Smoke Trails 34

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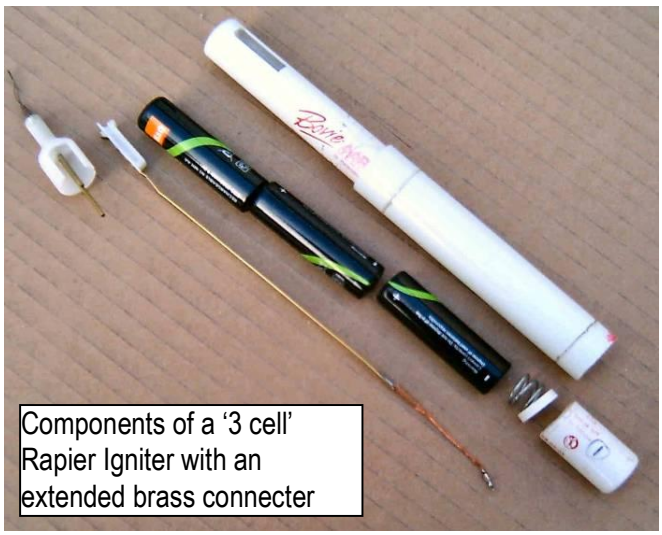
First, a very happy New Year to all vintage fliers, especially to those rocketeers who have remained undaunted in the face of troubles with Rapier motors. But things can only get better: it is now an 'open secret' that Rapiers are back in production in new premises, and Dr Z is busy making L2s and L1s. Neil Sommerin, who regularly travels to the Czech Republic and knows Dr Z quite well, has, in person, collected consignments from Castle Zigmund. Because Neil cannot ship either within the UK or overseas, some of the chains of distribution, via willing individuals who of necessity must remain incognito, are worthy of an episode of 'Allo Allo'!

The red-cased L2s we have seen so far are: standard (≈140 mN); L2-LT (≈80 mN, 25 sec); L2-HP (≈200mN 15 sec). The L1s, still with their traditional green cases, are of unknown spec, but early examples show enough grunt to propel my profile Lansen quite nicely. One grateful recipient of Neil's entrepreneurial endeavours, Steve Bage, writes: "Having got hold of a selection of new Rapiers via a secret underground network of deep-cover Rapier die-hards, I thought that I should go out any try some out. The weather in Aberdeen was diabolical – more than a foot of snow and sub zero temperatures – but there was little wind so once I'd dug the car out there was nothing holding me back. "I took out my old Jetex Flying Wing and fitted an L2-LT, which have always suited the Flying Wing. It lit at the first touch of a 3-cell igniter button and it went away beautifully like a love sick angel – a nice spiral climb and a long motor run, after which it headed off directly downwind, never to be seen again, as it came down in an area of head high undergrowth full of thorns. I searched for a while but it was hopeless. One can't draw any overall conclusion about Dr Z's latest offerings, but this one motor performed very well, too well in fact! Oh well, these Jetex wings are quick to build."

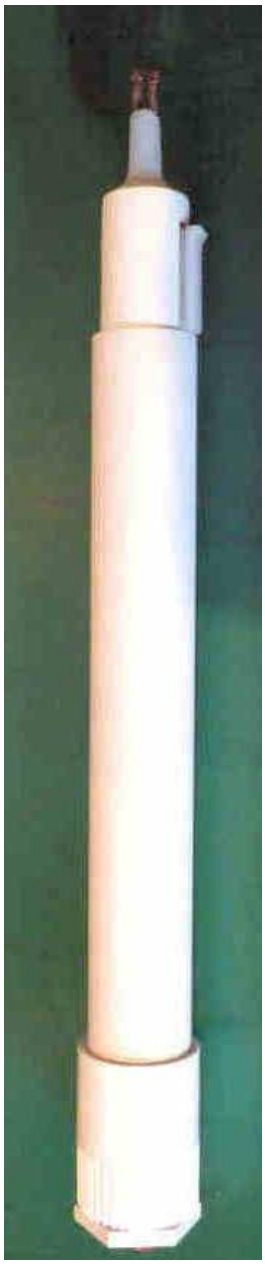
A modified 'Bovie' cautery tool compared with an original



Components of a '3 cell' Rapier Igniter with an extended brass connecter

One can only applaud Steve's stoicism in the face of such conditions – the spirit of Captain Scott and lives on in Aberdeen! His reference to an electronic igniter is significant: though one might be prepared to send motors through the post, arguing they are no more than 'smoke generators' and play the old soldier if caught out ("S'welp me guv'nor, I didn't know nuffink" … won't do it again, honest"), posting fuses is a different matter – one can hardy plead innocence and the risk is definitely not worth the possible repercussions.

Left: Modified 'Bovie' cauterising tool. Note the three AA batteries for trouble-free Rapier ignition.



We have ignition

Which is why electronic ignition is going to become *de rigueur* in the future. SAMS Models has for some years been selling a cautery tool for this purpose. These work well, especially when new, but have a number of drawbacks: **1**. they are expensive – £20 or so due to the weakness of the pound; **2**. The wire tips one inserts into the motor nozzle are quite delicate, and easily bent, especially when hot, or broken should the motor 'pop'. **3**. Battery life is limited – the tips gradually become less hot and effective with damp old or cold motors; **4**. The tips are not long enough to reach the propellant in an L3. Fortunately, it is perfectly possible to address all of these issues. A small 'nick' can be filed in the electrode tubing and the ends gently broken off to reveal the narrow hole down the centre down which 2-3" lengths of Nichrome wire can be inserted. This wire can be thicker than the original, say, 27-30 swg. The body of the original tool can be cut in two and the body extended with a length of 2" diameter plastic electrical conduit tubing from B&Q, so that it will take three AA batteries instead of two. The original thin brass strip has to be extended, but a bit of spare brass and solder is an effective, if somewhat 'agricultural', solution. The original cap can be re-used the whole held together with electrical tape. The photos on the previous page make, I hope, the modifications manifest. Three batteries give a healthy glow even with 27 swg Nichrome tips and 2500 mAh rechargeable batteries will see you through the day. The tips are much more robust than the originals, but, should you break one, spares can prepared at home and easily replaced on the flying field.

Steve Bage, typically, made a better job of his igniter (see left), writing: "It is made from a very old igniter which was in pretty bad condition sitting in my scrap box. Plastic conduit was glued with cyano to the igniter end; at the other end I used a 'Female Conduit Adaptor' to provide a screwed closure from which to access the batteries. The trickiest bit was extending the brass conductor strip to the end of the three batteries and coming up with a way of creating a contact. I soldered a one end of piece of wire to the brass conductor and the other end to the original contact spring. This is not an especially elegant – I'm sure something better could be dreamed up – but it works fine. The Nichrome wire I used is about 0.3mm, which equates to 30-31 swg and seems plenty strong enough. With Asda's own brand' AA re-chargeable '2500 mAh' capacity batteries, the tips get much hotter than before. So far, I've only used it once in anger. This was with an L2-LT, which are often hard to get going, but ignition was instant".

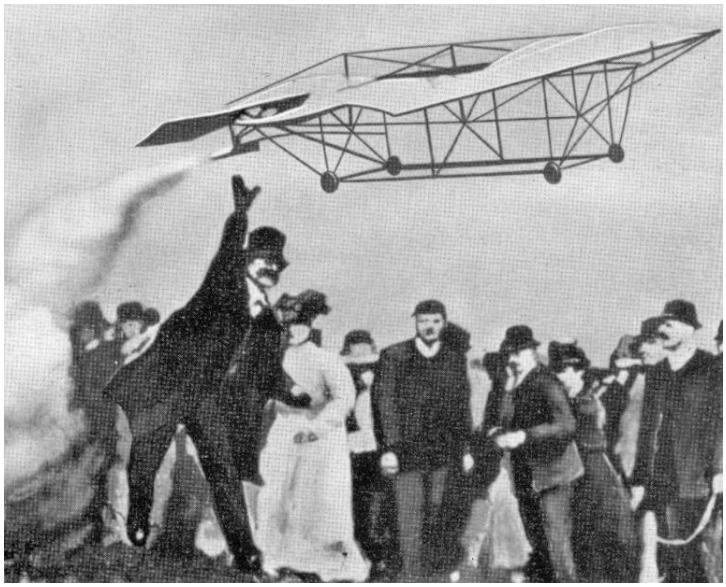
My own experience with a '3-cell' igniter (patent applied for) matches Steve's. I was kept quite busy at the last two Old Warden meetings igniting other people's Rapiers (see left, with Simon Firth). By this time, most rocketeers were scraping the bottom of the barrel, retrieving odd motors from forgotten places in their flight boxes. These had hitherto resisted ignition with fuses or lesser igniters, but I didn't have one failure with my 'turbo boosted' igniter. As Andy Blackwell observed, "you could vasectomise an elephant with that".

There is also some good news for genuine Jetex fliers. Readers will remember that Jetex pellets are still quite easy to come by, but wick, whether ICI or Sebel, is harder to find, and of dubious quality when one does (*Smoke Trials 6,* Dec 2009). Dr Z has now applied his considerable pyrotechnic expertise to the problem, and Neil brought back some copper cored flexible wick from his last visit. Though thicker than either Jetex or Powermax wick, it goes through a 50C orifice, but I was worried it might not 'burn through' to the pellet face. So I passed a sample to our resident *Smoke Trails* technician for testing. Andy reports: "After a few initial experiments confirming that Dr Z's wick would burn past the orifice, which fortunately it does, I loaded up a standard 50C with Sebel fuel and gauze and used the usual two piece wick system. The copper wire is quite thick making the close coiling more difficult than usual, but there was no sign of flaking when wound to the dimensions of the pellet face. I closed the motor and threaded $^1/_2$" of wick through the orifice. Holding the motor in a pair of water pump pliers, I lit it: nice steady burn on the way in, then the coil at the pellet face took over, spreading ignition very rapidly and ejecting the wick with a very satisfying 'spit'. The rest was a textbook two pellet burn. Interestingly, the motor casing glowing cherry red in the darkness of the garden. The glow started near the end cap, then, as the fuel burned, it increased and spread towards the front until the engine was 90% aglow, fascinating! The only caveat I have about the wick is that it needs to go through the orifice easily. Experiments with an old Jet-X motor showed that if it is too tight and the nozzle too thick the flame will not reliably pass through. However, it worked on a genuine 50C, so it's a thumbs up from me". Thank you Andy. Incidentally, a 'cherry red' glow implies a casing temperature of around 700°C. Neil has already passed Andy's observations to Dr Z, and hopes he will try a finer gauge. In the meantime, Neil has a number of 1 metre lengths of the new wick available for a small donation to charity. Interested readers can email Neil at *neilsommerin@gmail.com.* And (listen very carefully, I will say this only once) I can arrange to collect them and pass them on.

Early Rocket Motors

V E Johnson, one-time editor of the model aircraft column of *Flight* magazine, will be name familiar to regular readers of my rocketry ramblings. He last appeared in *Smoky Addiction 3*, where I quoted his comments about L F Hutcheon's rocket plane of 1913. Rees Jones, who lives in New Zealand, kindly sent me some extracts Johnson's book, 'Model Aeroplaning, its Practice and Principles', which was published in 1922. Johnson's prognostications on all manner of modelling matters make for eyebrow raising reading, for example, this is what he writes about what he is pleased to call 'Electrically-Driven Models': "No attempt should on any account be made to use electric motors for model aeroplanes. They are altogether too heavy … a 2 oz motor driving a propeller giving a static thrust of 3 oz … the total weight [with accumulators] will be 1lb nearly. Now from a pound weight of rubber one could obtain a thrust of pounds, not ounces". Johnson is equally dismissive of 'One Cylinder Petrol Motors': "So far as the writer is aware, no success has so far attended any one-cylinder petrol motor, nor do we think any success is likely attend such efforts. The question of vibration is a very serious one." Johnson has apparently convinced himself that any model aeroplane driven by such a motor would shake itself to bits. Perhaps a reader more knowledgeable about these matters than I am could tell me when the first model aircraft driven by a one cylinder petrol motor took to the air – surely it was earlier, or not long after, 1922?

About 'Rocket Driven Models' Johnson is more sanguine, despite recalling a famous, or infamous rocket flight that took place in 1907: "The writer has very vivid recollections of an aeromodellist who turned up at a competition held at Crystal Palace with one of these 'rocket-planes', to the huge disgust of the other competitors. When the rocket plane, after soaring madly up into the air, plunged head first down on to the stone-work of an empty fountain and smashed itself to pieces, there was joy in the ranks of the other competitors. The actual length of flight was about 100 yards". Though Johnson does not say so, the 'aeromodellist' in question was Mr F W Thomas (see *(Jet) X Files 5*). Mr Thomas appears to have been treated very badly – a flight of 100 yds was no mean feat, and why is it that a model is ineluctably drawn to the only tree, or spectator, or stone fountain – whatever – on the flying field?



Sadly, the fate of Mr Thomas's ambitious and unorthodox model is all too familiar to the present day free-flight rocket plane flier. And also, unfortunately, is the unmerited disdain of other model fliers, especially when one tries to mix it with the radio control boys.

Left: Mr F W Thomas first appeared in *(Jet) X Files* 5. This better reproduction of the antique (1907) photo is worth repeating for new readers. Andy Blackwell has obviously modelled his launch technique on that of our illustrious Edwardian forbear.

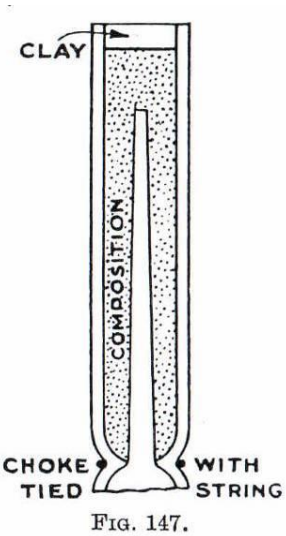


FIG. 147.

As proof of his approbation of rockets, Johnson includes Fig 147 in his text, conceding "for a certain class of experiments such a source of power might be useful" and gives details of its fabrication, the composition of the black powder, and the somewhat alarming instructions: "The composition is firmly consolidated about half an inch at a time with about twenty moderate blows of a mallet". Should the modeller survive this process with his faculties and digits intact, and dares to ignite his 'source of power', Johnson assures him: "the rocket does not necessarily explode when the composition is consumed . . . the duration of its flight is only a few seconds, five to seven according to the strength of the composition … the 'rush' [sic] is therefore violent. This rapidity of flight seems to be the drawback to its use". The only other data Johnson gives is that his signal rocket has a 1" bore, a length of 8.25" and has a flight of about 1000 ft. Hmm … not really suitable for a model aeroplaning then!

'Fig 147' (above) is very similar to an illustration Lawrence Sparey used in his wartime *Model engineering* article, and the method of making the 'choke' is the same. (See *SAM Speaks,* (*SS*) June 1999). So now we know where Sparey got his ideas from, but, to be fair to him, he provided much more detailed instructions and carefully defined his motors' dimensions. But, according to Doug McHard ('Sheffield's Secret Weapons Factory', *SS*, Aug 1999), Johnson's (or Sparey's) methods were most hazardous, so it's good that Rapiers are back and we don't have to resort to such dangerous expedients!

Piggyback Launching

Peter Smith first told of his experiments with air launching his Skyjet 200 in a letter to *SAM Speaks*, June 2010. But Peter's story, a delightful addendum to Don McGovern's Mother-Hawk/Squawk-Hawk saga (*Smoke Trails 30*), should, I think, be kept for posterity in its rightful place, i.e. *Smoke Trails*, where it could reach a yet wider audience

Top left: The early KK Skyjet 200; **below**: Peter's Skyjet coming into land after its piggyback launch.

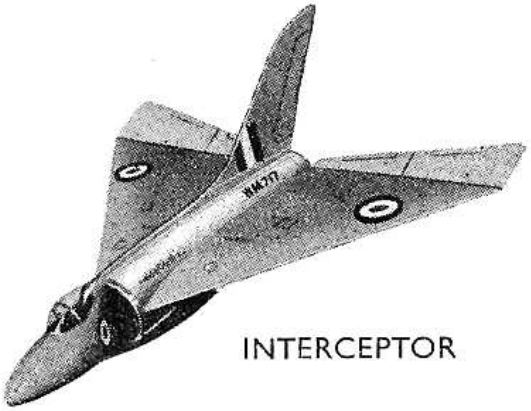
Peter wrote: “Regarding the KK Skyjet 200, a modelling friend of my youth, Ron Evans, was a devotee of the Ethereal Lady, and had, in fact, lost two over Tattenham Corner on their first flights. I don’t think there were many dethermalisers in those days [1951], we were just happy to see our creations fly! I had just finished the [Skyjet] ‘200’, and Ron and his third ‘Lady’ were ready to go. I can’t recall why, but we decided to try a Mercury/Mayo type of double-aircraft launch, and devised a track on the wing of the ‘Lady’ to accept the ‘200’ into some built up slots, with rubber bands and dethermaliser wick so that the ‘200’ would launch when airborne.

It actually worked perfectly on the maiden flight, but we could not repeat it, probably because there were so many fuses to light in a strict order, and we were dealing with differences in seconds to make things work. The photo is the only evidence that the event took place – you may think this is all made up, but I swear it’s true”. Peter added a few more details in a letter to me, “As I remember, we had about six more attempts to get it to fly before the boom snapped right behind the pod. I think the boom was ½" x $^{5}/_{16}$" and very soft, what we call carroty!” Well I for one believe you, Peter, and I hope you approve of what I have done with Ron Evan’s Box Brownie photo of your Skyjet.

Replicating Jetex Kits

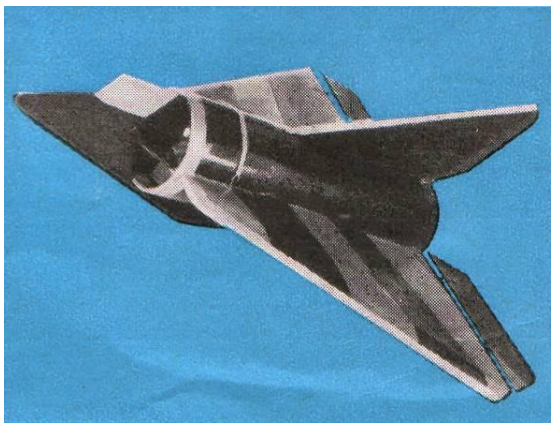
Whilst we are making good progress recreating Keil Kraft Shadows, Veron Quickys and Jetex Wrens and Sharkies, we have been less successful with two iconic models from the fifties: the Jeticopter and the Interceptor. The former, in its ‘100’ guise, first appeared in 1950, and the smaller Jeticopter 50 a little later (the advert is from 1951). Both of these were the creations of Harold Figgins; Mike Ingram’s more sophisticated moulded RTF helicopter (not a Jeticopter) didn’t arrive until in 1954.

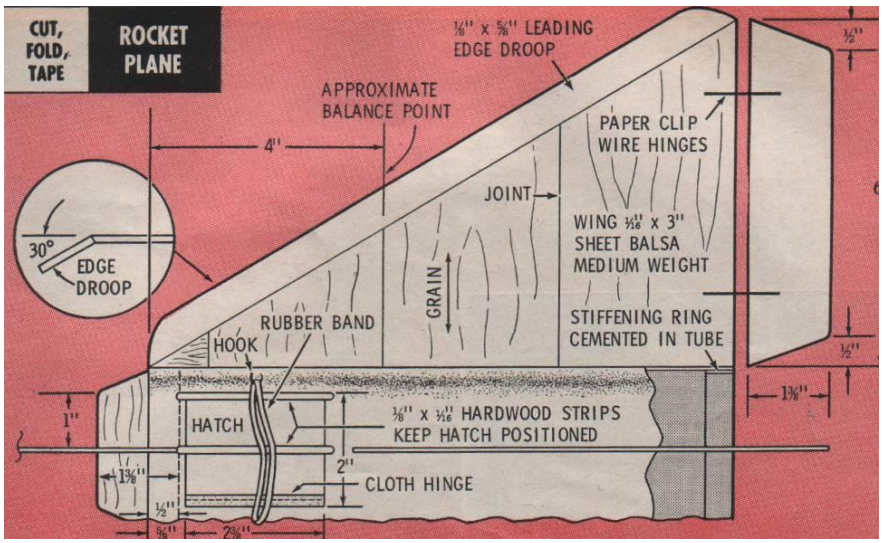
None has been seen on the flying field recently, so I was pleased to get to receive an email with a photo (below left) from Phil Worth. Phil writes: “The ‘Jeticopter’ is very nicely built. I was told, when buying it at the ‘Nats’ 3-4 years ago, that it was a prototype for a Powermax kit. Now Roy Lever would have a go at anything so this didn’t come as too much of a surprise. The box art looks good and the flapping hinge assembly should provide lift and autorotate ok. I feel it is too ‘historic’ to fly so will draw up a plan and send you a copy”. If the story told to Phil is correct (I did have my doubts, but “Copy of original lable [sic] Powermax model easy to build and fly. Uses two 50Z engines” and a Large yellow ‘50Z’ has been pasted along the bottom of the otherwise original box art), I don’t think anything became this particular Roy Lever project. A great pity. Phil concluded his email: "I had a Jetex powered helicopter as a young boy, and well remember the smoke, the fun, and the tears”. It would be good to see a Jeticopter in the air again, whether ersatz or not, so I look forward to Phil’s Powermax plan and will publish it in a future article. Rapier motors, being lighter than their Jetex, or their Jet-X equivalents, are admirably suitable to the task of powering helicopters and there should now be no problem lighting up two simultaneously!

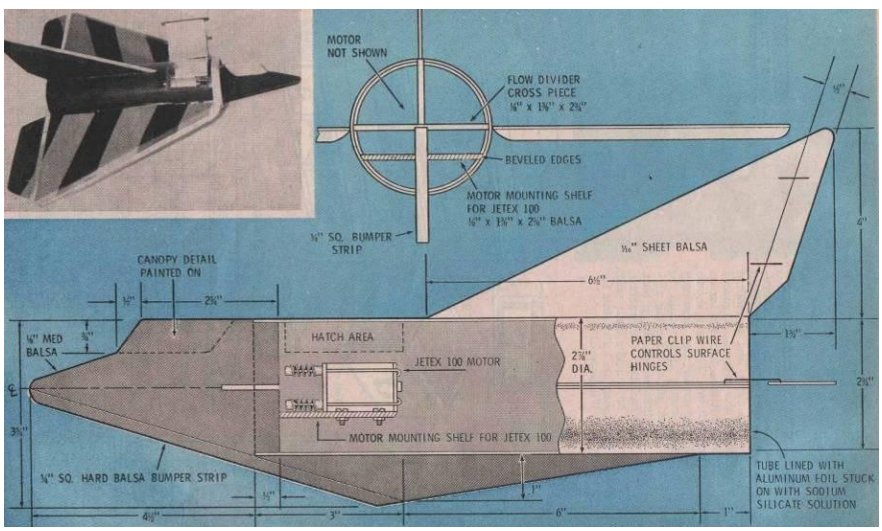


I last wrote about Peter Cock's Interceptor in *Smoke Trails 24*, but despite my pleas there, and elsewhere, I have not been able to get my hands on one so that I can attempt a facsimile.

As an alternative, I might have a go at Roy Clough's 'Delta-wing jet, which was published in *Popular Mechanics*, July 1965. Though not quite as idiosyncratic as his 1953 'turboprop' (*Smoke Trails 27*), it is still an unusual design: the Jetex 100 is enclosed and the delta wing has a conical camber. A spectacular performance with what was even then an old motor is promised: "Launch the Delta Rocket from your hands and it glides straight out for a short distance. Then the nose tilts up and, gathering speed, the plane shoots skyward, trailing a cloud of blue smoke like a jet with the afterburner cooking. The sharply swept back delta wing, needle nose and rakish fin suggest speed and power. The performance is equal to the promise … the simple jet propulsion system is practically foolproof … any one of a number of different size jet motors can be used ... the model can be flown with a pair of 50's".







Left: Roy L. Clough Jr's 'Delta-Wing' was ob-viously inspired by the Jetex Interceptor, and building one may assuage my cravings for this model.

It was originally for Jetex 100 (though Clough says a Jetex 150 or 200 could also be used), so a little rescaling may be necessary for a Jetex 50 or Rapier L2. The fuselage is a simple tube of 2" diameter lined with aluminium foil, but there is no reason why it could not easily be adapted to take an authentic augmenter tube.

Clough gives some good advice pertinent to all us Jetex fliers; "be sure to hang on [to the model] until the motor has built up thrust … this may take as long as five seconds".