



AMATEUR BOAT BUILDERS' ASSOCIATION

MARCH/APRIL '03

ABBA COMMITTEE

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Contact any of these four people for clarification of association activities.

A TALE OF TWO POWER PLANTS

About halfway through last year, for better or for worse, I sold my own designed and built Victorian river launch, which had been finished and operating for about nine years. The new owner was Brad Mioceovich of Veem Engineering. Brad had found "Isis" on the Wooden Boat Association's web page and contacted me about sourcing a similar one. I invited him around to see it because it hadn't been used for a couple of years, and buyers of such specialty craft are rare. Brad fell in love with "Isis" and promptly bought her.

His long term intention was to convert her to electric power but first he explored the Swan River with her original power plant, a 1951, 3hp Simplex two-stroke with no reverse. Veem Engineering, which makes large ship propellers, gives Brad access to a lot of marine technical expertise so he was able to study the boat's performance in much greater technical detail than I had. He was easily able to calculate such things as power absorbed by the propeller and, hence,

the engine's output at various speeds and so on. At cruising speed the little boat was only needing about 1kw (say, about 1.5 horse power) and since this was usually on about half throttle, I guess that matches up. A 1:10 scale model which I built before starting construction appeared to use about 1 watt to get scale speed in the neighbours' swimming pool. Since the real boat was ten cubed times as big it could be assumed that that 1kw would be needed. The boat must be pretty slippery.

For the electric conversion Brad chose a small motor made by Advanced DC Motors in the USA. It was reversible, making the boat much more user friendly around jetties, etc, and would be much happier running at slow speeds than was the vintage Simplex which tended to oil up plugs running slow. It also fitted into the existing engine bearers perfectly once a large mounting strap was made up. Many motors, notably the English Lynch, would have required a complete re-hash of the bearers - major

surgery. The motor had been originally imported by an electric car enthusiast who wanted to try it in a marine stern-drive arrangement, but who didn't go on with it. Brad was able to purchase it unused from Electric Vehicle Motors in Sydney. Incidentally, the choice of electric power was not out of character; at the turn of the last century, as far as I can tell, steam was the most common power source in England, but in America petrol, naphtha and electric were all common. However, Brad's version uses totally modern current controls and no doubt has better batteries, too.

The batteries ended up being no less than six, 130 amp-hour deep cycles made by Trojan in the US. Such batteries are not cheap but they can be repeatedly discharged almost fully and re-charged, which car batteries are not suitable for, although they will put out more amps for short periods. They are all wired in series giving a maximum of 72 volts, a shocking figure but all the heavy duty cables are out of sight either in battery boxes or under the floor boards. It was originally planned to run only four batteries for 48 volts but Brad was advised that this motor would be more efficient on the higher voltage. Although six batteries are heavy, "Isis" has excess buoyancy in the bow (I had 72kg of ballast up there) so four batteries go in the fore-peak and the remainder are in the centre of the boat, just ahead of the motor. She now trims well, and not much deeper than originally.

The main engine box, which I made for Brad along with a bow battery box, covers the motor, two batteries, a small glove compartment (good for charts, etc) and the main control gear. The motor is direct drive and is quite happy in the region of 1000 rpm. It is managed by a Curtis controller protected by a 150 amp fuse but seldom draws a tenth of that. A compact rheostat sits beside the motor, connected by push-pull cable to the Simplex's original bronze throttle lever under the skipper's seat. At this stage reversing has to be achieved by a separate switch beside the throttle lever. So in theory one

shuts the throttle down, flicks the switch and opens the throttle again to achieve reverse, but I think it's possible to get reverse while throttle is still on if needed in a hurry. Brad would like to incorporate reverse into the main throttle gear motion, like modern boats, but hasn't got around to it yet.

Brad had a new propeller made up at Veem. It's one inch greater diameter than the original at 12", but much less blade area. Originally it sported no less than 15" pitch but this has since been reduced to 8" to get the motor revs up more than somewhat. The prop shaft was bumped up from the original 5/8" to 3/4" (there was enough space in the prop tube but it needed new bearings), and Brad rethought the shaft seal. I'd had drip lubrication, about a drop a second kept the bearings cool, but Brad wanted dry bilges so added a double-lip grease seal to the top end. The shaft is still water lubricated but takes water from the original water cooling inlet, via a small liquids pump originally meant for use with an electric drill (belt driven from the shaft adaptor near the fly wheel) and injected just behind the double seal. The only instrument is a multi-function Cruise Pro (NZ) gauge which can show a variety of data including amps, volts and even percentage of charge remaining. Unfortunately the instrument only reads to 48 volts so only the two rear batteries are tapped off for this function and the assumption is made that the four bow batteries will be similar. At just under 5 knots the motor draws 6 amps and indicates a total endurance of about 20 hours. Increased speed draws a lot more current and 15 amps reduces battery life to a mere 7.1 hours. (The Simplex used a litre of petrol per hour) So far Brad's run for up to 6 hours at the lower figures, by which time only 30% of the batteries' capacity has been used, so he's got a pretty healthy range if he ever needs it. Maximum hull speed is about 5.5 knots but just under the 5 is quick enough and much more economical. All in all Brad presented a fascinating talk on this unusual power source and gave several members serious food for thought.

PLY PERFECTION

Our last Toolbox Visit, somewhat later than usual in the month, was to Mike Wade's home workshop in Kalamunda. Mike's building a "Navigator" open sailing boat designed by John Wellsford in New Zealand. This boat is about 15' long and was described in the last newsletter as multi-chined, four chines per side. That's not quite correct in that the ply planks overlap and are glued to each other, so I guess it's glued clinker or lapstrake, really, although as the pictures show, there are internal stringers backing up all but the lowest overlaps.

Mike's still got a long way to go with the hull, which was good for us because, being unfinished, the construction was obvious; so obvious in fact that I took no notes for this report, the pictures tell the story. When we arrived the structure was upright on the building jig just waiting to receive the transom which was part glued up on the bench. The bottom panel was curved into place (it's flat and stretches across the two lower chines) and fitted with keel, stem, a forward strongback, centrecase and cockpit sides. All frames except the transom were sitting in place although not all were glued in place at this stage. The frames were already notched for stringers and sheer clamps although some adjustments to the angles will be necessary before these are glued in. The part-frames each side of the cockpit and centrecase were held at their correct settings by temporarily screwed cross members. Most of these will be safely removed when the hull is skinned.

The centrecase has an internal width of 2" which looks excessive, but the depth of the 'case suggests that the chord width of the plate will be fairly big so 2" may generate a reasonable section.

This boat will not be a lightweight - it's being very solidly built. The frames, all permanent, are from 9mm ply, doubled up at the stringer notches. 9mm is also used in the bottom panel

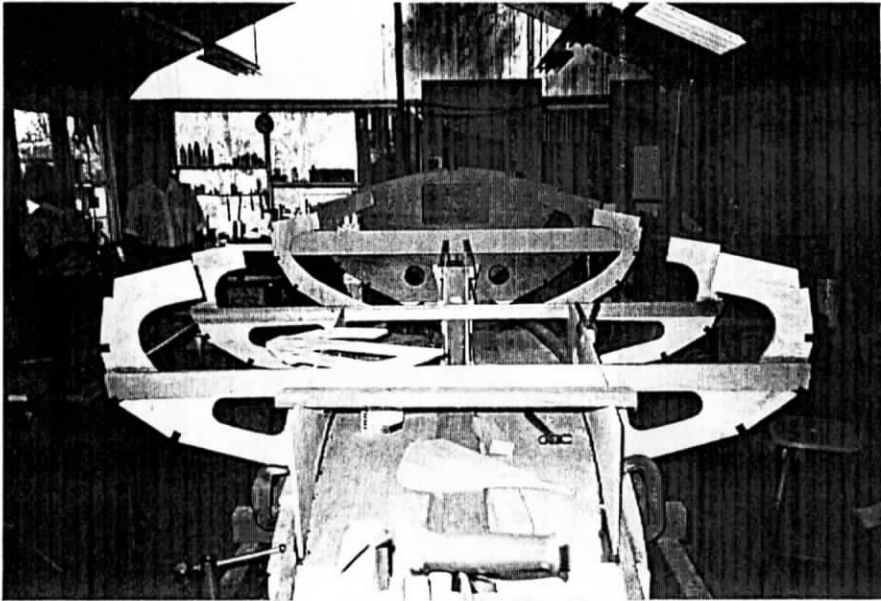
and the centrecase sides while three layers of the same material are laminated up to make the stem. This latter seems like a good alternative to the more usual curved laminated stems à la Oughtred and others. Such structures generate a great deal of sawdust in cutting the many laminations and use enormous quantities of glue. The Navigator method may not look so pretty, but who's going to see it? Furthermore, cleaning up the traditional laminations can present problems if there's much silica in the filler one mixes with the epoxy; it can rip hell out of the planer blades. This once led to my discarding a complete stem because my planer blades were only good for two passes at a time. Maybe only microballoons should be used as a filler in this application.

But I digress - the second to fifth strakes, or panels, will be of 6mm ply, which is a good deal lighter, but I'm not sure of the deck thickness. And of course, there are cockpit seats and seatbacks/coamings to go in as well. Suffice it to say that the boat will be fairly solid, not a bad thing for a camping and cruising boat which may get knocked around over shallows, etc.

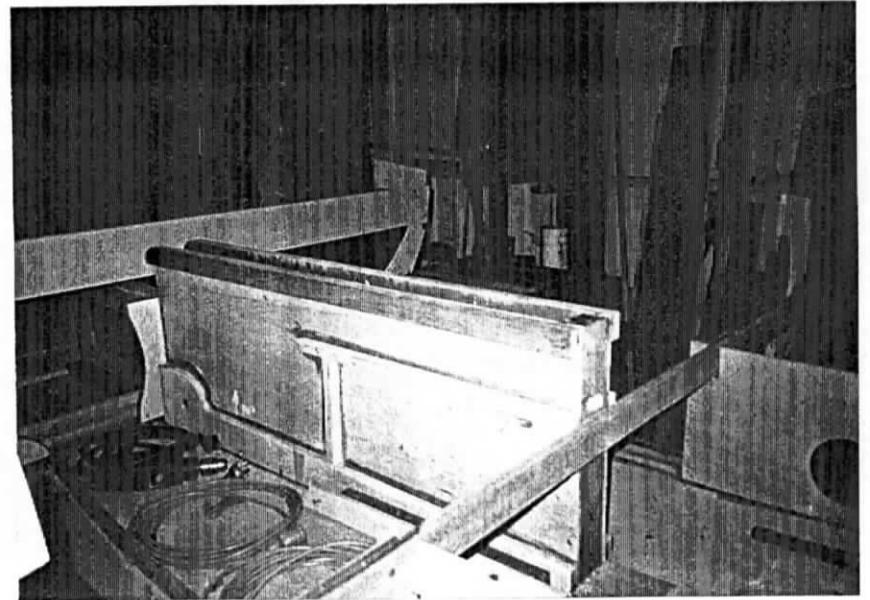
Although Mike had the plans, including sail plans, out on the workbench (nice touch) I didn't pay enough attention to them. I think they included a gunter-rigged sloop and a yawl but Mike is planning to use the gaff-rigged sloop which is also shown. Of course, choosing a sailmaker is still a long way down the track but he's already ascertained that a New Zealand sailmaker currently makes sails for this design in "linen". What "linen" means, and how it compares with cotton and Dacron, we'd like to know - can anyone out there help?

Boatbuilding is far from being Mike's only hobby, just his latest - he's into old machinery from tractors through to workshop tools and machines and is currently restoring several items so I don't think he gets to see much TV! He's

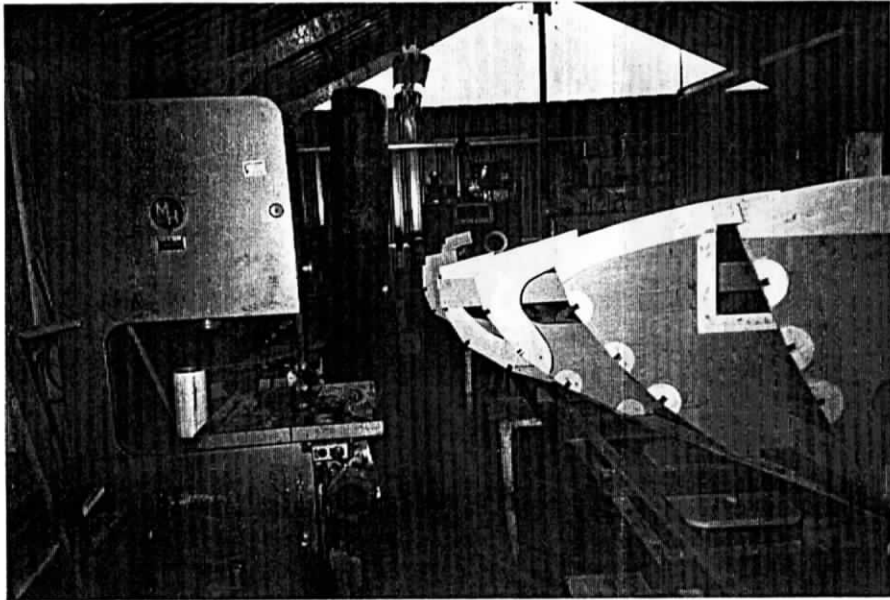
MIKE WADE'S PROJECTS



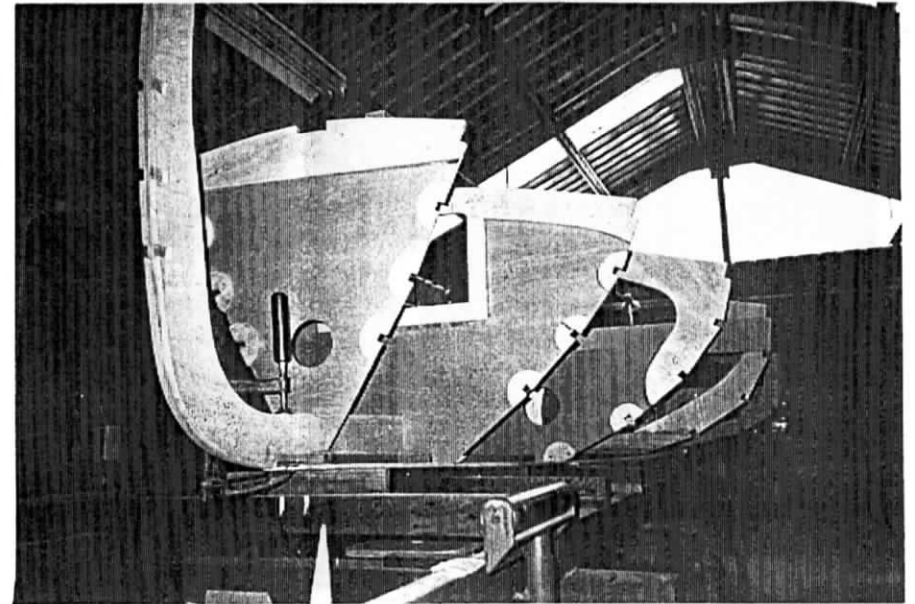
The stern view, transom not yet in place.
Note the ample beam and flat bottom.



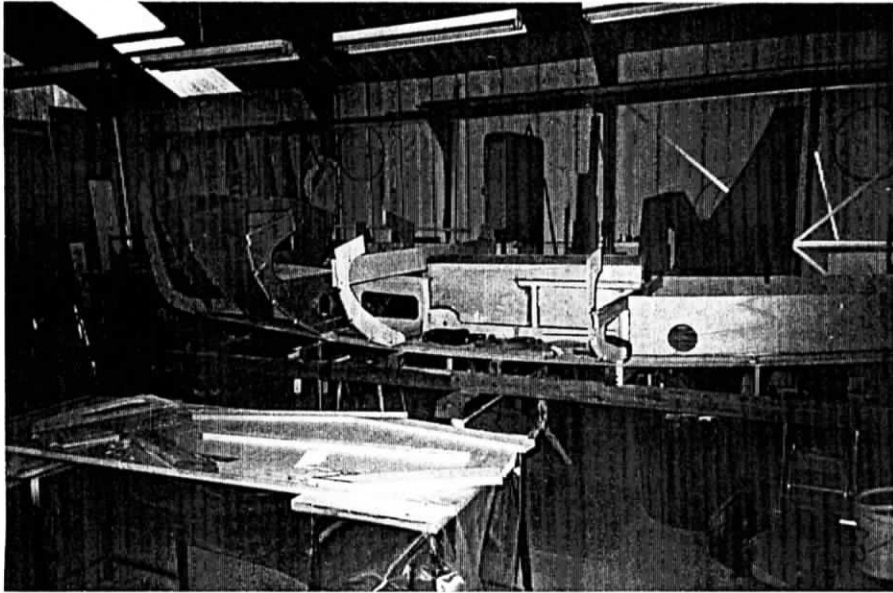
The centrecase in place with part-sheeted cockpit.
'case gap is 50mm, probably OK for a broad 'plate.



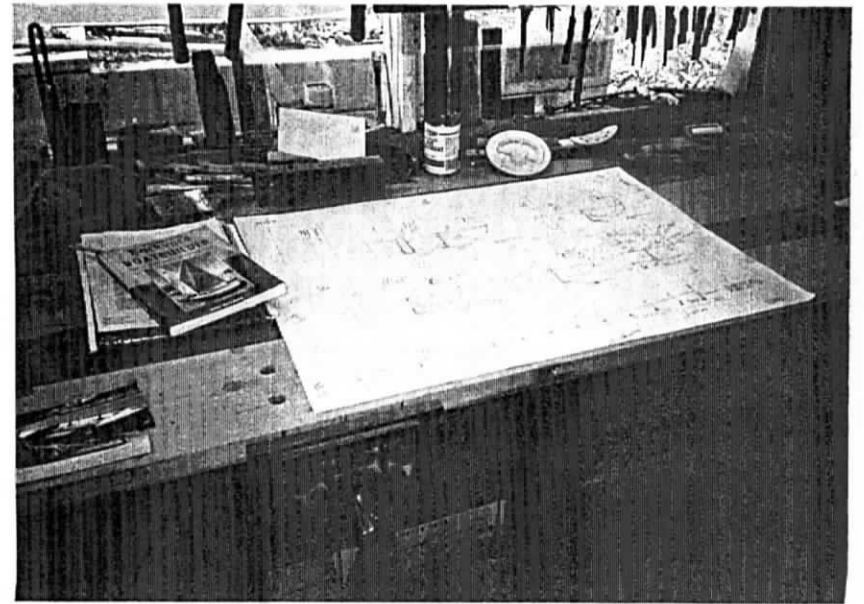
A poorly lit shot showing the starboard bow and
the larger of two bandsaws.



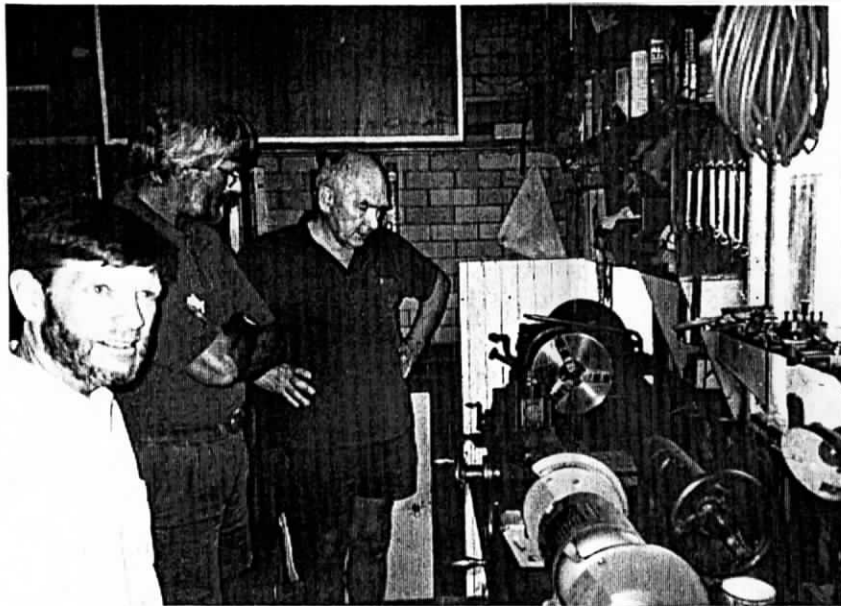
The port bow with stem notched for stringers,
frames temporarily clamped to the keel.



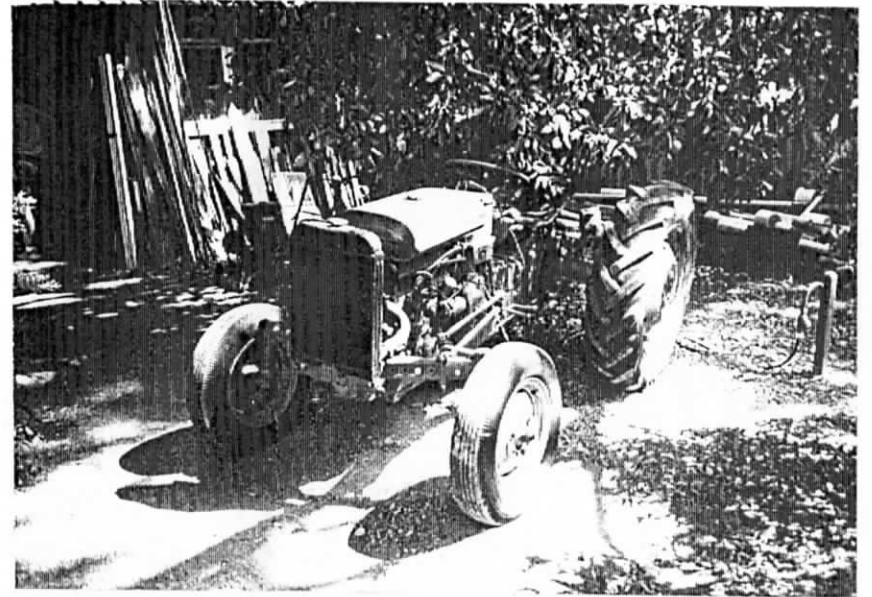
A general view of the building jig at present. The transom under construction on a school desk in the foreground.



The drawing board and boat plans to one side in the workshop. Hope the lines show up!



Chris, Klaus and Mike examine his lathe at one end of the shop. It had to be installed by a crane.



Another of Mike's hobbies; early Ferguson tractor rescued from Kelmscott SHS, undergoing rebuild.

also built sailplanes in the past so although he finds the boat plans a bit mystifying from time to time, he's more than capable of high quality woodwork. Once again it was an extremely interesting visit, followed by a fine afternoon tea, and we are indebted to Mike for his hospitality.

ADMINISTRATION NOTES

For our next evening meeting we will visit **Steve Hartley at Tasker Sails and Spars** where he will be talking about, that's right, sails and spars. This will be a bit like that visit we made some time ago to The 12 Volt Shop, with the same advantages in that Steve will be able to show us rolls of different sorts of cloth, etc, which he couldn't very well drag along to a meeting at RPYC. For those of us interested more in sailing rather than motoring and more in the one-off style of boat than racing classes, this will be a very interesting evening. That's at **15 McCabe St, Nth Fremantle** at the early hour of **7pm, Tuesday, 25th March**.

After our last **Toolbox Visit** to Mike Wade's home workshop in February, we join the big boys again at **Image Marine** for our April visit. Image is the Austal Ships subsidiary which employs our secretary, John McKillop, as a naval architect. We've previously visited Oceanfast where President Geoff works. Image is currently working on a pair of 41m harbour-cruising catamarans, destined for Hong Kong. One of these is fairly well advanced although bow sections are still to be attached while the other is only about half plated up. Thus, we should be able to see the construction and the almost finished item on the one visit, something usually denied us. That will be at **Image Marine, 15 Egmont Rd, Henderson** on **Saturday, 5th April at 2pm**. Better turn up on time, I'm not sure if we'll be able to get through the gates later. Enter Sparks Rd from Russel Rd and Egmont is the first on the right.

LIBRARY: We're still looking for books on canoes and other small craft to purchase. Not many ideas have come forward so far, how about some member input? I made up a list of the relevant books at my local library but they're all old and probably out of print. We need better ideas, so come on folks.

FOR YOUR OWN BUYING: A good range of books can be found at the Chart and Map Shop, 14 Collie St, Fremantle, ph 9335 8665. Email charts@ca.com.au

CALENDAR:

Tuesday, 25th March, 7pm.

Steve Hartley on sails and spars at Tasker Sails, 15 McCabe St, North Fremantle.

Saturday, 5th April, 2pm.

Passenger cats at Image Marine, 15 Egmont Rd, Henderson.

Monday, 14th April, 7.45pm.

Committee meeting.

Two only websites this issue, both to do with epoxy. Try the following:

www.westsystem.com - by the Gougeon brothers, gives access to their bi-monthly magazine.

www.atlcomposites.com - ATL are the Australian manufacturers and agents for West Systems.