Smoke Trails 27

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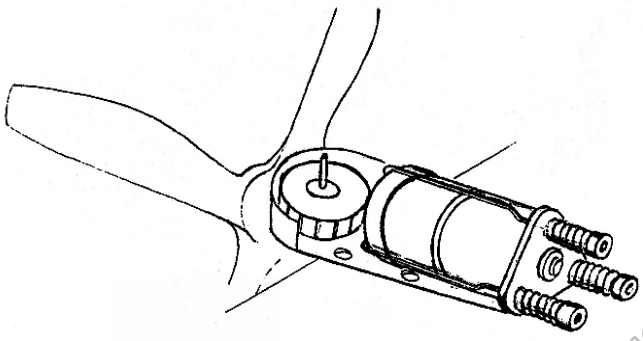
The eleutherian simplicity of Jetex flying was one of its great attractions, one that 'born again' Jetex fliers like Walter Snowdon fondly remember. Walter, whose current interest is recreating the old 'pocket money' profiles, reminisces: "I built them all, some several times over – all six of the Skyleada 'Silhoujettes', the Veron Panther and Seahawk, and the Keil Kraft Attacker and Shooting Star. The Comet was a superb flyer. I had great fun flying them all and lost a couple of Jetex 50s and an Atom 35 when they landed (or crash landed!) in long grass and bushes. Happy days, when you could go into a well-stocked model shop on a Saturday morning, build a model by Saturday night and fly all day Sunday on a bottle of pop and a jam sandwich".

Ah yes, I remember them well. Rapier flying, at its best, is even simpler – no cleaning and reloading, and one just needs a box of motors and an igniter! But, given the lack of Rapiers, this particular ecstasis is no longer possible, and I'll have to get used to aeroplanes with propellers again. Is there, I wondered, an interesting way back to prop (er) 'planes? A turboprop perhaps? Was there a Westland Wyvern in the KK 'Flying Scale' series? But what to power it with? The ever inventive Joe Mansour looked for a way Jetex could substitute for a small i/c engine. The illustration is from Keith Brothwell's 'All about Jetex' (*SAM Yearbook 3).*



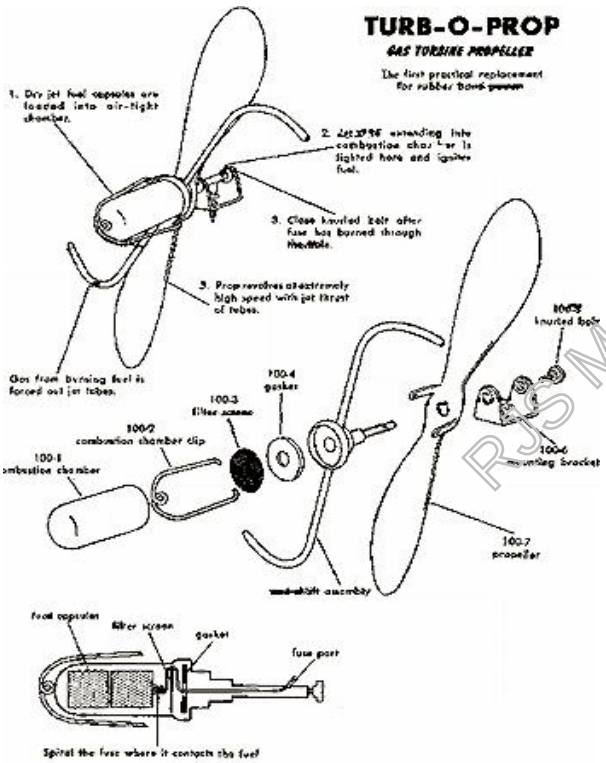
Above: the Wilmot Mansour turboprop unit, developed as an accessory for the Jetex 100, was never marketed.

Keith wrote in his fine article: "To combine the thermal efficiency of a jet, or rocket in this case, with the high low speed [sic] thrust of an airscrew, Mr Mansour spent a considerable amount of time on the development of a turbo-prop unit. As an accessory for the 100 motor, it was not considered a success and never reached the production stage. Tested by the LSARA, it developed about the same power as a 0.75cc diesel engine despite an inefficient turbine. Later modifications, however, produced a thrust of 10 oz.

Employing a turbine, it was a true turboprop but, at 2 oz, it lacked the strength to deal with turbine revs of 4-6,000 rpm." Bert Judge has never referred to this unit – perhaps Joe Mansour kept this particular liaison with the LSARA private – so, unfortunately, little more is known about it. However, there is a Jetex-turbine chimera about which, because it was actually produced and marketed, we know rather more. This is the splendidly named 'Dempster 'Turb-O-Prop'.

Above: Unlike the WM unit, the Dempster 'Turb-O-Prop' was produced commercially and examples have even appeared on eBay!

John Miller Crawford writes (on *Jetex.org*): "The Dempster 'Turb-O-Prop' must surely be a leading contender for the title, 'Most 'Fiendishly Imaginative Application of Jetex Power'"! I agree with him! *Flying Models* The US were also quite taken with this innovative unit and reviewed it in April 1955. Their review began, helpfully, "The Turb-O-Prop is the trade name for a new form of model plane power – a jet-driven propeller using solid rocket fuel for thrust. The fuel used is one or two capsules of the Jetex No. 50 type. Burning this fuel produces high velocity gases, which are exhausted through two jet tubes to provide thrust to rotate a 6" diameter aluminium propeller".



The simple construction and modus operandi of the Dempster 'MFIAJP' is evident from the illustrations left. The advert promised a "Smooth humming sound in flight".

Flying Models continued their review: "Depending upon the fuel used and rate of burning, run is approximately 30 seconds. During this time, sufficient thrust is developed to fly a regular 1/2A free flight model. Weight of the complete engine, less fuel, is ¾ of an ounce. Static thrust of the prop is about 2 ounces, 4,000 rpm. . . . [it] is of course easy to start. It requires cleaning after each run because the combustion produces small amounts of material which, combined with moisture from the air, can in a few hours form corroding substances. Fine wire can be used to clean the jet tubes. Along with the instant-starting features of this type of engine, there is a complete absence of torque. This allows the prop to be used on small models and, when combined with low weight, should give a phenomenal flight performance. The propeller is free-wheeling, of course, when power is exhausted. No moving parts are heavily loaded, therefore the engine, with proper care, should have a very long life".

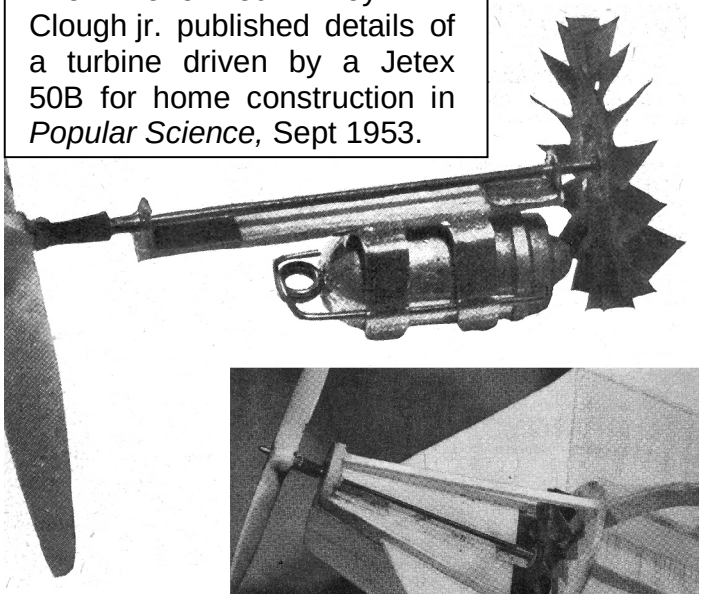
Alistair Simpson, writing on *Jetex.org* was more than a little sceptical: "I wonder if *Flying Models* actually tried one out. In addition to the limited likelihood that the device could ever fly a model, at the advertised price of $3.98 it was expensive too. At that time an 049 Cox Space Bug could be had from American Hobby Center for less ($3.95). No need, then, to look far for reasons for its lack of commercial success!"

John Emmet made a replica from engineering drawings prepared by Tom Crompton in the US back in 1988. John reported that It did work, giving a peak output of about 3.5 Watts (a feeble 0.005 BHP (definitely not the claimed 'equivalent to a ½A engine'!) and that cleaning it afterwards was 'very fiddly'. I would add that ignition of the 'Jet-Tex fuel' (as Dempster's advert curiously refers to Jetex 50 pellets) appears to require an awful lot of wick.

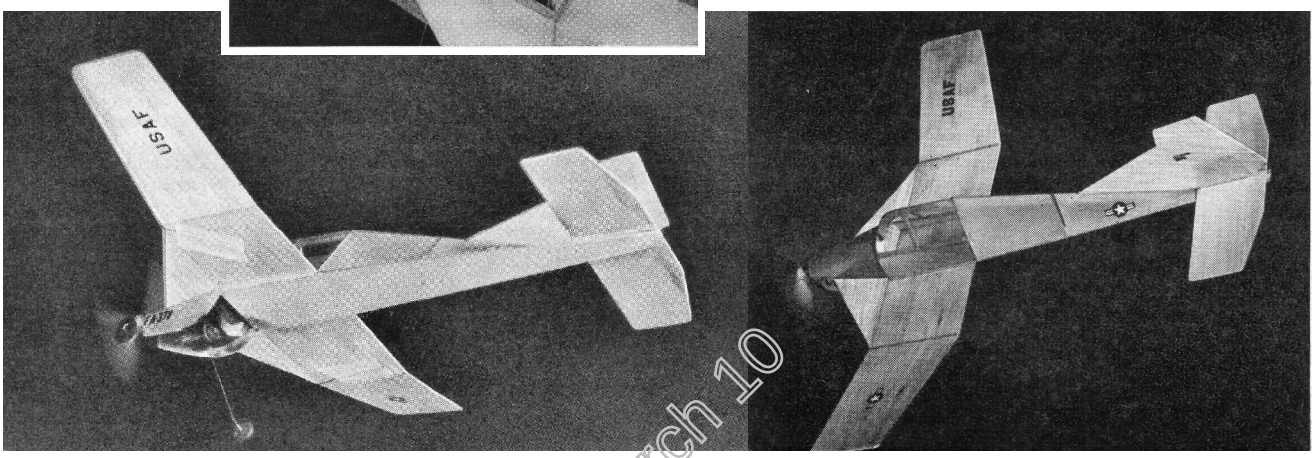
The Dempster MFIAJP then, even if I could afford one, (an example on eBay went for over $200 recently), is not likely to ease my transition to 'non jets' and would not be the ideal motive power for that Wyvern!

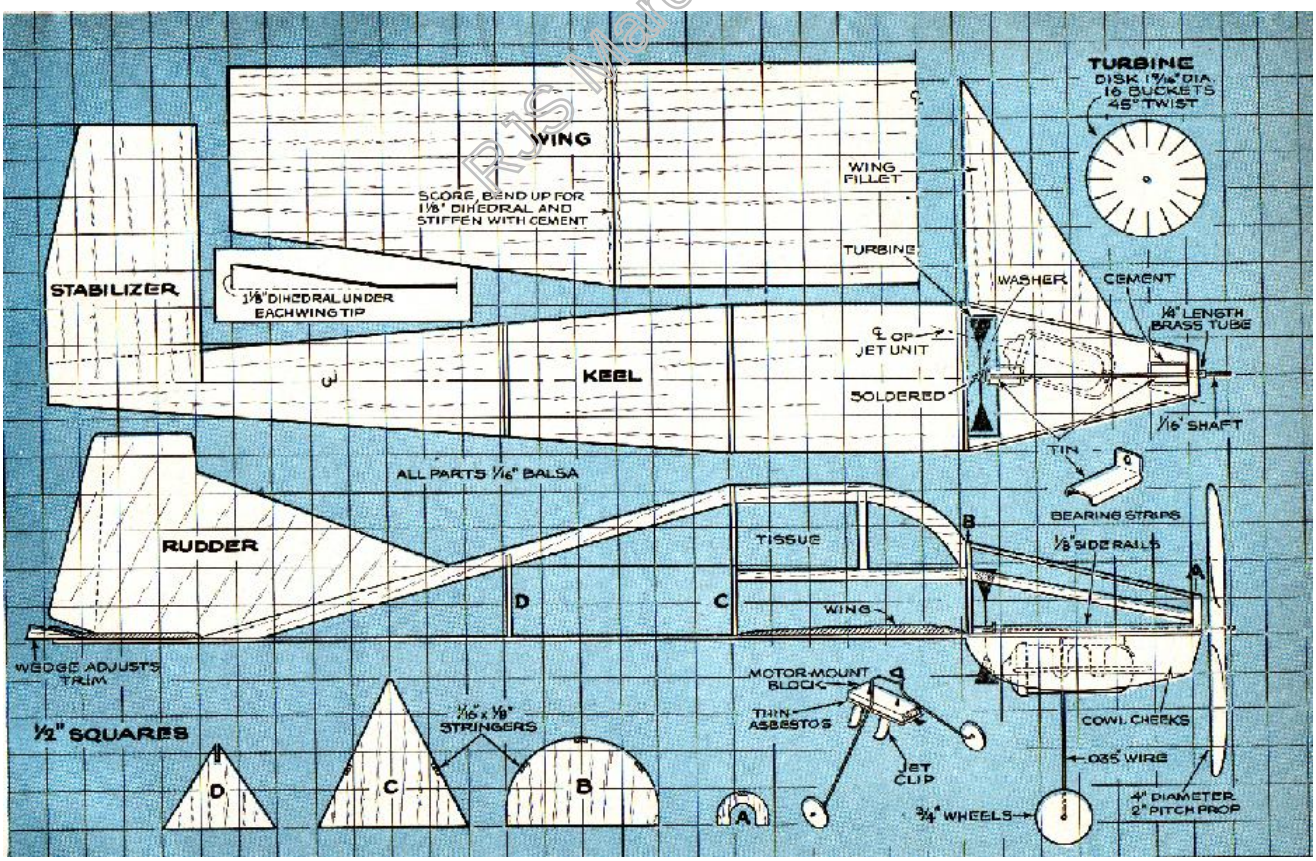
So I did a little research in the archives and found another Jetex turbine – not a commercial product, but one designed for home construction.

The renowned Roy L. Clough jr. published details of a turbine driven by a Jetex 50B for home construction in *Popular Science,* Sept 1953.



This somewhat 'Rube Goldberg-like' device is described by its prestigious author thus: "Gases from a miniature jet engine whirl a tin-can turbine which in turn spins the prop to keep the plane in the air […] the powerplant on the left drives a balsa plane into the sky as [the photos] below". The nice flying shots (which I hope were not faked) show the power from the prop and any thrust left over from the 50B were sufficient to fly the all-sheet crop-duster like model. The mechanism was obviously judged simple enough to be made by the average reader of *Popular Science,* which seems to have been the US equivalent of our *Meccano Magazine*.

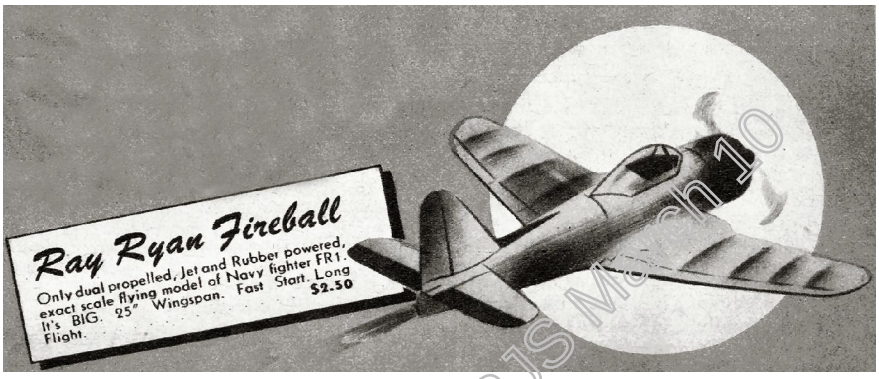


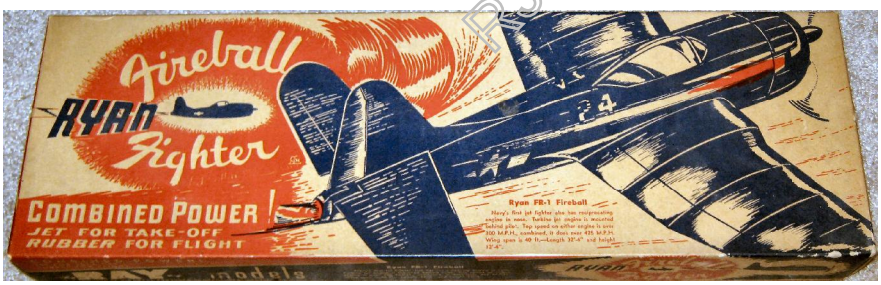


As a lad, I never did get very far with *Model Engineer*, or *Meccano Magazine* for that matter, and my dyspraxic metal working skills were the despair of Ivor, my longsuffering woodwork teacher, but Roy Clough's device of bent tin and wire may now be (just) within my capabilities. The extracts below give the flavour of *Popular Science's* article:

"The hissing power of a miniature jet is harnessed by a turbine to spin the prop on this model plane – just as on a real turboprop airliner. The prop does most of the pulling, but the jet thrust helps too. Jet power is supplied by a Jetex 50 solid-fuel motor. […] Flights of 150 ft can be expected. **Prop shaft and turbine**. Bearings for the prop shaft are cut from tin-can stock […] the turbine is made by cutting 16 vanes in a 1 9/16" tin disc and twisting them [to] about 45°. It is then soldered to the back end of the propeller shaft. **Flying.** The trim of this model is unusual because the CG shifts during flight […] balance for a floating glide without a pellet in the motor. The rudder is bent a bit to counter the jet deflection, which tends to force the plane to the left. The model will travel on the level for some distance, then it will go into a gradually steepening zoom as the fuel pellet is consumed and the motor peaks. Caution. A thin solution of egg preservative painted inside the cowl cheeks will keep them from being scorched".

All of the above is quite tempting, and I can search for egg preservative on the Internet. Unfortunately, the model, pukka vintage 'semi profile' period piece though it is, is more than a little 'agricultural' and unappealing. A 'turboprop', then, is not such a good idea: is there a proper scale subject out there which features a jet and a propeller – one perhaps originally with mixed power units – that fulfils my requirements? There is a nice modern design – Richard Crossley's Curtiss XF-15C for rubber and Rapier L1 (*Smoky Addiction 4*) – but I don't know of any 50's design with a diesel engine and a Jetex motor. However, there was one curious 'dual power' kit marketed in the US just after WW II:

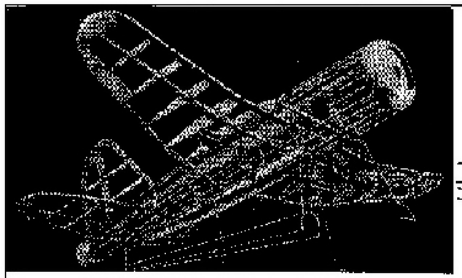




Left: the Ray Models Ryan FR-1 Fireball was a model of the first US Navy 'jet' fighter. The FR-1 was powered by a Wright Cyclone radial and an early 1600 lb thrust Allison turbojet.

The model faithfully, and ambitiously, reflects the real one's hybrid power, being for rubber power and a punctured Sparklets CO_2 bulb! The box top proudly proclaims, "Combined Power! Jet for take off, Rubber for flight".

The advert has appeared before in these columns (*Smoke Trails 12*). Ben Nead had wondered if the model was a figment of the copywriter's imagination, as he had never seen one. Well now he has, and acquired one for his extensive collection of Ray models. Generously, he sent me scans of the plan and wood. At first sight, after I had pieced it together, the plan looked to be a very nice job, but closer inspection revealed some distortions and a 13 mm (½") disparity between the top (plan) view and the side view. Were these in the original, I wondered, so I asked Steve Bage to wave his magic 'CAD wand' over Ben's scans. Steve writes: "The plan has an unmistakable 'Ray' look about it, and there are indeed a number of issues. The fuselage is significantly shorter in the side view than in the plan view and the print wood matches neither! I've stretched the side view a bit, it's probably still a few mm short, but near enough for a toy airplane purposes. I've fixed the fuselage keels to match the plan view.



Ryan Fireball Construction

A. Making the Fuselage

B. Making the Wing

C. Covering Wings

D. Covering the Fuselage

E. Building the Tail Assemblies

F. Making the Canopy

G. Installing the Wings

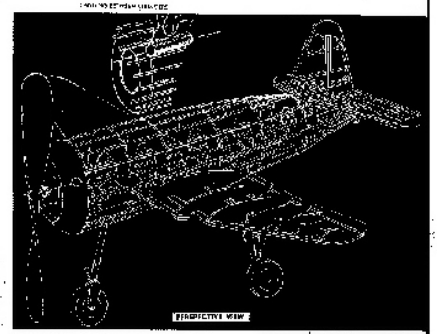
H.

I. Completing

J. Flying the Fireball

Concerning the Rocket Units

Making the Propeller Shaft



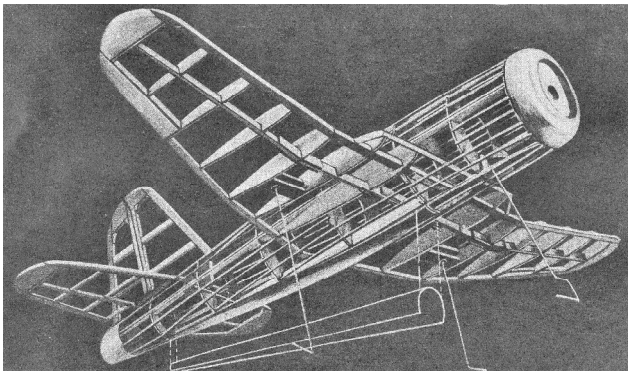
RAY FLYING MODELS

RYAN Fireball

PROPELLED

It looks as if Ray had taken a paper copy, cut it up, and re-pasted all the bits together in a new layout, probably to make room for the photos. They used to do this quite a lot in those days. Some bits were not square and there were a couple of tell tale marks where things had been moved. The ribs also look rather an odd shape, but I've drawn them just as they are. Other than the fuselage keels I've not checked the print wood or die cut (or should that be die crushed) wood against the plan. I've squared up the bits best I can so I'm pretty confident that this version of the plan is better in a lot of ways than the original, but a few more 'challenges' will surely come to light during a build, so builder beware!"

Thank you Steve. I'm sure Ray employed competent draughtsmen – note the fine perspective drawing below – and the inaccuracies are by no means unique to Ray. As any committed SAMmite knows, old plans can contain lots of errors which these days become very obvious when plans are 'digitised'. Fortunately, correcting them in the digital domain is relatively straightforward. When building in the old days, I remember, we took these errors, distortions, etc, in our stride, 'bodged' our way around even quite large ones, and just carried on!



Left: This nice illustration shows off the Fireball's structure splendidly. The heavy CO_2 bulb is positioned under the wing and exhausts into a shallow trough. A Rapier (say an L1) could be located a little more forward than this: the weight of the motor would help to counter the extra thrust for climb-out and as the propellant burns off the cg will move back for when the propeller takes over. Perfect!

About the design itself, Steve asks how one was meant to prepare and launch the 'duel fuel' model. Hmmm … a very good question, best answered by a quote from the (comprehensive) instructions: "First fly with the rubber motor only until you have the ship [sic] in trim. Now for a real dual power flight. Insert the rocket [CO_2 bulb] in its tunnel and wind the rubber motor. One person must hold the plane in his right hand and with his left hold the propeller from turning. The second person carefully engages the gun squarely on the rocket unit. The person holding the plane gives the signal to fire the gun and launches the plane in a normal manner. The breathtaking climb that follows will give you a new thrill in model flying".

The operation of the [Ray] 'gun' referred to above was described in *ST 11*. Of wooden construction, a spring-loaded needle, released by a trigger, pierced the CO_2 capsule in (hopefully) a reproducible way. The one shown left appeared on eBay a couple of years ago.

Despite the reservations, the Ray Fireball is a very nice design. Lindsey Smith is better able than I to assess its scale accuracy, but it looks good to me and one would of course (as Ray themselves recommend) not bother with the undercarriage. It may be just the model I'm looking for. Reducing the span to 16-17" would make it suitable for one of Atomic Workshop's little electric motors. They suggested a Voodoo15/25 with either a 90mAh or 130mAh LiPo (see *atomicworkshop.co.uk*). Building this vintage design essentially for electric power, I can incorporate a mounting tube for a Rapier, deepen the trough and cover it with foil. All initial flight resting would be under electric power, and a Rapier lit up as and when. Should make for a stirring sight! One thing still bothers me: I wonder just who was responsible for that name. Given the prototype had a very new and unreliable turbojet, the sobriquet cannot have inspired confidence in the test pilot. If we ever do see Rapiers again, and if they are as (un) reliable as the 2008/2009 varieties, any 'authentically' duel-powered Fireball could end up being just that!