September 2012

This Month's Meeting - Wednesday 19th September

We are back to the Flying Shack this month for the start of our "indoor" season. Nick, our Winter Events Coordinator, is getting us off to a good start. Our speaker will be Russ Stein who will be giving us an illustrated talk on his flight to the Arctic Circle in a Eurostar. The meeting will start, as usual, at 8.0pm sharp.

Quote of the Month

"To put your life in danger from time to time... breeds a saneness in dealing with day-to-day trivialities." — *Nevil Shute*

Fly-in Reports

3rd September - Bulley, Colliers Elm Farm by Dick Osler

Well, there it was gone! The final official fly-in of the season has happened! This time, a Monday was selected due to suitable weather and it turned out to be a really good evening, with around 20 visiting aircraft, and at least half a dozen members journeying by road. The host for the evening was Tim House and the venue was Colliers Elm Farm near Churcham.

By the time that I got there, Nick Heywood was duty chef, having just replaced Myron at the BBQ. Once again, burgers and hot-dogs were supplied in ample quantity.

Congratulations to David Howell who made it to his first and our last fly-in of the 2012 season. It was great to see a Shadow in the air once more.

Thank you Tim, for allowing the SVMC to use your location. Despite the poor summer, the club has managed to

arrange 7 fly-ins, so many thanks to the organisers, hosts and everybody else whose hard work assisted in making the most of a fly-in season that had far from ideal meteorological conditions.

Fly-in Season Review

The weather has had a devastating effect on the Club's Wednesday evening fly-in programme. The statistics

are depressing reading. Out of 18 possible occasions we actually managed to have 7 fly-ins - a 39% achievement. This must be an all time low for the Club.

However, a closer look dispels some of the gloom. In terms of turn-out there were 27 aircraft at both Windrush and Defford, 20 at Bulley, 19 at Newnham and Oxleaze, 14 at Over farm and 8 for the annual Treasure Hunt. These are exceptional figures by any standards since, with the exception of the gyrocopter at Defford, all the pilots were Club members or visitors who were recruited to membership.

It has, perhaps, been a baptism of fire for Myron who enthusiastically took on the mantle of Summer Events Organiser at the AGM in January. However, those evenings that did happen were very successful, well attended and greatly enjoyed. Thank you Myron for trying so hard in the face of adversity!

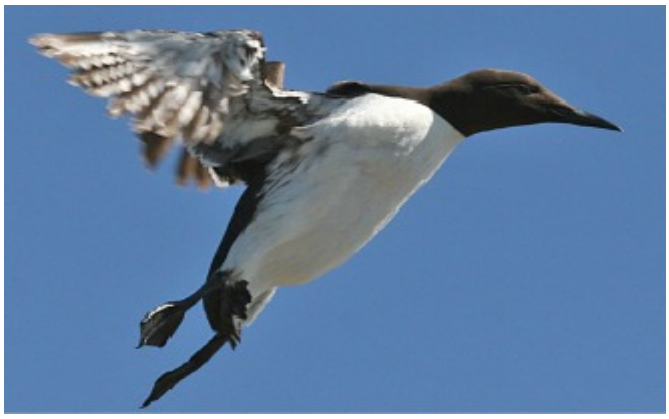
Seabirds as Aeroplanes by John Sparks

Watching rain falling is no fun. However, I avoided the misery this Summer by spending a couple of months in the Arctic enjoying the real masters of the air – seabirds. Birds, no more than aeroplanes, cannot escape the consequences of gravity and the properties of air when flying. But they differ fundamentally from our aircraft in one obvious respect namely that their wings not only provide the lift to support their bodies but also produce the propulsive force. Broadly speaking, the inner part of a bird's wing is aerofoil shaped due by the lie of the feathers and generates much of the lift. I saw no albatrosses in the Barents Sea but include a photo of a **Wandering Albatross** which reveals the elegant profile of its high aspect ratio 'slippery' wing which not only supports the heavy bird in the air but also enables it to glide at high speed in the storm-wracked southern ocean. The driving force in flapping flight comes chiefly from the long feathers – or *primaries* – at the end

of the wings. During the down beat, the wing sweeps forwards against the airflow and the long primaries twist to act like the blades of a propeller – (see the photo of the **Arctic Tern** just about to flap downwards). On the recovery stroke, the wing is swept backwards and the outer

feathers open like the panels of a venetian blind to reduce the air resistance.

A **Guillemot** flapping furiously to brake as it comes in to land. The wings are being swept back and the outer wing



feathers have parted. They will close

against the airflow when the wing is brought forward. Note how the webbed feet are extended to act as air brakes. Even so, all landings in these birds are barely controlled crashes.

Seabirds come in various shapes and sizes. The most magnificent species of our northern seas is undoubtedly the **Gannet** which is completely different in

design from, for example, the **Puffin**.

Weighing nearly 3 kgms, this bird has long, slim wings with an aspect ratio of just over 13 which gives it a comparatively high wing loading of 118N/m². Like albatrosses, **Gannets** have relatively small wing muscles and depend on extracting the power of the wind to soar and glide rather than continuously flap their long wings. By contrast, like all members of the auk family, **Puffins** have short stubby wings with a much higher wing loading (174N/m²). These birds are obligatory 'flappers', having the gliding properties of the proverbial brick. Birdwatchers refer to them appropriately as '*buzzbombs*'. Their small whirring wings are an evolutionary consequence of them pursuing their prey under the sea, with their wings doubling up as flippers. Water is a hundred times denser than air and so a wing that functions in both has to be a compromise. As a 'flipper' it needs to be only relatively small to generate sufficient thrust for swimming, but a much greater surface area is required to produce the lift and thrust in air. The downside of this compromise is that the wings of **Guillemots** and their kin must work hard in the air.

Furthermore, the birds must achieve a decent airspeed in order to take off, and once airborne their power of manoeuvring is limited. Some diving ducks also use their partly open wings underwater. The heaviest of these is the **Eider**.

Weighing 2.2kgms and a wing loading of 194N/m², in calm conditions, these hefty sea ducks need to patter along the surface before they are able to rotate and become airborne. They then fly rapidly,

and have been clocked at 70 mph in *level* flight, so are among the fastest of birds. By comparison, gulls with their comparatively broad and lightly loaded wings are highly manoeuvrable; they are Jacks-of-all-trades, good at soaring – especially slope soaring over ships - but not as expertly as albatrosses, fast, but not as fast as auks. However, they can swoop and swerve – like this **Kittiwake** that has just stopped in mid-air and

performed a wing-over to catch an Arctic Cod – with an agility quite beyond the capability of many seabirds.

The **Fulmar** is a close relative of the albatrosses and shares their flying

technique. However, being much smaller, flapping flight is much less exhausting when conditions are not conducive to soaring. Weighing about 0.85 kgm, it has wings of aspect ratio 11.4 and a wing loading of 73N/m². The figures for the **Wandering Albatross** are respectively 15 and 140, which gives

it a high stalling speed (ca 20 mph) but a fast, shallow glide of 25:1. By comparison, my **Quik** with only 10.6m² wing and average aspect ratio of 6.57 has a pathetic glide ratio of around 6:1. With the abundant lift generated by wind and big swells, these birds can stay aloft for hours without flapping their wings. They even have a locking mechanism in their elbows to enable them to keep their wings extended without much effort. These effortless gliders have strongly drooping wings – anhedral – which, on an aeroplane would make it very unstable in roll. Side-slipping into the troughs between swells, rolling and rising on the lift generated by advancing wave fronts is a flying technique used by these oceanic birds and their smaller relatives like Fulmars; their anhedral wing plan must make rolling and side-slipping easy. Of course, the birds are inherently very expert in controlling the manoeuvres that pilots of a drooped-winged aircraft would need to delegate to an in-flight computer.

Slowing down sufficiently to land without injury on their nesting sites is tricky for these huge seabirds unless they meet a good headwind. The **Black-browed**

Albatross deploys its impressive air-brakes, and elevates its spread tail to give the bird a larger angle of attack to enhance lift as its airspeed drops prior to landing.

Although albatrosses are grounded in calm conditions, north Atlantic **Fulmars** have the reserve power to progress by beating their wings. However, in still conditions, they put the *'ground effect'* to good use. When it all goes quiet and the sea is like a mirror, **Fulmars** are able to glide quite long distances after a few wing beats, their bellies almost touching the surface while riding on a cushion of air.

The fact that some seabirds make the longest journeys ever recorded in the natural world – and undertake them year after year – testifies to their efficiency and mastery of the air……. and I have not even mentioned the extraordinary flying adaptations of land birds.

Dates for your Diary

22nd - 23rd September - Nationals Round 3 rescheduled. Over Farm to include a tour of Cornwall.

1st – 2nd December – The Flying Show, NEC Birmingham

Acknowledgements

Dick Osler and Bruce Morgan for the article and photos of the Bulley Fly-in. John Sparks for the article and photos on birds plus the photo below taken on 9th September just to prove that we have had some good flying weather.

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