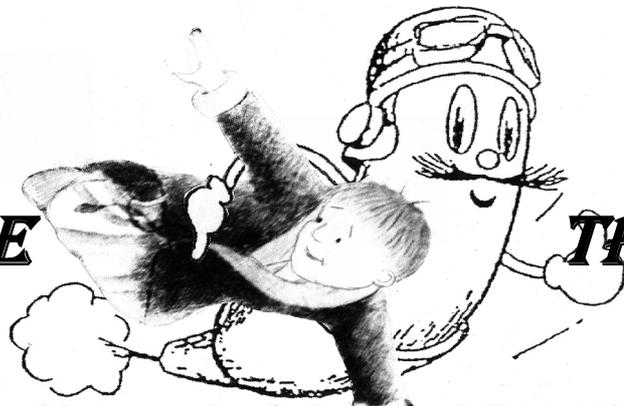
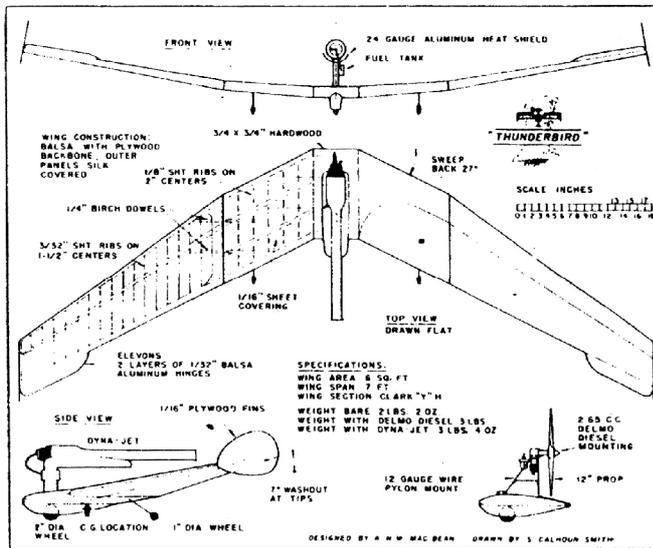


SMOKE TRIALS 6



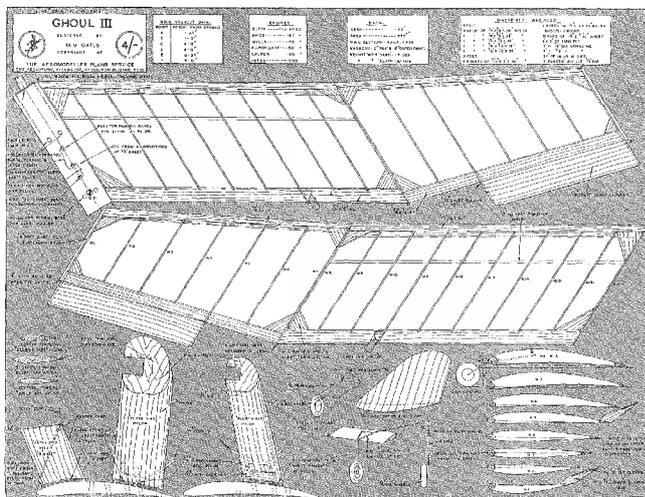
**Roger Simmonds; 8 Orchard Way, Offord Darcy,
PE19 5RE; rsimmo@globalnet.co.uk**



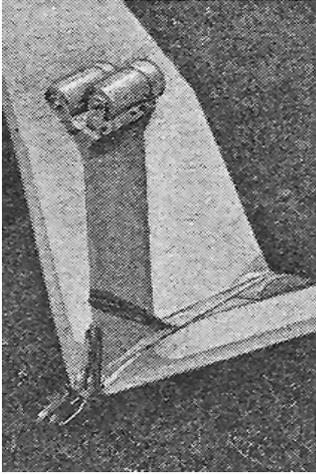
I have had some interesting feedback on the 'Ghoul' (*Smoke Trials 4*). Jim Boys, son of the legendary Howard, emailed: "Have you any further information about the tailless rocket powered model ... could it have been photographed in Lyons?" The photo was actually taken at a UK rally in 1948 (not 1946 – my mistake). The Ghoul was powered, not by one of Howard's rockets, but by a Jetex motor that was, confusingly, showing an unusual amount of smoke. Jim continued his email: "Attached is the plan of one of Dad's models which immediately followed the one shown in *SAM Yearbook No 1*. I think you will find this of interest and the two models look remarkably similar to me". The plan Jim sent me is of A M W Mac Bean's 'Thunderbird' (left) which first published in *Air Trails Pictorial*. Was it one of these that made such an impact at Eaton Bray just after the war? A ban on free flight jets followed!



'Ghoul III' is larger than the earlier (32") version shown in *ST 4*, being an impressive 46" span, 352 sq in and weighing a little under 3 oz. It could be powered by a number of motors. John Miller Crawford kindly sent me copies of the plan (left) and accompanying article from *Aeromodeller*, July 1951.



Top left: The pulse-jet powered 'Thunderbird'. **Middle:** The 21 year old Mr Gates B.Sc. with a diesel powered version of his model. **Bottom:** The very nice plan; note similarities to Howard Boys' earlier Flaming Ptero and Mr Mac Bean's frightening Thunderbird.



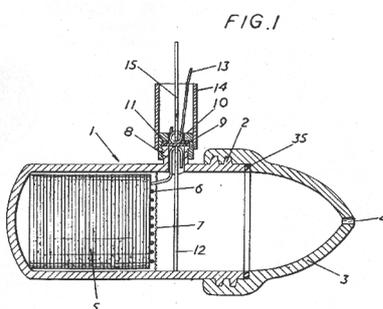
The article is as nice a 'period piece' as one could wish for: "Designer: M. M. Gates, B.Sc. [ah, yes, those happy days when a B.Sc meant something!] ... Aero Engine design Student aged 21 ... specialist in high performance tailless designs, ... always incorporates an unusual feature in his models". . EASY [sic] to fly, and simple to build ... why not try one for your baby class diesel or Jetex unit? Its high performance is equal to the best of orthodox designs ... The popular choice [of motor] will probably be the Allbon Dart 0.5 cc, a lightweight Jetex 200, an Elfin 1.49 c.c. unit (not for beginners!), or, another tricky high power unit, *twin* [my italics] Jetex 350's".

Left: Ghoul's pylon with two Jetex 350 motors. Now that I would have loved to have seen!

Despite siren voices from those who can supply the necessary EDF technology, notably 'Atomic Workshop' and Derek Knight, there are still some stalwart folk out there who are persisting with rocketeering and haven't yet gone over to the 'Dark Side'. For us Reactionary Relicts, a significant hurdle to getting our Jetex motors operational is not rusted gauzes, odd sized washers, or even oversize or damp fuel, — but wick. I recently tried examples of genuine Jetex wick from the many tins I have collected. Oh dear! ... most spluttered only very feebly; none burned vigorously enough to pass through a 50C orifice, and only one example stayed alight when compressed against a fuel pellet with a gauze. Even then, the ICI fuel failed to ignite. I was, as they say, more than somewhat nonplussed — how was I going to light my fire?

I wondered if the potency of my wick could be restored (no, please, titter ye not!), so I tried a few things whilst the wife was away (no, really, missus!). Would putting it in a warm place help? (Oh well, please yourselves!). I baked various 6-12" samples from my oldest (unopened) tins at 120°C for a couple of hours. I was relieved these didn't burst into flames, and the crystalline deposits were now less evident. So far so good! The results were as follows: storing wick in the airing cupboard did no good at all; baked examples appeared more brittle and burned with more fizz, but were still useless for nozzle duty. Some examples did now burn when pressed up against a gauze, however, and ignited a well-dried ICI pellet, though not one taken straight from a box. In comparison, Powermax wick ignited this pellet at first attempt and burned through the orifice cleanly.

These experiments are of course inconclusive; it may be that baking at a higher or lower temperature, or for a longer or shorter time is more efficacious, and I can only suggest that before throwing away that useless tin of genuine Jetex wick, or selling — or reselling — it on eBay, try popping it in with the crème caramel. Do be careful though. What all my 'faffing about' (I think that is the correct technical term) has taught me though is: should we ever get Rapiers back, never again will I complain about comparatively minor problems like obscure ratings or ignition failures! The other moral of this tale is: do not overbid for Jetex wick on eBay!



It is a great pity Wilmot Mansour, who were not unaware of problems associated with fuses, didn't develop a method of electrical ignition. The device (left) is not an electrical system, as some folk thought (though it could be adapted for that purpose), but is to enable optimisation of the orifice without regard to its need to accommodate a fuse. John Emmet marketed a simple electric some time ago, but so far, even with a fresh battery, I have had little success with mine — it just seems to melt the pellet.



As I wrote last month, it is now possible, with an astute mix of 'off the shelf' components, to make a 'Jetex 50' size model, or something not very much larger, for EDF (electric ducted fan) and achieve a very reasonable performance.

Left: components for micro EDF; modified 30 mm impeller, Lithium-polymer cells and KP timer. Note the balancing holes in the fan.

Steve Bage explains: "I've been working on an EDF project on and off for over a year now, but it's a bit of a slow burner and so far I've only got the plan drawn! The model is a MiG 17, one of my favourite early jets, to be powered by a micro ducted fan with a brushless motor and Lithium polymer batteries (LiPos). There are a couple of alternatives: Derek Knight's powerful 32 mm fan, which delivers about 60g of thrust with 7.4V (two LiPo cells wired in series), and a unit made in China by an outfit called AEO. This has the advantage of being very light at around 10g, but it's rather poor quality, and I had to re-wind the motor and re-balance the impeller. It produces a little over 50g of thrust on two cells.

LiPo batteries have an incredible capacity, which gives the potential of very long run time, so, for free flight, a timer is required, not only to keep the model in the field, but also to prevent damage to the batteries (LiPo batteries don't like being fully discharged). Also, brushless motors require an electronic speed controller (ESC). Fortunately, small and cheap lightweight ESCs are used in micro R/C and Derek makes an amazing little timer that weighs only 1.4g. This takes the place of the radio receiver and, furthermore, allows power levels to be adjusted. The statistics of these little fans compare quite favourably with Rapier motors, and, indeed, Jetex:

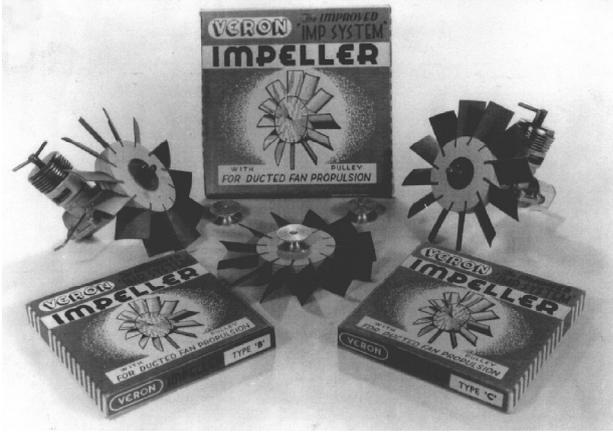
Motor Type	Installed Weight (g)	Typical Duration (s)	Typical Thrust (mN)
Rapier L2	8	20	120
Rapier L2-HP	8	16	220
Rapier L3	14	20	300
Jetex 50C	16	15	220
Jetex PAA Loader	44 (3 pellets)	21	490
30mm EDF	30	60+ (adjustable)	500

The thrust from a 30 mm fan allows a model somewhat larger than a typical 'L2 Rapier' type: my MiG 17 is 17" wingspan and 20" overall length. It may end up overpowered, but with the adjustable thrust option of Derek's controller this is not a problem. This useful function also means that trimming need not be quite so much the 'white knuckle experience' the rocket plane flyer so much enjoys. Cutting of balsa on this project is imminent, so hopefully there will be some photos coming soon".

Thank you, Steve. It can be seen from his table above that a 30 mm EDF 'power train' is heavier and produces more thrust than an L2 or L3, and one needs to go smaller yet to have an EDF suitable for a Keil Kraft MiG 15 or Skyleadà Mystère. Marty Richey in the US has shown this is possible, but not yet with 'off the shelf' products. However, a 'power train' with an AEO 30 mm or KP 32 mm EDF is comparable in thrust and installation weight to a Jetex PAA Loader and is compatible, in size and weight, with the larger Jetex 'Tailored' Hunter or Swift.

But putting EDF into a vintage Wilmot Mansour model might be considered sacrilege by some, and making a new design for these newfangled EDFs with LiPos or whatever and controlling these with an electronic gubbins that doesn't contain genuine KH 88B pentodes is also contrary to SAM Sacred Scriptures. But there is one genre of truly vintage model 'jets' where EDF would not cause even the most fundamentalist Samatollah to raise an hoary eyebrow – Veron's venerable Flying Scale ducted fan models.

Veron's Amazing Ducted Fans



CALLS FOR A CELEBRATION AT CHRISTMAS!

Over and over again throughout the past year VERON Kits have proved themselves "second to none!" Now is the time to start building again. Why not make it a "Veron Christmas"? One of our kits as a gift will please any model aircraft enthusiast.

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The "LAYOCHKIN 17"

17" span model of the famous Russian jet fighter featuring the revolutionary "jet" (Pat. pending) ducted impeller propulsion—the nearest approach to real jet flight yet attained by any manufacturer. Designed for use with Oxyjet and Glow Plug motors up to 87 c.c. Kit includes stage-4 stage plan including rears-made impeller and starting pulley.

KIT PRICE 30/6
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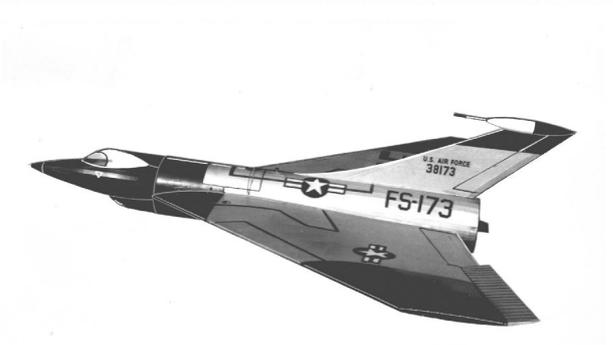
VERON Sabre "IMP" F86E

THE "STAR TURN" OF THE SEASON

PAT. APPLIED FOR

Incl. Pwr. Tax **29/2**

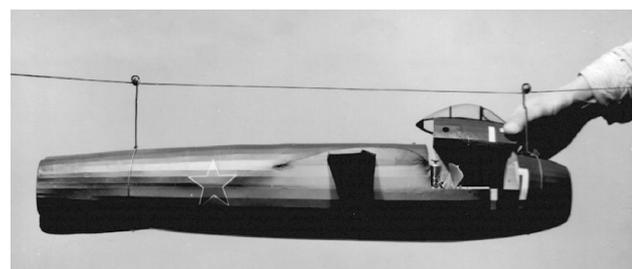
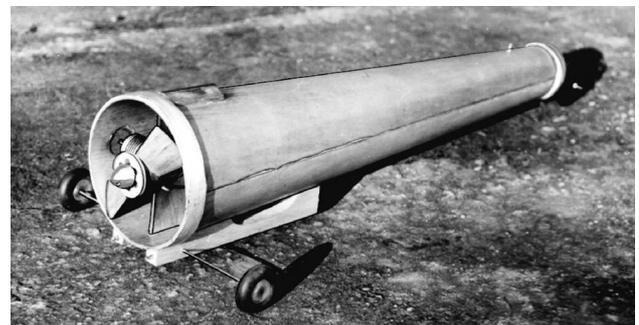
Phil Smith, Veron's designer, "hits the target" once again with the North American SABRE, which, having been tried and tested, is acclaimed as the most advanced kit of its type on the market. The SABRE F86E has an extra-ventral induction slot for 100 per cent. impeller efficiency and is a natural successor to the "IMP" (Pat. applied for) L.A.17.



Above: Phil Smith's innovative jets; the advert for the 'Improved Imp System' features what appears to be a relatively unsuitable motor! Note the high prices of F-86 and La 17. The futuristic 'Deltaceptor' (bottom), being only 'scale-like', had the reputation of being the best flyer.

Phil Smith was the chief designer for Veron (aka Model Aircraft (Bournemouth) Ltd) pretty much from the beginning, producing a string of designs, many of which are justly famous. The range of these designs is astonishing, and not only aircraft. When turbojet aircraft first appeared in the skies over Britain in the late forties, Phil was, like Howard Boys and Joe Mansour, one of a number of modellers to look up and emulate in miniature what he saw. Jetex put a stop to Phil's own experiments with rockets fuelled with the contents of Coffman engine starters (cordite, according to Wikipedia), and he then took a different approach. But Phil was one of the first to produce scale kits for Jetex and introduced the ubiquitous 'trough' – a neat solution to the problem of hiding the motor and deflecting the exhaust that was widely copied by Albert Hatful, Ray Booth and others. Though not by Joe Mansour and Bert Judge, – but that's another story!

Phil's greatest contribution to 'Flying Scale Jets' was, however, to produce a practicable ducted fan unit (the Imp) and a number of splendid kits to go with them. These unique products were the result of much R & D. For example, see the interesting experimental vehicles below!

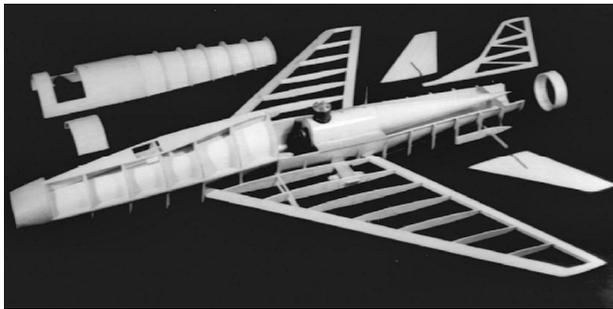




The three-wheeled test bed with a shrouded propeller appears to be free running and was probably a lot of fun! The tethered fuselage belongs to a La 17, sans fin, tailplane, or wings. The set up was presumably to test and optimise a prototype of the sophisticated Imp in a more controlled manner.



The FD 2, La 17, F-86 and later Deltaceptor created quite a spectacle when demonstrated at rallies throughout the land (I would love some eyewitness accounts), and were favourably reviewed in the modelling press. According to Phil, they sold 'quite well': the FD 2 being the most popular and around two hundred kits were produced. It is not known, though, how many of these were built and flown! The FD 2 was described in some depth in *Smoke Trails 4*, to which I would refer the reader. One quote of Phil's from *ST 4* bears repeating: "the actual thrust of the FD 2 prototype was not very great, but this did not matter – with all that wing area it was in effect a powered glider". The Deltaceptor was a more potent performer: it was lighter and the duct and intakes could be optimised solely for efficiency.



The kits were of course costly to produce, and not popular with Veron's management, who insisted that they were powered by cheap and readily available motors. Like the contemporaneous Jetex Tailored models, they were not widely emulated or quite the commercial success they should have been. Thus it was that a number of prototypes never made it to the shops. Two outstanding examples are a Super Sabre for control line, and a free flight Hawker Hunter. The former (made, Phil says, as a 'private venture') was powered by a relatively high performance (and high revving, important for ducted fans) glow motor, possibly a Cox Medallion 15. Phil remembers that it did fly, but really needed a KB 40! The Hunter was free flight; 27½" span, 36" length, powered by a small diesel.



Top left: Phil Smith launches Veron's first DF kit, the La 17. **Next**, Phil at Halton 1957. **Next:** A shot at the ultimate? The unique C/L Super Sabre was never kitted – Veron obviously had an eye on their profit margins! **Bottom:** It is even more of a pity that the Hawker Hunter never made it to the shops. (All photos from Phil Smith's archives).



Top: A fifty year old Veron FD 2 resplendent in red dope. **Next:** Re-jigging of wing without dihedral. **Next:** airframe complete and ready for covering. Note the EDF unit that was eventually discarded. **Bottom:** Peter's beautifully restored model, finished in silver, ready for its maiden flight.

Restoration of an FD 2

A little while ago, Peter Coombe, self confessed member of the RSPCA (Royal Society for the Prevention of Cruelty to Aeroplanes) acquired an ancient FD 2. It was essentially good condition, but needed a lot of work to bring it back to flying condition. Readers will remember the FD 2 is quite large, 38" span, 48" length, and weighed 14 oz with an AM 10 diesel motor. I'll let Peter tell the story in (more or less) his own words:

"Initially, I made the decision to go down the 'R/C assist' path with a 70mm DF, a 240W Watt brushless motor and LiPos. I wasn't seeking high speed at all, I just wanted it to 'drift round' *à la* original and enjoy the shape. It didn't quite turn out like that! I have been cobbling airframes out of 1/16" balsa for nigh on 60 years, and I thought reconstruction would be a piece of cake. Not so! It proved a lot more exacting than anticipated, and pretty slow work. First, old tissue and dope were stripped with 'Nitromoors'. Then, oily wood was cut out and new grafted in. I then discovered that mummified balsa cement is resistant to cyano, and I couldn't get really good 1/16" sq balsa for love or money. But the most intractable problem was the removal of dihedral and subsequent re-alignment of the wings and modification of the wing root profile and intakes. The wings just seemed to want to sag to a very unattractive concave anhedral! In the end, I fitted 1/8" spruce spars webbed with balsa. I covered the wings with heavyweight tissue, but this shrank far too much, warping the delicate frame, and had to be stripped off. Eventually, I got some *Polyspan* light synthetic tissue from FliteHook. This shrank less ferociously and took dope well. The model was finished in silver, not its original red.

Disappointingly, EDF proved impractical, so I fitted a BRC 200 watt brushless motor driving an 8x6 prop [in 'pusher' mode], a 40 amp ESC and 2200 LiPos. I had to wrestle with a lot of electrical spaghetti for final hook-up! There is bags of thrust (30 oz with a fresh charge). Since the complete airframe weighs only 16 oz, I was expecting a good climb".

Peter then had to wait for a good flying day (quite rare this year, he observes) for the test flights. These were a mixture of success and tears: “The FD 2 flew very well and looked exactly as I remember it *circa* 1956. However, a severe pitch down half way through the first flight resulted in a hasty landing. This was caused by the engine access hatch flipping up 45°, (not altogether surprising considering the huge volume of air passing through those big intakes) giving a dramatic air-brake effect. The Next flight, *sans* hatch, was nice and sedate with very little power needed for a stable and controllable performance. I then secured the hatch with several strong rubber bands and off I went again. More than enough power ... it was now flying very fast, but easy to control and responsive. Most pleasing! At one stage, the low sun caught the gold of the tailpipe-mounted motor— the prop is quite invisible – and the strong reflection looked just like the reheat kicking in! I regret that at this juncture exuberance triumphed over discretion and good sense. I decided it was time to beat up the tower. Climbing steeply to a fair height, I opened the throttle fully for the first time and dived. The FD 2 streaked across the strip, probably close to 65-75mph. I then saw the wretched hatch pop up, and in an instant the model nosed into the ground in a blizzard of silver confetti. “Oh dear!” I uttered. Most of the damage was caused by the LiPo doing an ‘Exocet’ through the nose. I will repair it when the wounds to my injured pride heal – it is too precious a model to abandon after all that hard work, and the Old Lady will fly again”.

Thank you Peter, an inspirational tale well told. And with a moral at the end. Such a pity – but we’ve all been there, and hubris is oft punished by pain and suffering! Peter’s latest project, by the way, is a Skyleada Vulcan enlarged to 200%, also for R/C electric power. Hmm ... is this the way things are going?

This being ‘Smoke Trials’ no 6, I’m inclined to put away my pen for the time being, at least until we have a supply of Rapiers again and my enthusiasm for small jet planes is rekindled. The ‘Trials’ joke is also wearing a bit thin, so a future ‘Jetex’ column will need a new and apposite title. We shall see. In the meantime, please keep up the correspondence and try to visit Jetex.org for the latest news. Finally, for the first time in print, here is Phil Smith’s Hawker Hunter. Peter comments, “Stunned by the Hunter. I did not know about that one. Utterly superb! It would have sold by the thousands – what a missed opportunity!”

