

# Wingtips



## On Other Pages

Sprinkler System	page 2
Seen At the Field	pages 2 & 3
Allan Laycock Reminisces	page 4
Featured Model of the Month	page 5
Pusher Propeller	page 6



Your editor is away from Canberra and has visited a Victorian model aero club. See February 2019 Wingtips to find out who has the Mustang wind sock.





Members may have wondered about the trenches that now cross the field. Here's the story: To finish the drainage system installed after recent heavy rain [see Wingtips October 2018], the club hired a Ditch Witch. The machine (driven by Paul Spackman who knows about these things!) was used dig a trench for a pipe that will drain rainwater away from the clubhouse. Paul also dug three trenches for sprinkler pipes, and the pipes were then buried. When finished there will be an additional four sprinklers to keep the pits and the multi-purpose area green during dry spells. Field Officer Len Ricardo (left) is connecting the pipes.



### Seen At the Field

Below and left, the multi-coloured UltraSport owned and flown by member and frequent visitor from the South Coast, Mike Ward.







Gary Grannell has yet another new model (above), this time a Fly Baby, an ARF by VQ. The engine is an RCGF 26cc and the model has a wingspan of 2.4m



Above and right, Merv Wright's P40 Warhawk is powered by a 20cc petrol engine and features a fibreglass fuselage.

Below, another of Merv's, a HobbyKing Stinger Mark 2 64 runs on 4S.



Below is Peter Ederle's Cessna, model unknown, maybe 172, 175 or 182. It's an ARF from an unknown maker, a hand-me-down from Bob Raadts and others. Engine is a Turnigy 55cc turning a 20x12 three-bladed prop -- a two-bladed wouldn't clear the ground. It weighs 10 kg and flies nicely, when, as Peter says, bits aren't falling off. (The blind nuts for the wing struts fell inside the wing and fuselage making them inaccessible.)



## Continuing from November 2018 Wingtips, Allan Laycock reminisces about Old Timers

I grew up in Canberra and old aeromodelling friends were Ray Murray, Byam Wight, Graham Parkins and Frank Byrne. (Byam, Graham and I were at Telopea Park High school together.) Most of the aeromodelling in the 1950s and 1960s was done by building from redrawn and scaled-up plans from magazines such as Model Airplane News, Aeromodeller and Model Aircraft. There was also an Australian magazine called Model News that later became Airborne. Supplies of kits were mostly from the UK and Australia as were the engines we used. There many cheap kits for small rubber powered models of both sport and scale designs. Such kits were of the 'stick and tissue' variety and although I tried a number of times I was never successful in building and flying one of these. Most flying in Canberra was control line with a little free flight because you had to know someone who had a field in order to do that. Towards the end of the 1950's some radio control was being flown but many were unreliable and crashed or flew away – they were after all only free-flight models interrupted by radio.

After a lay-off for a number of years I came back to the hobby in the mid 1970's. Later, information from US magazines mentioned a new class of model called "Old Timers". These were designs of models built in the 1930s and 1940s of stick and tissue construction, but larger and for gas engines. Originally free flight, with the advent of reliable radio control systems many were flown in this way. Having not been successful with the smaller rubber models, and now having a radio control system, I revisited that area and built an Old Timer for radio control. The first one flew ok but suffered the dreaded Dutch Roll so I built a bigger one for an OS .40.. It flew well but I was not sure if it should climb so steeply, at around 40 degrees. After those early successes I started building many Old Timers for many different sized engines and started flying them in competitions in Australia.

The Americans formed the Society of Antique Modellers that had chapters all over the US and the world. I formed a Chapter here in Canberra in 1991 (SAM Chapter 83). Also in 1991 I flew in my first SAM Championships in the USA.

I have now flown in 17 US SAM Champs, plus three in Europe and one in the UK. (They only fly free flight and I gained a second place trophy for my efforts.)

In 2015 I was inducted into the USA SAM Hall of Fame and in October 2018 – the 50th Anniversary SAM Champs – I was one of the Grand Champions for r/c. [See November 2018 Wingtips.]

One of the things that I enjoy about flying SAM type models is that you get to build and fly models that were from your youth, plus you join a large fraternity of like-minded modellers from around the world. I have encouraged a number of Australian SAM modellers to fly in the US, including BMAC members. Bob Raadts has competed with me on 7 occasions and Max Rixon on two occasions. I have friends in Italy (and might get there in 2019 for the SAM Euros), and from all over the USA. I send and receive e-mails, ideas and news including a number of newsletters from these people on a regular basis.

I would normally build models and take them overseas with me but this time my friends in Chicago (SAM Chapter 117 "the Chicago Buzzards", aka "the Electric Mafia") loaned me 8 models to fly and I competed in 11 events with them in order to win. I was very sorry to lose a borrowed one in the cornfield that surrounds the AMA flying site but the others survived my ministrations and will be able to fly another day.







Photos: David Green

*In the absence of another candidate, this month's featured model is one of your editor's.*

The Dornier Do 335 Pfeil ('Arrow') was a German WW2 twin-engine heavy fighter, which was that country's fastest piston-engined aircraft, being capable of 763 km/h. Tandem engines meant less drag than planes with engines on the wings. Because of Hitler's refusal, until late in the war, to have defence aircraft rather than just concentrating on those for attack, the plane was never fully developed and failed to see significant action. There

was an unsolved problem with cooling for the rear engine, which led to failures. Turning to the model Do 335s, an i.c. engine in the rear is also problematic. (A member recently told me that his Do 335 crashed due to an overheated rear engine.)

My model, being electric, doesn't have that problem, although there are other issues.

It is a Black Horse ARF of balsa and plywood construction that has a wingspan of 1724mm and a weight of over 6kg. Flaps are fitted, but the ARF doesn't include retracts -- some from HobbyKing fit perfectly. To locate the centre of gravity far enough forward, both batteries (4S 4000mAh) must be just aft of the front motor.

Without wind, the take-off run uses the length of the runway, even with the flaps half down. Because of the length of the undercarriage struts, the lower fin touches the ground all too easily. (See the take-off photo, left) Landing is interesting. Full flap works very well and changes the trim only slightly, but, with 6kg plus of weight, landing speed is faster than I'm used to ... but I'm learning.

Brian Oakes



To see a short video of the Dornier flying, and some shots of the only remaining Do 335, click on the link:  
<https://youtu.be/YnynfkKiO0c>

# The Pusher Propeller

From a discussion about my Dornier 335 at the field recently, it appears that there's some confusion about pusher props. (With the advent of electric motors for model planes, pushers can be used to pull, and you don't need a pusher to push!)

## What is a pusher prop?

Obviously it's for those occasions when the motor or engine is at the back of the aeroplane, pushing it (below left, note the 'P'), rather than pulling from the front (called



'tractor', above right) but there's a bit more to it than that.

## Internal combustion engines

In aeromodelling, the internal combustion engine runs best (or only at all) when turning anti-clockwise. When using an i.c. engine at the back of the model as a pusher, the engine has to face backwards. This creates a problem – with a normal prop as the thrust will drive the plane backwards. The solution is a prop with the blade angles reversed, a 'pusher' or 'clockwise' prop. The engine can still run anti-clockwise, but the slipstream will go back away from the plane.

This is bad for an air-cooled engine which can overheat if the model is stopped on the ground for too long as the engine isn't in the slipstream. Cowling for the plane would be totally out of the question. The history of full-size aviation provides many examples of pusher engines overheating. (See both the Cessna and Dornier that were Featured Models in this month's and last month's Wingtips.)

## Electric motors

The arrival of electric power for model aircraft solved some problems, but also brought confusion.

An electric motor will run happily in either direction, so you don't need a pusher prop for a rear-engined plane, you just alter the direction of rotation. Also, electric motors don't need as much cooling as i.c., so can be cowed when used at the back.

Another advantage is that a twin-electric model can have contra-rotating propellers, meaning that the 'P' factor or torque from either motor cancels out the torque from the other. When you open the throttle the model won't pull to the left, as with a single. For example, my Amiot 143M is set up this way. The port motor turns anti-clockwise (below left) and drives a normal (tractor) prop. The starboard motor turns clockwise (below right) and has a



'pusher' prop. (Incidentally, the full-size Amiot was the same: the port and starboard engines were manufactured to turn in opposite directions and the props were different.)

(Something to ponder: what props and motor direction did I have to use so that my Dornier doesn't suffer from "P" factor?)

## A Popular Mistake

If the motor is behind the fuselage, there's an easy mistake to be made. Whatever prop you're using, with either electric or i.c. power, front motor or rear, the curved side of the propeller blade must face the front of the model! The propeller blades are like a wing and, as we all know, the aerofoil gives most lift when the curved side is facing up.

I made this mistake on the maiden flight of my DH-2, which has a pusher prop. I'd mounted the prop in the usual way, that is, with the label (the curved side) facing me when I installed it. At full throttle the poor DH-2 barely left the ground and, still at full throttle, only just made it back to the strip. There was also more prop noise than usual. With the label facing the front, and the concave side facing the back (photo below) power is more than adequate.

Brian Oakes

