the members were interested in the new world champion glider, the A-2 *Petrel*. We all looked in the latest model magazines for a full-size plan. Our search seemed in vain, for all that we could find was a small projection drawing. We decided that we would have to draft our own plan, but one day early last year, Mr. Weisensee saw your magazine in the local hobby shop and was overjoyed to find that it offered full-size plans of the *Petrel*

We sent for the plan, and David Forstin immediately began construction. To compensate for our rough terrain the model was covered with very strong silk.

On Labour Day, the first Monday in September the " Tiger Town " model meet is held at Mount Hope airport, the municipal airport for Hamilton. This meet is the largest in Canada. It attracts modellers from all parts of the country and from the northern states of the U.S.A. But even with such tough competition, David won first prize (a trophy) in the junior towline glider section with 485 seconds out of a possible 540—and Klaus Westermann, a younger modeller, took third prize, with an A-1 Nordic *Ghost*.

We buy MODEL AIRCRAFT every month and read the articles with great keenness. Plans and handbooks which interest us especially are MA 315 D.F.S. *Reiher*, MA 309 *Whippet*, MA 311 *Helicanth*, MA 308 Cessna *Air Master*, "Model Aircraft Plans Book," "All About Model Aircraft," and "Power Duration Models."

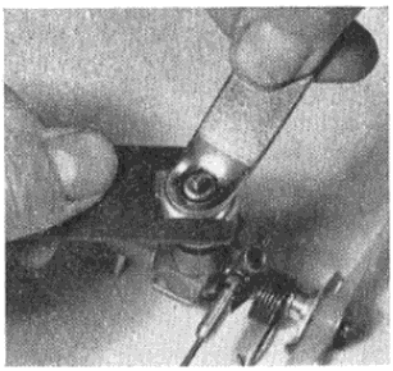
The boys range in age from 10 to 17. They build good, clean models and only once have they come away from a competition without at least one prize.

Peter Chinn's ENGINE TIP for Wingmen

ALTHOUGH you may think it a simple matter to replace a glowplug, there are some points which you need to watch. If your motor is a small one with the cylinder parts threaded together, by not following a few simple rules you may distort the cylinder and damage your engine.

The upper part of the cylinder in many small glow engines—two examples are the Davies-Charlton Bantam and the Allen-Mercury 049—is threaded on the outside for the cylinder jacket to screw over it. If the unit is not tight enough it will leak, and if it is too tight the tapered threads will tend to squeeze up the bore. You should, therefore, be careful if at any time you need to refit the cylinder jacket.

When you take out a glowplug for inspection or replacement, it will sometimes bring the cylinder-head with it. This may happen after a run, for heat will make the alloy jacket expand more than the steel cylinder liner. You should hold the cylinder firmly with a suitable wrench while using your plug spanner on the glowplug (see *picture*). Similarly, in replacing the plug you should use the spanner again and make sure that you have just the right tightness—enough for the plug and not too much for the cylinder-head.



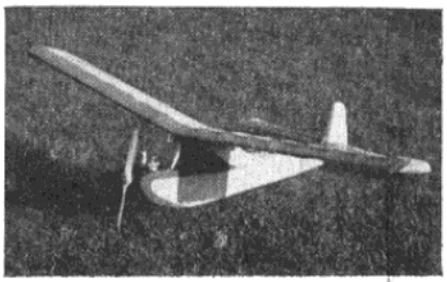
Most manufacturers supply cylinder-head tools to fit their engines.

WINGMEN WRITE . . . .

I would like to recommend, for a beginner's first F/F power model the Veron *Cardinal*. It is of very simple construction, with detailed drawings of various engine mountings, while the fuselage sides and wing ribs are die-cut for quick construction.

My *Cardinal*, fitted with a Mills, is a perfect combination. Easy construction on the plane, easy starting with the Mills and an " all weather " performance.

The photo shows the completed plane which



was doped blue and white with check bands round the wing, tail and fuselage.—Richard Emmerson, Dexford, Leics.

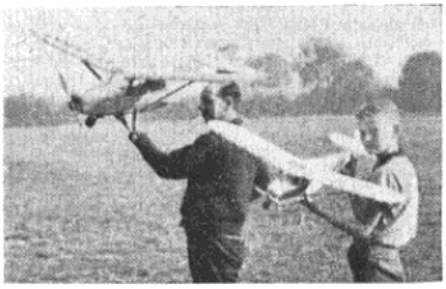
* * *

I am glad to see that you have formed a club for us younger modellers, as I live in a village and

the nearest club is at Oxford more than twenty miles away.

I started by building small rubber and glider models then went on to F/F power with a Keilkraft *Southerner Mite*. On about its tenth flight it got caught in a thermal and went out of sight into the clouds, but three days later I was notified that it had been found by a farmer in a village six miles away.

I have built four more models since then and I am now going to make a *Junior* 60. My father is making a ¼ in. scale *Cessna* 172 for R/C, and in the



photograph we are shown with our Aeronca *Sedan* and Mercury *Monocoupe*.—James Tobin, Banbury, Oxon.

* * *

Although I have been modelling for a year, I think that joining the Wings Club will be a good proposition.

I started the world-wide pastime of aero-modelling by going to a model shop with my father and asking for a model aeroplane which I could build and fly. We were presented with a class "A" team racer and a 1.5 c.c. motor (although I now know I should have started with a simple glider or rubber model).

After that I built a Hollander *Libel* from your magazine and this was very realistic in flight. For my next C/L attempt I built a K/K *Demon*, powered by an E.D. 2.46 which was very fast and provided endless fun. Then I built a *Choose* from your plans service and powered it with a Frog 1.49 which kept me happy for many a Sunday afternoon. I now have the Frog 1.49 in a stunt model of my own design, the E.D. in an F.A.I. racer and the other 1.5 (A.M.) in a K/K *Gazelle*.

At the moment I am building a K/K *Gypsy* and rebuilding a K/K *Invader*. My pals all build model aeroplanes and we have a private club, so I hope they will all join the "Model Aircraft Wings Club" as well.—Michael Plaskett, Barrow-on-Humber, Lincs.

Dear Alan Winterton,

I would like to become a member of the Model Aircraft Wings Club. With this coupon I enclose a postal order for 1/- to help cover the cost of the badge transfers and membership book. *All membership applications must be on this form.*

Name in full.....

(Underline christian name normally used)

Address.....

.....

..... Date of birth.....

School or College.....

Name of other club or clubs to which I belong (if any).....

.....

Send to—MODEL AIRCRAFT WINGS CLUB, 19-20, NOEL STREET, LONDON, W.1.

PEN PALS' CORNER

Geoffrey Cottam is 15 years old and is interested in R/C and C/L models. His address is 17, Upland Grove, Bromsgrove, Worcs.

Michael Gilbert builds F/F and C/L models. He lives next door to Geoffrey at 15, Upland Grove. Both these Wingmen would like to hear from fellow members with similar modelling interests.

Geoffrey tells me that many of his friends have admired our super Wings badge.

Watch out next month for the first of a special feature for Wingmen by Ray Malmstrom

ON THE WINGS CLUB WORKBENCH — The Veron Colt

VERON'S new prefabricated *Colt* C/L trainer kit, which we reviewed in Over the Counter last month, is recommended to Wings Club members as an ideal "first attempt" power model. Any engine between 0.75 and 1.5 c.c. can be used with it and the pre-shaped parts, together with the very complete, illustrated, instructions, enable anyone of average intelligence to tackle the *Colt* with complete confidence.

There are, however, a couple of building operations which may give the absolute beginner a little trouble, and as these are also likely to crop up when building models other than the *Colt*, these hints will be of permanent help to you. Moreover, if you are entering Veron's "Beat the Clock" competition they will certainly save you valuable minutes!

Bending leadout wires

This series of photographs show you how to bend those leadout hooks neatly. The sequence is the same using either round or square nose pliers, but use a pair with jaws the correct width to correspond to the length of one side of the square hook as shown in the photograph.

For a "solid" loop, after reaching stage 4, just wind the end of the loop round the stem and cut off, but it is easier to finish as in 5 and slide a ¼ in. length of small fuel tubing over the wire to secure. This way your flying wires can be clipped straight onto the leadout wire.

Soldering keeper wires to engine bolt heads

The art of making a good soldered joint eludes many modellers, even quite experienced ones. The process is, however, very simple and these photographs show how we soldered the short length of wire across the heads of the engine mounting bolts on our *Colt*.

The success of a soldered joint depends very largely upon the cleanliness of the parts to be joined, so the first job is to clean the bolt heads and the wire with sandpaper. (Photograph 1). Now tin the hot (and clean) soldering iron by applying a little flux, and touching the iron's copper bit with a stick of solder, which must flow evenly all over the bit. (Photograph 2).

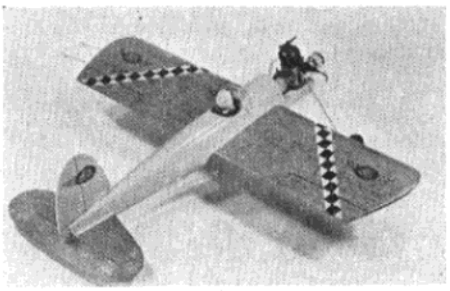
Apply a spot of flux to the parts to be joined using a matchstick or short length of wire. (Photograph 3).

With the hot iron melt a drop of solder on the bolt heads. (Photograph 4). Hold the fluxed wire in position across the bolts with a pair of pliers and apply the hot iron until the solder flows over the wire, securing it firmly in position.

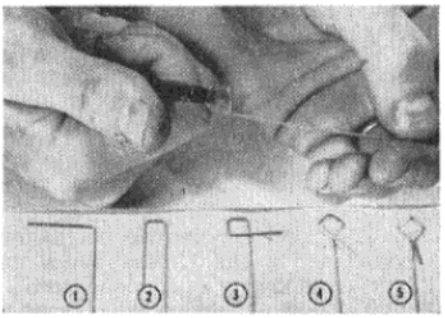
* * *

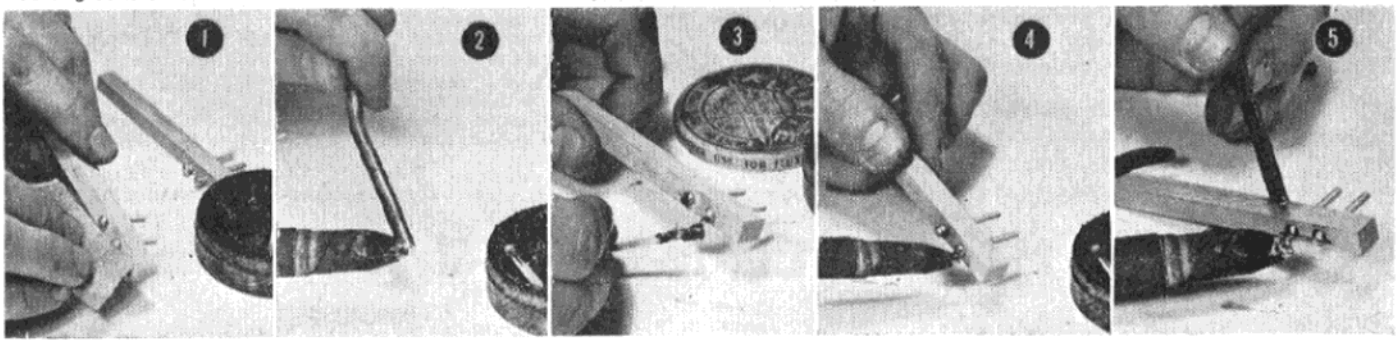
Although the Veron competition does not require the engine to be fitted, or the model painted, we hope you will all want to carry out both these jobs! A very good exhibition quality finish can be easily obtained by first giving the entire model a coat of clear dope, and then covering it all over with lightweight tissue, by laying the tissue in place and fixing it with a further coat of clear dope applied over the tissue and brushed well in. If you use coloured tissue a very nice effect will be obtained by simply applying a coat of clear fuel proofer or the new butyrate fuel proof dope. If you prefer a solid colour, then use two or three coats of coloured dope, rubbing down between each coat. Give a coat of fuel proofer on top or else use coloured butyrate dope.

Our own *Colt* has the wing and tail covered with coloured tissue (red and yellow) and the fuselage is colour doped.



Our finished Colt flies really well and the Wings Club transfers add an attractive touch. Although these transfers look different to yours they are really the same and next month we will show you how the two club transfers can be simply modified into six new designs.





Club News

WANSTEAD M.A.C.

At the club meetings the floor is cleared for the "Hovercraft" fans. Several members have built model hovercraft to "hover" in the clubroom. These provide a great deal of enthusiam at the club meetings as compared with the usual R.T.P. flying.

Some months ago the club was faced with a serious increase of charges for the hiring of the school classroom in which we hold the club meetings.

However, so ridiculous were the prices asked of us that the school caretaker a very good friend and keen observer of the club's activities, put in a good word for us over the telephone to the local council who have granted us use of the clubroom free of charge.

We are indeed grateful to the caretaker and the council for their consideration towards us aeromodellers.

ERGS M.F.C.

Due to usual British weather conditions, combat is the present craze. The standard has greatly improved over the past few months, and the streamer bill has gone up in leaps and bounds due to the attacking intentions of our better combateers, with *Black Ghosts*, *Razor Blades*, *Peacemakers* and *Things*.

Although not strictly aircraft, four successful Hovercraft have been built with engines ranging from 5 to 6 c.c.s.

Once again the membership has gone up, and it now stands at 43, of whom 15 paid a visit to the National Models Exhibition and thoroughly enjoyed themselves inspecting the display, but left with the solemn intention of entering some of their own efforts next year.

WHARFEDALE M.A.C.

The Northern Area Winter Rally held at R.A.F. Rufforth was well attended by local enthusiasts. The day turned out to be very good for C/L and as a result three very interesting team races were concluded.

The class B Final was most interesting being between two very closely matched models differing considerably in race technique. First place was taken by Watson's ETA 29 Mk VI with 90 m.p.h. plus/35 laps and second place taken by J. C. Horton's fantastic Frog 500 model with 80 m.p.h. plus/70-75 laps, the winner being only *one* lap ahead at the finish.

Negotiations are now taking place with the Air Ministry together with the S.M.A.E. with a view to renting, purchasing or otherwise obtaining a portion of one of the local Ex-R.A.F. aerodromes for C/L use.

Given sufficient encouragement the club would gladly make provision for national and international events to be held on such a circuit should negotiations prove successful.

CHEADLE AND D.M.A.C.

The most important recent club function was held in the club room where pots were presented to Brian Faulkner (overall club champ), Tom Wilkes (Power champ), Milke Turner (Rubber and Glider champ), and Len Whalley, our new treasurer, the C/L cup. The club junior trophy went this year to Neil Carter.

Whilst the contest enthusiasm in all classes, particularly free-flight and radio, has increased, total membership is reduced. To rectify this we are giving more attention to attracting juniors (12-17 years of age) and any other newcomers. People interested should contact D. Powell, 8, Boundary Road, Cheadle, Cheshire, for particulars or attend a club meeting on the first Tuesday of the month at the A.T.C. Hut, Bank Street, Cheadle.

CHICHESTER AND D.M.A.C.

At our recent dinner and prize-giving, 50 members and wives saw Wing-Comdr. Gutteridge (of Gutteridge Trophy fame) present our eight trophies to the prize winners, who were: Scale Trophy, R. Hackett; Combat Trophy, N. Thair; Team Race Trophy, R. Boxall; Precision Power Trophy, J. Wingate; Open Sailplane Trophy, J. Barnes; Open Rubber Trophy, J. Devenish; Junior Contest Shield, N. Gibbons.

The Victor Ludorum Trophy was again won by R. Hackett.

DAGENHAM M.A.C.

The club started the season with a combat comp for a club cup which was won by Alan Marsh. To keep our free-flight bods happy we held a power duration ratio competition which was won by Pete Paulfreman with a ratio of 16 : 1, followed by Lemay, 14 : 1. The club is coming to life again now that the flying season is drawing near.

Combat is well supported in the club and enough interest was found to form a combat team. The team hopes to see better organised combat rallies this year, instead of the mad shambles that were seen at most comps last year.

CROYDON AND D.M.A.C.

A couple of our more adventurous members toddled up to Rufforth for the Northern Area winter rally and toddled back again with a first in glider (Dennis Partridge, 8 35 with his aged *Nebula*) and a second in rubber (A. Wisher three 4's and 3 : 24).

A decent interval after his return from northern climes, Dennis won the breed-improving Wakefield contest we ran at Chobham, pipping Man of Kent Elliot into second place. Entries were not numerous; perhaps the L.A. Wake men are getting soft or running short of winter grade rubber lube.

There are stirrings of an electronic nature in the club lately; Dennis Partridge (again !) produced a Mills 0.75 radio model, about the size of an F.A.I. Team racer, which proceeded to sear round Chobham wagging from side to side in time with the button pushing, so apparently it's not just naturally unstable.

CHESTER M.F.C.

The 1960 Clwyd Slope Soaring Contest will be held on the Western Slopes of Moelffamau in North Wales on July 3rd.

There will be four classes: Open, A/2, Radio and Junior. The entry fees will be Seniors two shillings and Juniors one shilling, pre-entry for the Radio event will be required and should be made to C. R. Filtness, 26, Raymond Street, Chester, before Saturday June 25th.

CHANGE OF SECRETARY

NORWICH M.A.C. J. E. Hemmings, 35, Moore Avenue, Sprowston, Norwich.
DUNFERMLINE M.A.C. A. Erskine, 36, Victoria Street, Dunfermline, Fife, Scotland.
PAISLEY M.F.C. T. Lawrie, 19, Ferguslie Park Crescent, Paisley, Scotland.
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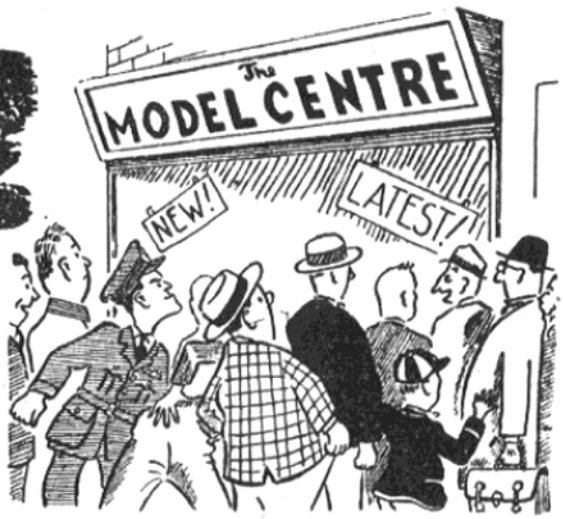

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Larkhill, Wiltshire

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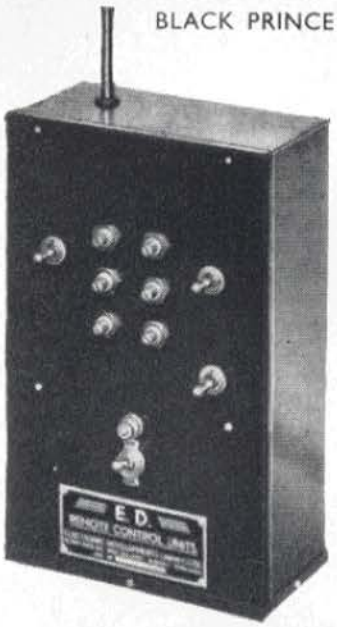
Introducing E.D TRADE MARK *new type multi-channel* RADIO CONTROL UNITS

BLACK PRINCE /6



TRANSMITTER

BLACK KNIGHT /1 Single Channel (Carrier) Transmitter. Price **£6 18s. 9d.** inc. P. Tax.

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BLACK PRINCE /6 Six Channel (Tone) Transmitter. Price **£15 9s. 10d.** inc. P. Tax.

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BLACK ARROW /1 Single Channel (Tone) Receiver. Price **£7 11s. 8d.** inc. P. Tax.

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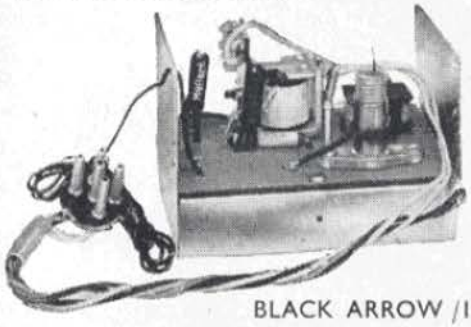
Illustrated Folders giving full technical details of all E.D. products are free on request.



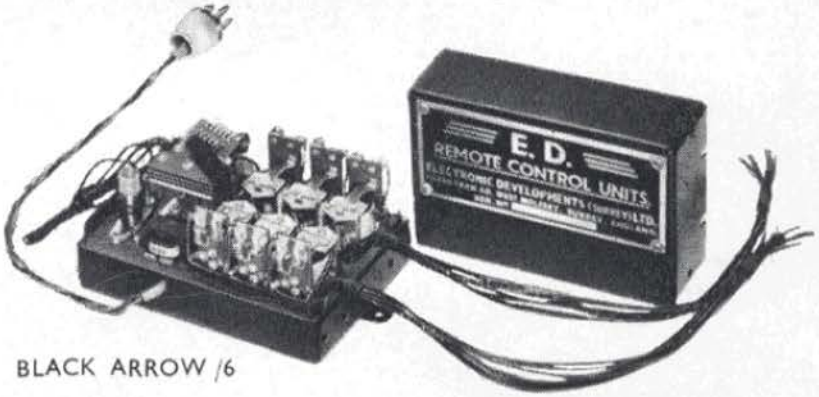
BLACK ARROW /1

This entirely new transmitter has been produced after months of exhaustive flying tests. The Standard Transmitter, the first of a new series, may be supplied up to 8 channels or as a single channel tone or carrier transmitter. Housed in identical cabinets, they are hand held using a 5 ft. detachable aerial. The self-biased switches fitted are easily accessible by both hands. Many unique features have been incorporated, including a neon voltage indicator.

Complete tone stabilisation due to feroxcube pot cores. Each potentiometer will only cover 100 cycles, and having set up, the transmitter will operate without further adjustment.

Battery consumption has been cut to a minimum and many months of use are assured. Balanced weight distribution makes perfect handling. A detachable compartment enables batteries to be inserted without disturbing the transmitter.

Size: $9\frac{3}{4}$ in. x $6\frac{1}{4}$ in. x $3\frac{1}{8}$ in. Weight Complete 5 lbs.
Less Batteries $2\frac{1}{4}$ lbs.

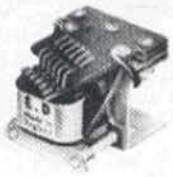


BLACK ARROW /6

The 4 and 6-Channel receiver is completely revolutionised with a new and absolutely reliable relay and a super sensitive reed unit capable of operating with an input of only 2 volts R.M.S. Using the new high gain Mullard transistors, transformer coupled and temperature stabilised, developing 20 volts R.M.S. into the reed unit. Both reed unit and relays are fitted with fixed contacts, no adjustment being required A low voltage supply of 30 volts for HT and $1\frac{1}{2}$ volts LT at extremely low consumption resulting that quite small batteries may be used. The complete receiver is mounted in virtually a crash-proof container.

Size: $3\frac{3}{4}$ in. x $2\frac{1}{2}$ in. x $1\frac{3}{4}$ in.
Weight: 8 ozs.

OCTAVE—Eight Reed Tuned Relay, **£3 0s. 0d.**



Multi Channel Servo Unit, £3 10s. 10d. inc. P. Tax.

BLEEP—Relay, **£1 4s. 0d.**

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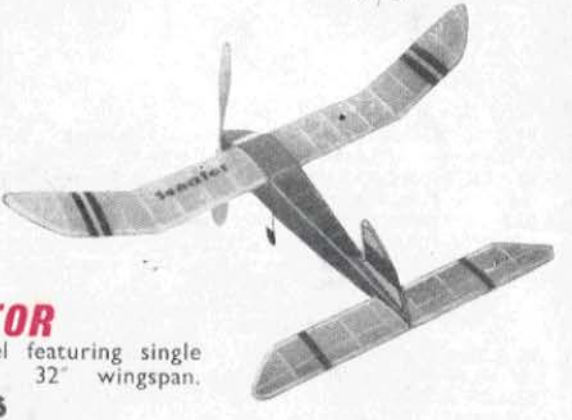
An attractive semi-scale design featuring knock-off wings. 23" wingspan. **5/6**



SENATOR

Novel contest model featuring single leg undercarriage. 32" wingspan. **7/6**

PLAYBOY

Simple-to-build cabin model. 20" wingspan. **4/6**

ELF

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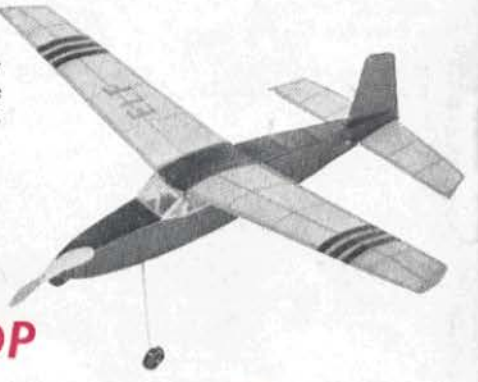

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