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#### other modelling angles . . .

These winter months tend to make many an aeromodeller look for diversions from his chosen hobby to occupy those leisure hours, when old man weather clamps down with wind and rain. Why not seek your new interests through the next issue of MODEL MAKER and MODEL CARS, out December 22nd? It contains drawings of the fabulous Mercedes Benz W196, featured on the cover. Plans for Graf Zeppelin aircraft carrier. Step by step on model race cars. A Schooner detailed. Yacht racing tactics. For the button and toggle switchers, RADIO CONTROL MODELS and ELECTRONICS, current issue now on sale has a special feature to help newcomers to multi-channel installation. Servo maintenance. New Beep box for control selection. Pylon racer plans. Phil Krafts tone transmitter and U.S. Nats. pics. Both mags, are same price ... 2/- per copy. If your hobby shop or newsagent does not carry a stock, send  $\frac{1}{2}/4$  for return post delivery from address below.

#### Winter events...

#### January 7th.

North Western Winter Rally, R.A.F. Tern Hill, Rubber/ Glider/Power plus = f/f, F.A.I. and  $\frac{1}{2}A$  tr, single/multi/ r/c. Pre-enter to G. Mutch 16 Briar Dr., Heswall, Ches. 2/6 Seniors, 1/6 Juniors. Cash Prizes.

#### January 28th.

FASTE Club Rat Race innovation. R.A.F. Oakington on A.604, Sm. from Cambridge. For up to .40 cu. ins. 60 ft r. 2-wheel gear. Compulsory stop each 70 laps. Details, T. Carpenter, 8 High Green, Gt. Sheford, Cambs, Fox 40 prizes.

#### February 21st.

Croydon A/I glider event. Chobham Common. Details D. Partridge, 126 St. John's Road, Redhill, Surrey. Cash prizes. Special Junior prize. 2/- per entry.

#### **Editorial and**

Advertisement offices

#### 38 Clarendon Road, Watford, Herts

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## AERO MODELLER MAP HOBBY MAGAZINE

## January 1962

VOLUME XXVII No. 312

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#### cover

Red panelling on the British European Airways' De Havilland Comet 4B is an accepted and commonplace sight at many European airports, First of the world's pure jet airliners, and one which has well earned its niche in the history of British aviation, the Comet production line has now been terminated to prepare for its successor, the "Trident". This issue includes scale drawings of the Comet across the centre pages.

#### next month...

Big gliders are coming back. Is it possible that we shall see a return to those enormous Leprechauns and Sunspots' Anyway, the St. Alban's seven-footer is one "open" class glider that has been particularly successful this past season, and no wonder when one reads the names of the expert consortium which formed the design panel. Number 96a (Clubroom address in London Road, St. Albans) is a model which we know will appeal for its simplicity and performance. This is but one item in an itsue packed with surprises, from the colourful Boeing-Stearman PT-13 Famous Bipe on the cover, to a revealing article from German aerodynamicist experts on the advantages of flat based airfoils.

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> that in flying from London—Rome— Athens a B.E.A. Comet 4B uses over 5,000 gallons of fuel but only four pints of oil in its four engines?

> > YOU can't achieve anything like this economy in the consumption of lubricating oil in your model engines, but THIS YOU **DO** KNOW; that when

you choose a Mercury Fuel blended with Castrol M lubricating oil, you will be enjoying the benefits of the same technical know-how from the

finest research organisation dealing with lubricants in

the world, as is enjoyed

by the world's finest airlines.





#### F.A.I. rules stabilised

ADVANCE NEWS FROM the November meeting of National Aero Club delegates and technical advisors to the C.I.A.M. indicates that there is a firm "freeze" on rule changes and modellers may be assured that there will be no alteration to the free flight specifications until 1964. Processing will now be the responsibility of each National Aero Club who will issue a certificate and label models to certify eligibility. The 5-kilogramme tension test for towlines is reduced to 2-kilogramme and new Indoor flight rules allow six flights with the best two to count as official scores.

Both radio control and control line aerobatic schedules are to be illustrated in the Sporting Code, and the new "K" factor system is adopted to unify points awarded for the A.M.A. pattern with those for the F.A.I. flights in control line. Standard fuel is retained for speed and clarification of the rules indicates that the diesel is not eligible for this class.

A scale rules committee has been created to determine an Internationally acceptable set of rules for use in free flight, radio control and control line scale model contests. In order to co-ordinate the work of this committee, and that af the three other specialist sub-committees a new post of Technical Secretary has been created with Rezso Beck of Hungary holding office for the first year. Jarmo Jaaskelainen is the new C.I.A.M. secretary and President H. J. Meier and V. P. H. J. Nicholls, were each re-elected.

Principle outcome of this meeting in Paris has been a universal desire to see that the procedure laid down at the 1960 meeting (described in January, 1961 issue) is better established and that technical matters are dealt with by the sub-committees, both promptly and efficiently.

The programme for World Championships is now firmly established for the future so that all Nations will know their travelling commitments in advance. In order to establish a pattern which separates the Indoor and Outdoor free flight interests, it is necessary that we have indoor and radio control consecutively instead of on alternate years, as follows: For 1962 there will be Indoor (at Cardington in October) and Radio Control (at Cranfield in August) and Control Line Championships (at Kiev, U.S.S.R. in September). For 1963 there will be Radio Control (at Genk, Belgium) and Free Flight (at Vienna, Austria). By 1964, the pattern will be established with Indoor and Control-line Championships; with a repeat of R/C and F/F (as 1963) for 1965, etcetera.

When official minutes of the meeting in Paris have been issued, we will be passing on more notes from the International discussion.

#### Another circle

We're happy to reproduce the picture of yet another permanent flying site for controliners. This one is used by the Strathmoor Model Club of Detroit, U.S.A. and was put down by the Parks and Recreation Dept. at a cost of £2,800. Nicolas Risi, who was with Feltham Eagles in '58 and Hayes Club in '59 is a regular user and is seen with Ed Heiser and team racers in the other photo. Their "Long Gone" Class B racers have had quite a run of successes—as the trophies indicate.

The circle is in River Rouge Park and is alongside *eight* grass circles for up to 70 ft. radius. Used for speed and team racing, the cement track was the scene of the Mid Eastern area F.A.I. team eliminations. Incidentally Strathmoor



M.C. has given a 20 minute display for TV, and the Heider/Risi/Wilson team are claiming a U.S. record of 7:22.8 for Class B using an Enya 29 "Long Gone."

#### Sparks

That 5 kilogramme tension test for towlines was beginning to influence use of metal line and we noted several modellers using plain wire, and braided cable, at the World Championships. They should take heed of what has happened to a Chicago modeller who was towing across a field near overhead cables. Though no contact was positively established, the plastic covered wire was burned through and the modeller received a jolt that threw him to the ground! Same could also happen on overcast days when there is likelihood of an electrical discharge. We hope the reduction to a 4.4lb. pull test will save the situation.

#### Silence . . . rewarded

Leicester M.A.C. are to award a special prize of £5 to the member who is first to place within first three places in any contest with an engine greater than 2.5 c.c. and using a silencer. Shows what a go ahead club will do in the interests of preserving their goodwill with the general public--would *your* club do the same?

#### What to do with Wakefields . . .

Remember John O'Donnell's proposed rules for limiting the performance of a rubber driven model of International specifications which we published in March 1961 issue? Solution John offered was to carry ballast related to the rubber motor.

English Electric MAC donated a Trophy to the North Western Area for this event and October 22nd was the set date for first contest at R.A.F. Tern Hill. Six modellers pre-entered, yet only two arrived on the field. Poor weather was not really the answer to this apathy. John finally made a "fly-over" with his "Maxie" carrying an 80 grammes motor and 80 grammes of lead ballast with a thermal assisted max despite turbulence.

Are we to take this poor support for John's effort to establish a rule change as being typical? We're of the opinion that after a season devoid of competitor information from the SMAE, that it's about time something is done to stir up latent enthusiasms. There should be a resolution from all responsible senior members of the Society to see that members, especially the juniors, get more value for their membership fee in '62.

#### Editor's Comet

For years, Editor Ron Moulton has awaited the registration of a full size aircraft bearing his initials. Ever a scale enthusiast, it was his intention to make a flying model bearing the initials, provided the subject was suitable. As time came near, there were hopes that the first Piper Colts would carry the letters. However, De Havillands stepped in first on behalf of B.E.A. so now your Ed. would very much like to know if someone will sponsor a four Dynajet, 20 channel radio controlled 1/10th scale Comet 4B! (See Cover and pages 25-27).

#### Index

All subscribers to AFROMODELLER, will find a copy of the six page detailed index to AFROMODELLER Volume XXVI for 1961 enclosed with this issue. Those who purchase the magazine from a newsagent or hobby shop can also get a copy by sending stamps or postal order value 1s, and addressed (3d, stamp) envelope for return. All orders for binding the twelve issues into volume XXVI automatically incorporate inclusion of the index at 15s. Copies should be sent to the editorial offices addressed "Binding Dept." with remittance. Binding is in Red cloth with gold blocked title on the spine, making a most handsome volume for your shelves, and one which is always available for easy reference through the comprehensive index.

#### Refrieved

During the last needle-match round for the annual London Inter-Club Challenge Cup on damp and murky Chobham Common, Laurie Barr had to make an 80 seconds flight to secure victory for Hayes club over their St. Albans rivals. He made the time with case but in the dusk, his model disappeared at 1:30 and could not be found.

A few days later, the name and address label paid off with a phone call to the owner. Apparently a good lady of the district had been exercising her Alsation hound

when the animal returned to base with a large Open Rubber model across his jaws . . . and not a mark on the tissue! Laurie was of course very pleased to have the model back. and he was reticent to mention that somewhere along the line, the fin had become detached. But this was no trouble for a Police School trained Alsatian. He smelled the model, then went out next day on recovery exercise to locate the fin with ease! However the story does not exactly end there. When Laurie made his second trip to the household he met the good lady's husband and found he is a buyer for one of



Britain's leading plastic models manufacturer, and needless to relate "Mr. Mastermodels" was soon engaged in trade chatter. First time we have ever heard of a 40 in. span introduction card used for business!

#### **Congratulations** Albert

During the 54th F.A.I. Conference at Monaco in October, Paul Tissandier Diplomas were distributed to those whose contribution to aviation sport had merited special recompense. We are particularly pleased to see that the only aeromodelling representative on the honours list was Albert Roussel of the Federation de la Petite Aviation Belge. This recognition for all the hard work Albert has put into organisation of aeromodelling in Belgium, especially the International Criterium des As meetings, is well deserved. Albert possesses the strength of character which enables him to exercise considerable authority in attending to the many requirements of these large model meetings and without his leadership the hobby would be missing a most influential administrator.

#### Report on the hobby

A most valuable contribution to the well-being of aeromodelling was made by the F.A.I. Models Commission Vice President Henry J. Nicholls when he read his report on the past year's activities to the F.A.I. Congress at Monaco. Deputising for President Hans Justus Meier, HJN outlined the new procedure whereby the creation of technical sub committees is helping to establish a better atmosphere of mutual co-operation between the F.A.I. and modelling Clubs throughout the world. He presented statistics, with an estimate of 7,000 aeromodelling clubs affiliated to National Aero Clubs representing no less than 240,000 active competition modellers, stating that this is but a small percentage of the 4½ million modellers in the world.

The urgent need for encouragement of youth to be creative as well as air-minded is recognised and the F.A.I. programme is making a very real contribution to the cause through World Championships. These were detailed both in nature and in their cost of running. A shattering figure of 52,500 DM (approximately £4,400) was quoted for the 1961 free flight Championships at Leutkirch, W. Germany.

The achievements of the year both in contests and technical development as well as the increasing degree of co-operation between modellers of all Nations was fully emphasised.

Considered by all who have read the report, to be a first class statement of affairs, it was well received by the Congress and will have helped in no small way to impress those in full scale aviation with the volume of enthusiasm and the value in education which is inseparable from our hobby.

THEY'RE OFF! Councillor W. Dewe, Chairman of Esher District Council, raises the flag to officially declare the 200 ft. diameter Esher control line circuit open on November 19th. An invitation contest will be run for F.A.I. Team Race and Stunt on May 20th, when other modellers will be able to enjoy Esher's hard-won flying site







THIS DESIGN STARTED life on 1960, when a A P.A.A. LOAD fuselage was made to use a Wakefield wing and tail for the Northern Gala. It was not flown in the comp. as the wing was irrepairably broken. A one-ounce wing is not strong enough to carry 11 ounces of inverted model when a "kind soul" places it upside down to stop it blowing away in the strong wind!

With the P.A.A. pilot and weight removed, it became a fairly potent "open" A weighing approx. 6 ounces powered by a Thermal Hopper. All three competitions entered were won, at the South Coast, Croydon and Surbiton Galas. Tony Young's contest winning ½A free-flight contest model

## DYNAMO

45-inch wingspan and simple as can be for ease of construction and flying—suits all .8cc. (.049 cu. in.)

At left is the original Dynamo, housing prototype Dydesyne Dynamic O49 diesel engine. Far right shows (top to bottom) tailplane retained in normal position by thread and rubber band strainer (see picture two) linked to dowel projection from fuselage. Dethermaliser fuse burns through rubber band strainer to release the tensioned tailplane to position seen in picture three. Note also the position of the engine timer in picture ture.

Early in 1961 the plan version was created, changing the wing from undercambered to speed up the climb, also simplifying the built-up P.A.A. load fuselage, but keeping the same rigging angles except for changing balance in that the C.G. was moved forward and dihedral was reduced.

Powered by a prototype Dydesyne "Dynamic" .049 diesel, it weighs 61 to 61 oz. and was flown in five contests during 1961, placing in all of them as follows:— 1st at the Midland Area Rally; 2nd at Northern Heights Gala and Devon Rally; 3rd in the Croydon Gala; and 2nd in the S.M.A.E. contest.

FULL SIZE COPIES OF THIS 1/6th SCALE REPRODUCTION ARE AVAILABLE THROUGH A.P.S. AS PET 812 PRICE 5/6 INCLUDING POSTAGE





Wings are best made first as they can be covered and doped and left to age whilst working on the rest of the model. They are quite straightforward and amply strong, provided good straight grained wood is used on the spars. Should added strength be required, the inner panels could be webbed between the two rear  $\frac{1}{2}$  in.  $\frac{1}{2}$  in. spars using  $\frac{1}{2}$  in. sheet with the grain running vertically.

On the fuselage, make up the pylon unit (pylon and two or three formers) and bearer unit (bearers and two formers) align these on one fuselage side then stick the other side on, add the tank then top and bottom covering. Tony uses diesels mostly and makes his tanks out of celluloid toothbrush tubes, cutting it to the length required, adding a top, bottom and vents all of celluloid, using cement as the adhesive. If a glowplug engine is used, a metal tank must be fitted.

When the bearer unit is cemented to the fuselage side, the weight of the motor must be considered, the short nosed version is for a motor weighing  $2\frac{1}{2}$  oz. and the long nose for a  $1\frac{1}{2}$  oz. Nose length must be varied for motors weighing between these amounts. Finish the model before finally drilling the bearers so that one can slide the engine to locate the C.G. correctly.

Check the glide first, packing the trailing edge of the tail until there is just a suspicion of a stall turning right; this is cured later after the first power flights, but acts as a safety measure, ensuring that the model will recover from any position.



Trim the initial power pattern from a  $2-2\frac{1}{2}$  sec. motor run at full revs, launching the model at approx. 80 degrees. This length of engine run is quite long enough to find out which way the model is turning. If the model has been built true, it should be going straight with the wash-in on the wing slightly rolling the model to the left. Balsa strip should be stuck on the fin trailing edge until the model does approx. two turns in 10 sec. turning to the right.

Once the power turn is definitely established to the right, the glide can be adjusted, removing the slight stall tendency—and now you're set for the first 1962  $\frac{1}{2}$ A event!





TWO FINE NEW TRADE LISTS have been issued this month by KeilKraft and Veron. They are strictly for retailers only, and no model shop will be complete without them. Significant innovation in the KK lists is the Mercury range of kits and accessories, plus Fred Rising's R/C products. Lest the modeller be disappointed that there is nothing new here for him, we hasten to mention the latest 1962 edition of the ever-popular Gamages Model Book — still only 1/- despite the raise in print costs — and giving no less than 132 pages jampacked with model items of all types, including a fine





range of plastics. KeilKraft's  $5 \times 3$  three-bladed nylon prop must be in heavy demand. Experts tell us, and contest results prove the point, that this is the tool to get the most out of a Cox TD -049. Moreover, it comes with a neat streamlining spinner at 2/11.

Soldering can make or mar modelling. If you try to do the job with a bulky iron it is like stirring tea with a shovel. We specially like the **Oryx** miniature soldering instrument. There are seven different variations of voltage and bit duty. Our choice is the mains voltage 10 watts with "J" type bit of 3/32-in. diameter tip. It gets into tight corners and puts the heat just where wanted, especially for transistor work. Cost ranges from 25/to 32/6 from distributors W. Greenwood of 677 Finchley Road, London, N.W.2. Makes an ideal Christmas gift! All wiring on our set-up for multi-channel was made with this iron.

When we saw the new Frog range of flying scale rubberdriven models we almost shuddered at their sales prospects. Who makes this kind of model and do they ever get them out to the flying fields? Retailing at 7/6, the series includes the Ryan PT-20 which we have test built, the Chipmunk and Auster. Have Frog overlooked the fact that present-day demand is for throw-together prefabricated all-sheet semi-scales? We must congratulate them for their fortitude, and having built and flown one of them, can most thoroughly commend the design. This is a *modeller's* kit series, calling for care in construction which is amply rewarded by the flight performance and at low cost too for 21-in. wingspan.

Is a hovercraft an aircraft? That question will never reach an answer acceptable to everyone; but naturally, any kit for an air-riding cushion craft or whatever one cares to call them, has some interest for aeromodellers.

Heading shows Oryx iron in action. At right, the Veron Pinto loosely assembled to show prefabrication. Left, Gloy in latest Polythene squeeze bottle is very easy to apply and good for covering, price 1/6. Inside of Hurst Hovercraft, and underside view showing airflow slots at bottom left. Below is the Frog PT-20, a fine flyer and a nice model to make





Above, from Bradshaw Model Products comes the imported Ambroid Stuka stunt C/L kit at 99/-, a superbly engineered kit for a fine model with excellent wood and accessories. Right are the latest Airfix kits for Halifax III and Caravelle

We've made the Hurst HH-1 Hovercraft as kitted by A. A. Hales Ltd. for  $\pounds 4/18/11$ . With a Glow 15 installed it rides well and is very stable. Moreover, it can carry a surprising amount of payload, lending itself to many applications including radio control. Length is 30 inches, and construction (developed by Vic Smeed) is remarkably simple. Incidentally, we regret that a few copies of the December issue went out with an incorrect price in the A. A. Hales advt. last month. Correct price of the *Cox Super Cub* is  $\pounds 5/0/5$  and not as in some copies,  $\pounds 4/8/5$ ; this price relating to the *Super Sahre*, both, of course, in the popular ready-to-fly plastic ranges.

Two new kits out in time for the Christmas trade from Veron are the Pinto 1A team racer with almost complete prefabrication at 33/9 including pre-assembled undercarriage and shaped fuselage parts, plus the Cessna Skylane for free flight or radio control at £4/19/6. Each bears the unmistakable stamp of designer Phil Smith. Parts are cut very accurately, and the design detail blends original and practical thought in a manner that has come to be expected in all Veron products. We shall be reporting on our tests with the Skylane at a later date. At the moment it is sufficient to say that it is a model which gives the modeller a great deal of pleasure in construction.

Airfix have brought out the Halifax in their 1/72nd scale No. 5 series and launched the 1/144th scale *Skyking* series with a Comet 4B to nicely coincide with our feature this month, and the Sud Caravelle. Retailing at 4.6, these small-scale plastics lose little in detail to their larger brethren and at the same time offer a more convenient display size.

Want a workbench that virtually disappears into the wall? Gould's folding bench table with a timber bench top 42-in. x 20-in. mounted on steel frame seems to us

Below, Sebel Products latest ready-to-fly should be a wow for parlour flying and would make a nice subject for indoor club activity with everyone flying same model. Developed by Bert Judge, it sells at 3/6 and is of mixed balsa and plastic structure. Centre is the KeilKraft threebladed 5 x 3-in. propeller mouded in nylon and with detachable spinner. Is proving to be ideal for .8 c.c. engines. Right (bottom) is a bargain in glowplug accumulators from Roland Scott at 10 - through the post or 7/6 for callers, worth infinitely more. Above right is frog Ventura glider kit, 42-inch span, makes a good beginner's subject.







to be ideal for the modeller. A tool cabinet, designed to fix above the bench and which is enclosed by the bench as it is folded up, can be obtained as an extra. So, too, can one get a vice to fit the bench. Details from Gould and Co., Dep. A/M., New Bond Street, Birmingham 9.





### AEROMODELLING IN OTHER COUNTRIES

## ... **INDIA**

IT IS ONLY comparatively recently that India has flown into aeromodelling skies. One would expect its progress to be faster than it is, but our country needs its foreign exchange and consequently, the import restrictions are very heavy indeed. Under such circumstances, it would hardly seem fair to compare it with England but compare we must, if only to show the condition of aeromodelling in this country.

A friend recently went to England and what he wrote back literally made my mouth water. Having been used to the dearth of goods here, he was utterly bewildered on entering one of the local model shops, by the vast and almost frightening choice of engines, kits and accessories available for the modeller. The tale here is a different and disheattening one. Let us consider Bombay, one of the largest and busiest cities in the vast subcontinent of India. In spite of all its importance, there is only one, yes ONE!! shop which *claims* to cater for acromodelling.

If one is lucky, the man behind the counter smiles and says reassuringly, "Oh, you are lucky; our full stock has arrived, and there are five engines to choose from." One should explain that the N.C.C. (National Cadet Corps) in Bombay has a large air-wing and it is this unit which gets first preference over all engines from the main shop in Calcutta, and just the left-overs are available for the local modellers.

The question of kits is a different one—few foreign kits are available, but quite a range of kits is made in India by "India's Hobby Centre", to whom all credit for the quality and prefabrication of their kits.

In all India, a land several times larger than the British Isles, there are only TWO shops (one with subbranches) which cater for the needs of aeromodellers. One is India's Hobby Centre, a concern with a large shop in Calcutta and branches in New Delhi, Madras, and Bombay. The other is "Model Aircraft India Service", which does business only in Calcutta and has no branches elsewhere. Between the two of them, there is a total of only twenty six engines available in India the Frog 500 being the only 5 c.c. engine available. When one reads the AFROMODELLER ads. of large and wellestablished concerns where there are over 300 engines to choose from, it is little wonder that the Indian aero-

Below left: National Cadet Corps modelling activity includes many A.P.S. designs and British kit models. At Right: a look inside Bombay's model shop. Heading pic shows author with his "Blue Pants".



D. Vimadalal Commencing a new series on the activities and interests of modellers in othey countries.

by



modeller's eyes almost pop clean out of his head!! In Bombay there is only one club which meets every

Sunday at an airport almost 20 miles out of the city. There has not been a single competition in Bombay for 2½ years. In Calcutta there is an annual competition which attracts quite a number of aeromodellers from all over India and has of course been regularly featured in "World News". Credit must be given to Mr. K. L. Roy who organises the event. With more men like him, Indian aeromodellers would benefit greatly.

In one way, Indian modellers are very fortunate. Even in a city like Bombay there are numerous "maidan's" (open spaces) where one can fly in peace, unmolested by any forbidding authority; and as far as the weather goes, it could not be better suited to flying all the year round except in the monsoon, the skies are a clear azure with small puffs of cloud. Winds are never too strong and the sun is always to be seen, unlike one in England.

One cannot always have everything! But one quality that everybody can possess is the spirit to keep the hobby going, and not let any difficulties dampen one's enthusiasm. Next time any English aeromodeller walks into a shop and grumbles at what appears to him to be "poor-stock", and is full of self-pity, let me, an ardent enthusiast from India, remind him that there are many hundreds of aeromodellers here who would probably give anything to walk into a shop with what seemed to him as "poor-stock". Mr. English aeromodeller—you don't know when you are lucky!







Graham Freestone worked very hard on his A/2s in '61 and fully deserved his British Team placing. Two models taken to the World Champs are drawn above and indicate his approaches to rough and calm weather tactics. "Liz" has an extraordinary wing structure which absorbs three lengths of shaped trailing edge and a full width of one-eighth by 3 in. sheet! Should make that centre panel area over the mid 51 inches of wingspan virtually unbreakable but heavy! "Ganymede" was used, naturally enough, at Leutkirch and proved to be a fine thermal holder. In fact, on home ground it has shown that it can do 3:03 without any real evidence of thermal aid.



A variety of international models including a World Champion









J. McGillivray is well known for his contest work in Canada, and his Open Rubber contest design at right has a good reputation. Because this type of model is popular in Great Britain, and other countries which are "ALL-FAI" have modellers who have expressed a wish to try the unrestricted type, we include full size airfoils above as a guide for the "own-designer". Two piece wings are relatively unusual, especially when they come from the land of large car boots, but in this case we suspect they stem more from an interest in localising damage, or rather avoiding damage, instead of any convenience for portability. At left is a leading French design to the Coupe d'Hiver class which contrasts directly with the Canadian model. Coming from a Junior (under the guidance of Lucien Foret), "Lou Diablas" emphasises the requirement for a short motor and long tail moment to get the most out of the small model. Incidentally we shall be giving more Coupe d'Hiver gen next month with details of an International Postal Challenge event.

**Recent World Championships have** been a triumph for what might well be termed the veteran community of U.S.A. modeldom. We refer to Gerry Ritz taking the '59 A/2 honours, to George Reich the Wakefield in '61 and Joe Bilgri the first World Champs for Indoor Models held at Cardington last August. Each is an all-rounder; but Joe more so than the others and his personal victory all the more respected as he has always been regarded as a pioneer protagonist for better standards in microfilm covered models. The F.A.I. Floppy at right was drawn "from life" at the Cardington meeting and shows the large area used in wing and tail to take advantage of the only restriction for the class which is that wingspan must not exceed 90 centimetres.







NO 91

BASICALLY SIMILAR IN geometry throughout to the Cox .010 described in October, 1961 report—all the Cox Tee-Dee series are virtually scaled to an identical design—the Tee-Dee 15 gives a truly remarkable performance which quite outstrips that of any other plain bearing engine, diesel or glow, of similar size. In many respects the Tee Dee 15—and thus the whole Tee Dee range—is a development of the original Cox "Olympic".

The bottom end is, of course, entirely re-designed around the Cox version of conventional shaft induction instead of reed valve. The bearing is plain, honed to finish, and carries a very hard, very large diameter shaft  $(\frac{1}{4}$  in. o/d). The shaft is stepped to give a long rear journal and a short front journal, ground to finish over the journals and the crankpin. A rectangular port .290in. wide and <sup>2</sup>/<sub>18</sub> in. long is cut in the shaft (finished with perfectly vertical edges, not just milled in by one operation) and exactly matches a corresponding port in the crankcase unit. The crankcase is then surmounted by a hard nylon type plastic injection moulding, which seats on a taper and also locates positively radially. A screwedon collar then holds this moulding in place and the intake tube and carburettor assembly screws into the moulding to complete the induction system in most efficient manner.

The shaft itself steps down to a stub  $\frac{1}{2}$  in. diameter length immediately in front of the bearing, which is splined to carry the propeller driver (machined from light alloy and anodised gold). The propeller shaft consists of a .161in. diameter steel screw, screwing into the shaft, carrying on the front a turned dural spinner in lieu of a washer.



As with all Cox engines, virtually all parts are turned from solid bar stock (with the exception of the plastic moulding) on automatic machines capable of working to very high accuracy, high surface finish, and with piston and cylinder units produced under controlled conditions for absolute accuracy of the order of millionths of an inch. As a consequence, there is no case of "selective fitting" when assembling. Tolerances held are such that all parts fit and the order of fits obtained is probably considerably higher than those developed manually. For the same reason, Cox engines need little or no runningin and although the test Tee-Dee 15 was given about an hour's running before taking any final readings, there was no change in performance.

The Tee-Dee 15 is essentially high revving, demanding a relatively small size of propeller. Peak r.p.m. on static test we found to be between 17,000 and 18,000 r.p.m., depending on fuel used. Running was consistent and strong at even higher speeds, indicative of more than

## ENGINE ANALYSIS

by R. Warring



adequate porting and correct timing. Induction is between approximately 55 degrees after b.d.c. to a little over 40 degrees after t.d.c. and gas flow is no doubt assisted by the "reservoir" space formed by the plastic housing, leaving a sort of accumulator chamber above the actual port. With pressure feed, fuel can literally pour into the intake throat at high speed running so that virtually liquid fuel is sucked in when the port opens. The needle valve control under such conditions becomes extremely non-sensitive and needs a considerable amount of adjustment to arrive at optimum settings. One gets the impression that the more fuel that is poured in, the higher the speed for a given load, but such speeds are not held consistently without careful adjustment.

Although we found the Tee-Dee 15 very easy to handle, starting characteristics on smaller propellers are definitely not as good as in the case of other Tee-Dee engines. The compression ratio is so high that it is rather like starting an over-compressed diesel. A good strong flick is required and then more often than not, the engine starts backwards and continues to run backwards at a moderate speed. As a point of interest, when running backwards it is often possible to be leaning out the needle to produce a backfire, when the engine immediately runs in the right direction—and provided the needle can be opened again quickly enough, will continue to run the right way. We also found it possible to produce "right way" starts by flicking gently backwards initially. The best answer with 7in. diameter propellers or smaller, seems to be finger choke until the fuel line is full, prime through the exhaust and then flick smartly. Exhaust priming is also most effective for starting.

#### Propeller R.P.M. Figures

Ni Methane	tro Content	0 Frog Redglow®	15% Record Nitrex	20% Castor 25% Methanol 55%	50 % Castor 25 % Methanoi 50 %
Top Flite	7 x 6 8 x 4 8 x 6 9 x 4 10 x 3 1	15.100 15,000 12,000 12,000 10,200	15,200 15,000 12,000 12,000 10,200	15,400 15,200 12,500 12,400 10,200	17,000
K-K (nylon)	7 x 4 7 x 6 8 x 4	17,000 14,300 15,000	17,000 14,400 15,000	17,800 14,500 15,200	18,800 15,700 16,300
Frog (nylon)	7 x 4 8 x 4	16,500 14,500	16,600 14,800	17,000 15,000	18,400 15,800
Trucut	7 x 4 8 x 4	17,800 15,500	17,800 16,000	18,000 16,000	18,900

 Although Frog Redglow contains no nitro methane, it is not a true "straight" fuel since it contains a small proportion of other ignition additives.

Performance we found to be excellent on straight fuel (with non-nitro additives—see PROPELLER—R.P.M. figures), yielding a peak B.H.P. of around .35 at 17,000. We could not improve on this figure over a period of a number of runs on different days, although undoubtedly higher figures have been obtained with individual engines. Nor did we find any appreciable difference in performance using 10 per cent. and 20 per cent. nitro methane in the basic fuel—only a very slight gain in the latter case and virtually no difference with 10 per cent. On stepping up the nitro methane content to 50 per cent., however, there was a very appreciable gain throughout the whole power range explored, realising a peak B.H.P. of .455 at 18,000.

The particular difficulty using a high-nitro fuel (50 per cent.) is that it is extremely destructive to the glow element. We burnt out six heads, making some ten separate runs on 50 per cent. nitro fuel. Further, the original cylinder was not strong enough to take these fuels. The problem of whether or not to continue "high nitro" testing was finally solved, when the cylinder cracked at the bottom of the exhaust ports on a 20,000 r.p.m. run (with destruction of yet another element).

This was a pure structural fault—just not enough metal holding the cylinder on, subsequently rectified by the manufacturers. The cylinder is of soft steel with diametrically opposed rectangular exhaust ports milled through the walls. Two transfer passages are milled

First test engine bhp curves below







upwards on the inside of the cylinder, passing between the pillars left between the exhaust ports. The actual section consists of three arcs see drawing at left leaving very little column strength supporting the top of the cylinder.

On the original cylinder the actual thickness of metal at the critical points holding the cylinder together was only .0135in. --- just not

man enough for the job, as the manufacturers have since confirmed. Breakage, when it occurred, was always in line with the bottom of the port and the stress raiser in the form of a sharp square corner here

#### Propeller—R.P.M. Figures

Frog nylon Top Flite	8 x 4 7 x 4 8 x 4 7 x 6	16,000 18,000 16,200 16,400 16,400	Production engine test on advised fuel, below:	
	9 x 4	12,900		



#### Crack on first test engine, and new type thick cylinder, at left. All Cox TD's will have thicker barrels in future.

has been relieved by putting in a radius (nominally .025in.). At the same time, wall thickness of the cylinder has been increased by .010in., making the thin part measure .0235in. instead of .0135in., after the cylinder has been bored and honed. Having received a new cylinder for examination, we are convinced that no further breakage of this type should occur.

The use of nitro methane in the fuel is definitely beneficial. Although we found little or no improvement in power performance, using up to 10 per cent. nitro, and only a small gain with 15 per cent, nitro, adjustment is less critical. With 20 per cent. nitro and higher nitro mixtures, there is a definite gain, almost directly proportional to nitro content. Unfortunately, the original engine was wrecked before intermediate fuels between 20 and 50 per cent, could be investigated. A subsequent replacement again employed the original thin cylinder which, not being the current standard, we did not feel justified in exposing to similar "high nitro" strains. Propeller r.p.m. figures were virtually identical to our original test data on low nitro fuels, but definitely "up" on 30 per cent. nitro used as a practical maximum and with castor content reduced to 20 per cent. No 30 per cent. nitro figures were available on the original engine for the direct comparison and so a separate B.H.P. graph is shown below left for the second engine.

We rate the Cox Tee-Dee .15 as an outstanding production which should achieve considerable prominence in the contest field-as well as making an equally good sports motor, for it was quite happy turning at 10in. x 3}in. propeller at 10,000 rp.m. plus. Pressurisation is not necessary but may be advisable for contest work where the engine is being operated at peak r.p.m. and tends to require a more critical needle setting for consistent performance. A pressure tap point is provided on the plastic housing (intake moulding)

#### Specification

Displacement: 2.449 c.c. (.1494 cu. in.)

Bore: .58465in. Stroke: .556in.

Bore/Stroke ratio: 1.05.

- Bore/Stroke ratio: 1.03. Hare weight: 4 ounces. Max. power: .35 B.H.P. at 17,200 r.p.m. on straight fuel *Original* .455 B.H.P. at 18,000 r.p.m. on 50% nitro methane *test engu* .44 B.H.P. at 17,000 r.p.m. on 30% nitro methane—*product*.
- test engine -production
- model. Max, torque: 27 ounce-inches at 10,000 r.p.m. on Original straight fuel test 30 ounce-inches at 10-12,000 r.p.m. on 50% nitro [ engine

methane

Power rating: 143 B.H.P. per c.c. on straight fuel. .18 B.H.P. per c.c. on 30% nitro methane (original production model).

.186 B.H.P. per c.c. on 50% nitro methane (production model). Power weight ratio: .088 B.H.P. per ounce on straight fuel. .11 B.H.P. per ounce on 30% nitro methane (original production

model).

.114 B.H.P. per ounce on 50% nitro methane (production model).

#### Material Specifications:

Crankcase: machine from light alloy bar stock,

Intake housing: injection moulded plastic. Cylinder: mild steel (integral fins).

Cylinder: mild steel (integral ins). Cylinder head: turned from light alloy (integral glow element). Back cover: machined from solid. Crankshaft: hardened steel 7kin, diameter. Connecting rods: hardened steel (machined). Ball and socket little end. Piston: hardened steel (hardened on walls only), flat top.

Propeller shaft: .161in. N.S.F. steel screw and spinner (turned from light alloy).

Venturi intake: machined from light alloy, Carburettor collar: light alloy (anodised gold).

Carolifeitor conar, ingin anoy (anotised gold). Needle: steel (spring ratchet). Propeller driver: machined from light alloy (anodised gold). Manufacturers: L. M. Cox Manufacturing Co., Box 476, Santa Ana, California, U.S.A. U.S. Retail Price: \$12,98. Price in G.B. 124s. 0d. British importers: A. A. Hales Ltd., Potters Bar, Middlesex.

### AEROPLANES IN OUTLINE Number 62 De Havilland COMET 4B

Drawn by D. H. Cooksey

JUST AS THE ORIGINAL Comet I was first in the field of pure jet air transport for relatively long haul operation, so has the extended and more powerful Comet 4B become the forerunner of many high density short to medium distance jets. It has, in fact, been the aeroplane which has forced the argument in favour of the turbojet over the propeller turbine types.

After the Comet 1 disasters, and the subsequent strengthened Mk. 2 (with Rolls Royce Avons replacing the De Havilland Ghosts) proved that all causes of failure had been eliminated, De Havillands produced a stretched fuselage variant in the Mk. 3.

Fuselage length jumped from 96 ft. to 111 ft. 6 in. and introduction of the Avon 523 gave a total power of more than double that of the first prototype. Registered G-ANLO, the Comet 3 created many records and its range potential for North Atlantic operations led to an order by B.O.A.C. for the developed Mk. 4. In order to curtail the test programme, the 3 became in turn the and then, when span was reduced from 115 ft. to 107 ft. 10 in. to simulate the projected 4B high density version, was known as the "3B". It appeared in both B.O.A.C. and B.E.A. colours, and now is XP 915 of the R.A.F. Blind Landing Experimental Unit (see picture below). Thus the last of the production Comets was developed, and the red, black and white livery of B.E.A. was introduced to an appreciative travelling public on these highly polished airliners. Fourteen aircraft are in

service with the British line and another four with Olympic (Greek) Airways. They operate with a passenger plan of 64 tourist and 22 first class seats over the European routes ranging in length from London - Moscow and Istanbul to the short runs of London - Dusseldorf and Frankfurt. Fitted entirely in tourist seating, the 4B could carry 102 passengers.

Most impressive attribute of the Comet is its initial rate of climb from the 146 m.p.h. take-off — this with full load including almost 8,000 gallons of kerosene fuel. The way in which it has brought jet travel to a very large proportion of the holiday traffic on the Zurich

Elegance is personified in the heading photograph of G-APMA, first of the Comet 4B's to be delivered in 1960. This was also first aircraft to carry the then new British European Airways livery. At right is G-ARGM rolling out for its acceptance trials and passing the development 3B, now in service colours as XP91S and marked as belonging to the Blind Landing Experimental Unit. Large control surface and flap areas are evident in this hangar roof view of the Comet at Matfield route (with a 530 m.p.h., I hour 25 min. journey) has left a most favourable impression. As with its sister type, the longer range Mk. 4 and 4C in B.O.A.C., the Comet is popular with its crews. Why then, is production terminated?

The answer is simply that through being the very first in the field (G-ALVG first flew on 27th July, 1949) the Comet design approach is now surpassed. More economic engines have been produced, and the conception of rear mounted engines after the Caravelle (which, incidentally, has a Comet nose cabin) has replaced the wing root buried turbojets. It is to be hoped that its successor, the Trident will achieve equal fame and greater commercial success in a highly competitive field. Certainly the Comet 4 will be with us for a long time yet, and its elegant form and characteristic silenced jet whine will always be admired.

Among its distinctive design features are the enormous flaps which reduce landing speed to 138 m.p.h., and the splayed jet pipes with silencing scallops which are arranged to deflect jet blast away from the rear fuselage. Most noteworthy feature of the structure is that it has been designed to be as much "safe life" as it is "fail-safe" and stemming as it does from the world's most tested airframe, particularly on the question of metal fatigue, this enhances confidence in what to many is the epitome of a *real* airliner.

Dimensions of the Comet 4B. Wingspan 107 ft. 10 in. Length, 118 ft. Height, 29 ft. 6 in. Wingsweep, 20 deg.







LATEST NEWS from the A.M.A. in the U.S.A. is that the Unlimited Power loading proposal and Class C are adopted. Classes A, B, and A models have had to weigh not less than 173:4 ounces per cubic inch of engine displacement. Provision of all "Open" classes will let the rocketeers have their show at the U.S. Nats.

Speed team for the World Champs will be Lauderdale (125 m.p.h.), Shuette (120 m.p.h.) and Carpenter (119 m.p.h.) with Nightingale as reserve. Silhavy and Aldrich have qualified for stunt, the West Coast rep. has yet to be announced, but whoever it is, they'll have a strong team at Kiev.

We've often wondered how many American modellers fly themselves to model meets. Arnold Zimmerman of Chicago Aeronauts is one, and he often takes fellow clubsters along in his Piper Tripacer. However, that doesn't guarantee that they are travelling by fastest method, for on no less than three such trips the homebound journey has had to be abandoned due to bad weather. Not much pleasure in having to leave the 'plane tied down for a week and renting a car to complete the journey! Pan American has dropped sponsorship of the PAA Class; but the contest goes on in some areas. The third annual Chicago Aeronuts event on October 1st was held over a water-logged field in a 20 m.p.h. wind. Not exactly conducive to thermal activity!

Now that World News is back after its long oreak due to space needed for International contest reports, we are able to correct an error in our advance news of the U.S. Nats. We stated that there were no full maximum scores in the F.A.I. events. This was not true of the Open age A/2 class which ended in a marathon of seven max's for Glenn Kinney of Lexington, Mass, against six max's by Dan McDonald of Greenville, Pa. Their respective totals were 1,350 and 1,184 secs,



making Glenn's total a new U.S. record and first, in our knowledge, to take the A/2 through to the four minute stage.

Helping the junior along is the theme of Roskill Modeller's Club in Auckland, New Zealand. They are sponsoring all expenses for a junior to travel to the week-long N.Z. Nats at Christmas. Lucky lad goes to Fielding, near Palmerston North, where the contests take place on an 88 acre airfield, surrounded by flat farmland.

City of Bucharest won the team Championship at the Rumanian Nats with University City of Iasi following close. Wakefield provided the only full score of 90 secs. by Otto Hints, who also won the power event at 788 secs. with a Hajek influenced design.

From the United Arab Republic we learn that the model department of the Egyptian Aero Club in Cairo has about 80 members regist red with predominant interest in gliders. Each October they compete for the "Al-Ahram" Trophy which allows for entry in a mixture of free flight and control line. Winner is the entrant with highest score in three categories and for the past two years it has gone to Ahmed Bassiouni. He qualified for the International Tailless event at Leutkirch, and had a design based on the Swiss flying planks with S-1 airfoil which managed 19 minutes on the first test flight (thermals are terrific at Cairo) making a new U.A.R. record. Picture, bottom left. shows Ahmed with the model.

Last of the five free flight meetings which determined the Champions of Finland provided a clean sweep for Kiuru club of Helsinki. Into Kekkonen making a perfect 900 secs. in A/2, Arto Tauría the same in Wakefield and 16-year-old Pauli Laxman led power; but by a mere 4 secs, over his identical twin brother Lasse! Over the year's performance, Sandy Pimenoff retains his power lead, Pentti Aalto leads Wakefield and Torsten Strang, A/2. Soon these lads will be preparing for their annual New Year's Day Indoor events, and in February they'll be putting free flight on Ice for the annual International at Helsinki.

Another International which appears regularly on the F.A.I. Calendar is the Hydromodel contest

Heading shows Shaul Nutove of ISRAEL with his 156-inch span maximum site F.A.I. glider designed for single channel radio control. Model now has sheeted leading edges and is called Eagle Mk. S. Shaul is a member of Tel Aviv M.A.C. and has only one hand — stout effort1 At far left is Ahmed Bassiouni with flying wing in EGYPT. Immediate left is scale winner at the first International scale event, M. Huybrechts of BELGIUM with black and orange Chipmunk

AERO

JOORNUS:

at Split in Yugoslavia. For 1961, teams went from Poland, France, Monaco, Germany and of course, the host nation. This gave an entry of 35 in F.A.I. power, 20 in Wakefield — on floats. Consistency with well-tried models paid off for leaders Zlatko Merker (Yugo), who scored 585, and Albrecht Dreyer (Germany) with 445 in power whilst in Wakefield it was a family affair with Erika Merori scoring 419 and her husband second with 331. These are totals of four flights.

Also on the Calendar is the Coppa Stella d'Italia. This is a very wellorganised slope soaring event held near Folgaria/Trentino. It attracted 64 individuals from Italy, Germany and Switzerland. Conditions varied from mild wind to a 40 m.p.h. breeze during the third round. Almost every entrant used the familiar Alnico magnet and vane steering on the nose as advised by Han Gremmer who pioneered the type, but he chose to use a rear rudder and nose magnet — with less successful results! Winner Flavio Ceccato of Treviso, Italy, scored three 5-minute max's followed by traditional second-place-man Kaczor of Bavaria. The Bavarian team won

Slope soaring in ITALY. Right, winner <sup>21</sup>-Ceccato and his model with high aspect ratio forward rudder above shielded magnet mount. Below him is general view of the flight area with large queue to launch. Quite a depth down there! Below left is the way to travel to such dizzy heights! In the sea at Split, YUGLOSLAVIA. Top is the Merori family in action, they took first and second places in Wakefield using the single front float layout. Below is power winner Zlatko Merker releasing Super Tigre powered model (diesel) with large front float just off the water surface. Cooling isn't ic!



with 2,408 total, followed by the official German Aero Club team and Prato from Italy. Feruglio of Trevoso had a novel honeycomb,

sparless wing structure and the majority employed straight dihedral, though not the winner, as can be seen in the picture below.







Low WING ?!! That is the exclamation which so often fills the air after some enterprising aspirant outlines his ideas for a low wing sport free flighter to his fellow modellers. Admittedly these "down under" sportsters can be more of a handful than their conventional brothers, but correctly applied aerodynamic layout produces a model which is just as easy to handle on Sunday afternoons.

With a .5 to .8 c.c. engine up in front, Colin Read's little *Pinky* is a clean playing sportsman as one meets on any field and just look at those lines, did you ever see a model look the part of a racey single place monoplane as does *Pinky*? Liberal dihedral and high set tailplane are the secrets of Pinky's well behaved disposition and no-one can grumble about the straight forward construction.

Commence by cutting the 3/32in, sheet fuselage sides and the formers, from  $\frac{1}{2}in$ , balsa, F2 and two F2a cut from  $\frac{1}{2}in$ , ply and bolt and cement together with the u/c legs between as instructed on the plan. Assemble the wing tongue box in two halves binding with thread or silk for extra strength. Make up the fuselage, cementing the sides to F2 and F2a, F3 and F4. Add in the tongue box, and the rear formers, to which are cemented the fuselage stringers. Impose the engine

## PINKY

A 35<sup>1</sup>/<sub>2</sub> in. wing span low wing free flight sport model for .5 to .8 c.c. engines by C. Read.

bearers and 1/16in. ply gussets, drill the bearer for engine bolts oversize to allow for adjustment to thrust line. Sheet the fuselage top, forward of the cockpit and the underside (crossgrain). Carve the engine cowling from soft block, hollowing out and well fuel proof internally. Bolt the engine in place and impose the cowl and 1/16in. ply nose ring for final shaping to the fuselage contours. The top half of the cowl is detachable and should therefore be only spot cemented to be easily removable after shaping. Add the u/c leg fairing. Make and shape the wheel spats by placing the inboard sides over the axles and adding the 2in. airwheels between their spacing washers. Then impose the centres, outer sides and shape. 2in. airwheels are used to keep the C.G. as low as possible, a necessity with this type of model.

Build the wing by laying down the notched trailing edge and lower spar. Add the ribs, then the upper spar and leading edge, gussets and tips. Cement in place the lower centre section sheet, kin. ply wing tongue and upper surface sheet. Remove from plan and sandpaper all parts.

The tailplane is very easy to build. The leading edge is cut from 3/16in, sheet and trailing edge from  $\frac{1}{2}in$ , sheet. Shape and position on the plan. Add  $\frac{1}{2}in$ , x 1/16in.

FULL SIZE COPIES OF THIS I/6th SCALE REPRODUCTION ARE AVAILABLE AS PLAN PET 813, PRICE 5/- PLUS 6d. POST FROM PLANS SERVICE



#### IODELLEA

Spatted wheels, neatly cowled engine and open cockpit go to make Pinky, a trim little craft. Dihedral angle is not so excessive as to detract from appearance. Extra detail adds realism and makes the effort worthwhile.

ribs and kin, sq. upper spar. Sand to lifting section and remove from plan. Do not use heavy wood for this component, as extra weight is as unwelcome at the rear end of this model as at any other. The fin is built in identical manner, but is sanded to symmetrical section. Assemble the fin and tailplane as one unit, adding the soft block fairing between.

Colin Read's method of finishing will be of interest to readers, for he is well known for the Concours d'Elegance finishes. Sand the whole structure and dope several times *before* covering, finishing with extra fine sandpaper. This gives that "smooth" wood effect around the outlines and on sheeted area. One of the prototypes was covered with lightweight nylon from an ex-government parachute and gave the model great strength. However for a normal finish use lightweight tissue for the wings and tailplane and heavyweight for the fuselage. Decorate to personal taste, add cockpit and any incidental details preferred and then the windshield.

Trimming a low wing design is little different from any other F/F sport model. Heavy wheels, a large (81in. x 5in.) nylon propeller and generous side area compensate for the wing position and correct trim is soon realised. The model should on no account turn to



the right as it will tend to spin in. Adjust the thrustline for a left turn, to take advantage of torque effect which will keep the nose up.

The prototype had 2 deg. left thrust, with no downthrust. Mr. Read adds that this is the first model he has known to require left sidethrust and attributes this to a low C.G. position, plenty of side area and extra large propeller. Readers will be interested to know that one of the Pinky prototypes won a first place in the Concours d'Elegance competition at the 1961 Northern Heights Gala, flying well in the rain afterwards.



An information forum arising from readers' letters

#### DEAR SIR,

A A

Over the past few months, being a regular reader and collector of AFROMODELLER, I have noticed in the R/C competitions with disgust, Mr. Uwins has taken a diabolical liberty to enter with the Frog Jackdaw, backed by the resources of the I.M.A., in a shabby attempt to "make publicity" for the new model, against R/C single channel amateurs, who haven't a "dog's chance" against those odds! No wonder he wins! Its similar to putting Stirling Moss in a hotted up private car and putting him against a local motor club's rally.

Mr. Uwins is a good multi flier and very experienced and to put him in a rally with the fully equipped Jackdaw for "rudder only", is just disgusting and very poor taste in publicity.

I doubt if Mr. Uwins met his match on equal terms (with many S/C fliers with rudder only, unbacked by I.M.A.) he would have walk-overs he seems to obtain, the R/C fliers I refer to, are experts in their own right, who do not enter contests but are well known by their articles and so on. Come! Come! Mr. Uwins, play the game and give somebody else a chance, the Jackdaw has had its publicity. OR HAS IT! Circumstances may be different with tougher opposition. Five wins, Bah! Five walkovers!

#### Hyde, Cheshire.

#### R. WILSON.

We were in two minds whether or not to print Mr. Wilson's letter, for this question of the pro-v-"shamateur" has always been with us. At what stage does the enthusiast become a professional? To what extent is sponsorship permissible? Does an amaleur lose his status when accepting a cash (or other) prize at a contest? In this particular case, our opinion is that—equipment apart—flying success depends almost solely on the ability of the pilot, and such ability does not go hand-in-glove with sponsorship.

More to the point is our surprise that this complaint comes from one whose wide-scale soliciting of materials and sponsorship from "The Trade" is so well known. How does Mr. Wilson reconcile his own conscience in this respect?

#### DEAR SIR,

I wonder if you have any tips to prevent "blushing" when doping. This is probably due to the fact that the humidity out here is 80 per cent. plus. I hope you can help! R.A.F. Seletar, Signapore.

#### CPL. PERRYMAN.

It should be possible for you to obtain cellulose retarders if your local humidity has such bad effect. Try the local garages or any spray painters. Blush is caused by the rapid evaporation of thinners and solvents lowering the temperature on the surface and causing condensation of the molsture in the atmosphere, which in turn precipitates the cellulose out of solution, giving the white appearance. If retarders are not available, simply allow the dope to dry blushed, then quickly brush acetone over the surface in a warm dry room.

#### DEAR SIR.

We are just forming a new Model Aircraft Club in the district and we would be grateful for information regarding entry into the S.M.A.E., both for members and the club.

#### Co. Kildare.

#### PATRICK GERAGHTY.

You should apply to the Society of Model Aeronautical Engineers, Londonderry House, 19 Park Lane, London, W.1, for information on affiliation of your club to take advantage of the membership, insurance and supply of newsheets, organisation of competitions, etc., Associate membership is Ss., full membership  $\pounds 1$  and 7s. 6d. for full junior membership (up to the age of 16 years), for the current year.

#### DEAR SIR,

I have recently formed a Model Aeronautical Society at Westminster City School. Do you have any films available for hire, illustrating aspects of Aeromodelling that you think would be helpful to me? S.W.1.

D. G. SPENCER.

We suggest you apply to the Petroleum Films Bureau, 29 New Bond we suggest you apply to the retroteum rims nureal, 29 New Hona Street, London, W.1., for the current catalogue of films available for club showing. There is only one specific aeromodelling subject available, but there are also many films of aeronautical interest alled to model-ling. Regrettably. the S.M.A.E. film of the Nationals has had so much use that it is now worn out and retired from circulation.



#### SQUADRON PART MARKINGS FOUR

#### Described by Leslie A. Rogers Drawn to 172nd scale by Ken McDonough

No. 56 Sqdn. R.F.C. 12 SE5's left for France on April 7th, 1917, from London Colney. Most of the pilots were to fall in action and by their deeds made the Sqdn, the best known unit of the R.F.C. Markings on departure:-

- "A" Flight—wheel discs painted red. "B" Flight—wheel discs painted blue quarters.

"C" Flight-wheel discs painted blue. No Sqdn. or individual markings were carried.

When the Sqdn.was withdrawn to Bekesbourne 21.6.17, as an attempt to combat Gotha Raids on England, it had acquired Flight letters and individual numbers. The strength had increased to 18 aircraft and as the Sqdn. had lost 16 pilots killed, wounded and missing in about two months, it was almost a new Sqdn.







Markings. All aircraft in a Flight carried the Flight letter. Individual markings were by numbers. Usual manner was for the flight letter to be painted on one side of the fuselage cockade and the number on the other. Both were repeated on the top decking. This method of painting has been varied on the aircraft used by Lt. A. Rhys David:

- "A" Flight marked A1, A2, A3, A4, A5, A6. "B" Flight marked B1, B2, B3, B4, B5, B6.
- "C" Flight marked C1, C2, C3, C4, C5, C6.
- It is known that-
  - Lt. Keith Muspratt flew "B2" (A'8913) at Bekesbourne.

    - Lt. Arthur Rhys David flew "B6" at Bekesbourne. Lt. H. G. Spearpoint flew "C3"-shot down as P.O.W. 17.6.17. Lt. W. Turner Coles flew "C5"—shot down as
    - P.O.W. 17.6.17.
    - Lt. C. H. Jeffs flew "A6"-shot down as P.O.W. 5.10.17.

The period of Home Defence duty ended on 5.7.17, when the Sqdn. flew back to France. Shortly after the Sqdn. returned to France, the method of flight and individual markings changed.

Some doubt exists about the exact definition of Flight Markings as regards "B" and "C" flights. "A" flight

Heading shows Sgt. Ashby and Capt. G. Maxwell in their SES's. Note cockpit and gun detail. Below is crashed "E' showing later style Sqdn, marking. Left: Earlier, inboard wing roundel on "I' compared with a/c "B" and "W" (Capt. Grinnell Milne)—see fuselages opposite.



used a small white dumbell, painted on the fuselage sides immediately behind the individual letter.

Some time during July, 1917, the Sqdn. began to "paint up" their aircraft in various colours —commonest decoration was painting the nose red, but this was taken further on some machines judging by the remarks of Capt. J. B. McCudden, who in his book *Flying Fury*, recalls seeing a highly coloured patrol including one in red and white stripes on July 13th, 1917. It is known that the red noses were still about on July 26th, but they were painted back to khaki green shortly afterwards on orders.

After the "painting up" episode, the markings settled down to a definite pattern until March, 1918.

Sqdn. Marking was an 18-inch white band around fuselage just forward of the tailplane.

Flight Markings were discontinued.

Individual Markings were by letters as before:-

"A" Flight used letters A, B, C, D, E, F.

"B" Flight used letters G, H, I, J, K, L.

"C" Flight believed to use R, S, T, U, V, W.

As from March, 1918, the Sqdn. Marking was changed to two sloping white bars on the fuselage sides just forward of the tailplane.

Individual markings was by letters as before, but this marking was used until the Armistice.

It is known that-

Capt. D. Grinnell Milne had aircraft "W".

#### McCudden's markings

Some confusion has been caused in the past about the markings of Capt. J. B. McCudden's SE5a. On the 12.1.18, McCudden mentioned his aircraft was marked 6 (six) on the planes but by this date all Sqdn. aircraft were marked by letters only. (Page 235 Flying Fury.) It seems as though this error in the book occurred as follows: McCudden used pencil to write his diary, in ordinary exercise books, during these books travels and subsequent compiling into a fluent story, some of the pencil notes became faint and blurred. By the time the book was published McCudden was dead and the errors went through. A 6 and G would look very similar in a blurred state.

Another similar error was the Serial No. A'4891, when it should have been B'4891, The serial No.'s of McCudden's SE5a's when in No. 56 Sqdn. were:—

15.8.17, took over B'519 Vickers built—damaged 4.9.17. Took over B'4863 factory built—written off early Oct.,'17. Took over B'35 Martinsyde built—exchanged on 3.12.17. Took over B'4891 factory built—this was the SE5a that McCudden fitted with the spinner from an L.V.G. CV that he shot down. Spinner painted red (refer to AEROMODELLER, December, 1957, for precise details and photographs).



à.















Left: Lt. Rhys David and his a/c at Bekesbourne showing both figs. in front of roundel. Right is blue and white wheel quartering of first Sqdn. SES's. Above, top to bottom—Lt. Keith Muspratt's SES of "B" flight with divided figs. Lt. H. Spearpoint's of "C" flight, compared with Lt. W. Turner-Coles's showing different styles (both these shot down on 17.6.17) "E" shows the dumbell of "A" flight. "I" the plain band marking, "B" and "W" are later markings, latter flown by Capt. D. Grinnell-Milne.





## OVER THE WAVES

Ultimate in multi?? This Japanese twinengined flying boat under full radio control must give its owner a great deal of pleasure Each reed responds to vibrations in sympathy with a transmitted tone peculiar to that reed. While the receiver is tuned to the transmitter frequency, it is necessary to adjust the individual *transmitted* notes or tones, to coincide with individual reeds. In other words, the transmitter must satisfy the discriminating reeds rather than the reverse. The reed unit is merely a discriminator within the receiver, so that when note *Doh* is transmitted, reed No. 1 will vibrate and to note *Fah*, reed No. 4 will respond.

Having discriminated a signal the reed unit must then switch its particular control surface in allotted direction by electrical circuit to the servo. However, the vibrating reed is incapable of passing sufficient current to operate the servo direct. As the reed vibrates it touches a contact, briefly making and breaking a circuit (usually at the rate of between 400 and 600 times a second) so that the current flows in short pulses which pass to a capacitor to be smoothed out into a steady current insufficient to

## Getting started in multi

IT IS MOST DIFFICULT to design something which is essentially simple and when it comes to layout of R/Cinstallation this is particularly so. We feel however, that we have achieved our object with a Min-X 6 and Graupner Duomatic and Unimatic servos, as we have used for this test feature.

There is a lot more to the magic of the multi channel R/C system than meets the eye and the apparent simplicity of the single line of communication set gives way to a host of added complexities. For this reason, we most definitely consider that anyone taking the plunge into multi should have at least one season of successful single channel operation behind them. There is also the very real question of expense. The set you buy pays for itself only in terms of the pleasure you reap therefrom. From the outset, we must say that for the average modeller at least, home construction of multi channel equipment, particularly the transmitter, is not a really practical proposition without some specialised knowledge of the subject and above average wiring skill. Home building of single output sets is (comparatively) simple, especially when kits are used such as the Ivy-AM (the subject of our earlier R/C project) but multi-thats a different story!

#### How it works

Having decided that "commercial it shall be", it is time to choose a particular set, but before doing so let us clarify the constitution of multi channel and its operation. The most simple and practical method of obtaining the number of links required between operator and model is for the operator to transmit a set of musical notes (technically termed Audio Tones). For example, if one transmitted all the signals of an eight channel radio control set such as we are dealing with, in the correct order, they would sound just like the notes of an octave played on a piano, thus-Doh, Ray, Mee, Fuh, Soh, Lah, Tee, Doh. Clearing our throats a little, we see that a suitable link, placed in the model must be one which will detect a signal transmitted by the operator (as does a single channel unit) but in addition, be capable of discriminating between the differing predetermined notes, all on the same waveband. How does the receiver (as we will now call it) discriminate between the different notes? The most common method and the one which we use, is to replace the relay used in a single channel set with a bank of reeds. A reed is physically comparable to those in a Mouth Organ and operates in a similar manner.

drive the servo motor, yet capable of energising a relay and this becomes the second switch in the circuit. The servo is then switched through the relay contacts.

The reason for using a multi set is that more control can be obtained over one's model, and this is the prime consideration when making one's initial choice. One can obtain multi sets of 3, 4, 6, 8, 10 or 12 channels. Normally the last mentioned three types are simultaneous sets. That is to say, it is possible to operate two different controls together, but calls for extra equipment in the transmitter. Choice will be governed by what one desires for a multi set and what one can afford. A three or four channel unit will give you (by normal application), Rudder and Engine control, a control set-up which can, although less positive, be achieved with a single channel equipment. A six channel set will add Elevators and eight channels will go further to Ailerons, while 10 channels provide a further sophistication in the form (normally) of trim elevator, a most valuable control for competition aerobatics.



Opposite is illustration of the layout of equipment in the Jack-daw. Rx loosely mounted in foam rubber. Tarousl cable galae secured to floor of fuselage. Note that all wires are bound with tape. Terminals to toggle switch are bound with thread. Toggle switch mounting is reinforced with ply discs each side. Removal of ply bulkhead reveals Rx above relay pack. Layout of tailplane shows elevator incorporated for future use with slot in side of fuselage to link up elevator push rod. Below is our set exactly as wired up in the lackdaw, Switch and servos bolt to sides of fuselage and upon detaching these, the harness can be removed as one unit to be placed on workbench and operated without adjustment, Right is diagramatic wiring layout of harness below. With just one battery power supply for every thing, this is as simple as one can get and permits detachment of any component from the harness for electrical check. Sort of gen we would like to see in those oversimplified, presume-you-know-it-all maker's instructions!



reed-relay 6 volt Rx with common power supply

The opportunity to test and evaluate the Min-X 6 (through Ed. Johnson) and availability of the Frog Jackdaw prompted our decision to use these units as the subject of our venture, and a full report on each will appear later. Of paramount importance is the need for good servos. Of these, by far the simplest to wire up, is the Centrifugal Clutch type, which is spring returned to neutral upon termination of signal and requires only two wires to each, one per channel from the armature of its corresponding relay. The simplicity of such wiring is a great attraction to the novice and as an example of its type we chose the Graupner Duomatic for its positive action and power. The Unimatic we chose for its simplicity of operation. Our whole installation, illustrated in harness, was installed just as it appears and is as easily removable by the detachment of the servos and switch. Following current practice, servos were bolted to the side of the fuselage, and plugs and sockets hang loose. This does not mean however, that all wire terminals are not meticulously supported and insulated. The Min-X 6 receiver has a separated relay pack and we have used a Crescent multi pin connector to link the two. (Using this stem, it is imperative to employ a heat shunt across

the pins when soldering, or the plastic plug may melt.) Retaining the two halves of this plug together when soldering also helps to hold the pins in alignment. Note that we use 6.25 volts 500 DKZ DEAC's for common power supply (Min-X 6 is all transistorised) which are to be preferred for their capacity to withstand high current drain; we used a toggle action switch. Turning to the illustrated model installation, the receiver is mounted as always in foam Rubber. People who know, also insist that a multi receiver should not be rigidly supported by its rubber surround, but instead be allowed to "flop" with kin. to kin. clearance all round. Reason for this is, that engine vibration can cause reed resonance in a rigidly packed receiver. That is to say, the reeds will vibrate in sympathy with the engine vibration which one should try to eliminate.

There then are the basic considerations of the novice who takes the big step into Multi Channel operation. Our example has been specifically chosen to illustrate a simple approach and the information covers sets of other manufacture.

Separated relays on the Min-X are not common to most other sets and this part of the wiring is thus eliminated, while on the other hand, some sets require additional batteries. Next stages in practical operation will be dealt with in future issues.







January, 1962



**Motor Mart** 

What's new for 1962?—that is more than a burning question, and one which few engine manufacturers will answer

WHAT CAN WE expect in the way of new power units from British manufacturers in the coming year? The fact that there are no illustrations of new shapes on this page is indicative of a consolidation policy. But there will be new types. Expect something for sports work to follow an already popular diesel, and of course the appearance of the Merco 49 is imminent. Parts only await the pressure die castings, due in January and which will even further enhance the attraction of what is sure to be a leader in its class. The decision to go for an expensive die-casting illustrates the confidence enjoyed by D. J. Alten Engineering.

Aside from few home prospects, Saburo Enva is concentrating on 35 and 45 TV types (Throttle Valve) and employs an ingenious double needle valve control as seen in the photograph above. One is the main full power setting valve and the other for idling. At moderate engine speeds, fuel flow is regulated by the tapered groove machined on the throttle valve surface, giving a rich mixture according to the airflow in the venturi. As the throttle closes so the main jet is blanked off and the idling jet takes over. Each needle has remote fuel feed, so the unit is bulky; but obviously both clever in inception and reliable in operation. We can say the same of the O.S. 49

throttle. This is quite plainly the result of long and most original thought. The idea of placing the airbleed control in front and using straight fuel, has lapped piston, two helleness. Right: throttle barrel of remarkably small Rossi Speed 10 c.c. intake area, is one likely to be has McCoy influence copied. Our example idles down to vations from the less than 2,000 r.p.m. on a 12 x 5 Italian speed Cham-P.A.W. wooden prop and peaks at pion. 9,900 r.p.m. but needs much more running time. We note that there is no front race as expected, and a balance collar which is an O.S. patent is used to dampen vibration. Expect too, a surprise from O.S. for the contest men. In Italy, Ugo Rossi was too busy to attend the Criterium, and one of his diversions was the new Rossi Speed 10 c.c. which has already hit the high speeds in control line. Czech and Hungarian State Modelling institutes will quite definitely produce new MVVS and Moki engines. Dave Goodwin loaned us his MVVS 2.5 R 58 some time ago, which gave performance in the region of 0.32 b.h.p. on Nitro fuel, and now we had the opportunity of trying the latest Moki S/2 as designed for plain fuel and matched the r.p.m. figures—which shows that Imre Toth's victory in speed at Genk was no fluke! The Moki owes something to Super Tigre and K & B and is very clean in external appearance.

The K & B 35 is now out and differs from the Wisnieski 15 with front rotary intake. Promises to be very powerful in its class and a plug burner!







#### For the technical

DEAR SIR,

I follow with a certain interest the article by Mr. Baguley on contest gliders and I follow with great interest the correspondence between J. Baguley, J. van Hattum and W. Hartill.

W. Hartill. In England you seem to think that a rough weather model should have a chord of at least 61 in., 25 per cent, tailplane and a thick wing section, e.g. N.A.C.A. 6409. I can assure you that in Scandinavia the usual contest weather is gale, or strong wind, but all the same we use models very emilies to Kokkweath for such the the wind, but all the same we use models very similar to Kekkonen's Leena. (In Sweden the A/2 design trend is dictated by Hansheiri Thomann). There is no aerodynamic difficulty in using a rather extreme model in rough weather like Thomann's, as Mr. Baguley would seem to think. The only problem may be that of flexible wings on an extreme A12. I should mention that Thomann won the Swedish winter Nationals in very high wind with his 2200 m.m. model. A similar model won the Eliminators under the same conditions.

As regards the still air times they are of little value as Mr. Baguley says. For two years I have collected such records, com-paring wing sections and spans in order to ind out how performance varies with span within different intervals of span. But as the "still air" average time can vary 10 per cent. due to the air temperature and dampness

"still air" average time can vary 10 per cent. due to the air temperature and dampness it is of no special value to make use of these figures. All I can evaluate is that the duration is increased with 6-7 seconds per decimetre within the range of 1900-2200 m.m. if the wing section is about 6 per cent. thick. To find the correct values I have to go back to Schmitz and Heise and calculate, and hope I will have results within a few weeks. Referring to the topic of Mr. van Hattum's discourse, Beurmann's article "Wie erreiche Ich eine gute [Langs-stubilitat 'in' der Flugmodellbau" Nr. 1, 2 and 3 1958 (not 1960 as says Mr. van Hattum) has caught my attention very much as for two years I have applied Beurmann's formulae. When I first read Mr. Beurmann's article it gave me a hendache; but then I was only 15 years old. I accepted his results and used his formulae with very good results. (Now I know that I was lucky). As a matter of fact I was so keen on everyone else learning and applying the formulae that I wrote an invisite hourt them and mode calculation. I was so keen on everyone else learning and applying the formulae that I wrote an article about them and made calculations on several models. My calculations did not confirm the formulae so I began to re-consider. (The only model to confirm the formulae was M. Hacklinger's MP 12). The most serious mistake made by Mr. Beurmann is the assumption that his  $C_mN$ values are correct  $C_mN = CmAC =$ co-efficient for the pitching moment around

the serodynamic centre, or neutral point, of the section which is situated at 25 per cent, of the chord). He uses measurements

in the Reynolds No. range of 300,000! The thinnest section is 9 per cent, thick! As we all know there will be a point of As we all know there will be a point of separation on the wing upper camber. As soon as this point of separation is situated more forward than 100 per cent., the centre of pressure moves forward. When the point of separation moves forward the CL is also reduced. Therefore we can imagine that the  $C_{mN}$  is smaller in the Re-range of 40-50,000 than in the 300,000 range. In the low Re-number range of models the the low Re-number range of models the point of separation varies very much. This also holds true for thin sections at low angles of attack where we can await separa-tion on the lower surface. And we can be sure that we alter the  $C_{mN}$  if we fit on a surbubute of any kind turbulator of any kind.



The best way of confirming my state-ents is reference to Schmitz's book ments

ments is reference to Schmitz's book "Aerodynamik des Flugmodells". The CmN also varies with the aspect ratio as does the CL. I do not know why Mr. Beurmann uses the CmN values that correspond to infinite aspect ratio. In the June issue Mr. Van Hattum said that a reduction of the tailplane camber implies a reduction of the moment arm of the tailplane. Mr. Beurmann however states "The neutral point of a model is the centre of pressure of a geometrically similar mudel "The neutral point of a model is the centre of pressure of a geometrically similar model with symmetrical sections and an angular difference of 0 deg. Thus the neutral point of the model is not dependent on the sections used or longitudinal dihedral. The neutral point simply depends on the geometrical outline, that is the tail moment and the scene and expect ratios of wing and tailplane." areas and aspect ratios of wing and tailplane." Here Mr. van Hattum contradicis Mr. Beurmann but Mr. Beurmann contradicts himself when in another place he develops the formula:

$$X_{1} = \frac{\Gamma_{a} \cdot X_{a} \cdot C}{\Gamma_{a}} : C = \frac{a_{1}}{2} (1 - N)$$

 $X_1$  = Distance between the NP (or A.C.) of the wing (at quarter chord position) and the N.P. of the entire model.  $X_2$  = Corres-ponding distance between the N.P. of the tailplane and the N.P. of the entire model.  $F_1$  and  $F_2$  are wing and tailplane areas.  $a_1$  and  $a_2$  are the lift gradients (dCL) of wing and tail. Here Mr. Beumann Very = Distance between the NP (or A.C.) wing and tail. Here Mr. Beurmann very clearly says that the N.P. depends on the lift gradients of the wing and the tailplane. However, he neglects the influence of the airfoil shape when calculating  $a_1$  and  $a_2$ . He treats  $a_1$  and  $a_4$  as functions of the aspect ratios only. (Small details such as a turbulator or a smaller nose radius will change the lift gradient). As a matter of fact the position of the neutral point is mainly a function of the lift gradients of

mainly a function of the lift gradients of the wing and the tailplane. Another drawback of Mr. Beurmann's formulae is that we can get an extremely long tail moment and a C.G. position of 80-90 per cent. Nothing says that this C.G. position given by the formula is the best one. Because of the dynamic stability and the moments of inertia it would possibly have been better to reduce the tail moment and move the C.G. forward, keeping in mind the retention of the former ratio between X<sub>1</sub> and X<sub>2</sub>. In my opinion, Mr. Beurmann's formulae is to be regarded as curiosity. In a strictly mathematical way, he eliminates some

mathematical way, he eliminates some variables and arrives at the wrong conclusions. In his desire to develop useful formulae he has neglected some variables with the result that the formulae cannot be used. If we apply Mr. Beumann's formula correctly in the case of "Lucifer" we find that we could either reduce the tailplane

moment and move the C.G. forward or retain the moment arm and C.G. position. (Of course, we then have to increase the angle of attack of the tailplane). This shows one disadvantage of Mr. Beurmann's formule formula.

P. WANNGARD. Stockholm, Sweden,

See AEROMODELLER Annual, 1961,2 for more on Beurmann's theory

#### Optimist

DEAR SIR.

As lead is so heavy, why don't aero-modellers use aluminium for nose weights. DUNTON WAYLETTS JOHN RALPH.

#### Pessimist

DEAR SIR.

Could you please let me know if you can supply a copy (preferably secondhand) of Advanced Maths (A1) by PEDGE, E.U.P. and also a book of five-figure maths, tables. BEXLEYHEATH, P. Potts. Taking up Gliding—Eh?

#### Thankful

DEAR SIR

On behalf of the speed enthusiasts in my club I would like to thank Dick Taylor and his friends for the tremendous amount of work they have put into the many S.M.A.E. speed meetings, including the Trials and Nationals, this year.

The giant speed entry at the Nats, is an indication of the boost these meetings have given to British speedmen. HAYES. KEVIN LINDSEY.

DEAR SIR.

I wish on the behalf of Chingford M.F.C. to register our sincere thanks to you con-cerning the "Free Plans Offer"; it has been cerning the "*Free Plans Oper*"; it has been the source of a tremendous burst of enthu-siasm among our impecunious (as always!) club juniors, and has, we believe, helped considerably in our aim of making the club "contest-minded" to enable us to regain our once cherished position as one of the top clubs. CHINGPORD.

J. W. HALL.

#### Doubtful

DEAR SIR.

In your February issue of ALROMODELLER I noticed something which appears to defy all theory. It concerns the article that was included with the plans for Don Pinkert and Gus Johnson's combat model "DONGUS". From the article, one finds that the average speed for the prototypes was 86 m.p.h. using a Veco 19 or an ETA 19 and an

What I am about to propose may be completely wrong, but if so I would like to know exactly where.

Consider the formula:  $\frac{R.P.M.}{60} \times \frac{P}{12} \times \frac{E}{100}$ Speed in ft. per sec.

60 12 100 Where r.p.m. is the revolutions per min. of a given propeller, and P is the geometrical pitch, and E is the percentage efficiency of the propeller. If we take the efficiency of the propeller to be 80% the pitch 6 inches, and the speed 86 m.p.h. we can calculate the necessary flight r.p.m. of the motor to satisfy these conditions these conditions. Thus:

X 6 80 0 × 12 × 100 126 approx. 60

Solving, we have X 18,900 r.p.m. Which means that taking the efficiency of the prop. as 80% we have a ridiculously high r.p.m. that no 19 engine could ever obtain. Taking the efficiency of the prop. to be 100% we would still need an air r.p.m. of 15,000 Either Mr. Johnson is using a different

prop., or my argument is unfounded. I. TURNER



#### 1961 Rufforth 1000

THE 1961 RUFFORTH 1000 lap (714 miles) team race for S.M.A.E. class B models was held on 5th November, organised by members of the WHARFEDALE club.

Heat I produced a very clean race which was eventually won by the Horton Haworth team (Wharfedale) with their Frog 500 powered "Dalesman" (winner of the 1960 1000 lap), their time was a useful 12:53.

Heat 2 resulted in a well executed performance by F. Hampson (Leigh M.A.C.) which produced a new record time for the 200 lap qualifying distance of 10:32.25. The very fast ETA 29 powered model was averaging more than 50 laps tank using an iso-propyl alcohol based fuel.

Heat 3 was technically interesting in that the winner—N. Jury (Matlock) was using an old type Amco RB 3.5 c.c. dised in a medium sized high wing model. Performance was extremely effective with 90-95 laps tank at a steady 70-75 m.p.h., giving a qualifying time of 15:4.4

Heat 4 went off with a "BANG"—with two ETA 29's an Enya 29 and O.S. Max 29 models all R.O.G'd within 5 sec. of the start. First over the finishing line was R. Yates (Leigh .MA.C.) with two cell tank feed Enya returning 50-55 lapt tank at 103 m.p.h. resulting in a time of 12:20.7.

The glorious final was a well balanced mixture of modern team racing techniques. Against the two fast racers of Hampson and Yates with their 93 m.p.h. ETA and 103 m.p.h. Enya models were matched the ultra-long range Frog 500 of Horton and the Amco BB powered model of Jury.

The flag came down for the last time at exactly 14.20 hours and all the teams got their machinery off to a good start.

The leaders had already crossed the 350 lap stage when it was noticed that N. Jury's gallant little Amco was showing signs of fatigue—the motor gradually consuming its own con-rod. He was eventually forced to retire after the model power-dived on takeoff due to the lines binding together. At 15:00 hours the race was already taking

At 15:00 hours the race was already taking final shape. The Horton/Haworth team were in the lead with 624 laps from Hampson with 473, Yates 375 and last came Jury 268 laps.

The Early a model of R. Yates had developed fuel feed trouble when the air-valve was exected from the two cell tank system, after approximately 600 laps this produced a "one lap one pitstop" state of affairs which caused his retirement at 782.

lap one pitstop" state of affairs which caused his retirement at 782. Meanwhile the Frog 500 "Dalesman" went ahead with highly consistent performance figures of 66 laps tank at 71-74 m.p.h. This performance eventually eclipsed the opposition and set a new British 1000 lap record in so doing (64:53.8). A well deserved victory admirably executed with the minimum of first flick pit stops. It is interesting to note that the first three

It is interesting to note that the first three places were taken by models equipped with two-cell tank systems and using either Jahnson or Enya No. 5 glow plugs. The rate of plug failure being considerably reduced over last year, i.e. one in 1961 as against 9 in the 1960 race). 38

## CLUB NEWS

Don Haworth, Don Moulding and John Horton with Frog 500 "Dalesman", winners of the '61 Rufforth "1,000 Iap" event, also won in '60

FOR THE LAST few months clubsters may have noticed that changes in Secretarial addresses of clubs have ceased to appear in these columns. This is due entirely to lack of space, for so many clubs want their names in print and space is, as always, limited. All future notifications of this nature will be added to our records (as always), from which the information is available to any who require it. We have many enquiries each week from modellers seeking the addresses of their nearest club, so—attention new secretaries—it pays to keep us current on your club address!

The more serious news this month comes from Wharfedale M.A.C. in the NORTHERN AREA. Owing to pressure from "Local Authorities" and due to the requirements of York Gliding Club, R.A.F. Rufforth is almost certain to be closed for aeromodelling activities in the coming year. This will be a blow to the Northern Area, who have used this Airfield many times during 1961. Meanwhile, the Wharfedale 1,000 lap team race was run there on November 5th and the Horton/Haworth class "B" team emerged as victors, using their remarkable Frog 500 powered Daleman, covering the 1,000 laps in 64: 53.8. Inter-club Combat took place too, with Halifax M.A.C. and York M.A.C. participating: but Wharfedale's Jerry Lee flew his Oliver powered wing to victory. At the Northern Area Dinner, Ken Long and Les Davy received the Rivers Trophy for their win at the NIArea "All F.A.I. meeting". The MIDLAND AREA has a new club in Alsager M.A.C., who extend a welcome to all

The MIDLAND AREA has a new club in Alsager M.A.C., who extend a welcome to all unattached modellers around those parts. Those interested should contact Eric M. Wilshaw, 11 Chancery Lane, Alsager, Stokeon-Trent. Nearby, Clayton M.A.C.'s 20 members are at the point of celebrating the first anniversary of its foundation. S.M.A.E. affiliated, they enjoy control line flying. Approaching the local Council for assistance over their accommodation problem, Bilston M.A.C. were given the use of a disused house, which will, when the necessary alterations have been completed, provide two building rooms, a common room, drying facilities, a tool room and ample storage space (*lucky penple*!). Travelling WEST, to Bristol where Bristol Buildogs and Bristol Aces combined to represent their factory in a decentralised competition with the English Electric Club on October 29th. The E.E. Boys used their own airfield at Warton, while the Bristol lads journeyed 40 miles to Blake Hill Farm near Swindon, a journey which paid off with bright and sunny weather and zero wind, contrasting with the rather dirly conditions at Warton. Contest embraced Open Power, Rubber, and Glider, plus Chuck Glider, all of which were won by Bristol except Chuck Glider, which they did not enter. How about Vickers, Hawkers, Westlands, De H's and Blackburns entering the fray?

Backtracking across the country now to EAST ANGLIA, we find F.A.S.T.E. in the news once more. The F.A.S.T.E. will run a Rat Race meeting at R.A.F. Oakington on January 28th, 1962. Oakington is on the A.604, about five miles north of Cambridge. Racing will start at 9 a.m. with eliminators running till noon. The semi-finals will commence at 1 p.m. and the finals will be run 3:30 p.m. Prizes offered are to be Fox 40, Rat Racing engines. Rules are: 1.60 ft. lines, .015in. diameter2. Maximum engine capacity 0.40 cu. ins., 3. 2-wheel sized landing gear, 4. One pit stop in 70 laps. 5. Two pit stops in 140 laps. Entries will be accepted on the field before 11.45 a.m. and this meeting will be the first of a proposed series which they hope to promote and would be grateful of support and interest. Who was "P. J. Matt" of Hoberling, Nr. Sleaford, who collected a Dangus with Fox 201 at the '61 Nats.? The F.A.S.T.E. lads would like to contact him.

News from the LONDON AREA is that Croydon M.A.C. will be running a Nordic All contest on February 21, 1962, at Chobham Common. It is open to all at 2s. per entry, which will be returned as prizes with a special prize for the highest placing junior All enquiries should be made to Dennis Partridge, 126 St. John's Road, Redhill, Surrey, Kenton's George Copeman and Kevin Lindsey (Hayes), have further developed George's Cleaver design to Super Cleaver standard. Weight is reduced from 15 to 13 ozs. and a pressurised tank is used. Manoeuvrability is slightly better, but the greatest improvement is in speed, which gas been increased to a genuine 110 m.p.h. Kenton's recent A/2 contest held in mist necessitated a 90-second maximum. It was won by "Jeep" Newman (an American how did you guess?), last seen disappearing towards the railway embankment in pursuit of his K.K. Coprice. On October 29th a four-club Combat ("A" and "B") was held with Northwood, Hayes, Feltham, W. Middx. and Uxbridge at Hayes' flying ground, and although a great deal of fur was had only Ray Meekins had much success for Kenton, taking 2nd plaze in "B" Combat. Alan Dell of Feltham, won "A", J. Bailsford of Hayes won "B". Hayes M.A.C, were not detered by the cold wind and saturated Chobham Common at the final of the 1961 London Inter-Club Challenge Cup, which they won once more, their team of J. Baguley, L. Barr and R. Sleight (Glider, Rubber and Power) victorious over St. Albans M.A.C. by just 10 secs. At the Blackheath Gala, Laurie Barr took second place in Rubber with a 4:55 fly-off. To round off a successful season, Jim Baguley reached the Glider fly-off.

Cosmo A.C. juniors recently organised a 4A Combat event, won by H. Jones in a hectic tussle with D. Walker. C. Wadlow was third. Popular design for this event was a slightly modified K.K. Gozelle with Frog 150. Permission has been granted by the local authorities to fly in Danson Park every Sunday morning, providing no litter is left behind (but that is for club members only). Recently, several non-members have been turning up to fly and left old lines and empty fuel cans behind. Having worked hard to obtain their privileges, Cosmo take care to abide by the regulations and naturally feel that it is unfair that others should spoil things for them Guilty norties take note!

that it is uniar that others should spoil taings for them. Guilty parties take note!! Esher M.A.C. announce that they will be holding an F.A.I. Team Race and Stunt event on May 20th 1962. Entries will be restricted to 25 in Team Race and 10 for Stunt for which the entry fee is 2s. 6d, per event. The meeting is to be held at the club's new tarmac flying site on Fairmile Common between Esher and Cobham on the A.3. Team Racing will start at 11 a.m. after 1 hours practice and Stunt will commence at 3.30 p.m. Pre-entry to I. W. Creighton, 27 Harvey Road, Walton-on-Thames, Surrey, is essential.

is essential, In the SOUTH EASTERN AREA, Brighton ran their Lanes Cup contes: for Precision Duration (nearest to 4 minutes F F, with three official flights) on October 15th, Reg Boxall came through the field of 11 entries to win with one sec. error. Clark Brooks, one of the youngest members, took second place with three seconds error. At the Blackheath Gala on October 29th, following the precept of George Fuller, John West re-entered the Power comp., using his reserve Dixielander and qualified for the fly-off with bath first and second string models. Cox Tee Dee model placed first and A.M.35 job second. Fred Boxall was third in the Rubber fly-off and Tich Garner was sixth in this, his second competition which

had a twelve man fly-off. Encouraging news from Winchester M.A.S. Encouraging news from Winchester M.A.S. in the SOUTH is that with great relief they have gained permission from their Council to fly on the far corner of the local Park, which allows three control line circles of 50ft. radius. Up till now they have been Soft, radius, Up till now they have been barred from nearly every usuable piece of round in Winchester. Well, perhaps the hying field situation is easing at last! Long flights are reported from East Grinstead and Horley M.F.C., where Richard Vincent raised the club glider record in a 40-minute chase over the Sussex Downs in pursuit of his beet wine Treadend classifier second in the chase over the Sussex Downs in pursuit of his sheet wing *Tradmad*, placing second in the U.S.A.C. glider contest at Goodwood on the same day. Indoor Rubber R.T.P. is now popular, the fastest time for 30 laps so far being 2:52. More frivolities!—R.T.P. flying had to be abandoned one everying owing to unquenchable hysterical laughter following the performance of Tony Love-lace's rather overpowered K.K. Globe Swift, which, in the space of about five seconds did two laps approaching Mach. 1, hit the floor, bounced, hit the ceiling, bounced back to the floor, flipped onto its back followed by two laps inverted, bounced off the floor once more and wrecked itself on a lampshade! once more and wrecked itself on a lampshade! THE CLUBMAN.

ANNUAL INTERNATIONAL CORRES-PONDENCE COMPETITION Flown August 5.6th or 12/13th 1961 Participating Clubs:-New England Wakefield Group-U.S.A. Badducustones and Stotem L.C.-

- BADHOEVEDORP AND SLOTEN L.C .---
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This year there were four awards The This year there were four awards The Flying Wooden Shoe for Open Team total, won by Rand M.A.C. The Albairos Trophy for Open individual total, won by John Swallow of Rand. The A.I.C.C. trophy for the topteam total, won by New England W.G. for their 37:33 total in Open Glider and the presentation of an Australian made engine for top place in F.A.I. power won by Ron Swindon of Tees-Side.

Every year a club from another country is invited to join this event, and it is hoped that a German club will compete next year, to further the aim of the organisation which is to further International friendship through our mutual hobby.

#### Overall Total

1. Tees-Side M.F.G. (England)	163:02
2. Rand (South Africa)	129:35
Open Total (Flying Wooden Shoe Tro	phv)
1. Rand (South Africa)	77:37
2. Tees-Side (England)	64:10
(Individual: J. Swallow (Rand)	25:05
F.A.I. Total	
1. Tees-Side (England)	98:52
2. Rand (South Africa)	68:31
(Individual: Ron Swinden (Tees-	
Side)	23:51
Wakefield	
Individual: Tom Chambers (Tees-	
Side)	14:30
Team: Tees-Side (England)	35:59
A/2 Glider	
Individual: Jim Daty (N.E.W.G.)	13:32
Team: New England W.G. (U.S.A.)	34:40
F.A.I. Power	
Individual: Ron Swinden (Tees-	
Side)	13:39
Team: Tees-Side	36:45
Open Glider	
Individual: Jim Daly (N.E.W.G.)	13:22
Team; N.E.W.G. (U.S.A.)	37:33
Open Power	
Individual Bert Spurr (Tees-Side)	15:00
Team: (Tees-Side)	36:26
Open Chuck Glider	
Individual: Rory Byrne (Rand)	3:36
Team: (Rand)	8:38



#### 1961 F.E.A.F. Champs

HELD AT R.A.F. Seletar by kind permission of Grp. Capt. R. D. Williams, Station Commander, the FEAF Champs attracted teams from R.A.F. Stations Changi, Seletar and Tengah.

Weather was good and a steady wind blew towards the sea all day. This made free flight times shorter than hoped and three models ended O.O.S. over the sea heading for Malaya! J.T. Pallister's winning for Malaya: J. L. Pallister's winning Dixielander was found later beached after a long swim and Sgt. Emery's Eureka was found by the Officer of the watch, trying to ram H.M.S. Victorious.

ram H.M.S. Victorious. It was once again found that even in "the land of the rubber tree", rubber motors would not stay in one piece. In the Concours d'Elegance qualifying flights S.A.C. Simmonds' scale Sopwith Pup which was leading in that event came to grief and failed to qualify. The Stuka stunt model of Fg. Off. B. Howlett almost ended the same way when, after a premature engine failure, the model struck one of the 50 gallon drums which surrounded the flying circle—auch! circle -ouch! Combat "A" final between Changi and

Combat "A" final between Changi and Seletar ended in a mid-air collision with the subsequent landing of the Changi model without an engine. Winner, Cpl. Thompson of Seletar went on to win 3 of the C/L events and place 2nd in the fourth! The R.A.F. Tengah team consisted of Sgt. Emery and J/T Everett who between them, achieved a very creditable performance. It is hoped that their success will inspire a keener following at their Station. They won Concours d'Elegance Rubber and Glider

Concours d'Elegance, Rubber and Glider and gained a 2nd place in Power. Final positions for the Inter-Station Challenge Cup were:---

ints.

R.A.F.	Changi	15	points.
R.A.F.	Seletar	14	points.
R.A.F.	Tengah	14	points.

J/T Everett and Sgt. Emery of Tengah with f/l winning models below left; Cpl./T Simmonds aided by SAC Mould with Sopwith Pup, and, at right, J/T Pallister releases winning Dixie lander. Went o.o.s. and was washed up on coast later!





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