Impington
Model Aeroplane Club
Founded in 1946 by Ray Malmström

March 2021
Website https://ivcmac.bmfa.uk

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An update on club activities

Sadly, as expected, this weeks news means that there won't be any indoor flying for the remains of this winter, but we should be able to have some indoor Saturday afternoon sessions over the summer if members want them. Check the club website for updates!!

Outdoor good times should be round the corner with summer Friday evening flying resuming on the IVC field on Friday 9th April, so if you haven't renewed and want to, please contact John Clarke. Remember that if you haven't renewed with the BMFA you will be uninsured which is not advised!!

When it's allowed (hopefully during March), a reminder of our outdoor sites. Check website.

Impington – Friday evenings only from 7pm starting 9th April – no flying at other times!!

Girton – Our main site. Full details on the website but note that there may be sports activities that preclude flying at the weekends. This is a great day time site during the week and on weekend summer evenings.

Some club members have private agreements with local landowners who allow flying – if you want to find out about these, please contact John Copsey. If any club members know of additional sites, please let us know.

Wako glider ready to fly…..

Mark Saunders completed Wako

Mark Saunders reports -

I've built 2 removable top covers, one plain and one with a power pod. Doing the power pod as an afterthought was a bit of a mistake. The top cover was originally envisaged as just a magnetically mounted flimsy cover, and required all sorts of jiggery-pokery to redesign as something more structural plus finding a place to hide the ESC and battery etc.

Would have been much easier in the old days when you would have just put a Cox .049 on a pylon!

Its wing loading has come out at 10oz per square foot, so it should glide, but given that it's about as streamlined as skip, I don't expect it to have very long flights!

At first sight the horizontal stabiliser looks a bit small compared to the wing, but according to the 'tail volume coefficient' calculation (which also takes into account the wing chord) it should be OK.

It has a servo-driven tow release in the top of the cockpit, so if it flies at all, we should have a go at towing it up! I've fitted a stabilising receiver, which apparently is a good idea for towing.

Coming to a Landing Zone near you, as soon as we have all been jabbed!

Who's this then?

Answer at the end…..

Gary Church's Nobler

Gary has been busy in the lockdown and the Nobler should be ready for summer flying with a Saito 40 up front.

You have probably heard of the Nobler (as designed by George Aldrich). An excellent stunt machine, it was designed in the early 1950s and the wing is the basis of virtually all subsequent stunt designs ever since.

Bob Gieseke built a nice looking version and (eventually) won the world champs with it in 1974 after several 2nd places.

Bob Gieseke pictured with his World Champ winning Nobler in the October 1974 Aeromodeller.

Microsoft Flight Simulator

During the lockdown I splashed out on this and have had some great fun exploring the world. The software is very good value at £59 but don't tell my wife what the new powerful PC I bought to run it on cost!!!

Here are some videos of interesting places I visited –

- Cambridge Colleges from the air
- Cottenham, Impington and Girton
- Flying up and down Mt Everest

The system uses artificial intelligence to create 3D landscapes from satellite imagery – sometimes with "interesting" effects!!

Club website

This should be your first port of call for info on club activities. You may recall we recently moved to a "free" BMFA hosted website. The old website has been automatically redirecting users to the new site, but this will stop in March.

To find the club website, just search for IVCMAC or anything similar – you will find it!!

Details of all club meetings are posted here.

Stuarts review in RCM&E

Our own Stuart Marsden did an excellent review of the Simple Cub in the February edition of RCM&E – worth a read.

Dodgy Launches

Alan launches his Easy Star whilst wearing the DJI FPV goggles. Transmitter in one hand and plane in the other! Competent observer Malcolm took the photo.

KK Senator

Waiting for its maiden flight, Chris Caruanas KK Senator waits patiently.

In their youth

Pictured in 1963, who is this on the right and what's the model? He doesn't do much control line these days!!

Article 16 compliance

You have probably just about had enough of being told what to do for this year already, but if you haven't ticked the box on the BMFA system to show that you understand the new rules, it's time to do it. There are 2 methods

1. Log on to the website where you renew your annual BMFA membership and tick the box. The website is https://bmfa.azolve.com If you haven't done it already, this should be the first thing you see. Alternatively select **My Profile** and then **Opt ins**
2. If you are having trouble doing this, just e-mail John Clarke and he will do it for you. clarke.john.x@gmail.com

Details of the new rules are on the club website "Club Documents" page. There are very few changes, but notable is that if you fly CL models over 1kg, you have to register!!

Operator IDs

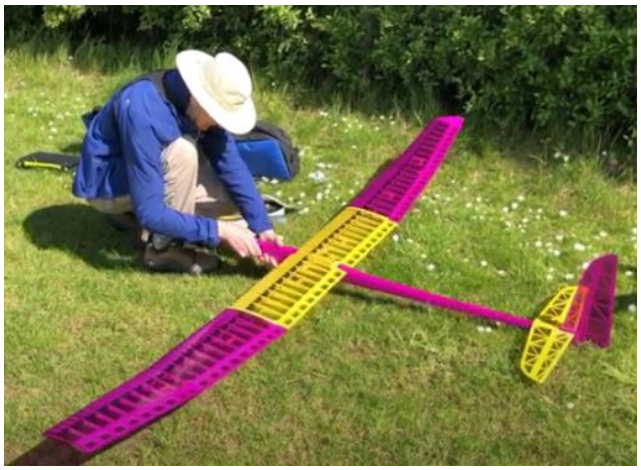
If you renewed via the BMFA, you will probably have received your new Operator ID by now. This is what you stick on your models. I can think of other places – Ed.

As a one off, your ID has changed, but we are assured that it will not change again. Your task (if you choose to accept it) is to re-label your planes…….

The new format GBR-OP-XXXXXXXXXXX is a lot longer than the original ones.

John Clarkes Inside F5J

John reports - In the summer of 2019 I crashed my 2.9m span 'Inside F5J' glider which I had built from a kit. It was a lovely model to fly – see the video here.



The forward end of the fuselage from the trailing edge of the wing to the nose was smashed plus one of the wing tips. The plan is to repair the glider and fit a flight controller with GPS and FPV gear. I would like to try using FPV to thermal with buzzards with a slow silent model which might just be able to climb as well as they do in a thermal.

I have started rebuilding the fuselage using 2mm liteply with carbon fibre rod longerons in the corners glued together with epoxy + microballoons and milled carbon fibre in some areas for extra strength. A bit messy looking but outside should look OK when covered.

The marks around the nose are ink (to blacken the balsa inside the motor cooling holes).

I have widened the fuselage by 2mm to make room for the flight controller. This construction provides a fuselage with few internal members which would restrict the space for the additional equipment. I hope that it will also be stronger for the increased landing loads if flying with heavier batteries.

The RC system will be Crossfire which has a much greater range than 2.4 GHz systems and will stop the alarming "RF signal critical" warnings I had flying up to 2,000'. At this height I dared not take my eyes off the model in case I wasn't able to spot it again. If this were to happen with the new setup I could switch on 'return to launch' and know that it would fly back to me. The BMFA have recently confirmed that this particular autonomous flight function is permitted under the CAA's Article 16 which is good news.

I will normally fly in manual mode but at the flick of a switch I can put the flight controller into self-levelling mode which could be useful if I ever lose orientation again. I don't want to crash this nice model a second time.

Droning on and on?

This is the 95Kg drone that went out of control at Goodwood and flew 8,000ft up into controlled airspace before the battery ran out and it crashed into a field. It was a scale model of a planned manned racing drone!!

Now that's something that could never happen to us, could it? You would think that a drone weighing 95Kg would have some pretty advanced safety measures, but I guess that's why you won't be getting your parcels delivered this way anytime soon!! Landing!!

Answer to Who's this then?

It's Stuart Marsden pictured in the March 1999 Aeromodeller launching at an indoor event. In their youth was Richard Staines with his CL Skylark model.

Mariners are famous for their stories – by Bryan Gostlow

And this Frigate bird ocean soarer is no different……..

This story begins in the fossil record around 50 million years ago when the Frigate bird had legs a little longer and a straight bill. At that time it lived in a freshwater environment and, as we'll see, today's marine Frigate bird hasn't altogether shaken off it's past.

Eocene era frigate bird

Darwin observed them in during his voyage to the Galapagos Islands 1841, "*The Frigate bird has a noble appearance when seen soaring in a flock at stupendous height."* They can still be found in the Galapagos today along with island sites in the Central and South pacific, Coral Sea and Indian Ocean.

Today's frigate bird has a wingspan close to 2.20m [81" to 91"] and the heavier females weigh around 1.4kg [2.2 to 3.2lb]. With long narrow pointed wings they have the highest ratio of wing area to body mass and the lowest wing loading of any bird of comparable size.

Richard's FVK Silent Dream

Richard's soarer *Silent Dream* has a touch higher aspect ratio, weighs only a tad more but at 16 oz/ft^2 wing loading matches the Frigate bird precisely. Ask someone to suggest an ocean soarer and they might come up with Wandering Albatross or Giant Petrel but these guys have three times the wing loading. In this respect the frigate bird is a true outlier and it has been suggested that this enables the birds to use marine thermals created by small differences between tropical air and ocean surface temperatures.

Perhaps reflecting their freshwater origins frigate birds are not known to rest on water despite spending weeks to months flying over the ocean. Their long wings, poorly webbed feet and reduced feather waterproofing make taking off difficult following momentary contact with the water. So, as long as they don't starve they have it made. Since the frigate bird spends most of its life at sea, its habits outside of when it breeds on land aren't well-known, that is until researchers started tracking them around the Indian Ocean. What the researchers discovered is that the birds' flying ability almost defies belief.

On one occasion 35 ringed great frigate birds were recovered. Of these ten were older than 37 years and one was at least 44 years old. One satellite tagged bird soared 40 miles without a wing-flap while others were recorded reaching 4,000m or roughly 12,000 ft. Bear in mind that temperature drops off by 6.5 C for every 1,000m adding up to a -26 deg chill factor. Two thoughts come to mind, "if they don't flap their wing how do they manage to pull it off?" and "they won't find much food up there, so why bother?"

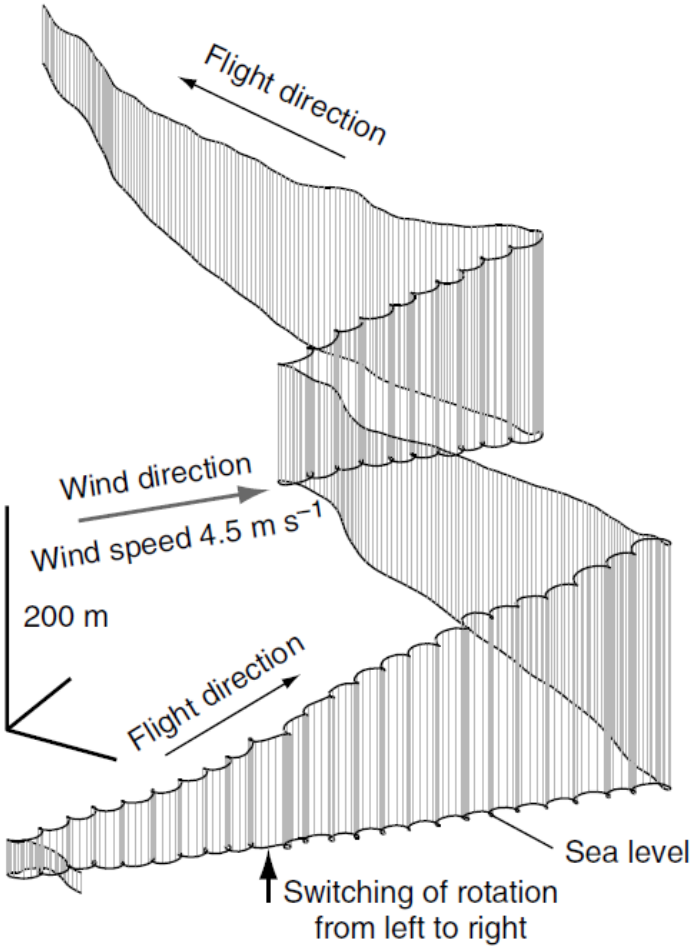
The frigate bird is said to be the only bird that is known to intentionally enter into a cloud, white cumulus cloud. Over the ocean, these clouds tend to form in places where warm air rises from the sea surface. The birds hitch a ride on the updraft, all the way up to the top of the cloud.

Winds that form updrafts on which the birds rely to soar can also disrupt the ocean surface. At these points of disruption deeper water rises to the surface, carrying with it things such as phytoplankton that attract small fish. The small fish attract larger predatory fish and cetaceans, which creates the very feeding frenzy that Frigate birds rely on. They scoop up Flying fish and squid that leap out of the water to escape predators.

Rather than relying on chance to find these ocean eddies predictive of foraging opportunities the frigate bird must follow them during both the day and at night. And so it seems that the bird has solved the problem of feeding itself without entering the ocean only to come up against another hurdle: When do they sleep?"

Using the type of technology employed by flight controllers a research group has "instrumented" a number of breeding female great frigate birds. The researchers used a data logging device to record the electro-encephalogram [EEG] combined with a three-dimensional accelerometer to record brain activity and head movements of birds flying over the Pacific Ocean and after returning to their nests on the Galapagos. For each hemisphere of the brain, the EEG was recorded of the primary visual area. In addition, the birds' movements and altitude were recorded with GPS data. All the birds engaged in one or two trips over the ocean lasting up to 10 days and spanning up to 3,000 km.

The typical flight pattern of frigate birds consists of circular rising on thermals [soaring] followed by straight gliding down.



When gliding during the day, the EEG showed activity typical of alert wakefulness. In addition, frequent high-amplitude signals occurred in conjunction with rapid head movements, likely reflecting visual processing during active searching for foraging opportunities. While circling [in thermalling flight] the birds were observed to maintain aerodynamic control with one eye closed while one half of the brain slept. In this way they could catch tens of seconds of sleep at a time. Occasionally both halves of the brain switched off, but in total they were observed to sleep for around 40 minutes each day and far less than they would on land.

This piece draws on articles by N Rattenborg [Nature] and H Weimerskirch [journal of Science]

Tony Neal started the ball rolling and Richard Staines chipped in with photos and data. John McIntyre has suggested a new IVC club cup for, "The best flight while asleep". I take it that the BMFA would have no problem with that. Sounds like a plan – Ed.