Aviary Design and Construction

By Bob Cleaver

Continued from the September edition

The aviary pictured at the top of the next page is a combination of steel and timber. The supports and the roof trusses are 50mm (2”) x 50mm (2”) galvanised square steel tube and the surround at the roof line is rectangular section timber. In this roof I also used a 2.5mm ($^{3}/_{16}$”) high tensile steel wire in rows, attached to turnbuckles at one end and eye bolts at the other, as additional supports for the weldmesh. This aviary was built *in situ* and is not constructed using the panel method (this is discussed in detail later). It is about 10m (33ft) wide, 4m (13ft) deep and 4.2m high (14ft) at the highest point and contains mostly finches and small parrots. This is a classic example of the need to arrange some form of catching facility within the aviary. Without this and in an aviary of these dimensions you would have no hope of catching fast flying finches unless you were extremely lucky. You will also note that in this particular case, there is very little level ground underfoot within the aviary confines, which also adds to the difficulty in chasing small birds around.

Miscellaneous.

For birds - Don’t over-perch your aviaries – leave room for the birds to fly or don’t clutter the floor if they’re ground dwellers. Also don’t clutter the floor with things you can fall over.

For animals - Here the opposite applies. You will need plenty of branches for the animals to run around on and climb up and down, but again, don’t clutter the floor with things you can trip over. Also leave enough room for you to walk in the enclosure comfortably without poking yourself in the eye with a piece of badly positioned branch.

For all creatures - Make sure the feeding stations are out of the weather and make sure the they are out of reach of ants and mice (this is not so easy and is a problem all of its own and is discussed later).

For creatures that drink (strangely enough there *are* some that don’t – e.g. the Kookaburra (*Dacelo novaeguineae*) and the Kowari (*Dasyuroides byrnei*)), make sure they always have fresh clean water and that it is placed out of the sun – particularly in summer. For birds in particular that don’t drink or drink very seldom (*eg*. birds of prey) it is a good idea to provide a shallow tray (*eg* a cat litter tray is ideal or an upturned dustbin lid) of water in which they can bathe, something they really enjoy.

For animals that don't drink (like the Kowari and some other carnivorous marsupials) water is probably more of a hazard than a help. It will probably be spilled and be spread around the enclosure, they will probably contaminate it and all you are going to achieve is more work for yourself. If you insist on providing water for these creatures use a bottle with a ball valve (as you would for mice) but you will find the animals will probably ignore it as they get all the moisture they need from their food source and is why it is important to ensure these creatures are fed a proper diet.

Try recreating the environment of the species you are going to house – again this is a tall order, but it is possible for some species. *eg*. for water, or wading, birds you could have a couple of shallow ponds with a stream running between them. For desert species you could have lots of sand (not bricklayers sand, but washed sand), rocks, tussock grass *etc*.

These are only some ideas for you to think about when designing an aviary and I know there will be many more, but I believe I have covered the basics. Please use your imagination, look at other peoples ideas and adapt them, talk to as many creature keepers as you can for more ideas and preferably put all your ideas down on paper before you start.

And the most important item of all - never forget that the comfort of the inhabitants is the prime objective.

2. CONSTRUCTION

After you have worked out the size and shape of your aviary there are several methods of construction you may wish to consider.

Let us assume, for arguments sake, that you are going to build your aviary using the most common method, *ie*. steel and weldmesh.

The first question you must ask yourself is - **is this aviary a fixture** or am I going to want to move it sometime in the future? You may decide to move house in ten years time and if you make your aviary as a fixture you'll have to start again (which is not always a bad thing), but if you want to take your aviary with you then you could use the method I have adopted and make it in panel form.

My aviaries are generally constructed as bolt together panels using 20mm ($^3/_4$") x 20mm($^3/_4$") x 1.6mm($^1/_{16}$") galvanised square steel tube, Australian manufactured Weldmesh and Lo-rib zincalume (or Colourbond) solid sections. The wire is attached to the galvanised square steel tube (or frame) with aluminium rivets and then covered with a galvanised steel strip attached with Tek screws. On the wire panels there will be a kick panel at ground level unless otherwise specified.

However I have also built aviaries as 'fixtures', which employs a somewhat different method of construction even though the basics are very similar.

The Panels (or Frames)

If you are making a panel type aviary the very first thing you must do is to draw yourself a plan or sketch of the finished product. (See fig.1).

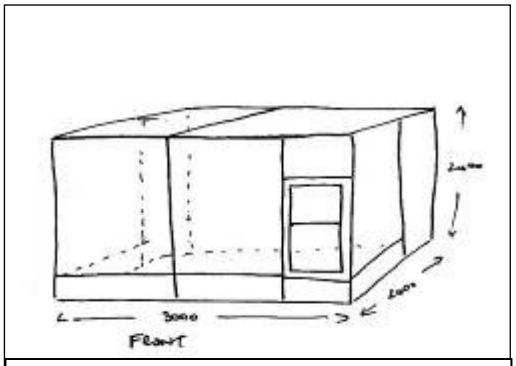

Fig 1. Rough sketch of aviary

You would then draw each side, roof (and floor, if there is one) as separate items and work out from each of these sketches what lengths of steel you are going to need. (See fig. 2).

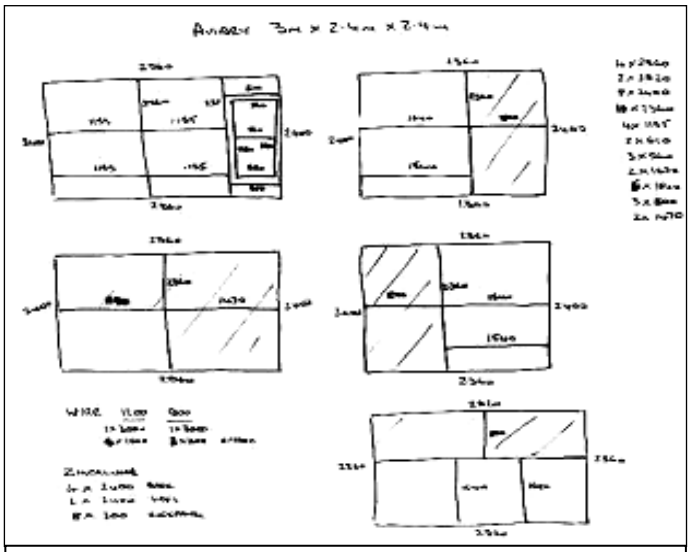

Fig 2. Sketch of each of the panels with measurements

Having done this you can then start to cut all your steel to the correct length not forgetting to drill the holes where you are going to bolt each panel together. It's much easier to do that at this stage rather than after you have assembled each panel.

Weld your lengths of steel together making sure your corners are square. This is critical otherwise the finished product will not fit together and tempers will become frayed at the time of assembly. The easiest way to square each panel is to tack-weld the outside pieces first to make a rectangle (or square) then measure diagonally corner to corner, clamp and then finish weld. Using this method you don't need a T-square. You can then weld in all your internal pieces.

After you have finished all the welding I find it is a good idea to grind the welds flat and then treat each weld with some kind of cold galvanising or Killrust otherwise the joint will rust.

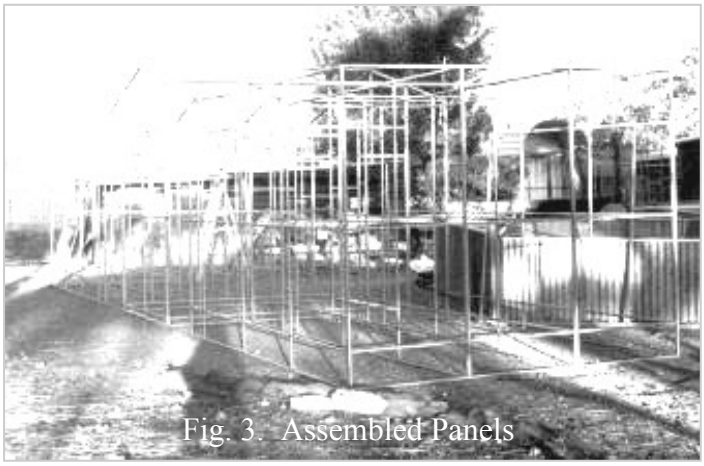

Fig. 3. Assembled Panels

The reason for grinding the welds flat is that it makes life a lot easier later on, particularly when you come to fixing the wire and zincalume in place – also the finished article looks better.

Weld up the whole aviary, panel by panel and then assemble it before you start to attach wire *etc*. just to make sure it goes together properly. Fig. 3 shows an aviary complex (of six with centre covered area) assembled prior to the attaching of wire, zincalume *etc*. You will be able to make minor adjustments or correct mistakes at this stage, which will be much more difficult, if not impossible, later on.

The aviary at Fig.4 is typical of the panel method; I have even employed this method with the gable roof as the next photograph will show (see Fig. 5). The aviary consists of two wall panels each side, one wall panel each end and the gable roof, which consists of another seven panels. All of these simply bolt together.

Fig. 4. Partly assembled gable roof aviary

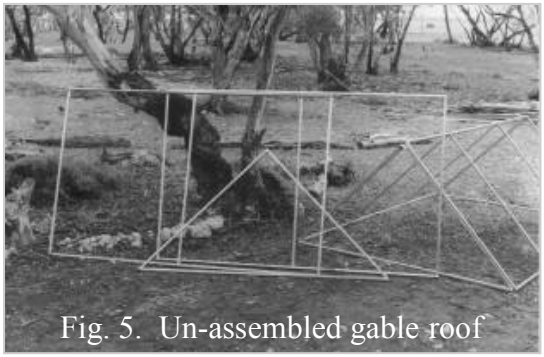

Fig. 5. Un-assembled gable roof

Fig. 5 shows the roof sections of the gable roof aviary before the wire and zincalume sheet has been attached. It consists of four side panels and three triangles. The third triangle was used at the centre and had no wire or other materials attached to it as it was used purely for support.

If you are considering a round-topped aviary, (see Fig. 6 on next page), this can be done with the wire alone (without any frame) but you must use a heavy gauge wire or the finished product will not support its own weight However, if you prefer, and have the correct equipment, you can bend your steel to suit the arc you need. This, however, is not as easy as it might sound.

For example – don't try bending 20mm square tube unless you have proper bending equipment – it will twist. Rectangular section is much more forgiving. Round tube is easy to bend but can be tricky when it comes to

Fig. 6. Round top aviary

fixing solid materials (*eg*. zincalume sheet) to it, and can often be the cause of a lot of profanities.

Wire and Zincalume Sheet

To attach the wire to the frame, (and let's assume for arguments sake that we are using weldmesh as it would be the most popular product), I generally start in one corner. Then drill and rivet either side of that corner and use the same procedure at the opposite parallel corner; then repeat the process in the other two corners. Don't try to stretch weldmesh – it doesn't like it and you'll end up with an untidy finish. If you use the method described above you should find that it will pull tight and will lay down nice and flat and then you can rivet along each side.

Once you have the wire in place the next step is to attach steel tape or strapping along each edges to cover the raw ends of the weldmesh. You will have previously cut your tape to the required length, which would be 20 or 30mm (¾ - 1") longer than each of the edges you are covering. I found the easiest way to fix the tapes in place is to attach one corner first, by Tek-screwing two strips together. Having done this you will then need a pair of grips of some sort to pull one of these strips tight to the next corner and fix it in place with another strip of galvanised tape for the next edge. You can then repeat the process along the adjacent side. (Not easy to put into writing but I know what I'm talking about!).

Repeat this process along all exposed wire edges, but remember that where the zincalume sheet overlaps a wire section, you will not be able to use Tekscrews, as they will not allow the zincalume to lay flat. At these points you must use rivets. The zincalume sheet can be quite simply attached with Tek-screws. I normally use one Tek screw per valley and at 250mm (10") intervals along the sides.

Concludes