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AQUARIST

AND PONDKEEPER

The Magazine for Fishkeepers



Odessa Barb (colour feature)
SPOTLIGHT ON **The Clown Rasbora**
THE PEACOCK GOBY
(A breeding success story)



COVER STORY Photo: A. van den Nieuwenhuizen

Every once in a while we come across a "species" of fish which becomes established and accepted within the hobby without any apparent or undue controversy. One such "species" is the Golden Barb, usually referred to as *Barbus schuberti*. Yet, nothing seems to be known about the origin of this fish. It is believed by many to be no more than a gold-coloured morph of *Barbus semifasciatus*, the Green Barb, with which it freely interbreeds and, therefore, not a true species at all. In the case of the Odessa Barb, the subject of our cover photograph, the situation is much more controversial. Its origins are shrouded in anecdotal hearsay and half-facts to such an extent that we do not even have a tentative scientific name for it. Most of the evidence points towards some form of human intervention in the form of selection and/or hybridization involving *B. conchonus*, the Rosy Barb, *B. cumingi*, Cuming's Barb, *B. ticto*, the Ticto Barb and/or *B. ticto stoliczkae* (*B. stoliczkanus*), Stoliczka's Barb. Blissfully ignorant of the controversy, the Odessa Barb continues to delight hobbyists with its beautiful colours, hardiness, adaptability, willingness to spawn (even in hardish water) and its relative tolerance of other lively species.

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AQUARIST



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Your questions answered...

Having problems? Send your queries to our panel of experts who will be pleased to be of service. Every query receives a personal answer and, in addition, we will publish a selection of the most interesting questions and responses each month. Please indicate clearly on the top left hand corner of your envelope which department you wish your query to go to. All letters must be accompanied by a S.A.E. and addressed to:

Your Questions Answered, The Aquarist & Pondkeeper,
The Butts, Brentford, Middlesex TW8 8BN.

TROPICAL



Dr. C. Andrews

Tropical



Tilapia—or is it? . . .

Can you give me some information on *Tilapia mossambica* and *Tilapia mariae*, particularly their breeding habits?

The scientific names of these cichlids are in a state of 'flux', but I will refer to them by the names you have used.



"*Tilapia mossambica*" male

Tilapia mossambica is, in many ways, a typical mouthbrooding cichlid. After spawning the female takes the eggs into the mouth for incubation. After about 10 days they hatch, although the fry will continue to dash to their mothers' mouth at the first sign of danger for a while longer. The young fry can be reared on newly hatched brineshrimp, then finely powdered baby fish foods, and eventually the same food as their parents. It is best to remove the male after spawning, and as soon as the young fish are obviously independent from their mother, they are best removed to another tank for 'growing-on'. Good filtration and regular partial water changes are important as these fish begin to grow.

By comparison, *Tilapia mariae* is an open-, or pit-, spawning cichlid.

After spawning is complete, again remove the male parent, leaving the mother to tend and protect her 'brood'. The care of the fry is similar to that for *T. mossambica*.

If you are particularly interested in cichlids, you should join the British Cichlid Association, 33 Kirkmeadow, Bretton, Peterborough. Do send a stamped addressed envelope when writing for details.

goldfish with tropicals . . .

Can I keep coldwater fish such as koi and goldfish in my tropical community tank?

I would not recommend this, since the coldwater fish will grow too large, have a disruptive influence (especially on the plants), and generally find conditions unfavourable.

C.A.

Coldwater



Irritated Fish . . .

One of my goldfish in a tank has started to scrape along the gravel on the tank base. It seems otherwise all right and feeds well. What is the cause, please?

The fish has parasites on it and is trying to remove them or reduce the irritation. A common pest is the fish louse, *Argulus* a small disc-shaped transparent creature about an eighth of an inch in diameter. It can swim freely and attaches itself to a fish and sucks its blood, leaving a small wound. A small pest which attacks very young

fishes is the Fluke, *Gyrodactylus* or *Dactylogirus*. These are like tiny transparent worms which can move on a fish with a looper action. Anchor worm, *Lernae* is also sometimes found. It swims freely as a larva and attaches itself to a fish and develops as a thin dark coloured thread. All three pests can be killed with T.C.P. Make a solution of half teaspoon of the fluid to half a gallon of water. Hold the fish in a net and immerse it into the solution. Do not leave it in for more than ten seconds and remove it to fresh water if it turns over. You can repeat the treatment for two or three days if necessary.

copper poisoning . . .

Please can you tell me why my fishes die in the pond? I have a glass fibre pond 18 inches deep and have a water-fall and fountain. These are fed through new copper pipes. We stocked the pond with two green tench; 2 nymphs; 2 Koi; two Orfe and two red and white fish, name unknown. We have water plants in the pond but the fishes soon die. Can you explain why?

The copper pipes are no doubt the cause of the trouble. Copper is very poisonous to fishes, especially when the pipes are new and have no lime coating on the inside. Change the pipes for plastic ones and clean out the pond and make a fresh start. Your pond is very shallow and likely to be dangerous during the winter, especially in your district. You have not made a very good choice of fishes. You did not state the overall size of

COLDWATER

Arthur Boarder

PLANTS

Vivian De Thabrew

KOI

Hilda Allen

MARINE

Graham Cox

DISCUS

Eberhard Schulze

the pond, but as it is a fibre glass one, I doubt if it is large enough for Koi and orfe. Both of these fine fishes need plenty of swimming space as they grow quickly and to a large size. You ask for a book which might help you. I cannot do better than to suggest my book, "Coldwater Fish-keeping" from *The Aquarist*. It is a pity that you did not get a book on the subject before you commenced fishkeeping as it would have saved you disappointment and expense.

fish deaths . . .

I bought a Moor and it appeared to be in perfect health but it was dead in two days. What do you think the disease could have been which killed it so quickly?

I do not think that the fish died from any disease. I do not know of any fish disease which would kill a fish without there were signs that something was wrong for a few days before. When a goldfish is about to die it would certainly show one or more of the following signs for a few days before. The signs could be: The fish stops feeding; the dorsal fin is kept closed; the rate of breathing is increased; normal swimming is impossible; the fish may lie on the bottom, perhaps on its side; the eyes may become filmed over; the body may swell up and the scales may protrude; sores or ulcers may appear on the body and red streaks on the fins. If none of these symptoms have shown up then the water may be poisoned by lead or copper. In such water a fish would die within a short space of time according to the con-

centration of the poison. However, I think that the more obvious reason for the death of your fish was 'lack of oxygen'.

This condition may be caused by foul water resulting from decaying matter in the tank or pond; overstocking with fishes; too many water plants, too warm water, perhaps through leaving an overhead lamp on all night, or heavy smoking in a room overnight. When a fish dies through lack of oxygen it will show no signs of ill health or disease but look in perfect condition. Your fish may have been kept in warmer water than you had in with a number of other fishes it is the one, usually, to suffer first. It is also a fact that when fishes die through lack of oxygen, it is the larger fishes which go first and smaller ones may appear to be unaffected. Clean out the tank and before adding to your stock check up on the stocking rate and have no more than an inch length of fish, excluding the tail, to each 24 square inches of surface area of water.

cypris . . .

In my coldwater tank I have swarms of tiny brown creatures swimming about. What are they and where have they come from?

The creatures are obviously *Cypris* a genus of *Ostracods*. They are mostly only about a twentieth of an inch in size. They are crustaceans and are enclosed in a tiny double shell. This is, no doubt, why goldfish do not eat them. They can form into a large swarm and are difficult to clear from a

tank. The usual cause of introduction to a tank is with water plants. A thorough cleansing of the tank is necessary to get rid of them. They do not appear to harm the fishes and feed mainly on tiny amounts of decaying vegetation.

late-hatching fry . . .

I took a number of very late hatched goldfish fry from my pond and placed them in a 24 in. x 12 in. x 12 in. tank in a cold greenhouse. Most of the fry died during a cold spell. Would it have been safer to have had a heater in the tank and if so at what temperature?

It is very difficult to rear very late hatched fry. Even earlier hatched ones are not easy to get through the first winter if they have been reared with no extra warmth. You can use a tank heater as is used for tropicals and set the thermostat at 70°F. This will enable the fry to continue eating all through the winter. You can surround the tank with material to conserve the warmth but have an overhead light for using during dull days.

breeding sticklebacks . . .

I have kept some Sticklebacks in a tank, 18½ x 12 x 12 in., with three goldfish for some years but can not get the Sticklebacks to breed. What ought I to do to get them to breed and what do I feed the fry on?

A slightly larger tank would be better and you must have no other fishes in the tank. There should be

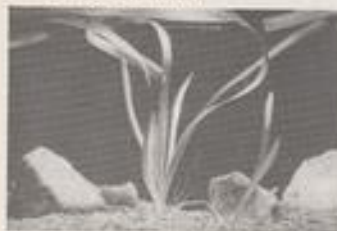
a male stickleback and two or three females only in the tank. The male should make a nest and entice the females in to lay their eggs. When spawning is over it is as well to remove the females to prevent them being harmed by the male who will guard the eggs and fry when they hatch. The fry will feed on *Infusoria* or Liquid fry food. **A.B.**

Plants

problems with *Vallis* . . .

I am having problems in keeping *Vallisneria*; over several months I have varied my suppliers hoping that an answer will be found, but to no avail, they last for 2 or 3 days they go all slimy and pulpy; my other plants and all my fish are surviving well.

Regarding your problem, I am unable to give you a very precise answer, as I do not have details of your water condition. However, an important point about *Vallisneria* (asiatica) is that it requires a deep tank and ideally should be planted on its own, as it does not readily establish well with most other plants. Hence, I suspect, the difficulties you are encountering. However, if given plenty of room and the right conditions it should eventually slowly establish and flourish; it requires good illumination—whenever possible direct sunlight should be given; it needs a temperature range of 68°-77°F, and soft and slightly acid to slightly alkaline water, with up to 10 DH and a pH of 6.6 to 7.6. It is not very fussy about planting medium, and will do well in a gravel medium with plenty of detritus.



Vallis requires deep water and good light for healthy growth **V.T.**

Koi



heating a pond . . .

Having lost some of my Koi in the recent cold spell I would be pleased if you could advise me on the best means of heating my pond in the winter?

I would be reluctant to advise anyone to heat outdoor ponds, bearing in mind both the prohibitive costs of doing so plus the fact that Koi are carp and as such should be able to withstand the rigours of a typical British winter. That is, provided they are kept in a sufficiently deep pond where the water temperatures will not greatly fluctuate between milder, sunny days and severe frosts at nights. This unnecessary stress may be as responsible as prolonged low temperatures in causing the loss of Koi in the winter. If ponds are shallow they can be covered to afford some protection, and a pump should be in continuous operation not only to aerate the water but also as a means of keeping open a hole in the ice without the need for constant cans of hot water to melt the ice.

The best I can do is exhort all prospective Koi-keepers to dig deep ponds of at least 4½ to 6 feet. Deep volumes of water are slower to cool in winter and slower to heat in high summer, thereby providing a more stable environment.

Large volumes of water are much easier to 'manage' than small ones and I speak from experience having had various ponds over many years. Since 1969 I have been completely fascinated by Koi and many of my original ideas about pond fish-keeping have been drastically changed by these beautiful carp, but I have no regrets.

water pumps . . .

I have now increased my filtration system in line with your recommendations to cope with the growing problems in my pond, but on trying to buy a cast-iron bodied central-heating pump was told these were not suitable and was offered a more expensive bronze-

bodied unit. This pump had a much larger output than I really need for my pond, and I have doubts about the suitability of bronze, can you please advise?

It is suggested that the supplier was acting in your best interests and has more knowledge on the quality of your local water supply than I can possibly have. It is a fact that any pump, except one made entirely of stainless steel could suffer to some extent under pond water conditions with the wide variety of dissolved salts present, whether added in the form of treatments or not.

Having spoken to many people about the use of different pumps I have been unable to arrive at any conclusions as you can imagine, but the basic facts are that in 'soft' water areas and with a low pH value, then cast-iron could be susceptible to some form of corrosion in the long term, whereas bronze would not.

'Hard' water tends to deposit some scale and thereby protect cast-iron, and in my case, an ordinary central-heating pump has now been in continuous use for four years without any trouble and is only checked once every spring to make sure the rotor is free to turn in its bearings.

In the Northern area complaints have been made of excessive 'rusting' inside cast-iron pumps and although the operating conditions were never fully assessed, changes were made to use completely stainless steel pumps at less than half the price of the large bronze model.

There is also the question of how much pumping capacity you need and I think if there is a definite problem in your area then it would be better to invest in two stainless steel pumps of say the 90 Watts input size to give you some control by using one or both according to needs in summer and winter, as these pumps have fixed speed and output.

In buying any pump, you must be aware that the maximum claimed output will not be achieved in practice due to friction losses in the pipework etc, as well as the actual height you may be pumping the water above pond-level, and a reduction of 20 to 30 percent may be expected. **H.A.**

Marine

a good book on native marine aquaria . . .

I am a total newcomer to the hobby of aquarium-keeping and would like to begin by keeping native marine-life.

Please can you advise me on the following:

1. How do I set up an aquarium for keeping British fishes, invertebrates and plants alive in the home?
2. Can I use natural seawater?
3. What are best fishes, invertebrates and plants to keep? I only have a 36 in. x 18 in. x 18 in. tank available.
4. What are the essential maintenance procedures necessary to keep all the tank's inhabitants healthy?
5. Do you know of any company which collect and sells British marine-life?

I'm afraid that your questions are too numerous and far-reaching in their scope to permit an adequate answer here. I strongly suggest that you read Maurice Melzak's new book *The Marine Aquarium Manual* which was recently published by B. T. Batsford Ltd., of 4 Fitzhardinge Street, London W1A 0AH, at £7.95.

This superbly written book, with fine line drawing illustrations by Sheila Galbraith deals with all aspects of creating, stocking and maintaining a native marine aquarium. There is even a section on how to go about collecting your own creatures and plants—and I'm afraid that is what you will almost certainly have to do since, to the best of my knowledge, the answer to your final question is that at present there are no commercially-organised companies in Britain which are able to supply native marine animals and plants.

In his first chapter, Mr. Melzak deals with all the major components necessary to establish an aquarium for the home culture of temperate zone

marine life forms. In Chapter 2, the aquarium ancillary equipment—some essentials such as air pumps, a hydrometer, etc., and some items of an optional nature such as protein skimmers and powerfilters, are thoroughly examined and discussed. Chapter 3 deals with alternative methods of filtration, i.e. alternatives to the under-gravel filter, and gives useful constructional details on how to adapt a second-hand household refrigerator to provide an economical seawater chilling unit.

In Chapter 4, the beginner is taken step by step through the process of fitting all the equipment together to create a functional marine aquarium.

The major chapter in the book, occupying some 75 pages out of a total of 175 pages, is Chapter 5 in which the author treats in considerable detail the major phyla or groups of plants and animals which the aquarist is likely to find in the British littoral or intertidal zone.

The next chapter, entitled, "The Seashore", deals with the geology of the rocky shore and the physical forces which affect both the littoral environment and the animals and plants living in this zone, together with a final 10 pages on the tropical marine aquarium to whet the beginner's appetite for this more advanced aspect of fish-keeping once he has successfully mastered native marines.

The seventh chapter covers general maintenance, including an interesting section on breeding and finally two appendices give lists of both suitable and unsuitable species for the home aquarium and some useful conversion tables—altogether the most readable and informative book dealing with the temperate marine aquarium I've seen so far.

G.C.

Discus



acaras, plecos and discus . . .

I have been keeping fish for two years and I want to move into discus. I have quite a knowledge of keeping these beautiful fishes, but I have a number of queries:

1. Can I keep Blue Acaras, a *Plecostomus* catfish with discus?
2. Would an Eheim 2009 provide adequate filtration?
3. I plan to maintain the tank using a 'clinical' system with no gravel but some potted plants and some bogwood. If I wanted to add gravel at a later stage what would be the best way of keeping it clean and neat?

I would have thought that if you really want to move into Discus you ought to stay away from fish like Blue Acaras who can, and very often are, somewhat too aggressive to be kept with the usually gentle Discus fish. As Discus are often initially timid, if they were to be housed with some boisterous fish they would never really settle in and I am sure you would lose them very quickly. *Plecostomus* catfish, often kept with Discus, grow too large for my liking to be kept in the same tank. I have seen sucker marks on the sides of Discus and Angel fish. *Plecostomus* catfish are nocturnal, when the lights of the aquarium are off and the Discus settle down in their favourite corner, the *Plecostomus* catfish becomes very active, upsetting the whole aquarium. If a catfish is at all required, go at least for the very much smaller 'Clown *Plecostomus*'.



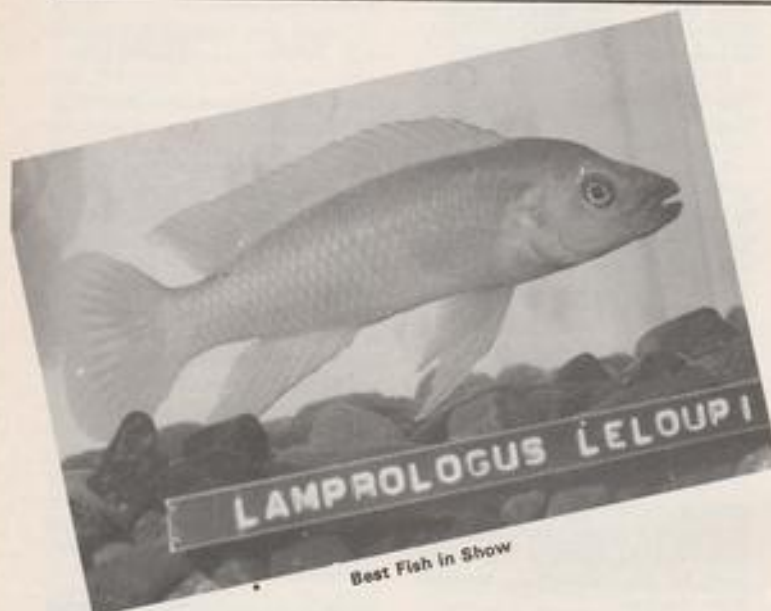
Blue acaras are not ideal tank mates for discus

You do not say the size your aquarium is or the amount of water it holds, but I am sure I will be right to say that your Eheim 2009 will be too small. If the filter is right for a given size tank, then this tank would probably be too small to keep Discus.

Gravel can be kept clean with either a Hoover, air or power operated or with one of the new 'Gravel Washers' (Ref. No. 400 200) from Eheim.

E.S.

BAF 1984



Best Fish in Show



1st award winning tableau by Bridgewater A.S.

The thirty-third B.A.F. opened to the public on Saturday, 3rd November, amid torrential rain which had commenced the previous day and continued to lash down relentlessly until the small hours of Sunday. The organisers were, naturally, concerned that the inclement weather might depress attendance, especially as they had opted for one and a half exhibition halls instead of one, as in recent years. Nothing daunted, however, the fish enthusiasts arrived in strength and within an hour of opening the main hall and 'annexe' were very comfortably populated but it was on Sunday that the public turned up in full force.

Trade stands were larger this year and Society tableaux showed a big numerical increase as did the number of entries for the various exhibitors' classes.

Tableaux maintained the recent trend towards smaller structures with more subtlety than flamboyance and Bridgewater Aquarist Society's mechanical gnomes gained first prize for their garden scene where a gnome hammered a nail into a D.I.Y. artefact while another nodded over a fish journal and a third disported himself on a garden swing. Meanwhile a large, wide-eyed goldfish surfaced and then submerged, continuously, in a pool and numerous worms wriggled out of the lawn.

Macclesfield A.S. displayed a cosy room tableau wherein a glowing fire and ornamental tanks of fish directed their therapeutic powers towards a recumbent armchair aquarist across whose T-shirt was emblazoned the word RELAX.

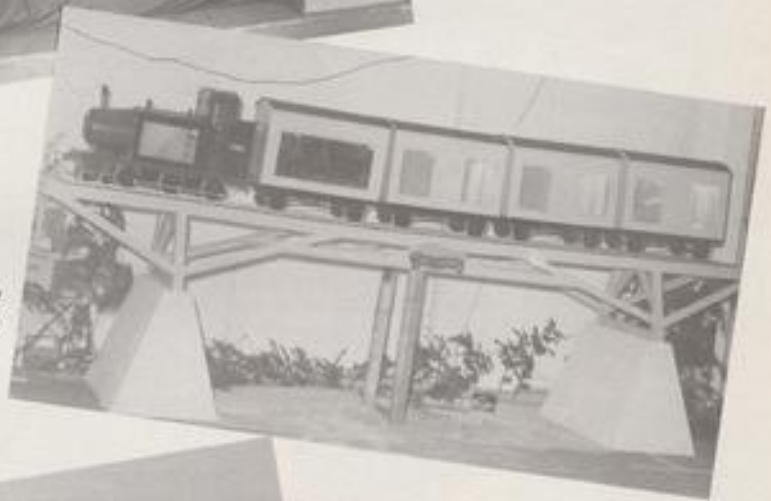
Darfield A.S. tableau was a representation of a poole table but, for this

Continued overleaf and on page 27



The new 'Champion of Champions' stand donated by LMB Aquatics

2nd award went to this tableau by Belle Vue A.S.



Champion of Champions
Botia sidhimunki



Macclesfield A.S. tableau which won 3rd prize

Company Profile

LMB AQUATICS



The LMB team (left to right): Linda Dainton, George Candler, Bryan Dainton and Richard Barratt

ABOUT two years ago, Bryan Dainton took over the premises at 748 Oldham Road in Failsworth a suburb of Manchester, and set about converting them, virtually single-handed, to accommodate his already-expanding wholesale and retail business, LMB Aquatics. This upward trend still continues today with the result that LMB have bought the shop next door and alterations are already underway on the new phase of expansion.

Once the work is completed, it will allow Bryan and Linda Dainton to increase the number of tanks they currently hold (100, 3-4ft.) to around 300. It will also allow them to introduce what may well be a unique feature to the hobby—a fully equipped quarantine section open to the public where fish may be viewed and reserved, but not bought, until the period of quarantine has been completed. Although all the fish offered for sale by LMB at the moment have also undergone a quarantine period of a minimum of 21 days, this is currently done away from the shop premises, owing to lack of space.

This is not to say that the shop is small or cramped. Far from it. In fact, the aisles between the rows of

tanks have been made sufficiently wide to take a wheelchair quite comfortably. Steps between the various sections of the shop have been smoothed out for the same reason.

Evidence that Bryan and his Shop Manager, George Candler, are also keen fishkeepers (hobbyists) can be seen in the selection of large, perfectly-conditioned specimens which they keep in the shop for show purposes (strictly not for sale). These include a massive Red-tailed Cat (*Phractocephalus*), a substantial, but young, pair of Eyespot Cichlid (*Cichla ocellaris*), an impressive *Lates niloticus* Catfish and, the rarest of the lot, a spectacular *Synodontis granulosa*. This last fish was collected by Richard himself (after whom *Lamprologus richardi* was named) and sent to Bryan some time ago. An



Synodontis granulosa

added, unique, "extra" is that this specimen is the first one ever to be imported into UK. There is a record of another, single, specimen being imported into U.S.A. but that is about all the information there is as far as the "hobby" side of this species is concerned. This fish is a gem of a rarity and is certainly well worth travelling to see.

Away from the "Show" specimens themselves and on to those available for sale, there is, of course, the whole range of common species. In addition, there is a wide selection of more unusual types, such as Sleeper Gobies (Eleotrids), Headstanders, *Distichodus*, Splashing Tetras, Dwarf Cichlids (*Nannacara* and *Apistogramma*), Chocolate Gouramis, Climbing Perches, Electric Catfish, Freshwater Stingrays, Birchirs (*Polyporus*), Shovel-nosed Catfish, Ghost Knife-fish and many others.

On the specialist front, there are countless African Rift Lake Cichlids and over 1,000 *Synodontis* Catfish available at any one time. Among these, are rarer species such as *S. angelicus*, *S. acantomias*, *S. multipunctatus*, *S. petricola*, *S. stormii* and *S. schoutedeni*.



LMB specialises in Cichlids & Catfish

For those hobbyists who are too far away from LMB or any of its 100 or so retail outlets (plus a Sales Rep. in Scotland), there is a Dial-a-fish Service which includes packing, freight, telephone call and Red Star delivery for a fee of £8.00. The shop also stocks the full range of dry goods, books, plants, livefoods, aids, e.g. CO₂ Diffuser, and (even) pre-packed Killifish eggs, and manufacturers its own tanks, stands and air-lines.

For further details, contact LMB at 061-682 6083.

"MONSTERS" of natural history are not the notorious science-fiction soap-opera from Loch Ness, where there is no evidence that the numerous annual reports are of the same thing, or that any of its reporters have the slightest experience of aquatic biology. I "covered" this story in its early days, writing for the Dundee Courier in 1932, and the *Daily Mirror* in 1933.

A monster is an animal abnormally shaped or constructed. Recently I received a letter from Dr. H. K. Mienis, of the University of Jerusalem, telling me he had found in a school collection a double-headed specimen of the fan-footed gecko, *Ptyodactylus hasselquistii* which lives in Israel. It was at Kibbutz Netzer Sereni.

This is the first time I have heard of a two-headed gecko. Double-headed snakes are a little more frequent and Dr. Mienis wrote because I have a double-headed water-snake, *Natrix tessellata*, from the same country, which an Arab brought to one of our wartime army hospitals having collected it in the marshes of Transjordan. Like most such "monsters" this was an immature snake which was not more than one year old and had probably never fed. It was about 10 ins. long, with two perfectly developed heads.

The U.S. seems to collect more double-headed snakes. I have a photo of what appears to be a copperhead from West Virginia, a pre-war exhibit in Cincinnati Zoo; a two-headed milk snake lived for some months in New York Zoo and a copperhead was found in Pennsylvania. I've also seen this abnormality in trout-fry. Apparently double-headed snakes are fed both heads at a time or one is in competition with the other.

A two-headed western diamond-back rattlesnake, born dead, illustrates the new English translation of Engelmann and Obst's magnificent book on *Snakes*, adding "this is a comparatively common congenital malformation in snakes."

Double-headed fish seem to be



by Eric Hardy

confined to larval stages like a brown trout hatched with two complete heads in 1963 in tanks at Glenfarg reservoir. A two-headed shark was found in Botany Bay, New South Wales and depicted in Whitley's *Fishes of Australia*. A similar "Siamese" twin is recorded on a prehistoric rock-drawing in New Zealand. In December 1929, the commercial weekly

Fishing News recorded a two-headed shark caught off New Jersey, U.S.A. Most zoologists scorn such monstrosities and are more concerned in solving the peculiar, almost double head of the hammerhead one of the mysteries among sharks. Either its widely separated eyes provide better vision or, with its nostrils located at each end of the hammer shape, it serves as a big flat nose and has a more directional sense of smell. Nine species of Sphyrnids have evolved this T-shaped head though some are more bonnet-shaped and on rare occasions some have reached British shores. One theory is that they act as bow-rudders for manoeuvrability like the diving planes of submarines or the long-nosed paddlefish in London Zoo aquarium I mentioned recently; or compensating poor forward lift; or distribute sensory pores in their skin for a wider sensing of food.

With almost 100 new species described each year and over 40,000 already listed, fishes evolved a great variety of heads, though none other so extraordinary as the hammerhead. The trumpet fish (*Anulostomus*) and the long-nosed butterflyfish have their heads drawn out to a snout for sifting in soft material or poke into coral;

Double headed trout-fry from a North Wales hatchery



leaf-fish extend their snouts like a telescope. Surface-feeders have the mouth at the top, bottom-feeders at the bottom, like that useful aquarium scavenger, *Corydoras*, often augmented with sensitive barbels, the fox-snouted catfish of the Amazon most bizarre of all. The long-snouted catfish, a South American freshwater species in New York aquarium, has a particularly long drawn-out snout as has the Congo mormyrid or "elephant fish". The steep, flat-fronted face of *Selene* from tropical African and American coasts earned it the nickname of the "lookdown fish". In contrast, discus and sunfish have left it little more than the front of their bodies, but no fish has a neck in the true sense.

What look like double-headed fish,

some of the devil rays, have two horn-like cephalic fins projecting either side of the mouth to form a funnel to channel food into it as they swim along. The heads of fishes seem to have evolved their differences mainly for feeding, from sawfish to swordfish, sifters, seizers, spitters (the archer), and coral-crunchers. But some like the sun-fish contracted it for swift-swimming. In 1965 a pug-headed perch with its upper jaw and skull deformed and considerably shortened, was found dead in the River Lea near Feildes Weir, London, the worst of several fish in the river with deformed upper jaws. Similar deformities have been found in a pike at Eggleton, a salmon in the Dart, in chub, carp, eels, trout, perch and American small-mouthed bass. This is probably due

to the bones being damaged by a sporozoan infection or a congenital deformity. A Norfolk eel caught in 1932 had its upper jaw shortened to a knob, with the lower jaw normal.

Some 19th century angling writers, particularly from North Wales, had a habit of giving special names like pug-trout and blue poll to abnormal trout they found as if these were new species. By varying water temperature during critical periods of a fish like trout's early development, specific characteristics can be altered. Malnutrition may cause it. Purists scorn any interest in these monstrosities, but they give some amusement to the aquarist who manages to rear them beyond the larval stage, so good luck to my friends with their double-headed gecko in Jerusalem.

Continued from page 22

observer, a splendid Quetzal Cichlid (*Cichlasoma symplectum*) stole that stand's thunder.

Among the fish displayed on Darwin's tableau was a lovely Green Terror (*Aequidens rivulatus*) in prime condition and fairly hefty with it, and two more eye-catching fish were to be seen on Sandgrounders A.S. stand in the shape of a 12 in. or more long *Pterygoplichthys gibbiceps* and a *Cichlasoma festae*.

Oldham A.S. secured the G.S.G.B. Cup for a Bristol Shubunkin, and the F.N.A.S. Goldfish and Comet Trophy for a common goldfish.

Mr. and Mrs. K. Hooley won the Champion of Champions event with their *Botia sidhimonsi* and Mr. A. Wilson of St. Helens A.S. won the Best Fish in Show award with his *Lamplogus leleupi* while Mr. K. Buckley of Bridgewater A.S. was the exhibitor to win most awards.

So far as the hobby's current state of health is concerned: the consensus of opinion prevailing at this large gathering was one of much optimism

and an air of cheerful well-being pervaded the hall.

Mr. John Hall, B.A.F. organiser, should be very well pleased with the response to his Federations' show and he and his team can be applauded for their sterling efforts and immense dedication in producing this spectacular attraction. For his part, John Hall wishes to extend his grateful thanks and appreciation to all who helped him to make the show a success including traders, societies and exhibitors as well, of course, as all those who gave their support by attending.

For anyone who attends BAF regularly, as has the writer for twenty years, the event is like an annual reunion when old friends gather to share a common interest and to swap reminiscences and stories of fishkeeping successes—and failures. With the sad business of dismantling over at the show's end, we lift our spirits again at the expectation of next year's get together—BAF 1985.

(A list of results in all competitive classes will appear in next month's issue)

NEXT MONTH

Breeding Cichlids—a colour feature by Dr. Robert Goldstein. Jack Hems turns the **Spotlight** on the Indian Glass Fish, *Chanda ranga*.

Ian Sellick writes about Cichlids

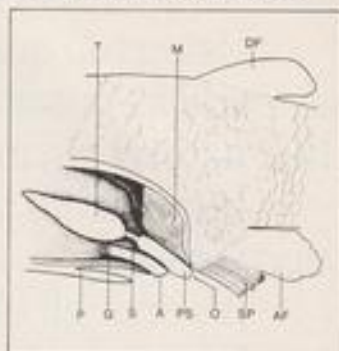
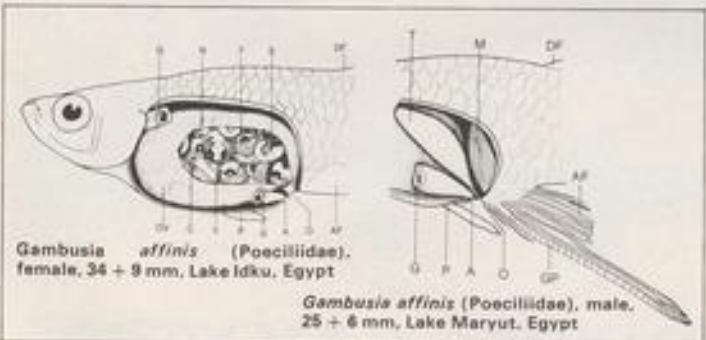
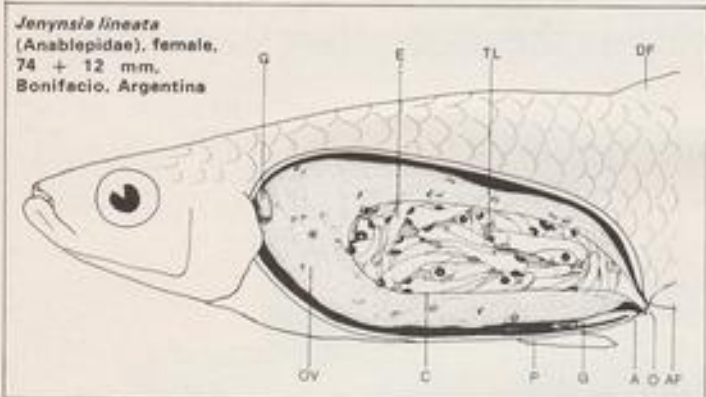
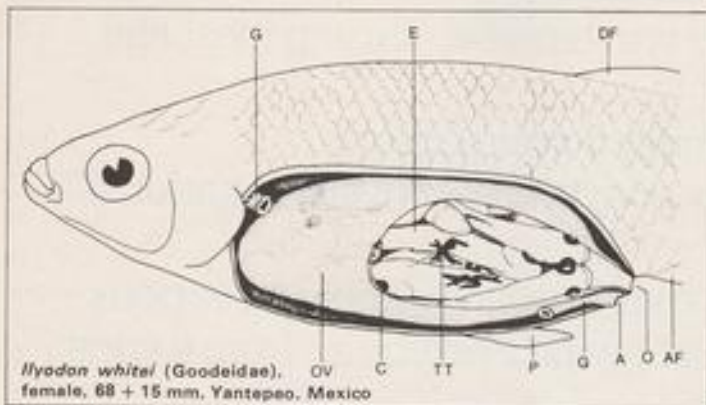
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Due to continued rising costs we announce with regret a small price increase as from 1 January 1985. But at 85p, *The Aquarist* is still the best possible value for the enthusiastic fishkeeper.

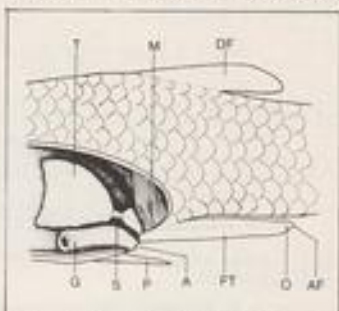
A BRIEF REVIEW OF LIVEBEARERS

by Dr Peter Miller (University of Bristol)

Due to a printing error, the captions for diagrams illustrating this article in our November issue, were misplaced. We regret this error and reprint those diagrams here along with their correct captions.



Goodea atripinnis (Goodeidae), male, 40 + 9 mm, San Juan del Rio, Mexico



Jenynsia lineata (Anablepidae) male, 36.5 + 9 mm, Bahia Blanca, Argentina

Diagrams: these are based on dissections by me, with the side wall of the abdomen and all except reproductive organs removed; as Chairman of the Society for the International Conservation of Livebearing Fishes, I must add that the specimens are all from study collections, not killed for present purposes, and I must thank Jim Chambers, of the British Museum (Natural History), for rushing me choice material. Abbreviations: A, anus; AF, anal fin; C, out edge of ovary wall; DF, dorsal fin; E, embryo; F, follicle wall; FT, sperm tube; G, gut (out end); GP, gonopodium; M, anal fin muscles; N, young egg cells for next brood; O, genital openings; OV, ovary; P, right pelvic fin; PS, pseudopenis; S, left sperm duct; SP, spermatopodium; T, left testis; TL, trophonemata; TT, trophotaeniac; Y, yolk.

THE ODESSA BARB

grass which trailed below the surface, but we nevertheless managed to net some of the fish as they took refuge in the vegetation. Suddenly I had a small barb in the net which glistened red in the sunlight. We examined it with interest, all the more so as close inspection revealed that there was a black spot on the body. We also observed small black markings in the dorsal fin. As a result we were of the opinion that we were dealing with an ancestor of the "Odessa barb".

We forgot, of course, to take a photograph immediately, because we

at once. As we now knew what we were looking for we caught sight of a number of examples, but they moved so quickly that we were unable to catch any more. We kept the solitary specimen (undoubtedly *Barbus ticto*) alive, because we were able to keep it for the rest of our trip in an aquarium of Y. W. Ong in Singapore. Soon the red coloration appeared to turn paler and paler until only a few red spots remained against the otherwise predominantly black ground colour.

In 1982 I was in Sri Lanka at the beginning of the rainy season together with a number of Belgian hobbyists. Naturally, a visit to the same collecting place was part of our programme. Since everything was bone-dry in the North at this time of year, hardly anything remained of the previous year's location. A great deal of the

places the water had a maximum depth of 30 to 40 cm, others were barely ankle-deep and some parts were choked with algae. The water temperature was 31.5°, water hardness 18° DH, carbonate hardness 17°, pH 7.5 and the nitrite content 0.

Over the stony and sandy bottom we were able to catch a lot of fish quite easily with a draw-net. These included *Noemacheilus botia*, catfish which resembled *Mystus tengara*, *Chela laubuca*, *Oxygaster*, the other species already mentioned and two females of *Barbus ticto*. I now share the opinion of Stallknecht that the Odessa barb is a variety of *Barbus ticto*. Therefore, I would recommend to anyone who travels to Habarane in Sri Lanka to look up and fish at the location I have described, for it is only 8.6 kilometres from the resthouse in Habarane.

The same spot in July



South-East Asian city. He was unable to furnish any more precise details. Consequently, it was never discovered whether one was dealing with a colour variation or a local form of *Barbus semifasciatus*, for their place or origin remained unknown.

There is, however, a description of the coloration of *Barbus semifasciatus* by Meinken in "Holly-Meinken-Rachow" and in it one reads: "During courtship and times of prime condition the abdominal and ventral areas of the male are a beautiful orange-red." These colours do not seem to be lost in subsequent generations bred from "Japanese barbs".

Other literature on the subject makes for highly interesting reading. In the Kosmos handbook "Aquaria" (1977) one reads on page 260: "A few years ago a particularly attractively coloured barb was for sale in the market of Odessa, the origin of which was unknown; it was christened the Odessa barb". In the article translated from Dazkewitsch one reads: "In 1971 a number of barbs were brought to Odessa, which had been bought in a

bazaar and so the original habitat of which was unfortunately unknown." I consider that to be another piece of evidence. Vense translated a number of articles of Dazkewitsch in 1976, one of which came out in March of that year under the title "Three barbs from the U.S.S.R." Here one reads: "In 1971 some barbs arrived in Odessa which had been bought in a bazaar in the Far East". There is also mention in the article of the long-finned variety of *Barbus conchomus*. Dr. Gerhard Hochstrasser goes into greater detail about this fish in March 1980 in the DATZ magazine in an article entitled "The



Barbus ticto caught in Sri Lanka by the Author



Odessa Barb spawning

Odessa barb—a secret?" From Rumania himself, the author states that the long-finned form of *Barbus conchovius* has been given the name Odessa barb in Russia and so the short-finned form must be given another name. He also says at the end of his article that the fish, the female of which has two dark spots, could be a hybrid between *B. conchovius* and *B. cumingi*.

J. Elias also writes in the same number of DATZ that the Odessa barb became available in small numbers in 1971 on the fish market of Odessa and that the fish was bred in Czechoslovakia in such numbers that no more buyers could be found for it. He also ventures to say that it could be a mutation of *Barbus conchovius*, but adds that there are similarities in appearance to *B. cumingi*. In his article in the January number of 1977 Dr. Frank Axelrod suggests that the fish originates from North Vietnam.

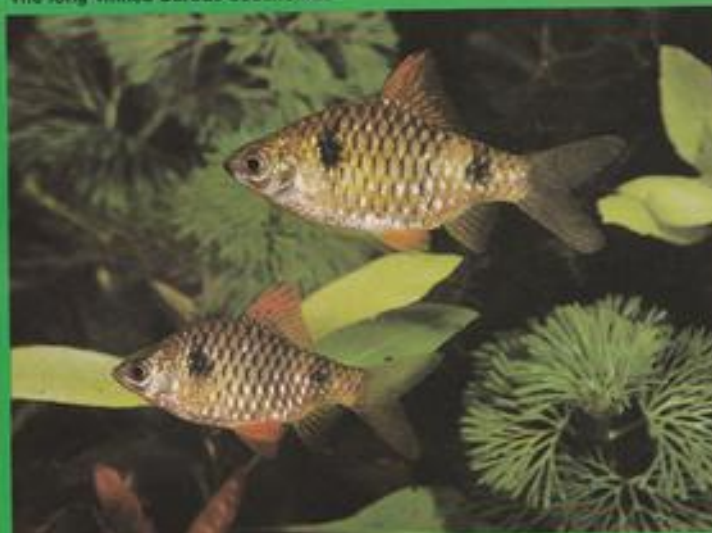
Reading all this one is inclined to agree with Stallknecht that one is dealing with a variety of *Barbus nico*. This is the case in the "Merqius Aquarium Atlas" in which a description of *Barbus nico* on page 400 is accompanied by an illustration of the Odessa barb. However, the following is stated: "The smaller and more colourful form of this species is called the Ruby barb. This variety first turned up in Moscow(?) and quickly won the affection of aquarists." And further on: "The brilliant ruby-red coloration of the males is maintained by providing a varied diet of live food and/or Terra Ruby".

One sees how confusion about the origin of a fish can arise. It comes as no surprise when many aquarists I know say: "Oh yes, isn't that the Russian fish?"

Because I have always considered the Odessa barb to be a beautiful fish I long had the plan of seeking out the places where they could be found, while making a visit to Sri Lanka. The opportunity arrived when I spent four weeks with my friend H. T. Snijders in 1981 in Sri Lanka. At the end of the dry season, in fact, with the accompanying temperature. One day while at Rodney Jonkass's



The long-finned *Barbus conchovius*



Barbus cumingi

house the name *Barbus nico* cropped up and that it was to be found in the area around Habarane. As we had plans to travel in that direction everything fell in with my wishes.

In the immediate vicinity of Habarane we discovered a very interesting biotope with all kinds of fish and plants, but no *Barbus nico*. When we were on the road to Minneriya-Tanks on the morning of the 7th April (by way of Polonnaruwa), about 400 metres past the 37 kilometre marker post, we saw a small area of water on the left. We decided to take a look and from the edge of the road were able to see fish swimming in the water.

Whilst Snijders was fishing with a hand-net I examined the water quality. The temperature was 33°C, pH was 7.6 and the water hardness 16° DH! We would never have guessed that the water would be so hard.

The water was a few metres wide and 40 to 90 centimetres deep. We could see the bottom through the relatively clear, colourless water and a shoal of *Garra ceylonensis* swimming over it. In addition we saw large numbers of *Barbus filamentous*, *Epiplatys danica*, *Rasbora daniconius* and *Danio devario*. *Garra* and *Epiplatys* were easily caught, with the others it was more difficult. The edge of the water was partially overgrown by clumps of

THE ODESSA BARB

grass which trailed below the surface, but we nevertheless managed to net some of the fish as they took refuge in the vegetation. Suddenly I had a small barb in the net which glistened red in the sunlight. We examined it with interest, all the more so as close inspection revealed that there was a black spot on the body. We also observed small black markings in the dorsal fin. As a result we were of the opinion that we were dealing with an ancestor of the "Odessa barb".

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The same spot in July



Some notes on the...

Breeding and rearing of the Peacock Gudgeon (Goby)

(*Taturndina ocellicauda*)
by W. J. Skillcorn/M. Clark

FROM Papua New Guinea, in the area of Popondetta (Safia Creek) comes a rarely obtainable, colourful and small fish. It is commonly called, in American literature, the Peacock Gudgeon. In Britain, we would have described it as a goby.

Gobies are a very much neglected group of fishes, very few of them having made much of an impression on the aquarium world. This is not surprising, as many of the fresh water ones are quite drab, although all are most interesting fish for the specialist, being a challenge to breed and having unusual habits.

In the April of 1983, Tropical Fish Hobbyist magazine featured two articles on the Peacock Gudgeon, *Taturndina ocellicauda*. As luck would have it, a month or two later some of these fish became available from our dealer, Betta Aquaria, in Newcastle-upon-Tyne. They had come from Germany and had been bred there from adults collected from the wild. Being rather expensive, we were only able to purchase three individuals, hoping to obtain a pair. At the

size at which they were offered, about 1½ in. and due to our inexperience with the species, they proved very difficult to sex, as Arend van den Nieuwenhuizen (A&P, March 1984) has found. Adult, mature fish of about 2½ in. are fairly easy to identify, however, as mentioned below.

Soon after installing our three fish in their aquarium, we lost one after it jumped out through a quarter-inch gap in the cover. We were left with two which eventually proved to be males. One of these was quite dominant over the other, which led us to hope that we indeed had a true pair. The dominant male was strongly developed with a deep body and slight cephalic hump. This characteristic is a reliable identification for the male, the head of the female being small and wedge-shaped, swelling out close behind the head in the belly region. The male is altogether more thick-set and dumpy. Our spawnings took place using our dominant male with what we believe to be the only female in the country, kindly loaned to us by the Aquatic Supply Centre in Sunderland, a sister shop of Betta Aquaria. We believe our

spawnings to be the first in Britain.

The overall colour of both sexes is blue-purple, with jagged, vertical bars of red down the sides. There are red streaks in the otherwise blue dorsal and anal fins, and all unpaired fins are edged in yellow. In our fish, as well as those of Crockford (1983), the dorsal and anal fins of the female are edged in black. This may or may not be a reliable dimorphism of the sexes, as it is not mentioned by Richter (1983), nor is it evident in his excellent photographs. It must be said, however, that the photographs presented by Richter to T.F.H. exaggerate the colours considerably, and the photographs by Crockford are much more true to life. The flanks of both spawning fish are yellow, at least in our fish, and not just those of the female as described by Richter. Their overall size is about 2½ in. the male appearing slightly larger, due to his more robust body. The fish are very attractive indeed, and keeping them has proved fairly easy, with only one or two reservations mentioned later.

Our fish were given a 24 in. x 12 in. x 12 in. aquarium to themselves here in school, but they never really settled down due to the continual comings and goings of classes. They are shy, retiring fish. Also, they were reluctant to feed, and went a week or two without feeding at all, despite every food imaginable being offered to them. During the quiet of an extended end of term holiday, however, they fed on whiteworms and frozen blood-worms. Because of this it was decided to move the fish to the home of one of the authors (W.J.S.) for peace and quiet.

They were moved into a small 18 in. x 8 in. x 8 in. aquarium with undergravel filtration, housed on the kitchen windowsill. This received only natural daylight. The temperature was kept down to 22°C as noted in the field by Crockford at Safia Creek. The water in the Washington, Tyne and Wear area is very soft indeed, and



Male Goby with eggs

the overall slightly acidic conditions (pH 6.8) seemed acceptable, even though the natural habitat was recorded by Crockford as 80 p.p.m. and pH 7.6. We were encouraged towards the acid, soft water approach by the success of Richter. We now believe, however, that water quality is fairly irrelevant. There was an abundance of slates and half flowerpots for the fish to retreat under.

However, remember we were still dealing with two males! We waited and waited, but nothing happened. The dominant male displayed beautifully to the other, who did everything he could to escape. After seeing a proven female, however, we were left in no doubt that we had two males.

We had other problems, a huge colony of *Hydra oligactis* had sprung up from some of the live foods, and this occupied the gravel all the way down to the undergravel filter plate (and presumably underneath it too). Paratox (Interpet) caused it to abate slightly, but after a water change it was back. We resorted to hand-picking, and harvested easily fifty a day.

As we were very keen to spawn

the fish, we (J.S. and M.C.) persuaded I. Young of the Aquarist Supply Centre to loan us his female goby. He has had limited success after finding that the fish had spawned in secret. He reared three, which after five months are up to 1½ in. long.

On bringing the female home, the subordinate male was moved to a separate aquarium, and the plastic bag containing the female was placed with the dominant male. He obviously thought it was Christmas! Even though still in the bag, he displayed vigorously to the female through the clear plastic. She was delighted, and in turn spread her fins and moved to be closer to him. She seemed in beautiful condition, with a bright yellow belly region bulging with eggs. The temperature had been adjusted a few days earlier to 24°C.

Two or three hours were spent mixing the water in the bag with that in the aquarium, and eventually the female was released. The male continued to display to the female, even in darkness. By the next afternoon they were both underneath the same piece of slate, a condition which in all our spawnings precedes spawning by about twelve

hours. That night still nothing had happened, but by next morning a crowd of eggs was glued by little threads to the underside of the slate. The female left the nest, but even though she showed considerable interest, the male would not allow her back.

The eggs were very large, about 50 in number (Richter notes 200) and wavered about as the male fanned them with his finnage. He spent a large part of his time upside-down, tending the eggs. As we only had the loan of the female for two weeks, we wanted to attempt another spawning. After three days we moved the egg-laden slate to the end of the tank, closely inspected and followed by the agitated male. Although fully formed larvae could be clearly seen inside the eggs, none showed any sign of hatching. The eggs were separated from the male and partitioned off by means of a very close-fitting piece of glass. As if sulking, the male retired underneath a slate for a day or so, and not even the female could tempt him out.

Only after six days did the larvae hatch out, and they were free swimming only a day later. Before this, babies could be seen spiralling up from the gravel, only to fall back down again. At the same time, in the other part of the aquarium, the pair were preparing to spawn once again. Both fish had been found to accept only live foods, and we used glassworms (*Chaoborus*), bloodworm (*Chironomus*), *Daphnia* and *Tubifex*. They adore newly hatched brine shrimps but would not take prepared foods as suggested by Crockford. Van den Nieuwenhuizen need have no fear—the adult fish are quite capable of taking even large bloodworms.

The second spawning took place exactly a week after the first. (dates so far: 21.11.83, 28.11.83, 18.12.83, 25.12.83, 2.1.84) and was observed in darkness at 1.30 a.m. The female was again thrown out of the nest, and as she seemed

Continued on page 38

Some notes on the breeding and rearing of the Peacock Gudgeon (Goby)

Continued from page 37

to bother the male tending the eggs, she was returned to the Aquatic Supply Centre (date 1.12.83). After six days, one free swimming larva was seen and transferred. All the others (again about 50) were eaten by the male as they hatched, as have all subsequent spawnings left with the male.

Of the original batch of fry, very few casualties occurred. We have about forty-plus which, after two weeks, are one centimetre long and yellow in colour. They are glassily transparent. Although very large to start with, we offered a whole range of fry foods, from prepared Liquifry, *Paramoecium caudata* and the micro-eel *Anguillula aceti*, to the larger ciliate *Spirostomum ambiguum* and newly hatched brine shrimps. It was the latter on which, after a day or two free swimming, they gorged themselves. We continued feeding all the live foods for three or four days, but as all the fry were taking brine shrimps we discontinued the ciliates and worms. However, another problem was now arising. The large quantities of brine shrimps used caused a massive explosion in the surviving population of *Hydra oligactis* in the gravel. Soon they were everywhere, and posed a real threat to our precious fry. At least three or four were taken, and even disposing of the Hydra at the rate of 30 to 40 per day by hand picking, more and more were being produced.

We decided to treat the aquarium with salt, as suggested by Morales and Dempster (1983). It does indeed seem to work. Very gradually, the level of salt in the water has been increased to 2.5 p.p.t. which is roughly 1½ level teaspoons per gallon (9.46 g. salt per gallon,

using the British gallon). After three days of full strength salt as above, the Hydra appear white and quite unwell, with shortened tentacles and body column. They seem unable to feed. The salt has affected only the Hydra—the fish seem to be totally unaffected, even the fry.

The young fish are doing extremely well and at one centimetre are at the stage where they should accept finely chopped *Tubifex* worms. At six weeks of age the young are about two centimetres long and take coarsely chopped *Tubifex* worms, small whiteworms (*Enchytrae*) and, of course, brine shrimp, which is still their most acceptable food. They are now housed in a small 12 in. x 8 in. x 8 in. aquarium with soft water. It is bare except for slates on the bottom and a small internal box filter containing wool and activated carbon. There are several snails present as scavengers. A second aquarium holds spawning No. 3, about 150 individuals—I think a 100% hatch, and so I am pleased to prove Richter accurate in his 200 figure! I (J.S.) have bought the beautiful female used earlier, so now she's mine—all mine!! As a result, I have been able to add considerably to my notes on this species, and to develop a technique for spawning.

The fish spawn like clockwork every week, almost to the hour. Spawning always takes place at night, about 1.30 a.m. The female joins the male 12 to 24 hours before spawning, and leaves immediately afterwards. The pair are always kept together, though. The eggs take at least six days to hatch at 24°C and sometimes seven or eight; they do not hatch altogether. Water quality does not seem critical. Spawning No. 3 mentioned above was in soft water plus 1½ teaspoonsful of salt. I leave the eggs with the male for five days, and then transfer the substrate carrying the eggs to the rearing aquarium, generally 12 in. x 8 in. x 8 in. with filter, but no snails at this stage. I briefly mix the waters for about

10 minutes and then introduce the eggs to the bare aquarium. They hatch over the next three days, and the young are easily reared on brine shrimp, although I do add *Paramoecium* for a day or two to be on the safe side. The fish's colour develops at about five weeks of age when blue bars first become visible.

Apart from spawning activities, the fish are strictly diurnal i.e. they are active only during the day. Both van den Nieuwenhuizen and I have found difficulty in inducing newly acquired fish to feed, and so perhaps this is fairly normal. Once settled in, the female is a real gannet! I have seen her eat eight glassworm larvae at one sitting. In their habits, they are not typical gobies. They do not stick themselves to rocks or the sides of their aquarium, but are free swimming, a favourite position being about an inch or two above the gravel. As I (J.S.) have gained in experience with these charming fish, they have grown on me as perhaps no other fish has.

The Peacock Gudgeon has proved particularly rewarding to spawn and rear, still having the mystique of being something new to the aquarium world in Britain. Their main drawback for some people would be their insistence on live foods, but with only a small amount of effort (the main effort at the moment is obtaining the fish in the first place) their interesting habits and beautiful colouring make all this worthwhile. They are peaceful in community aquaria, but rather shy. As they become more available (probably always in small numbers, though), and as interest in gobies in general increases, we can think of few better fish to occupy a small, rock-strewn aquarium.

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BOOK REVIEWS

Common Names of Tropical Fish, by Peter A. Lewis. Published by Lewis Books, Ohio (1984). Price: £2 including package and posting from Dee Bee Books, 116 Hesketh Lane, Tarleton, Nr. Preston, Lancs.

Dr. Lewis has attempted a most difficult job and has done it extremely well indeed. Common names are often frowned upon because of their limitations—they are only applicable in one language; they can vary from country to country, despite the sharing of a common language; they can even vary from region to region within a single country; they can arise and disappear within a short time, leaving no official trace; and so on. . . .

Yet, despite these (and other) justifiable criticisms, the fact remains that many aquarists have problems handling Latin or Greek words which can mean as little to them as common names do to some ichthyologists.

In addition, the majority of fish-keepers are not ichthyologists. Therefore, as long as this remains so, there will always be a place for the common names of species within the hobby.

Being well aware of this, the author has produced a 62-page book that uses common names as the first point of reference, matching each with its corresponding scientific name (or names, as the case may be).

The result is a useful and interesting collection of over 2,000 names in an easy-to-use alphabetical format which allows the interested reader to follow up any names in greater details should he/she wish to do so.

For example, an Albino *Corydoras* could be either *Corydoras aeneus* or *C. paleatus*. This, in itself, is useful information to anyone not familiar with the fact that there are two species of *Corydoras* available in this form. It is then up to the individual aquarist to check up on either or both of these species for further information.

Several other features elevate this book from the status of a mere list to that of a respectable and welcome addition to the ever-expanding body of reference literature:

1. There is a Glossary of the Greek and Latin roots of generic and specific names, e.g. *Affinis* means Akin to or Related; *Fluviatilis* means Living in Rivers; *Xiphophorus* means Sword Bearer.

2. Each scientific name is followed by a figure in parenthesis denoting the Standard Length of the fish in inches, e.g., Freshwater Stringray—*Potamotrygon laticeps* (48) signifies that this fish can grow up to 48 inches in length.

3. There is a Bibliography of 23 entries.

4. The text was compiled using a computer and filed on a floppy disc making future updates, refinements and improvements both practicable and inexpensive.

In summary, "Common Names of Tropical Fish" is a worthwhile publication which is excellent value for money at the price. Future editions could benefit from the addition of an alphabetical scientific list which would undoubtedly improve the "usability" level even more. Whether this can be done without having to increase the price significantly is, of course, a different matter altogether.

John A. Dawes

Amerikanische Cichliden. 1. Kleine Buntbarsche by Horst Linke and Wolfgang Staack. Published by Tetra Verlag, Postfach 1580, D-4520 Melle, West Germany. Price: DM30 (about £10 in the UK).

This is another beautifully illustrated book from the Tetra stable that is a companion to the volumes on East and West African cichlids already published.

Covering every known species of South American dwarf cichlid in nearly 200 profusely illustrated pages, this book must be obtained by every aquarist. It matters little that the text is in German; the photographs, distribution maps and tables of water analyses for the rivers the fish are found in tell their own story.

After a short general introduction and description of biotopes in South America, the book launches into detailed descriptions of the genera and the species in them. The small *Aequidens* of the *dorsiger* group are the only acaras covered. I would dispute the

author's assumption of the synonymy of *Ae. flautibrus* with *Ae. dorsiger*. After the acaras, the next 130 or so pages are devoted to the genus *Apistogramma*.

This is the greatest section (in all senses of the word) of the book. The photographs, mostly by Horst Linke, are fantastic, and illustrate most described species of *Apistogramma* as well as many that have yet to be named. While mostly males are featured, there are significantly more photos of females of many species than I have seen before published.

Where multiple colour varieties of a species occur, as for instance in *A. agassizi*, all the colour forms are comparatively illustrated.

Each species is also illustrated by a good drawing which points out the species typical distinguishing features; features which many times do not show as well in photographs.

Crenicara is fully covered, with an illustration of a rather curiously coloured, unnamed species from the Upper Amazon at Iquitos, Peru.

Demonstrating how up-to-date the book is, it illustrates the new species, *aureocephalus*, in its coverage of *Nannacara*, this with the familiar *anomala* being the only two valid species available in the hobby.

The name *Papiliochromis* for the ram is used by the authors (in my view correctly), although there is no mention in the discussion on synonymies of the recent claim that *Microgeophagus* should take precedence. Pictures of wild and Far-East farm-bred rams show both to be beautifully coloured despite claims that wild ones are rather poor.

The book closes with the rather curious and extremely beautiful genus *Tamniacara*, never, to my knowledge, seen in this country.

The last few pages are taken up by a chart illustrating comparatively all known forms of *Apistogramma* in good black and white drawings. This is a very useful guide to where to look to identify your fish.

Please, Tetra, can we have an English edition? In the meantime, this one is an essential purchase for all keepers of dwarf cichlids—worth every penny of the approximately £10 it costs.

IAN C. SELLICK



SPOTLIGHT

The CLOWN RASBORA

FEW references can be found in aquarium literature to this cyprinid from the Malay peninsula, Borneo and Sumatra, though it was described for science by Bleeker as long ago as 1850. In point of fact, the species seems to have remained unknown to most hobbyists here until the end of the Second World War. Even then the fish only turned up (on widely separated occasions) in small numbers.

It is probable, however, that the species was known to German aquarists some few years before war broke out. Nonetheless, it is difficult to understand why no mention of it is made in Arnold and Ahl's classic work entitled *Fremdländische Süßwasserfische* (1936) or in *Aquarienkunde* (1943), an excellent collaboration (of its time) between the well-informed Dr. Kurt Kramer and Hugo Weise. Both books were published by Gustav Wenzel and Son of Brunswick, Germany. It is interesting to note that, in the late C. H. Peters' *Life and Love in the Aquarium* (Empire Tropical Fish Import Company, New York City, 1934), and under the heading RASBORA KALOCHROMA, we find the following: 'This supposed form of the maculata, resembles the smaller fish in colour and markings, but exceeds most Rasboras in size, reaching a length of almost four inches... it is extremely rare and not available.' Here it must be stated that, many writers on exotic freshwater fishes mistakenly believed *Rasbora maculata* to be a young form of *R. kalochroma*. Interestingly, Peters pointed out that, at the time of

(*Rasbora kalochroma*)

by Jack Hems

Photo by M. Gilroy

going to press, a Mr. J. L. Gonzales, a resident of New York City, 'has spawned *R. maculata*.' Peters then goes on to inform his readers that those authorities who held *R. kalochroma* to be a mature form of *R. maculata* were wrong.

Be all this as it may, and, coming to the present day, when *R. kalochroma* does come on the market, which it does, now and again, it should be snapped up without delay, for it is possessed of all the qualities, and more, that go to make a desirable community fish. After which it is hardly necessary to stress its most commendable attributes as, for instance, its peaceable nature and its reasonable size: an engaging 3½ in. Its coloration is stunning.

The body is elongated and moderately compressed, tending to thickness on the caudal peduncle. It is olive-green on the back shading to an almost flame-red on the sides grading down to silvery white underparts. The middle and upper parts of the body are overlaid with a violet sheen that comes and goes as the fish moves in and out of bright light. Two blue-black spots adorn the sides: one just behind the gill-cover, the other, twice or thrice its general diameter, above the base of the anal fin. The scales are rather large, with dark edges.

The anterior part of the anal fin is almost in line with the hind portion of the dorsal fin. The twin lobes of the tail-fin are not deeply

forked. All fins are suffused with red or reddish orange. Ordinarily this reddish pigmentation is more apparent in the dorsal and anal fins and at the juncture of the other fins to the body, though near and along the margins the reddish tints give way to translucent blue, sometimes black along the bottom edge of the anal and the leading rays of the dorsal. Young fish are not so wondrously coloured as adults. In well grown fish, the female is fuller in the body than the male.

R. kalochroma is not difficult to satisfy in the way of food: it accepts all small live foods, shredded flesh foods (raw red meat and raw white fish) and dried foods. Two or three small meals a day are enough to maintain its health. The best temperature is one in the middle to upper seventies (°F). The Clown Rasbora or Ember Rasbora—to give the fish its popular names—is an active fish and keeps to the middle and upper levels of the water. It is recommended to introduce several of the species into a tank rather than one or two; for in the wild state it swims in shoals and, like other shoaling cyprinids such as brachydanios, looks best and appears to be most 'at home' when it is moving about in the company of its own kind. Among the plants common to its native waters—non-turbulent streams, shallow lakes, rice paddies, and the like—are various species of the genus *Cryptocoryne*. Because there are so many different species of *cryptocoryne* available today there is no reason why the keen aquarist should not be able to create a most enchant-

SPOTLIGHT



ing and fitting underwater scene. *Vesicularia dubyana* or Java moss—native to Indonesia—looks most attractive growing on some piece of suitable rock. (Non calcareous.)

Water for *R. kalochroma* should be clean, clear and soft, with a pH reaction of about 6.3 to 6.5. Given the right conditions, the life-span of the fish should extend beyond five or six years. Although the fish will spawn in captivity, it is

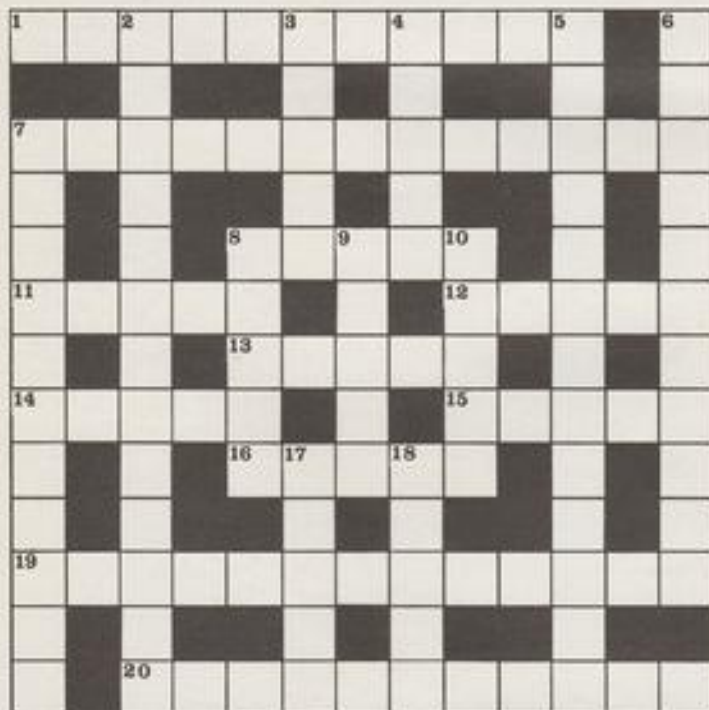
neither a prolific nor ready breeder (hence, I assume, its comparative rarity).

The spawning act is typical of the genus. There is general enhancement of colours and some abdominal distension in the female. This is followed by much driving on the part of the male and further increase in coloration. A sexually aroused male may pick out a single female for attention or else several males will attend one female or even a small group or roe-swollen and excited females. At peak periods of the chase, eggs and milt are released among plants (thickets of cryptocorynes are recommended). The eggs are not strongly adhesive. Spawning con-

tinues over several hours or a few days. Much depends on the size and age of the fish, temperature of the water, condition and colour of the water, and the quantity and sort of food available (feedings of mosquito larvae and *Daphnia* are advised). The eggs hatch and the fry become free-swimming within the space of three or four days. The fry can be fed on newly hatched brine shrimp and miniscule 'worms', later powdered dried food. It is advisable to remove parent fish from their eggs as soon as spawning is over.

All in all, the introduction of *R. kalochroma* into a tank provides a generous bonus of beauty and a constant source of joy.

CROSSWORD *by Isis*



CLUES

- Across:**
1. My pig's plain sticking out of place (11)
 7. If I sat on a siler, egg will develop afterwards (13)
 8. To catch a mackerel? (5)
 11. — barnacle, or Barnacle — (5)
 12. Acara to double a win? (5)
 13. Ocean depth (5)
 14. — form, do-it-yourself time? (2, 3)
 15. Polluted; sounds like a net? (5)
 16. Saline (5)
 19. Ed's larva in bath peace plot (13)
 20. Tail-like shape shown by, eg. female Killis, Bitter, etc. (5, 6)
- Down:**
2. Marine aquarist with doctor (fish) (7, 8)
 3. Coelenterate bud (5)
 4. (Old) The ocean (2, 3)
 5. Name incorrectly applied to *Tilapia rubrolineata*; better for the fryling (6, 7)
 6. Pool cleaners (4, 7)
 7. Banner-waving acara? (4, 7)
 8. Places (5)
 9. — Gramma for example (leaves) (5)
 10. As a fish may find fake food? (5)
 17. — — cirl, French trout (3, 2)
 18. Sublet (5)

Answers on page 48



of the Aquarium

Ovi-ovoviviparity

OVI-OVIVIPARITY is a form of egg-laying (oviparity) found in fish in which the eggs are fertilized internally but are later released by the female after a shorter or longer period of time. (See also Egg-layers—A-Z, June 1983, and Livebearers—A-Z, September 1983). In this way, therefore, ovi-ovoviviparity (delayed egg-laying) may be regarded as being intermediate between straightforward oviparity on the one hand and the two well-known forms of livebearing, ovoviviparity and viviparity, on the other.

Despite being the least common method of reproduction in terms of species, there are nevertheless quite a few well-known fish, and some less-well-known ones, which exhibit ovi-ovoviviparity.

Perhaps the best-known are various species of sharks and rays, very few of which are ever kept in aquaria. Of those that are from time to time, the most common is the Dogfish, *Scyllorhinus canicula* whose eggcases known as Mermaid's Purses, are sometimes found washed up on beaches. Occasionally, developing Dogfish embryos are also exhibited in Public Aquaria.

Horaichthys setnai (Family Horaichthyidae) is a species that has never found its way into the hobby. However, a superficially similar species, *Tomenus gracilis*, has been kept by



Horaichthys setnai

aquarists, albeit rarely. It is, in fact, the only member of the Poeciliidae that exhibits ovi-ovoviviparity, the remainder, e.g. Guppies, Mollies and others, predominantly being ovoviviparous.

In the Characidae, there is also a single delayed egg-laying species. It is the Swordtail Characin, *Corynopoma riisei*, a fascinating and unusual fish which gained some popularity in the past but sadly seems to have disappeared from the hobby over the last 15-20 years.

Among the fish kept on a more-or-less regular basis by aquarists, the only ovi-ovoviviparous species is the single representative of the Family Pantodontidae, the Butterflyfish, *Pantodon buchholzi*, which has been successfully spawned in aquaria.

Somewhat less popular, probably because of its nocturnal and sometimes carnivorous habits, is the Woodcat, *Parauchenipterus inignis*, a 6-inch (15 cm.) Auchenipterid Catfish from the northern parts of South America. Yet, it too exhibits delayed egg-laying and has now been spawned in captivity.

Pencilfishes

PENCILFISHES have been deservedly popular in the aquarium hobby for many years. At first sight, there does not seem to be anything either confusing or controversial about these delightful fish.

However, if one attempts to identify a particular species by delving into more than one aquarium reference book, one quickly begins to get the impression that everything is not quite right with Pencilfish classification. Move outside the aquarium books and into the scientific literature and the situation really begins to get confused.

In most aquarium books, Pencilfish are assigned to the Family Hemiodontidae. However, leading ichthyologists dispute this, placing them instead in the Family Lebiasinidae (thus also invalidating the "old" Family, the Nannostomidae). For fuller treatment of this point, see the entry on Hemiodontidae in A-Z, August 1984.

Although the issue is far from settled, the following classification by

Order: Cypriniformes

Family: Lebiasinidae

Sub-Family: (a) Lebiasininae—contains only two genera with approximately 8 species: *Lebiasina* and *Platybuccina*—neither are kept by aquarists.

(b) Pyrrhulininae—contains a total of around 26 species in five genera and two tribes.

Tribe:

(i) Pyrrhulinini—contains about 18 species in three genera: *Copeina*, *Copella* and *Pyrrhulina*.

(ii) Nannostomini—contains about 8 species in two genera, *Nannostomus* and *Poecilibrycon*.

Nelson (1976) currently commands considerable support:

According to this classification, all the Pencilfishes belong to just the two genera, *Nannostomus* and *Poecilibrycon*. This makes the other "species" sometimes cited, *Nannobrycon*, invalid. However, there is no universal agreement as to how the two valid species may be identified with the result that a species such as the One-lined Pencilfish can appear as *Nannostomus unifasciatus* in one book and as *Poecilibrycon unifasciatus* in another. And the confusion goes even further than this

with the most common "species" of all, the Golden Pencilfish, *N. beckfordi*. There are, at least, three subspecies, *N.b. anomalus*, *N.b. beckfordi* and *N.b. aripirangensis*, but some authorities regard each as a separate species, while others do not. Hybridization, both intentional and accidental, does not help either. It, therefore, seems likely that Pencilfish classification will remain controversial for a long time yet.

Oxygen

OXYGEN is one of the major constituents of air (see also Nitrogen—A-Z, November 1984). The vast majority of organisms asphyxiate if its concentration drops below a critical level. Even anaerobic organisms (those not requiring oxygen for respiration) digest compounds which, themselves, contain oxygen, thus making this element vital for life at all levels, from viruses to whales.

Although oxygen is not a very soluble gas, aquatic organisms have evolved to cope with this. For example, freshwater at 20°C and 100% saturation will only hold 8.8 parts of oxygen in every million parts of water (denoted as 8.8 ppm). If you work this out as a percentage, the result is only 0.00088%. Compare this with 21% oxygen concentration in air and the real magnitude of the difference begins to become apparent.

Taking things a bit further, saltwater holds approximately 20% less oxygen than freshwater at the same temperature saturation.

For example, absolutely pure water (not aquarium freshwater which contains some salts) will hold about 9 ppm of oxygen at 20°C and 100% saturation, but saltwater having the "average" salinity found in marine aquaria (i.e. around 35 parts of salt/1,000 parts of water) will only hold around 7.4 ppm of oxygen at 20°C and 100% saturation.

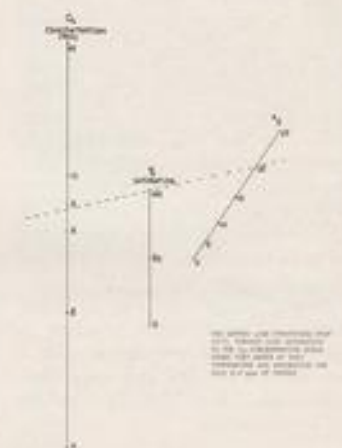
Factors such as these help explain the difference in maximum stocking levels between freshwater and marine aquaria.

However, the story does not end there because the solubility of oxygen is also affected by temperature. All other things being equal, e.g. barometric pressure, an increase in temperature will be accompanied by a decrease in the amount of oxygen that can be carried by water at a particular level of saturation. For instance, at 25°C and 100% saturation, the oxygen concentration in freshwater is around 8.1 ppm (compared with 8.8 ppm at 20°C). Similar conditions, of course, apply for saltwater.

From the aquarist's point of view, this means that the higher the tempera-

ture, the greater the deficit in oxygen availability. Complicating matters further, increased temperature results in an increased demand for oxygen by organisms (see Q10—A-Z, December 1983).

A final point well worth bearing in mind is that the toxicity of ammonia increases as the level of available oxygen decreases.



pH

pH is a value based on the hydrogen ion concentration of a solution. The higher this concentration, the more acidic a solution will be. Conversely, low hydrogen, but high hydroxyl, ion concentrations indicate alkaline conditions.

The pH scale runs from 1 to 14, with the mid-point, 7, indicating neutrality. Values below 7 indicate acidity while those above indicate alkalinity.

Water is a chemical compound made up of hydrogen (H) and Oxygen (O) bonded together in the ratio of 2:1 to give H₂O. When a molecule of water is allowed or made to dissociate, it generates one positive hydrogen ion (H⁺) and one negative hydroxyl ion (OH⁻). (See A-Z, March 1984, for further details on water).

Unlike most other scales, the pH scale is not linear; it is logarithmic. This means that the units are not

equal; they vary by a factor of 10. Therefore, a solution having a pH of 8 is ten times more alkaline than one having a value of 7. A pH of 9 indicates 10 times the alkalinity of pH 8 and 100 times that of pH 7, and so on.

Viewed in this way, it is easy to see how an abrupt change in pH of a single point on the scale can have drastic effects on the health of organisms. Gradual changes are, however, tolerated much more comfortably.

In general terms, most freshwater fish prefer a pH of 7 or slightly under. Notable exceptions, like Rift Valley Cichlids, obviously, exist. In marine aquaria, the pH should be maintained between 8 and 8.3.

Buffering solutions, which are available commercially, prevent sudden changes in pH and should, therefore, be considered a useful part of any aquarium "maintenance kit".

Hydrogen ion concentration affects a wide range of biological and environmental factors. For example, some

Cichlids, such as the Krib, *Pelvicachromis pulcher*, and, at least, a number of Mbuna species, produce a higher proportion of females when the pH is on the high side. Low pH values affect the metabolism of "filter" bacteria. They also increase the solubility of carbon dioxide which could reach toxic levels unless dispersed in some way.



pH levels have an unusual effect on the sex ratios of several species, including the Krib, *Pelvicachromis pulcher*.

Tomorrow's AQUARIST



ANTHONY HUGHES—A 16-YEAR-OLD PRIZEWINNING AQUARIST FROM BRISTOL

LAST November's *Tomorrow's Aquarist* featured the under-sixteen prizewinners at the Bristol Aquarists' Society Coldwater Fish Show which had been held a few months earlier. Among the winners was Anthony Hughes (then aged 15) of 61 Queen's Road, Cadbury Heath, Bristol, who won Second Prizes in the London Shubunkin, Koi and Junior Classes.

That was our first contact with this exceptionally good, young fishkeeper. Since then, we have renewed our acquaintance on a number of occasions, notably, the Nailsea and District A.S. Open Show in June when our Consultant Editor, John Dawes, officiated at the prizegiving and presented Anthony with another batch of well-earned awards.

The third chapter in the story was written at this year's Bristol Aquarists' Society Coldwater Fish Show where Anthony lifted his most prestigious prize yet, First in Class 35—Koi not exceeding 9 inches body limit.

What is particularly impressive about Anthony's achievement this year is that he won his prize at a Show which is recognised nationwide as being among the very best of coldwater events in the fishkeeping calendar. This means that competition is always of the highest order with the best breeders and keepers of coldwater fish in the country exhibiting their top specimens in a mind-boggling display of exceptional fish. (Incidentally, if you have never been to the Bristol A.S. Coldwater Show before, make a special note somewhere to remind you to do so next September—look out for the date in the summer issues of *Aquarist and Pondkeeper*.)

In addition to the Bristol First Prize, Anthony has won eight others since he started showing fish in mid-1981:—

| Show | Date | Class | Winning Fish |
|------------------------------|------------|-------------------------|-------------------|
| North Avon A.S. | May 1982 | Junior | Common Goldfish |
| Weston-super-Mare A.S. | July 1982 | Junior | Common Goldfish |
| Newbury & District A.S. | Oct. 1982 | Shubunkins | London Shubunkin |
| Bristol A.S. (Table Show) | 1982 | Junior A.V. Goldfish | Common Goldfish |
| Cheltenham A.S. | Sept. 1982 | Shubunkins | Bristol Shubunkin |
| Bristol A.S. (Table Show) | 1983 | Junior A.V. Goldfish | Common Goldfish |
| Newbury & District A.S. | Oct. 1983 | Shubunkins | London Shubunkin |
| Nailsea & District A.S. | June 1984 | A.V. Koi | Golden Ohgon |



Anthony photographed at the B.A.S. show in September

Other prizes won so far are ten Seconds, six Thirds and five Fourths at Shows ranging from Cheltenham down to Plymouth, making a grand total of thirty awards in three years. It must be remembered that, unlike tropical hobbyists, coldwater enthusiasts have a much shorter showing season which stretches roughly from May to October. Consequently, there are relatively fewer opportunities to win trophies and awards. Thirty wins, therefore, represent quite a remarkable feat.

Anthony started keeping fish in 1979 when he won a Common Goldfish at a fair by throwing ping-pong balls into a jar. As so often happens in such cases, his fish died within half an hour. Even so, this did not put him off the idea of keeping fish as a hobby. Soon he had persuaded his mother to buy a replacement, along with a traditional bowl. Six months later, he "graduated" to his first aquarium and hasn't looked back since. The first small tank was followed by two 3 ft. ones and, ultimately, by a 1,000-gallon pond which has a shallow (1 ft.) and a deep end (3 ft.) and contains Koi, London and Bristol Shubunkins, variously-coloured Common Goldfish and a wide selection of pond plants.

Things may be quiet at the moment as Anthony's fish "sleep away" the winter months. However, it won't be long before plans are put into effect for the forthcoming coldwater season. We wish Anthony the very best of luck and continued success with his fish in 1985 and look forward to meeting him again on the winners' rostrum.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★
**HAPPY CHRISTMAS TO ALL
 TOMORROW'S AQUARIST
 READERS: SEE YOU IN 1985!**

WHAT IS YOUR OPINION?



by B. Whiteside,
B.A., A.C.P.
'Photographs by the Author'

THE 30th September finds me at my typewriter again on the day on which water restrictions have, at last, been lifted in the area in which I live. I may now use my garden hose again—although the return of the rain that caused the removal of the all-night water cut-off also makes it unnecessary to water gardens now. I fed my lawns early in September and the combination of water, food and warmth has made an amazing improvement to my burnt lawns. Grass is now growing over many of the previously-bare patches.

Mr. Mark Gill lives at 15 Upavon Close, Castle Vale, Birmingham, and he writes: "In the September issue you asked for readers' opinions on feeding oscars, so I have taken this opportunity to write my first letter to you. In the four years that I have been keeping tropical fish I have kept oscars on four occasions. All the oscars that I have purchased—nine in all—have always been small, so more or less untrained in feeding. At the moment I have four 1½ in. tiger oscars in my 36 in. × 15 in. × 12 in. tank. Of all the oscars that I have kept I have never been able to get them to eat flaked foods; even the very expensive cichlid flake is spat out; so in my opinion flake food is useless for oscars.

"When they're very young I feed my oscars on small, thin earthworms

chopped into bite-sized pieces. Frozen gamma-ray-irradiated foods are excellent. The four oscars that I have at present are fed regularly on frozen bloodworms and lancefish (?). The latter of the two are quite large and so are also chopped up, just like the earthworms. When the oscars reach about 3 in. they are able to eat cichlid pellets—which then form the main food for the ever-growing oscars. At this size, smaller foods are useless to the fish; chunky foods are needed: such as longer, fatter earthworms; and meaty foods, such as raw steak, chopped up and refrigerated. On these foods the oscars grow very quickly. Once, one of my previously-kept oscars grew from 1½ in. to 5½ in. in just five months. I do not believe in feeding live bloodworms and *Tubifex* to any of my fish. These foods come from filthy water and are full of disease organisms. I once lost three oscars after feeding them on such live foods. I am convinced that the food gave them a bacterial disease as they became covered in a pure white fluff. I have never lost any other fish in this way, simply because I've only ever fed those three oscars on such live food; so, in my opinion such live foods are dangerous if you don't know how to prepare them.

"Anyway, I don't believe there is any need to feed such live foods when gamma-ray-irradiated foods are available, because my oscars go mad over these foods. Lastly, may I just say how interesting oscars are and how intelligent they seem to be? I would advise anyone who has never kept them to try and do so. I am going to transfer my oscars into my 60 in. × 12 in. × 19 in. tank as soon as they reach about 3 in. in length. I hope that my letter has been of some interest, and I hope to write again to let you know how my oscars are getting on."

I shall pause here and take the opportunity to wish all of my readers a happy Christmas and a bright, peaceful and prosperous new year. In particular I should like to thank everyone who has written to me in 1984—especially the majority whose

letters did not appear in print because of the lack of space. I must also thank several people on the selling side of the hobby. Dr. Neville Carrington, of Interpet, always keeps me abreast of the latest developments in his thriving company; and he may well have been contributing to this column for longer than anyone else. Mr. Ray Field—and his wife Gwenne and son Stephen—invited me to spend a most delightful day at their establishment in Sandy, Beds., photographing their kol. I've just sent them some A4-sized coloured enlargements which look very well. I hope to return to Avenue Fisheries again to visit them.

I'm looking forward to my next but one column—for the February 1985 issue—which will mark my 21st year as a regular contributor to *The Aquarist & Pondkeeper*. I wonder how many words and photographs I've pounded/printed out during those 21 years.

I've just finished cutting my lawns (6th October) and was surprised to discover that three primrose plants in my garden are in bloom; and as well as good crops of roses and pansies there's a beautiful drift of white flowers on my old Russian vine. Less pleasing was to discover, last night, that seven out of eight neons that share their tank with eight golden barbs have died from some nasty disease. I assume it's neon disease because the barbs are in perfect health. The galling part is that nothing new has been added to the tank for well over a year. I assume the disease has been lurking, ready to strike, for all that time.

Mr. Robert Knowles resides at 916 Warwick Road, Acocks Green, Birmingham. He writes: "In the August issue you asked for readers' opinions about small catfish. I had an unusual experience the other night with an upside down catfish, *Synodontis nigriventris*. I had rearranged the furnishings in one of my tanks which contained mainly guppies and other small fish, including the upside down catfish. In the tank there was a mass of Java moss, so I broke off

THE AQUARIST



Egeria densa

about half of this and left it lying on the cover glass of the tank. This was in the afternoon about 3.00 p.m. About 10.30 p.m. that night I went back to the tank to switch off the lights and noticed the Java moss had dried out and flattened itself; and there in the centre was a very dry catfish; but it did flicker slightly when I lifted up the hood. Immediately I put the fish back into the tank where it floated head up on the surface with its gills barely moving.

"Next morning I found that the fish had disappeared and I found it hiding under a flowerpot, none the worse for wear. Two weeks after the incident the fish has lost half its tail and its back seems to have gone a much lighter colour, whilst its head has remained the same dark shade as before.

"On the subject of Java moss, I find no difficulty in growing it in my tanks; and after switching heater and lights off in tanks, often for months I have found that that mass begins growing again soon after the heaters

have been switched on. I have also dried Java moss out completely and after replacing it in water it has grown again."

My thanks to the Association of Aquarists for sending me a copy of their magazine. I'm still not sure about the reasons for the existence of the Association.

"May I first congratulate you on your 60th anniversary," writes Mr. Melvin Cooper, of 5 Union Street, Trecynon, Aberdare, Mid-Glam. He continues: "Well done! Keep it up." Mr. Cooper goes on to say: "I first wrote to you early in 1984 when I had just set up a 36 in. tank after a lapse of eight years. Well, I have recently set up a 48 in. tank. At first my wife had the say as to what fish occupied this tank. They consisted of five pearl gouramies, five angelfish, three scissorstails and three giant danios. To satisfy my craving for the slightly unusual in catfish, we travelled to Thames View Aquarium in Windsor—a trip that proved very worthwhile. We purchased one *Synodontis nigris* and another species of *Synodontis* the name of which I lost. It is large and a smokey-grey colour all over. Any ideas? The choice of catfish was unbelievable and the advice given invaluable.

"My 36 in. tank has now become the home of two red oscars. When bought they were only an inch long; two months later they are about 5 in. long. They have been fed on a diet of earthworms, raw chopped bacon, beef and liver. For convenience I freeze down the chopped liver in the ice cube trays of the freezer. These are then thawed as needed—quickly and easily. However, a major problem has arisen with the oscars: they fight like dog and cat. There are no other fish in the tank except for the *nigris* and a few *Corydoras*. I have had to partition off the oscars for now. I hope they will mellow as they grow.

"Well, I'd better sign off now—but before doing so I'd like to contradict your recent article on the clown loach. Mine is 4 in. long, never hides away, is first to the top of the tank for food, and swims around

with the giant danios." (I don't think the article was mine, Mr. Cooper. I have two very large and elderly clown loaches and they are very tame. They love food tablets and grab any put into the gourami tank that they share. They are quite the noisiest eaters I've ever kept. They suck and blow at the water surface and chew away noisily. Visiting aquarists—especially teenagers—always ask to see the clowns if they've seen my fish previously. They are a most attractive pair. B.W.)

Photograph 1 shows *Egeria densa*, a plant popular with tropical and coldwater aquarium keepers. Please drop me a line giving me details of your experiences with this useful species. Photograph 2 is of a convict cichlid. Please let me know of your experiences with it or any other large cichlids.

I've had super service out of my Zoobeko air pump over many years. All it has required has been occasional new diaphragms and valves—as well as new air filters (which I cut from ordinary felt). About a year ago an unfortunate accident caused water to back siphon into my pump when I was out. Subsequently I got the pump cleared and dried out and it worked perfectly well again; however, the water has finally taken its toll: the iron core has rusted and the coil has burnt out. I attempted to repair the fine wire on the coil—which was probably quite foolish—but it was never intended to be repaired; so I've sent off to Hillside Aquatics for a new coil and magnet/core. The metal-cased Zoobeko is still, by far, my favourite pump.

I must apologise to the many people who have been writing to me and whose letters have not been used. Sadly, the instructions I received some months ago to cut down the length of W.Y.O. means that I use many fewer letters than previously. I get through only two or three per month, although I receive many more. Perhaps I should cut down the number of topics posed at the end of this feature each month.

My thanks to the North Avon



Convict Cichlid

Aquarist Show for the copy of their programme. The nearest I've been to Bristol was Bath—which I visited some weeks ago. I hope the show was a big success. Thanks also go to the Anabantoid Association of Great Britain for the copy of their magazine *Labyrinth*. It's interesting to note that Mr. John Dawes is the Hon. President, and Drs. C. Andrews and R. J. Goldstein the Hon. Vice Presidents.

For a future feature please send me details of (a) any experience you have had with the treatment of fish diseases using antibiotics obtained from a vet; and (b) providing aquarium plants with addition plant foods—in liquid or solid form.

Hope you have a smashing Christmas and all you wish for in 1985. Please drop me a line. Good-bye until next month.

Answers to Crossword

- | Across: | Down: |
|-------------------|--------------------|
| 1. Misapplying | 2. Surgeon Keeper |
| 7. Fertilisation | 3. Polyp |
| 8. Spear | 4. Ye Sea |
| 11. Goose | 5. Otolina cichlid |
| 12. Awani | 6. Pond filters |
| 13. Abyss | 7. Flag cichlid |
| 14. Ex Kit | 8. Seam |
| 15. Taint | 9. Royal |
| 16. Salty | 10. Tasty |
| 19. Leptocephalus | 17. Arc-en |
| 20. Round caudal | 18. Topic |

Coldwater Jottings by Frank W. Orme

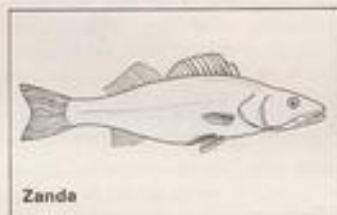
The West Midlands evening newspaper, *The Birmingham Evening Mail*, carried a number of "fishy reports" during the late summer months. On the 9th August Steve Pearce wrote: "Travelling fairs which offer goldfish as prizes are to be banned in parts of Warwickshire under a new crackdown sparked off by animal rights campaigners. The ban will cover all fairgrounds in Nuneaton and Bedworth and follows a recent decision to outlaw circuses which use performing animals in their acts."

"Members of the borough council's recreation and amenities committee agreed to end the fairground custom of giving away goldfish. In future, no travelling fair which abuses the fish will be allowed to use council-owned land. A local RSPCA official commented: 'This is marvellous news. Goldfish have been abused and degraded over many years. They have been given away like bags of sweets for far too long. The fairground operators are there to make as much money as possible, and they see goldfish as a cheap means of achieving that aim.'"

An item appeared on the 28th of August in which it was stated that the North Wales police had warned people to be careful when buying fish after poachers had slaughtered hundreds with poison at Rhuddlan, near Rhyl.

Stizostedion lucioperca is more commonly known as the Zander; it is a ferocious fish which can reach a length of around 20 inches and kills other fish for the sheer love of killing, and not to appease a hunger. Since its release by the Ouse Water Authority in 1960, many anglers, conservationists and water authorities have viewed the spread of the fish with some alarm. However, writing in the *Evening Mail*

on the 27th of August, Norman Worth, the angling correspondent, appeared to take a different view of the fish—for he wrote: "Mention the word Zander to most West Midland anglers and they will probably go, if you will pardon the pun, a little grey around the gills. If there is more than one present they would almost certainly start a voluble conversation about the evils of the Zander and the damage they cause."



Zanda

"The Zander is quite common in European waters and really not all that uncommon in some of our fresh waters. They were first introduced here late last century into some pools and lakes. Now some English anglers regard them as killers. It's a strange attitude to take because on the continent they are known as fine fighting fish, excellent to eat, and there is little evidence that they upset any fisheries balance there."

"Why then this hot under the collar attitude? Well, they are usually a stillwater fish which, unfortunately, were released into eastern river systems as a fishery experiment. Within a few years they had a population explosion particularly in the massive relief channel. This also coincided with a decline in bream and roach there. Hence their fearful reputation—which is not altogether unfounded, though the Zander feed mainly on small fish."

"So why the present storm of apprehension among Midland anglers? The problem is that some rather

foolish anglers have had a go at illegally stocking West Midland waters with the Zander."

"Zander are now in strength at Combe Abbey Lake, Near Coventry, where I should think they find ideal feeding and breeding conditions. My records show that nearly 100 have been caught from the Avon from places as far apart as Warwick, Stratford, Welford, Harvington, Evesham, Fladbury, Pershore, Strensham and Tewkesbury. The Severn-Trent Water Authority are concerned about the Zander. Anglers catching any are asked to take them home, freeze them, and call the Water Authority who will send an inspector to collect them."

Another item appeared under the headline "Warning to farmers not to poison fish." Readers were informed that Staffordshire farmers had been warned not to poison rivers or streams with highly toxic slurry or silage alcohol which could kill fish by the thousands.

A scientist with the Severn Trent Water Authority explained that alcohol from silos was one of the most lethal substances known to aquatic life and could wipe out fish stocks and wildlife. Because of hard ground during the drought heavy rain would run into watercourses to turn rivers into death traps for fish. Earlier in the year, 250,000 gallons of slurry seeped into a Staffordshire waterway and killed 5,000 fish. The slurry and alcohol remove oxygen from the water and farmers could be fined and ordered to restock areas where fish had died.

With the rapid approach of the year's end, I wish all readers and editorial staff of this magazine an enjoyable Christmas and good health and fortune for 1985.

We have to report with regret that shortly after the above article was prepared for this issue, we received the sad news that Frank Orme had passed away on October 18th.

It is hoped to publish an obituary notice in our next issue.

THE BASIS OF FISH HEALTH

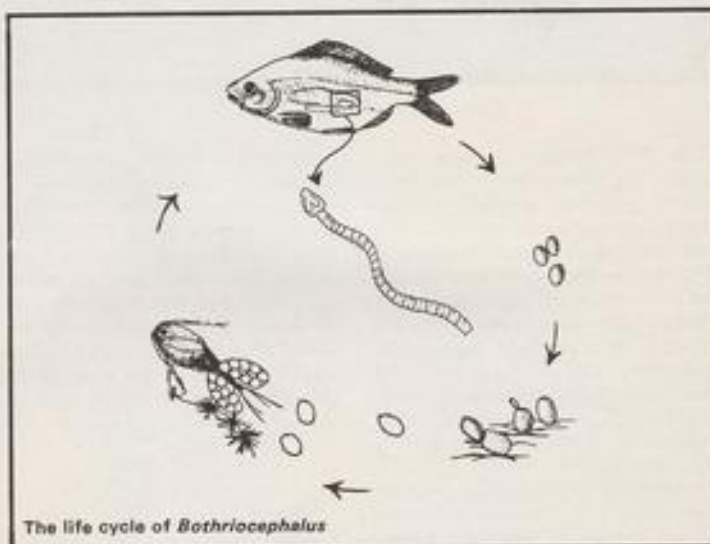
The Grass Carp tapeworm

by 'Mayfly'

The genus *Bothriocephalus* contains many species of intestinal parasitic worms, most of which occur in marine fish. One, however which is widespread and important in freshwater, is *Bothriocephalus acheilognathi*, also known as *B. gotschongensis*. *B. acheilognathi* is often called the grass carp tapeworm but it occurs in many species of carps and other cyprinid fishes, including the grass carp (*Ctenopharyngodon idella*), common carp, (*Cyprinus carpio*), Chinese silver carp (*Hypophthalmichthys molitrix*), the golden shiner (*Notemigonus crysoleucas*) and fathead minnow (*Pimephales promelas*) as well as species of *Barbus*, *Tinca* and *Rutilus*.

This tapeworm has a wide geographical range and has been recorded from Japan, western Europe, U.K., U.S.A., Canada, Egypt, China, U.S.S.R., Israel, and S. Africa. It is known to have been imported from the River Amur region and China into the Ukraine and other regions of the U.S.S.R. and there is considerable evidence that it has reached its present wide distribution as a result of movement of infected fish especially grass carp *Ctenopharyngodon idella*.

In Britain it was first reported in the literature in 1978 and since then has been recorded on several occasions from many areas of the country including Yorkshire, the Thames Valley and the West Country. One of the early authenticated cases in Britain was in 1979 in carp which were descendants of fish imported (before the Ministry of Agriculture, Fisheries and Food restriction on imported fish) from Europe in 1972 and 1973. In S. Africa the parasite appeared after the importation of silver carp from Israel and



grass carp from Germany for culture programmes which aimed to produce fish for control of the water hyacinth (*Eichornia* sp.) and other plants which were becoming a nuisance in water ways.

The tapeworm has a milky white, semi-transparent body, usually between 3 and 8 cm long with a maximum width of about 0.5-1.2 cm. At the front can be distinguished the elongated head (or scolex) with two shallow sucking grooves which are the organs of attachment (bothria). Behind the typically heart-shaped head extends the ribbon-like body, made up of segments. In this species the anterior segments are slightly broader than long, whereas the mature (i.e. those segments further from the head) are more or less square and the gravid segments, near the hind end of the body, are longer than broad. When fully extended the worm has slightly corrugated or frilled sides. Tapeworms are highly modified for their life within the body of their hosts and lack all those structures and functions associated with life in the outside world—they do not have eyes

or other sense organs, and they can only make very limited movements. They do not have a mouth or any sign of a gut, but again this is hardly necessary as they lie bathed in the semi-digested food of the host and they absorb their nutrients over their entire surface. A very characteristic feature of the grass carp tapeworm is the appearance of the segments, each of which contains a double set of reproductive organs. As in all tapeworms each segment is fully equipped with male and female organs—a necessary adaptation for endoparasites which may live a solitary existence within the body of their host. In the solitary state fertilisation of eggs of one segment can be undertaken by sperm from another. In the oldest segments at the back of the worm the fertilised eggs develop into embryos, each contained within an eggshell. These pass out of the infected fish with the faeces into the water of the lake, pond or tank.

When the eggs are shed the cilia (hair like projections) of the larvae can be seen moving within the shell and the six larval hooks can also be seen. Eggs

have an operculum, or lid, at one end through which the larva escapes and swims in the water. Its first host is a species of the genus *Cyclops*, or a member of a related genus. These are planktonic crustaceans and are common in ponds and lakes. They contract the parasite in their food. The larva penetrates the intestinal wall and takes up a position in the body cavity where it forms a small, elongate proceroid larva. The second host (the fish) becomes infected by feeding on infected *Cyclops*, the proceroid attaching to the gut wall and rapidly growing to maturity—according to some authorities sexual maturity is achieved after 20 to 25 days (depending on temperature) after which the worm begins to lay eggs.

In the light of what is known of the cycle it is not surprising that tapeworm problems are usually associated with first year carp in farms—it is during the first summer when young carp are particularly dependent on planktonic food. This is precisely the period during which the maximum invasions occur and when many fish losses happen. Later in the year, when the fish begin to feed more on the bottom, the losses due to tapeworm become less.

Many infected fish only contain a single worm but heavy infections do occur, and instances have been recorded of hundreds of worms in a single fish. In one Chinese outbreak

it was reported that the total mass of tapeworm in the gut exceeded the body weight in many fish. The number of fish infected in a population is also very variable; on some occasions workers have reported low levels (3%) while on others 100% infection levels are found.

The effects of the parasite can lead to severe emaciation, reduced growth and high levels of mortality. In other recorded instances no marked pathogenic effects have been noticed. The highest mortalities have been seen in German pond hatcheries where mortalities have reached 100%, and also in Chinese fish farms very heavy losses were reported, but there are some suggestions that pathogenic effects and mortalities also occur in natural conditions. The pathology in heavy infections includes intestinal blockage, inflammation and even perforation. Most of the tissue damage is associated with the attachment site where each of the bothria engulf one or two of the small folds on the inside of the gut wall. This results in some mechanical damage and local haemorrhages. Severe distension of the gut can occur and can sometimes be seen as an enlargement of the abdomen so that it is possible to distinguish infected fish without dissection.

Measures taken to control the grass carp tapeworm include the destruction of the infected stock—and when the fish are small and of relatively low value

this is obviously the most sure method. For larger, more valuable individuals, particularly brood stock, a range of drugs are available which will destroy the worm without damage to the host. (These drugs are referred to as anthelmintics.) Control of the crustacean intermediate host using an insecticide can be undertaken but a more sure method is to empty the pond and leave it dry over winter or at least for some time. Fortunately the eggs are susceptible to low temperatures and die rapidly at 2-7°C. If ponds cannot be left for a long period, disinfectants can be used—quicklime, sodium hydroxide and teepol, or iodine-based compounds. Dosages of these will be given in a later article entitled 'treatments'.

It is likely that a pretty constant supply of *Bothriocephalus* is being maintained by imported koi and other cyprinids. We have seen several infected imported stocks this season alone. Every effort must be made to control its spread as it presents a certain threat to the culture of fish and a likely threat to our wild stocks of cyprinids. The very fact that it has a low level of specificity as regards intermediate hosts (it can occur in many species of copepod) and definitive host (it can occur in many species of fish) and has a proven ability to reproduce in temperate regions suggest it is capable of becoming a permanent problem in the British Isles.

OSCAR

G. Robinson

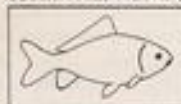


Meet the Societies



SOUTH PARK AQUATIC STUDY SOCIETY

SOUTH PARK AQUATIC



STUDY SOCIETY
The S.P.A.S.S.
newsletter emblem



The common goldfish,
Carassius auratus

S.P.A.S.S. can trace its roots back to the 1960's when enthusiasts used to get together at the late Ron Dudley's house on Sunday mornings for informal discussions on the coldwater hobby. These sessions became so popular that the decision was taken to form a coldwater Society and look for a new and larger venue. As an enduring gesture to the Dudleys, the name of their road was given to the new Society.

G.S.G.B. Standards were adopted straightaway and have been maintained from the first competitive venture, an Invitation Show, to the present day. The first Invitation Show proved very successful and quickly expanded into an annual Open Show held every June.

A special feature of this event is the auction of coldwater fish which takes place while judging is underway.

For a number of years, S.P.A.S.S. held joint Shows with Kingston & District A.S., the latter being responsible for arranging the tropical side.

Another early association was a series of quarterly Shows between S.P.A.S.S. and five other Societies from South London. Unfortunately, some of those Societies no longer exist. For the past 15 years, there has also been an Interclub Show between S.P.A.S.S. and the Isle-of-Wight A.S.

In addition, there is a full programme of outside activities, including exhibitions, pond hunts, aquatic insect identification sessions, visits to members' houses and trips to Open Shows.

Among the interesting in-house projects organised some time ago was one involving the distribution of two young Common Goldfish to all members with the directive to rear them for a year, recording their methods as they went along. At the end, this made for much interesting discussion. In fact, two of these fish went on to win major Open Show Awards.

Space prevents us from giving details of any other activities. However, they are numerous enough and varied enough to cater for virtually every need.

Meetings are held every third Tuesday at Wimbledon Community Centre, St. George's Road, starting at 8.00 p.m. Subscription rates: Adults, £2.50; Juniors, £1.00.

Apply to: Mrs. M. Dudley, 163 South Park Road, Wimbledon, SW19 8RX. Tel: 01-540 5662.

STAVELEY AND DISTRICT AQUARIST SOCIETY



The S. & D.A.S. badge



The Angel

DESPITE continuing stories of gloom and doom concerning everything from the state of the economy to that of some aspects of the hobby, new Aquatic Societies are regularly being formed in all parts of the country. These new Societies are not only coming into existence, but most appear to be thriving even after the initial (and inevitable) flush of excitement has begun to subside.

One such Society is the Staveley & District Aquarist Society which was formed in 1982 by a small group of dedicated aquarists who wanted to move away from the more formal approach adopted by most other similar organisations. The result is a Society which is run (quote) "like a family where everyone mixes together". Apparently, this works very well with meetings being held twice monthly, something that would be out of the question if grass-roots support was lacking.

The venue for these meetings (which take place every other Friday) is the Middlecroft Leisure Centre, Staveley, Nr. Chesterfield.

While maintaining a casual approach at these get-togethers, S. & D.A.S., nevertheless, provides a programme of activities designed to inform or get discussions going on a wide range of aquatic subjects. Talks, slide shows and structured lectures by seasoned members or prominent visiting speakers are, therefore, regular features at meetings.

In addition, there are visits to Fish Farms or other large aquatic establishments at least one Sunday in every month.

Other monthly activities include Table Shows that lead to end-of-year trophies which are kept for the following 12 months by the winners. These long-running events are also open to juniors via three competitive Junior Shows held over the year. Members also compete for a Pairs Trophy (Livebearers and Egglayers) and a Breeders Six award.

These two last areas of activity, obviously, lead to a surplus of fish and these are auctioned every quarter, thus helping the Society's funds.

The first Open Show (held under Y.A.A.S. rules) was successfully held last June and will now be repeated annually.

Subscription rates: Family, £7.00; Single, £4.50; Juniors and O.A.P's, 10p per meeting.

Apply to: Mrs. C. Yates, 4 North Road, Clowne, Staveley, Chesterfield, Derbyshire S43 4PG.