

# The Aquarist

and Pondkeeper

MAY, 1962



MONTHLY  
Vol. XXVII No. 2

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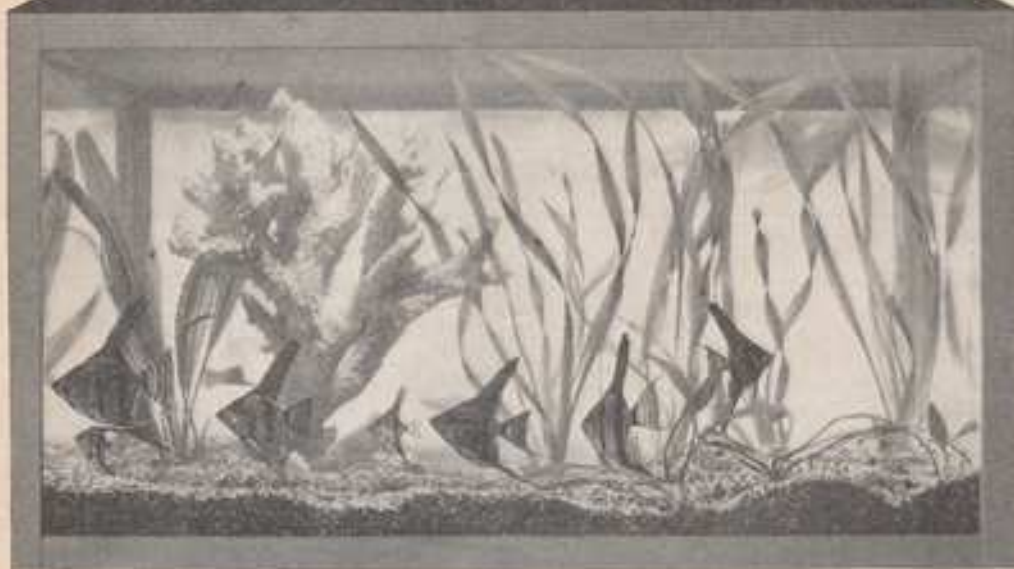
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# The AQUARIST AND PONDKEEPER

Founded in 1924 as "The Amateur Aquarist"



THE BUTTS, HALF ACRE, BRENTFORD,  
MIDDLESEX

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PUBLISHED MONTHLY

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The Editor accepts no responsibility for views expressed by contributors.

VOL. XXVII No. 2

1962

## Editorial

A REAL short cut for beginners to aquarium-keeping has been announced from the U.S.A. In New York it is now possible to obtain an 'Instant Fish' package, and a tiny plastic aquarium, for a little over a pound. With these comes a packet of 'Instant Shrimp', a title that knowing aquarists may recognise as one describing the familiar brine-shrimp eggs. They are used to feed the fish that hatch, within 24 hours or so, from the eggs in the 'Instant Fish' packet when these are added to water in the aquarium. Again, knowing aquarists may guess that these are eggs of fishes of the cyprinodont group, the 'top minnows', which under natural conditions can survive near-desiccation until the rain arrives. It has not been claimed that Instant Water Plants are also available with this latest addition to American toy shops, but perhaps something on the lines of the Japanese 'flowers' that open in water will be developed; alternatively, spores of thread algae could be incorporated into the magic packets. And, of course, provision of Instant Water is another problem yet to be solved.

Instant fish of another kind have apparently caused trouble for a Loughborough hotel. The hotelier's scheme is to provide 'instant trout' for diners by keeping trout with his goldfish in the hotel's pond; the trout are to be served really fresh, in fact within 10 minutes of an order for them being given. This is reported to have brought an instant emotional protest from an inspector of the R.S.P.C.A., who is quoted as saying: "I think this is a callous and gruesome idea. Trout should have large stretches of water and I for one would not fancy eating a fish 10 minutes after I had seen it swimming around." Just, of course, as callous and gruesome as the keeping of poultry and rabbits for table purposes, and as lovers of instant trout we wish this pond-keeping hotel instant success and popularity. And long may the troubled inspector enjoy his fishmonger's wares without qualms about the way his meal met (unseen) its (not instant) death in a trawler's hold.

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## The Turkey Fish

by JOHN BOURSOT

IN the older works on fishes, and in a few modern literary pieces seeking to distinguish their pages by the ill-advised absence of photographs, the reader is regaled by engravings and drawings of the species quoted in the text. Remarkable though these figures are in depicting the general appearance of a given species, they are all too often wanting in accuracy. Accompanying this article is a photograph of a pen and ink drawing of *Pterois volitans* done from a living specimen by the young artist Mr. Guzman. Not only has Mr. Guzman unerringly transferred every detail of the fish to paper with the most painstaking care, but he has so faithfully captured the fish's expression that it could not be mistaken for any other turkey fish than mine. Although the name lion fish is now indelibly stamped on the minds of most aquarists, and tiger fish, zebra fish, butterfly cod, scorpion fish, rock fish and cobra fish are apt in that they refer to some particular aspect of the fish or its environment, turkey fish somehow seems the most fitting.

The turkey fish ranges from Polynesia through the Malay Archipelago and the Indian Ocean to the east coast of Africa, and up into the Red Sea. The fish is a member of the family Scorpaenidae, which embraces several hundred, mostly ovoviviparous, species widely distributed in temperate seas, with a scattering in the tropics.

A fish of such bizarre appearance as the turkey fish might easily lead the aquarist to suspect it of being delicate and unsuitable for aquarium life. Fortunately, the reverse is true. It is hardy and temperamentally well suited to aquarium life, and is by no means so demanding and finicky as some aquarists think. An aquarium of 43 gallons will accommodate a full-grown turkey fish. A thin film of sand should cover the bottom. Rocks and coral should be freely used, and so arranged as to allow plenty of swimming room for the fish's enormous pectorals to pass without touching. A subdued light will avoid the danger of blindness. Aeration is necessary, and may be turned on from 9 a.m. to 12 midday, and from 3 p.m. to 10 p.m. A filter is probably beneficial. After a year or more the filter unit on my tank went out of order, and remained so until the tank was completely dismantled 13 months later before moving. At the new address the tank was set up afresh with new sea water and the re-habituated filter. There was no appreciable difference in the turkey fish's behaviour during the time without a filter. However, a filter can do no harm, and may be run for the same number of hours as the air pump. The constant use of a power filter, sometimes turned on and off by a clock at regular intervals day and night, to remove the



Turkey fish or lion fish

sediment and sloughed bits of skin stirred up in the ensuing current, is often, and quite erroneously, considered essential for the successful maintenance of *Pterois*. Such treatment is most disturbing to the fish and quite unnatural. No animal or plant enjoys a minor hurricane in its environment at set periods day and night for the rest of its life.

In the aquarium the young *Pterois* grows rapidly. From an exquisitely detailed miniature of the adult, the baby *Pterois*, frailly beautiful and glass-like, soon becomes a sturdy creature a foot long, with massive head and mailed cheek. Magnificently proud, overwhelmingly spectacular, it is fearless, calm and deadly.

The pattern of the turkey fish is extremely complicated, and requires a subtler pen than mine to do it justice. Hence, I shall content myself with a few remarks. Ivory and brown bars of varying width and intensity streak and band the fish from nose to tail. A few immaculately white dots embellish the lateral line and the base of the pectorals, and may be mistaken for parasites by the newcomer. The huge pectorals, as graceful as ostrich plumes, are brown with deeper tones in bases and patches, and become handsomely suffused with rich smokey-blue in a matter of seconds when the fish is provoked. On the hinder part

of the fins translucent areas in the membrane frighten the aquarist into thinking that the fins have been punctured or rent. The first fin ray serves as a feeler. Incapable of being straightened out, the crook is presented to suspicious objects, and pieces of food are often deliberately touched as they fall past the fish to the bottom. If one of the fin rays is broken, the broken part will hang limply in the water. New growth starts at the point of injury, and continues until the ray is restored to its former size, when the broken part falls off, and should be removed. The large pelvic fins, like smoke-blackened parchment, and indented as the wings of the comma butterfly, are streaked and smudged with snowy white. The two dorsals are singularly dissimilar. The first consists of 13 to 14 stout disconnected banner-like spines, all capable of independent movement and accompanied by a hidden gland of virulent poison in a groove on either side. The second dorsal, the caudal and the anal agree in that all these resemble a lady's veil with black and white dots. The latter are indistinguishable from the paper in the photograph. The points over the eyes are lost as the fish matures.

Never handle a turkey fish! Effects of a simultaneous puncture from all the dorsal spines might end in death. The dreaded stung fish, a close relative, for whose poison an antivenom has been produced, leaves a man dead within 2 hours after being stung. The neurotoxic poison of the turkey fish is notorious for its swift action and violent pain. The stung member swells to twice the normal size in a matter of minutes, and the pain, already excruciating beyond conception, steadily grows worse until the victim drops to the ground kicking and writhing mad with agony. Dilute ammonium chloride taken internally, and injections of emetine hydrochloride, penicillin and adrenalin have all proved helpful in averting the change from man to corpse. The quantity of venom secreted by each gland is insignificant, being about one-sixth the weight of a postage stamp, but enough to kill 10,000 mice.

*Pterois* is often sluggish, and at all times unburied. Confronted by an enemy the fish tips up on its head the better to present its dorsal spines. Should the offending object come too close, the turkey fish will deliberately jab its spines home with quick hard, almost imperceptible, thrusts strong enough to penetrate wood to a fraction of an inch.

The turkey fish lives well with others of its kind, although the size of the tank needed to house more than one specimen will curb the average aquarist's ambitions in this direction. There are good reasons for precluding *Pterois* as a community fish. Firstly it feeds on smaller fishes, secondly its quiet dignified temperament is undermined by a crowd of peering little coral fishes from which there is no escape, and lastly, its size and appearance would, in all but the largest community tank, make it an object of incongruity rather than a thing of beauty. One does not keep a lone peacock in an aviary of finches.

The turkey fish travels well. It is best transferred from its plastic bag to the aquarium by means of a bowl large enough to accommodate not only the body but also the beautiful pectoral fins, in order to avoid their hanging over the edge of the bowl and sticking to the inside. Otherwise they will be torn by the fish's frightened movements at the crucial moment. I do not advocate the use of a net as one or more fin rays will certainly be snapped, and give the fish an ugly tattered look until the damage is slowly repaired.

*Pterois* will readily accept pieces of raw prawn as well as small fishes, dead or alive. Unless the turkey fish is in a small almost bare tank, food fishes should be stunned as they are apt to slip into the rockwork and be lost. *Pterois* never dashes after its prey, preferring to let it get away rather than be hustled. If the food fish is dead, the air

should be squeezed from the swim bladder to make it sink, though dead fishes floating at the surface are often accepted, even from the fingers. It is strange that so spiny an object as a fish should be swallowed with impunity, whereas a piece of shrimp still bearing the stringy outer integument (after being "shelled") causes the turkey fish to chew and gulp and spit out the offending morsel. To obviate this I buy large frozen cocktail prawns, and keep them in the refrigerator. Each prawn is cut into four or five thick slices, one of which is "shelled" under the tap every morning, put on a board and trimmed with a razor blade to remove any stringy material. The clean white meat is then cut into bite-sized pieces. These are dropped one at a time in front of the fish, which will leisurely advance to eat them. Allow the fish time to swallow each piece before offering another. Young turkey fish will eat up to 18 pieces half the size of a cube of lump-sugar in one meal, but older specimens are satisfied with two or three.

Gloomy is the accusation often levelled at the turkey fish to account for the sudden and unexpected death of a specimen; a charge which I can neither confirm nor refute. However, the following bitter-sweet episode will leave the reader to draw his own conclusions. Two years ago I received a shipment of one *Pterois volitans* and one *Dendrochirus zohoreus* (dwarf lion fish, never called dwarf turkey fish) in the same plastic bag. Both fish were put into a 45 gallon tank arranged to suit their identical requirements. At night I tried feeding them. *Pterois* declined all food, but *Dendrochirus* gulped down a dozen or more stunned guppy-sized red flag mollies from the surface. From that moment on the fish showed signs of quiet distress. There were no traces of disease, the fins were partially erect, food was refused, and the fish, never once abandoning the quiet graceful movements of its kind, constantly changed its hiding place among the rocks whither it retired for solitude—a bad sign. The fish lingered for 3 days and 3 nights. On the fourth day it was quiet, and I hoped for its recovery. Later on faded colours and milky eyes showed that death had long intervened. I removed the fish from the rocks where it had died in a life-like position, and preserved it in propylene phenoxetol.

Had indigestion caused its death? I still wonder. A possible explanation is that the fish had been without food for longer than the *Pterois*, and that any turkey fish, dwarf or other, might succumb to a too hearty meal after a long fast. A day or two later the more spectacular and valuable *Pterois* started eating as much as it wanted twice a day with no ill-effects. On record are seven turkey fish of different sizes which together accounted for 200 full-grown female platys in 2 days shortly after arrival at their destination.

The turkey fish sheds its skin naturally and often, a phenomenon in no way connected with disease. When shedding, the fish will shoot forward a body's length as though pricked by a pin, to rub off the old skin against the water.

The turkey fish enjoys a temperature of about 80°F (20°C) and is nocturnal. Although active during the day, it is darker, more alert and "wide awake" at night. The turkey fish contracts white spot from the usual causes, though it is not unduly susceptible. An outbreak in my tank was quickly cured by raising the temperature by 5°F (3°C), and dissolving nine level teaspoons of sulphathiazole sodium in a cup of water (one teaspoonful to each 5 gallons of aquarium water), and gently stirring the mixture into the tank to ensure an even diffusion. Next morning all the spots had gone except one, which lasted until midday, when it, too, disappeared. Although nothing in the tank was changed, removed or added before or after treatment, the cure worked magically, and left the turkey fish in great form with a huge appetite.

# Goldfish Gossip

by RICHARD GUPPY

SOME years ago, reading an old book of aquarium lore, which I picked up in the public library, I came across a passage which I have had reason to recall on many recent occasions. The author stated that, as a rule, pond owners get a good lot of young fish from their first spawning, and never do so well again. The explanation given was simple, too simple I think. "At the start" this expert wrote, "there are only a few fish in the pond, and so only a few eggs and fry get eaten. Next time, the eggs and fry are eaten by the well-grown offspring of the first spawning." This theory might account for losses in the second or third spawning, but its author seems to have overlooked an obvious fact. The number of fry surviving would depend, not on the absolute quantity of fish in the pond, but on the ratio of egg-producers to egg-eaters (some fish would fill both roles, of course). The large number of young from the first spawning, coming to maturity, would tend to swing this ratio back to its original value. Whatever the true reason it is worth noting that my own experience exactly tallies with that described in the book. In spite of the one miserable little size for all those eggs, the number of fry which resulted from my first spawning was fantastic and incredible. This large pond was so full of them that a pail of water taken from any woody area was bound to bring up several. The first onset of winter killed nearly the whole brood, an episode which I will return to later. Perhaps a dozen survived; they are the only goldfish which I can definitely claim to have hatched and grown up in that pond.

## Sticklebacks in the Pond

Several good explanations might be advanced for the failures of spawnings in the big pond. The most obvious one is sticklebacks. I have listened to some dissertations, in no uncertain terms, on the kind of so and so who would get sticklebacks in a goldfish pond. To fellow aquarists I think that I can appeal for understanding. For many years I had dreamed of a pond of my own, with real fish in it. By degrees the obstacles were overcome. When at last the pond in all its glory awaited only its finny inhabitants, I broke down and put in the first thing I could get hold of. My statement that these sticklebacks supply the most obvious explanation for the poor performance of the goldfish, is not meant to imply that I personally consider them responsible. Nearly always, when the goldfish are spawning, I am on hand, closely observing the whole procedure. It should be easy to catch the little fish in the act of taking the eggs, but I have never been able to do so. They could, of course, get away with a lot of eggs overnight, but long before then I have taken out a wash-tub full of the *Nitella* and blanket weed in which twenty or so pairs of goldfish have been spawning all mornning. This material, removed to whatever containers or small stickleback-free ponds are available, should hatch out more fry than I will know what to do with. Fond hope—under the best of conditions I get a hundred or so, at the worst I get nothing.

If it were not for the evidence of that first successful spawning, I should blame the whole thing on temperature. The water in these ding ponds seldom gets as warm as

60°F (15.5°C), except right at the surface in direct sunlight. The best hatches occur in a concrete cistern which I eventually constructed, in which the water gets noticeably warmer. The trouble with aquaria, dishpans etc. is that my spawning "places" are mostly algae, which quickly rot and foul the water if piled in too great a concentration.

## Theory of Optimum Number

The theory I favour at present is as follows. For any pond there is an optimum number of fish, which will produce the heaviest possible spawning; this is far below the number which the pond will carry, without evident decrease in spawning activity. There is a danger period, lasting from the time the eggs are laid, until the fry become free-swimming, during which depletion by snails, insect larvae, planarians and a host of other organisms is extremely rapid. In cool water this danger period is extended to the point where, unless the seeding with eggs has been extremely thick, the entire brood is lost.

The sticklebacks are so prolific that they cannot be eradicated by ordinary means. I have taken hundreds out with the drag seine, and brought up with them many goldfish, a large proportion of which are not coloured, though quite large. I had noticed a few of these drab fish spawning, but they are so hard to see that I had not previously realised how numerous they were. Moreover, more than half of the coloured fish are now white. Some of these became white while small, others turned white after being red for a while. This has even happened to some which I sold as red fish, the customers being not slow to let me know about it! Now I begin to see where I have accidentally pulled a fast one on the critics. "These sticklebacks are very necessary" I will tell them. "I want to raise some selected goldfish, so I can't have them breeding at will, and cluttering up the pond with all sorts of throwbacks."

## Winter Killing

Earlier I touched on the question of winter killing of young fish. The claim is frequently made nowadays that goldfish of any size will winter outdoors as safely as the largest. It is evident that these people have acquired or developed very hardy strains, and they now dispense well-meaning advice that is going to cause heartaches for many who take them seriously. That leaving young fish outdoors to live or die will bring into operation a very rapid-acting form of natural selection, should be evident. But into Canada (as in England also, no doubt) there is a constant influx of fish from sunnier southern climates, where goldfish raising is easier and therefore more practical. These imported fish always carry the well-known trait of being quite hardy when well grown, but very delicate when small. I cannot answer the question, which is academic only, of whether codding goldfish will cause them to revert to the above-mentioned condition, or whether these imported fish have always been that way, having come originally straight from their homeland, or via Japan, which also boasts a summer much more genial than ours. I have by now built up a fairly hardy strain of goldfish for myself, but it is still clear that those fry



*Blanket weed being checked for the presence of goldfish eggs by the author.*

which make the best growth before cold weather strikes, have the best chance of winter survival.

#### Lesson of the Newts

In this connection I have made some interesting observations on several species of newts, which I have reared in my pond and aquaria. Newts from England will nearly always survive the winter outdoors while still in the tadpole stage, as will our native British Columbia species. But newts from North Carolina invariably perish if winter catches them while still equipped with gills, though they are perfectly hardy after transforming into the terrestrial stage. The average January temperature of North Carolina is nearly the same as here, the July average is 15°F (9°C) higher. The conclusion seems inescapable that a high summer temperature ensures metamorphosis of all tadpoles before winter, so there is never any selection for winter-hardy individuals in this stage of their growth.

This brings up another matter which seems to be consistently overlooked. I refer to the great difference between a pond and an exposed tank as a winter home for fish. Some people claim to have kept small goldfish in tanks which become frozen over. If this is true, they have a strain of fish able to withstand conditions too severe for almost any other aquatic animal, even those insured to northern climates. As very convincing evidence of the truth of this statement, I will cite the example of some axolotls (aquatic salamanders) that I collected at about 5,000 ft. altitude, where the air temperature must frequently fall below 0°F (-18°C). These amphibians, kept in a 5 gallon stone crock outdoors, were killed by a temperature of 20°F (-6°C) overnight. Their water had about a half-inch of ice at the surface; a thinner layer encased part way down the sides of the crock. No ice was at the bottom, where the bodies of the axolotls lay, and when I tipped the crock over, the ground beneath was quite unfrozen. The first lot of goldfish that I owned were killed in just the same way, though some were quite large. I did not keep a record of the details. They were in a wooden tank holding about 30 gallons, supported

on a bench. This was thinly frozen over for a week or two; I recollect that an electric light hung over the water was able to keep a part of the surface open at all times. The fish lay in a bunch nearly immobile at the bottom, and I have never seen fish in my ponds behave like that. They all died after the thaw, some getting the 'shimmies', and others floating at the surface.

#### Surface Area and Depth

The mass of water in a pond can be said to be contained between the bottom (heat-absorption area) and the surface (heat-loss area). The former is always the greater. Consider the example of two ponds of unequal depth, but having the same surface area. In the deeper pond the heat-losing area is proportionally less, both to the heat-absorbing area and to the volume of water. Now in a tank of any conventional shape, the heat-loss area, which includes the sides, is several times greater than the heat-absorption area. If the tank is elevated from the ground, the heat absorption is nil. A deep tank is no better, perhaps worse, than a shallow one of the same capacity. The formation of ice at the sides or even the bottom of a thin-walled container seems to disprove the common notion that convection currents caused by expansion of water at approximately 40°F (4°C) will bring the colder water to the surface. Whatever the true fact may be, after experiencing the events recounted above, I made and kept a resolution, never to allow ice to form on any aquarium, or other container for animals, not sunk below the ground level.

#### Mr. J. Laughland

We regret to announce the death of Mr. J. Laughland, who for many years was a well-known aquarist in the north of England and an active society official. Since 1949 Mr. Laughland has set his monthly crossword for readers of *The Aquarist*. He leaves a widow, to whom our sympathy is extended.

## Spawning in Ponds and Hand-Stripping

by A. BOARDER

PRECEDING articles dealt with breeding in tanks, and now outside pond breeding will be discussed. To breed in an open pond without any control is hopeless as far as fancy goldfish are concerned. So many eggs could be eaten and then if any fry hatched they too could be eaten. Should a few fry survive they may be the worst specimens of the spawning. The reason is that if the variety is of a double-tailed type the best fry with good caudal fins will be slow swimmers, whereas the poor-quality fry without good tails may even be single-tailed fish and these naturally would be able to swim faster. In a shoal with better fry they would escape if the shoal was attacked. Apart from the probability of the best fry being eaten there is always the rearing problem: how can one sort the best fish from a hatching to feed them specially? Often the best fish are not the largest, and where there are a number of coarse fish in the batch these could get the most food and the good ones could go short.

### Controlled Breeding in Ponds

This is not to say that successful breeding cannot be done in a pond, but it must be controlled, and I will now deal with the methods I have found successful for the past 25 years. The pond should not have too much underwater plant life, so that bunches of plants anchored near the edge will be the only ones readily available for the breeding fishes. If too much vegetation is spread all over the pond it would not be possible to collect the eggs for hatching in safety, as must be done in this method. By the month of April, the bunches of weed should be prepared. Make a bunch about a foot across, fairly thick so that it provides plenty of shelter for many eggs. Several water plants are good; one of the best is hornwort (*Ceratophyllum demersum*), and even the sometimes despised Canadian water weed (*Elodea canadensis*) is quite suitable. The bunches should be anchored near the edge of the pond in a shallow spot if possible. They must be at the surface, as most fish prefer to spawn on or near the top of the water. Have a few spare bunches of weed in reserve or at least have plenty of plants available for bunching when required.

Having prepared for the eggs it is essential to make sure that the breeding fish are in the pink of condition. After many years of experimenting I can find no food better than the garden worms for conditioning fish for spawning. Feed with these as often as the fish will take them. Feed also with any suitable foods as recommended previously. See that the water in the pond is quite fresh and pure, as I do not think that you are likely to succeed unless the water is in this state and well oxygenated. Breeding in the out-door pond can be very disheartening at times. The fish may not spawn at all and as they have probably been all together in the pond all the winter there is not the opportunity of separating the sexes and so encouraging them to spawn when they were once again put together. I fear that you will have to have plenty of patience, as sometimes the fish will refuse to spawn until well into July. This can be exasperating, as one is all ready to take



In hand-stripping a goldfish the fish is held over a bowl of water whilst the belly is stroked firmly with one index finger.

the eggs and impatient to get fry along so that they can grow to a fair size by the winter.

### Water Temperature

Of course, the fish must be in the pink of condition and then if the water is right there seems no reason why a spawning should not start. What triggers off this actual spawning? I wish I could say definitely, but with all my experience I am unable to put my finger on the actual reason. The temperature of the water may have some bearing on spawnings, but I have had them take place at 50°F (10°C) and also at 78°F (25°C). The average is 61°F (16°C) and I would be prepared to say that most took place when the water temperature was in the lower sixties (15° to 18°C). One very good plan is to remove a large quantity of water and replace it with fresh from the tap. If the water in the pond has become very warm, say over 70°F (21°C), the introduction of cold water often sparks off a spawning. A fountain playing will sometimes help but it seems that there is some secret happening which makes the males start to chase the females and encourage them to lay their eggs. I have sometimes found that if fish have been caught, perhaps for exhibiting, when they are returned to the pond a spawning may commence. This, of course, occurs only during the breeding periods. It is noticeable that the fish give off a strong smell at these times, and I have often wondered if this smell is in any way responsible for starting the spawning chase.

I have found that spawnings start in the early morning almost without exception. As noon approaches the activity lessens and it is unusual for the spawnings to go on all day. See that some protection is provided near the spawning part of the pond, to prevent cats from catching

the fish as they splash about over the top of the water. Once a number of eggs can be seen on the bunches they should be removed to hatching containers. I usually take some of the water near the bunches to make sure that there can be some male sperm which could fertilise any eggs requiring this. You can pick the bunch out from the water, as the eggs will not be harmed as long as they are not out of the water for more than a few moments. The eggs show up distinctly when out of the water, shining like small amber beads. Another bunch should then be introduced and before long it is probable that many more eggs will be laid on these.

Naturally, no other varieties of fancy goldfish should be in the pond as these would only cross with the good types and prevent a good spawning. It is probable that most of the spawning fish will be too excited to worry about eating any eggs for a time, but once the excitement is over they soon settle down to a search for eggs. The bunches containing the eggs should be in a safe place before this. The hatching tanks should now be brought

up to 70°F (21°C) and kept well aerated. This can be done by seeing that there are plenty of oxygenating plants in the tank or by artificial aeration. If many eggs are in a small container it is possible that many will die if there is insufficient oxygen available.

Hand-stripping can be resorted to if many eggs are required, but do not attempt to do this unless the fish have actually started spawning, as otherwise you can damage them. Take the female in one wet hand, belly up. Then firmly stroke towards the tail. The eggs should flow out fairly freely if the fish is ready. If the fish is held just under water in a bowl the eggs will spread and stick to the sides. Immediately after repeat the operation with the male and make sure that some milky fluid is expelled. After a short time swirl the water around and after half an hour empty and refill with fresh water. If care is taken and the fish are ready no harm need be done and it is possible to obtain plenty of eggs free from any pests which may be found on water plants.

The next article will deal with hatching of fry.

## OUR EXPERTS' ANSWERS TO TROPICAL AQUARIUM QUERIES

I should like a decorative, though not too colourful background for my fishes. I do not care for the papers printed with imitation rocks to stick on the glass. Can you suggest anything else?

A pleasing effect can be obtained by painting the outside back of the tank in several shades of green or blue, graduating the shades of colour from very dark at the bottom to light (almost white) at the top. If poster paint is used, it is quite easy to wash this off when you wish to change the background.

I have been trying to breed *Tetragodon lineatus* without success. The pair are alone in a 36 in. tank. The water in the tank is 12 in. deep. The fish have spawned twice within the last few weeks. Of the first batch of eggs, those which were not eaten by the male soon turned white and fuzzy. The eggs of the second spawning hatched out but the fry, after a short while, seemed to experience difficulty in swimming, and all of them died before a month was out. Kindly tell me what I can do to save the fry of another spawning.

The fry of Loer's gourami stand a better chance of survival if they hatch out in water not more than 6 in. deep. As soon as they become free-swimming they need plenty of freshly cultured Infusoria, followed a week or so later by brine shrimps, micro worms and the like. It is most important to keep the top of the water clear of dust or oily scum. Furthermore, the aquarium must be kept closely covered to prevent cold draughts blowing across the surface and chilling the young fish when they rise to the surface for their gulps of air.

As a beginner in tropical fishkeeping, I should like to know whether it is possible for a fish to choke on its food? The other day I found one of my paradise fish dead on the bottom. Its mouth was opened out like a camera bellows. A short while previously it had looked in composition as a most admirable free-chopped zucchini. At that time it appeared to be in the best of health, and was beautifully coloured.

Greedy fish will sometimes, but not often, choke to death after seizing a piece of food. To guard against such a fatality, make sure that all food given is small enough to be swallowed without any difficulty.

I have an old kitchen sink and wonder whether it could be used for spawning tropicals?

So long as the sink receives a good top light it can be used as a breeding tank. The outlet hole should be sealed with a hard rubber or wood plug (or cement), and if it is surrounded with a brass collar, this should be given several coats of bitumen paint. After cementing and/or painting, the sink must be given a thorough soaking in several changes of water.

Many queries from readers of "The Aquarist" are answered by post each month, all aspects of fish-keeping being covered. Not all queries and answers can be published, and a stamped self-addressed envelope should be sent so that a direct reply can be given.

Would it be safe to use rainwater draining from a tiled roof into an iron gutter to top up my aquarium?

As you live in a country district, if the gutter has not been painted for a long time, rainwater draining from it into a clean pot, glass or wooden receptacle should be quite suitable for aquarium use. But do make sure that the gutter is kept clear of litter deposited by gales and birds.

Will aquarium plants grow satisfactorily under the light provided by a fluorescent tube?

Many aquatic and terrestrial plants will prosper under what is known as "warm white" fluorescent light. But if the aquarium is a large one it may be necessary to use more than one tube to provide sufficient light-intensity.

My angel fish spawned in alkaline water, and the eggs hatched out satisfactorily. But, reading that cichlids do best in acid conditions, I boiled some peat in a saucepan, and when it had cooled down I poured the brownish water through a filtering pad of nylon into the tank. In a few days most of the fry were dead. Please can you tell me where I went wrong?

It is not unlikely that the rapid change in the reaction (pH) of the water killed the fry. It would have been wiser to have left well alone. Although nearly all cichlids do best in acid water, a few, including the angel fish, will breed successfully in slightly alkaline water.

Is it absolutely necessary to remove a diseased fish from its companions?

Strictly speaking a diseased fish should be kept in isolation until it is cured of its illness or it dies. But in many cases a diseased fish will not affect its companions if the tank is kept scrupulously clean, the water is filtered, an even temperature is maintained and live food predominates in the diet. For disease is more likely to spread from one fish to another if they are kept in unhygienic surroundings, and subjected to rapid changes of temperature and a diet consisting of too much starch and too little protein.

# Far and Wide

by RAYMOND YATES

## Fire

WITH the exception of worn or faulty electrical wiring there seems little risk of fire for enthusiasts in fish-keeping. Even the makeshift electrical connections which one meets with so often in hobbyists' homes seem to stand the strain very well, and I have heard of very few instances indeed of trouble in this direction although oil and such-like heaters have, on occasions, caused anxiety and even loss. It was with some surprise therefore that I came across quite an unusual fire-accident in *Fire*, the national fire-prevention week gazette.

It seems that accidents can happen so easily. This one concerns a small boy who had a very lucky escape when his jacket pocket burst into flames. He purchased a packet of a proprietary brand of oxygen-aerating tablets in a processed paper envelope. He put the tablets into his jacket pocket which contained, among other things, a match-box occupied by a dead moth in a bed of cotton wool. During the day the boy attended to the fishes in the school aquarium and dropped an oxygen-aerating tablet into the water. Later in the day he collided with another boy and his jacket pocket burst into flames. Fortunately he was unhurt but his jacket was ruined.

Investigation proved that the tablets were potassium chlorate, which, with the red phosphorus on the striking surface of the match box, reacted when brought together, causing the ignition of the jacket pocket and contents. The packet containing the tablets bore no indication of the potentially dangerous nature of the contents. The boy was fortunate that no sugar crystals were present in his pocket, for the reaction between the sugar, potassium chlorate and the red phosphorus may well have caused a minor explosion. The thanks of hobbyists in general are due to *Fire* for bringing this unusual aspect to our notice.

## How they Started

ONE never-falling topic of interest at a club meeting is for a speaker to enlarge on how he first began with the hobby. Mr. H. R. R. Odam entertained the Nottingham club some time ago with details of his own entry to the piscatorial ranks. Way back in 1924 he was a keen wireless fan and had a brick and glass lean-to added to the rear of his house as a workshop. After 13 years of this he tired of radio and cleared out the lot, which left time hanging heavily on his hands. An article on alpine gardens stirred his imagination and he decided to try to make one. He obtained by devious means and methods about one hundredweight of newspapers, soaked them for days, mixed cement with them and started his garden. About 6 ft. by 4 ft., it had a small waterfall down the hillside with a miniature lake at the bottom. This latter looked so bare that some fish were called for—a mistake which has cost him dear in £.s.d. over the years! Seeing an advertisement for goldfish he duly called at what turned out to be a private house, intending to buy one or two fish. However, after listening to the genuine hard luck story he finished up with two tanks and six assorted goldfish. Of course, as the reader will have guessed, the lake soon proved too

small, as also did the tanks, as by this time Mr. Odam was interested in the fish. From here it was a short step to a bungalow bath, complete with drip tap, and all went well until he discovered tropical fishes. Soon the two tanks were full of tropicals. First breeding success came with goldfish, more or less by accident, although tropicals became the main interest. The war brought an end to active fish-keeping but one day in 1949 Mr. Odam strolled into a pet shop just to talk about fish and when Mrs. Odam soon afterwards said she would like a bowl of goldfish the disease took hold of him again.

## Take your Pick

ONE club in the midlands runs an occasional "Take your Pick" competition, each victim in turn answering two questions and choosing his box number. Everyone present has a go at answering the questions and taking their pick. Fishy prizes included an 18 in. by 10 in. by 10 in. tank, six flame fish, any pair to winner's choice, 24 in. by 12 in. by 12 in. tank, two penguin fish, 12 zebrias and so on. Quite a few prizes are returned and auctioned for the benefit of club funds.

## Unusual Experience from Poland

WRITING in the Scottish Aquarium Magazine, Mr. R. Gold of the East of Fife Aquarist Society has related an unusual experience at Gydansk in Poland with the three-spot gourami. It appears that he was walking along a back street in the dock area when he came across one of the most unusual pet shops he had ever encountered. Situated in a corner, it consisted of only one large room where a large display of tropical fishes were on show and for sale. The many sized tanks were not heated in the usual manner of thermostat and heater but by a large pot-bellied stove, fed with coal. The window frames were made up in the typical slay way, this time with newspaper glued over all the joints. All the tanks were within a few degrees of each other and the average temperature was about 72°F (22°C). One tank contained three-spot gouramis, and Mr. Gold bought a pair, although with the extreme language difficulty he wanted small specimens and got two large ones instead. The cost in our currency was 6d. for the fish and 1s. 6d. for the broken bottle in which they were carried to the ship. The customs officials showed great interest and would not believe that he had bought them, but thought it more likely that he had caught them in the harbour. Subsequently Mr. Gold had no difficulty in keeping the fish in his ship and in fact raised 50 fry from a spawning. Next time you are in Gydansk, have a look round the port quarter—pity this is rather off the route of the average package tour.

## Iron Curtain

WE seem unable to find out much about the hobby beyond the "Iron Curtain". The Russians like everything big and for this reason the rather diminutive size of most of our tropical fishes might make little appeal. There is a grocery store in the main street of



Moscow (Gorki Street) which has a large aquarium in the window as a display item, but the goldfish on view are all the size of trout and lack the heartwarming appeal of the fancier members of the goldfish fraternity.

Aquaria have long been used in consulting rooms, theatre foyers etc., but I have not heard of their use previously at railway stations. However, at the East Station in East Berlin (it used to be called the Silesian Station) a number of aquaria are dotted about in these somewhat unusual surroundings. May be these have a tranquillising effect on passengers who must, from this station, be leaving for Warsaw and Moscow, although connections can be obtained for Prague, Sofia and Bucharest. Has any reader any interesting notes on aquaria beyond the Soviet frontier or in any satellite country?

#### Committees

**A** NORTHERN club makes the point that committees of small societies tend to fall into one of two groups. Either they comprise half the membership (in which case everybody knows what is happening but very little does happen because of the amount of discussion required before a decision is reached) or they consist of a very limited number who manage to achieve a considerable amount of work with a minimum of debate. The latter system seems preferable but has two potential dangers. A particularly energetic person may come to control the club through the lack of energy or thought on the part of the other committee members, and this may have disastrous results over a long period. Secondly, the members of the committee can become so immersed in their plans and schemes for the welfare and advancement of the club that they forget that the other members may be interested in their activities. The club in question feared the second alternative might

possibly refer to them and they are therefore publishing a report of committee activities from time to time so that there can be no suggestion that committee meetings are held in secret session. There is some sound sense in this; rank and file members like to be informed.

#### Stoke on Trent Museum

**R**ECENTLY in Stoke on Trent, I found myself outside the Museum just as a shower of rain drove everyone off the streets. I was quite interested in this modern but small building, where most of the exhibits are connected with the pottery trade. However, I did find some fishes upstairs and also a few reptiles. I was particularly interested in a large snake which seemed to be some variety of dice snake, which was housed in a typical aquarium with a lightweight aluminium cover. As far as I could see there was nothing to prevent any child, and there were plenty there, from moving this cover and so allowing the snake to escape. However, the snake in question was very lively indeed and, such is the power that snakes have on the mind, I suppose nobody would have dared interfere. I left the museum without ascertaining if, in fact, the cover was removable, but I thought it was quite a psychological point. About thirty-two years ago I remember being at Amsterdam Zoo and standing alongside a 20 ft. crocodile, and one this size is enormous. We were separated by a low wall about 30 inches high at most, and it would have been quite possible to have leaned over and stroked the creature. I cannot imagine anyone trying it after one look at that hideous head. I found the experience quite unnerving, like being up a high tower with only a low wall between oneself and the long, long drop. Plate glass takes all the interest out of dangerous creatures; there is no element of risk whatever, real or imaginary.

## Cleaning Tubifex

**M**ANY aquarists are reluctant to use *Tubifex* worms as a food for aquarium fishes and quite rightly so, for unless caution is exercised much harm can be caused to the occupants of the tank.



Photo:

Louise E. Perkins

*Tubifex* worms in sand against the aquarium glass

Owing to the nature of the worm's natural habitat, (*Tubifex* are found mainly in sewage-polluted water), one can expect this creature's digestive tract to be filled with dead bacterial organisms and the body covered with filth. It is because of this and the harmful effect of decomposing dead *Tubifex* that they should be kept in running water and fed to the fishes from a feeding ring, as most *Tubifex* enthusiasts know. A fish suffering from a bacterial infection such as one that may be contracted from the worms stands very little chance of survival, for internal bacterial infections of fishes are very hard to diagnose because of the lack of obvious symptoms.

The necessity of cleaning the *Tubifex* before feeding with them is obvious and may be achieved in the following manner. The worms should be placed in a bath consisting of a mixture of distilled water and skimmed milk (equal parts by volume) for 24 hours. A fresh solution should then be prepared in the same way and the worms transferred to this, where they must be kept for a further 24 hours. After this treatment, which is designed to purge the worms, they should be chopped to the required size (if this is necessary) and immersed in a solution consisting of 4 drops of mercurochrome to 2 quarts of distilled water for 15 minutes. The worms, which are extremely nourishing, are then ready for feeding to the fishes. Mercurochrome may be purchased quite easily from your local chemist.

R. E. Macdonald

# The Beautiful Silver Water Beetle

by LAURENCE E. PERKINS

(Photographs by the author)

ALTHOUGH all aquatic insects are of great interest to any student of life it would be fair to say that few of them possess attributes which might be termed beautiful. For the silver water beetle (*Hydroporus pictus*), however, it is no exaggeration to employ this adjective and it is regrettable that the scarcity and local disposition of this insect make it so difficult to obtain. It is likely that its rarity has been over-emphasised, for although it is in no way so widely abundant as the diving beetle (*Dytiscus marginalis*), it is probable that it occurs in fair numbers in many localities as yet unexplored by those likely to be interested. For many years only a few certain locations have been named as known habitats with the result that all specimen hunters have repaired to these places rather than take the chance of drawing a blank in untried territory.

Wishing to obtain a pair of these beetles recently, I also took the line of least resistance and headed for an area some 70 miles from my home where *H. pictus* has been taken over a number of years. The result of an afternoon's very thorough netting was a solitary female specimen, although a wide variety of other creatures was collected which made the trip worthwhile. A return visit to the same area a couple of weeks later resulted in the capture of a lone male specimen, which I regarded as more than lucky in view of the apparent scarcity of the species. The meeting of these two specimens, which took place within the small aquarium I provided for them, was seemingly a matter of great pleasure to both of them and I like to think that although they were caught no more than 50 yards from one another they had to be brought many miles distant to my home before being united.

## Feeding

Having tried to keep these beetles before and experienced difficulty in providing suitable foodstuff, I determined to discover what constituted their main diet. It is generally stated that *H. pictus* is almost entirely, if not exclusively, a vegetable feeder, so that it would appear a relatively simple matter to experiment with varieties of water plants. The aquarium was initially furnished with hornwort (*Ceratophyllum demersum*), milfoil (*Myriophyllum spicatum*) and curled anacharis (*Blodea crispata*), and although the beetles were not observed in the act of feeding there were signs of some droppings and slight damage to the foliage of *E. crispata*, and it was thought that some nourishment was being taken during the night. In view of their large size, however, it seemed that their appetites were not being fully satisfied and that other types of food might be tried. As the larval form is carnivorous, feeding upon the flesh of aquatic snails, it seems strange that the adult insect should change its habits to such a degree as to become entirely vegetarian.

With this in mind a decomposing garden worm (residual from an earlier feast enjoyed by a pair of *D. marginalis*) was dropped into their tank. It was almost immediately seized by both beetles, the softened flesh soon rupturing and a piece being triumphantly borne away by each beetle



Dorsal aspect of the female silver water beetle shown as she climbs to the water surface along a stem of curled anacharis.

to be devoured almost completely. This meal seemed to suffice for 2 days, during which time further worms in similar condition were offered but left untouched, although slight nibblings at the hornwort and curled anacharis took place. A large very dead worm was greedily eaten 3 days after the first and it became apparent that a variety of diet was of more importance than quantity, and that rotting vegetation and flesh were preferable to fresh meat and plant material. It would be fair to say that these beetles are scavengers and omnivorous, and that they feed sparingly when compared with the smaller *D. marginalis*.

## Silver-washed Undersurface

Our largest native beetle, exceeding in body size even the awesome-looking stagbeetle, *H. pictus* reaches a length of 1½ inches. Dark olive brown in colour on the upper sur-

face, it appears to be quite black when submerged, an illusion that is heightened by the contrasting brilliance of its silver underside, which has the appearance of being coated with highly reflective silver foil. Out of water the underparts are seen to be clothed in short thick hairs, which trap a sheath of air when submerged and result in the fascinating silver-washed effect. The second and third pair of legs are extremely long and fringed with hairs of a much finer texture than those of *D. marginalis*. The legs are moved alternately when swimming and the beetle is propelled in a much slower fashion than the rapid dartings of *D. marginalis*, whose legs move in powerful unison. A further difference between the two species lies in the manner of taking air from the atmosphere, for whereas *D. marginalis* remains at the surface for quite long periods with the tip of the abdomen exposed to the air, *H. picus* periodically journeys to the surface, where it assumes a horizontal position, canting slightly to one side and with one arm of its antennae breaking the water. Lifting and lowering its wing-cases a number of times it quickly takes what air it requires before returning to the lower levels. When lifted from the water it frequently emits a sound, which one might attribute to the expulsion of stored air beneath the wing-cases, but I have heard this sound made under water when the creature has suffered a collision with some other tank inmate, and on these occasions there have been no air bubbles to indicate that air had been released.

Although more sluggish in its habits than *D. marginalis*, *H. picus* is more active, creeping about with exploratory movements of its antennae and resting for only short periods. *D. marginalis*, on the other hand, spends long periods resting either at the surface or among the denser clumps of foliage during the hours of daylight, reserving the darker hours for hunting its prey.

One chief characteristic distinguishes the sexes and this is to be found in the forelegs, which, in the male, are modified at the ends to form triangular plates, the purpose of which seems to be for obtaining a purchase upon the back of the female during pairing, as in *D. marginalis*, which possesses a similar but more pronounced enlargement of the male forelegs.

The larval form reaches a length of 3 inches and is reported to feed upon molluscs, but it has hitherto not been my good fortune to obtain a specimen. Although the relative rarity of *H. picus* has been blamed upon its popu-



Side view of female silver water beetle. About one-third of the length from the hind end is seen a backward-pointing projection from the abdomen; the purpose of this structure is not known.

larity and subsequent collection on the part of aquarists and entomologists, I think it more likely that the large, sluggish and soft-bodied larvae fall victims to both the larval and imago forms of *D. marginalis*, among other predators. Whatever the causes, it is a pity that all those people sufficiently interested to go in search of this very fine insect do not contribute something to its continued existence among us by trying to rear some specimens, with the object of liberating them in waters where they might raise further broods with greater chances of survival and multiplication.

## Cacti in the Fish House

ON hot days cactus plants will benefit from an occasional spraying during the evening. This corresponds to the heavy dew the plants would get in their native habitat. At the same time any dust will be removed. Do not spray during wet or cold weather. A careful watch over the plants will ensure that they do not become infested with mealy bug. This is a small grey bug which is covered with a white "meal" and lays many eggs in a kind of woolly nest. These pests can be picked off with a pointed match-stick, but if a plant is allowed to become badly infested it must be removed from the fish house and sprayed outside with malathion. Wash off later on before the plant is returned.



The visible sexual distinguishing feature of the male—the triangular enlargements of the forelegs—is shown in this side view of the silver water beetle.

## No. 4 — The Shubunkin

by A. BOARDER

**T**HE shubunkin is one of the most popular varieties of fancy goldfish and is suitable for the tank or garden pond. The main features which distinguish it from other varieties is that it appears to be scaleless; the usual hard, bony scales of the common goldfish are missing. This gives the body the appearance of having been scraped to remove all the scales. The result is that the body has a soft delicate look which has been termed 'calico', 'nacreous' and 'mat'. If the fish has any typical scales these show up very plainly. The presence of a few scales would not disqualify a fish at an exhibition but points could be deducted by the judge if they were visible. Another very important feature of the shubunkin is the colour. This is quite distinct from the ordinary goldfish colour and, in my opinion, if the fish does not show most of the desired colours it is not a shubunkin, whatever its shape may be.

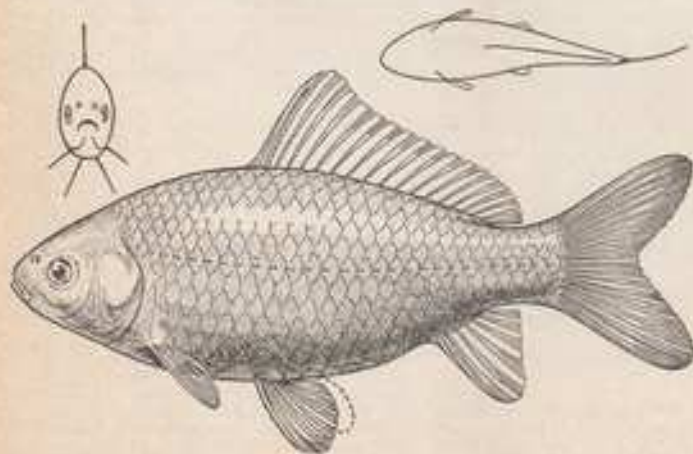
### London Shubunkin

There are two types of shubunkin: the Bristol and the London. The former is a rather stream-lined fish with large fins, and an especially well-developed caudal fin, or tail, whereas the London is shaped as for the common goldfish with the colours of the Bristol shubunkin. There seem to be very few good-coloured shubunkins on exhibition these days. About 12 years ago many fine fish were to be seen and it was then that these fish were judged under the Standards set up by the Federation of British Aquatic Societies, which conformed largely to the standards of the Bristol Aquatic Society. Under these Standards there were 35 points awarded for colour out of a possible

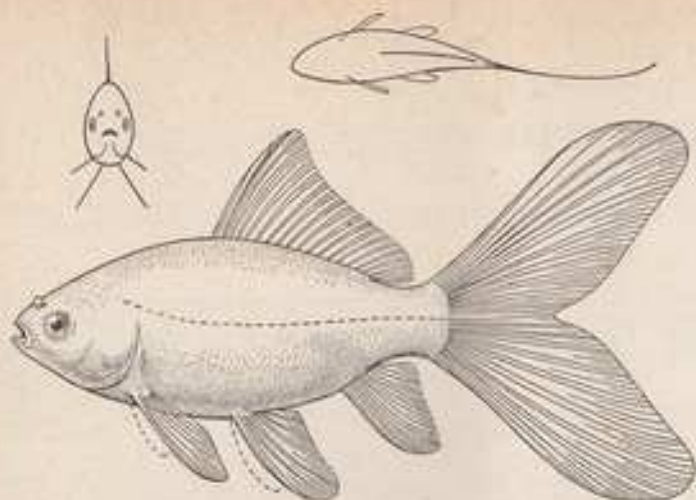
100, and this meant that emphasis was placed on the colour. This encouraged the breeding for colour and the subsequent appearance of good-coloured fish on the show bench. However, when 1947 standards were reviewed by the Federation the system of pointing was altered to satisfy an outside body and instead of the 35 points for colour only 20 was suggested. Also, under the old rules 20 points were allowed for the tail and 30 for the other fins, the body receiving 15. Under these rules it was imperative for the breeder who wished to be successful at showing to concentrate on the special features of the fish, which tended to ensure that the type of fish required was being bred. However, under the new rules the pointing was as follows: size, body, colour, fins, condition (and deportment), 20 points each, making a total of 100. Ever since these pointings were made the quality of the shubunkins seen at most shows has steadily declined. A large fish in good condition can start off with 40 points. With a good body it can get another 20, which means that any fish faintly resembling a shubunkin could beat a well-coloured shapely fish that was smaller. As the colour is the outstanding feature, which differentiates this fish from other varieties, surely colour should receive more points? I would go so far as to give 40 points for colour alone.

### Bristol Shubunkin

We will now consider what the Bristol shubunkin should be like. It must have a single tail and a normal body, that is not too thin nor yet too stout. The upper and lower contours should correspond and be nicely curved. The



Outline of the London shubunkin (which is the same as that for the common goldfish) from the Federation of British Aquatic Societies "Show Standards"



Outline of the British shubunkin, illustration from the Federation of British Aquatic Societies "Show Standards"

length of the body should be about two and one-third times the depth. The caudal peduncle should be well waisted, the snout rounded, the mouth small and with normal nasal flaps. The dorsal fin should be carried erect and have the front edge evenly curved; the back of the fin should be slightly concave behind the front lobe. The pectoral and pelvic fins should be well rounded, not too flowing and about the same length. The anal fin must be single and rounded at the end. The caudal fin is one of the outstanding features of this fish, as it is well developed, more than half the length of the fish, the lobes broad and well spread with rounded tips. It should be held well out from the body and not droop.

The colour should be a bright blue ground with violet, red, yellow and brown, with a speckling of black all over the body and fins. If a fish has these bright colours it is very attractive and never fails to call forth admiration. The pity of it is that so few really good-coloured fishes are seen at shows to-day. Many have such poor colouring that they cannot be termed shubunkins at all. I have had to judge so-called shubunkins with no blue, no red, no violet and no real black. They have been just a dull mottled brownish shade with no definite colour as required by the Standards. Only occasionally does one see the brightly coloured fishes on show and then there is no hesitation on the part of the judge.

It is probable that the insistence by many clubs that the judge must give a first prize no matter what the standard of the fish has encouraged the exhibiting of badly shaped fish. If an exhibitor gets a first prize for his fish he is entitled to presume that this is a good type of fish and so breeds to that standard. How much better would it be for the judge to say that there was not a fish worthy of a first prize and so emphasize the fact that the quality was low.

There are many ideas about how to breed show-quality fish, from crossing shubunkins with scaled fish, to pairing a colourless fish with a deeply coloured one. I have seen excellent results from pairing well-coloured fishes to one another. I consider that often when a good fish is produced from the unnatural crossings it is the result of prominent characteristics in one of the parents throwing forth again. It is not an easy task to breed well-shaped and good-coloured shubunkins but this makes the task so much more

interesting than trying to breed from strains which reproduce like so many peas in a pod.

The gill plates of this fish should be soft, that is they must not be bony, and any hard scales will drown point a fish. Faults seen apart from lack of colour are: humped back or snouty, too long and flowing finnage, too heavy a body and too many hard scales.

The next article in this series will deal with the fantail goldfish.

### *Elodea callitrichoides*

THE genus *Elodea* has given us some of the most useful and attractive-looking plants for growing in the coldwater or tropical aquarium, and among the less familiar species is *E. callitrichoides*, a native of the Argentine, Paraguay and Brazil.

Its narrow, unstalked leaves, roughly  $\frac{1}{2}$  in. long, grow in whorls of three every  $\frac{1}{2}$  in. or so up the slender stems, which may exceed 3ft. in length. The stems branch frequently and soon produce thickets of greenery dense enough to offer a safe haven for livebearer fry or the scattered eggs of oviparous fishes.

At a comfortable living-room or tropical-aquarium temperature the stems and foliage are coloured light olive green, but at 45°F or so they become tinged with rust red. Although a low temperature does not appear to harm this plant its growth is arrested until the return of warmer conditions.

*E. callitrichoides* is an excellent oxygenator, and as its stems and leaves are narrower than those of *E. densa*, they do not prevent side or top light entering the aquarium, or offer much in the way of resting places for suspended sediment. Tiny white spotless flowers borne on long stalks are produced about the middle of the summer.

Propagation is easily effected by snipping the ends of stems and replanting them as cuttings in the compost. All in all, *E. callitrichoides* is an excellent plant for breeding purposes or for massing in the back corners of a decorative aquarium.

J. H.

### (3) European Amphibians

by ROBERT BUSTARD, B.Sc.

ALMOST all the European amphibians will flourish, and, indeed, many will breed, in an outdoor reptiliary. Some, however, that are of small size and secretive disposition, will seldom be seen, and these I tend to keep indoors. This is a matter of personal preference. If kept out of doors they require little attention naturally and can usually be found in their favourite hiding place if required.

The European green tree frog (*Hyla arborea*) is the only species of frog likely to be kept which is not now to be found in Britain. This delightful little creature seldom measures more than 2 inches and is a beautiful grass green dorsally. Being a true tree frog the fingers and toes end in adhesive lamellae, the so-called "sucker pads", which enable the animal not only to climb among foliage but to rest on a vertical sheet of glass or indeed to sit upside down on the roof of its vivarium or reptiliary. I have always considered these frogs to be an ideal outdoor species, especially if there is plenty of growing vegetation among which they can live, as they seldom descend to the ground except to enter the water to breed in the spring. Tree frogs feed on any winged insects, and bluebottles are the mainstay of collectors, since quantities of gentles can be purchased quite cheaply and easily. They can be bred by placing a fishhead or a piece of bad meat in a place where it is likely to become fly-blown, and then later transferring the gentles to the reptiliary, where they will appear later as bluebottles. One need only introduce a few flies to watch the acrobatics of these delightful animals. They leap after their food with a total disregard of where they will land but their amazing ability to cling on to anything usually provides them with a safe landing.

There are only two species of salamanders in Europe; the spotted salamander (*Salamandra salamandra*) and the Alpine salamander (*Salamandra atra*). The foregoing is by far the easier to obtain and is a most attractive animal, being blotched in vivid yellow or yellow-orange on a black background. The average length is 6 to 7 inches and they are well built. Spotted salamanders do well either indoors or in the reptiliary. In either case they must have access to water, as when purchased in the spring or summer they are frequently gravid. They produce a number of young by taking a hip-bath. The babies are provided, at birth, with well-developed eyes and four limbs and external gills. They live in the water and require similar treatment to axolotls. After several months they metamorphose and take on the vivid coloration of the adults. Baby salamanders both in the water and on land require tiny earthworms or white worms. They will take minute pieces of raw meat if it is moved slightly. The adults feed on earthworms but gentles and mealworms can also be offered. The Alpine salamander requires similar treatment but it produces two fully developed young, which are provided with lungs and live on land from birth.

The European newts are more aquatic than the British species and are often kept in aquaria with a land area at



Photo: A. Bustard  
Five-bellied toad (*Bombina orientalis*). This small species has an attractive red-orange pattern on its underside.

one end. Worms are the best food. The aquatic habit applies particularly to the Italian crested newt (*Triturus cristatus karolusii*), the marbled newt (*T. marmoratus*) and the Spanish newt (*Pleurodeles waltli*). Indeed the Spanish newt is almost entirely aquatic throughout its life. I provided my specimens with a wooden raft on which they occasionally sat, otherwise they remained in the water. The Spanish newt is the largest of the European newts, with a total length of a foot. The marbled newt is particularly attractive, with delicate green markings. The Alpine newt (*Triturus alpestris*)—not to be confused with the Alpine salamander—seldom exceeds 4 inches and is much less aquatic than some. The variable coloration is most attractive, being frequently of a purple colour above with or without markings. On the flanks this gives way to sky blue and the underside is orange.

One of the most attractive of the European toads is the green toad (*Bufo viridis*). Coloration is very variable but usually includes green and the marbled effect is most striking. In size it is somewhat smaller than our common toad but requires similar treatment. The much smaller midwife toad (*Alytes obstetricans*) is a drab species but has remarkable breeding habits so it is worthy of a place in the outdoor reptiliary, where it may breed naturally. Mating takes place on land in this particularly terrestrial species, and the males collect egg strings, often from several females, and carry them around, wound round their hind legs until the tadpoles are ready to hatch, when they take them to the water.

Of a similar size (2 inches) are the fire-bellied and yellow-bellied toads (*Bombina orientalis* and *Bombina variegata*)

respectively). They are very agile little creatures, and spend long periods floating in the water among weeds with just the eyes and nostrils protruding and catch their food by sheer speed. I feed these small toads largely on flies and bluebottles. There remains one toad that is occasionally available, the spadefoot toad (*Pelobates fuscus*), which is a rather boring species to keep because of its habit of digging itself into the ground, where it can be hard to find!

The European amphibians provide a happy hunting ground and I well remember when they became available again after the war and I was able to unpack my first parcel. Their hardy nature, often beautiful coloration

and active habits, combined with their relative cheapness, make them firm favourites among collectors.

#### Prices

Examples of typical prices at present of the specimens mentioned in this article are:

European green tree frog, 2s. 3d.; Spotted salamander, 7s. 6d.; Alpine salamander, approx. 10s. to 15s.; Italian great newt, 2s. 6d.; marbled newt, 10s.; Spanish newt, approx. 15s.; Alpine newt, 4s.; green toad, 3s. 6d.; midwife toad, 6s. 6d.; fire-bellied toad, 6s. 6d.; yellow-bellied toad, 6s. 6d.; spadefoot toad, approx. 8s. to 10s.

## Shot Darkly With Reds

by T. ROLAN

**B**“BLACK rubies!” And what visions of exotic jewels shot darkly with deep crimsons and reds these words conjure up. But applied to fish—! The aquarist knows that *Barbus nigrofasciatus*, variously called the nigger barb, the ruby barb, the ‘purple-headed carp’ in Holland or the ‘crimson head’ in Germany, can more than live up to this most beautiful of its popular names. When the male is in first-class condition its breeding colours are magnificent. The head and foreparts then show a ruby-red glow that darkens to jet black from the dorsal fin to the tail and is underlaid with faint shimmerings of red. This colour phase, since it is associated only with courting procedure, is not permanent, and the males when out of breeding trim, and the females at all times, are a pale olive colour faintly banded with black. They are then rather plain little fish. So it is up to the aquarist to do his best to ensure that the males retain their beautiful coloration by keeping them in first-class breeding condition.

In order to achieve this with these fish it must be remembered that they require plenty of space, plenty of air and good feeding. Black rubies are extremely active and move readily around so that they need sufficient swimming space and a reasonable depth of water. They also need good supplies of oxygen and must be kept supplied with fresh water; the occasional replacement of about one-quarter of their tank water by water from the tap has been found to be beneficial. The tank should be kept scrupulously clean, and, though they can withstand a temperature range as wide as 70° to 90° F (21° to 32° C), it is generally acknowledged that at 75° F (24° C) they show the most intense activity and coloration.

In their eating habits they are most obliging fish and can make do with dried food alone, but they will not reach a peak of condition unless they are fed on a varied live-food diet. Adult brine shrimps, mashed earthworms and, as they have small mouths, *Daphnia* and *Cyclops* in particular, will serve as a staple diet. It should also be remembered that they eat considerable quantities of food and that they should therefore be fed liberally.

It is a challenge to the aquarist to bring these fish up to their finest trim, but there are other characteristics apart from their beauty that make ruby barbs so well worth keeping. They have the virtues of the genus *Barbus* with none of its vices. That is to say they make good community dwellers, since at maturity they are only 2½ in. long and they are by nature really peaceful neighbours; the males

go in for mock battles and mad chases round and round in narrow circles or throughout the length of the tank, but they are not addicted to the fin-nipping that a number of the smaller barb species indulge in, and a rogue ruby barb is a most unusual phenomenon. Then, as we have seen above, they are not difficult to feed, as they are omnivorous, and, finally, they are not difficult to breed. In South Ceylon, where they are found in slow-running, placid streams, the ruby barb is prolific, and in aquaria, too, it spawns easily. Novice fish breeders in particular, do well with these fish since there are no problems of sexing.

The parent fish must be of a reasonable size to provide plenty of eggs. In fact, the most satisfactory breeding results are obtained with well-developed fish aged from 9 to 15 months, chosen for their good coloration and, in the female, her nicely rounded shape. Preparatory conditioning is necessary, during which time the fish are fed liberally on a live-food diet, and this can be carried out either in separate tanks, in which case the fish are transferred to a smaller tank for the actual spawning, or the whole process can take place in one medium-sized spawning tank divided into two sections by a sheet of glass that can be removed when the fish are ready to spawn. This will be after about 7 days, by which time the male fish will be very active and showing all his wonderful courting colours and the female really plump.

The spawning tank may be prepared as follows: the bottom should be covered with round small stones or a layer of marbles to act as an egg trap, since, like all the barbids, the black rubies are avid egg-eaters. Fresh tap water that has been allowed to stand for a few days may be used to a depth of about 8 in., and plenty of spawning plants in the tank; either fine-leaved plants such as *Myriophyllum*, *Cabomba* or *Lisnaphila* or artificial media such as nylon wool or coconut fibre will be quite suitable. Some free swimming space should be left, however, for the fish to chase each other in. As for water temperature, this should be raised from the 75° F (24° C) at which conditioning takes place to the 78° to 80° F (25° to 27° C) required for spawning.

This usually takes place in the early morning, so, during the previous evening, the parent fish, female first, followed in a little while by the male, should either be transferred to the prepared spawning tank or, if the second method is being used, the glass partition between the fish should be removed. There will be quite a lot of chasing by both male and female and the semi-adhesive ova will be deposited

in the plants three or four at a time over a period of anything from 2 to 3 hours.

The parent fish must be removed from the tank as soon as spawning is completed or else there will soon be no eggs left to hatch. Furthermore, the male and female should be separated so that the female suffers no damage from the possible persistence of the male's breeding instincts after the eggs have been laid. If this is done another spawning can be obtained in 14 days' time. If spawning has not taken place at all within 2 days the fish should, in any case, be removed as they are obviously not in condition.

The pale amber-coloured eggs will hatch from 24 to 48 hours later. For 3 days the fry exist on their yolk sacs, after which they will become free-swimming. They can then be fed with liquid fry food and egg infusion. This

in turn can be replaced within a few days by micro-worms and newly hatched brine shrimps. From then they can be reared on any mixed diet until after 4 weeks some coloration will appear and the fish will begin to look like ruby barbs.

Black rubies in the dealer's tank give almost no indication of the beauty that they may ultimately display. For one thing they are young and the male fish does not attain complete coloration until it is fully adult. Furthermore they need peace and quiet and will never show fully if bothered by excessive netting and siphoning. But, provided that they have been bred from a good strain, they will, if left to themselves, more than repay all efforts to provide them with suitable conditions; and the sight of a male ruby barb displaying its true courtship colours is worth more than a little effort to achieve.

## SHUBUNKINS

# Selecting Breeding Fish

by JOHNSON H. HOOD

**I**N a previous article I have tried to indicate the importance of the red/orange and black factors in shubunkins, and to show that, in my opinion, there is close affinity in the coloration rate of metallic and nacreous fish. As this is really a continuation of the previous article, and before discussing the selection of brood fish, I feel it would be wise to consider the red/orange and black factors in more detail so that newcomers to the hobby can more easily recognise the presence, partial absence or complete absence of one or both factors.

### Colour Factors

I do not know why metallic fish change colour, but it is evident that those fish which do change colour have some factor in their genetic make-up that is absent in fish which do not change colour. For the sake of simplicity I call this the red/orange factor. In slow-colouring fish the red/orange factor is on the wane, and as far as colour is concerned the fish has partially reverted to its wild ancestry. It has been suggested the red/orange factor in goldfish is due to a condition known as xanthochromism, where only the red and yellow pigments are developed, black and brown being entirely absent. This may or may not be true.

Most authorities on the goldfish claim the presence of black in goldfish is a temporary phase, but I have bred, from shubunkins, metallics which developed at 9-12 months all red/orange bodies except for a small amount of black on top of the head. A startling feature of these fish was the fact that all the fins were jet black. Also they retained all these characteristics until they met an untimely death, at the age of 10 years, in a polluted pond. When breeding metallics one important fact emerges. Even quick-changing parents produce slow-changing and non-changing progeny. If slow-changing parents are used, only a very small proportion of the spawning ever change colour. There is a moral in this fact for shubunkin breeders.

The black factor in goldfish is perhaps the most difficult problem and one we know least about. It has many puzzling aspects. Consider the moor. One of the hazards of breeding moors is the annoying knack of certain fish to lose the black and turn red/orange. Also in moor spawnings will be found fish which lack the black factor and remain bronze all their lives. Another curious feature is



Photo: In the moor goldfish blackness accompanies the possession of 'globe eyes' H. V. Lacey

that only among globe-eyed (telescopic) fish are found all-black fish. If the eye structure is responsible for this why are there so many globe-eyed red/orange fish?

### Three Theories

Perhaps it would be quicker to arrive at some possible explanation of the black factor by postulating three theories, making a brief provoking comment on each and allowing the reader to argue the multitude of details I have not mentioned.

**THEORY 1.** The red/orange and black factors are entirely separate and unrelated to one another. The red/orange is dominant over the black factor. To support this theory we would have to accept the following: (a) Moors turn red/orange because they have the red/orange factor and it supersedes the black. (b) Moors are black because



they have the black factor but not the red/orange factors. (c) Unchanging bronze fish from moor spawnings lack both black and red/orange factors. Against this theory: No all-black fish without globe-eyes has ever been produced.

**THEORY 2.** There is no separate black factor. It is just a stage of development of the red/orange factor. Any permanent black is an arrested development of the red/orange factor. To support this theory we would have to accept the following: (a) For some reason the red/orange development in moors has become arrested, producing a black fish. (b) In sacreous fish the partial arresting of the red/orange factor is normal occurrence. (c) Blue is an arrested development of the red/orange factor. Against this theory: why are bi-coloured moors never seen?

**THEORY 3.** There are two kinds of black. The first kind is a stage of development of the red/orange pigmentation, lasting a limited period only. The second kind consists of dark pigmented cells, existing independently at varying levels in the tissue of the fish, and are permanent, although of varying intensity. To support this theory we would have to accept the following: (a) A large proportion of shubunkins will have to undergo a dark stage whilst the red/orange factor is developing. (b) The development of black spots in metallic fish (similarly to shubunkins) is inhibited by the heavy silvery under each scale. (c) Blue is a collection of dark pigmented cells deep in the body. Against this theory: why are moors black?

#### Test for Pigment Intensity

If this obviously severely curtailed theorising sparks off many arguments it will have served its purpose. Certainly theory 3 explains sacreous fish very well and I greatly favour it. Shubunkins can have cells which are heavily pigmented or lightly pigmented or they can be absent. A large number of sacreous fish go through a dark phase of varying length very like metallic fish. I have found a good guide to the intensity of the dark pigmented cells is the rapidity of reaction to light surroundings. If the fish bleaches or blanches rapidly the dark cells are only lightly pigmented. This is a very undesirable feature and if possible such fish should be excluded as breeders.

When choosing brood fish I would recommend that: they should be of a warm rich red/orange; should have had a short dark stage; should have heavily pigmented dark cells; should not bleach or blanch easily. I would avoid: those which are pale coloured; those which are more yellow than red; those which are brown or reddish brown for a long period; those which have a very long dark stage; those whose dark cells are only faintly pigmented and have a brown appearance; those which blanch easily.

No sensible breeder of metallics would dream of using slow-colouring fish as breeders if it could possibly be avoided. The shubunkin breeder must be just as stern with himself and counteract as much as possible the natural tendency of goldfish to revert to the wild type.

I have made very little mention of blue, and omitted it from the recommendations in choosing brood fish. If it is present, together with the other desirable features, then, of course, you have a potential show winner. Some time ago I recommended mating red/orange to blue. This is a good plan, but its greatest disability is the reduction in number of fish carrying the quick-changing red/orange factor.

One other point. I have suggested that in an uncoloured metallic and certain sacreous fish the red/orange factor was absent, whereas it may be absent visually; I would accept that in a percentage of the fish it has become a recessive factor.

Incidentally, in case anyone has not guessed, my ideal type of coloration in shubunkins is warm red/orange, deep royal blue and rich black arranged in a pleasing fashion.

## *Nannostomus anomalus*

by J. STOTT

**T**HE most outstanding feature about *Nannostomus anomalus* is the beautiful sleek, streamlined appearance, indicative of the capability for fast swimming which also lends for graceful movement. A native of the Amazon, it is a true tropical and therefore a temperature in the region of 75°F (24°C) is needed and this should be increased to 80°F (27°C) for the breeding tank.



*Nannostomus anomalus*

Besides having an attractive shape the fish also possesses a peaceful disposition, so it is quite suitable for the community tank. On a basic colour of olive brown a rich velvety black line extends from the tip of the lower jaw along the centre of the body to the base of the rays in the caudal fin. Along the top edge of this line is a second one of brilliant gold, commencing at the top lip and extending to the upper part of the caudal base. The under parts of the fish are greyish white with the anal fin and the ventral fins pale lavender blue, fading out to transparency at the edges. Dorsal and pectoral fins are flushed with delicate rose pink. In the male this pink colouring may deepen when the fish is in breeding condition.

*N. anomalus* appreciates clear, soft water, slightly acid, say around pH 6.8, and a not too bright top light. It has a small mouth compared with many other species of a similar size and this should be remembered when providing food. Powdered shrimp and powdered dry *Daphnia* will be found suitable for dry feeding. Live foods most acceptable are *Cyclops nauplii*, brine shrimps, white worms, small earthworms finely chopped and small bloodworms and the like.

An intended breeding pair must be well conditioned, then placed into a breeding tank containing soft, acid water. One or two clumps of sterilised willow root make ideal spawning medium and a water depth of some 6 inches will be sufficient. Spawning is a somewhat prolonged affair and may extend over 2 or 3 days. The eggs are small and adhesive and at the temperature suggested hatching usually takes place in about 48 hours.

Feeding the fry should commence when they are seen to be free swimming, which is generally within 4 or 5 days after hatching, although this varies considerably. For a first food green water is recommended for 3 to 4 days, then Infusoria can be given along with the green water. Observe the fry carefully and when they are big enough to take them introduce micro worms. Keep the temperature at 80°F (27°C) until the fry are around 6 to 7 weeks old, then carefully drop the temperature to 75°F (24°C). Avoid overcrowding, as this can severely interfere with growth and development. When fully grown *N. anomalus* averages about 1½ to 1¾ inches in a good specimen.



## from AQUARISTS' SOCIETIES

Monthly reports from Secretaries of aquarists' societies for inclusion on this page should reach the Editor by the 5th of the month preceding the month of publication.

RECENT activities of the Reading and District A.S. have included an excellent film show, put on by Mr. C. Leake; the programme included an H.M.S. Solon film "Summer-time tandem" and a much cooler subject "Hakone houses of N.W. Alaska". Two table shows were held: Goldfish, which was won by Mr. J. Babby's Blue Azara; second and third places being filled by Mr. B. Lockwood's Kermesse Carps and Mariposa was won by Mrs. Sandra Talry with a W.C.M.M.

The society is staging a public exhibition of furnished aquaria in the lounge of the Oxford Cinema in Reading from 7th to 20th May. It has been decided also to re-affiliate to the F.R.A.S.

At the last meeting of the Three Gosses Group F.G.R.S., several Reading members joined in to listen to a very interesting and enlightening talk given by George and Eglal Smith on the selection and breeding of Guppies.

THE last two meetings of the Romford A.S. were mainly composed of colour transparencies shows. The first was a slide on how to select fish on "Breed Shows" and illustrated various ways of handling and feeding them to fish. The second was by a number of the Society, Mr. P. Sargent, on how and how not to photograph fish. This was extremely well done.

The Dagenham Open Show will be held on Saturday and Sunday, 7th and 8th July. All enquiries should be made to Show Secretary, A. T. Smith, 125, Hissam Avenue, Romford, Essex. The dates will be the same as last year.

AT the April meeting of the Northampton and District A.S. members took part in program and fish identification competitions which were run by Mr. J. Wright and Mr. N. Lyons. Table show results for Cyprinidae were: 1, B. Chadwick; 2, R. Shuster; 3, E. Webb. Junior section: 1, M. Gerrish; 2, R. Holliday.

PLANNING for a "first time" meeting always proves somewhat of a headache for organizers, but the committee of the Midland Association of Aquarists' Societies have every reason to feel elated at the success of the first convention of aquarists which was sponsored by the Association at Adlestropes on Saturday, 14th March. Attendance, by no means deterred by bad weather, was in the region of 150, sixteen Midland Societies being represented.

After an exhibition of coloured slides of fishes, decorative aquaria and garden pond layouts, visiting society members had a chance for discussion over refreshments provided by the hosts, who were the Atherton A.S. Mr. Colin Roe, the well-known Midland aquarist and principal of Shirley Aquatics, Ltd., then gave a most informative talk on "Specialisation in fish breeding". A society forum followed in which questions on Society management in the inevitable one-on-one cases for "white spots" were put to a panel of Association speakers and judges.

With the experience of this most successful event to work from it is hoped that the M.A.S. will be encouraged to plan other and more

ambitious meetings which cannot do other than foster an enlightened interest in the hobby.

AT the recent annual general meeting of the Chester A.S. the following officers were elected: President, Mr. G. S. Moorhead; vice-presidents, Mr. F. Williams, Mrs. J. Williams and Mr. G. Legg; chairman, Mr. H. Evans; secretary, Mr. G. Davies, 22, Nymy-Green Road, Llandudno; treasurer, Mr. A. Evans; Committee members: Mr. H. Taylor, Mr. E. Stokes and Mr. D. Brightman.

The society's schedule of visits for the forthcoming year is interesting and varied, with a visit to Blackpool Aquarists heading the list. There is also a visit to the coast of Anglessea for the purpose of collecting information on marine life and in a month's time, as it is hoped there will be a few of these interesting aquaria started this year.

AT the March meeting of the Stroud and District A.S. a very informative talk was given by Mr. B. James on various plants and their uses in the aquarium. A challenge show for Shubunkins and Goldfish was won by Mr. P. Dainty with a Goldfish and Mr. W. Gray was second with a Shubunkin. A raffle was also won by Mr. J. Dainty.

The April meeting took the form of a "down-to-go" quiz, the prizes of the club taking on the serious and proving victorious. A challenge for A.V. Livebearer was won by Master G. Bevington with a fine female Black Mollie; second was Mr. Gray with a Guppy and third, G. Brunnington with a male Mollie. The raffle was won by Mr. L. Griffiths.

AN open table show is being staged by the Mansfield A.S. on Sunday, 3rd June, at the Stanley Hall, Castle Street, Mansfield, Cheshire. Booking is from 1 p.m. to 2 p.m. and the judging is at 2.30 p.m. Raffle will be played while fish are being judged and refreshments will be available. Clubs interested should contact the show secretary, Mr. A. Hand, 46, Birton's Lane, Mansfield.

THE Thorne A.S. will be holding their first open show on Sunday, the 3rd June, at the Grammar School, Thorne, judging to commence at 2.30 p.m. The secretary is Mr. D. Wells, 10, King Edward Crescent, Thorne, No. Doncaster.

THE monthly report from Leith A.S. states that the chairman, Mr. N. Aiken has resigned due to business matters and Mr. R. Fraser has been elected in his place. The Society had a very interesting and informative lecture on "Aquarium Plants" by Mr. A. Jeffrey of Kirkcaldy and Mr. R. Cooper also of Kirkcaldy gave a lecture on a "Decorative Home Set-up."

The table show was well attended, the results being: English—1, R. McFarberry; 2, H. Porter (Caribbean species); 3, G. Wilson (Cherry Barb); Livebearers—1, C. Barr (female Veilhead Guppy); 2, G. Barr (male Veilhead Guppy); 3, J. A. McLaughlin (female Coloured Guppy); English—1, J. Milne (Siamese

Figure); 2, J. Milne (Shy Barb); 3, A. Elias (Australian Rainbow).

The leading contenders for the "Aquarist of Year" should be: Sisson—1, McInosh (36 points), D. Hard (26), T. Elliot (20); James—1, Milne (30 points), D. Beattie (18), D. Duncan (18).

AT the April meeting of the Bedford and District A.S. a lecture on plants was given by Mr. F. C. Kuznetzky and was illustrated by slides of aquarium plants, pond plants, and household plants. The meeting proved extremely interesting and informative.

THE following officers were selected at the recent general meeting of the Uxbridge and District A.S.: President, Mr. R. Sherry; Chairman, Mr. H. Moore; Treasurer, Mr. J. S. Peters; Secretary, Mr. C. E. Bull, 70, Hatherleigh Road, Ruislip, Middlesex.

The annual general meeting was followed by a lengthy discussion regarding the proposed increase in fish-keeping throughout the district. It was decided that a drive should be commenced to recruit new members—particularly beginners.

AT the first meeting of the newly formed Yorkshire (Sheffield) section of the Fancy Guppy Association, the following officers were elected: Chairman, Mr. K. Riding; Secretary, Mr. G. Jackson; Show Secretary, Mr. G. Jackson; Treasurer, Mr. P. Rindworth; Public Relations Officer, Mr. Harrison. The meeting was presided over by Mr. F. Whittam (Lancashire section) and Mr. Preston (Pomona section), and they kindly offered to provide some initial breeding stock. Future meetings will be held at Unity Hall, Rawson Square, Bradford, on the second Sunday in each month at 2.30 p.m.

Prospective new members, beginners or otherwise can be sure of a friendly welcome, and every effort will be made to assist them. Enquiries should be addressed to Mr. G. Jackson (Show Secretary), 49, Firtz Street, Wesley Place, Low Moor, Bradford, Yorks.

MEMBERS of the Merseyside A.S. have enjoyed quite a varied programme recently, including a visit from Mr. Mason Smith of Cambridge. The annual dinner was also well supported and Mr. B. Pengilly has also entertained the members with an illustrated lecture. An Open for Show is being staged on Sunday, the 26th May, the judges being Mr. R. E. Legg and Mr. B. Pengilly. Among the forthcoming speakers are Mr. J. Conley on "Guppy Specialisation," and Mr. W. Bailey will also speak, his subject being "The Trade Answer Book." Mr. A. Bland will discuss "Aquarist Medicine," and it is also hoped to hear Dr. Ghoshally, Dr. Hugh Thomas and Mr. R. E. Legg.

NEWS from Postypool Aquarist and Pond-keeper Society includes the announcement of the resignation of Mr. P. Inghott from the position of secretary. This was received with much regret by the members as Mr. Inghott had given magnificent service to the Society and had built a good foundation for the future. Publication of a 12 page monthly magazine has commenced and the Annual Show will be held at the Town Hall, Postypool on the 26th May. The new secretary is Mr. P. H. Jeffrey, 27, Victoria Road, Postypool.

AT the April meeting of the Leeds and District A.S. Mr. A. Day was in the chair in the absence of Mr. P. Reynolds who was ill in hospital. An outing has been arranged for the members and friends to Chorley Zoo on the 1st July, and final arrangements are also being made for the open table show. A talk was given by Mr. J. Skinner on fish diseases and cures and the dangers of cyanide live foods, and the winners of the Table Show were as follows:

THE AQUARIST

Labyrinthia: 1 and 3, Mr. D. Lees; 2, Mr. Moss; Livebearers: 1, Mr. B. Moss; 2, Mr. D. Lees; 3, Mr. Smith.

A NEW venture of the North-Eastern Federation of Aquarist Societies is an inter-club show staged first in a house and away tent, and covers six classes. The first match was between Sunderland A.S. and the Tyne-side A.S. and resulted in a win for Tyne-side with 27 points to Sunderland A.S. 9 points.

At the last meeting of the N.E.F.A.S. a talk was given by Mr. Jan Wagar, a well-known aquatic and Edinburgh dealer on his recent visit to American fish dealers, establishments, and in particular the American Snake Co. in New York. The result of the table show for Charridae and Cichlids was as follows: Cichlids—1, Mr. A. Ritchie (Tyne-side); 2, Mr. A. Goodfellow (Preston); 3, Mr. E. Adverton (Percy); Charridae—1, Mr. W. F. Dunn (Sunderland); 2, Mr. D. Mackay (Tyne-side); 3, Mr. W. F. Dunn (Sunderland); 4, Mr. A. Best (Sunderland).

FOR the first time in 11 years, the Gravel Aquarist will not be open to visitors this year. The council has agreed to demolish it late this year to make room for new development and the Grimsby and Cleethorpe A.S., which ran the aquarium, has decided not to carry on this season.

With its closure ends an arrangement that is probably unique. For the Aquarist Society was breaking new ground in running a public aquarium as a private enterprise—probably the only such society in the country to do so.

It took the gravel over about 11 years ago. The gravel had been closed during the war and before that had been a cafe.

The aquarium, staffed mainly by members of the society, working on a voluntary basis, was popular from the start. The committee closed

throughout the season and beside leaflet-makers, the ponds had official visits from dozens of schools.

In its time, the aquarium housed one of the largest collections of rainbows in the country, and extra attractions were cichlids, snakes, terrapins, iguanas and water dragons.

MEMBERS of the Isle of Wight A.S. met at the Newport Social Club recently, when, following an open discussion, Mr. Bryden spoke on how to furnish an aquarium. Table show results: Slim-bodied tetras—1, E. I. Davis; 2, J. and K. T. Davison; male veiled guppies—1, E. Knight; 2 and 4, S. G. Stevens; 3, J. A. Gomers; plant competition—1, A. Parker; 2, E. T. Davison.

THE main item at the last monthly meeting of Queen Kate & Northfields Pond and Aquarium Society was a table show for variety fish (single fish). The judge was Mr. Brown of the Scarborough Society. Results were as follows: 1, Mr. J. Grace; 2, Mr. H. Peltner; 3, Mr. T. Lowe. The best fish in the show was a Tiger Barb.

While the fishes were being judged, the minutes drawn to judgement by Mr. T. Lowe, "Breeding of Brine Shrimp." Talk on Barbs by Mr. E. Lane and the Society Newsletter by Mr. I. Givens. The April assembly was a debate on Tropical and Coldwater fish.

#### SECRETARY CHANGES

CHANGES of secretaries and addresses have been reported from the following societies: Bedford and Cratich A.S. (Mr. B. Hanson, 28 Avenue Road, London, N.10); Potterypond Aquarist and Pondkeeper Society (Mr. P. E. Jeffries, 27, Victoria Road, Potterypond).

#### AQUARIST CALENDAR

**28th May:** Potterypond Aquarist and Pondkeeper Society: Annual Show to be held at the Town Hall, Potterypond. All enquiries to The Secretary, P. E. Jeffries, 27, Victoria Road, Potterypond.

**27th May:** Acornham A.S. Open Table Show. Details from the Secretary, Mr. T. H. Hammett, 63, Plantation Street, Acornham.

**3rd June:** Macclesfield A.S. Open Table Show at the Academy Hall, Castle Street, Macclesfield. Particulars are available from Show Secretary, Mr. A. Beard, 40, Byron's Lane, Macclesfield.

**3rd June:** Thorne A.S. First Open Show at the Grammar School, Thorne. Details from the Secretary, Mr. D. Wells, 10, King Edward Crescent, Thorne, Nr. Doncaster.

**24th June:** Slippon and District A.S. Open Table Show at the Antislavery Hall, Slippon, 7.30 p.m. All details are available from the Secretary, Mr. K. Barlett, 38, George Street, Slippon.

**7th-8th July:** Dagenham Town Show. All enquiries to Show Secretary, Mr. A. T. Smith, 125, Heston Avenue, Romford, Essex.

**18th-22nd September:** Leeds and District A.S. Open Show to be held at the Trinity Church Hall, Leeds.

**29th September:** Kingston and District A.S. Inter-Club Open Table Show.

**29th-31st October:** British Aquarist Festival, Bala-Vic Zoological Gardens, Montgomery. Schedule available from Show Secretary, Mr. Geo. W. Cooke, "Spring Green," Fieldhill, Barley, Yorks.

Society secretaries are invited to send details of forthcoming exhibitions and shows for inclusion in this feature. Full details to help readers wishing to attend these events should be given.



## BRITISH AQUARISTS' FESTIVAL

1962

20th and 21st October

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However there is no fear that the angle iron aquarium will ever disappear, this, the basic, and most essential piece of equipment has been with us many years and without it our hobby could not have flourished. It is not perhaps as elegant as we would like for our homes and it does tend to become a little cluttered up with electrical wires. But to list the faults is like listing the faults of an old and faithful servant, let us just say that there is an alternative aquarium, the ARBE aquarium, constructed to eliminate all these faults and designed to be an elegant and worthy addition to your home.

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