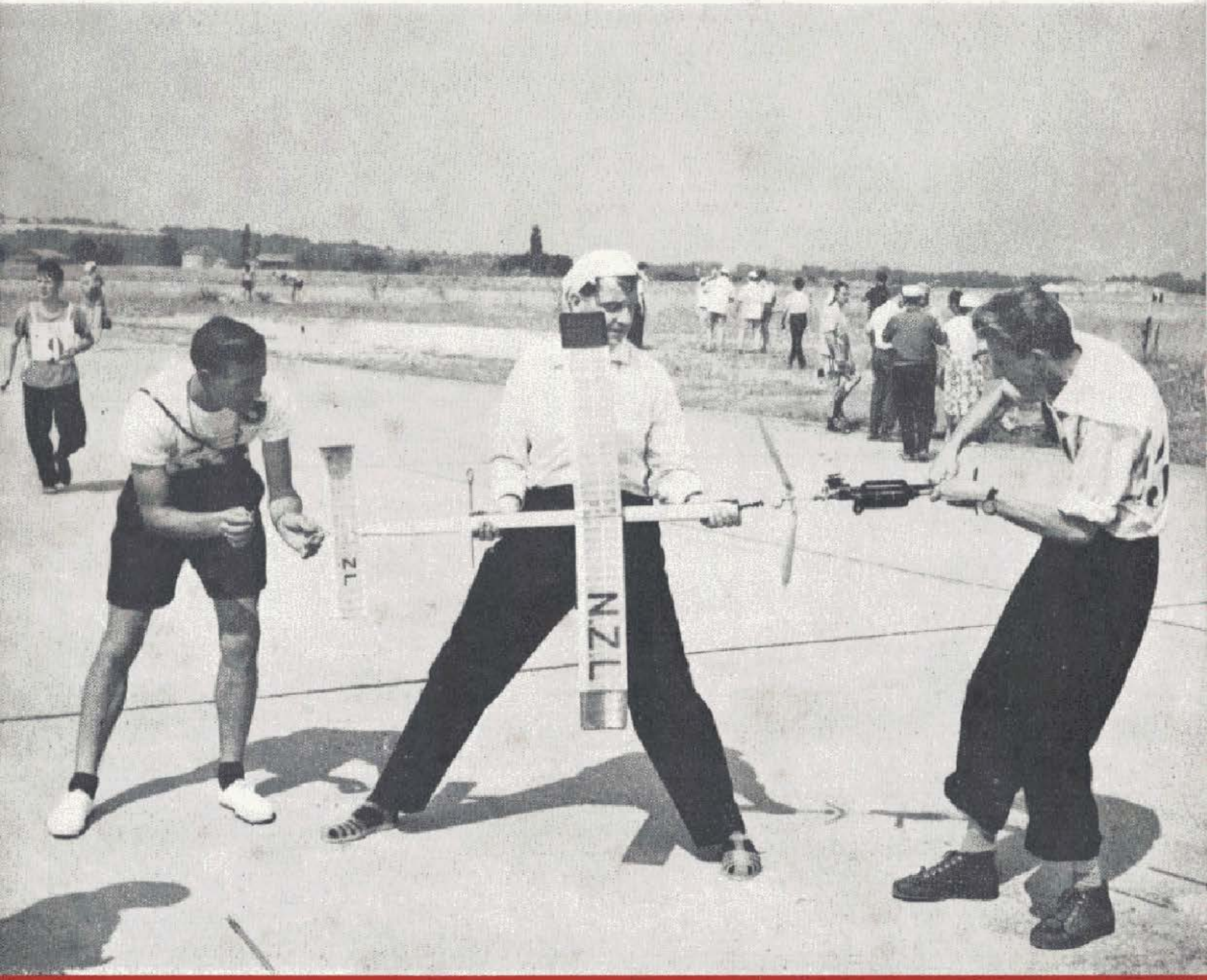
MODEL aircraft

SEPTEMBER 1959 1'6



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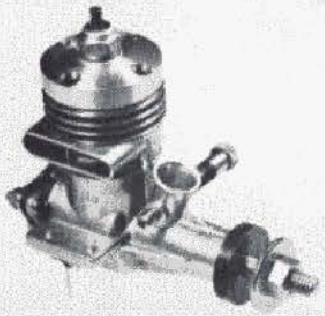

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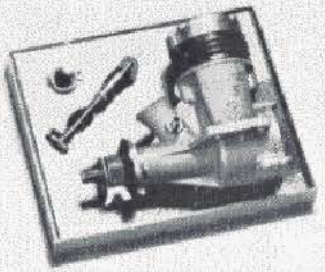

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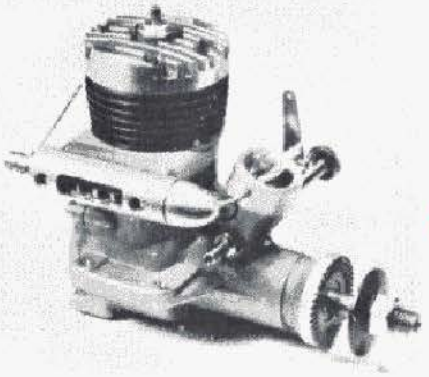

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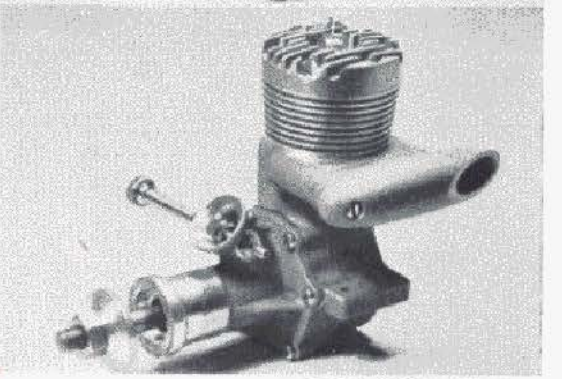

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ENYA 35 (Two speed)	£7 18 4
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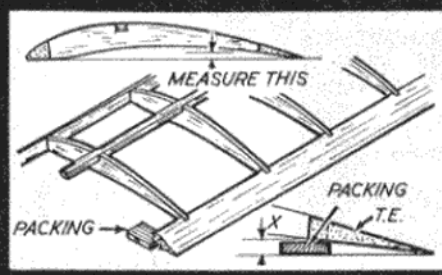
Why, even in this self-same journal, one of these 'gentlemen' has quite obviously been snooping, sneaking or prying around our Works and upsetting our silk-worms. The wretched things have been off their food for weeks. We have tried everything. We have had vets in, we have given them Vetsyme, we have sent to Italy for fresh mulberry leaves..... not a bit of it. They just won't spin.

However, he does talk some sense, although like all paid hacks, he takes rather a long time to say it. What he is really trying to say is that it isn't the finish that matters, it's the wood itself, and with this we must wholeheartedly agree. I believe I have even made the point myself before.

The trouble is that he has not read quite widely enough. If he likes to read all the American journals on advertising and all the rest of it, he will see that it is sales Pre-sentation that matters. So if it's sales Pre-sentation that matters - it's sales Pre-sentation that we've all got to do. That is why we all describe ourselves as the best, the biggest, the greatest, the fattest, the thinnest, the most wonderful, and all the other superlatives that modern advertising has to use.

John Paterson



BALSA TIPS . . . . . No. 23

Building an undercambered wing it is important to prop up the *front* of the trailing edge to conform to the aerofoil section. Measure this height 'x'. Packing strips are scrap balsa sheet the nearest size *below* this measurement. They then can be pushed under the trailing edge—preferably between each rib station—to adjust the trailing edge angle, as required.

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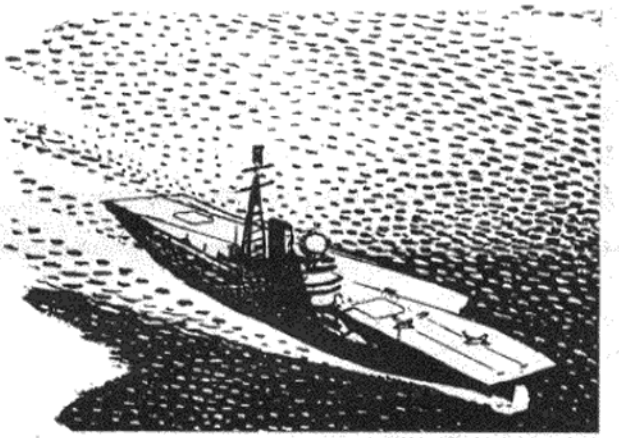

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MODEL AIRCRAFT

SEPTEMBER 1959

No. 218/9 VOLUME 18

The stoppage in the printing industry caused the cancellation of the August issue.

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Here and There

This is an airfield - the airfield at Brienne-le-Château, France. The time is 9.30, the date July 18th, 1959. Is this important? Yes it is. When the 'photo was taken this area should have been filled with competitors flying in the Wakefield contest.

Elsewhere in this issue is a full report of the contest, but this is the place to comment on complaints which were made, and the main criticisms of this as a World Championships can be summarised thus :

1. The contest started late.

Comment : *The programme must be rigidly adhered to unless exceptional weather conditions prevail—this was certainly not the case.*

2. No flexibility was allowed in selecting the launching site to suit the conditions on the day.

Comment : *The launching site must be selected on the day and, if necessary, changed during the day, to suit the conditions. Fortunately, this time the necessity did not arise.*

3. A large part of the aerodrome was out of bounds.

Comment : *This is ridiculous—but again fortunately, in the event, the exceptional weather made it unimportant.*

4. Competitors were often unaware of what was happening.

Comment : *At first announcements were only in French. After a protest they were in French and English, but at every Championship they should always be in at least three, and preferably more, languages.*

To resume: we regret that due to the recent stoppage in the printing industry the August issue of MODEL AIRCRAFT did not appear. However, in this, the September issue, you will find all your favourite features, a full report of the Wakefield and other interesting news, reports and articles. By missing an issue we have had to hold over some interesting articles, but they will be appearing in subsequent issues, and we promise you they are well worth waiting for.

Those readers who have a yearly subscription to MODEL AIRCRAFT will automatically receive an extra issue to compensate for August.

5. Too many delays in pre-flight check weighing.

Comment: *This is inexcusable; if a competitor has only half an hour in which to fly then he must be allowed his full quota of time.*

6. Too many social functions.

Comment: *Competitors travel thousands of miles to fly in a contest; this must be the first consideration. Any other attractions should be arranged so as not to interfere with test flying time and possible travel arrangements, and attendance should, in any case, be optional.*

These remarks are not necessarily in order of importance.

From the foregoing we do not wish to seem unnecessarily harsh on the French authorities. In the circumstances they did a difficult job well, and, in fact, some of the criticisms can be applied to all World Championships—including those run in this country.

One other point is worthy of mention. This concerns travel. In our opinion the S.M.A.E. would do well to consider the question of hiring a minibus type of vehicle for teams travelling on the Continent. In the present case the travelling time from London to Brienne would have been approximately the same, as would the cost. But most important, the team would have been independent of local arrangements.

As a final thought, the last time there was a seven man fly-off the F.A.I. panicked into a rule change—so don't start on next year's models too soon!

Never mind—eh?

EARLIER in the year we promised to teach Major Draper to fly C/L, and the Northern Heights Gala provided a suitable occasion. The first flights were not unsuccessful, although the photo above rather belies this statement! What actually happened was this . . .

The model, one of the Editor's "vintage" class "A" team racers, was fast, too fast for training, the flyers were somewhat sleepy after lunch, and, after two rather erratic flights, there was a disagreement between instructor and pupil. One wanted to give "up," the other "down," so the model made its own choice.

The conversation afterwards was rather illuminating:

Major Draper: "I must apologise to the owner of the model for crashing it."

Editor: "That's all right, it was mine."

Major Draper: "I won't bother then, you were showing me what to do!"

Cover Story

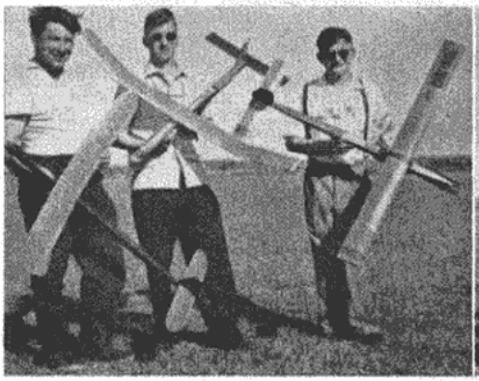
THE tense moment as the last turns are cranked on is well depicted in this photo taken at this year's Wakefield. The model is the New Zealand entry of Doug Kennedy and is being wound by proxy flyer Jean Fontaine. Holding is Robert Guilloteau proxy for William Cooke, and waiting to light the fuse is third proxy and team manager John Sheppard.

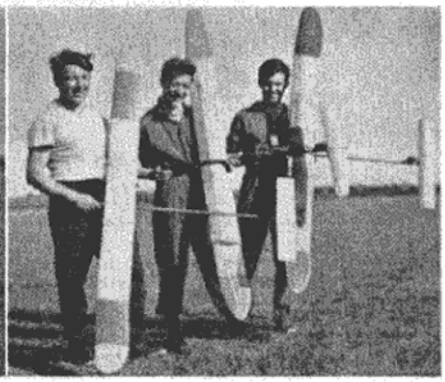
Incidentally, John told us that neither of the French proxies understood English, which made things difficult for him as manager, and difficult for them as they could not understand the written instructions that accompanied the models.

It is not suggested that linguistic ability should come before flying skill, but it is a point that organisers might bear in mind perhaps by providing an interpreter.

Perfect weather for both 1959 International Team Trials

THE trials at which our International Teams were picked this year were held in almost perfect conditions. How the Wakefield Team (photo left) of Ray Monks, Jack North and Lew Roberts fared in the contest, which was held in almost identical conditions, is told elsewhere in this issue. The A/2 team of Ray Monks (congratulations on the double Ray), Ray Shirt and Eric Black will be fighting it out at about the time this issue appears, and a full report will be featured in M.A. next month. Incidentally, Ray only just made the double; he did in fact place fourth, but third man Barry Picken being unable to attend the Championships, Ray moved up one.





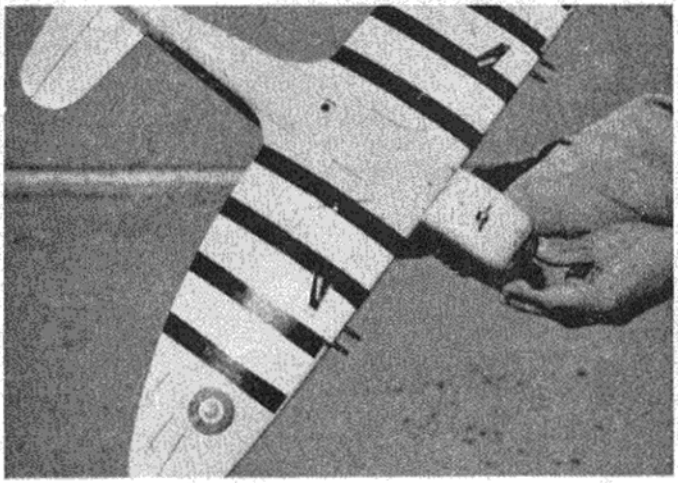
The final total times for ten flights were:—

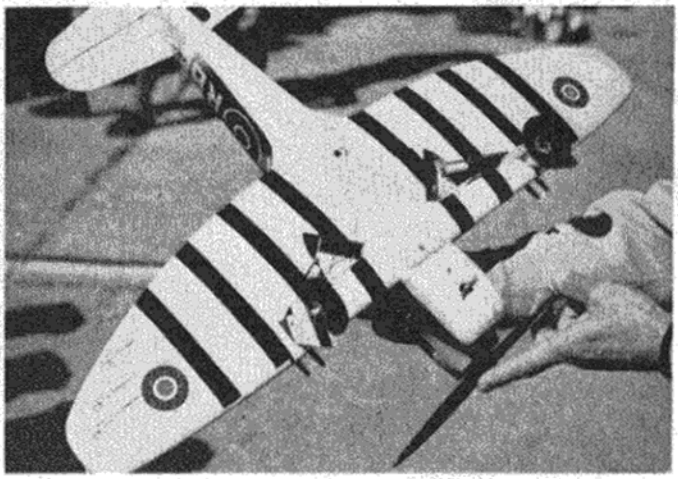
Wakefield

1. North, J.	27.58
2. Roberts, G. L.	27.32
3. Picken, B.	26.49
4. Monks, R.	26.44
5. O'Donnell, J.	26.24
6. Fuller, G.	26.14

A/2

1. Black, E.	27.28
2. Monks, R.	27.18
3. Shirt, E. R.	27.16
4. Ferrer, G.	26.31
5. Amor, B.	26.17
6. Wiggins, E. E.	25.57





UP and DOWN

a practical retracting and detracting undercarriage for C/L

FOR years we have looked forward to seeing a really foolproof retracting and detracting undercarriage, and at this year's Nationals we almost did! Ron Aaron, designer of the Frog *Tempest* kit, entered a replica of this machine fitted with such an undercarriage (our heading photographs show the two underside views of this model) in the Knokke Trophy, but, unfortunately, he was unable to fly it.

The system, devised and made in co-operation with George Fletcher, works perfectly (see below for how) but what with the weight of the undercarriage, plus 12 oz. of lead in the nose to bring the c.g. to where it should be, the model is too heavy. With an all-up weight of 3 lb. for 125 sq. in. of area, this is not surprising and the engine is also detuned by being fitted with a scale six branch exhaust system.

However, George and Ron are far from disappointed with the outcome. The model was built only as an experiment, and the lessons learned will be put to good use next time. Although it is too early yet to disclose their plans for the next attempt, we can say that it really is ambitious, and will have more than one motor!

Incidentally, a special handle was made up—to accommodate the third line—and this had a two-position plunger built in: one position to operate the undercarriage and the other for the throttle fitted to the engine.

. . . . . How it Works

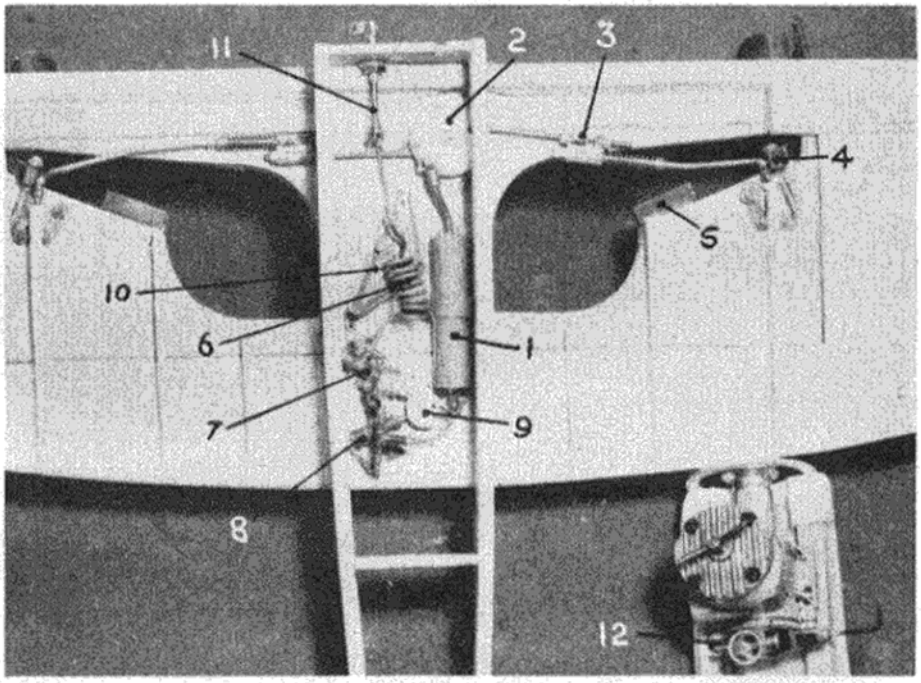
Retraction is by means of compressed air operating a ram in cylinder (1). This rotates disc (2) in a clockwise direction which in turn pushes out spring-loaded rods (3). This lifts the legs to fully retracted position where they are locked by magnets (5). Lowering takes place in the reverse manner, being actuated by a spring in cylinder (1) which is exhausted of air.

METHOD OF OPERATION

Compressed air at about 50 lb. pressure (by bicycle pump) from a tank in top of fuselage is fed through pipe (6) to valve (7). This valve is opened by cam (9) via bellcrank (10) to which it is coupled by a stranded cable making reverse operation impossible.

Further movement of the cam opens exhaust valve (8) which lowers undercarriage. Engine throttle is also operated by bellcrank (10) via rod (11), which is spring loaded in the "throttle open" position to throttle (12).

Small closure of throttle raises undercarriage. Near-idle position lowers it. As cam is coupled by cable, throttle can be re-opened without retracting undercarriage for controlled landing. No. 4 is angled undercarriage hinge which gives scale position of leg in both positions.



whew! what a Wakefield

France stages hottest (weather and flying) contest for years.

Czech tops seven man fly-off.

Team win for U.S.A.

Suitably attired for the conditions, Finnish competitors, Pentti Aalto and Seppa Takko, carefully study an airborne model to see if there is any lift about before launching.

REPORT AND PHOTOS BY NORMAN BUTCHER

PERFECT weather resulted in a seven-man fly-off won by the Czech flyer Dvorak, and a team win for America with a score only 44 sec. under a maximum, at the 1959 Wakefield held at the U.S.A.F. base at Brienne-le-Chateau, France. This exciting finish to the most famous of all international contests was the culmination of an exceptional day's flying, and did much to erase competitors' criticism of certain aspects of the organisation. Complaints there certainly were which was a pity, for although in retrospect they assume their correct perspective, at the time they marred what could have been a perfect weekend. Anyhow, everything in its correct place, so let's start at the beginning.

London Airport at 7.30 a.m., and the British party—the team Ray Monks, Lew Roberts, Jack North, manager Bob Copland, A. F. Houlberg, Mr. and Mrs. Rushbrooke and myself, gathered in the departure lounge, where we were joined by Australians Alan King and Bond Baker. An hour and a half later the French Customs authorities were displaying a very marked interest in the contents of large boxes, and were completely mystified as to why Lew Roberts was satisfied with a box equivalent in size to a small handgrip ! By eleven o'clock everyone was safely at the Aero Club d'France where official programmes were handed out.

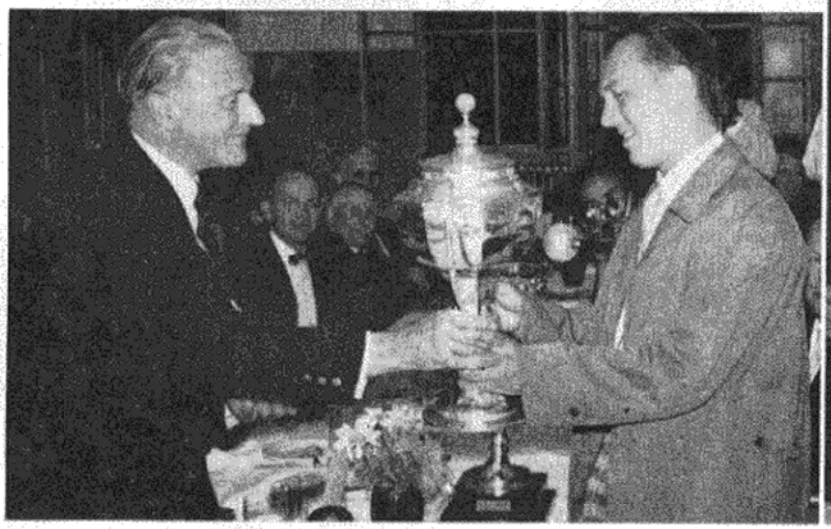
The 100-mile bus journey from Paris to Brienne provided ample opportunity for discussion and renewal of friendships, while Jack North gave us a description of the 'drome which he had inspected while on holiday. His talk of it being surrounded by cornfields caused some concern but fortunately, as we progressed, evidence of harvesting became more and more apparent, and when we finally arrived the fields were quite clear although some rather dense woods and a spinney worried the team.

When we arrived the competitors were quickly shown to their rooms in a modern barrack block. This accommodation was good, each

TO THE VICTORS THEIR SPOILS

Below: Frantisek Dvorak receives the Wakefield Cup.

Right: The American team, Herb Kothe, Joe Bilgri and Bob Hatschek, with the Alphonse Penaud Cup.



team having a room to itself, with adjoining showers, etc. Contestants' meals were served in an adjacent canteen while other visitors could purchase refreshments in the Base club.

Members of the Press and other visitors could not be accommodated on the 'drome, so had to stay in the town of Brienne, some four miles away, and although it was stated that the buses would run to and from the town, it would be on an unscheduled basis. This was true—I did not see a bus between the two places on any basis.

Processing on the following day provided the first opportunity to have a close look at the models; it was an eye opener to see how many carried last year's Cranfield transfer. The Russian models created considerable attention and it was interesting to see that they now incorporate a lot of balsa in the construction. Their native grown reed is still used fairly extensively, particularly for longerons, but I would not be surprised if their championship class models were not 100 per cent. balsa in the near future.

The models of Matveev were particularly outstanding and featured an aluminium tube fuselage with a plug in wound balsa tail boom, while Ivannikov's twin-bladed folding props had the blades mounted on "outrigger" hinges of some 6 in. diameter.

Wound balsa, or all sheet type fuselages, were in preponderance and in view of the rubber breakages that occurred on the following day this was a good thing as very few models sustained structural damage. The models of Swiss team member Meyer were excellent examples of workmanship and, as well as featuring a wound fuselage, the wing was pylon mounted on a wound ply tube, which slid over the fuselage allowing for simple adjustment of the c.g.

Last year's winner, Bond Baker, had an interesting machine, similar in general layout to his earlier design, but featuring an all-sheet wing and tail, tissue covered, and with a very high finish.

Of the processing itself, this was carried out in a hangar and the competitors passed along a single row of tables with no undue delays. Although several models were underweight and had to be ballasted, none, as far as I know, was declared under or over size. Perhaps this was because the organisers were allowing a tolerance of plus or minus 10 per cent!

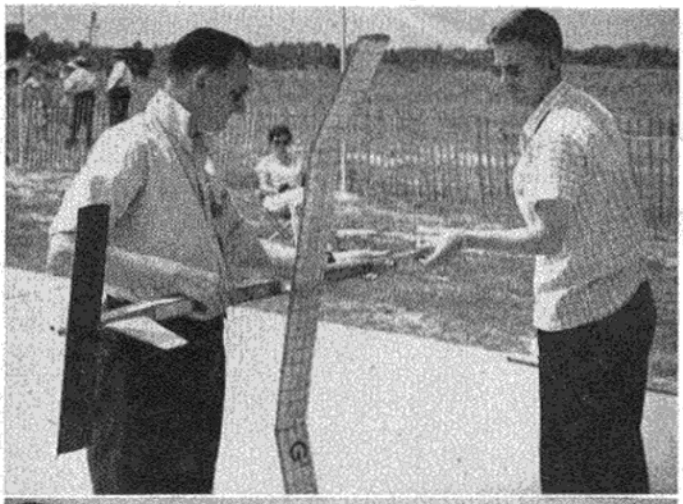
At 5 p.m. the Irish boys, who were last in the draw, arrived and caused considerable merriment—when the lid of the model box was raised a musical movement played "When Irish Eyes are Smiling." This concluded the processing and I wandered out on to the sun blasted aerodrome to see how test flying was progressing.

Quite a few teams were out with their models but way up wind of the site from which the contest was to be flown. This was a concrete apron on the very edge of the airfield and was flanked with flagpoles for the flags of the competing nations. With the wind in its prevailing direction this was O.K. but today it was blowing, quite strongly, in the opposite direction. Several team managers posed the question of moving the site if the wind remained in the same quarter for the contest; this caused no little consternation as apparently no provision had been made for such a contingency!

A reception and show at the Château of Brienne was scheduled between 7 to 10 in the evening. The reception was first held at the Town Hall and local dignitaries, including the Prefect of the County of Aube, met the competitors. Just as the British team were being introduced the air raid siren sounded—a standard method of announcing the reception of distinguished guests, I gather, as the same sound greeted the teams on their arrival at the Town Hall of Troyes on the Monday.

The entire town had turned out for the show and it finally started at the time it was due to finish. Act followed act in seemingly endless succession, most of them being comedy ones spoken in a colloquial French that was incomprehensible even to those foreigners considered fluent in the language. At midnight the end of the first part was announced and following strong representations from fliers, who were furious at missing several hours perfect testing weather, to say nothing of an early night to get in "trim" for the contest, A. F. Houlberg arranged the immediate return of the coaches to the 'drome.

Sunday morning dawned slightly cloudy but this quickly cleared to become even hotter, if possible, than before. Fortunately it was practically a flat calm with only slight, and



Bob Copland holds as Jack North inserts his winding tube. This device really "relieves the tension" when winding, particularly in conditions such as prevailed at Brienne.

There's more ways of wearing a competitors' number.... Canadian Don Mackenzie presents the most original approach as he weighs his model prior to getting his fifth max.

Lennart Tysklind looks happy. He had reason to when this 'photo was taken. He already had four max's "under his belt" and was due for another.

John Sheppard came all the way from New Zealand to team manage, and proxy fly Alan Clarke's model, which he is here preparing for its third flight.

Left: Russian champion Ivan Ivannikov holds for team mate Vladimir Zapachny as he winds for his first flight.

Right: Hungarian team manager, Reszo Beck, uses a much labelled box lid to shield Gyorgy Benedek's rubber from the sun. Laszlo Azor is holding.

Left: After scoring three max's, Hans Suter's model was damaged. Here he repairs the damage for his fourth flight.

Right: Portuguese flyer Milton da Fonseca e Sousa "weighs in."

continually varying, drift, so the selected flying site was quite suitable. I arrived shortly before the contest was scheduled to start and was amazed to find the flying site completely deserted. The flags were flying limply from the flagpoles but apparently in the rush to get these ready the stopwatches had been forgotten !

The competitors were setting up camp around the concrete launching site and erecting tents or rigging improvised shade shelters to protect the models from the sun, while on the site itself large sun umbrellas and two chairs were provided for timekeepers. Behind each umbrella a recovery motor-cycle was placed and there was also a radio car in contact with an observer on a nearby hill. In fact, all told the recovery arrangements were absolutely first class.

Even before the contest commenced a heated argument was in progress. It had been ruled that team managers could not actively assist their fliers in preparing their models—not even by holding them while being wound. After a strong protest to the jury this ruling was rescinded but it was not a very pleasant augury for the contest, the start of which was already well behind schedule.

Finally, at 10 a.m., half, or one and a half, hours late, depending upon which of the two programmes you followed, flying commenced. The contest was divided into five rounds of one and a half hours each, allowing half hour periods in which each team member had to put in one flight. This system has been used in the past and should work well provided there are no bottlenecks—at Brienne this was not the case.

Before flying, the models and motors were weighed, the motors then being handed to the timekeepers for safe custody. This weighing caused interminable delays, it being not uncommon for a competitor to spend 20 of his 30 minutes in the queue, in spite of being at the weighing table before the start of his period was announced. Fortunately, however, the timekeepers were very tolerant once the flier was on the launching site.

The French and Hungarians were the first two off, launching almost simultaneously, but it was the latter who scored the first max, the French model only doing just over the 100 sec. This was to be the pattern of the contest throughout—a terrific thermal and an easy max, an equally terrific down-draught and its consequent result, or a period of almost completely "flat" air in which a model showed its true trim.

Our boys did well in the first round with a max each and the prospects were rosy indeed, but by the end of the second round only Roberts had repeated this, both Monks and North having been victims of the uncertain conditions. North, thinking his machine might be slightly off trim, had a quick test flight and the model landed in a stagnant pond on the 'drome, but fortunately the lunch break gave time for both man and machine to dry out.

During this round the organisers tried to make up for lost time by "snipping" at the period times; this was quickly spotted and stopped. The conditions were still unchanged and although there was an element of luck in scoring a max it was more in avoiding a downdraught rather than in catching a thermal, as the slightest assistance from lift would make these highly developed models certain of an easy three minutes. It was during this round that I was able to form my first overall impression of the flying. It was to a terrifically high overall standard—I think the best I have seen at any World Championship. The styles of flying were infinitely varied from Bilgris' slow leisurely climb with a 12 strand Pirelli motor, to Ivannikov's power model type trim with the circular section Lactron, but the outcome was the same: the models got up there—safely.

An hour's break for lunch and the third round was under way. In view of Robert's leading position, the British team manager Bob Copland decided to let him fly first in this round. After the usual queue for weighing there were only a few minutes left of the period—plenty of time if everything went right. It didn't, the motor broke at about half turns, in its turn breaking both prop blades. There was only one thing to do, fly the reserve.

It was now a fight against time, but the formalities were completed and Roberts started to wind. Hardly had he turned the handle before the motor went, this time breaking one prop blade. Fortunately the fuselage was intact so a hasty repair to the prop with sticky tape and pins, a new motor, prepare to wind and bang. This one broke while being stretched—no winds at all !

All now seemed lost, but strong representations to the jury, particularly concerning the unnecessary delays at the weighing control, enabled Roberts to make his second flight later, although he did suffer yet one more breakage. All this does point the moral of winding without the prop and using a winding tube á la North and McGillivray, or using a circular shield in front of the prop as does Bilgri. It now seems that the prop is the most vulnerable part of the model in the event of the rubber breaking—as it was proved over and over again that most modern Wakefields emerge from this crisis with their fuselages intact.

With the third round well under way it was

The British team being presented to the Prefect of the County of Aube in the square before the Town Hall of Brienne.

still very much anyone's contest. I had said at the start and was still of the opinion that with the conditions as they were there would not be a fly-off. Just how wrong I was became apparent later. Rather than intersperse this write up with details of scores I have compiled a separate table showing round and multiple maximums, and a study of this and the results will show how fortunes were fluctuating during this and the fourth rounds. If anything, downdraughts were more prevalent than ever and I saw models descend from several hundred feet in less time than it took to down a tin of iced "coke"—a seemingly never ending supply of which could be bought from a bar the U.S. authorities had laid on.

By the time the last round was due to start the temperature had dropped slightly and a light cooling breeze was blowing directly towards the hangar. For the first time models were consistently drifting out of the 'drome and many flights were abruptly terminated as models flew out of sight behind the hanger. Not all of them went behind it though. Jan Smolder's executed a perfect final circuit *inside* to score exactly 180 sec. !

The scoreboard was now the centre of attention as the scores of the possible fly-off men were put up. There were nine possibles and one by one we ticked them off. This was going to be the biggest fly-off ever, but no, Joe Bilgri and Alan King were unfortunate leaving seven—the same as in 1955.

Causing less general interest, but of no less importance, the final team placings were being worked out. Our team had put in some consistent flying and risen from sixth to a very well earned third place. Ray Monks had the top score, with Lew Roberts who had recovered well from his earlier setbacks second and Jack North, whose model was unaffected by its "dunking," a mere seven seconds behind. They had flown really consistently, and together with hard working team manager Bob Copland, deserve praise for their efforts.

The fly-off competitors were now gathering for their final flights to decide who would hold the trophy and get the main limelight, for although Dvorak is generally considered the winner, according to the rules there are in fact seven winners ! A fly-off is held merely to decide who will hold the trophy.

The rules for a fly-off are simple. When all competitors are ready a starting signal is given, and they are then allowed five minutes in which to wind and launch their models. This procedure was strictly followed although somewhat hampered by the fact that the barriers which had kept the large and interested crowd at bay

Continued on page 225

1. **Niels Christensen of Denmark is airborne after his model during this launch.**

2. **Last year's winner, Bond Baker, was right out of luck. Here he inserts the motor in his model which featured all sheet wing and tail surfaces. Assisting him is Alan King, himself a previous winner and hotly favoured this year after scoring four perfect max's. A downdraught in the last round spoilt his chances.**

3. **Guido Fea is a regular Italian team member. Here he prepares for a flight assisted by team manager Licio Fanfani.**

4. **A not uncommon sight during processing—a Portuguese competitor adds ballast.**

5. **All the way by motor cycle from the Emerald Isle, Geoff Woodward holds for John Carroll as he winds for a first round max.**

6. **A first time entry in the Wakefield came from Morocco. Model of flyer Georges Navarro was to modern design standards but gave a disappointing performance.**

7. **Bob Copland and Lew Roberts at the weighing table.**

8. **Spanish flyer Carlos Merseburger Baldy's machine was one of most original. Note mid wing and high set tailplane.**

The Fly-off

1. Among the first off was Jack McGillivray, whose model reached a good height and was in perfect trim.
2. Herb Kothe holds for Bob Hatschek. Bob winds from the back—note shoulder harness to ease the strain.
3. The winner "feeds in" the motor. This shot gives a good idea of the layout of the model. Fuselage is sheeted back to motor peg.
4. Stanislaw Zurad prepares the machine which won him second place last year and fourth this—quite a record.
5. With two men in the fly-off Canada had to enlist outside help; in Don Mackenzie's case Bob Copland.
6. McGillivray watches anxiously for the starting signal, with the winding tube already in place and winder hooked up. Helping him is their third team man, Dave Sugden, ex Loughborough College flier.
7. Unluckiest man was Tysklind—his prop didn't fold, bringing him down for 121 sec.
8. Zapachny (right) is watching the starter. His second model is held by Matveev. We were surprised at how few competitors during the contest took their reserve models to the take off site with them.

were dismantled at the close of the last round and they now surged round the fliers.

A Very light signalled the start and almost at once four models were airborne, closely followed by two others, and finally after a pause that seemed interminable, by that of Dvorak, who had wound with a slow deliberation that seemed harder on the nerves of the onlookers than it was on his.

All the models reached a good height but the prop on that of Tysklind's did not fold and it quickly descended behind the hangar. The rest were mere dots weaving together just above a rapidly darkening skyline and to separate and follow them called for severe concentration on the part of the timekeepers. However, one by one they had to give up and the final times were announced.

In view of the unscheduled nature of the bus service we now had the problem of reaching the town of Brienne for a clean up before the prize-giving dinner. Fortunately, a lift was arranged by five of us "townies" but in view of the lateness of the contest we only had 10 minutes in which to change before being whisked back to the 'drome. However, it was worth it. The banquet was excellent, the speeches were longer than we had hoped for, but shorter than we had expected, while the wines and spirits which flowed freely soon removed all memory of harsh words that might have been said earlier.

Loudest cheers of the evening were for Marc Cheurlot, who as well as being the French team manager, also, as a resident of Brienne, made all the local arrangements. He had worked really hard for months before the event and well deserved the ovation he received.

With the dinner over, everyone (except the members of the Press who had to thumb a lift back to town) repaired to the hangar where a dance, which was enjoyed as much by the local inhabitants as the visitors, was in progress and the bar did a roaring trade as the stories got taller and taller until well into the wee sma' hours.

At 9 a.m. the following day the air, and quite a few heads, were shattered by the roar of jets as the famed American aerobatic team—the Sky Blazers—put on a splendid display of high speed aerobatics. Afterwards the planes landed—there was an anxious moment when the braking parachute of one did not open properly—and the pilots were introduced to those contestants who were not busy packing.

By 10.30 the buses were loaded and en route for Troyes for a final reception. Mercifully, the full itinerary, which had included a visit to clothing factories, was cut, and by early afternoon we were heading for Paris.

Thus another Wakefield contest was over and although there was much to criticise, there was much to praise. We in Great Britain appreciate, probably more than many, just how much is involved in organising an event of this stature and that there will always be some point which is open to criticism. The criterion is whether the competitors enjoyed themselves and I am sure that as far as the British are concerned the answer is yes.

BRIEF NOTES

Joe Bilgri was using a clockwork d/t timer mounted in the pylon. As far as I could see this was the only departure from the otherwise universal fuse.

• • •

In the frantic last minute rush to catch the bus Bob Hatschek left a spare model behind. Still he did take back something he didn't expect, a Russian machine which he had exchanged for one of his.

• • •

I did not hear of any models being completely lost but both Jack North and Bob Hatschek had some tree climbing to do on Monday morning.

• • •

Many and varied were the methods used to keep motors cool. Tins, thermos flasks, polythene bags inserted in another containing water or ice and so on, but when it came to the final test—winding—all were subjected to the terrific heat and blazing sun, although some did endeavour to obtain shade by winding under the umbrellas or shielding the rubber with a box lid.

• • •

The American team's total score of only 44 sec. less than a possible maximum is some achievement. This score has in fact been bettered in the past but then teams consisted of four members, with only the best three counting for the team award. Now one poor flight can wreck an entire team's chances.

• • •

There were 65 entries from 23 nations. Only one entry did not turn up, that from Pakistan—a newcomer to World Championships as was also Morocco. With this one exception every competitor flew and only three did not complete their five flights. These missed one flight each.

• • •

When it was noticed that there were ladies among the timekeepers some doubts were expressed—they were not realised. All the timekeepers were keen, tolerant, understanding, and could see well—anything else required?

• • •

The lack of shade shelter for competitors and models was much commented on. The British team were lucky in being able to borrow a tent from some lads from the Stockton Club who were "just visiting," but those help was much appreciated. It would be as well if, in future, the S.M.A.E. were to include some form of small tent in the standard equipment of teams.

RESULTS

INDIVIDUAL RESULTS FOR THE WAKEFIELD CUP

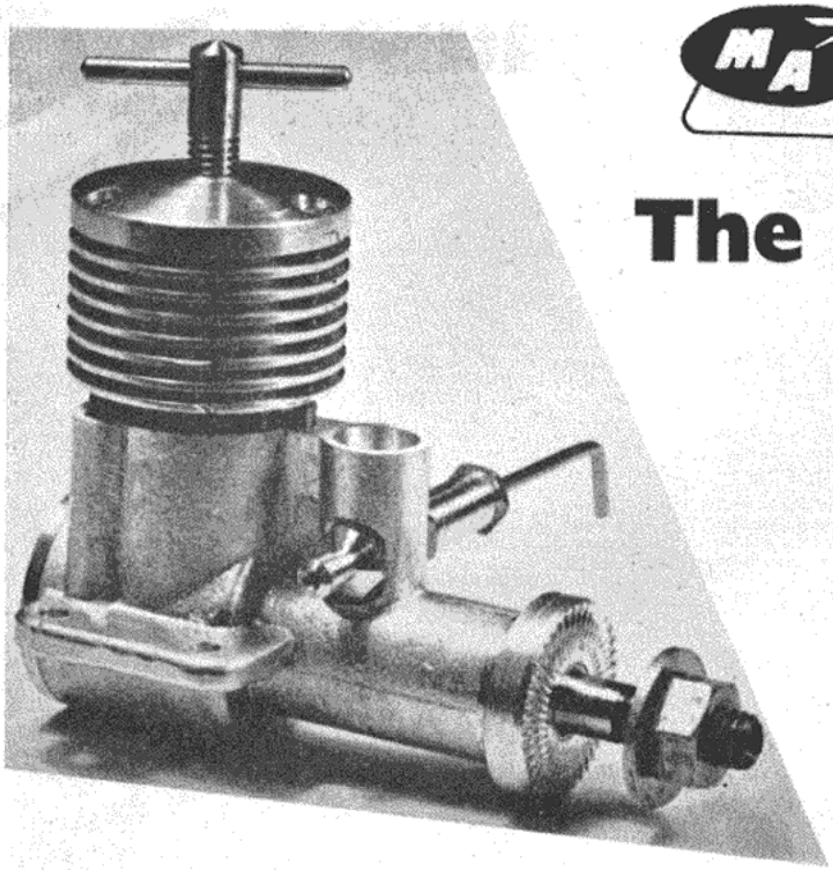
1.	Dvorak, F.	Czechoslovakia	180	180	180	180	180	900 + 285
2.	Hatschek, R.	U.S.A.	180	180	180	180	180	900 + 256
3.	McGillivray, J.	Canada	180	180	180	180	180	900 + 245
4.	Zurad, S.	Poland	180	180	180	180	180	900 + 230
5.	Zapachny, V.	Russia	180	180	180	180	180	900 + 198
6.	Mackenzie, D.	Canada	180	180	180	180	180	900 + 184
7.	Tysklind, L.	Sweden	180	180	180	180	180	900 + 121
8.	Bilgri, J.	U.S.A.	180	180	180	180	163	883
9.	Cardoro Sueno, A.	Portugal	155	180	180	180	180	875
10.	Kothe, H.	U.S.A.	163	170	180	180	180	873
11.	Petiot, J.	France	145	180	180	180	180	865
12.	Hyvarinen, R.	Finland	180	180	180	147	160	847
13.	Fea, G.	Italy	180	180	123	180	180	843
14.	Meyer, J.	Switzerland	180	180	112	180	180	832
15.	Shilling, H.	Germany	137	160	180	180	174	831
16.	Monks, R.	Great Britain	180	139	142	180	180	821
17.	King, A.	Australia	180	180	180	180	97	817
18.	Hamalainen, E.	Finland	164	180	180	110	180	814
19.	Van Mellaert, J.	Belgium	143	180	130	180	180	813
20.	Krizsma, G.	Hungary	180	180	180	130	138	808
21.	Pla Ysas, M.	Spain	180	180	173	143	128	797
22.	Roberts, G.	Great Britain	180	180	108	129	180	797
23.	North, R.	Great Britain	180	147	180	127	156	790
24.	Kossowski, A.	Poland	180	180	180	88	159	787
25.	Fullarton, J. (P) Petiot, A.	Australia	180	180	83	180	158	781
26.	Rupp, G.	Germany	91	180	180	148	180	779
27.	Suter, H.	Switzerland	180	180	180	78	159	777
28.	Benedek, G.	Hungary	136	180	180	97	180	773
29.	Cooke, W. (P) Guilloteau, R.	New Zealand	81	151	180	180	180	772
30.	Sugden, D.	Canada	180	77	180	180	154	771
31.	Taberna, S.	Italy	180	109	180	180	118	767
32.	Johansson, R.	Sweden	56	180	178	180	170	764
33.	Smolders, J.	Holland	180	138	76	180	180	754
34.	Scardicchio, V.	Italy	180	76	180	180	132	748
35.	Nimptsch, W.	Germany	150	180	105	180	132	747
36.	Aalto, P.	Finland	108	180	120	180	157	745
37.	Ivannikov, I.	Russia	123	180	180	126	121	730
38.	Da Fonseca E. Sousa, M.	Portugal	96	118	180	180	140	714
39.	Muzny, L.	Czechoslovakia	107	180	138	105	180	710
40.	Carroll, J.	Ireland	180	112	111	180	127	710
41.	Mikkelsen, H.	Denmark	180	180	64	180	95	699
42.	Kennedy, D. (P) Fontaine, J.	New Zealand	180	180	67	119	150	696
43.	Terrazzoni, D.	France	109	110	140	180	151	690
44.	Monturo Cavaco, M.	Portugal	78	180	106	178	144	686
45.	Charbert, J.	France	105	123	106	169	180	683
46.	Azor, L.	Hungary	113	180	167	111	105	676
47.	Lust, P.	Holland	180	93	103	180	103	659
48.	Van Mellaert, L.	Belgium	142	180	120	107	108	657
49.	Matveev, V.	Russia	103	72	131	165	180	651
50.	Kaufmann, B.	Switzerland	69	180	60	154	180	643
51.	Baker, B.	Australia	99	152	90	139	159	639
52.	Qvarnstrom, A.	Sweden	180	71	78	152	156	637
53.	Balasse, E.	Belgium	138	80	134	132	142	626
54.	Cizek, R.	Czechoslovakia	118	147	110	96	139	610
55.	Reuser, B.	Holland	—	180	180	137	101	598
56.	Merseburger Baldy, C.	Spain	137	144	89	75	102	547
57.	Christensen, N.	Denmark	121	118	133	69	85	526
58.	Clarke, A. (P) Sheppard, J.	New Zealand	65	56	180	109	113	523
59.	Kosihski, J.	Poland	112	97	180	—	129	518
60.	Nienstaedt, E.	Denmark	107	86	27	61	119	400
61.	Navarro, G.	Morocco	12	39	48	44	—	143

TEAM RESULTS FOR THE ALPHONSE PENAUD CUP

1.	U.S.A.	2,656	12. France	2,238
2.	Canada	2,571	13. Australia	2,237
3.	Great Britain	2,408	14. Czechoslovakia	2,220
4.	Finland	2,406	15. Poland	2,205
5.	Italy	2,358	16. Belgium	2,096
6.	Germany	2,357	17. Holland	2,011
7.	Sweden	2,301	18. New Zealand	1,991
8.	Russia	2,281	19. Denmark	1,625
9.	Portugal	2,275	20. Spain	1,351
10.	Hungary	2,257	21. Ireland	710
11.	Switzerland	2,252	22. Morocco	143

MAXIMUMS SCORED

1 ST. ROUND	2 ND. ROUND		3 RD. ROUND		4 TH. ROUND		5 TH. ROUND	
	Single	Multiple	Single	Multiple	Single	Multiple	Single	Multiple
29	36	20	30	13	31	9	24	7



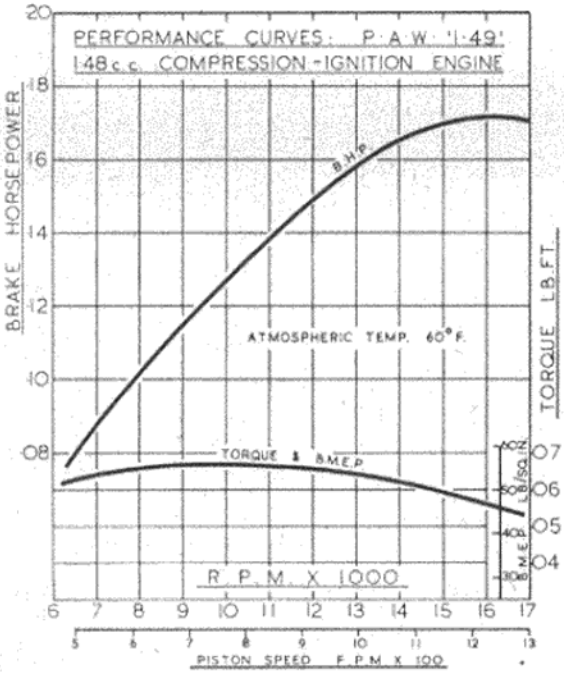
ENGINE TESTS

The P.A.W. 1·49

". . . deserves recognition as one of the best 1½ c.c. engines to appear from any manufacturer . . ."

IF our test engine is representative of average production examples of the new P.A.W. 1.49, it would be true to say that this British 1½ c.c. is at the top of its class, at the present time, in both performance and general handling characteristics.

The 1.49 is, in effect, a scaled-down version of the P.A.W. Special 2.49-D model. This latter engine, when tested two years ago in this series, received a very favourable report. The 1.49 retains most of the features of its larger brother, including its special induction and cylinder porting and its distinctive crankcase design. More competitively priced than the 2.49-D (£4 6s., or £2 cheaper), the 1.49 dispenses with the 2.49-D's single ball-race, but retains a full - length cast - iron bushed main bearing. The cupped prop driver is replaced by a conventional disc type and the needle-valve is unraked.



One of the most interesting components of the 1.49 is its crankshaft. This is of exceptionally large diameter for a 1.5 (11/32-in.) and has an overlapped, 13/64-in. dia. crankpin (the same size as the 2.49-D), making for great strength and rigidity, despite generous intake porting and a 7/32-in. dia. gas passage. The valve port is a long, narrow slot, approximately 5/32-in. wide and ½-in. long. As in the 2.49-D, the narrowness of the crankshaft port is compensated by the width of the induction slot through the main bearing, to give the required intake timing. The actual induction period occupies approximately 145 deg. of crank angle (60 deg. ABDC to 25 deg. ATDC), but this relatively moderate timing is practicable because of the extremely rapid opening and closing of the long rectangular valve. The accumulator chamber formed, between the carburettor venturi and the shaft, by the induction slot in the thick walled bearing bush, probably also has beneficial results.

The cylinder design and construction closely resembles that of the 2.49-D. The liner has an outside diameter of 0.685-in. giving a generous wall thickness of 0.112-in. (heavier than the 2.49-D), to resist overheating and distortion. The cylinder porting is very cleverly cut to provide the smoothest flow with the maximum possible effective port area. Wide, smoothly contoured, internal transfer flutes convey mixture to the combustion chamber and, incidentally, give a timing which extends much farther into the exhaust period than is normal. Exhaust timing is conventional for a high performance engine, the ports remaining uncovered for approximately 140 deg. and also giving a supplementary air induction period of about 60 deg. at the top of the stroke.

The crankcase follows the sensible and practical design originated with the 2.49-D. It has a strongly pro-

portioned bearing housing with upright intake webbed to the lower cylinder housing to form a stiff integral unit, with long beam-mounting lugs to reduce unsupported length. The needle-valve assembly is the same as that fitted to the larger engine.

In brief, one's impressions, on examining this engine, are of a soundly engineered unit, possessing certain out-of-the-rut features suggestive of better-than-average performance. As our subsequent notes disclose, the engine is not disappointing in this latter respect.

Specification

Type: Single-cylinder, air-cooled, reverse-flow scavenged two-stroke cycle, compression ignition. Shaft type rotary-valve induction with sub-piston supplementary air induction. Conical crown piston with matching contra-piston.

Bore: 0.500 in. Stroke: 0.460 in.

Swept Volume: 0.0903 cu. in. = 1.480 c.c.

Stroke/Bore Ratio: 0.92 : 1.

Weight: 3.5 oz.

General Structural Data

Gravity diecast aluminium alloy crankcase and main bearing housing with integral carburettor air intake. Screw-in rear cover. High tensile steel counterbalanced crankshaft, hardened and ground, with 11/32-in. dia. main journal and 13/64-in. dia. crankpin and running in $\frac{7}{16}$-in. o.d. Brico cast-iron bush. Cylinder liner of alloy steel, hardened, located by narrow annular seating in crankcase and axially clamped by cylinder-barrel holding down screws. Piston of Brico cast-iron with solid $\frac{1}{8}$-in. dia. full-floating gudgeon-pin of silver steel. Machined L.64 alloy connecting-rod. Brico cast-iron contra-piston. Machined aluminium alloy finned cylinder barrel, sliding fit over liner and held down by three machined screws into main casting. Machined alloy propeller driver, taper fitted to shaft. Brass spraybar type needle-valve assembly, reversible for left or right hand control. Beam mounting lugs.

Test Engine Data

Running time prior to test: 3 hours.

Fuel used: KK. Record Powerplus Diesel.

Performance

As delivered from the manufacturers, our 1.49 had already received an hour's preliminary running and our impressions of the starting and running characteristics of the engine were very favourable indeed, right from the first start.

Received just before the engine had its "general release" no instruction leaflet was included, but, with a few experimental flicks on an 8 × 4 prop to get the feel of the required compression setting, two or three casual choked turns were the only preliminaries to an almost immediate start. Port priming was not required at any time and starting was easy and rapid at all times and on a wide variety of props.

As one would expect, a little more caution was required when starting on small props (6-in. dia.) to avoid chopped fingers, although, in this respect, the P.A.W. is one of the least offending of 1.5 diesels and, of course, a prop diameter of less than 7-in. will seldom be called for in actual practice.

The P.A.W. is not over-fussy as regards the fuel used and a number of different blends were tried with satisfactory results. The brand used for the performance tests was, however, chosen in view of the very high speeds attainable with the 1.49, at which the benefits of a fairly heavy mixture are more readily apparent in miss-free running and the avoidance of excessively high compression settings.

On test, the 1.49 delivered its maximum torque at just on 10,000 r.p.m. but the torque curve was, in fact, quite remarkable for its extreme flatness over a wide range of operating speeds and an almost constant torque was maintained between 9,000 and 12,000 r.p.m. As a result of this, the 1.49 proved capable of turning a smoothed and balanced Trucut 8 × 3 prop at 11,700 r.p.m. Beyond these speeds, torque declined quite slowly, so that the calculated b.m.e.p. did not drop below 50 lb. × sq. in. until a speed of 15,000 r.p.m. was reached —a most creditable performance for an engine of this size.

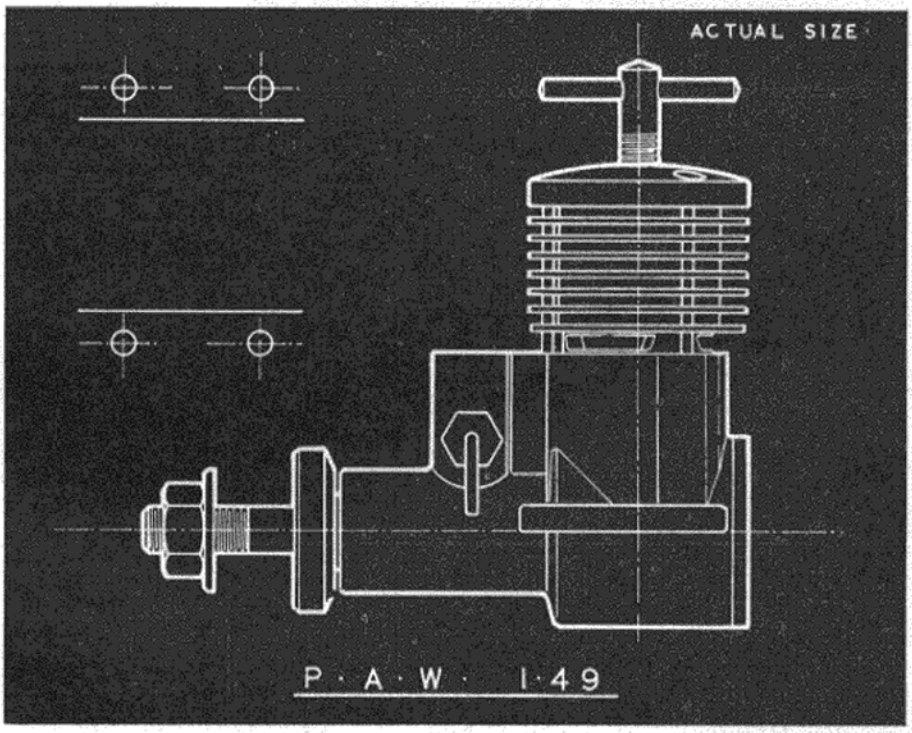
The related power curve then showed a maximum output of 0.172 b.h.p. at 16,200 r.p.m. a figure which, in fact, is the best so far recorded for a 1.5 c.c. engine in this series. In a model, this peak should be closely approached in the air on a suitably finished 7 × 3 prop.

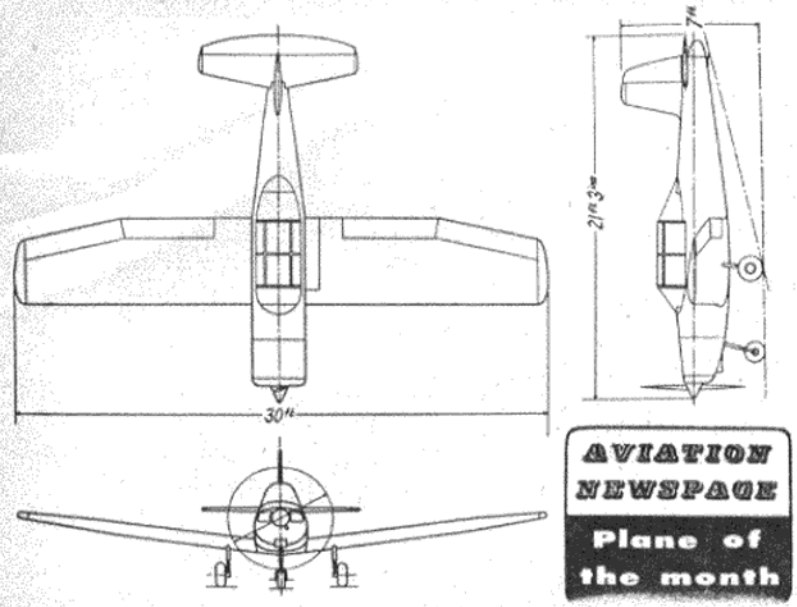
Running qualities were very smooth and consistent throughout the tests. The controls were found to be excellent; no tendency for the contra-piston to stick, or run back, and with just the right sensitivity on both compression and needle adjustment.

If all P.A.W. 1.49s are as good as our test sample, this new model deserves recognition as one of the best $1\frac{1}{2}$ c.c. engines yet to appear from any manufacturer, British or foreign.

Power/Weight Ratio (as tested): 0.79 b.h.p./lb.

Specific Output (as tested): 116 b.h.p./litre.





The MORRISEY 2150

THERE can be few more difficult tasks in aviation than to break into the U.S. market for light business aircraft. Beech, Cessna and Piper between them can offer such a formidable range of single- and twin-engined aircraft, at the right sort of prices, that a new product has to be outstanding to survive.

A few aircraft, such as the *Aero Commander*, have done so. Now a new name is added to the list in the shape of the little *Morrisey* 2150, an all-metal tandem two-seater with handsome lines and a performance to match.

The company that builds it, Morrisey Aviation Inc. of Orange County Airport, Santa Ana, California, was founded by William J. Morrisey, chief test pilot of Douglas Aircraft in Long Beach until his retirement in 1954. It was quite a step from the 78-ton four-engined C-124 *Globemaster*, which Mr. Morrisey flight tested, to the Model 2150; but his earlier experience accounts in large measure for the 2150's success, because he built into it many refinements which are found usually only in large executive and military aircraft.

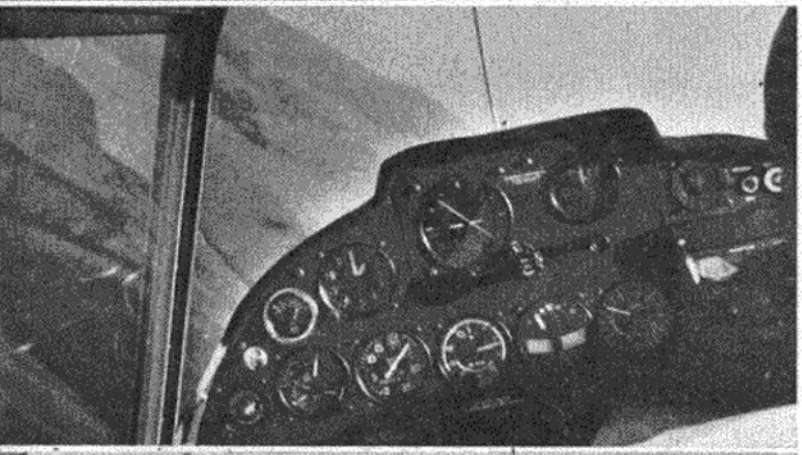
It is an advanced concept in every way with a wide speed range, unexcelled field of vision and an airframe that is delightfully simple to maintain. Construction is orthodox, with two-spar wing, steel-tube forward fuselage and monocoque rear fuselage. The fixed tricycle undercarriage is ideal for training and business flying, and the 150 h.p. Lycoming 0-320-A2A engine makes the 2150, in the words of one customer: "the first civilian plane ever to hit the market that was not underpowered in its original configuration."

This particular operator, Chuck Amos, owner of Aero Sales and Service Inc. of Fresno, California, should know what he is talking about because he has three of the initial production batch of six 2150s. He added that he thinks nothing of turning a 20-hr. student loose in a cross-wind above 20 knots, when conventional trainers are all tied down, and pointed out that the comprehensive equipment of the *Morrisey* enables pupils to learn the use of flaps and radio, and to cope with short-field landings on rough airstrips in the first eight or nine hours before they go solo. Night flying is also possible, as the 2150 is designed to carry full all-weather instrumentation.

One of Aero Sales and Service's aircraft logged 1,000 hrs. in its first ten months. Another owner, Capt. William Cheney of American Airlines, had no hesitation in planning a tour through Europe and South Africa in his 2150. Nor is it purely a tourer-trainer, for Pacific Automation Products have on occasion removed the rear seat and dual controls from their "executive transport" 2150 and used it to haul 300 lb. of urgently-needed test cables to South Californian missile test sites.

Data: Span 30 ft. Length 21 ft. 3 in. Height 7 ft. Weights, empty 1,125 lb., loaded 1,817 lb. Max. speed 148 m.p.h. Cruising speed 135 m.p.h. Landing speed 52 m.p.h. Rate of climb 1,450 ft./min. Ceiling 22,000 ft. Range on 35 U.S. gallons 525 miles.

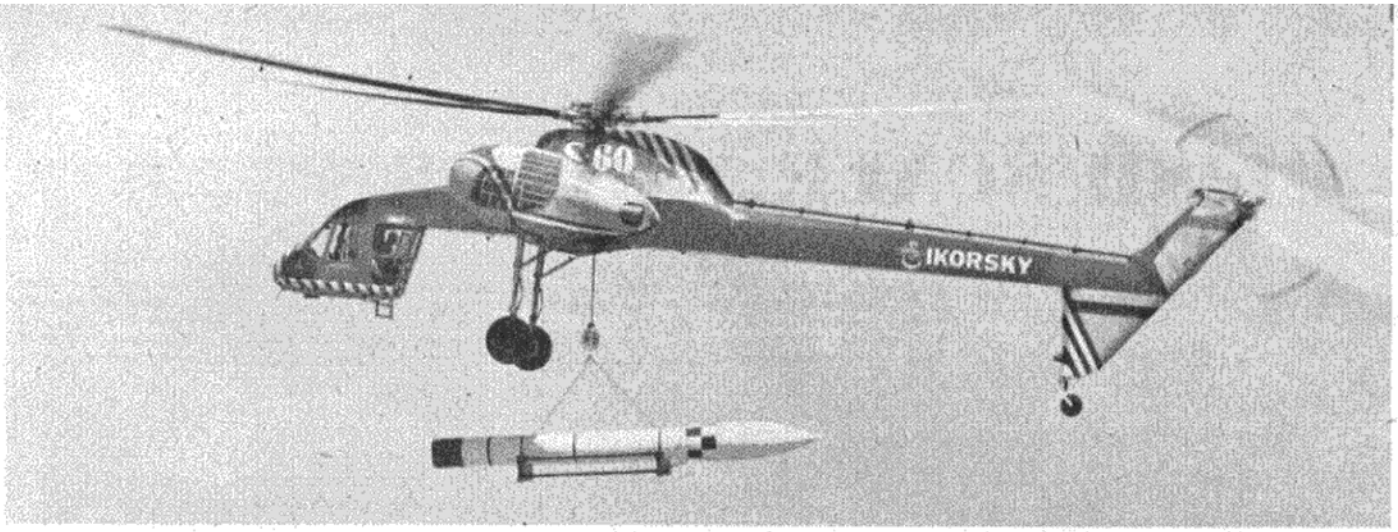
Colour scheme: Fuselage, white top, pale blue sides and underside, black flash; wings, pale blue top surfaces, white undersurfaces, white tips; tail surfaces, mainly fluorescent orange, with white leading edges and roots.



Two early production models of the Morrisey 2150 are shown in formation in the top photograph. Simple lines make this a very modellable prototype.

Centre photograph shows what the instrument panel looks like from the back seat during a left turn.

A superficial resemblance to the Chipmunk is evident in the lower photograph. A good idea of the aircraft's size may be had from the figure standing by the propeller.



AVIATION NEWSPAGE

by J. W. R. Taylor

CHOPPER JOHN is the name given by the U.S. Army to the helicopter operation being demonstrated above by Sikorsky's giant new S-60. The idea is to give new flexibility to the 5,820 lb. Honest John unguided nuclear artillery rocket by hauling missile, launcher, firing crew and a jeep-full of ground equipment speedily from place to place under flying crane 'copters.

Such loads are chicken-feed to the S-60 which can haul up to six tons for 100 miles in its initial form, using the 2,100 h.p. Pratt & Whitney R-2800 power plants, 72 ft. rotor and transmission of the well-known S-56 transport helicopter. Later installation of turbines will increase the payload by another 2½ tons.

* * *

WANT A 220 M.P.H. BABY RACER ? If so, and if you have a goodly stockpile of dollars, you could do worse than contact Howard Terrill of Torrance, California, who has advertised for a buyer for his Special, the *Poopsi-Doll*. Illustrated above, this little home-built spans only 16 ft. 10 in. and is 19 ft. long. Cruising speed with the original 100 h.p. Lycoming was reported to be 180 m.p.h.; but it has had a 125 h.p. Lycoming for the last 130 of its 230 flying hours.

Reason for the sale, apparently, is that Terrill, a pilot with Western Air Lines, is building a new version with more power and a larger wing area. Its performance should be something to see !

* * *

R/C MODELLERS in the States are warned to watch their frequencies or they might find a six-jet bomber landing in their backyard at any moment. Lockheed have converted two B-47 *Stratojets* into pilotless drones, under the designation QB-47, and both should be in service with the U.S.A.F.'s Air Research and Development Command this summer.

* * *

TAKE ONE GOOD FIGHTER, scale it up, put in two engines instead of one and an extra crew-member, and the result should be a good bomber. That seems to be the design philosophy behind Dassault's new *Mirage IV*, illustrated below, which is based on the same company's highly successful Mach 2 *Mirage III* interceptor.

In its prototype form the *Mirage IV* has two 13,225 lb. s.t. afterburning Atar 9 turbojets and weighs around 55,000 lb. The production version will be considerably larger, with two unspecified licence-built 33,000 lb. turbojets and a take-off weight of 106,000 lb. Semi-automatic in operation, it will be able to cruise 800 miles to its target at Mach 1.7-2.0, carrying the newly-developed French atomic bomb, and will then return to its base at around Mach 0.9.

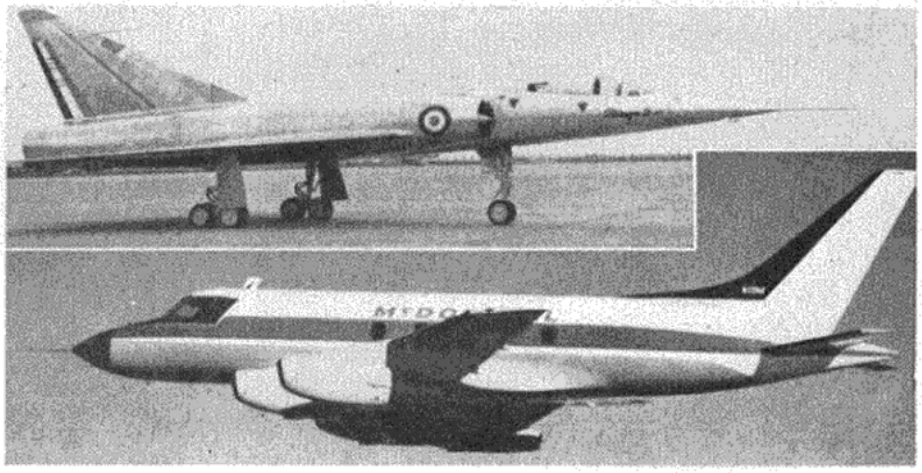
* * *

UNIMPRESSED by the current craze for mounting turbojets on the side of the rear fuselage, McDonnell have adopted a traditional American underwing pod layout for their Model 119 utility trainer-transport, which is competing with Lockheed's *JetStar* for the U.S.A.F.'s UCX contract.

Looking like a baby 707, the prototype is powered by four derated Westinghouse J34 turbojets, but production models will have four of the new and highly-efficient Pratt & Whitney J60s, each giving about 3,000 lb. s.t. At a normal take-off weight of 40,928 lb., carrying 10 passengers, they will give a range of 2,033 miles at a cruising speed of 522 m.p.h. (Mach 0.79).

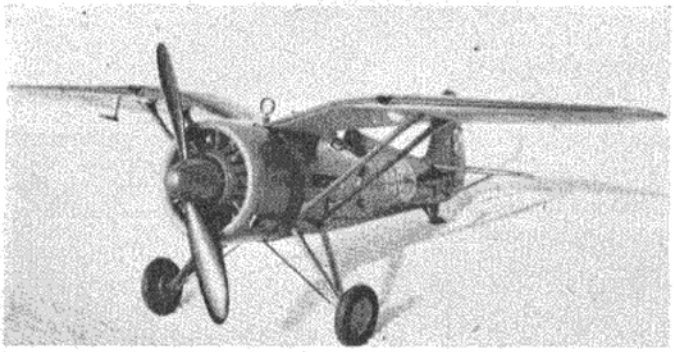
The wings of the 119 are swept at 35 deg. and have an area of 550 sq. ft. Span is 57 ft. 7 in., length 66 ft. 6 in. and height 23 ft. 8 in.

Above : Howard Terrill's "Poopsi-Doll," below is the "Mirage IV" and below that the McDonnell trainer transporter.



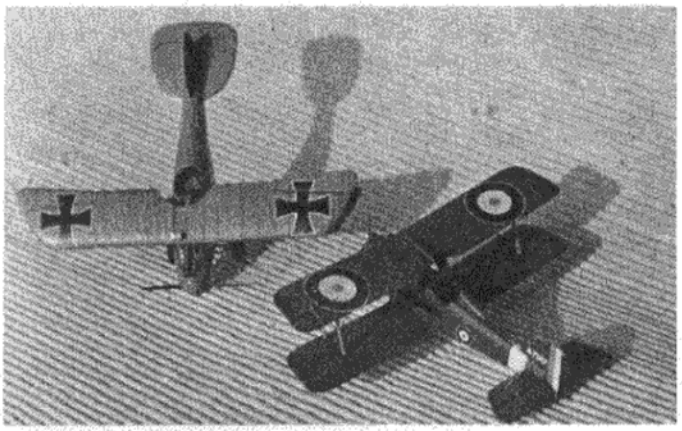
POLISH SCALE MODELS

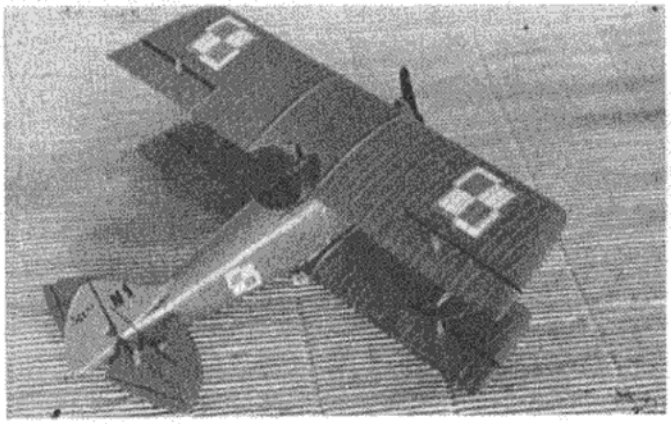
SCALE modelling, both flying and solid, has a large following in Poland and a recent National contest produced some wonderful examples of craftsmanship. Over 60 models were entered and the following selection of photographs, taken by Weislaw Schier, gives some idea of the diverse types and outstanding quality of the exhibits which were divided into five categories—Flying scale, Historical, W.W.2, Civil and Jets, plus overall winners.



◀ *Outright and W.W.2 class winner was this superb model of the PZL-P11c fighter. Built by Benedykt Dobrowski—an airline pilot—it is an exact replica of the machine he flew in the defence of Poland during the last war. The construction exactly duplicates the original—metal spars, etc., and metal covering—all controls work from the cockpit and the radial engine is fully detailed, all of which accounts for the 3,600 hours' work that went into this model.*

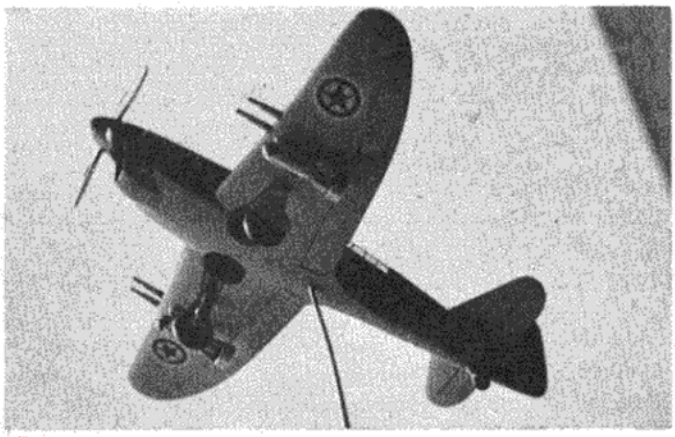
These two famous W.W.1 opponents—the Albatross D-3 and S.E.5a—were exhibited by Henryk Heineiren and won him first place in the Historical section. They are to 1/75th scale and very highly detailed. ▶



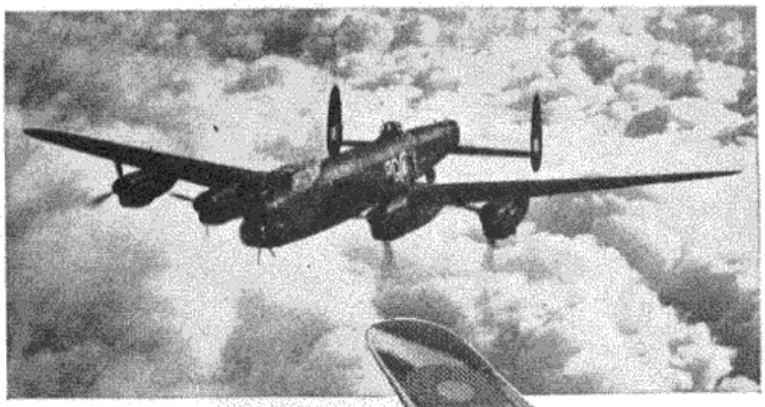


◀ *This solid model of the Spad S-61 was built by Wtcedyrtiew Cichy, who is well known in Poland for his detailed models. Moving elevators, rudder and ailerons, together with full cockpit detail, are a feature of this machine.*

Third place in the W.W.2 section went to Weislaw Schier for his Fairey Firefly which had, to quote his own words, "... a highly glittering finish." ▶



◀ *Also entered by Mr. Schier was this C/L replica of the Polish designed Bartel BM-6a, a between-wars fighter. Very detailed and authentic in all respects it obtained third place in the overall category.*



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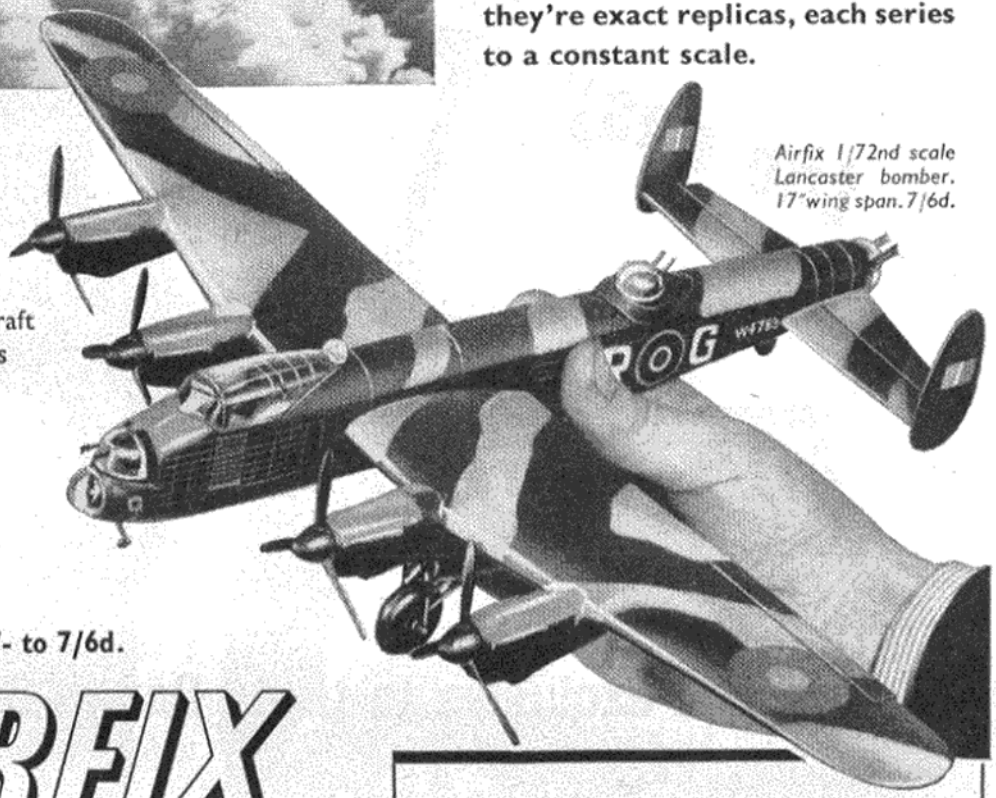

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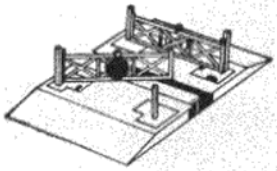

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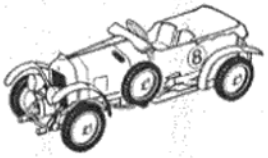

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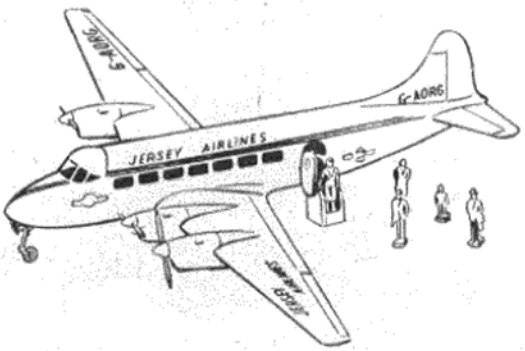

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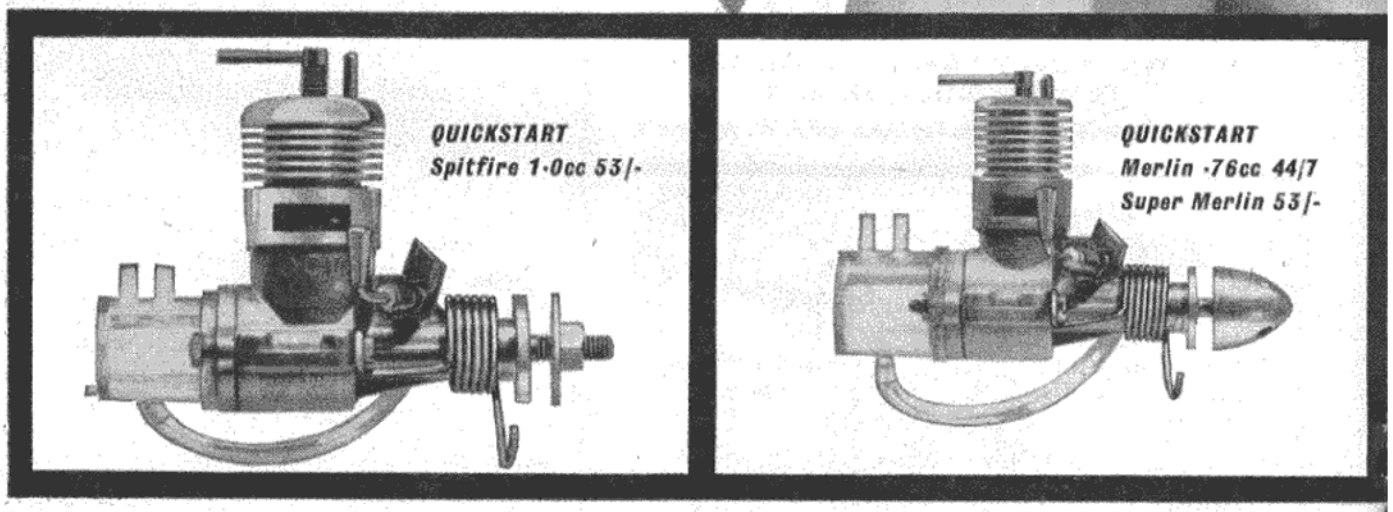

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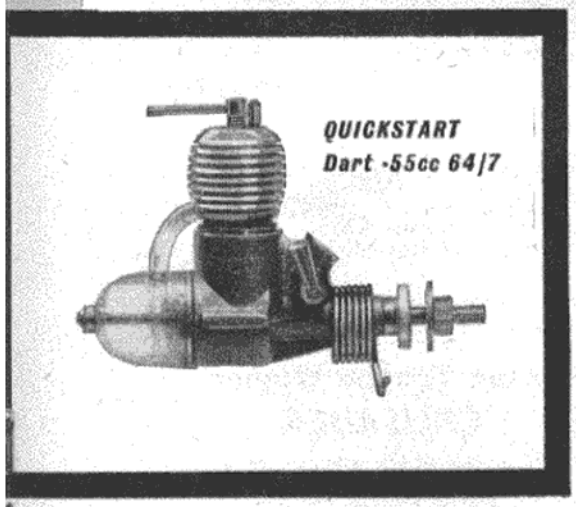

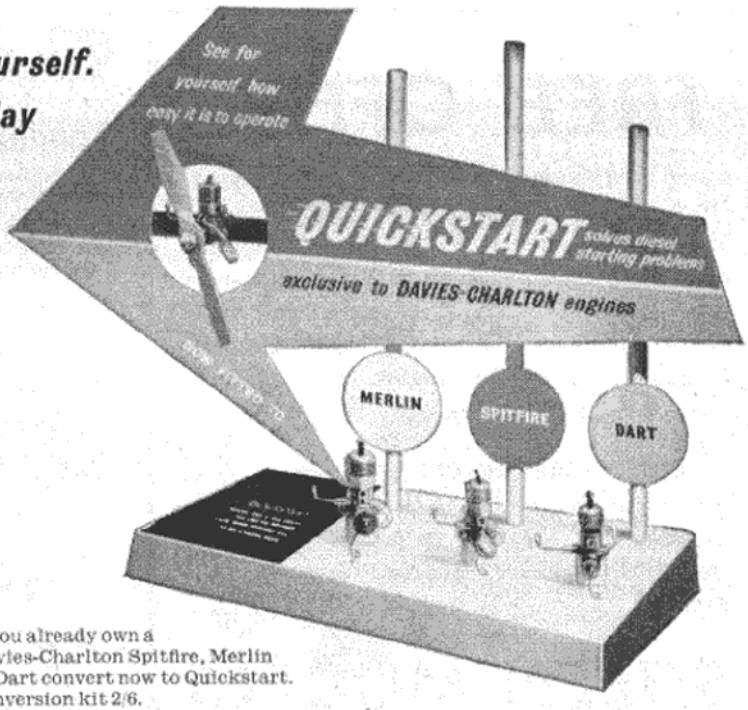

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HILLS MEADOW DOUGLAS ISLE OF MAN

Topical Twists

by PYLONIUS

Simply Fuming

A reader recalls that romantic period of modelling when his nostrils were assailed by the sweet fragrance of the diesel and petrol fumes of ten years ago. These were the stirring pioneer days of the early diesel; most of the stirring going into the filthy brews, 10 per cent. fish paste and 90 per cent. castor oil. On any busy Sunday the atmosphere became so thick you had to cut your way on to the flying field. We now await some fluent pen to recapture the stomach twitching nostalgia of the period under the evocative title of "Retch for the Sky."

But was the period so romantic? Possibly only in the sense that it was in the days before they cut the long grass at Fairlop. If I were to plumb for a more romantic period it would be in those far off days before the terms O.S. and o.o.s., were thought of. When in full pioneer regalia of breeches and deerstalker, you consorted with the other gentlemanly hobbyists on respectable Wimbledon Common. But, if the modellers in those times were squares, the models were even squarer. No lightweight rock 'n' roll stuff here, all good solid handiwork, capable of giving Wimbledon Common as good as it gave. Model quality was assessed by weight poundage rather than seconds duration, and a good, sportsmanlike nose dive into the common was considered better form than an ostentatious 20-yard flight. In any case retrieving was only possible over short distances, and then at a sedate pace, as the tight breeches restricted c.g. movement. Now and again, however, the odd, paper bag model flew off the common, but this sort of exhibitionism was frowned on by the true hobbyist.

The model code was also strict in other respects. You couldn't just wander about the common with nothing more than a club badge and a knowledgeable air—you had to have something to sling around, even if it was only a donkey engine nailed on to a box kite, which it often was. One model per person was the order of the day. A fact that can be verified by a look at an old photograph, where everyone is armed with a model, with the exception of the park keeper and the local squire.

A modern flying field photograph would tell a quite different story, an example being the famous snap taken by Mrs. Bloggs on Chobham Common. Space doesn't allow us to publish the picture, but some idea might be got from the caption:

From right to left: (It should have been left to right but the good lady was holding the camera upside down) J. Bloggs (holding half a wing and engine mount), small dog (holding other half of wing), B. Prang (face visible between two wings —or are they his ears?), an enthusiastic wreckage burner. Six assorted club members. Mr. X (half head) who was hit by Joe's model, and the tall chap with curly hair on the extreme right is the Chobham Clump.

Grand At-Traction

"The model world is in a state of flux, but we must solder on regardless." These stirring words, spoken by J. Bloggs Esq., at the All Plastic Rally of Great Britain, were not, alas, taken to heart by the powers that be in the world of power. With the vociferous engine unit holding the centre of the world stage, and the obsolescent model plane banished, quite appropriately, to the obscurity of the wings, it seems a pity that no World Championship is being held in its honour.

The oversight on the part of the engine lovers is understandable but quite inexcusable. They have been so engrossed in the whole fascinating business of producing, purveying, comparing and generally drooling over their noisy little darlings, that a minor detail like a flying event seemed quite remote and trivial. Then again, the prestige of the engine has so greatly increased that it seems almost an insult to put it to the demeaning task of towing a silly toy aeroplane about. Even so, they could have staged some sort of international show for their ingenious ironmongery. By dropping the model plane masquerade completely, the engine lover could really come into his own. A Model Engine Rally would be a winner from the start. Run on lines similar to the popular Traction Engine meetings, all sorts of intriguing contests and sideshows could be staged. Starting events, torque trials, dismantling races are but a few of the possible attractions for the expert, whilst, for the spectator, there would be a "Knock the Neighbours out of Bed" sideshow. "Try your hand at starting up this 10 c.c. racing engine, and see the neighbours jump out of bed." And, we must not overlook the most popular event of all, the acoustic range test, the prize going to the owner of the engine receiving the first public complaint.

However, the choice of venue for such an event might create something of a problem. Outer Mongolia has its possibilities, but the Sahara oasis of El Deezil is the one most likely to meet the approval of the International Anti-Noise League.

A Ballet Shame

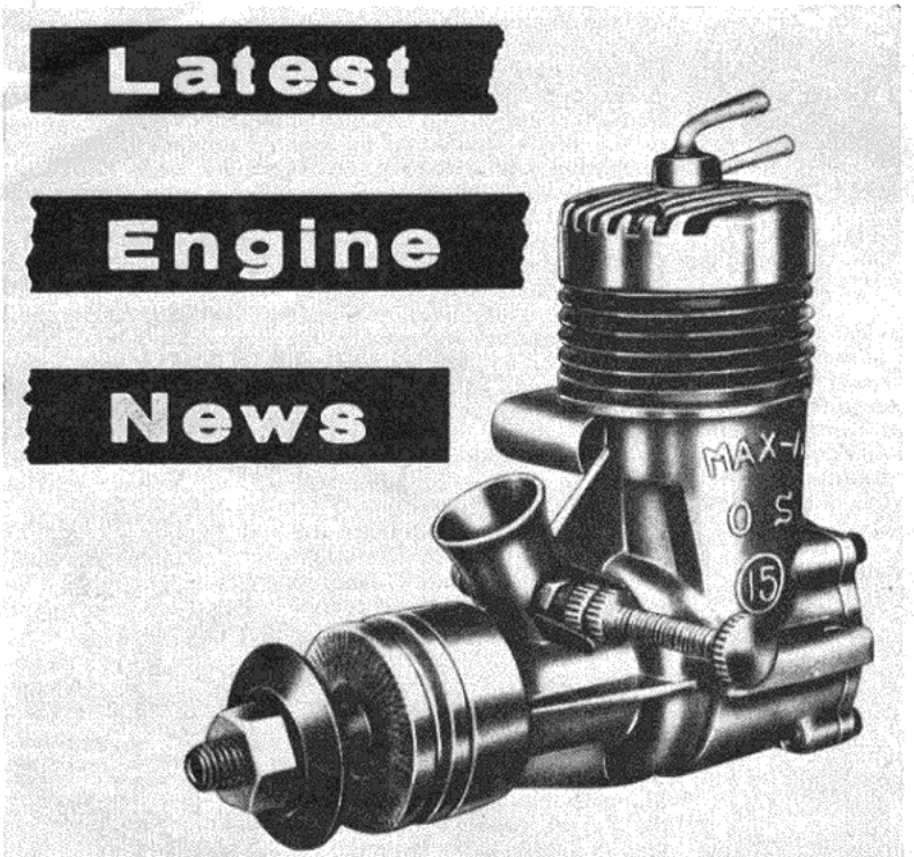
One of the most picturesque of the glider ballet movements, the enchanting, winch throwing arabesque, is to be banned. This news will come as a sad shock to all who take delight in the choreographic brilliance of the glider expert. Possibly the restriction on performance is a result of pressure from Equity, and, with the whole display limited to a mere backward prance it could be said, in the language of the ballet, that this *pas-de-deux* has had its *pomme-de-terre-friet*.

But not everyone regards the antics of the winch lugger with an artistic eye. There are the cynics who regard the winch throwing act as a bit of bravado to offset the whole fatuous business of running at full speed backwards. Then there are those timid souls who can look a ten pound, radio uncontrolled model full into its spiralling eye but who shy at the sight of the free flying winch. One correspondent refers to the acute discomfort of these roving reels whistling past his quivering ear, Were he, however, a glider enthusiast this, to him, would be the sweetest music in the world, as it is with all winch slinging fans everywhere—even in remote Stevenage, where a certain Mr Giggle is reputed to have written that beautiful old song: "I have heard the Mavis slinging."

In spite of the severity of the new rule we can be sure that the line towers will sportingly toe the line. More than that, they will be falling over backwards in their determination to observe it.

Sketches by—ALI

Latest Engine News



From PETER CHINN

Official factory illustration of the production type O.S. Max-D 15 diesel. This ball-bearing 2.5 is expected to win a place among the leading FAI diesels.

THE appearance of this article should coincide with the availability, at model shops, of at least two new British "Americanised" beginners' engines. As has been hinted from time to time in M.A. over the past few months, we appear to be on the threshold of a new approach—one might almost say a reversal of past policy—by British manufacturers in the beginner engine field.

These new engines, "starter" equipped in most cases, are glowplug models built to the American 0.049 cubic inch (0.8 c.c.) size, i.e. Class "Half-A" under the U.S. Academy of Model Aeronautics displacement limits. Prices are lower than existing beginner diesels —comparable, in fact, with U.S. levels. They include the Frog 049-RG, the Davies-Charlton Bantam and the A-M 049.

Why this sudden interest, by our manufacturers, in small glow motors? For an answer to this we have only to look at the growth of the model engine industry in the U.S.A., where more Half-A glow engines are made than the total production of all other sizes throughout the world, and where a single factory may turn out more than 20,000 of these engines per week. This immense production is, of course, only partly absorbed by the model building fraternity: a large proportion of most Half-A engine manufacturers' outputs, go into plastic and other ready-built, or ready-to-assemble, models, sold in toy shops and stores throughout the country. It is to such additional markets that our manufacturers are now looking. We are not alone in following the United States in this. Similar moves are evident in Germany.

You may well ask: "But why glow engines? What's wrong with our small diesels?" A fair question and it is clear, from conversations that we have had with members of the British model engine industry, that they, themselves, are not entirely convinced that the glow engine must replace the diesel in the beginner groups.

But the example of the American manufacturers is one which cannot be ignored and it is more than probable that the plastic manufacturers, who hope to enter hitherto untapped markets with ready-made engine-powered models, have been more impressed by American results than by British opinion. There are, after all, certain advantages to using glow engines to penetrate deeper into the beginner market. Manufacture is less costly—a very important point. Starting (though diesel-conscious British modellers may find it difficult to believe) can be easier—and certainly more straightforward for the young beginner to understand. The glow motor has also been claimed to be better suited to the use of integral starter units, although this, according to Davies-Charlton sales director, Harry Hundleby, is answered by the instant starting characteristics of the new spring starter equipped "Quick-start" Merlin diesel. . . .

To the British model industry, the diesel v. glow question is, therefore, still very much a case of "wait and see."

U.S.A.

We have just received one of the new Cox "Space-Hopper" 0.049 engines from the U.S.A. It is not clear at the moment, whether this is a replacement for the well-known Space-Bug and Thermal-Hopper contest engines, or whether it is supplementary to these latter. The Space-Bug and Thermal-Hopper are not listed in the latest Cox catalogue. On the other hand, the instruction leaflet issued with the Space-Hopper appears to suggest that this new model is intended more for "sport" flying, than contest work, and the recommendation of standard Thimble-Drome glow fuel, instead of the Thimble-Drome Racing blend, specified for the Thermal-Hopper, Olympic, etc., seems to bear this out. Some test figures should soon enable us to assess this new model, of course. Meanwhile we have addressed an enquiry to the factory on this point. The actual prop/r.p.m. figures quoted for the Space-Hopper (17,500 r.p.m. on a 6/3, 21,000 on a 5/3) are the same as those for the Thermal-Hopper.

Following the success of the Fox Combat 35, the K & B Allyn and Veco companies are also introducing "Combat" versions of their 0.35 cu. in. engines. The K & B engine, known as the Torpedo 35C, has just been announced. Similar in appearance to the existing stunt 35 and 35RC models, it has a new and stronger crankshaft of 65-ton alloy steel and a new cold-forged 2024 aluminium connecting-rod. Like the 45RC it has a meehanite piston with circumferential oil grooves. A new, strengthened crankcase is used for the 35C, which is also adaptable to pressurised fuel feed. The price in the U.S. is 16.95—just over £6 1s.

Japan

The O.S. 2½ c.c. diesel, the Max-D 15, under development now for more than two years, is at last in production. As can be seen from the accompanying illustration, the production engine is more or less identical with the final design, of which photos were published in last October's issue of M.A. It is a loop-scavenged motor with shaft valve induction and twin ball bearings. We expect to have a couple of these engines for test shortly.

All the Enya glow engines—now well known in Britain—have been dealt with in these columns, excepting the 09 (1.6 c.c.) model.

Of typical Enya design, the 09 is a delightful little engine, being virtually a scaled-down version of the bigger Enya glow models, complete with one-piece crankcase-cylinder block with inserted cylinder sleeve and metal-to-metal head joint; a crescent-counterweighted, hardened crankshaft running in a separate, bronze-bushed front housing, and fine quality construction throughout. Performance is at least equal to the very best in the 09 class (e.g. with a well run-in specimen, 13,300 r.p.m. on a stock Stant 7/4 prop using Super-Nitrex fuel) and handling is first class.

* * *

Germany

One of the new type Taifun Hobby 1 c.c. diesels, as illustrated in our May issue, has now reached us and shows itself to be an entirely new design and not merely a revised version of the previous Hobby and Hobby RS models. Practically every part of the engine has been re-designed.

Starting with the most obvious, the crankcase is now an extremely robust unit on the lines of the 2.5 c.c. Taifun Blizzard. The crankshaft is heavier, with a full disc web and a journal diameter of 8 mm. (slightly over $\frac{5}{16}$ in. and very large for a 1 c.c. engine). The reverse-flow scavenged cylinder is completely different and is now of the twin opposed ports type (similar to that seen on the Cox engines and certain Super-Tigre models), instead of the circumferential port type previously used. In accordance with current trends, it also has a considerably greater wall thickness—0.062 in. at the thinnest point.

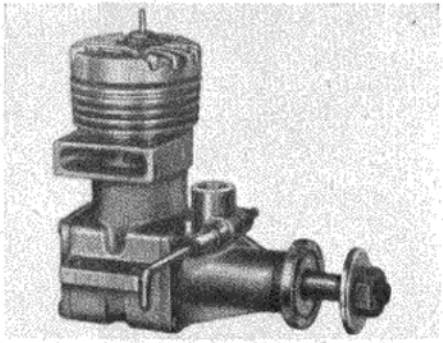
At 3.3 oz. the new Hobby is somewhat heavier than its predecessors, but should, we feel, prove to be a better engine.

* * *

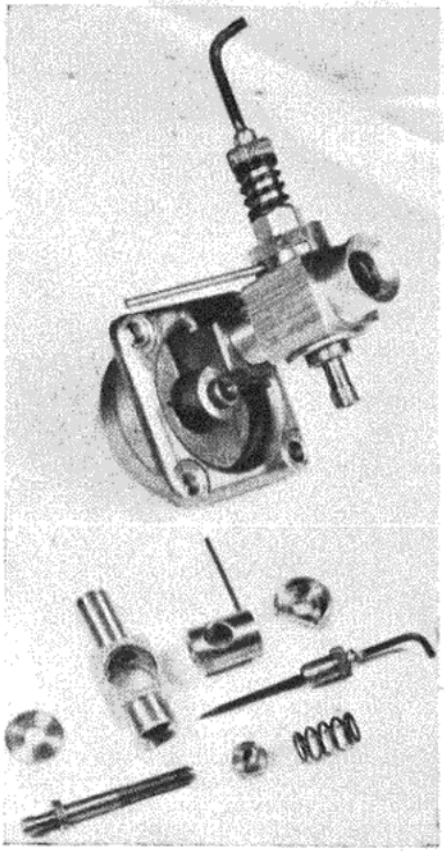
France

From Paris, Moteurs Micron, one of the oldest European model engine manufacturers, have sent us details of their new Micron Series 29 Super-Sport 5 c.c. glow engine, together with a photograph which is reproduced here.

This engine, it will be observed, is of the shaft-valve, plain bearing type, and is doubtless intended as a French reply to the popular American and Japanese glow 29's and 35's. Unlike these latter however, the crankcase is open both ends and appears, in fact, to be the same casting as that used for the Micron 29 disc-valve, ball-bearing racing motor. Bore and stroke of the two motors are the same (19 × 17 mm.) and the Super-Sport retains the 29 set-up of a steel cylinder liner in a one-piece cast aluminium crankcase-cylinder block, but with lightweight cast-iron piston, instead of a ringed alloy type.



Above: New French engines are few and far between. This is the recently announced Micron "Super-Sport" of 4.82 c.c., for stunt, team-racing, etc.



Right: E.D.'s variable speed carburettor for the 2.46 Racer. Throttle is of the barrel type and does not interfere with the needle-valve adjustment.

With the Super-Sport, the makers submitted a power curve showing a maximum output of 0.55 b.h.p. at just over 15,000 r.p.m. on a fuel containing 5 per cent. nitromethane. This is slightly more than the output claimed for the racing 29.

* * *

Italy

Signor Jaures Garofali's Super-Tigre engines for 1959 cover just about the largest range of types in current production by any manufacturer. No less than 14 different types, from 1 c.c. to 10 c.c., are now listed.

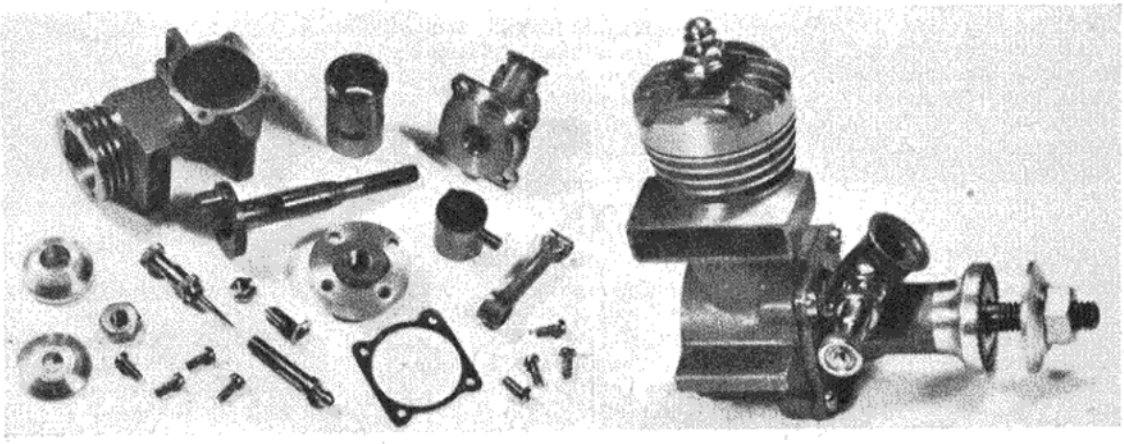
Supplementing the latest versions of such well-known types as the G.20 and G.21 glowplug engines and G.30, G.31 and G.32 diesels, are new R/C versions of the G.30 and G.31 with coupled throttles, and a bored and stroked 0.19 cu. in. version of the G.20. In the U.S., where this is the only ball-bearing 19 now available, this model Super-Tigre has been particularly well received. U.S. Super-Tigre distributor, John Maloney, to whom we were talking a few days ago on the transatlantic phone, tells us that a 5 c.c. Super-Tigre Twin is in the offing.

Late Late News!

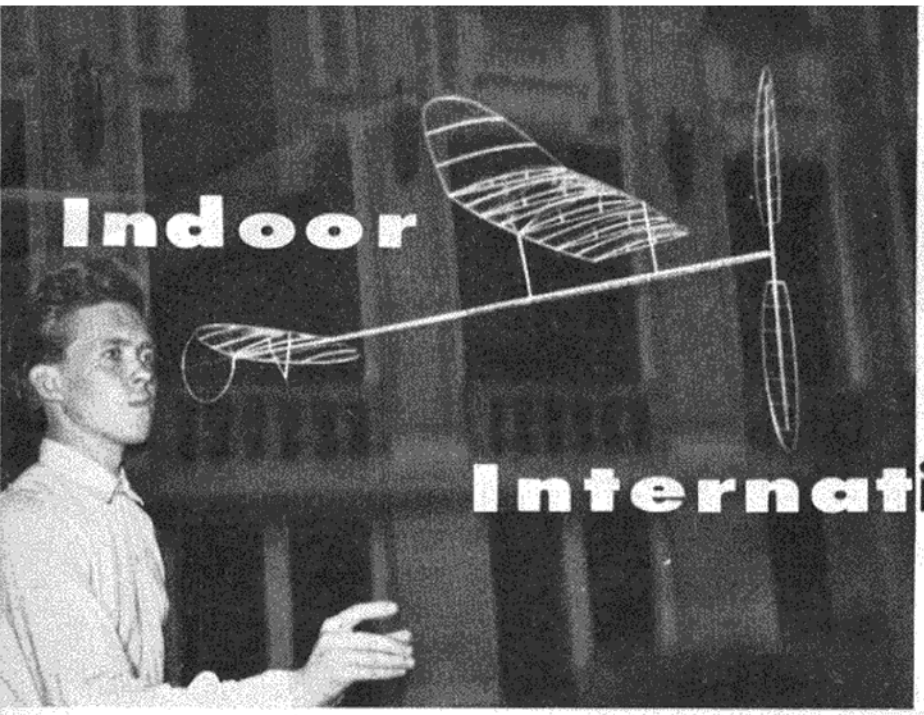
Leroy Cox advises that the Space-Hopper will, in fact, replace Thermal-Hopper. Fuel recommendation in leaflet in error: use hot racing blend.

New engines received. Veco 35C: first tests suggest a better engine than the standard 35. O.S. Max-D 15: impressive and finely built with many unique features. Fox 09: quite unlike any previous Fox design, with outstandingly easy starting. Rivers 3.49 prototype: first diesel to approach top glow 19 standards of performance and handling. Alag X-05 (1 c.c.): notably compact and light weight. Proton 2.5 c.c.: improved and cleaned-up version of this Hungarian engine.

Right—Enya's delightful 09 is virtually a scaled-down version of the larger Enya glow-plug models and has a performance to match. Bore and stroke are 0.500 x 0.500 in., giving a displacement of 1.61 c.c.



Parts of the Enya 09, showing its several "big engine" features, including the one-piece cylinder-block and crankcase, counter-balanced shaft and metal-to-metal head joint.



Indoor International

A new International class? Hungary stages First World Microfilm Contests

ABOUT a year ago Hungary proposed that the F.A.I. should recognise microfilm models as an International Contest class. As a result it was agreed that a trial meeting should be organised by Hungary, after which a final decision would be reached. This meeting—the first International Indoor Contest—was held on the 16/17th May in the Assembly Hall of the University of Debrecen and was a great success.

Two contests were flown—for models under 350 mm. (13.8 in.) wing span, and over 350 mm. wingspan—in a hall that measured 82 × 82 × 118 ft., and the winning times were 14 : 27 and 22 : 05. (*The size of the hall can be compared to the Corn Exchange, Manchester, which has roughly the same floor size but is only some 90 ft. high, and even then, "tapers" to a dome. This would account for the higher times put up compared with the winning flights at our last two meetings. Unfortunately, Reg Parham and Phil Read, who were to have represented Great Britain at this meeting, were prevented from going, but we have no doubt that had they been able to compete their times would have compared favourably with the other competitors.—Ed.*)

Competitors began to arrive early on the Friday and true to tradition immediately began test flying, which carried on all through Saturday—the official "training" day.

Promptly at 9 a.m., Sunday, the contest proper was opened by Mr. Antal Reti, Secretary General of the Hungarian Aero Club, supported by Mr. Gilman of the F.A.I.

First man off in the under 350 mm. event was Geza Varszegi—Hungarian National Champion—and he was closely followed by the other competitors. Finnish flyer L. Englund was among the first away and his model immediately attracted the attention of competitors and spectators alike. It climbed very smoothly at an angle of 30-35 deg. to a height of some 90 ft. where it cruised steadily in the draught-free atmosphere, finally descending amidst loud applause after a flight of 14 : 27. Even this early in the contest it was obvious that this time would be hard to better, and in the event it assured him of a fairly easy first place, although the next five places were very closely fought out.

The over 350 mm. contest started after lunch and K. H. Rieke of Germany, who had returned over 18 minutes during test flying, was tipped as a possible winner. His first flight of over 19 minutes put him well in the lead and would, in fact, have secured him first place even if he hadn't recorded 22:05 on his third flight.

Misfortune dogged the Hungarian flyers Antal Egri and Gyula Simon. Both had recorded 16-19 minute flights during the test period, but with both models airborne for their first contest flights, they collided and were irreparably damaged. Also unlucky was second place man S. Kujawa of Poland—his time of 18 : 50 would have been considerably better but the motor ran out while the model was still some 20 ft. up, and the rubber becoming detached from the rear hook made the model nose heavy, causing it to dive in.

At the dinner after the contest the winners were presented with beautiful cut glass vases by Mr. Reti, while, in his after dinner speech, Mr. Gilman stated that he had found the meeting most interesting, and, in his opinion, the F.A.I. should definitely add indoor events to the official list of contests.

Technical Notes

All entries in the under 350 mm. event featured elliptical wings with polyhedral, except that of Otto Roser which had straight dihedral. The Hungarian models had fuselages of rye-straw; all others used balsa tubes, and with the exception of Rieke who was using nichrome wire, nylon thread was universal for bracing. Pirelli was the most popular rubber—no Dunlop in evidence—but the Hungarians as usual used "Lactron."

The winning models

L. Englund

Wing	350 × 90 mm.	(13.78 × 3.54 in.)
Tailplane	200 × 75 mm.	(7.87 × 2.95 in.)
Fin (circular)	45 mm.	(1.77 in. dia.)
Length of fuselage	365 mm.	(14.37 in.)
Distance between motor hooks	205 mm.	(8.07 in.)
Airscrew diameter	220 mm.	(8.66 in.)
Weight less motor	0.29 grm.	
Weight of motor	0.295 grm.	
Length of motor	315 mm.	(12.4 in.)
Max. turns	2,350	

K. Rieke

Wing	900 × 160 mm.	(39.43 × 6.30 in.)
Tailplane	380 × 130 mm.	(14.96 × 5.12 in.)
Length of fuselage	750 mm.	(29.53 in.)
Distance between motor hooks	390 mm.	(15.35 in.)
Airscrew diameter	450 mm.	(17.72 in.)

RESULTS

Under 350 mm. class

1. L. Englund	Finland	14 : 27
2. G. Varszegi	Hungary	12 : 36
3. O. Roser	"	11 : 52
4. S. Niemela	Finland	11 : 49
5. S. Kujawa	Poland	10 : 58
6. L. Hamalainen	Finland	10 : 57
7. I. Antal	Hungary	9 : 33
8. A. Egri	"	9 : 23
9. R. Kreisz	"	8 : 58

Over 350 mm. class

1. K. H. Rieke	Germany	22 : 05
2. S. Kujawa	Poland	18 : 50
3. L. Englund	Finland	17 : 26
4. L. Hamalainen	"	16 : 49
5. G. Simon	Hungary	16 : 40
6. I. Antal	"	15 : 04
7. A. Egri	"	12 : 26
8. S. Niemela	Finland	9 : 42
9. R. Kreisz	Hungary	9 : 14

INDOOR INTERNATIONAL CAPTIONS—TOP TO BOTTOM

K. H. Rieke's model makes a sedate descent after its 22 minutes winning flight.

The Hungarian, G. Varzegi, does not believe in "getting down to it" to launch.

The model of Finnish expert Hamalainen airborne. This photograph gives a good idea of the balconied layout of the hall —rather like flying in the Rome Opera!

Gyula Simon (right) with his over 350 mm. model. He has also flown for Hungary in two A.2 Championships.

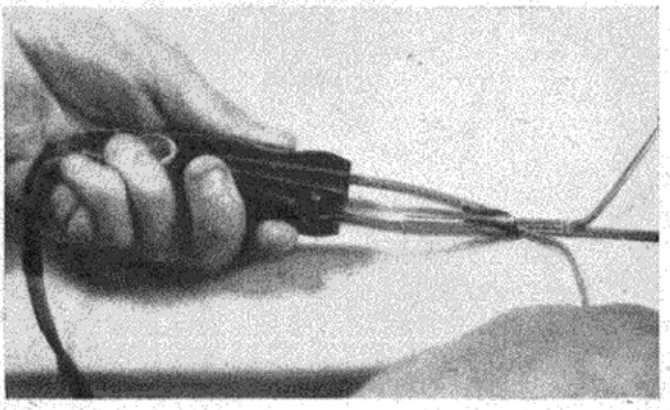
Polish flyer S. Kujawa winds his under 350 mm. model, assisted by J. Bury. He has reversed the normal procedure where the entrant holds the model and his assistant winds.

Following usual procedure is Rudolf Kriesz of Germany, whose model is being wound by Mrs. Rieke.

OVER the COUNTER

We were more than impressed with the Victor soldering tool manufactured by **Allied Distributing Corporation Ltd.** This is a 6-volt soldering iron with a difference, although it is, perhaps, best described as a pair of soldering tongs, as it consists of a plastic handle with two metal arms tipped with carbon points.

In use, the work is gripped between the carbon points, a switch on the handle is depressed and this heats the work, to which the solder is then applied. It is claimed that with this tool it is not necessary to clean parts to be soldered, not even of grease. Therefore, for our test we connected the iron to a 6-volt car battery, took two pieces of $\frac{1}{16} \times \frac{1}{4}$ in. brass, dipped them in oil, gripped them in the jaws, applied a drop of Baker's Fluid, switched on, applied the solder and, lo, a perfect joint.



This test convinced us that the Victor is an indispensable item of field equipment to be used for everything from repairing tanks to soldering R/C wiring joints. Price is 42s.

* *

The McDonnell F.101-A *Voodoo* is the latest **Revell** plastic kit to appear in this country. A great deal of thought has been put into the design of the various components of this model and the rather difficult contours around the engines and wing roots have been very successfully reproduced. Assembly is rapid and surface detail good. To a scale of 1/76th, this kit is excellent value at 4s. 10d.

Other new plastics from Revell are the Douglas X-3 1/64th scale, moulded in white plastic—the Northrop F.89 *Scorpion*, 1/82nd scale—and the Swedish SAAB *Draken* (Dragon) delta, each costing 4s. 11d.

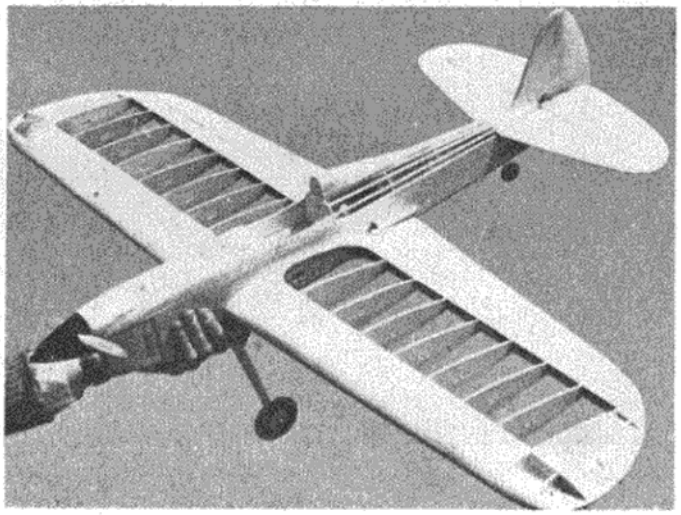
* * *

Airfix have a D.H. *Heron* kit at 4s. 6d. and a very nice job it is, with its cabin windows, crew and passengers. The undercarriage is fully retractable and features the most efficient device for securing the main wheels in the "down" position that we have yet seen. Each kit includes an information leaflet on Jersey Airlines who are Heron operators, and younger builders will be interested in the Jersey Airlines Wings Club, details of which are also given. For the final finish there is a choice of transfers —Jersey Airlines or R.A.F. Queen's Flight, the latter probably being designed to appeal to the Service-minded modeller. From the trade side an attractive display stand is available to retailers.

Other new attractions from Airfix include "Johnny" Johnson's *Spitfire* Mk. IX, and a Messerschmitt M.E.109g. These two replace the existing *Spitfire* and M.E. already in the range and are of greatly improved quality. It is interesting to note that the directors of Airfix do place great importance on suggestions for new models put forward by their customers; as a result, many new and fascinating prototypes are under development and will be reviewed in M.A. as soon as permissible. Incidentally, all Airfix kits are to 1/72nd scale.

Over the Counter reviews

Keil Kraft's SPECTRE



THIS is a fully flapped, straightforward to build stunt model, with pleasant lines and designed for the 2.5-3.5 c.c. power group.

The kit contains die-cut balsa components, printed ply parts, pre-shaped undercarriage, plastic cowl, plus hardware including rubber wheels and a stunt tank (which requires no soldering), all of which are of good quality. This is a dry kit, no cement or dope being included.

The entire construction is straightforward and follows normal practice, although special care is necessary when connecting up the control system to ensure smooth operation—a little patience pays big dividends when the model is flown. The model was covered with the heavyweight tissue supplied, and the all up weight worked out at 27 oz.

The *Spectre* was flown on 50 ft. light laystrates and held a good line tension through all manoeuvres, especially the eights. The power was supplied by an Enya 19 glow motor, which proved ideal and gave a 6 min. motor run on the tank supplied. The take-offs and glide prior to landing were particularly smooth and on landing it had a long steady roll before stopping.

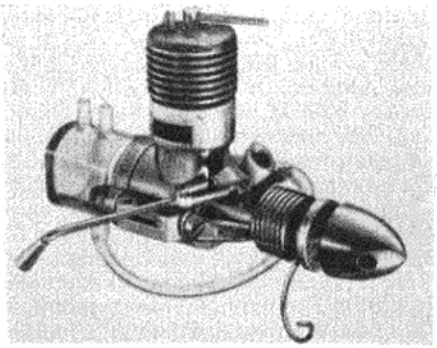
We did find one snag using a glow motor—the plastic cowl melted on one side due to the hot exhaust gases, but this trouble should not be encountered with a diesel engine.

This kit gives good value for money (retail price 38s. 5d.) and makes up into a pleasant looking stunt model which is a pleasure to fly, and limited in performance only by the pilot's experience.

Airfix Polystyrene cement now comes in screw top bottles, each containing over 1 oz. of non-stringing quick-drying adhesive. For those who dislike tubes this packing will be welcome. The adhesive may be applied to the parts to be joined with a small cheap artist's brush, or a small piece of wire. This method is very economical for joining small parts, although for large joints such as fuselage halves the traditional tube packing is more convenient.

* * *

Probably the most impressive series of plastic kits in existence is the **Frog** "M" series of U.S. Army mechanised equipment. The largest model is the Atomic Cannon, which together with its transporter trucks measures no less than 32 in. long! More than 300 parts go



First illustration of the Davies-Charlton "Quickstart" Merlin mentioned in our last issue.

to make up this magnificent model which, like the rest of the series, is to 1/32nd scale; it costs 36s. 6d.

Also from I.M.A. comes the latest in combat flying wing kits. Suitably named, the *Gladiator* is of 36 in. span, fully prefabricated, and includes a moulded nylon bellcrank. Most popular 2.5 c.c./3.5 c.c. engines are suitable. Price is 28s. 9d.

The Frog *Tutor* is a new 39 in. span F/F kit, of orthodox high-wing cabin layout, for use with 0.8 c.c. to 1 c.c. diesels, and is also fully prefabricated. A good model for the novice yet of sufficiently attractive lines to appeal to the more experienced builder. Price 23s. 11d.

The **Keil Kraft** *Gazelle* is a very easy to build, fully prefabricated trainer for stunt or combat. Very rugged yet light construction is the feature of this design which enables it to withstand a great deal of "bouncing" in the hands of the L flyer. If you have a 1 c.c. to 1.5 c.c. diesel awaiting an airframe, here is one for only 19s. 10d.

Performance Kits' 33 in. span *Galaxy* is a novel approach to the small rubber-powered cabin model offering the alternative of sport or speed versions. High quality printed balsa sheet and coloured tissue are included. The *Puma* is a 34 in. span high-wing cabin sailplane of semi-scale appearance featuring built-up construction. Both *Galaxy* and *Puma* cost 7s. 8d. each.

Aviation Bookshelf

THOSE who knew that Peter Lewis was writing a book on **Squadron Histories** may find the result disappointing, because in general the information given about each squadron is limited to the date it was formed, the types of aircraft with which it has since been equipped and the dates of its postings to various stations and theatres, plus an occasional note of the C.O.'s name and the types of duty it performed. Such entries are squadron histories only in the narrowest, most uninspired, Civil Service sense.

Take the 13-line entry for No. 74 "Trinidad" Squadron, better known to most of us as Tiger Squadron. It states that "Major E. Mannock, V.C., served with the squadron" and, later: "1941, at Biggin Hill, C.O. W/C A. G. Malan." The reader will look in vain for any record of the squadron's mighty deeds during the periods when these greatest fighter pilots of two world wars served with it. Nor is there any reference at all to the service of, for example, G/C Cheshire, V.C., with No. 617 Squadron or W/C Roland Beamont with 56 Squadron.

Whilst this book is bloodless and inadequate in its main purpose, it has considerable worth as a pure source of reference, because the last 84 of its 208 pages are devoted to 13 appendices. Only four of these have anything really to do with the subject of the book; but it is good to have available even an incomplete list of Air Ministry Specifications from 1920 to 1949, a note of the approximate strength of the R.F.C., R.N.A.S. and R.A.F. through the years, a list of Chiefs of the Air Staff, and so on. Best of all are the pages of squadron markings in full colour, and these will appeal particularly to model-makers. (PUTNAM, 30s.).—J.W.R.T.

* * *

A VERY welcome third edition of **The World's Fighting Planes** arrived at our offices recently. This authoritative work by those well-known aviation authors, William Green and Gerald Pollinger will provide hours of absorbing reading.

There are 240 pages of photographs, silhouettes and data on aircraft of 18 different countries. On the new dust cover are two colour photographs of the Convair F.102 Delta *Dagger* in its red and silver finery and the English Electric P-1 *Lightning*. The three view silhouettes are sufficiently clear and large to be useful to scale modellers, as are also the photographs, which in this edition, are nearly all new. Most of the military aircraft produced since the last 1956 edition are depicted. (MACDONALD, 15s.).

* * *

POPULAR MODEL AIRCRAFT contributor, Ray Malmstrom, needs no introduction to our readers. His latest book—The **Eagle Book of Model Aircraft**—is aimed at the younger modeller and presents, within its bright red and black covers, a complete course in basic aeromodelling. Starting with a simple explanation of the basic layout of a model aeroplane, Ray continues on via illustrated chapters on trimming for flight, to a complete list of tools and materials likely to be required by the would-be modeller. The models described range from a simple glider via rubber powered models to F/F power and C/L scale models. A notable departure from the already available books with similar aim, is the inclusion of seven full size plans for the models described. Ray's step-by-step sketches ensure rapid and successful progress and every model is illustrated with clear photographs. An excellent solution to the gift problem.
(HULTON PRESS, 8s. 6d.).

* * *

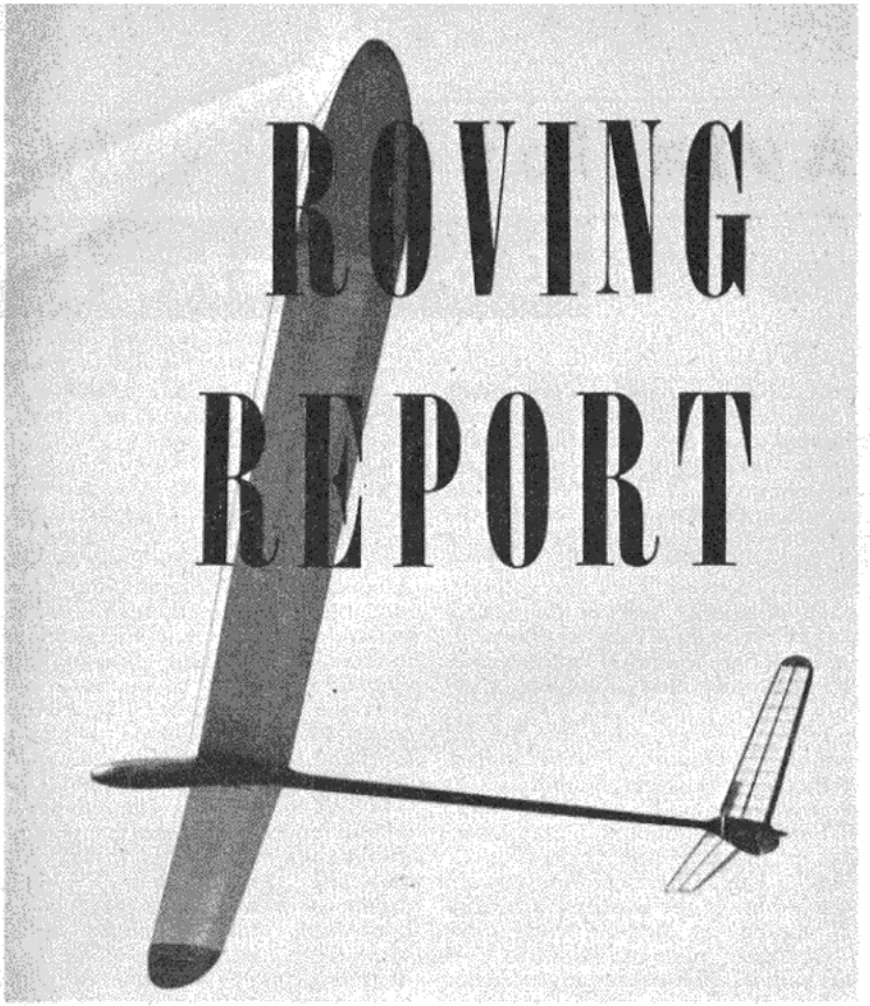
YET another third reprint is that well established title, **Aircraft Camouflage and Markings 1907-1954**, by Bruce Robertson. We know by the number of letters we receive from readers, that the subject of aircraft colouring and marking is one of great interest and importance to scale modellers. The advent of the plastic kit has increased the number of people seeking information on the subject, and this third, revised, impression of an already established publication will do much to satisfy the demand.

Many of the errors in the earlier editions have been corrected, including some of the more obviously incorrect colours, in the 20 full colour pages, which depict a host of interesting aircraft colour schemes. Printing and binding are to the high standard expected from this publisher.
(HARLEYFORD PUBLICATIONS, 45s.).

* * *

THAT long awaited Harleyford publication **Air Aces of the 1914-1918 War** will soon be in the shops. Due to the recent printing dispute binding has been delayed, but we have seen an advance copy of the text and hope to give a full review next month. Price will be 45s., and the size matches previous Harborough books.

ROVING REPORT



Lindner's latest Nordic A/2 glider "Kria." Spanning 87 in., this high aspect-ratio design by the German master, Rudolf Lindner, is reliably quoted as having a still air duration of over three minutes.

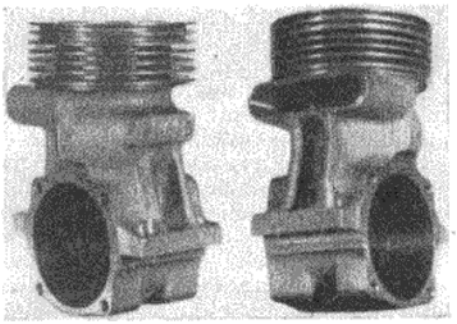
LAST year we were talking, in this column, about the baby radio-controlled models that have appeared in America following the advent of sub-miniature all-transistor receivers and the Cox Pee-Wee motor. But, if you thought half-pound R/C jobs were small, what price Ken Willard's latest?—a 3¾ oz. indoor model!

For indoor flying (and by "indoor" is meant, of course, a reasonably sized hall, not a cottage parlour) models must fly really slowly. We can forget all about penetration, and go for high angles of attack, heavily undercambered wing-sections, minimum power and, of course, lightest possible construction. Writing in *M.A.N.*, Ken Willard describes his approach to this question and the resultant 3¾ oz. of model is a profile pusher of 33 in. span and 230 sq. in. area. A C.G. "RX-1" receiver and Bonner SN escapement, needing only two pencells, are used. The highly cambered wing is single-surfaced, covered with Jap tissue. Power was a problem, since even the tiny Pee-Wee is far too lively for this sort of model. Willard overcame this difficulty by equipping the Pee-Wee with a small reverse-pitch metal fan, installed behind the prop, to absorb excess power and reduce thrust. The model flies safely in 30 ft. circles and slowly enough to enable the operator to trot around beneath it!

Designed to take advantage of the new F.C.C. regulations now effective in the United States (under which modellers have been allocated five new alternative frequencies), are two new superheterodyne receivers by the Citizen-Ship Radio Corporation. Similar selective receivers are expected from other manufacturers shortly. With equipment such as this, the ability to have several models in the air simultaneously, without risk of interference, is, at last, a reality. Circuit racing, combat and formation flying (!) will doubtless follow in due course. . . .

The two Citizen-Ship superhet receivers are the Model SSTR for single-channel control and the SS-MSR-8 for multi-simultaneous eight-channel control. Both are crystal controlled, require no tuning and are reported to have a selectivity of about 5 kc/s. To change from one to another of any of the five approved frequencies, one simply plugs in the appropriate crystal. The SSTR operates from a single 9-volt miniature transistor battery and costs $69.95—just under £25. The SS-MSR-8 is basically the standard MSR-8 model but with the superregenerative circuitry superseded by a new superheterodyne section. The price—inevitably higher for superhets—is $149.95 (£53 11s.) as against $99.95 (£35 14s.) for the MSR-8.

The new Yellow-Jacket YJ-61C replacement cylinder block for Dooling 61's. Note the vertical stiffening webs.



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In a recent issue we described and illustrated an interesting American plastic control-liner, the Wen-Mac *Turbojet*. This is one of several models in the Wen-Mac range of ready-made power-driven models. Two others include a scale Beechcraft *Bonanza* and a new addition, a scale Chance-Vought *Corsair*, both of which we have recently had the opportunity of examining. These two models are cheaper than the *Turbojet* (they cost only $8.95 and $9.95—£3 4s. and £3 11s. respectively—complete with engines) and are of somewhat simplified construction.

The 13½ in. span *Corsair*, for example, has the entire fuselage, wings, tailplane, fin, and undercarriage struts moulded in one piece, leaving the bottom of the fuselage open. Even the fuel tank is now an integral part of the fuselage and the only readily detachable parts are the elevator, bellcrank, wheels and, of course, engine. The 14 in. *Bonanza* is moulded in two main components comprising top fuselage shell with butterfly tail-unit, and bottom shell complete with wings and fuel tank. Both these models are now fitted with the new 0.049 cu. in. Wen-Mac Mk. 3 engine with "Rotomatic" starter.

The *Corsair* weighs 5½ oz. complete and the *Bonanza* a trifle less at 5⅜ oz.

* * *

This year, the Australian state of Queensland celebrates its centenary and the Model Aeronautical Association of Queensland have taken the opportunity to join in the festivities by organising "Queensland Centenary" Model Aircraft Championships. The Championships have been divided into two events, one covering C/L and the other, F/F.

In the C/L championships recently held, the Newtown Model Aeronautical Association of Brisbane were particularly successful. Almost inevitably, someone made one of those long-distance flying visits which seem to be a feature of Aussie meetings. This time it was Darcy Peck, up from Sydney in the morning, winning a first and two seconds in team racing and then heading 700 miles back again the same night to start work next day. . . .

Almost inevitably, too, O.S. engines and Gorrie props won practically every event, excepting F.A.I. team racing, won, just as inevitably, by Oliver Tigers.

One of the reasons why diesels are not over-popular outside Europe is that they are definitely not so happy as glow engines in hot, dry climates, or high altitudes. This much we gather from our numerous correspondents throughout the world. This has nothing to do with local inability to "handle" diesels.

For instance, Pete Visser, after years of experience with both diesel and glow in the Cape Province, found that, at the 6,000 ft. altitude of the Johannesburg venue of the 1959 South African Nationals, his diesels would just not "perform."

Similarly, John Stewart, now back in the U.S. after several seasons of successful contest flying in France and Germany with everything from Olivers downwards, finds that his diesels cannot cope with temperatures of 100 deg. F. and relative humidity of around 5 per cent.

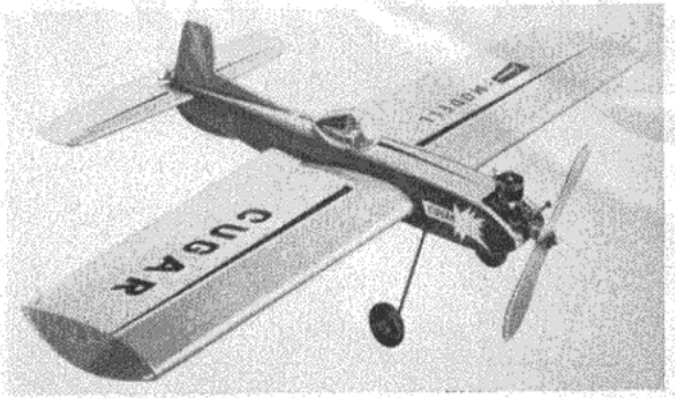
We have had the same sort of complaints from parts of India, Central America and the West Indies.

* * *

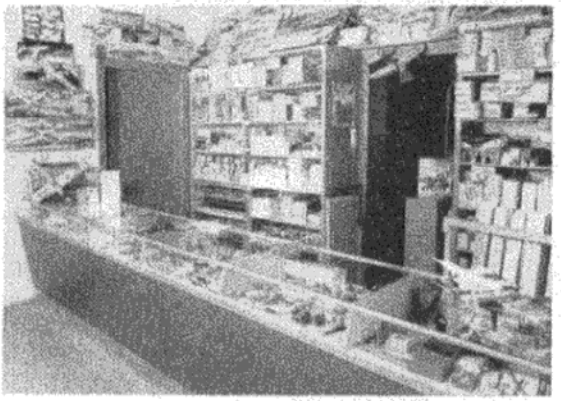
From Bruce Underwood's new Model Power Company (931 Minerva Avenue, Columbia 24, Ohio) we have received one of the first production model "Yellow Jacket" YJ-61C cylinder blocks as described in Roving Report last November. This block, which comprises crankcase and cylinder barrel, is intended as a strengthened replacement for the standard Dooling 61 component and has been produced mainly for the model racing car and racing boat fraternity, among whom it will doubtless form the basis, also, for some one-off specials. The block which weighs 3½ oz. (less than ½ oz. more than the stock Dooling component) is very nicely sandcast in a special high tensile aluminium alloy and is accurately machined, drilled and tapped, ready to take the standard Dooling components. It has a yellow anodised finish—the "Yellow-Jacket" trade mark. The price is $15.00.

* * *

The West Australian daily newspaper recently published a photo of Gordon Owens of Gnowangerup M.A.C. with an interesting 11 ft. span Auster R/C job. This impressive looking model, which weighs 13 lb., is fitted with an O.S. Minitron receiver and O.S. compound escapement and is powered by an Enya 60.



Right: Flying this O.S. Max-35 powered stunt model, Horst Diemer won last year's German Stunt Championship. The model spans 47 in. and is now available as a Graupner kit.



Former World A/2 Glider Champion Oskar Czepa's model shop in Vienna. Among Czepa's fine international array of engines, kits, R/C equipment and accessories, are products from Germany, Great Britain, Japan and the U.S.A.

* * *

Enya power, in this case a 29-3, is also featured in a large stunt model by Ian Russell of the Hayes Club. Despite a wing area of 652 sq. in. and 3 lb. all-up weight, the model does a steady 68 m.p.h. on stock fuel and goes through square loops ("you can see the corners, they're so square") without the slightest trace of a falter in the engine note.

* * *

In our March issue, we commented on the Russian Petukov VIP-20 motor, owned by Ian Russell, which was thought to be the only one in this country. It now appears that there are at least two more of these 2.5 c.c. racing glow motors in the U.K. and we hear that one of these has been clocked at 118 m.p.h. in a speed job. We were disappointed not to see any of these motors in action in the Class I speed event at the Nationals.

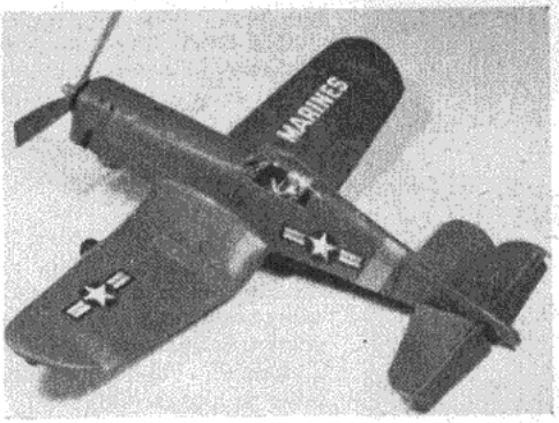
* * *

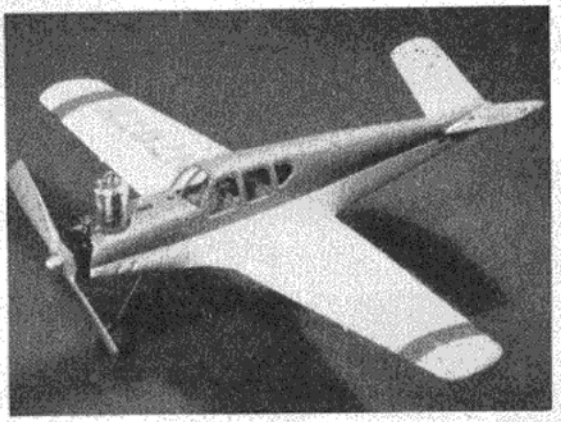
Pino Gottarelli

British C/L speed-men who remember the Italian speed team and, in particular, Signor Jaures Garofali's Super-Tigre boys, will be sorry to hear of the death, in a flying accident, of Giuseppi Gottarelli of Bologna.

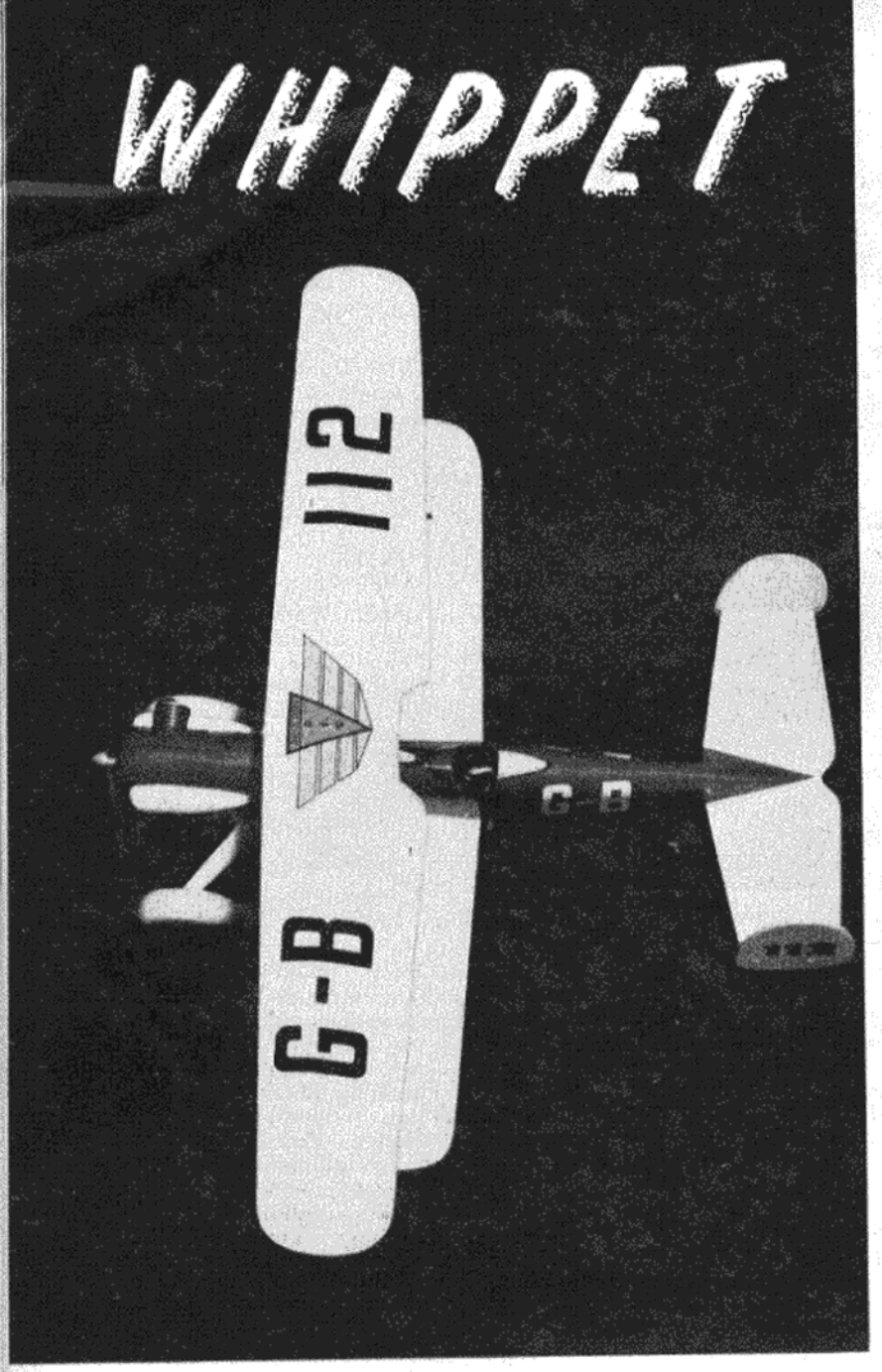
Pino Gottarelli, whom we of *M.A.* had the pleasure of numbering among our most valued correspondents, was one of Italy's most accomplished modellers. After serving his term of military service, he obtained a chemistry degree at Bologna University and was later commissioned as a lieutenant-pilot in the Italian Air Force. He was chief instrument-flying instructor of his squadron and a member of its aerobatic flight. It was while flying a jet on squadron duty on April 15th, that his aircraft dived into the sea off Ravenna and Gottarelli lost his life.

Right: An attractive, low-priced, ready-to-fly plastic. Wen-Mac's new Corsair, powered by the Wen-Mac Mk. III 0.8 c.c. glow-plug motor with "Rotomatic" starter. Far right: Also fitted with the new Wen-Mac Mk. III engine is this 14-in. Beechcraft Bonanza in green and white plastic. It sells in the U.S. for approximately £3 11s. including handle and lines.

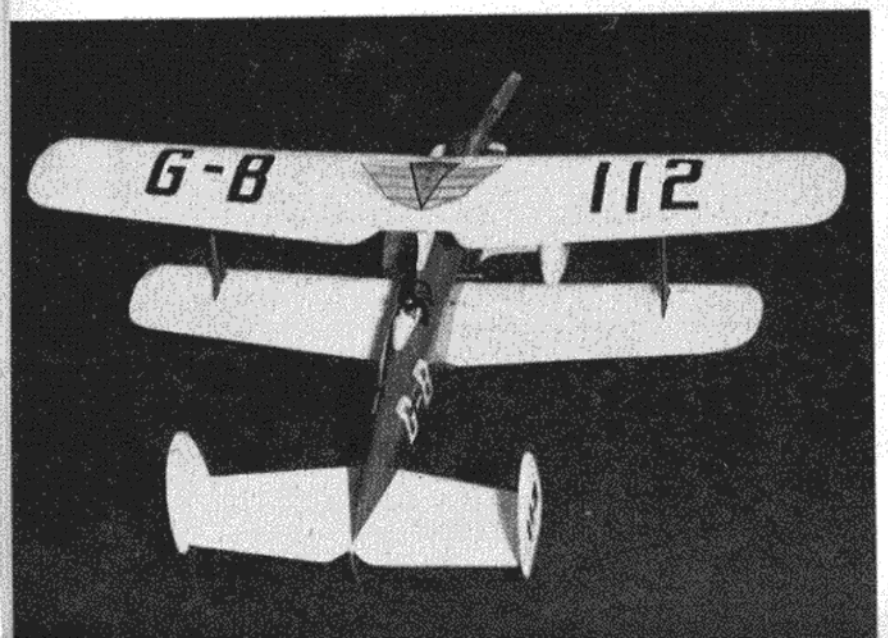




WHIPPET



From whatever angle you look at it, Whippet is a compact and snappy design.



a really smart little round-the-pole or Makes the most of of small motors

LOOKING for an eye-catching model for that small motor of yours—semi-scale, with good flying characteristics, ease in building, yet robust? Here's just the model for flying round the pole on the club night or on that nice Sunday that comes suddenly out of the blue. *Whippet* takes only a short time to build and most of it can be built out of the scrap box.

Fuselage

Construction begins with the fuselage, which is built mainly out of $\frac{1}{16}$ in. sheet balsa. F1 can be cut out of $\frac{1}{8}$ in. balsa if the engine is to be beam mounted, e.g. D.C. Bambi (if this motor is used, the model should be kept as light as possible —don't skimp the doping but choose the wood carefully), but if the Cox Pee Wee is used F1 is as per plan (for the motor). The cowl is not necessary, but gives the model a neater appearance. The motor should be given 5 deg. down thrust and 5 deg. right thrust to start with; final trim is obtained by adding washers to suit so as to give a smooth power-to-glide change-over. Bend the undercarriage as shown and stitch to ply plate with strong thread. Then cement firmly in the fuselage. The rest of the detail is explained on the plan.

Wings

The wings are built in the usual way. Check for warps (it is recommended that the bottom wing is pinned in position on the fuselage and then the tailplane cemented in position so as to line up with the wing).

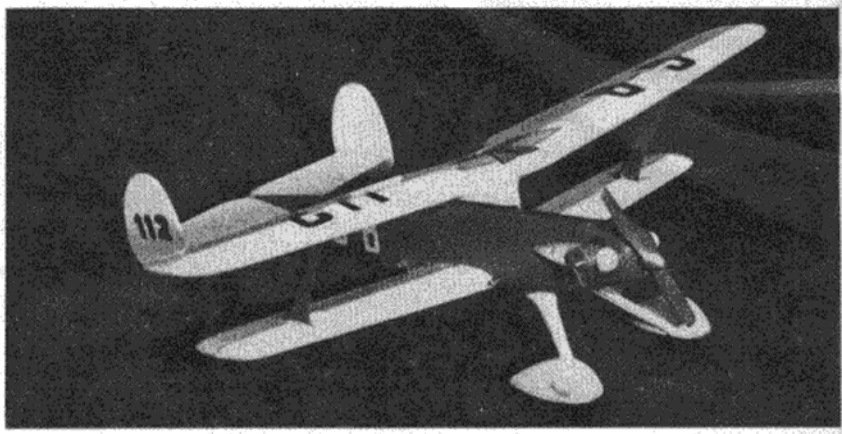
Finish by getting rid of the warps! Remember, the heavier the model is, the faster it flies, also the poorer the performance. Also remember to put your name on the model (mine is on the centre strut which is cemented firmly to the fuselage), in a non-fade ink, e.g. indian ink, as a model may spend a long time in the open before being found!

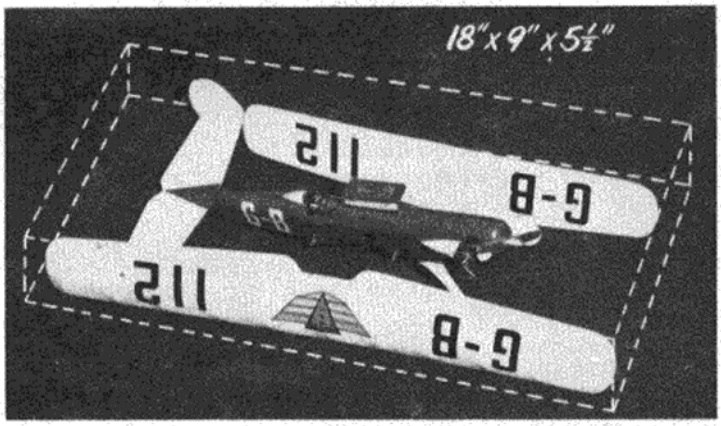
I will leave you to give the model its final trim as each of us has his own pet way.

Flying

Do not use too big a tank for F/F—a 1.5 c.c. tank is ample, as the model has a good climb and can cover a lot of ground during a flight. Also do not fly it in a gale—it is only small, so give it a chance. For r.t.p. flying the tank may be as large as possible.

biplane for fair weather flying. the current range

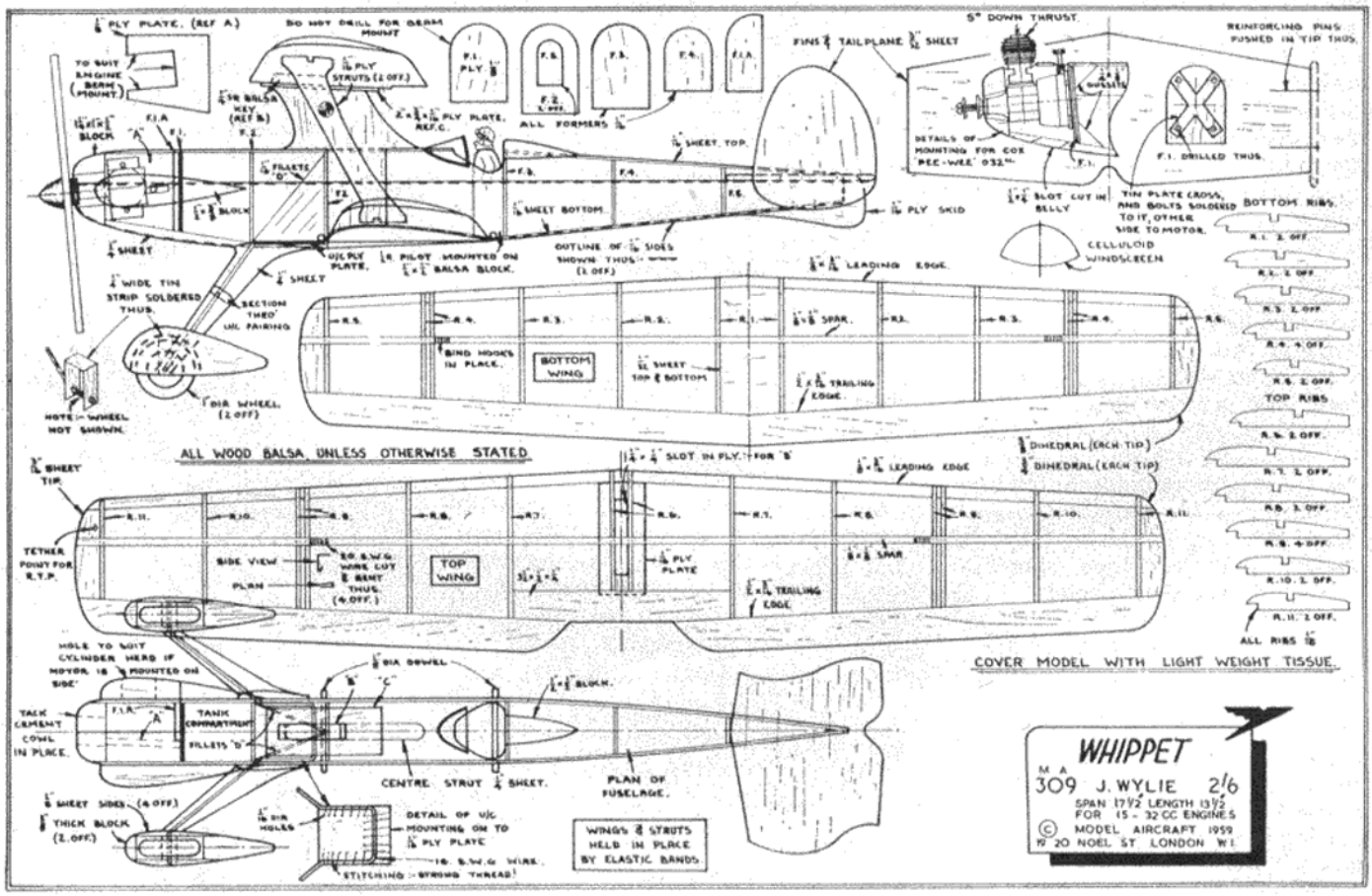




designed by

J. WYLIE

FULL SIZE WORKING DRAWINGS ARE OBTAINABLE FROM YOUR LOCAL DEALER, OR BY POST FROM THE "MODEL AIRCRAFT" PLANS DEPARTMENT, 19-20, NOEL STREET, LONDON, W.1, 2s. 6d., POST FREE



Readers' Hints and Tips . . .

. . . were what we asked for, and what we got ! Literally hundreds were received and of these the most interesting and original have been accepted for publication in MODEL AIRCRAFT. Not all ideas need illustrating and this month we have included a column of written hints as well as the usual selection from our artist's sketchbook. The stars denote the lucky Tool Chest winners—others will receive a cheque for 10s. 6d.—so if *you* have a good idea send it to MODEL AIRCRAFT, Readers' Hints & Tips, 19-20, Noel Street, London, W.1. We'll be pleased to see it, and you may be lucky and win a tool chest.

★ A useful non-slip straight-edge for cutting balsa sheet is a new hacksaw blade. Although the teeth hold it firm they leave only a slight impression on the wood. This idea is from J. Wood, who warns only to use a new blade—old ones are usually bent !

From the same person comes a good tip to use when building "wash" into a wing—make the spars a loose fit in the ribs. This decreases the natural tendency of the structure to "flatten out."

* * *

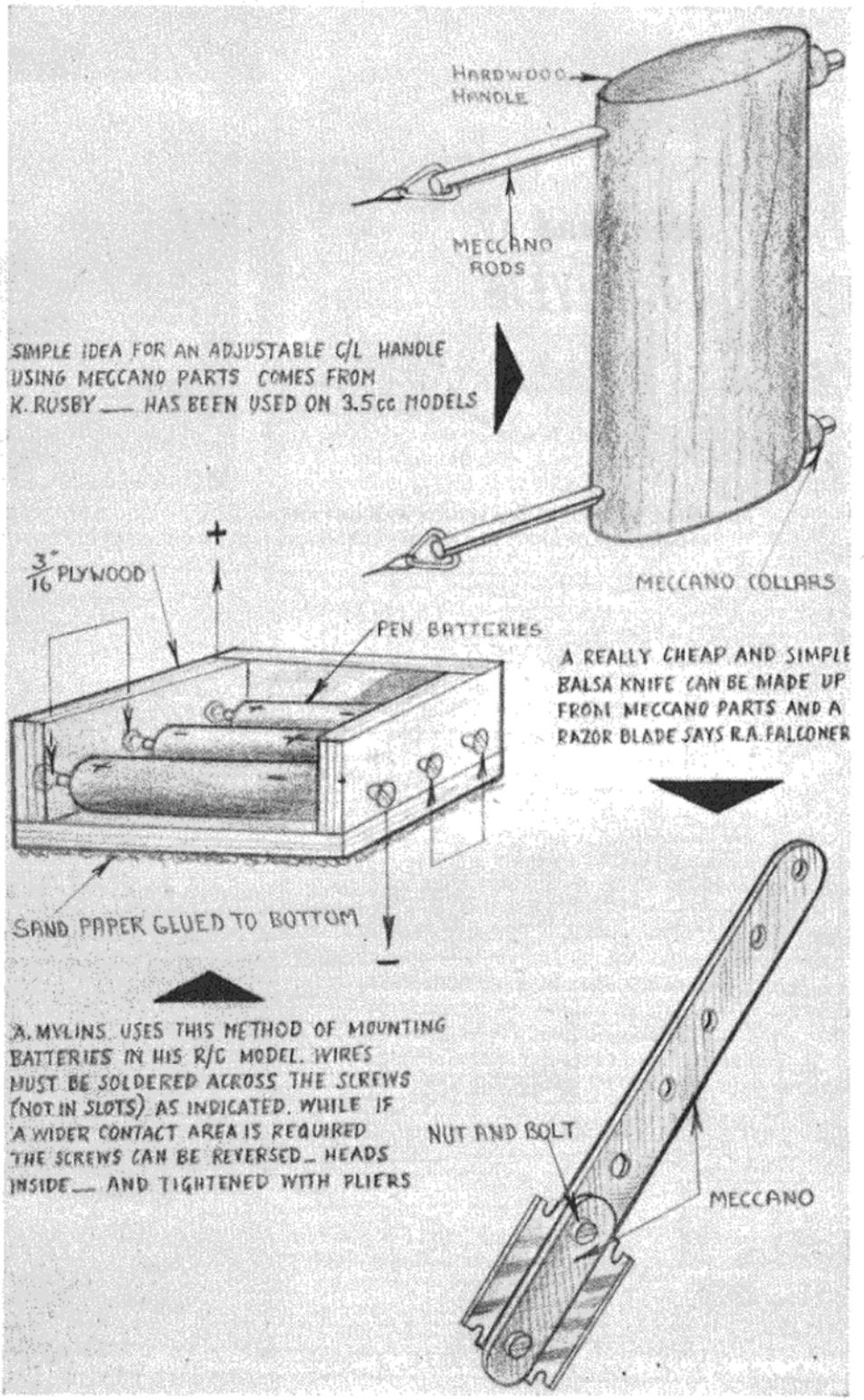
The problem of disguising the cracks that often appear in balsa when bending it for certain sheeting jobs has been neatly overcome by M. Johnson. His method is to completely fill the crack with cement, and immediately sand the adjacent areas until the dust works into the crack, mixing with the cement. When the cement is dry another application of fine sandpaper will "tone" the repair in and a flawless surface results.

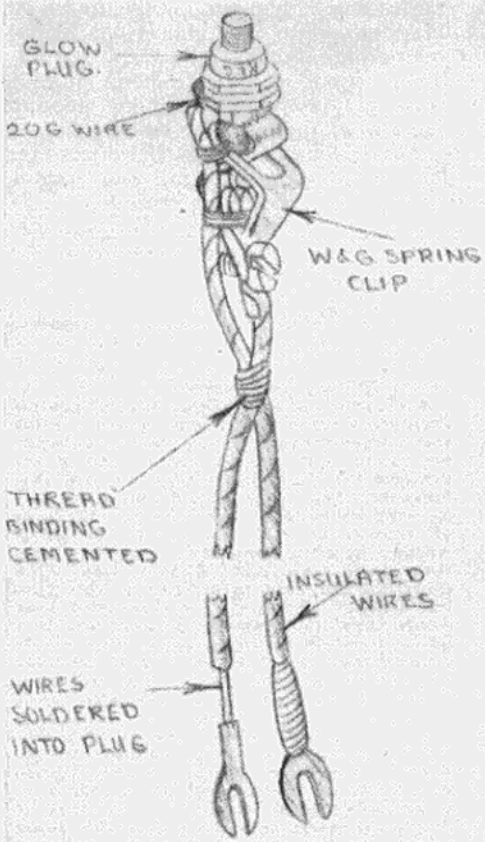
* * *

Most designers specify pre-cemented joints—and an easy way to do it, with the ribs of parallel chord wings shaped en bloc, is to smear the cement along leading and trailing edges *before* separating the ribs. R. Hobbs, who sent this idea, also reminds us of an old dodge—a good sanding sealer can be made up by mixing talcum powder with clear dope. Smells nice when you sand it too !

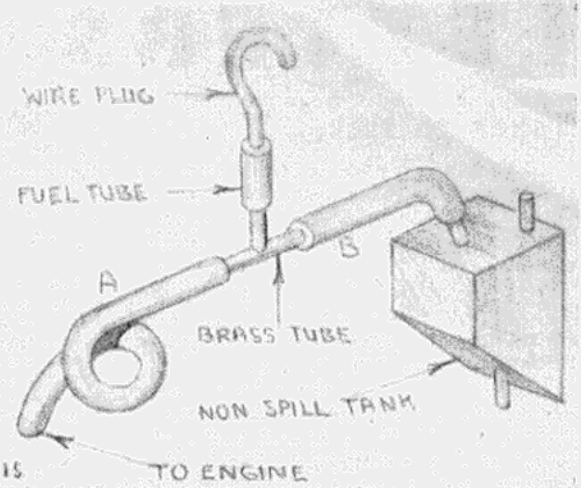
* * *

A lot of kit plans do not give wing or former sections as these items are supplied, printed or cut out, in the kit. With the possibility of repairs or rebuilding in mind A. Robson suggests taking a tracing of such parts before starting building—would certainly save a lot of time if you do need a new wing.

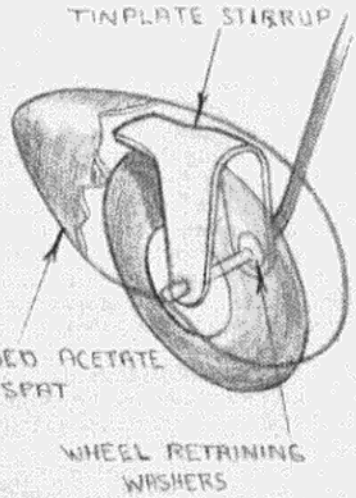




THIS QUICK RELEASE GLO-PLUG CLIP IS USED BY P.M. ELGART. THE CLIP SHOULD BE DISMANTLED BEFORE THE FLEX IS BOUND TO IT AND THE 20 s.w.g. EARTH CONTACT PUSHED 1½ IN. DOWN THE INSULATION BEFORE THE WIRE IS BENT

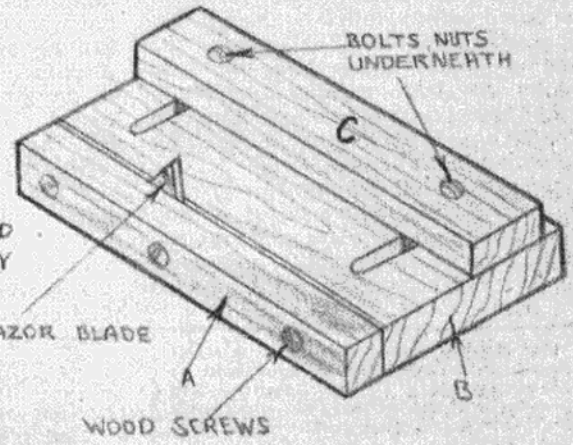


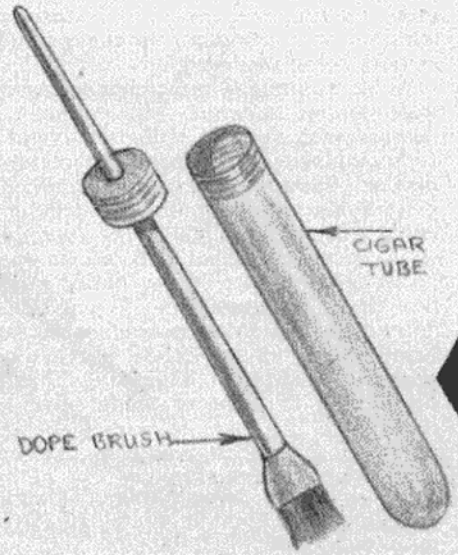
NO TIMER REQUIRED WITH G. HODGESON'S 'LIMIT TANK' IDEA. START AND ADJUST MOTOR WITH PLUG IN PLACE AND WHEN SET REMOVE. RUN IS LIMITED BY LENGTH OF TUBE 'A' BUT REMEMBER DIFFERENT PROPS AND NEEDLE SETTINGS WILL VARY LENGTH OF RUN



SIMPLE AND EFFECTIVE WAY OF RETAINING SPATS DEVISED BY A.C. DAY. THE STIRRUP IS SOLDERED TO THE AXLE AND THE SPAT FIXED TO IT WITH ARALDITE OR A SIMILAR ADHESIVE

OF THE MANY BALSA STRIPPER DESIGNS RECIEVED WE LIKE THIS ONE BY B. SEARLE. WIDTH OF CUT IS ADJUSTED BY SLIDING 'C' IN GROOVES IN BLOCK 'B'. THE BLADE CAN BE ADJUSTED FOR HEIGHT BY LOOSENING PIECE 'A'





NO MORE 'SOLID' DOPE BRUSHES AFTER HASTY FIELD REPAIRS FOR J.M. WHITELEY — BRUSH STAYS SOFT FOR DAYS, AMPLE TIME FOR A PROPER CLEAN UP AT HOME

LETTERS to the Editor

Taken to task

DEAR SIR,—I wish to refer to certain statements made in the July issue of MODEL AIRCRAFT (Nationals report), which I consider to be not in the best of taste.

The first is the remark concerning the R/C event on the second day, where you state that you departed in disgust, due to the poor standard of flying.

I would very much like to know, since when have any competitors been under obligation to fly to a standard laid down by the staff of a magazine. Surely such contests are open to all S.M.A.E. members, and that includes beginners, novices as well as experts. If the standard in this event was exceptionally low, I doubt very much if such remarks in print will do anything whatsoever to encourage the competitors to better efforts next year.

The second is on the subject of continuity in the running of events at the Nationals. As every member of the S.M.A.E. works voluntarily, the Council cannot force anyone to run an event, or even be on hand, they MUST rely on volunteers, and even the keenest of "event runners" likes to be a spectator, or even a competitor, sometimes.

There is also the important point that volunteers who run events at the Nats. and other Centralised Contests are entitled to as much enjoyment out of doing the job, as they would get if they were competitors instead, yet on so many occasions (as I know myself from personal experience over the last five or six years) this is so often the exception rather than the rule.

When competitors show a little more appreciation of their fellow members who give of their time and energy to enable contests to take place, many more volunteers will be to hand, and continuity will be possible; to the benefit of all.

The third statement is that concerning the contest name boards, their being of little help even if used in conjunction with the programme. The names on the boards were identical to those in the programme, and in the programme the type of contest taking place for each trophy was clearly explained.

As I spent many hours producing the 30 odd boards, such petty fault-finding makes my blood boil.

If you must criticise after these events, at least be constructive about it, and accompany your criticisms with practical suggestions for improvement, and above all, please remember the words in each copy of the M.A., "The Official Journal of the Society of Model Aeronautical Engineers," to which quite a few of your readers belong.

Yours faithfully,
FREDA SHIRT (MRS.)

No competitor is under any obligation to fly to any standard, or even to fly at all, and we are under no obligation not to comment on what we see. Criticism is the finest spur to improvement, to ignore poor flying begs the issue, to call bad good, or even passable, creates a feeling of satisfaction which is the last thing anyone wanted, or so we should have thought!

We entirely agree with Mrs. Shirt about the organisers being volunteers and we were not being critical—far from it. We suggest that our remarks be re-read (M.A., July, page 194), as they are quite clear.

The signboards themselves filled a long felt want and Mrs. Shirt is to be congratulated on her efforts, our criticism was of the way in which they were, or rather were not, used.—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.

Still wrong !

DEAR SIR,—By this time you will have had a fistful of correspondence concerning Harry Stillings' remarks about wind effect on rolling and looping. His words put me in mind of an old R.A.F. story (probably still doing the rounds in mach terminology) about the *Naval* pilot who, after air testing an ancient *Swordfish* at an M.U., blotted his copybook for ever and a day by remarking to his C.O. that the cruising speed was a bit low and that turning the aircraft into wind and flying up wind didn't seem to raise it!

Yours faithfully,
A. M. SAUNDERS
(ex driver airframe)
Windlesham,
Surrey.

DEAR SIR,—I have just read part VI of "and so to . . . Radio" by Harry Stillings, and I wish to make the following comments.

Mr. Stillings states in his sixth paragraph that due regard must be paid to wind direction in attempting stunts. Surely he has forgotten one important point, that is that the model, when in flight, is performing in still air conditions, ignoring turbulence. It will, in fact, be drifting with the air in a downwind direction, but this drift is only relative to the ground, there is no drift of the model relative to the air. I suggest that Mr. Stillings tests this by doing a loop downwind. To him, on the ground it will look odd, but it will be just as good a loop through the air as his into wind ones. Again, if he would turn his attention to the glide pattern of a F/F job he will see that a model which does perfect circles on a calm day will, without change of trim, on a windy day, follow a flight path similar to a series of kinks in C/L wire. Nonetheless, it is still circling perfectly *through the air*.

Similarly, his comments regarding maintenance of adequate speed are misleading. Flying into wind, the model may *appear* to be almost stationary (witness this year's Nationals) but the flying speed, which is more important than ground speed, will be normal. Downwind the converse holds good.

Ask any full-size pilot if he has ever felt his 'plane trying to roll over because he happens to be flying crosswind.

I hope Mr. Stillings will appreciate my point and not feel resentful of the correction.

Yours faithfully,
ROGER COOPER
Cheadle, Cheshire.

Harry Stillings comments—

Both your correspondents are, of course, absolutely right and I was wrong. Mine was a false premise due to confusion between air speed and ground speed, and I am grateful for their correction. I still say, however, that "due regard should be paid to wind direction" but only for the sake of smoothing out the stunts—in other words, the only thing that matters is how they look from the ground, and wind direction can help materially in this aim. Mr. Cooper agrees that a downwind loop would look odd from the ground, and to a novice it might be unrecognisable or wholly unsatisfying, so that he might conclude his control or the model was at fault. Regarding maintenance of adequate speed for proper control, I used the expression "forward speed" when I should have said "flying speed"—two quite different things. What I meant, of course, is that signals should not be given when the model is in a partially-stalled condition, but that it should be given time to regain full flying speed. In the case of the roll, although wind direction cannot, in fact, assist the manoeuvre, it is easier for a novice to "see" what is happening in a crosswind roll as he has a full broadside view of the model throughout.

It would seem, therefore, that I gave the right advice but fell into the trap of basing it on a false assumption. I am glad the error has been pointed out and corrected.

Scale in all things

DEAR SIR,—I have read with interest the article by Mr. Peter Lewis on designing your own C/L scale models (MODEL AIRCRAFT, April). There is, however, one point which I feel could be enlarged on.

This is the relationship of model size to engine size. Many otherwise good scale models are spoilt by incorrect selection of power plant for the type of aircraft being modelled.

As an example, I remember seeing a scale contest in which was entered a *Mosquito* with a pair of Mills 75's aboard. It was about 36 in. span, completely planked, heavy and beautifully finished —it was also sluggish in the air. Another entry was a *Tiger Moth* also roughly 36 in. span, but with a K.B.19. It was quite light (in fact almost flimsy) and flew like a supersonic jet—looked silly. They both lost flying points and were beaten by an inferior model which was powered sensibly. Therefore, when considering the size of model give a thought to the type of aircraft being modelled and choose power to give an appropriate performance.

Yours faithfully,
B. R. DUNN
Eastbourne,
New Zealand.

Club News

ST. ALBANS M.A.C.

We managed to beat Surbiton in the first round of the L.D.I.C.C.C. Our win was by a very narrow margin and the day was not without its mishaps; in fact George Fuller had one of the most unlucky days he can remember. He began the day by writing off two power models; this was followed by a clockwork timer blowing up and an engine which refused to run any more! Thus he was reduced to trimming and flying his third reserve!

A contingent from the club attended the area championships at Wigsley, but did not have a very successful day, Bryan Cox writing off a power model, his first prang in about two years!

ASHFORD M.A.C.

At our second combat rally the weather was really wonderful. But the entry was not as large as we anticipated, so next year we hope to have team racing also.

The Rivers works boys were quite impressive by their team work and fast models. Mike Smith was using the new Rivers 3.49—this should be very popular if they all go as fast as Mike's. However, after a very exciting three up final, Peter Tribe and his *Razor Blade* emerged as the winner of a hard won battle.

Results

1.	P. Tribe	Northwood
2.	G. Rivers	Hayes
3.	B. Greenaway	Hayes

DARTFORD M.F.C.

At our rally held at Central Park we ran four contests—combat, class "½A," "A" and "B" team race—the entries being 53, 10, 24 and 13, respectively. This was the club's 21st birthday rally, and competitors came from as far as High Wycombe, Dover and the Isle of Thanet.

The weather was perfect—lots of sun, no rain, and a nice gentle breeze. It attracted many spectators, who all appeared to be enjoying the fun.

Although there were one or two slight hitches the rally ran fairly smoothly and many competitors complimented us on a well-run rally.

The B.B.C. sent along a camera team and a reporter and showed the result of their labours at 6.10, Monday evening. They spent most of the afternoon filming and did quite a good account on the TV.

Results

Team race

Class "A"

1st	Balch	Hayes
2nd	Tyler	Feltham Eagles
3rd	Cooper	Mill Hill
4th	Kilner	Feltham Eagles

Class "B"

1st	McNess	W. Essex
2nd	Taylor	W. Essex
3rd	Whitebread	W. Essex

"½A" Final

1st	Cheesman	Sidcup
2nd	Dew/Bell	Ecurie Endevor

Combat

1st	A. E. Rivers	Hayes
2nd	Jones	Enfield

U.S.A.C.

The aeromodelling clubs of Chichester, Worthing, Lancing, Horsham, and East Grinstead, have formed an association in Sussex, the name of which is the "United Southern Aeromodelling Clubs," Association (U.S.A.C.). The association's aims are, to further aeromodelling interests, to run, and help to run, competitions, comradeship between clubs, exchange ideas, and to help each other.

Interclub competitions are being arranged to take place in the autumn. Two cups, one for open glider, and one for open power, are being donated by the secretary.

Due to the recent stoppage in the printing industry it has not been possible to include all reports received—sorry! Remember, when sending us a future report, we must receive it by the 15th of the month.

It has been suggested that an aircraft could be hired to take members across to Belgium in September to the 10th Criterium d'Europe, cost about £9 each!

The secretary is R. Lelliott, 6, Orchard Avenue, Lancing, Sussex.

SOUTH EASTERN AREA

The South Coast Gala on October 4th will be held at R.A.F. Tangmere, where, through the kindness of the C.O., we have obtained use of the airfield. This gala is an *aeromodellers'* meeting and not a public spectacle—full details will be circulated in due course and any enquiries should be sent to the Hon. Area Secretary, 28, Milton Road, Dunton Green, Sevenoaks, Kent. (S.A.E. for reply please.)

WEST LONDON M.A.C.

The club has recently been re-formed and has already aroused interest in the neighbourhood with a display of C/L aerobatics at a local school sports day.

Juniors are kept busy on club nights (Monday, at Beaufort House School, Lillie Road) with an indoor C/L pylon and at least one senior is contemplating invading their province! Incidentally, if any London clubs would like to "have a go," they're welcome to arrange a date with us. The line length is 10 ft. and a limit has been imposed on engine and tanksize of 1 c.c. and 7.5 c.c. respectively. At a recent competition, the winner (most laps in 5 min.) averaged nearly 7 m.p.h.! Apparently, it isn't easy to keep a fast machine going for 5 minutes!

SOUTHERN AREA

The Southern Area and West Hants Rally will be held at Beaulieu Aerodrome on September 27th. Contests are for open rubber, glider and power "½A," "A" and "B" team race (results returned to Londonderry House for S.M.A.E. events) and combat. Pre-entry for the C/L events must be sent to J. S. Hitchcock, Russets, Arne Road, Wareham, Dorset, before September 20th.

CROYDON & D.M.A.C.

The Croydon contingent turned up at the trials in strength loaded with winding tubes, Univac-type, self-computing crank-without-care winders and a small army of timekeepers.

The result of all this was that Jack North came first in the Wakefield trials; this now completes his set of British team places, with one each in A/2, F.A.I. power and now Wakefield.

Jack didn't fare so well in A/2, as he came over all shy about his 1950 model, due to the howls of incredulous merriment that normally greet the appearance of its parachute d/t, and instead flew an ultra-modern ('55 vintage) creation resplendent in pretty Aerolac colour scheme; this put him about fifth overall.

Den Partridge's luck deserted him, his *Nebula* having one of its rare off days, and putting him among the "also flews" with John Palmer, and John Blount who took time off from being a blue-suited Beverley airman to place ninth.

Don't forget the Croydon Gala, Chobham, September 13th, all classes of open F/F plus slope soaring and chuck glider. Remember, folks—the gala run for you, by us.

THE LEICESTER M.A.C.

We will be holding another C/L rally at Stapleford Park, Melton Mowbray, Leicestershire, on Sunday, September 13th. There will be two comps, combat and stunt, commencing at 10 and 12 o'clock respectively.

The entry fee for both comps is 1s. 6d. and there are prizes to the value of £15.

The layout will be the same as last year with teas, etc., laid on. Also the train rides.

SOUTH WALES AREA

How many copies of this magazine are bought in South Wales? How many of its readers are in a club in this area? Are you a "keen" aeromodeller, or still a lone wolf, unaware of other modellers in your town? There are a handful of active clubs in the South Wales Area, at this moment, and we of the S.M.A.E. Committee are determined to re-form or start clubs where needed. All that we ask is for you to write either to the area chairman, P. T. Waters, 18, Bridge Street, Kenfig Hill, Nr. Bridgend; or to the area sec., V. H. Davies, 8, Bryn Gaer, Dafen, Llanelly, Carms., and we will do the rest. Please don't hesitate, you must write, as it is only by re-building the area's total of clubs that the aeromodelling movement will be kept active in South Wales. Let's have news from Barry, Newport, Bridgend, Neath, Llanelly—what has happened to these once very flourishing clubs?

WHARFEDALE & D.A.

Due to a request made to the S.M.A.E. earlier in the year by the Wharfedale club we have pleasure in announcing that a "½A" team race *will* be held at the Northern Gala (September 6th) this year.

Prospective competitors should send their entries through the usual S.M.A.E. channels for this and all other T/R and F/F events.

Recently the club members wandered down to the Wharfedale Children's Hospital where a display was to be staged. This lasted 4½ hours and the programme included combat, stunt and balloon bursting to howls of delight from the young spectators.

Members of the club gave away model kits to the children which were accepted with glee and proudly taken indoors.

We have held a series of whist drives recently in aid of the junior travel and support fund; these have proved a great success and have been well attended so far.

BILSTON M.A.C.

During the past few weeks club members have taken part in flying displays at the local Carnival and a Scout Gala. The crowds at each show enjoyed the combat flying best, even more so when five models became airborne, each towing a streamer.

OUTLAWS (CANNOCK) M.A.C.

The last of the area C/L championship events was marred by high winds which considerably reduced the entry. Roy Lockley's much repaired "Smoothie" finally justified its nine month's erratic existence by beating the only other stunt entry by a clear 120 points, making "Lok" second to Brian Horrocks in the stunt championship.

RESULTS

(Aggregate of three meetings)

Combat—Individual

1st	M. Keeling	Rangdipoids (Derby)	6 pt.
	R. Cresswell	Bilston	6 ,,
3rd	—. Cain	Halesowen	5 ,,
4th	R. Gibbard	Rangdipoids	4½ ,,

Combat—Club

1st	Rangdipoids (Derby)	18 ,,
2nd	Bilston M.A.C.	8 ,,
3rd	Outlaws M.A.C.	6 ,,

Stunt

1st	B. Horrocks	Wolves	12 ,,
2nd	R. Lockley	Outlaws	6 ,,
3rd	M. Grimmett	West Brom	3 ,,
	A. C. Day	West Brom	3 ,,
	O. Fisher	Coventry	3 ,,

Team Race—F.A.I.

1st	R. Deville	Rangdipoids	2 ,,
	Bayliss	Rangdipoids	2 ,,
3rd	K. Newbould	Rangdipoids	1 ,,
	R. Lockley	Outlaws	1 ,,

Overall Championship (all three events)

Individual

1st	B. Horrocks	Wolves	12 ,,
2nd	R. Lockley	Outlaws	7 ,,
3rd	M. Keeling	Rangdipoids	6 ,,
	R. Cresswell	Bilston	6 ,,

Club

1st	Rangdipoids	23 ,,
2nd	Outlaws	13 ,,
3rd	Wolves	12 ,,

NEW CLUBS

GRANTHAM & D.M.A.S. W. Freestone, 52, Houghton Road, Grantham.

GIRLING A.C. B. Young, 11, Fairy Lane, New Town Centre, Cwmbran, Mon.

FELTHAM & D.M.A.C. H. E. Martin, 72, Hanover Avenue, Feltham, Middx.

CHANGE OF SECRETARY

ANGLIA M.F.C. P. Davis, 19, Greenways, Chelmsford, Essex.

SOUTHERN CROSS A.C. G. K. Gates, 45, Boundary Road, Hove 3, Sussex.

NORTHERN HEIGHTS GALA

After a rather uncertain start, the weather man realised that it was the N.H.G. day and obliged accordingly—everyone, therefore, enjoyed himself as usual.

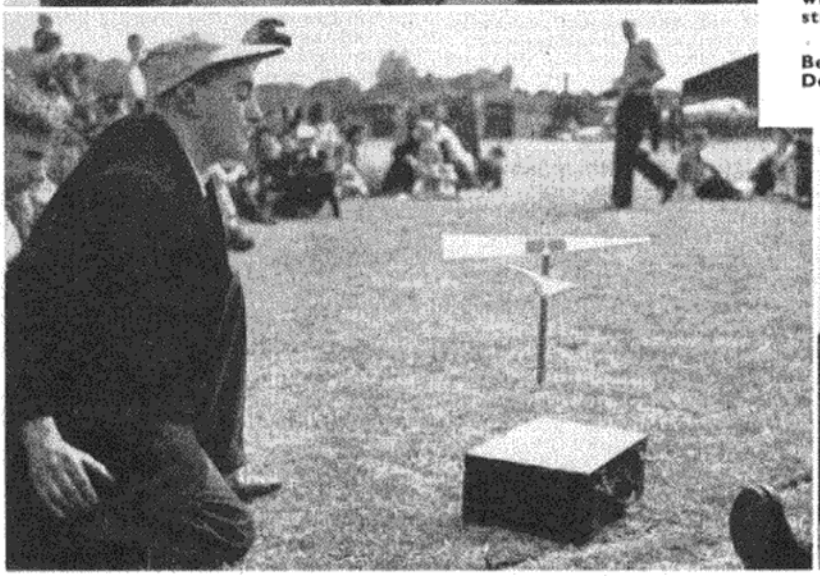
All the usual contests were held, and the full results appear below.

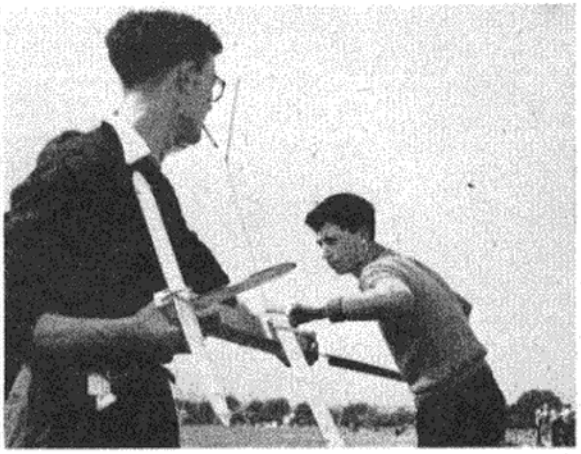
CAPTIONS TO PHOTOS

Top left: Surprise of the day. P. E. Norman, in one of his rare contest appearances, won the radio, and with a ducted fan delta! Model weighs 28½ oz., has 270 sq. in. area, and is powered with a Frog 149 Vibramatic, while the fully transistorised receiver weighs 1¾ oz. and was made by M. Kite of Mullards.

Left: B. Jukes releases his ultra light Thurston Trophy winning helicopter. Model was really "indoor" construction, but then it was almost indoor conditions!

Below: Pete Scarbrow assists fellow Croydon club member, Den Partridge, with his rubber model.





Recent Results

MODEL ENGINEER CUP *Team glider*

1. St. Albans	25.43
2. Northern Heights	21.34
3. Birmingham	21.21
4. Essex	20.22
5. Baildon	19.57
6. Coventry	19.46

FLIGHT CUP *U/R Rubber*

1. O'Donnell, J.	Whitefield	11.20
2. Crossley, P.	Blackheath	10.52
3. Tubbs, H.	Baildon	9.55
4. Chambers, T. B.	Tees-side	9.33
5. Roberts, G. L.	Lincoln	8.49
6. Thorp, E.	Derby	7.57

F.A.I. POWER CHAMPIONSHIPS

1. Posner, D.	Surbiton	29.58
2. Jays, V.	Surbiton	29.53
3. Manville, P.	Bournemouth	28.45
4. Young, A.	Surbiton	28.26
5. Cox, B.	St. Albans	28.22
6. Spurr, A. W.	Tees-side	25.52

NORTHERN HEIGHTS GALA

QUEEN ELIZABETH CUP *Wakefields*

1. G. J. Lefever	S. Essex	501 pt.
2. G. Fuller	St. Albans	480 ,,
3. M. Dixon	Leamington	417 ,,

FLIGHT CUP *Open rubber*

		sec.	sec.
1. D. Greaves	Leamington	360	395
2. N. P. Elliott	Men of Kent	360	363
3. E. Barnacle	Leamington	360	296

FAIREY CUP *Open glider*

1. J. H. Foxall	Northwick Park	360	145
2. J. Orde-Hume	Northampton	360	103
3. E. Wiggins	Leamington	360	99

THURSTON TROPHY *Helicopter*

1. E. J. Jukes	107 pt.
2. R. M. Dudley	82 ,,
3. F. G. Boreham	28 ,,

DE HAVILLAND BOWL *Open power*

		sec.	sec.
1. R. Lennox	Birmingham	360	189
2. N. Lovett		360	160
3. P. Dodd	Surbiton	360	124

R.A.F. REVIEW CUP *Radio control*

1. P. E. Norman	19 ft.
2. D. Knights	48 ft.
3. J. Batchelor	55 ft.

KEIL CUP *Combat*

1. —. Pratt	Northwood
2. M. Smith	High Wycombe

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General Flying Models	D. Williamson	A/2 Glider
Power Models	V. Spence	Westland *Widgeon*
Flying Scale	R. L. Aaron	Bleriot
Special Award	A. W. Evans	Sikorski 539b

AEROMODELLER TROPHY GALA CHAMPIONSHIP

E. Barnacle — Leamington

Contest Calendar

Aug. 30th	L.R.C.M.S. Annual Contest R/C aircraft only. Single and Multi. R.A.F. Wellesbourne, nr. Stratford-on-Avon.
Sept. 6th	**NORTHERN GALA.** U/R Glider. HAMLEY TROPHY. U/R Power. CATON TROPHY. U/R Rubber. AEROMODELLER TROPHY. R/C. TEAM RACING. Classes "A" and "B."
Sept. 13th	Croydon Gala, Chobham Common. F/F all classes. Leicester C/L Rally, Stapleford Park, Leicester. Combat and Stunt.
,, 20th	KEIL TROPHY. Team Power. Area. FARROW SHIELD. Team Rubber. FROG JUNIOR CUP. U/R Rubber/Glider.
,, 27th	"½A," "A" and "B." TEAM RACING. Area. Southern Area & West Hants Rally, Beaulieu Aerodrome, open R/G/P, "½A," "A" and "B" Team Race, Combat. (Pre-entry C/L events—see Club News.)
Oct. 4th	South Coast Gala, R.A.F. Tangmere, nr. Chichester. (See Club News.)
,, ,,	Cambridge S/S Rally, Invinghoe Beacon, R/C and F/F.

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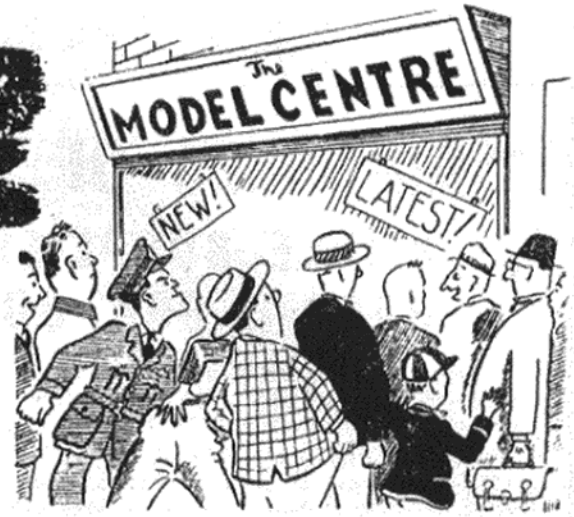

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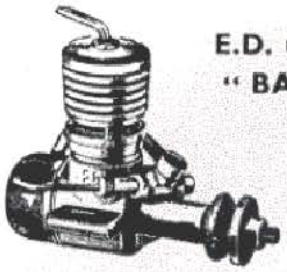

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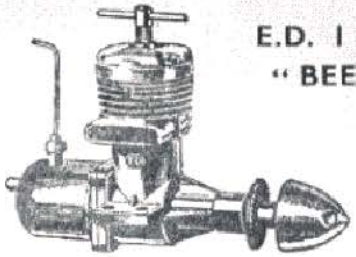

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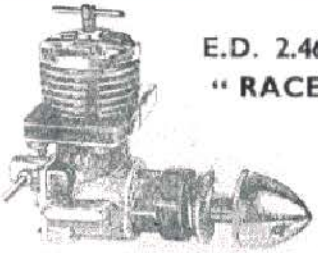

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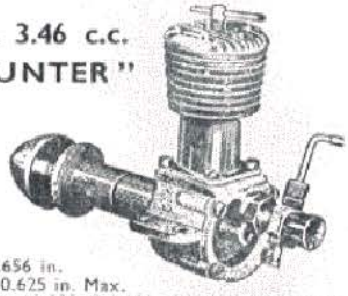

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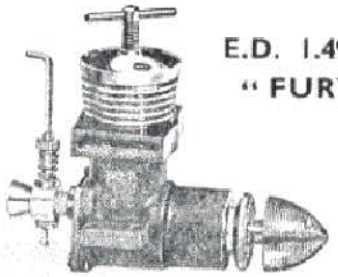

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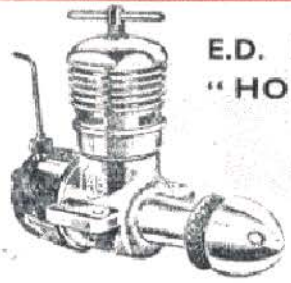

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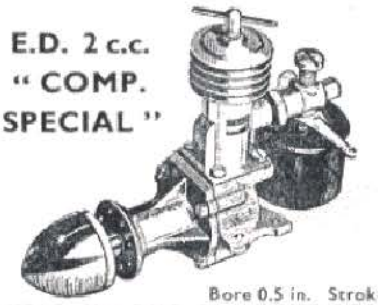

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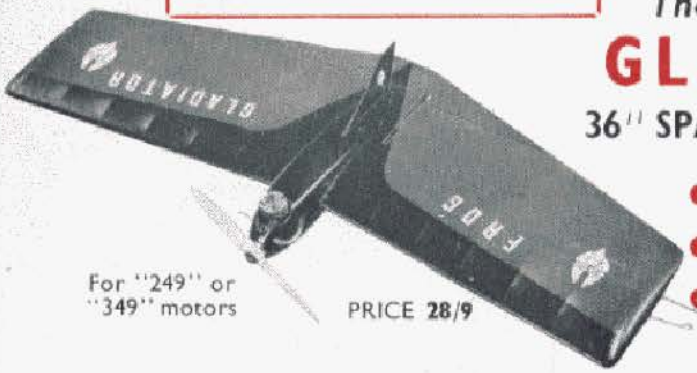

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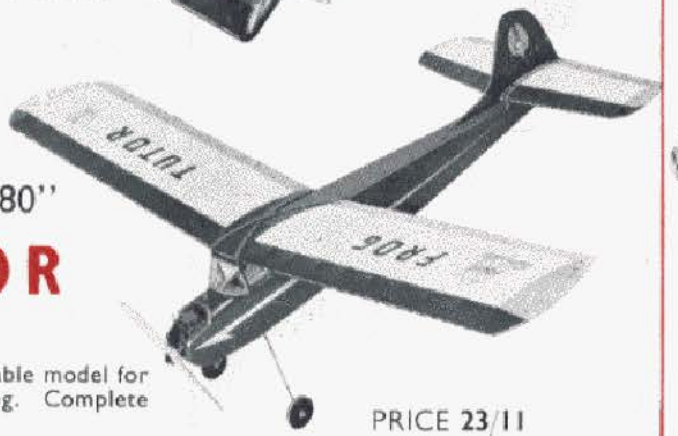
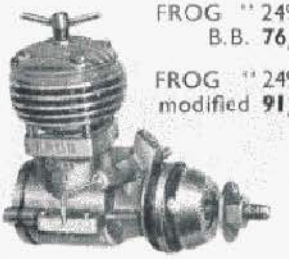
Exceptionally stable model for all weather flying. Complete kit.



PRICE 23/11

THE RIGHT MOTORS FOR THESE MODELS

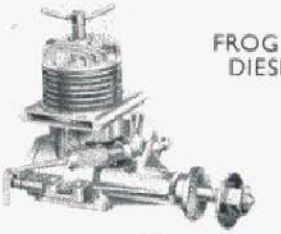


FROG "249" B.B. **76/10**

FROG "249" modified **91/10**

FROG "349" B.B. **79/2**

FROG "349" plain bearing. **73/3**



FROG "80" DIESEL **46/-**

For best performance use "Powamix" and "Red-glow" fuels. Blended by Shell-Mex and B.P.

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INTERNATIONAL MODEL AIRCRAFT LTD.
Morden Road, Merton, S.W.19.