

## Aquarium filtration options

### Under gravel filtration

There are many choices to be made when it comes to setting up an aquarium, the simplest and cheapest option comprises of a tank, hood, stand, light heater and an air driven under gravel filtration system see *fig 1.1*, as the name suggests this type of filtration is placed on the base of the aquarium and covered with the gravel.

Dependant on tank size one or two airlift tubes are then fitted and an air stone is placed inside the tubes which when turned on creates water flow through the gravel and up the air tubes, not only does the gravel act as a mechanical filter but also bacterial colonies of Nitrobacter and Nitrosomonas become established and break down toxins such as ammonia and nitrite in the water. These filters are best suited to aquariums with a low stocking level.

### Power filter

Another option is the use of a **power filter**, *fig 1.2* these are possibly the most widely used method of aquarium filtration and with good reason. The power filter is not only very simple to use, but also gives excellent mechanical, biological and chemical (if required) filtration. The power filter is designed to hang on the back of the aquarium they are simple to clean and replacement cartridges are readily available.

### Internal power filter

The internal power filter *fig 1.3* is a handy easy to use method of filtering a small, low stocked fish tank, this filter is suitable for both tropical fish and coldwater fish. These filters have the space saving benefits of a under gravel system combined with the power of a standard power-filter, they work by catching suspended waste before it reaches the bottom of the aquarium. The internal power filter is typically supplied with suction pads for attaching to the aquarium walls, it is easily removed and easily cleaned, as mentioned earlier however this filter is not suitable for large well stocked fish tanks best used in aquariums up to 80 litres.

### Canister filtration

Canister filters *fig 1.4* provide 'ultimate' filtration for large or heavily stocked aquariums, they can be used in both coldwater aquariums and tropical aquariums. The fact that the canister is housed outside the aquarium means not only is there no unsightly filter boxes in the aquarium but also the filter itself can be large enough to house good quantities of filtration media. Dependant on the canister filter's manufacturer it will typically have one to four baskets (maybe more) which hold different types of filtration media, each basket is then placed on top of one another so the aquarium water passed through each one.

The canister filter does take a little more time to set up and is more expensive however we would highly recommend its use especially in well stocked or cichlid fish tanks.

### Wet and dry filtration

The wet and dry filtration system *fig 1.5* is sometimes called a trickle filter and offers ultimate biological filtration. The term wet and dry filter is so called because the aquarium water is exposed to both water and air, it is in these conditions (large presence of oxygen) that beneficial bacteria flourish and actively remove toxins from the aquarium water. By far this aquarium filtration method requires the most effort to install and maintain due to the fact that this filtration system requires rather elaborate plumbing, it does however allow the hobbyist to design and create a bespoke system. The vast majority of wet and dry filters are designed to sit underneath the aquarium and require an over flow box at the back of the fish tank.