

Fishkeeping is an art: An aquarism is a living ornament, a pond decorates the garden, breeding fish is fun, and to get it all right all you need is a little knowledge and a lot of luck. Diseases? Magic ingredient X cures all. Which fish to choose? The most colourful one of course!

THIS IS ALL NONSENSE!

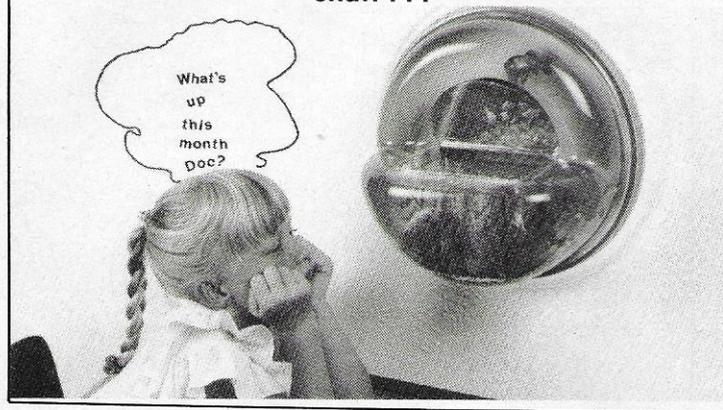
Fishkeeping is a science. An aquarium can be very decorative, or very plain, for these are not the conditions that decide whether it is suitable for the creatures that live therein. The garden pond can be an aquatic display with cascading waterfalls and fountains, floodlights of any colour over or under the water, very decorative indeed.

But hardly designed for keeping, breeding or even seeing pondfish. Disease cannot be cured until it is diagnosed. The conditions of your aquarium dictate which fish will thrive, not your aesthetic preferences.

The Americans, especially, discovered that education is entertainment. They have the best public aquaria in the world. The average American hobbyist buys all the gadgets he can find and sets everything running before even considering choosing the fish... the average European buys a collection of fish and asks for a tank to put them in at the cash desk! How many British children have arrived home from a fair with a goldfish in a plastic bag? (Their first tank is the kitchen mixing bowl filled

FACT & fantasy

Fishkeeping myths and legends abound. Like family heirlooms, they are passed down from generation to generation. But help is at hand, with Dr. David Ford of the Aquarian Advisory Service — his article will sift the wheat from the chaff...



with fresh tapwater.)

No, it is not an art, it is a science... but science can be fun. Science lets you do it right and that is better for the fish, for you and for the hobby. In times past, fishkeeping was accepted as an art form and so

many myths and legends developed that persist to this day. Let's look at a random collection, and demolish them too.

FISHY MYTHS

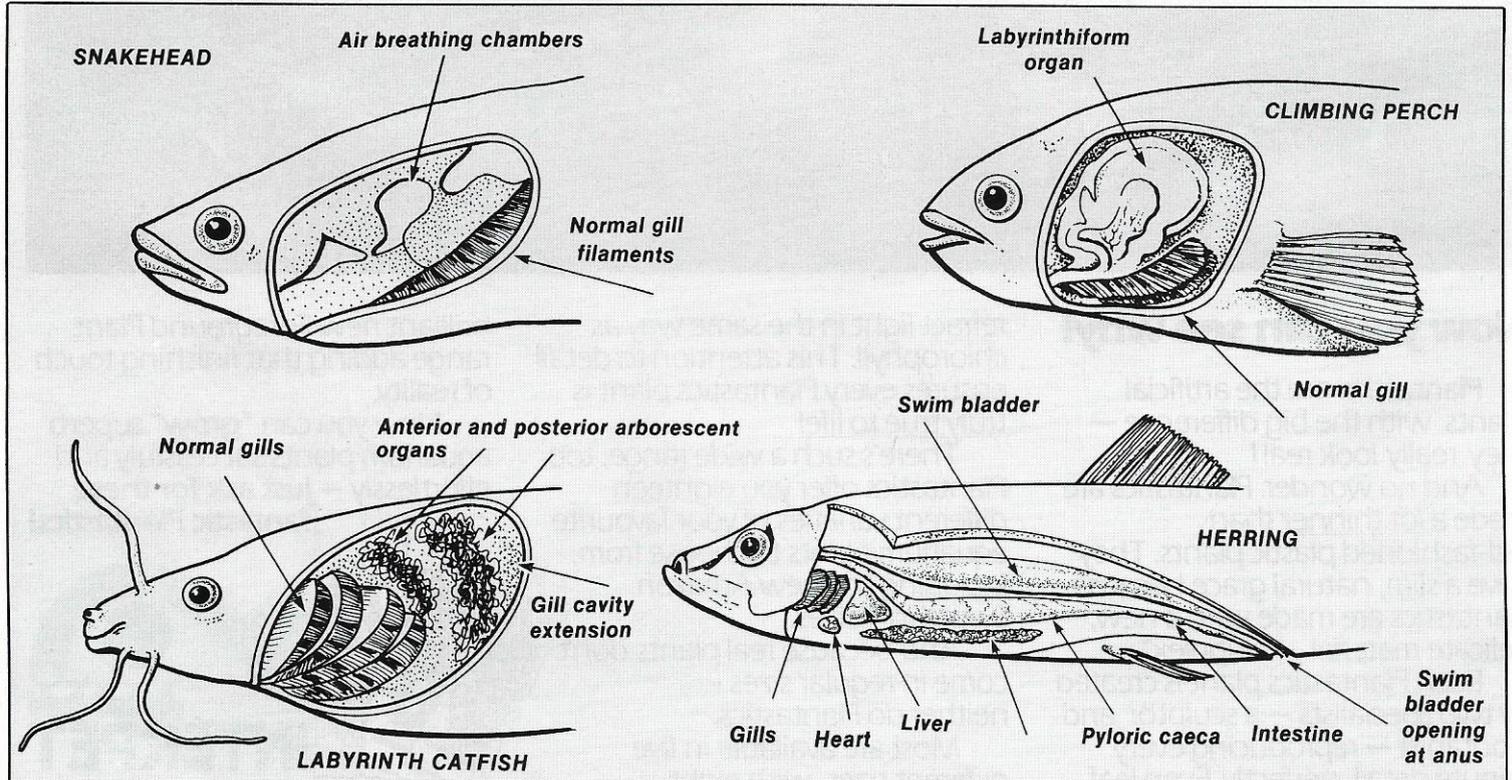
Goldfish tanks and tropical

tanks are different systems: It's a well known fact that you get a goldfish aquarium or a tropical aquarium. All the equipment is different, there are even separate book titles, not to mention societies. This is because tropical fish need heated water and the goldfish is a coldwater species, so you can't keep them together in the same tank. So why is it that so many Chinese restaurants have beautiful aquaria displays of fancy and plain goldfish mixed with shoals of community tropicals? Of all people, the Chinese should know about goldfish!

Goldfish have a tolerance of water temperature that goes from freezing well into tropical temperatures, so the varieties soon acclimatise to the average 24°C of the tropical tank. Do not try to keep big goldfish with tiny tropicals, or the former will have an expensive meal. But that is the only real problem.

Black Mollies are community fish: The Black Molly, *Poecilia mexicana*, originates from mildly brackish waters, and if placed in a typical soft, acid water community aquarium it becomes distressed. This is shown by 'shimmying' (swimming on the spot) followed by Fungus and / or White Spot diseases, then *Columnaris* and death. (The hobbyist doses all the other perfectly healthy and happy fish with chemical cures to save his Black Mollies.) Marine hobbyists know about Mollies — they put them in their saltwater tanks to mature the

Myth: all fishes breathe water. Truth: of 20 families of fishes, 24 genera can breathe air. From modified swimbladders, to extended gill cavities or special labyrinth organs, many fish have lungs for air-breathing.



system, and often leave them there for years.

Tilapia are only a food fish: There are hundreds of species in the Tilapia family, yet only one is seen in the hobby trade, *T. mossambica*, the Mozambique Mouthbrooder. In fact, all the species can be kept in the aquarium, and although not a colourful fish they are fascinating to watch.

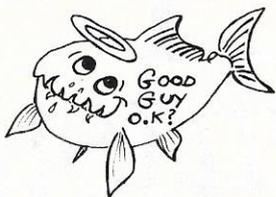
Each species has its own lifestyle with hierarchies, territorial quarrels, seduction and intrigue, to rival any TV soap opera. They are also one of the most studied species in the world, the foremost authority being the Institute of Aquaculture at Stirling University in Scotland.

Tiger Barbs are fin nippers: Not by choice! It is natural for Tigers to shoal and establish a pecking order, maintained by harmless skirmishes. Buy one, or even two Tiger Barbs and they cannot shoal. They attempt to establish a pecking order with other members of the community tank, who often don't respond and get a fin-nip from the frustrated Tiger.

These lovely fish look good in any tropical set-up, but do get half-a-dozen at a time so they can behave as nature intended. No fin-nipping then.

Piranha are aggressive: Certainly not as aggressive as Hollywood would have us believe! A solitary Piranha is a timid and shy fish, loath to swim forward to its owner. This is because they are a pack animal and large shoals cannot be housed in home aquaria. If you want an aggressive fish as a novel pet, don't choose Piranhas... fish such as the Red Devil,

Cichlasoma citrinellum (now *erythraeum*) will happily smash against the glass in order to get at your visitors and bite them.



Put a Tench in your pond to stop diseases: The Tench, *Tinca tinca*, is even called the "Doctor Fish" in older books, with the claim that its body mucus is medicinal even for other species. Certainly, body mucus has antibiotic actions for any fish but each is specific to its own species. All that will happen if you add the nocturnal, bottom-living Tench to your pond is that it will rarely, if ever, be seen again.

ICHTHYOLOGICAL MYTHS

Ichthyology is the scientific study of fishes. Research at Universities and Colleges has proved many of the hobbyists' myths to be unfounded (not untrue — you can only prove something *is*, you can't prove it *isn't*). A committed fishkeeper can tap this source of information for help with his / her hobby. Thousands of papers on Ichthyology are published annually, but you have to go to a scientific reference library to plug into the system — ask your nearest student!

Scales are used to tell a fish's age: Yes, quite true, but only for cold water species, not the tropical fish the hobbyist keeps. It is the seasonal changes in growth rates that give rings on

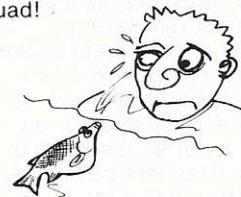
scales — just like the rings in a tree stem — so tropical fish that live in waters without true seasons do not show the effect. You take pot luck on how old that Giant Gourami or Large Angelfish is when you invest in a bigger fish.

Amazonian fish live in soft, acid water: Lots of scientists have taken trips up the Amazon and report enormously differing water conditions. It is a seasonal river, and the water chemistry can vary throughout the year, with the fish triggered into spawning by these changes. The classic example is the Discus, *Symphysodon aequifasciata* (etc), which can be found in Amazonian water of almost distilled quality, ie, zero hardness but neutral pH.

Flash floods can sweep organic acids into the rivers and streams that give rapid drops in pH value, but may increase hardness to at least "medium" values. This explains why hobbyists have kept Discus, even bred them, in their local tapwater. (The secret is that Discus like it hot more than acidic... over 30°C to breed.)

Archer Fish can shoot accurately: Hobbyists reported that *Toxotes jaculator* always got his kill, first shot, any angle. How could the fish compensate for water refraction, wondered the scientists... experimentation showed the Archer Fish scored only fairly well in hitting insects when positioned directly under the target, giving no refraction

effect. In the wild it was seen that a better score was achieved by a shoal of the fish spitting at an insect like a firing squad!



TECHNICAL MYTHS

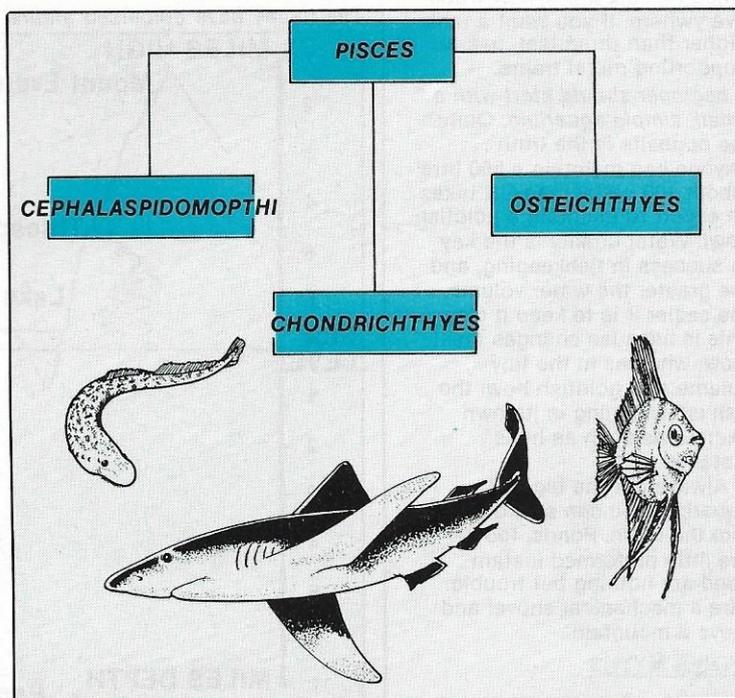
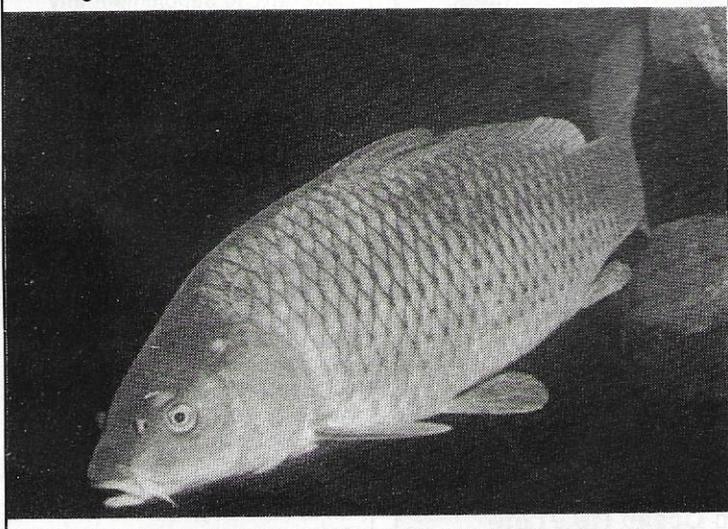
Never use domestic hot water from the tap: It is always claimed that the copper in domestic pipes is poisonous to fish, and the hot water system gives the highest levels. If true, it would poison us too. In fact the copper levels are minute, and only occur in brand-new fittings. A simple flushing of the system (a few seconds will do) will remove the dissolved copper.

Older pipes (especially in hard water areas) are coated with a protecting lime layer. The new hot water system can't be drained every time, but if a few months old or more the water is quite suitable for mixing with the cold supply to give instant 'tropical' blend for partial water changes. Changes of 50% or more need dechlorination.

Pumps can be turned on and off: Power filters rely on oxygenated water to 'feed' the bacteria on their filter medium.

Myth: there are hundreds of divisions of fish groups from the 20,000 known species.
Truth: there are just three major divisions of the fishes, as shown here.

This is the late-lamented Clarissa, British record carp. She spent over 20 years in London Zoo Aquarium, where the controlled environment gave no clue to her age via scale readings.



FACT & fantasy

Turn one off and the bacteria go into reverse, producing toxic materials just like the fish (instead of breaking the fish's excreta down to safe nitrates).

When the pump is switched on again these toxins flood into the tank, stressing the fish.

Airpumps, too, have a beneficial effect by raising the dissolved oxygen level. Turn them off, and if the tank is a 'busy' one, the fish are soon gasping for air at the surface. Hobbyists say that partial use cuts costs — not a lot, a modern power filter uses less current than the tiniest nightlight. It is also said that airpumps buzz so loudly you can't hear the TV, but the latest airpumps (such as **Atlantis s-series**) have to be touched to confirm they are actually 'on'.

Silicone-sealed tanks can be any shape: The old-fashioned metal frame aquarium was limited to a box design, but the use of silicone sealer has allowed tanks to fit into any space. Square, oblong, triangular, multifaced, in fact any shape with a straight edge for sealing is possible.

However, there is a limit to the sealer's ability — that is three feet high.

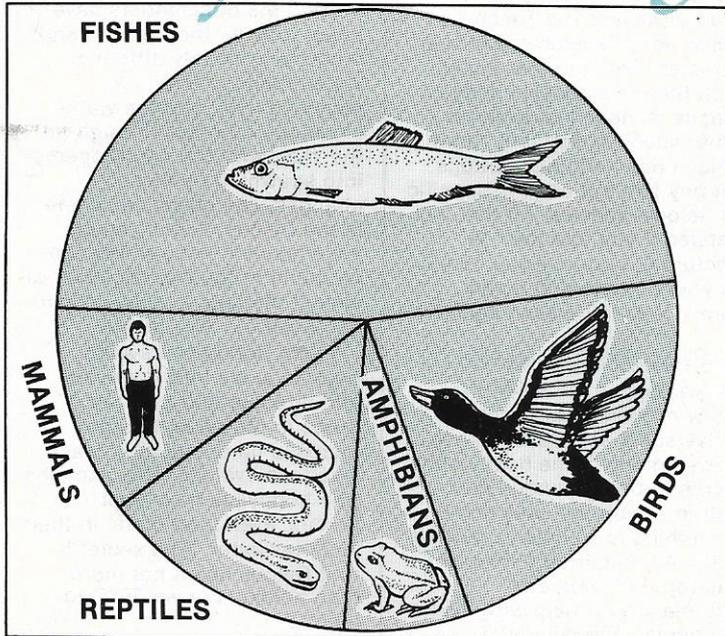
Water can exert enormous pressures, but that effect is dependent purely on depth, not volume. A foot depth of water has the same sideways pressure, whether it is a sea, a pond or a puddle. Silicone sealer is *guaranteed* to a depth of three feet (90cm) of water, which means it is probably okay to around 40 inches (about 100cm). The only silicone-sealed tank I built that was four feet high, unzipped like a banana, depositing an embarrassing amount of water everywhere. If you want a tank higher than three feet, use a supporting metal frame.

A beginner should start with a small, simple aquarium: Quite the opposite is the truth . . . anyone can maintain a 500 litre (about 100 gallon) tank; it takes an expert to maintain a goldfish bowl. Water quality is the key to success in fishkeeping, and the greater the water volume, the easier it is to keep it clean. This is because changes are slow, whereas in the tiny volume of a goldfish bowl the fish is swimming in its own excreta as soon as he is installed.

Always get the biggest aquarium you can afford or fit into the room. Ponds, too — the little preformed instant pond are nothing but trouble. Hire a mechanical shovel and move a mountain.

OTHER MYTHS

Something is wrong with the



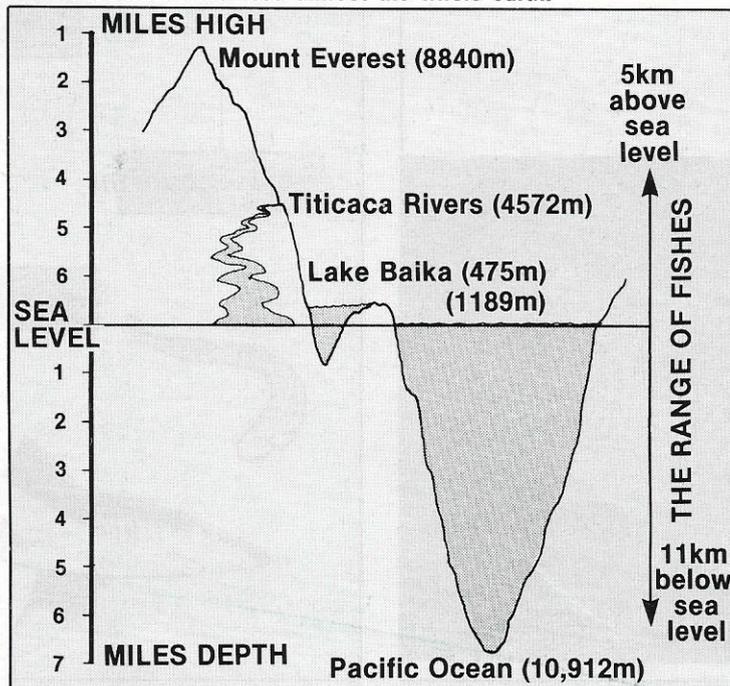
The legendary fishes! Of the nearly 42,000 species of vertebrates (animals with backbones) the 20,000 species of fish outnumber all other groups.

pond, it's like pea soup!: Fish farmers add chemical fertilisers to try and get their ponds to go green. It is a sign that everything is right with the water. The minute, sensitive free-swimming algae won't grow in polluted or immature waters, but soon reproduce to a green soup when conditions are

ideal. Goldfish (and Koi) thrive in such waters, developing noticeably deeper colours.

Fish are silent pets: Not true! If you put a microphone into the aquarium and tape-record the underwater sounds you will find that many species (especially Cichlids and many Catfish) are

The fishes have colonised almost the whole earth.



buzzing, growling and squeaking all the while. Use a proper waterproof mike, of course.



A good cleanout does wonders for the fish: Quite the reverse . . . it may kill them. Nothing is a greater shock to the fish than to be swimming in old, mature water, even if it's getting a little murky, and then plunked into new, immature, crystal clear tapwater. The chemical differences are enormous.

Never change more than 50% of the water.

You must stop feeding the pondfish by November: A real classic, this one! If you ask any carp farmer they will confirm that feeding continues as deep into winter as the weather allows. Another claim is that hobbyists should stop feeding when the temperature reaches 10°C. In fact carp (which include goldfish and Koi, of course) will feed readily down to 5°C. Below this they become sluggish and sink down to the bottom.

So let your fish decide when they want to feed, not the books.

Ornamental fish must have some live food: This was true back in the days when convenience fishfood was biscuit crumb or dried ant 'eggs'. Nowadays, manufacturers carry out fundamental research into fish nutrition and routine quality control of their products to ensure that the food is balanced and complete. Certainly we do this at the Aquarian laboratories, where over 90 tanks are devoted to daily quality control and to diet research. There is no longer any necessity to supplement any spes' diet — the modern flake has all the nutrients fish require, whether for

Last, but not least — *The hobby is difficult and I am too busy:* If you are too busy then you need an aquarium. Gazing into the world of fishes has a proven soothing effect, slowing the heart rate and lowering the blood pressure. No, it is not

If you are still worried about those problems, remember that free advice is available everywhere — your local

Do not forget the original free Advisory Service run by yours truly, Dr David Ford at **The Aquarian Advisory Service, Thomas's, Oakwell Way, Birstall, Batley, W. Yorks WF17 9LU.**