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THE **AQUARIST**  
AND PONDKEEPER





# THE AQUARIST

AND PONDKEEPER

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**Our Cover**  
Water Lily: *Amabilis*  
(See page 144)

July, 1972

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# WHAT IS YOUR OPINION?

by B. Whiteside

Photographs by the Author



THANK YOU for all your letters. I received twenty one this month, eleven of them dealing with the Mono—*Monodactylus argenteus*. I had no idea the fish was so popular!

I was recently asked about the most suitable conditions under which the glowlight, *Hemigrammus erythrozonus*, would breed. Perhaps you could let me have your opinions on this query. Photograph 1 shows one of my elderly glowlights, but I have recently added some young ones to my collection as I consider the glowlight to be a most enchanting little fish.

The first letter which I received came from Dr. N. Carrington, of Interpet, and concerned Mr. Nedell's comments on American heater/thermostats in the April, 1972 edition. Dr. Carrington points out that Petcraft import such a unit. Interpet did sell units of this type, but discontinued their sale for two reasons: (1) Most British aquarists use an all-over hood so that the thermostat is enclosed in the hood. Since the American type of unit is not designed to be water-tight, there is a genuine risk of condensation getting into the works. (2) Since tanks vary in depth, the American type of outside heater/thermostat very seldom is exactly the right length for your tank, and it would not be practical to have several different length models available because of a stocking problem for dealers and wholesalers. It is therefore necessary, when using this type of unit, to have some form of water circulation such as a motor filter or aeration. Many aquarists do not choose circulation of this type, and consequently they run into trouble because the bottom few inches of water in the tank are permanently cold. This is very bad for the fishes because of the very big temperature differences, and Dr. Carrington thinks that this is one of the prime causes of white spot.

He says this because many aquarists do not seem to appreciate this problem, and do not put the heater as low in the tank as possible. He has judged furnished aquaria at shows and has even seen such tanks with the thermostat lower down than the heater. How people can expect to get any form of temperature control this way he cannot imagine. For this reason he favours submersible heater/stats in which the heater can be placed right at the bottom of the tank, with the thermostat either vertically—or at least slightly—above it, and this overcomes the vertical stratification problem. Of

course, in a large tank, you still need a heat source at each end of the tank, Dr. Carrington considers, and in his view two combined units are the ideal solution. He uses two Minimatrics. Dr. Carrington ends by saying that the Springfield combined heater/stat is "a very good unit," with an outside control, but he considers it quite expensive.

Mr. G. D. Dugdell, of 14 Mill Gardens, Horsford, Norwich NOR 84X, finds this a very interesting feature, and, like me, has not been very successful with the keeping of Monos in fresh water. He bought two and placed them in a 5 gal. tank filled with water from, and floated in, his main 5 ft. x 2 ft. x 1½ ft. tank. The fish thrived for two weeks so he decided to free them in



the larger tank. To prepare for the switch he took some of the water coming from the larger tank's power filter output, and piped it into the smaller tank for a few hours; the water in both tanks was then the same. When the fish were released into the larger tank they immediately sank to the bottom, lay on the bottom with their mouths wide open, and died within five minutes. He wonders if shock might have been the cause. (Let me have your opinions on this unfortunate incident).

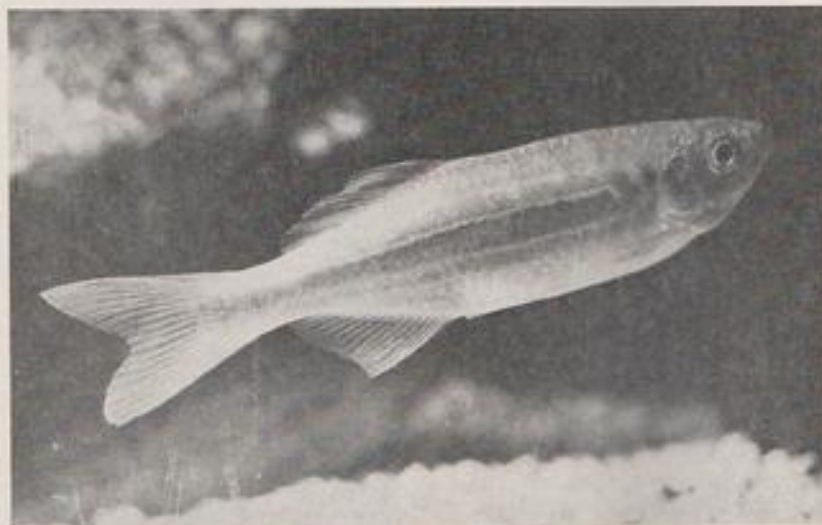
Miss L. C. Baugh writes from 100 Shaw Road, Blakenhall, Wolverhampton, Staffs., on the subject of Monos—or Malayan angels as they are often called. She bought two and placed them in a tank with angels, black mollies and gouramies. The angels and gouramies did not bother with the Monos, but the mollies

chased them continually. She removed them and placed them in a smaller tank with guppies, platies, neons and bumble-bees, but they both died after a week. Some months later the mollies died and Miss Baugh bought two more Monos. These were placed in the original tank and have since doubled their original size. They are often seen at the front of the tank, and are kept in fresh water. They feed on flaked foods, dried worms, live *Daphnia* and white worms, and she finds them very interesting. She has noticed that when the fish are frightened in any way, the silvery part of their bodies goes black, and it takes some time for them to regain their normal colouring.

Mr. J. Jellie, of Hurst Grange, Stirling, Scotland, wonders what I did with my Mono. He purchased four 1 in. specimens which he kept in a 15 in. tank of

address is 59 Myers Lane, Bolton, Bradford 2, Yorkshire. He kept two monos in his community tank, but after one week the fish developed small, white ulcers on their heads. He tried several "cures" without success, but then tried adding 1 tablespoonful of aquarium salt to each cubic foot of water in the aquarium. This did not harm any of the other fishes and the ulcers cleared up. Three months later he has still got the Monos and they are growing quite well.

"I kept five Monos, together with some scats, in brackish water. When I got them they were shy and generally nervous; however, after a couple of days they became quite tame," writes Mrs. S. Lusardi, whose home is at 15 Wakley Street, London EC1 V7LT. She goes on to say that she soon noticed that her scats' tails were becoming more tattered every day. Con-



freshwater with "a healthy dose of aquarium salt" added, and they thrived. He found that they were not too keen on dried foods, but they are amongst his favourite fishes. Mr. Jellie had to get rid of all his fishes and tanks when he moved to a new school. He would like to have readers' opinions on how long a marine aquarium can be left without attention. He has some experience of native marines being left in school for six weeks, but would not trust tropicals for that length of time. His worst fright was when he returned from a school holiday to find that the air supply to the school tanks had been turned off. The tanks were full of black slime and he thought the worst. However, he got a net and found all the crabs, fishes and prawns still alive. He hastily made up some fresh salt water and placed the creatures in it; they thrived! Mr. Jellie ends by saying that he finds this feature "a goldmine."

Master Stephen Proctor is 15 years old, and his

considering that Monos are crafty fish, she decided to keep watch from a position where she could not be seen. She soon caught the Monos nipping the scats' tails. The Monos were quickly swapped for more scats!

Mrs. P. A. Emmerton, of 264 Woodmonsterne Road, Streatham, London SW16 5UA, had two 1 in. Monos which, when kept in fresh water in a community tank, grew to over 3 in. in length. On learning that they preferred brackish water she put them in a tank with a small amount of sea salt added. They were dead within one week. (No doubt the sudden change killed them). Like me, Mrs. Emmerton had trouble with her oscars going very thin, grabbing at food and then blowing it out. She had almost given up hope when she decided to try them on the diet on which she feeds her snake-heads—mainly steak, liver or pieces of cod or haddock. The oscars never looked back! One fish did get a cloudy eye, and it was treated with Halamid. The eye cleared up, although Mrs. Emmer-



ton thinks that it would probably have done so without treatment. Her snake-heads get cloudy eyes sometimes, but they clear up just the same, treated or untreated. She asks if readers could send their opinions on what she could do with two 14 in. snake-heads, in a 3 ft. tank, when she does on holiday, as the fish get aggressive when hungry.

220 Plumstead Common Road, Plumstead, S.E.18, is the home of Mr. R. Loten, and he has had trouble with tiger oscars and piranhas developing cloudy eyes. He consulted Sterba's book, "Aquarium Care," and decided that the trouble was caused by *Costia*. He removed about 1/3 of the tank's water and cleaned the base. Fresh tap water at room temperature was added and the tank's temperature increased to 86°F. An appropriate antibiotic can also be added, he says. Much to his relief the above measures brought about a cure in three days. He would like to know if readers could tell him of any firm which will supply mealworms by mail as he is having difficulty in obtaining them.

The address on Mr. T. Bolingbroke's letter is: 28 Spenthorn Lane, Ashford, Middlesex TW15 1UJ, and he kept four Monos in a 3 ft. tank with other common freshwater fishes. The Monos more than doubled their size in nine months, but were given away when their owner moved house. An attack of white spot was cured using "Contra Ick." The fish were kept in water at 78°F and were fed on flaked foods, *Daphnia* and *tubifex*. The only fish with which the Monos did not get along were two small angels. Mr. Bolingbroke had eight Rams—*Apistogramma ramirezi*—which were about 1 in. long, and which were kept in a 3 ft. tank with two pairs of dwarf gouramies. The tank was heavily planted, but the Rams died within eight days although there were no signs of any disease. He wonders if the gouramies' spawning behaviour had anything to do with the Rams' deaths. The tank water was neutral and the hardness 80 ppm. Last year Mr. Bolingbroke left his fish for two weeks while he was on holiday. The lights were left off but the fish were fed once, in the middle of the period, by a friend. No losses were sustained, so the process will probably be repeated this year. Mr. Bolingbroke asks if anyone has any information about a fish which he calls *P. kingslyae*. He recently noticed that his specimens were herding some fry about their tank, and all he knows about the fish is that it comes from Africa and is probably a mouth-breeder. (I was unable to trace the fish in Sterba's "Freshwater Fishes of the World.")

Mr. K. Dodd's home is at Gable Cottage, 21 Priory Hill, Wembley, Middlesex HA0 2QF, and he has been keeping Monos for some years. He uses ordinary water straight from the tap, and finds that they keep healthy; however, he says that they start to rip up the plants if they don't get enough vegetable matter, and he provides his Monos with finely chopped cabbage.



(Original!) He keeps their water at 75°F and can't remember when he last had one die.

Mr. R. Luck writes from 88 Penrith Rd., Basingstoke, Hants., and he finds this a very interesting feature. He has found that Monos do far better in salt water, and his are kept in a 38-gallon marine aquarium. The fish are 2½ in. and 3½ in. in length, and take 1 in.-1½ in. guppies in one go. He thinks them truly beautiful fish, especially when the morning sunlight shines on them through his lounge window.

Mr. A. Binns' Monos were shy when first introduced into their new home, but after two tank changes they



became quite extroverted. They are housed in a 36 in. community freshwater tank with dwarf cichlids and have a diet of flakes, *Daphnia*, F.D. shrimp and F.D. *tubifex*. Mr. Binns knows nothing of the chemistry of the tank's water, but he changes about 3-4 gallons once per month. He thinks that Mr. Aslett's suggestions for new articles are very good, and he says that he would find them very helpful. He thinks this feature is extremely good and it is the first "call" for him and his wife when *The Aquarist* arrives. Mr. and Mrs. Binns live at 67 Mill Lane, Brigg, Lincs. DN20 8ND.

As I don't want this topic to become MONOTONOUS, I'll move on to a very fishy story from Mrs. D. Hanning, and she sends her letter from 11 Seaton Place, Ford, Plymouth. About twelve years ago she came home from shopping to find water splashed all over the floor, and her largest goldfish missing. She dashed down the garden and found her cat tossing the fish in the air. Grabbing the tooth-marked fish she rushed into the house and literally threw the fish into the tank—where it swam round happily. The cat had taken the fish upstairs, out through the top of a sash window which was only open 6 in., down over the kitchen roof, and along to the bottom of the garden. Since then the fish has lived in her garden pond. Two years ago the same fish was caught by a neighbour's cat and taken over a high fence; it was rescued once again and lives to tell the tale. Commenting on tiger barbs, Mrs. Hanning says that some may be aggressive and some may not—just as with humans. The first tiger barb which she bought fought with everything and had to be returned to the dealer's shop; a latter pair gave no bother at all, even when one died and the other was left without a mate.

Photograph 2 shows the giant danio, *Danio malabaricus*, one of the faster movers in one of my school tanks. I'd be pleased to hear of your experiences with this fish, particularly as regards breeding, for next month's feature. (Some readers may wonder why I include photographs of fishes or plants about which I ask questions, in the same edition of the magazine in which I ask the questions, and do not keep them to include with your replies in the following edition. The reason is that I have reached the interesting conclusion that if readers see photographs of some of the subjects about which I ask questions, *when* I ask the questions, they appear to be much keener to send in their opinions on the topics. Last month's photograph of the Mono is a good example).

Last month I included a question about, and a photograph of, *Apistogramma rimirezi*—the Ram, as it is popularly called. 16 years old Master Kevin Ireland, writing from 11 Berkley Road, Shirley, Solihull, Warks., tells us that he recently had some interesting experiences with this fish. A few weeks ago he bought a sexed pair, and when they were placed in their new home they began to defend some territory at the rear of

the tank. Both fish had their ovipositors down. The fish were in a mixed community tank, and were fed mainly on *Daphnia*, *tubifex* and meat. Two days later the fish spawned—but they ate their eggs the next day. Seven days later they spawned again; a *P. kribensis* in their tank upset them and once again they ate their eggs. The Rams were removed to another tank and spawned for a third time; the eggs then lasted for three days before being eaten. A fourth spawning took place eight days later and the parents attended to the eggs until they hatched; they then ate the fry! Kevin will remove the parents after the next spawning as he is determined to rear a brood of young Rams. He finds that these fish will eat any kind of food. He has now bought a second pair of Rams and is looking forward to results. (I bought myself a beautiful pair of young Rams two weeks ago and they seem to be thriving. One fish has had its "breeding tube" down several times already, so, like Kevin, I'm hoping for a spawning some time soon).

Mr. K. Grayling, whose home is at 9 Goulton Road, Clapton, London E5 8HA, has had a pair of Rams for the past three months. He has found that they are very keen on clipped earthworms; they will also eat flaked foods, but only when pieces sink down in the water to their level. Since then, the male fish developed a boil on its forehead and had to be destroyed. Mr. Grayling is now looking for another male fish. He tells an amusing story about his local dealer—who has a 6 in. piranha for sale. The dealer has put a sprawling, small, plastic model of a human skeleton on the floor of the tank. The piranha is obviously not amused! Mr. Grayling wonders why there is such a paucity of experts on tropical and coldwater fishes. The most authoritative writing he has seen is by Mr. A. Boarder and Mr. J. Hems. Mr. Grayling considers that there is scope for someone to start up a course called: "Know Tropical Fish," for example, to shed light into a few dark corners. (I don't know if readers saw Mr. and Mrs. R. Skipper, of the House of Fishes, on a recent B.B.C.2 programme called "Pets and Vets." I did, and although I do not know Mr. and Mrs. Skipper I must say I was very impressed by their television presentation of our hobby. It was rewarding to hear such good sense talked, as one quite often hears and reads such nonsense these days. It was also encouraging to hear that some colleges and universities are now providing courses on the diagnosis and treatment of fish diseases. For too long this field seems to have been ignored by such establishments—as regards dealing with diseases of fishes kept by ordinary hobbyists. Most people would agree that a sick cat or dog deserves, and gets, more sympathetic treatment than a sick fish—but I'm sure that there must be many sick fishes whose lives could be saved if the local vet knew how. Let's hope that more vets will know how, soon!)



Photograph 3 shows a *Bacopa* plant—*Bacopa monniera*. Recently my own plants have not been growing too well. What sort of general conditions do you find best suit *Bacopa* plants? Your opinions should make interesting reading.

"Like many others, I consider W.Y.O. ? to be one of the finest articles in any British aquarium publication," writes Mr. L. Anderson, from "Wyncote," Barmby Moor, York YO4 5EE. Mr. Anderson goes on to express a view with which Dr. Carrington would possibly disagree. He writes: "I think far too much emphasis is placed on rigid temperature control!" With a separate heater and thermostat, both submersible, the water in his 24 in. x 12 in. x 12 in. tank varies in temperature from 70°F to 82°F. He has difficulty in controlling the growth of *Cabomba* and Amazon swords, and the angels and dwarf gouramies, especially, thrive. He ends his letter by asking if any readers know the most successful method for ensuring that home-bred *Daphnia*, reared in "stable-tea," are pest-free enough for aquarium use. He has heard that it might be possible to use methylene blue. (I must admit that I have never reared my own *Daphnia* and know of no answer to Mr. Anderson's question. Do you have any suggestions? If so, drop me a line).

Well, I'm afraid that that's it for this month. I hope to include the unused letters in next month's feature. Please send me your opinions on the questions in the main body of the text, and on the following: (a) Which is the most interesting public aquarium which you have visited—either in Britain or overseas—and what are its

main attractions? (b) I recently bought myself a couple of pairs of silver-tipped tetras which I have found to be most attractive little fish. What have been your experiences of keeping and/or breeding this tetra? (c) What reasons would you offer as to why plants of water wistaria (*Synnema triflorum*) close up their upper leaves at certain times during the day when all obvious external conditions remain the same—e.g. when the light which they receive remains constant? Giant hygrophila (*Nomaphila stricta*) responds in a similar manner, but only when light intensity varies. I have noticed such responses from water wistaria in my own tanks, but have not finally settled my mind on the specific reason. (Of course, there may be several reasons). I'd be interested to have your views. (d) For how long have you been able to keep a goldfish alive in a goldfish bowl? (I asked this question in the April edition, but got no replies. Perhaps readers of *The Aquarist* are so enlightened that they have never kept goldfish in a bowl—or do they not want to admit to having done so? I don't recall ever having kept goldfish in "a goldfish bowl," but I do remember, when I was very young, keeping goldfish in large, glass bowls which I obtained from a grocer's shop). (e) What have been your experiences with using wood, or cork bark, as internal aquarium decorations? I look forward to hearing from you c/o *The Aquarist*. Please print your name and address clearly on your letters, add the date, and enclose a S.A.E. if you require a reply. Good-bye until next month!

## PRODUCT REVIEW

REFILLABLE AUTO FEEDER, distributed by Liverine Ltd., Fraser Street, Grimsby, Lincs. For prices see advertisement in this edition of *The Aquarist*.

This new product, being distributed in the U.K. by Liverine Ltd., is made in Taiwan. The Auto Feeder consists of a clear plastic container, with an input for air at the top, a white plastic "net" grid at the base, and a plastic sucker at the side, by which it is attached to the glass of the aquarium. The unit is approximately 3½ in. long by 1 in. square, and comes complete with a yellow plastic cap for the bottom, an air line, T-piece and clamp to control the air supply, and a "block" of food. The food consists of freeze-dried *tubifex* worms, the guaranteed analysis given being: crude protein 50 per cent, crude fat 1 per cent, crude fibre 4 per cent, maximum ash 8 per cent and maximum moisture 5 per cent. The feeder contains 10 grams of worms, and the distributors say that these should be sufficient for about one week for 35-45 tropical fish in a given tank. The worms are suitable for freshwater and marine tropicals, and for goldfish.

To use the feeder it is connected to the air line supplied, via the T-piece. The other end of the T-piece

is connected to an air line from your aquarium air pump. The yellow cap is then removed from the base of the feeder, and the feeder placed in the aquarium—about 2 in. under the water level—and fixed in place with the sucker. The clamp on the air line is then adjusted so that a bubble rises from the feeder about once every fifteen seconds. It is important that this adjustment is done correctly.

The feeder is now in operation and the fish will soon discover it and begin feeding—as I found when I tested a sample feeder. No further attention is required until the supply of food is finished. When this happens it is a simple matter to refill the feeder with a new "block" of food, supplied by the distributors. The main advantages listed by Liverine Ltd. are that, being totally automatic there is no possibility of overfeeding; it saves feeding time; it is an excellent holiday feeder and regular feeding promotes faster growth; and the food in the feeder will not contaminate the water as it is only taken by the fish as required. Other advantages which they point out are that once having bought the feeder, it can be refilled with freeze-dried *tubifex* at a price well below the level of most freeze-dried *tubifex*; and that one is actually saving money after the third or fourth refill.



At present the Auto Feeder and refill are only available with *tubifex*, but it is hoped eventually to offer a wide range of foods with these. For the aquarist who would like to have his fish fed automatically, at a relatively low cost, the Refillable Auto Feeder should be of interest—especially during holiday periods.

B.W.

SALUFIT REMEDY COMPLEX, for the treatment of all common fish diseases, manufactured by Vitakraft, 28 Bremen, 44/West Germany. I do not yet know of the price of this new product.

"Salufit" is described by its makers as: "The only preparation in the world which cures more than fifteen fish diseases."; "A sensational advance for the aquarist. No more sick fish."; "The complex drug against all common fish diseases."; "Cures more than fifteen fish diseases of bacterial and virus types."

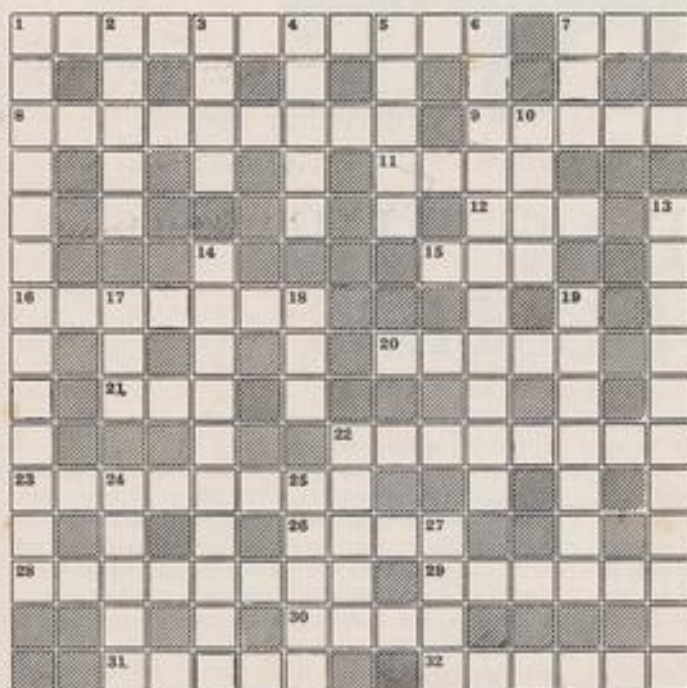
Unfortunately, for the purposes of this review, but fortunately for me, none of my fishes developed any

diseases during the period when I had this new product for review test purposes; thus I was unable to test it in use. However, the product does certainly sound as if it should fulfil a long-standing need for aquarists. The majority of us meet with various diseases amongst our fishes over the years, but many of us guess at the disease, guess at a possible cure, and guess at the amount of "cure" to use—as someone once said. "Salufit" sounds as if it should solve a lot of these problems; trial and error treatment should be well on the way out.

Unfortunately, because the product is manufactured and packed in Germany, the instructions on the remedy's glass container, and the details on the packing carton, are in German—and I am unable to read the language; thus I do not know what substances "Salufit" contains and cannot comment upon them. However, as well as a leaflet in German, the carton contained one in English. Some quotations from this leaflet would probably be the best way in which to let readers know

## The AQUARIST Crossword

Compiled by M. W. CLARKE



Solution on page 151.

### CLUES ACROSS

- Instrument for measuring warmth (11).
- Type of lettuce (3).
- He's adaptable (9).
- It will have lips (5).
- What could have been left of Jack's pail of water (4).
- Father Time will live through this period without ageing (3).
- Raw material (3).
- Its larvae is called a Pride (7).
- Man of a bed of nails (5).
- A catfish's pectoral? (3).
- Part livebearer, part cat, make up this egg-laying mammal (8).
- Bird taking beer at 3 a.m. (8).
- Payment for tenancy (4).
- Winner of the undersea stakes (8).
- Avoided (6).
- Number of times you have to be bitten to be shy (4).
- What a Great Tit may be to a fly (5).
- A mad monk perhaps, but he is still the father of modern genetics (6).

### CLUES DOWN

- Just a spoonful needed to set your marines in good health (5, 8).
- Noisy vessel (5).
- She may be for the parlour, dairy or chamber (4).
- The place to attach your Electric Eel, to liven him up (3).
- Dance for a *Paracantharus* (5).
- Flat fish with wheels to aid the search on the ocean bed (6, 5).
- Corn grows on one (3).
- Spiky cactus-type plant (4).
- A much worshipped marine fish (7, 4).
- Salmo gairdneri* (5, 5).
- Place finder (5).
- Very poisonous tree (5).
- How a guppy may feel in an 18-in. tank with an 8-in. Oscar (7).
- Birds do so to keep plumage in good order (5).
- Actually this Danio is only a tiddler (5).
- Crime of the Fire Eel (5).
- A drop of blood will make the piranha's do so (4).



of the uses to which this product can be put, and the claims which the makers make for it.

I quote: "By using 'Salufit' we don't have sick fish. This sounds unbelievable, but only the aquarist who uses 'Salufit' will see how right this statement is." The product does not contain quinine; it is harmless to fishes and plants; it can be used in marine aquaria. I quote again: "The reason for the effectiveness of 'Salufit' is the special preparation. The different ingredients do not act at the same time, but one after the other. . . . This principle grants a good reaction of every part of the remedy." To use the product the required quantity is dissolved in warm water and spread over the surface of the tank's water. One package will treat 22 gallons of water; in severe cases one package is

used for eleven gallons. The product causes a slight greenish coloration of the water, but this disappears after a short time.

I quote: "'Salufit' is active against the following diseases: White Spot, Itch, Fin Rot, Pseudomona Infections, Micro and Myxosporidiae, Skin Fungi, Oodinium, Costia, Chilodonella, Trichodinia, Neon disease, Flukes, Grampos, Virus diseases and Bacterial diseases."

It would be unfair to reach any conclusions about this product without having had the opportunity to test it, but it does sound as if it could be the answer to many of the "problem" diseases which can attack aquarium fishes.

B.W.

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## Breeding Goldfish



by Arthur Boarder

## SORTING THE YOUNGSTERS

ANY youngsters should be of a good size at this time of the year and their feeding need not cause as much worry as when they were tiny. A good mixture of dried and live foods should keep the fish healthy. The question of space now comes into the reckoning. It is very difficult to raise a fair number of healthy goldfish of any variety unless they have plenty of swimming space. What might have been sufficient for them when they were tiny, is not likely to be enough for them when they are at least an inch in length overall. It does not matter how well you feed or how well oxygenated or warm the water is, the fish will not

grow at their maximum unless they have plenty of swimming space from now on.

If one is breeding common goldfish there is little need to be very fussy about the fish you keep. Most of them will be good enough for the garden pond but it is possible that among them there may be one or two with a slight fault, such as a deformed fin or body. Such fish should never be put into the pond as they are likely to pass on their defects to other youngsters later on. Another important point to watch when breeding goldfish for the pond, is the rate of colour change. The original bronze of the young fish does not always

change to the desired gold within a reasonable time.

If bronze goldfish of about two years of age are put in the pond they may never change at all and then if they breed, their progeny may be bronze or a large proportion of them. No goldfish should be placed in the pond if it has not changed colour in a couple of years. Many may have been hatched in the pond and so it is important to watch these youngsters to make sure that no undesirables are allowed to remain in the pond. If the pond is not too large it can be cleaned out in the late autumn and then one has a good opportunity of checking up on the quality of the fish which have been bred.

When considering the breeding of any of the fancy goldfish a very different procedure is necessary. To breed a number of good-quality fancy goldfish one should use a different technique to that used when dealing with common goldfish. Although it may be possible to breed some good fancy fish in a pond if no other varieties are there, it is much safer to breed with a controlled method. By this I mean that the eggs will have to be taken from the pond and hatched in a safe place away from the possible attentions of the parent fish.

The sorting of fancy goldfish is not an easy task and it is necessary for one to get plenty of experience with the type being bred before one can be sure that the fish being reared are of a sufficient quality to deserve the best conditions and feeding. The shubunkins are about the most popular variety of fancy goldfish as they usually change colour very early in life and they are an attractive fish for the tank or garden pond. Their sorting can be a problem to the uninitiated as it is not always easy to pick out the best ones when they are small. Their shape is fairly easy to examine, as if placed in a clear-sided tank it can be noted and any with a fault, such as humpty back or incomplete finnage, can be dispensed with. The most important point in sorting shubunkins is the type of colour. Many youngsters will be too pale in colour to be of any use; if a fish is almost transparent or whitish when young it is not likely to ever become the desired colours. The deeper coloured ones are the best to keep and watch. This type will usually give the blue ground colour so desired. This deepish colour is not likely to develop very early in the life of the fish, but if all the darker coloured ones are kept it is probable that some may turn out as one requires.

There still seems to be some confusion between London shubunkins and Bristol shubunkins. The former should be of the same shape as a common goldfish and the latter should be streamlined in shape with much larger finnage. The colours should be just the same and so if one compares the shapes of the types it is easy to sort out which are the true varieties. Sometimes the two types have been inter-bred and this can give a number of fish which are neither one

thing nor the other. Such happenings are usually the result of stocking the garden pond with all types or varieties of goldfish.

When sorting young fantails it is not difficult to find those which are worth keeping even when very young. With any of the double-tailed varieties it is possible to sort out the throw-outs when they are under three weeks of age. I do not suggest that the best can be picked at this early age but at least one can discard those which are never likely to make the grade. If the fry are placed in a white bowl and examined from above the caudal fins can be examined and any which appear to be single can be thrown out. Although many can be discarded at this early age it is not possible to pick out any which can make winners. Further sortings are necessary when the fry get a few weeks older. By two months old the youngsters can be placed in a clear-sided tank and then the shape of the body can be examined. Any with a shallow body can be removed and any with a decided hump to the back are also never going to be of much use. I do not suggest that the actual ultimate shape of the body can be assessed at this early stage; it is possible, with experience to sort out the unwanted quite early in their life.

The dorsal fin can now be examined to make sure that it is of a good shape. Sometimes specimens can be found with a narrow pointed dorsal fin like that of a shark. These are useless and no matter how long the fish is kept, such a fault will never change and so such a fish can be thrown out. The caudal fin should be completely divided and held out in a line with the body. It is not always easy to be sure that the caudal fin is completely divided, as some young fish may carry the two parts close together and one which could be discarded when very young could disclose the division at a later date, and so it is not wise to pass over any fish which appears to be very good in other respects until it is older.

As for colour, it is not possible to pick out the best coloured ones until the fish are over eight months old. This time is not arbitrary as some strains of fancy goldfish are longer in changing colour than others. The scaled type may take a year in which to change to the desired red and this colour change can be hastened by the conditions under which the fish are kept. If the water is about 65°F., and the fish have plenty of space and food they can change colour much earlier than if conditions were not as good. My own strain of fantails usually change colour before the end of the year in which they were hatched. Some fantails show some white or silver colour on them, and although this may not cause them to lose points at a show, my own personal opinion is that the all-red type is to be preferred. It is also harder to breed good fantails which are all a self-red than some with silver markings.



The sorting of veiltails can require the same procedure as that for fantails. There are some very important differences between the two varieties. Whereas the fantail body should be an oval shape, like a chicken's egg, that of the veiltail should approach that of a sphere. The deeper the body for this fish the better will it be. The upper curve of the body should flow in a good curve from the head to the caudal peduncle and the lower curve should correspond to this curve. The finnage is very different from that of the fantail as it must be larger and not inclined to be pointed where the dorsal and caudal are concerned. The dorsal must be high and held erect with a nice curve at the back. The caudal fin must be large, completely divided and not have the lobes forked as with the fantail. Also the caudal should be hanging down in graceful folds and have as straight a base to the fins as possible. I like all veiltails to be of the shubunkin type, that is, having no hard scales. I know that such fish are recognised by the Federation of British Aquatic Societies, but I wish that the scaled types were catered for in the fantails only and the calico or shubunkin types in the veiltail variety.

With both varieties the anal fins should be double and this is a fault often found in otherwise perfect fish. Many of these double-tailed types will have only one anal fin or else one normal one and a smaller one. It is not easy to examine these anal fins, and even when in a show tank the judge may have difficulty in noting whether the fish has divided anals or not, especially when many veiltails sit on the bottom of the tank at a show and one cannot see if they have an anal fin or not. The colour of the calico type of veiltail should be as for that of the shubunkins, a rich blue ground with red, brown, violet and yellow markings and splashed or spotted with black. There appear to be very few good veiltails seen on the show benches these days but it is hoped that this handsome variety will receive the attentions of dedicated breeders so that we may once again see the grand classes of these fish like those we used to have in the years soon after the last war.

When sorting the young of Orandas and Lionheads it is not possible to pick out the winners at an early stage. The hood, which is the distinguishing feature

of these varieties, is not formed at an early age and it may not show up well until the fish is at least two years old. This makes the sorting problem more difficult than with some of the other varieties. The oranda should have the same body and fin shape as the veiltail but there should be a hood or bison-like formation over the whole of the head and gills. The more of the head which is covered by this excrescence the better will the fish be as far as a show specimen is concerned. The lionhead type should be the same body and fin shape as the fantail but must have no dorsal fin at all. The hood should cover the same area of the fish as for the oranda. One of the main faults found in the lionhead is that where the dorsal fin should normally be, instead of a clean curve over the back, there is often a protuberance or two giving the back a most untidy appearance and a fault which will lose the fish many points at a show. The colour of these fish can be a clear red or there may be some silver. It will be noticed that many of the orandas which are imported have plenty of silver on them and another feature usually found in such fish is that the caudal fin of the oranda is forked, more like that of a fantail, and this is a fault not easy to breed out of the strain.

Moors are of two types, the fantail and the veiltail. Each should correspond in form with the ordinary fantails or veiltails. The main difference is that both fish should have telescopic eyes and be of a sooty-black colour. Any bronze will lose a fish points and it is often found that an otherwise perfect fish will not be of this dull black but show too much bronze, especially on its underparts.

Bubble-eyes and celestials should have no dorsal fin and these varieties are best bred in large tanks and not in a garden pond. The bubble-eyes should be as large as possible and the colour of the fish can be a red or red and silver. The celestials should have their eyes pointing upwards and the same colours are to be found as in the bubble eyes. Much care and patience is needed to be able to breed a number of really good specimens of any of the fancy varieties but the rewards are well worth the effort.



## **THE BRITISH AQUARISTS' FESTIVAL,**

**will be held this year at Belle Vue Zoological Gardens Manchester on**

**SATURDAY 14th OCTOBER and SUNDAY 15th OCTOBER**





#### British Cichlid Association

As a recently formed body that fully expects to become a powerful force in the hobby the British Cichlid Association would like to make clear its intention with regard to Judges and Standards.

The B.C.A. acknowledges the fact that there are already in existence sufficient panels of recognised judges for tropical fish all of whom should be capable of dealing with the Cichlid fishes as indeed they have done in the past. Accordingly, the B.C.A. will not be setting up another panel of judges. In keeping with this policy the Association has affiliated to the Federation of British Aquarist Societies which represents the majority of hobbyists in Britain. Whilst there are no current plans to hold major table shows it follows that any shows would be under F.B.A.S. rules.

The B.C.A. would, however, be pleased to cooperate with existing panels in any revision of standards that may be felt to be necessary. It is the intention of the Association that any information it gathers should be made available to all interested parties.

The B.C.A. does plan to encourage and assist its members to become proficient speakers on the subject of Cichlids and proposes to prepare a list of speakers in due course. This list will supplement rather than supplant those published by other bodies.

Further details of the B.C.A. can be obtained from the Secretary. S.A.E. please!

JIM BURTLES,  
Secretary,  
"Nicosia," Cyprus Road,  
Burgess Hill, Sussex.

#### Power Filtration Without A.C. Mains

With reference to my article in the May issue of your magazine: As a matter of interest, there is a printing error in the third paragraph of page 66. The first line should read: "Power transistors T1 and T2 form an *astable* multivibrator . . ." This means that the multivibrator has NO stable state and is, in fact, a free-running oscillator. The A.C. power supply described is totally dependent on this property.

P. A. HICKLING, B.Sc.,  
2 Kenmare Drive,  
Mitcham, Surrey.

#### Bristol Shubunkins

I should like to supplement the information given by Mr. Arthur Boarder on the subject of Bristol Blue Shubunkins.

The original outline and colour description quoted came from the Bristol Aquarists' Society in 1933.

Since then our Annual Open Show offers six cups for Shubunkins alone and last year one hundred and fifty fish were presented in competition for them.

While Bristol A.S. is not primarily a specialist society we will always do whatever we can to help those interested in these fish.

H. C. B. THOMAS,  
Hon. Secretary, B.A.S.,  
2 Grove Park,  
Bristol, BS6 6PP.

#### Flamingo Park Zoo

The March, 1972, edition of the *Aquarist* quotes the cost of admission to Flamingo Park Zoo, Yorkshire, as 30p and children half-price.

I would like to point out that this is now 35p for adults and 20p for children. This does not include parking or admission to the Dolphin House or Tropical house where the fish are on display. The cost of these are: Parking 10p; Dolphin house 20p and 10p; Tropical house 10p and 5p (children).

I know everything is rising in price these days, but your article gives the impression that a family of two adults and two children can see all the attractions for under a £1, whereas it is over £2.

I would say the Zoo is well worth a visit, but the tropical fish displays are nothing special.

N. S. KELLETT,  
5 Long Close,  
Bessacra, Doncaster.

#### Half-Banded Barbs

You published my article on breeding the half-banded barb in the May issue of the *Aquarist* and I thought you might be interested to hear of a surprising twist to the breeding which became evident a few weeks after the event.

When the fish had reached about  $\frac{1}{2}$  inch in length, it became apparent that not all the fish were the same, and by the time they were  $\frac{1}{2}$  inch long and showing colours, about 10 per cent of the total number of fishes (15) were quite plainly different.

The majority of the fish were miniature replicas of the parents, showing 3 or 4 bars on a goldy-greenish hue, but the 15 different fish showed no bars, only a black spot at the caudal peduncle and the colour was nearer red than gold and the body seems more transparent than the other fish.

At present the only explanation I can offer is taken from a reputable fish book which says that Schubert's barb (*Barbus schuberti*) is perhaps only



a colour variation of the half-banded barb. The description and picture of *B. schuberti* certainly match our "odd-fish-out" and this seems, at present, the best explanation. It would be interesting to see if any other readers could shed some light on this subject.

T. D. KEARSLEY,  
13 Newman Street,  
Higham Ferrers,  
Northants.

#### Slide and Tape Lectures

I have listed below three Slide and Tape lectures made by our Society which are hired out to other societies at a nominal fee. Would you be so kind to print this information at some time in the near future as many clubs wonder what entertainment to use for their meetings.

7th annual open show, 72 slides roughly.

Plants for the aquarium, 50 slides roughly.

Fishes for the community aquarium, 50 slides

roughly.

Mr. Roy Browning is the secretary dealing with the hire of these films. His telephone number is Brighton 419911.

SALLY M. CORBIN,  
80, Marlborough Drive,  
Burgess Hill, Sussex.

#### Battery-Powered Aerator

We were most interested to read the article about power filtration without the A.C. mains supply by P. A. Hickling, B.Sc.

This article gave a number of different methods of aerating an aquarium during a power failure and although all the methods mentioned were of use to the aquarist, we would suggest a far simpler method would be to employ a Battery Powered Aerator, the cost of which need not exceed £2.87½. Such aerators run for approximately 24 hours on a small, dry battery.

FANTASY PET PRODUCTS LTD.

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## HERPETOLOGICAL NOTES

by Stephanie J. Peaker

### Rana

Frogs of the genus *Rana* are not very often kept by herpetologists in Britain since, unless they have a good deal of space to jump, they are liable to damage themselves. If a large enclosure can be provided then they are very interesting animals to keep. We had an indoor enclosure 4 ft. x 4 ft. and over 6 ft. in height with a pool in the bottom. The inhabitants included the Common Frog (*Rana temporaria*), Edible Frog (*Rana esculenta*), Agile Frog (*Rana dalmatina*) as well as several African forms—the Sharp-nosed Frog (*Rana oxyrhyncha*), Bent-toed Frog (*Rana mascariensis*) and Green-striped Frog (*Rana fasciata*). The temperature during the day was kept at 70-75°F and allowed to fall to 55-60°F at night. A 15 watt blue light was installed in order to observe the animals feeding in the evenings. Batches of flies were released into the cage and this evoked a fantastic display of leaping to catch flies seemingly far out of reach. Any that escaped the ranas were soon caught by Green Tree-frogs (*Hyla arborea*) which lived in tall plants. Hedgerow sweepings are an excellent source of food for such a collection of frogs.

An interesting small frog we kept in Hong Kong is the Paddy Frog (*Rana limnocharis*) and they would be ideal additions to a community of small frogs. This species, as its name implies, is common in paddy fields

and, like its larger relative the Chinese Bull Frog (*Rana rugulosa*), is eaten in China. It is very attractive, being basically green with a light dorsal stripe. The dark markings on the lips continue from the upper to the lower jaw as if paint had been applied with a brush.

Care must be taken when building up a community of frogs not to introduce ones which have highly poisonous skin secretions. The example usually given is the toxic Pickerel Frog (*Rana palustris*) from North America.

### Feeding Snakes

Keepers of snakes are always faced with the problem of whether to give live or dead vertebrate food. This subject always provokes argument and emotional articles sometimes appear in lesser Sunday newspapers on the evils of giving snakes live food. Leaving emotion aside but bearing humanitarian thoughts in mind, I want to state some of the advantages and disadvantages of feeding dead or live prey.

The main advantage of giving live food is that some snakes will not accept carrion. There are, however, several disadvantages. If the prey is a rat or mouse, and is not killed immediately, it may well damage the

Continued on page 134

# ROCKETS OF THE OCEAN DEPTHS

by D. England

Few of us realize the fastest moving creatures. Man's top speed over 100 yards is 9.1 seconds, working out at 22.5 m.p.h.; a racehorse has clocked up just over 42 m.p.h.; and hunting leopards, known as cheetahs, can reach a speed of 45 m.p.h. in two seconds from a standing start. Cats, getting up to 70 m.p.h.

The swordfish never been accurately ascertained. But, speed has never matched the astonishing feats of penetration remembering their tremendously strong snouts, achieved with that the all-out velocity of swordfish at scientists put the and 100 m.p.h.

Here are a couple of "striking" instances of the power behind a swordfish's drive. In the museum of the Royal College of Surgeons, London, can be seen the broken-off snout of a swordfish which had pierced the oaken hull of the ship-of-the-line "H.M.S. Wasp." In doing so it cut and 13½ in. of oak in this one thrust. The ½ in. of felt, and leave its sword behind in order to get its body clear away.

Another hungry swordfish mistook the copper-covered bottom of an oak sailing ship for food of some kind. It gathered speed, hurled itself forward, lunged its sword clean through three inches of wood and metal, and as a penalty had to surrender its sword. A section of the ship plus sword was preserved at Singapore. At least, it was there before the Jap invasion. It was estimated that, as the fish's snout was nothing so tough as copper, it must have been travelling at least a mile a minute.

One of the most impressive aspects of a swimming fish is the brief time it takes to "get into its stride," so to speak, making man look sluggish. The Marine Laboratory, Aberdeen (Scotland) and the Cambridge School of Zoology have done work on this. Small fish can reach top speed in less than a twentieth of a second, and the initial thrust that the fish exerts on

the water may be as much as

An equivalent human takes its own weight. sprinter to spring from three would be for a speed in just over a quartering blocks to top reaches top speed only in a second. In fact, he yards race. The reason is that half of a 100-proportion of its total muscle applies a higher an athlete does in getting moving its tail than terms of "all out" speed it from his feet. In can move in a short bursts that a small fish swimming 10 times its own rate equivalent to tail plays a vital role: the fish in a second. The is in direct proportion to its of its movements

How does the greatest of the deep? Not a fish, one knows creatures come the deep," since a whale is a true "denizen of fathoms. A British Antarctic expedition to the sometimes grows to a length of 100 or more feet, and has a weight of 120 tons.

The blue whale can reach a speed of 20 knots (approx. 23 m.p.h.) and maintain 14½ knots (16 of 10 minutes or so) for some hours. A killer whale is swifter still, its top speed has been put as high as 35 m.p.h. These remarks are largely accounted for by the fact that the fastest of all cetaceans. These remarks are largely accounted for by the fact that the fastest of all cetaceans. These remarks are largely accounted for by the fact that the fastest of all cetaceans. These remarks are largely accounted for by the fact that the fastest of all cetaceans.

All cetaceans are capable of considerable speeds. Writing of a grampus, which is a blunt-headed dolphin-like species, an observer recorded: "The speed of the vessel in which I made the passage was fully 18 knots; but the little whale seemed to maintain its position with the same absence of effort as does the albatross over the mast-head of a swift steamer. Occasionally, with the same utter ease it glided ahead for a ship's length, then dropped alongside again, until its visiting time having expired apparently, it sheered off at right-angles and disappeared."

The tunny's body is regarded as one of the most



perfectly streamlined contours known to nature. The thickest part is in front of the middle, and the width diminishes gradually to the tail. This is known to engineers to be the shape which offers least resistance, and is why a tunny is capable of high speeds. Canadian tunny fishermen equipped a line with a speedometer, which registered the rate at which a hooked fish went away. A 60 lb. specimen topped 44 m.p.h., but the large ones of around 500 lb. are believed to be capable of higher speeds than this.

The tropical sailfish, which can grow to 12 ft., is one of the fastest species. It has been timed at 68 m.p.h. That remarkable phenomenon, the flying fish, is not far behind it. The ciné-camera has cast much light on its movements. It breaks surface at 15-20 m.p.h., and is almost horizontal at that moment. But it does not glide at once; instead "taxi" along the surface. It threshes the top of the water with its tail fin as this gives additional speed. Air speed has

been estimated at anything between 35 and 55 m.p.h. Then follows the glide, which may last up to four seconds, carrying the fish 50 yards or so, and perhaps more with a following wind.

One must not overlook that comparatively small, though very fast mover, the bonefish. It varies from three to 10 lb., and veteran anglers say it is one of the gamest of all species. Zane Grey, famous writer of Westerns, was an inveterate fisherman, and he had great admiration for this particular species, saying "No other fish celebrated for swift motion is in his class." One angler who had hooked a bonefish reckoned that his catch hurtled out 400 ft. of line at a speed of 40 m.p.h.

It is the habit of the bonefish, if taken close inshore, to rush for the land at top speed. Such is its velocity that it has been known to rocket out of the water and land up on the beach, unable to check its headlong career earlier.

Continued from page 132

snake by biting or gnawing it. There is also the danger in a wooden cage that the rodent will gnaw its way out leaving a hole for the snake to follow. While these objections can be overcome by removing the animal if it is not immediately eaten, there are difficulties particularly if the cage is well furnished and the rodent goes to ground. Giving dead prey overcomes these obstacles and has the advantage that once a snake is accustomed to eating carrion, food can be deep-frozen when plentiful and then thawed and rewarmed when necessary.

While I feel that the dead system has certain advantages, I have no objection to live feeding most species of snake and always revert to it if the snake will not feed on dead prey. I am convinced that many snakes can kill their prey at least as quickly, if not more so, than the mechanical methods available to the keeper.

#### Humidity Measurements

Humidity can be an important factor in the care of many reptiles and amphibians and a number of methods exist for its measurement. A very useful booklet on humidity and its measurement is *Measurement of Humidity* by M. J. Hickman (National Physical Laboratory, notes on applied science no. 4, 4th edition, 1970, London, H.M.S.O.).

#### Answers to queries on chelonians

I have two young terrapins just over an inch in length that bend their necks sideways to withdraw their heads. The shell is brown but the head has orange-yellow spots. The dealer I bought them from says they came from South America. Can you identify them?

These specimens are side-necked terrapins (Pleuro-

dira) which occur in South America, South Africa and Australia. The species you have is a member of the genus *Podocnemis*, probably *P. unifilis* which is the form usually imported and often known as the Amazon River Terrapin. They require a water temperature of about 80°F, otherwise their care is as for other baby terrapins.

Is the Matamata turtle from South America ever available in Britain?

Yes, but only rarely and then they are expensive.

Will the European Pond Tortoise (*emys orbicularis*) hibernate successfully at the bottom of a pond?

Yes, provided that they are not babies (carapace at least 3-4 in.), they are well fed during the summer and that the pond is at least two feet deep with a thick layer of mud in the bottom. However, I do prefer to bring terrapins indoors for the winter and feed them in the usual way.

Please note to include a stamped addressed envelope for answers to enquiries. Only those of general interest can be included in these notes.

#### Tortoises and high temperatures

Tortoises can sometimes find themselves in the open sun in deserts and under such conditions their body temperature can rise alarmingly. As an emergency measure to prevent a lethal rise in temperature, tortoises have been found to salivate profusely to cover their head and front legs. Some may also urinate to wet their hind limbs. These two measures have the effect of increasing evaporative cooling thus preventing a lethal rise in temperature. This behaviour has been studied in several species and a paper on the Ornate Box Tortoise (*Terrapene ornata*) has recently been published by M. L. Riedesel, J. L. Cloudsley-Thompson and J. A. Cloudsley-Thompson in *Physiological Zoology* (vol. 44, p. 28, 1971).

# Vallisneria

by Jorgan & Pamela Hansen

*Vallisneria* is one of the most rewarding plants we have dealt with, but has been much neglected in aquarist literature as it is generally stated to be so common that nothing need be said about it. It looks beautiful as a background plant and, for example, belongs just as much as the Amazon sword plant to the angel-fish tank as the fish's vertical stripes make it almost invisible when amongst the *Vallisneria* which thus affords it camouflage and shelter. It is also excellent in a livebearer tank: the long leaves form a centimetre-thick layer on the surface, providing an ideal hiding-place for the young in their first difficult days of life.

The plant reproduces rapidly which means that biological decomposition in the tank is speeded up i.e., the waste products of the fish are quickly consumed by the plants. This also means that there must be plenty of waste materials in the tank for the plants to use. All plants take a certain time, up to 2 weeks, before they start to grow after being re-planted, and if *Vallisneria* is placed in a tank already densely planted it might never really get the chance to begin growing, as all the available materials might be consumed by those plants already established in the tank.

It is generally stated that *Vallisneria* should be planted densely in order to succeed, but in our experience even when only a few individuals are planted they multiply. We brought our first four *Vallisneria* plants home in a little pot, and now three years later they have multiplied to the extent that we have sold 700 plants and have about 300 in our tanks at the moment.

There exist both male and female *Vallisneria* plants, but very few male plants are to be found in aquariums, in fact it took several years after the introduction of *Vallisneria* before a male plant was discovered. This scarcity of male plants is no doubt related to the fact that runners from either male or female plant are female. Reproduction in aquariums generally

takes place by means of runners from female plants, which have broader and stronger leaves than male plants.

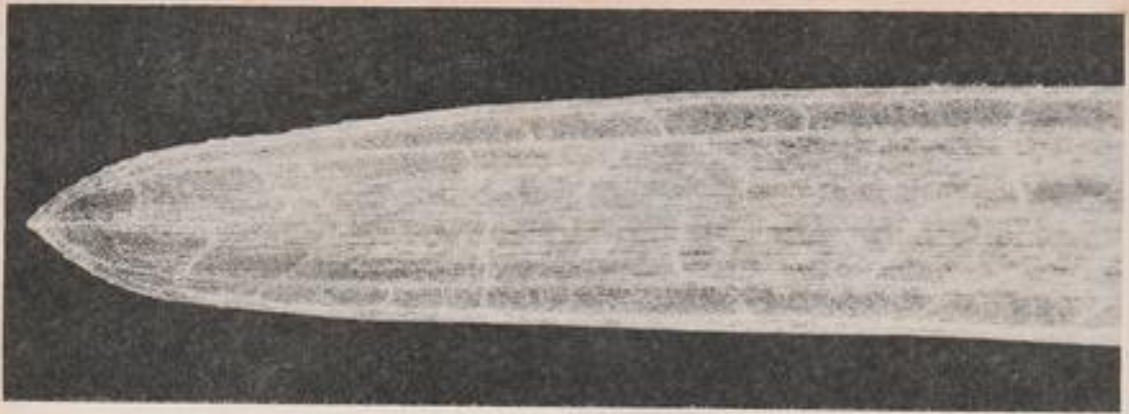
Although *Vallisneria* rarely flowers, it is nonetheless interesting to know a little about the male and female flowers and how fertilisation takes place. The male flower has a short stem and therefore sits at the base of the plant, whilst the female flower, which also emerges from the base, has a long spiral stem. Although Innes has suggested that the specific name *spiralis* might refer to the twisted or spiral form of the leaves in the corkscrew variety of *spiralis*, it is generally thought to refer to the spiral-shaped stem of the female flower. This stem is remarkable also in the rate of its growth, according to De Wit about 2 cm. an hour, one of the most rapid rates of growth ever measured in a plant.

Fertilisation occurs in the following way. The male flower extricates itself from the plant, rises to the surface and opens. Pollen emerges and enters the floating female flower, whereupon the latter folds together, the stem contracts, and the flower is pulled to the bottom. There the seed ripens and produces new plants.

*Vallisneria* belongs to the family *Hydrocharitaceae*, and has been variously called eel grass, tape grass, and Italian water weed. It is named after the Italian naturalist Antonio Vallisneri de Vallisnera who was the first to describe the plant at the beginning of the 18th century.

When one attempts to distinguish the different species one finds oneself in the midst of confusion. The ordinary aquarist writer and dealer complicates matters by haphazard and often quite wrong use of latin names, but even the experts disagree as to what is or isn't a true species. Some maintain that there are a dozen different species while others insist that only one or two true species exist. Moreover it is sometimes maintained that one and the same species can take on quite different forms according to the

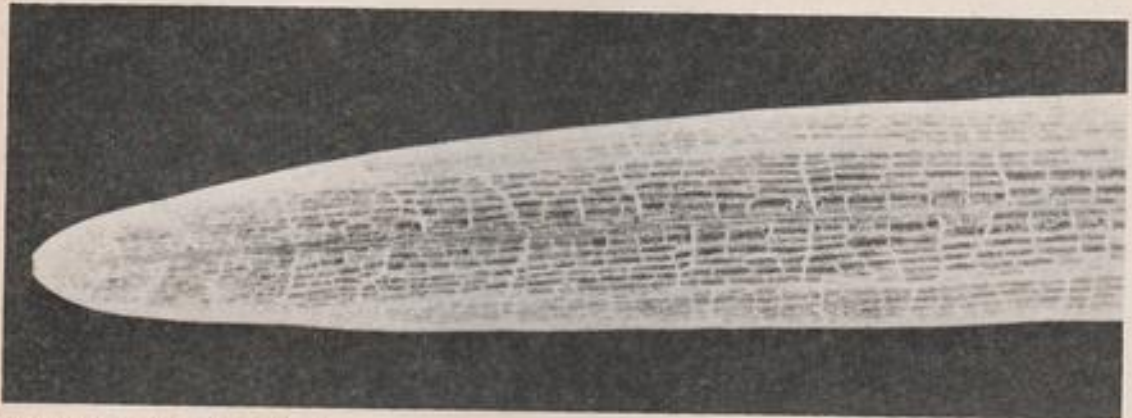




*Vallisneria* leaf showing inner structure



*Vallisneria* leaf as above but showing tacked edges



*Sagittaria* leaf showing inner structure

environment in which it is placed; "corkscrew" *Vallisneria*, for instance, is stated to lose its corkscrew characteristic if not exposed to daylight. The accompanying chart, based mainly on information from De Wit's *Aquariumplanten* (1966), attempts to clarify the distinguishing characteristics of each presumed species.

*V. spiralis* is the species most commonly known to aquarists both in its normal "straight" form and in its twisted or corkscrew variety *var. tortifolia*. But de Wit brings to our attention a form of *V. asiatica* called *var. bivaensis* which comes from South-east Asia and Japan, whose description is identical to that of *V. spiralis var. tortifolia*. *V. spiralis* alone has at least 12 synonyms. Some maintain that *V. spiralis* and *V. americana* are of the same species; while Innes, writing in the *Aquarium* in 1939, declared that there were only two species, *V. americana* from America and *V. spiralis* from Europe. He says, Giant *Vallisneria* from Florida is not a different species from *V. americana* but differs because it grows in a different environment. This Giant *Vallisneria* he mentions is no doubt what is now classified as *V. neotropicalis*, distinguished from *V. americana* in 1943 by Marie-Victorin. (*V. neotropicalis* is not known to de Wit as an aquarium plant, and the male flower is unknown.) *V. neotropicalis* is not to be confused with *V. gigantea* which comes from New Guinea and the Philippines, although the two are peculiarly similar. A Danish writer K. K. Laursen declares that *V. americana* is of the same species as *V. spiralis* but that *V. gigantea* is a species in its own right. C. den Hartog thinks that *V. asiatica* is identical to *V. gigantea*. De Wit relates a cross Wendt made between *V. gigantea* and *V. spiralis* whose leaves were thin, almost transparent, 18 mm. broad, and 1 metre long, and produced runners like *V. gigantea*.

According to de Wit (*Die Wereld der Planten*) *V. americana* has a more refined mechanism of fertilisation than *V. spiralis*, and is one of the few of the *Hydrocharitaceae* family which can tolerate salty water, and in fact thrives best in it. On account of the waves the female flower is to be found somewhat under the surface of the water. An air bubble prevents the water from entering the flower. Eventually the ripples of water push one of the small boat-like male flowers containing pollen into the air bubble, whereupon fertilisation takes place.

*V. asiatica* can be distinguished from *V. spiralis* and other species by the differently formed and placed stigma and the peculiarity of the male flower possessing only one another. Miki, who first described *V. asiatica* in 1934, was unable to cross it with *V. spiralis*. De Wit states that the seed of *V. asiatica* is twice as long as in *V. denseserrulata* Mak. (He does not include this latter species in his classification and gives

no further information about it, so we have omitted it from our chart.)

*V. torta* is often referred to without amplification in articles and dealers' advertisements but we haven't come across the name in any serious work, so can only conclude that it is a synonym for *V. spiralis var. tortifolia*. A dealer's advertisement offering "*Vallisneria*—straight, twisted and *tortifolia*" is also confusing, as one is not clear over the difference between twisted and *tortifolia*. We would be glad if anyone could enlighten us as to the distinction.

The *Vallisneria* in our tanks is supposedly *V. spiralis* ordinary type but it grows to a length of 140 cm., i.e., considerably more than the reported maximum length for this species. Its leaves are 1 cm. broad. Photos 1 and 2 show the points of two specimen leaves from our tanks. Note that the edges of the leaf in Photo 1 are tacked only slightly, at the point of the leaf, while the edges of the leaf in Photo 2 are tacked much more. Photo 3 shows a leaf from a species of *Sagittaria* whose edges are not tacked.

There are several ways of distinguishing *V. spiralis* from *Sagittaria*. The *Vallisneria* leaf is narrower, and less coarse, and it leaves are divided vertically into three by a strip of darker green. In *V. spiralis* the veins run into the point of the leaf, while in *Sagittaria* the two outer veins disappear into the edge of the leaf. The root of *V. spiralis* is fine and has a bluish shimmer whereas *Sagittaria* has a coarse white root. (de Wit—*Aquariumplanten*).

N.B.—None of the literature mentions chromosome numbers, which could perhaps help to distinguish the different species.

#### GOODIES GALORE FOR AQUARIUMS

Pet fish are taking up residence in more and more British homes. And with the spread of the hobby has gone greater skill and sophistication in the provision of tanks, plants and other products to keep these pleasing and beautiful creatures in good condition.

So the "Win £100 of Aquarium Goodies" prize in the Inter-Pet Company's competition, run through the magazines of Britain's 2-3,000 aquatic society clubs, will make a wide appeal.

The winner enjoys an all-expenses-paid day's visit to the Walton Manor fish farm and Inter-Pet's new manufacturing plant to choose fish, plants and products to a total of £100.

Entry is free. Contest task is to list in order of importance 10 given factors in starting an aquarium. For tie-breaker an up-to-eight-word advertising slogan for Inter-Pet is required.

Closing 30th December.

Extract from "Competition Journal".



<i>Latin name</i>	<i>Date of description</i>	<i>Common name</i>	<i>Length</i>	<i>Breadth</i>	<i>Origin</i>	<i>Distinguishing characteristics</i>
<i>V. americana</i>	1803 A. Michaux	—	—100cm.	—	Eastern America to Gulf of Mexico, Cuba, Jamaica, Haiti	Can live in brackish water. Orange-red colouring in vein cells can be seen through microscope. Leaf-edges only slightly tacked and no tooth-formed hairs.
<i>V. asiatica</i>	1934 Miki	—	30-50cm.	5-7mm.	Vietnam, South-east Asia, Formosa	Similar to <i>V. spiralis</i> but has differently formed and placed stigma, and only one anther in male flower.
var. <i>bivaensis</i>	—	corkscrew or twisted	10-40cm.	—	Yodo river, Japan	—
var. <i>higoensis</i>	—	—	100cm.	12mm.	Kiushu near Edzuko, Japan	—
<i>V. gigantea</i>	1912 Graebner	Giant	100-200cm.	15-30mm.	New Guinea, Philippines	Similar to <i>V. spiralis</i> , but leaves coarser and stronger. Edge darker green than rest of leaf. Female flower twice as large as in <i>V. spiralis</i> . Petals missing or badly developed.
<i>V. neotropicalis</i>	1943 Marie-Victorin	Giant	100-200cm.	15-20mm.	Florida	Similar to <i>V. americana</i> , with orange-red pigment, but magnified edge of leaf is shown to be tacked, with tooth-formed hairs on each point. Male flower unknown.
<i>V. spiralis</i> Has at least 12 synonyms	1753 von Linné	straight Italian	—80cm.	4-12mm.	Tropics and Subtropics. S. Europe up to L. Garda and L. Como	Leaves bright green. Five rows of veins, middle vein clearly thickest. Edges of leaf very finely tacked, especially on point of leaf.
var. <i>torrifolia</i>	—	corkscrew or twisted	10-30cm.	5-8mm.	—	Twisted leaf. Smaller and with finer structure than ordinary <i>V. spiralis</i> . Is stated not to flower and thus to propagate exclusively by runners.
var. <i>hort.</i>	—	giant corkscrew	25-60cm.	—	U.S.A. cultured form	In appearance and colour like var. <i>torrifolia</i> .
<i>V. aethiopica</i>	Fenzl.	—	—40cm.	—	Middle and East Sudan	Perhaps true species, perhaps form of <i>V. spiralis</i> .

*This Month*

We look forward to the pleasure of meeting you at this outstanding event in London.

**"The Aquarist & Pondkeeper"**

## **FISHKEEPING EXHIBITION**

**Alexandra Palace, Wood Green, London N.22.**

Open to the public

Saturday 15th July  
10am—9pm

Sunday 16th July  
9am—5pm



**HOW TO GET TO ALEXANDRA PALACE**

**BY TRAIN.** From any of the Main line railway stations take the underground tube train to Finsbury Park from where buses W3 or W5 run to Alexandra Palace, or Piccadilly Underground line to Wood Green Station.

**BY BUS.** Routes to Finsbury Park, 4A, 19, 29, 39, 106, 127, 168A, 221, 236, 253, 259, 279 and Green Line Coaches 715, 715A, 718, from where buses W3 or W5 run to Alexandra Palace. Other routes to Wood Green are buses, W4, W6, 29, 123, 141, 221, 243, 298, 298A and Green Line Coach 715.

**BY CAR.** From North of London: Follow A1000 over the North Circular Road (A406), turn left into Fortis Green and Queen's Avenue. Turn left at the bottom of Muswell Hill into Alexandra Park. From South London: Take Stroud Green Road from Finsbury Park and follow road into Crouch Hill. Turn right at the bottom of Crouch Hill into Crouch End Broadway, then left into Park Road and Alexandra Park. From the West or East of London: Take the North Circular Road (A406) and follow directions as from the North of London.

**Ample free car Parking in the Alexandra Palace Grounds.**

### **1971 CUP HOLDERS**

**All winners of perpetual trophies should now return them to the Show Secretary.**





## OUR EXPERTS' ANSWERS TO YOUR QUERIES

### READERS' SERVICE

All queries MUST be accompanied by a stamped addressed envelope.

Letters should be addressed to Readers' Service, The Aquarist & Pondkeeper, The Butts, Brentford, Middlesex.

## TROPICAL QUERIES

by Jack Hems

My female guppies all appear to be born with, or develop, bent spines. Also, the males are smaller and less colourful than the original parent stock. Please can you give me a reason for this deterioration in size and physical appearance of my fish?

There are several reasons why guppies lose size, shape and general physical attractiveness. One reason is too much in-breeding. Another reason is overcrowding. Furthermore, environment and food must be taken into account. To maintain a stock of well-shaped, large and brightly coloured guppies it is necessary to give them plenty of swimming space in clean, well-aerated water. It is essential, too, to provide them with a diet rich in protein.

Please tell me the maximum size and general requirements of *Pelmatochromis pulcher*.

This species, which is described under different formal names in different books, attains a length of about 3½ in., the male being the larger and less brilliantly coloured of the two. A temperature in the middle to upper seventies (°F) and a diet of live and flesh food is called for. Although the species is a good mixer (except when breeding), it is best to give a pair a tank to themselves. A tank 18 in. by 10 in. by 10 in. is large enough. It should be generously planted and furnished with an overturned flowerpot to serve as a cave.

I should appreciate all the information you can give me about the care and breeding habits of *Betta splendens*.

For 22p we can send you *The Fighting Fish of Siam* by Dr. Feroze Ghadially. This well-written booklet covers the care, breeding habits, colour inheritance, and diseases of this popular species.

I have just bought two *Pangasius* catfish and would like to know the full size of this fish, its suitability as a community species, and its preferred food.

*P. sutchi* is the species most commonly seen in tropical aquaria. This fish from south-east Asia may exceed a length of 6 in. and is therefore most suited to an aquarium stocked with fishes of about its own size. In its larger sizes it will worry, or swallow, smaller tropicals. It will eat any live or dried food.

Is a 15 watt Gro-Lux lamp large enough for a 2 ft. tank planted with *Vallisneria*, *Hygrophila* and *Cabomba*?

A 2 ft. aquarium planted with light-loving plants such as *Cabomba* requires a 20 watt Gro-Lux or warm white fluorescent light. The light should be kept switched on for at least ten hours a day.

Would I invite trouble if I introduced freshwater mussels into my tropical aquarium?

Most certainly you would invite trouble. The disadvantages of freshwater mussels in the ordinary home aquarium are as follows: They plough valleys or furrows in the compost and use up a lot of the available oxygen. Worse. They have the habit of dying without signalling their imminent demise. Thus the aquarist is not aware of their fate until a smell arises from the aquarium or the water develops a bluey haze. Clearly, freshwater mussels are best left in their native rivers or ponds.

I have been given a fish called a convict cichlid. It is pale grey or dirty white with black bars on the sides. I was told to feed it on earthworms. At the moment it is living with platys, rosy barbs, and blue gouramis. I should like some information about the care of this fish.

The convict cichlid (*Cichlasoma nigrofasciatum*) is not suitable for a community aquarium. It is a very active bully. It needs a tank to itself or the company of much larger cichlids. It will flourish on earthworms, the regular live foods, and the coarser-grained dried foods alternated with pieces of raw meat or raw fish.

**I cannot find any information on *Barbus schuberti*. What can you tell me about this charming little fish?**

No one seems quite certain whether this barb is a golden sport derived from the Chinese *Barbus semifasciolatus* or an improved form of the rather rare *B. sachsii*. But what we do know, however, is that the fish was developed in the tanks of the late Tom

examine them very carefully for snails or the egg-capsules of snails. It is a good plan, too, to leave newly purchased plants in a dish of water for a few days before planting them. During this period examine them frequently. Used according to the printed instructions, the proprietary eradicator of snails called Snail-Away gives complete control without harming the fish or plants.

**I left some thick off-cuts of expanded polystyrene outdoors all winter. They have become beautifully weathered and algaed. If I give them a good soaking in a couple of changes of water will they be safe to use as a decoration in my tropical aquarium?**

The pieces of polystyrene, after a good soaking, will



*Tilapia zillii*

Schubert, of Camden, New Jersey, several decades ago. Schubert's barb (*B. schuberti* is not a valid scientific name) is hardy, with a range of temperature extending from the middle sixties to the eighties (°F), quite long-lived (upwards of four years) and easy to keep and breed in small home aquaria. It is sometimes called the golden barb, a popular name that is also applied to the diminutive *B. gelius*.

**Is there any method of preventing snails taking up residence in my aquarium?**

As a rule, snails are introduced into the aquarium on water plants. So whenever you buy plants

not endanger the lives of your fish. But you will have to keep them in position with some heavy stones.

**Does *Tilapia zillii* make a satisfactory aquarium fish?**

Provided you can give this fish a spacious aquarium to itself, then the answer is yes; for *T. zillii* is remarkably accommodating in the matter of temperature, quality of the water, and food.

**How many different tetras, about the size of a flame fish, could I keep in comfort in a balanced tank 48 in. by 15 in. by 15 in. in size?**

About thirty fishes averaging 1½ to 2 in. in length.



## GOLDWATER QUERIES

by Arthur Boarder

Two years ago my son caught some Crucian carp and added them to the fish in our pond. Recently we noticed some blood spots on the fish and found that they were attacked by fish lice, (*Argulus*). We cleared them but after about a fortnight we saw some more on the fish. How can we clear the pond of these pests?

No doubt the *Argulus* were brought in with the carp. The recurrence of the trouble was due to eggs hatching in the pond which had been laid by the ones you destroyed before they were found. The idea of being able to put some chemical into the pond to kill pests is a happy notion but most fish pests are as sturdy as the fish and anything strong enough to kill them would also kill the fish. You can rid the fish of lice by catching the fish and removing the pests. You should be able to get the better of them in this way. The only other sure way is to empty the pond and allow it to dry out for a couple of weeks.

Why is it that we keep goldfish in our pond all the spring, summer and autumn and then they die in the winter. They become sluggish, go off their food and eventually die?

The only reason I can find for this happening is that the pond water becomes foul. Fish will not tolerate impure water. One sure cause of foul water is that something has decayed and polluted it. Mostly this is uneaten food and if too much is given once the water cools down, then this will not be eaten by the fishes and it will turn the water foul. Also too many decaying leaves in the pond can soon cause trouble. Water lily leaves, when they die, will pollute the water as quickly as anything I know. In future reduce the feeding of the fish considerably once the weather turns colder and empty the pond, clean it out well and refill. This will ensure that the fish have a good chance of going through the winter with an excellent chance of survival.

I recently used some Hydrogen peroxide to cure a fish of fin-rot but must have used a solution which was too strong. The fish has gone a dirty white colour and is no longer red. Will it get back to its original colour?

As long as the fish was not harmed too badly it is probable that it will recover its normal colour in time. You must have destroyed all the mucus covering of the fish which would make it liable to an attack of

fungus. If the body continues to look fuzzy and dirty, try a rather mild sea-salt solution for a few hours each day. A desertspoonful of sea salt to a gallon of water will help the fish to recover.

I have a medium sized pond with plants and fishes. Can you tell me how to clear the water. I thought that it would clear when winter came but it did not?

Very often ponds which have been thick with green algae all the warm weather will clear almost overnight when the cold weather comes. Fortunately for us but not for the pond, most districts in England have not had a real winter and so the algae has not been killed. My own pond only froze over twice all through the winter and then only slightly and it thawed too soon for the water to become cleared. Growing water plants will tend to choke out the green algae and where a pond has a lush growth of them one rarely finds the algae. Once the water plants die down in the autumn they are no longer of any use for this purpose and the water becomes thick. In such cases it is not until the spring when the plants grow again that the water will clear. If the pond can be emptied and refilled it may keep clear for a time, at least long enough for the plants to get going again.

What are the feeding and breeding habits of the Golden Orfe?

Golden Orfe will eat anything a goldfish will eat. Healthy fish eat a considerable amount of food and if they have plenty of swimming space will grow very quickly. They prefer a live diet, such as worms, *Tubifex*, *Daphnia*, maggots, meal worms, wasps and flies, in fact any kind of live food you can get. They are mostly surface feeders and as they swim around near the top in shoals, they are very attractive. They prefer cool, well oxygenated water. They breed in a manner similar to that of goldfish, the males chasing the females and they lay their eggs on water plants and roots in the shallows. The eggs are laid singly and adhere to the plants, etc. They are slightly larger than goldfish eggs and take about the same time to hatch; about a week in a normal temperature for the time (roughly 63°F), but in less time if the water is warmer. Rearing is as for goldfish.

I have some shubunkins in my pond which have bred. Some of the young ones appear to



to be almost transparent with practically no colour at all. Can you explain this?

Among a number of young shubunkins it is almost certain that some of the youngsters will have little or no colour. This lack of pigment occurs in most strains and one must be careful to exclude such fish from the breeding stock. To keep a good colour among the fry one needs to use fishes which are as darkly coloured as possible. Shubunkins should appear to be scaleless but among a hatching it is probable that some will show several hard scales. There is no need to keep these fish from the breeding stock as they are often the better coloured ones and although they will throw some scaled fish they will also produce some fish with the required colours.

I intend to start a coldwater tank but for reasons of space it can only be 36 in. by 18 in. by 8 in. The lesser size is the width. Can I

succeed with a tank like this or shall I have to use one or two aerators?

The tank should hold 12 in. of fish not counting the tail. With this amount of fish you need have no aerator. If your tank could have been laid on its side, that is with only 8 in. of depth it would hold 27 in. of fish.

Can I keep small fish, terrapins and newts in one tank?

I do not advise this. The terrapins must have an island on which to climb and they can take a nip out of a fish. Newts only come to the water to breed and then leave for the rest of the time until the following spring. They should also have an island on which to crawl when they wish to leave the water and they should then be returned to grassy land, preferably at nights.

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## From a Naturalist's Notebook

by Eric Hardy

WE WERE very concerned early this spring when half-a-dozen British sand-lizards were advertised for sale (not in the *Aquarist*) for "scientific" interests. Scientific bodies like the British Herpetological Society were equally concerned that this precariously limited native reptile should be so exploited. Upon investigation, I learned that youths originally caught a dozen newly-emerged sand-lizards near Studland in Dorset in March. They lost six and sold the rest to a dealer in Surrey.

For some time, Dorset sand-lizards have been traded among local pet-shops, Keith Corbett, a London University herpetologist, told me. In view of their precarious position on the British fauna, which is the northern limit of their range, this is contrary to their scientific conservation. Apart from the rapidly declining haunt in Lancashire on the Ainsdale-Berkdale dunes and golf courses, the few surviving haunts include Dorset's Isle of Purbeck near Agglestone Rock where they are the prey of the smooth snake; the hilly commons near Frensham ponds in Surrey; near Eastbourne in Sussex; the Aldershot area of Hampshire; and formerly near Blackheath (Suffolk), Amersham (Bucks.), Alderbury (Wilts.), Whitstable (Kent), near Ilfracombe (Devon), and Newmarket (Cambs.), from which they have mostly disappeared.

The most notable change in sea-aquaria since the war has been the widespread introduction of small

cetaceans, chiefly the bottle-nosed dolphin, with much more success than Frank Buckland's famous, if brief, introductions of porpoises to London Zoo in the 1860s. Three sea-aquaria in Japan have up to half-a-dozen Risso's grampus or dolphins trained to perform like the bottle-nosed species in Florida's marineland. Others now have the white whale, including Germany's Duisberg Zoo after one was kept at Coney Island aquarium New York in 1955, though two attempts at London's old Westminster Aquarium in 1877 and 1878 survived only a few days. The bottle-nosed dolphin is, however, the most widely exploited cetacean.

Until the recently published 258-pages *Field Guide of Whales and Dolphins* an English-language publication by Captain W. F. J. Mörzer Bruyns (TOR Publishing Company, P.O. Box 3670, Amsterdam, \$12), we had no really practical book for identifying these marine animals either at sea or when stranded ashore. Without wasting a single word, this book tabulates the biological details of each species, aided by 106 illustrations of whales, dolphins and porpoises, 19 world maps of their distribution, tables of dorsal fins, beaks, flukes, teeth, whalebone and other details, and two world maps of sea-temperatures. The author, brother of the zoologist Prof. M. F. Mörzer Bruyns, devoted 30 years at sea in the Dutch Merchant Navy to his hobby of sketching and identifying these marine



mammals. I know no book so comprehensive in its practical details as this. The dimorphism in some of these creatures is illustrated in the sketches but not mentioned in the text. I remember finding a bottle-nosed dolphin stranded on the Lancashire coast in 1942 whose belly was grey instead of the usual white (*Nature*, October 24th, 1942).

I mentioned this at the time when out on field-study with Dr. H. N. Southern, the Oxford University biologist then working on geographical distribution of dimorphism in birds; but it was outside his experience. Bruyns attributes a more grey form to the West Atlantic; but by this he may mean their backs, as he doesn't mention dimorphism in particular. The Pacific long-beaked dolphin's white belly becomes pink in August, yet the colour plates show one sample white-bellied, the other light grey.

Another of my interests has been in mapping the distribution of our native white-clawed, freshwater crayfish, especially in the north. Apart from a few Cumberland streams, the furthest north record I have is Cocker Beck near Darlington, County Durham. In Westmorland it has been found in some of the streams draining into Lake Windermere and into the upper Eden near Melkinton.

Yorkshire's many haunts range from tributaries like Ling Ghyll and the Upper Ribble (including near Skipton and the Leeds and Liverpool Canal there and at Silsden and from Longroyd Bridge, Huddersfield to Marsden); also the Ure, near Hawes and nearby sources of Eden, The Dearne, Baine, Wharfe, Derwent, Swale, Nidd, Aire, Malham Tarn, Semmerwater, Roundhay Park lake, Leeds, Winterburn Beck at the top of Airedale, even in the Huddersfield-Ashton canal and on streams on the coal-measures near Cawthorne (near Barnsley) though not on the millstone grit of the Pennines, excepting where introduced temporarily.

In east Lancashire, apart from the extreme upper Ribble between Clitheroe and Sawley, where it extends its range from the limestone on the Yorkshire border, it has been introduced and often established in mill-lodge reservoirs and ponds between Oldham and Stakehill, near Hopwood Park, Droylsden ponds (Audenshaw near Manchester), Crime Lake on the Bardsley Canal near Droylsden, etc.

Crays were formerly established in Knott Hill reservoir near Hurst—near Ashton-under-Lyne on the Lancashire-Cheshire border. In East Cheshire they were introduced to the Dane, the Serpentine in Tabley Park near Knutsford, and to a stream at Withington near Chelford. In Derbyshire crays inhabit the Dove, etc., and in Nottinghamshire the River Sale.

In the West Country they are in the Frome (Glos.), Wylve (Wilts.), Avon (Wilts. and Somerset), etc. In the Home and Southern Counties they are common in Herts., Kent and Oxfordshire, the Hampshire Test, the upper Hampshire Avon, lower Itchen, Kennet (Berks.), Thames north of Winchester, Mole (Surrey), Lee (Herts. and near Stansted, Essex). They even inhabit a few Irish waters, like Killmoon River in Tyrone, but do not seem to be in Scotland or Wales. The red-clawed Continental variety *Astacus fluviatilis* was introduced to Nuneham Park and other parts of Oxfordshire.

The British white-clawed *Astacus pallipes* (synonym *torrentium* of pre-war nature books, though these are now separate specific names so near as France) is probably only a geographical subspecies of the larger Continental *Astacus astacus*, which has been introduced to several waters by aquarists liberating their traded specimens. It is almost certain where a cray occurs in other than hard water that it has been introduced.

## MARLIAC'S LILIES

by B. Fry

MOST of the cultivated water lilies (*Nymphaeas*) grown today are hybrid plants first developed by M. Joseph Bory Latour-Marliac before World War I. M. Marliac had his nurseries and water gardens at Temple-sur-Lot. When he died in 1910 he carried the secrets of his success in producing new forms of the water lily with him to the grave.

Yet as Hervey and Hems tell us in their *Book of the Garden Pond*, M. Marliac left to the water gardener "a legacy of beautiful plants, of colours to rival the rainbow, single and double, scented and scentless, and

that will grow in anything from six inches to several feet of water."

One of the triumphs of Marliac's art and skill was the production of the double white water lily he named Gloire de Temple-sur-Lot. This ravishingly beautiful lily packs as many as a hundred petals to a single fragrant bloom and flowers generously after the second year of planting. It is ideally suited to a medium-sized to large pond. Gonnère is another white of great charm. The flowers are myriad-petalled and are produced over all the summer. Hermine is white,

tinged with yellow. It is smaller in growth than the above and its star-shaped flowers are held well above water level. *Marliacea Albida* is white with a sunflower-gold centre. It is as free-flowering as *Gonnère* and does well in any but a tiny garden pond.

Without question, *Escarboucle* is one of M. Marliac's finest reds. The flowers on a well-established plant are of the size of a dinner plate. It is in such demand by discerning water gardeners, that orders for it are usually placed with the aquatic plant specialists very early in the year.

Among the several pink water lilies raised at Temple-sur-Lot few are lovelier than *Jeanne de Lamarsalle*. Another good pink is *Morning Glory*. Yet another is the delightful *Amabilis*, with the tulip-shaped flowers coloured salmon pink, or light rose. These lilies demand at least eight square feet of surface area in which to spread their waxy leaves.

Perhaps the loveliest yellow water lily is *Chromatella*, which is quite happy in restricted, but not too restricted, surroundings. Apart from the beauty of its

flowers, this lily has the added attraction of apple-green pads blotched and speckled with wine-red.

Water lilies are not difficult to grow if you know a thing or two. One of the essentials is an old wicker basket, a close-slatted box or, better still, a plastic planting crate readily obtainable from any well-stocked aquarium shop. Line this container with two thicknesses of clean sacking and then spread the roots of the plant in a bed of heavy loam or gritty yellow clay. See that the growing point of the lily is left showing above the compost. Now, cover the compost with washed pebbles or a couple of inches of washed sand to prevent the fish from mouthing it up and muddying the water. It is best to start a water lily in shallow water. In a filled pond, the planting crate may be placed on a tower of bricks and then, as the stems of the lily lengthen, remove some of the bricks from the pile every so often so that the container is lowered, a few inches at a time, in the water. By the time the bottom is reached, the water lily will have made plenty of new roots and thrown up a large number of leaves.

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## *Cabomba*

by Stanley Fox

IT IS NOT my intention in this article to describe the different species of *Cabomba* in detail; although the main chapter describes the most successful method of introducing these plants into the aquarium, the additional information may lead to a better understanding of these plants in general, and in particular the factors that influence their survival.

It is not advisable to immediately plant out any of the various species of *Cabomba*, instead they should be allowed to float in the tank; this applies whether or not they are rooted plants or cuttings. When you observe the appearance of a new root system on the lower portion of the stems of cuttings, then it is time to plant them. Before the final planting out, remove the portion of the stems below the newly formed roots. Where the plants already possess a root system they can (after a flotation time of at least ten days) be safely planted. Care must be

taken not to damage the roots when placing the plants into the compost, nor is it advisable to plant *Cabomba* in close proximity to each other. A minimum distance of at least half an inch is ideal. When these plants are thus separated the accumulation of mulm and other types of undesirable detritus can easily be removed. It is also essential that the lower stems have free access to water flow and food substances unimpeded by excessive dirt.

No doubt some aquarists do plant cuttings of *Cabomba* direct into the gravel, and that the plants do not die-off as a consequence; nonetheless, the percentage of plant losses directly attributed to this practice far outnumber the successful achievements. When *Cabomba* cuttings are directly planted into gravel they will usually rot away at compost level.

Apart from normal servicing of the tank, plants should be allowed to grow in peace; this particularly



applies to the *Cabomba* plants. Frequent transplanting from one location to another should not be undertaken as this practice will slow down the plants' growth. Too frequent pruning is not recommended; at least allow one or two plants to grow to their natural size. You will find that these plants can grow to enormous lengths when tank conditions are ideal for them.

The general form and structure of *Cabomba* plants show that these plants assimilate most of their food materials through the tissues of their leaves and stems, the fine but not extensive root system is really inadequate for this task, although they do assist in the process. For the latter reason, it is not strictly necessary to use sub-soils such as peat, clay and soil, in the culture of these plants.

The most attractive of the species is *C. caroliniana* var., *multipartita* and this variety looks most impressive in a deep tank which allows plenty of room to show off the large leaves. Probably the hardiest of the species is *C. australis* and this is the variety that I recommend for the aquarist who finds it somewhat difficult to keep *Cabomba* plants alive and flourishing in his aquaria.

Soft water is ideal for the following species, *C. pulcherrima* and *C. warmingii*, and not too essential for the remaining varieties. One advantage in the use of soft water is that it discourages algae from forming on the leaves of these plants. All the *Cabomba* species prefer clear water; excess mulm and floating dirt should not be present in the aquarium. These plants thrive best in matured water conditions in well-planted tanks. All the food that the plants need is present in such an environment. In a newly set-up tank it is sound practice to introduce at regulated intervals a liquid plant fertilizer suitable for aquaria purposes. A cautionary note: follow the instructions on the container, do not use excessive quantities of fertilizer. As soon as it becomes apparent that the tank contains sufficient natural food substances for the plants, the use of the fertilizer can be discontinued. Flowing or circulated water can be beneficial; it will help to prevent dirt and algae from settling on the plants, and as an added bonus will stimulate the plants in their growth. This manner of growth aided by water flow is named Rheotropism.

Different species of *Cabomba* require diverse water temperatures, i.e., *C. aquatica* will flourish in the higher fifties on the fahrenheit scale, the other varieties will prosper best in the higher seventies. Whenever possible a slight decrease in water temperature at the latter end of the growing season will in the long term make a difference to the well being of these plants.

High intense light in conjunction with sustained

high water temperature will for a time stimulate plant growth. However, should these conditions prevail on a continuous basis, internal damage will occur to the plants. This will in turn affect the assimilation of food intake and the rate or speed of photosynthesis. Light of moderate intensity is best for these plants, preferably of long duration, ten to twelve hours is ideal. The needs of plants to assimilate light of long duration (photo period) will vary somewhat according to family or species. In general, plants that possess bright green foliage such as *Cabomba* will benefit the most.

Poor light will cause the plants to become partly etiolated (the full effects of etiolation can only occur when plants are in the dark for a long period of time). The signs that show evidence of this condition will be the gradual yellowing of the leaves and abnormally long internodes (the sections of the stems between the leaves). The leaves will become more brittle than they are normally and at the slightest touch will become detached from the plants; the apex and lower extremities of the stems will often become denuded of leaves. The leaves that remain on the plants will become retarded in growth. As etiolation progresses the internal tissues will become feeble, thus accelerating the process of degeneration.

Methylene blue is often used by aquarists for the treatment of fish ailments; unfortunately, frequent use of this chemical will effect *Cabomba* adversely. Normally the cell-walls of plants are permeable, allowing gases and water to diffuse through them. Methylene blue will affect this process, in extreme instances the plants will die. It is sometimes not appreciated that when chemicals are added to aquarium water they are often detrimental to the health of plants; some plants are affected by one type of chemical, and yet are fairly immune to others.

It is by deliberate intent that I omit details of pH and D.H. requirements for the *Cabomba* plants; soft water and matured water is the nearest approach that I have made to this question; as water conditions in aquaria are in a constant state of flux, or chemical change, albeit slow, there is nothing to be gained by giving precise details of pH and D.H. values, for in practice they cannot long be maintained at any given figure. The only added information that I will give is that in my experience none of the *Cabomba* species will flourish at its best in extremely acid water conditions.

With perhaps one notable exception, all life forms will cling very tenaciously to life and will only die before the end of their natural life-span when adverse environmental conditions precludes any chance of their survival. The *Cabomba* plants have been named as "problem plants," they are not really; all they require from you is help and understanding of their primary needs; given this, they will flourish.



# FISH STANDARDS

by M. D. Cluse

ONCE THERE WERE no standards for aquarium fishes, for the simple reason that there were no competitive fish shows. The British Aquarists Association founded in the early 1920's by A. E. Hodge, editor of *The Amateur Aquarist* (forerunner of *The Aquarist and Pondkeeper*) organised what was possibly the first competitive aquarium fish exhibition ever held anywhere in the world. This was held in Fetter Lane, London in 1926. The judges no doubt used their personal experience to give their verdicts. These would be based upon the fishkeeping proficiency of the exhibitors as evidenced by the condition and size of the exhibits. Although there were a few domesticated coloured fishes such as golden tench, golden orfe and, of course, common goldfish, almost all fish including guppies and green swordtails were wild type in form. The only exception, I think, was one glass aquarium containing some metallic fantails. The B.A.A. also put on exhibitions in 1927 and 1928. It gave first a gold medal for the best fancy goldfish and then a silver cup for the best fancy goldfish bred by an exhibitor. There were classes for Comets, Shubunkins, Nymphs, Fantails, Fringetails, Lionheads, Orandas and Celestials. The B.A.A. club badge depicted a Fringetail, nowadays called a Veiltail. It was evident that extra skill on the part of the aquarist was required to breed this fish. The reason was, of course, that genetical factors were of major importance and the breeder had to select to maintain a good strain. It was then obvious that with such a variable fish as *Carrasius auratus*, it was necessary to draw up standards in diagrammatic form so that there were accepted ideals at which to aim. Therefore, during the next few years the B.A.A. did, in fact, make standards for fancy goldfish. Until the last war there was an upsurge of fishkeeping activities, enthusiasm being stimulated by the growing popularity of tropical fish. Local clubs sprang up in various parts of the country. During the war many of these disappeared and of course it was almost impossible to keep tropical fish in this country. After the war the hobby revived and so did the Federation of British Aquatic Societies. This drew up provisional standards for aquarium fishes. The first disavowal came from the guppy breeders. The guppy had become domesticated and like the goldfish

had not only changed its colours but was also available with various shapes of finnage. The guppy specialists decided that they would prepare their own standards and stipulate which genetic characteristics should be approved for showing and how the points awarded should be distributed. A few years later the Goldfish Society of Great Britain was formed. The stocks of fancy goldfish had deteriorated. Many varieties had been interbred and became mongrelised. It was possible from a single spawning to obtain veiltails, fantails, nymphs and "telescope-eyed" varieties. Brother and sister fish could be entered in classes for different varieties. Various goldfish mutations had evolved in China over many centuries, but very little virile stock from the ancient homeland was reaching this country. G.S.G.B. decided to concentrate upon four fancy varieties which between them incorporated the mutations of form then recognised in Great Britain. They were the Singletail—normal body, long tail fin with rounded lobes; the Twintail—short deep body with long divided tail fins with little forking; the Globe-eye—short, deep body, long forked divided tail fin, protruding eyes and black coloured metallics (moors); the Bramblehead—short body, deeper than normal, short fins but without a dorsal fin and with a special characteristic, a fleshy globuled growth on the head. G.S.G.B. made its own drawings of these approved varieties based on observations of actual fishes. It decided to introduce type tests in order to disqualify borderline mongrel types. A revolutionary step was taken regarding the pointing system. Because of the overwhelming importance of the genetic factors governing the various varieties only a fifth of the total points were allotted for condition and deportment. Another fifth was allotted to the special characteristic to be encouraged on a particular variety. The remainder were given for body, fins and colour which are all variable genetically. This policy is very important if the various mutations are to be preserved when breeding these highly developed goldfish in this country. Although more fancy goldfish are being imported into the country now from the Orient, there is no certainty that these will continue to come. Père David's deer, herds of which roamed in the park of the Summer Palace



at Peking, are probably extinct in China now, but survive in zoological collections in the western world. In 1962 G.S.G.B. increased the number of its approved varieties by seven, adding Pearlscale, Celestial, Bubble-eye Pompon, Fantail, Oranda and Common Goldfish, which had amongst them four additional special genetical characteristics. A thorough re-appraisal of G.S.G.B. standards has been undertaken in the last few years. All drawings have been slightly modified and two further varieties, the Comet and the Broadtail Moor, have been added.

The name Singletail has been changed to Bristol Type Shubunkin and Goldfish, whilst the Twintail will be known as the Veiltail. The new forty page standards booklet should be available in time for the Alexandra Palace Show this year and will be the only set of standards for goldfish obtainable. Aquarists breeding and showing fancy goldfish can now aim for the same set of practical ideals wherever they may be in the United Kingdom. Show secretaries perhaps versed only in tropical fish showing can use this revised book of standards as a guide when putting on classes for fancy goldfish.

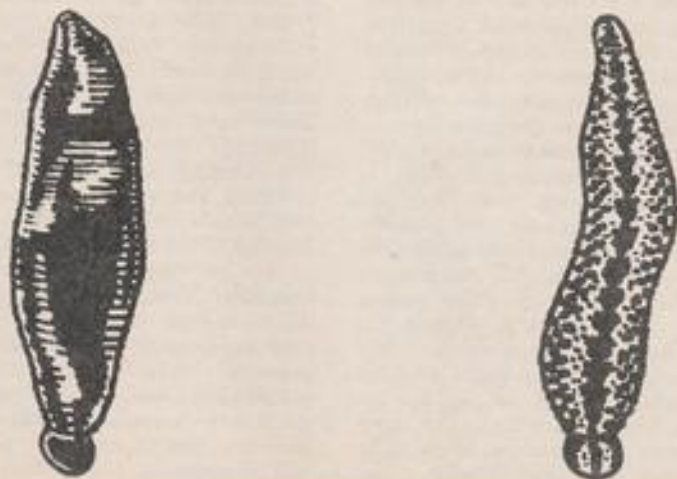
## LEECHES

by David C. Wareham

LEECHES can be divided into two groups: those which have a beak or proboscis for sucking blood from their prey, and those with jaws and teeth which chew flesh. Of our eleven species, we have only one which is capable of penetrating human skin and that is the Medicinal Leech (*Hirudo medicinalis*). Introduced from the Continent to this country many years ago, it was used up until fairly recent times, for the curing of infected blood and bruises which the leech painlessly extracted from the somewhat anxious patient. It is still being exported from Europe to countries such as North America where it can be found in drug stores, but its use in this country is rapidly diminishing.

Being carnivorous, their food consists of the flesh and blood of other animals, the smaller of which are often devoured completely. Aquatic insect larvae, worms and crustacea form the main part of their diet and although leeches are sometimes found attached to larger animals such as waterfowl, and even cattle, it is doubtful if they use these animals as regular sources of food. All leeches have special cavities or pouches in their stomachs where they can store large amounts of blood. They can take more than twice their own weight in blood at a single meal which can then last them for many months if necessary.

The largest and probably most familiar of our native leeches, *Trocheta subviridis*, or Common Pond Leech,



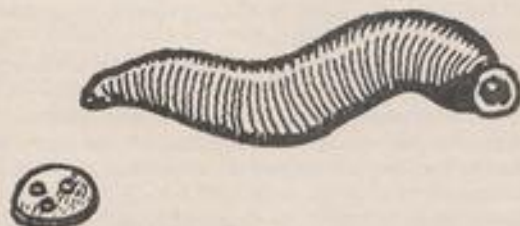
The Common Pond Leech (left) and the rarer Medicinal Leech.

is some four or five inches in length when at rest and double this length when extended. It is a brownish green above and a paler blue-green beneath. It feeds on a variety of living and dead matter, including snails, insects and their *larvae* and even other leeches. It is not unusual for it to leave the water altogether in its search for earthworms, although the habit is usually confined to after dark.

When feeding, the leech injects an anticoagulant into the wound which ensures a constant flow of blood and this explains why the wound continues to bleed for some time after the leech has dropped off. As well as this anti-blood clotting substance, some



Leech making its egg cocoon in the Clitellum or 'Saddle' and (below) with newly-made cocoon.



leeches possess a pain-killing liquid which enables them to feed on their host unnoticed and therefore unhindered.

Leeches have two suckers, a large one at the posterior end and a smaller one at the mouth end. The mouth is situated underneath the sucker and the eyes, differing in number according to the species, are positioned on the back. The leech's method of movement is characteristic and is not unlike that of some of the "looper" caterpillars of Geometrid moths. It first anchors its head-sucker to a rock or whatever it is moving over, and then draws its posterior sucker up next to it. Stretching its head out again, it repeats the process, and so on until it reaches cover. In addition to this movement leeches can also swim through the

water by graceful snake-like undulations of the body. These undulations are also employed sometimes when the leech is at rest, to ensure that a fresh supply of oxygen is kept circulating around its body.

Like their close relatives, the earthworms, leeches are hermaphroditic. This is to say they each have male and female reproductive organs. When pairing, each leech deposits some spermatozoa on its partner which then burrow through the skin and into the ovaries. Once fertilized the eggs are laid in a cocoon which is formed from the clitellum or "saddle." These cocoons vary in shape, some being flat and smooth, whilst others are rough and horny. They are secured to stones and the foliage of water plants or, as in the case of the Horse Leech (*Haemopsis sanguisuga*), deposited in the soft mud of the water's edge. Some leeches carry their eggs around with them beneath their bodies where they remain until they hatch.

Leeches are to be found throughout the country in ponds and ditches and slow-moving streams where they spend much of their time clinging to the underside of the leaves of water plants or beneath stones and rocks. When disturbed they immediately search for some dark place to shelter. Their colouring ranges from pale grey to dark olive-black, and because they merge so well with their surroundings, they are seldom seen unless accidentally collected on one's feet or gumboots by wading in a pond.

Collecting them presents few problems, and a jar or plastic bag can be used for carrying them. They can be found, sometimes in large numbers, fastened to pieces of rotting wood, under rocks, or indeed on almost any submerged debris. Having found them, one is presented with the problem of dislodging them. They can be quite stubborn if they wish but can be removed successfully with a little patience by easing a small twig or a finger under the suckers and persuading them gently to transfer themselves to the collecting bottle.

Being long-lived, leeches can provide fascinating subject-matter for the aquarist and pondkeeper alike. Different species can be kept together, but in a case like this a large tank is preferred as cannibalism can and does occur. One or two large stones or a flat piece of rock or slate provide adequate shelter for the leeches and water plants give them a place to deposit their cocoons. They do not require much in the way of food, one or two worms or a snail being given once a week is usually more than enough. Dead or uneaten food should be removed as soon as possible to prevent the water from putrefying. A close-fitting lid for the tank is essential to prevent the leeches from moving up the glass and out of the top.

Keeping these interesting creatures in captivity provides not only the opportunity of studying their life histories in the comfort of one's own home, but also creates an extremely unusual conversation piece.



# MOU THBROODING

## HOW IT ALL BEGAN

by Jorgan and Pamela Hansen

THE CICHLID FAMILY, which belongs to the suborder *Percoidae* of the order *Perciformes* (perch-like fishes), comes from Africa, Asia and America. Cichlids are of particular ethological interest on account of their highly developed behavioural patterns, and degree of parental concern—in that either one parent or both parents take(s) care of the eggs and fry in widely differing ways for periods ranging from a few days to several months.

Some place their eggs upon stone or plant and provide here a constant stream of fresh oxygenated water, clean the eggs, and later care for the fry for several days, until it's time for a new brood.

Others are more solicitous; for example, *Aequidens maronii*, the Keyhole Cichlid, will look after its young with great care for up to six months.

Some hide their eggs in caves, where they stick fast to the roof, and if there aren't any caves to be found, the fish, for example, *Pelvicachromis pulcher* (old name *Pelmatochromis kribensis*), simply dig their own caves. With some Tanganyika cichlids parental care is developed to the extent that the half-grown young are allowed shelter in the cave even when the next brood hang as eggs, or swim around as fry. A whole family with children of all sizes. (*Julidochromis ornatus*.)

Other cichlids again "nurse" their young with a secretion of slime which the young feed on for the first 8-10 days. The four species of discus, *Symphysodon*, are a well-known example, while the Orange Chromide, *Tropheus maculatus*, is a lesser-known one.

All these instinctive actions and their mechanisms of release have, through thousands of years, been developed and improved upon in order to ensure survival of the species. Both in South America and Africa one finds mouthbrooders, cichlids which hide their eggs in the mouth, and even in some cases keep them there so long (up to two months) that the fry have to be fed in there (*Tropheus moorii* and *Tropheus duboisi*, 1-9 young). Can one imagine a more peculiar way of preserving the species than that? Hardly, but nature is at times enigmatic.

In each stream or lake is to be found a certain amount of fish of varying sizes and with varying food requirements. It has been shown that the species

adapt themselves to the available food supplies, so that none goes to waste. Small fish eat small insects and crustacea, others live mainly on vegetable food such as algae, e.g. *Pseudotropheus tropheops*, and yet others live on smaller fish. Nature sees to the balance so that any eventual excess of a particular species is soon corrected. If, for example, predatory fish increase in number, the other fish will soon be decimated, which will result in predatory fish finding it increasingly difficult to cover their food requirements: this will result in the dying out of those weaker specimens who could not find enough to eat, and thus the original state of equilibrium will again obtain. Aquarists know this from "ick" (variously called *Ichthyophorus*, *Ichthyophthirius multifiliis*, and *Ichthyosporidium hoferi*): if it is allowed to infest an aquarium, all the fish don't die, for then all the "ick" would die too, but instead a state of balance between parasite and fish is gradually attained.

In some areas there might, however, be so many nutritional resources that the different species live very closely together, such that ordinary means of propagation are out of the question, and the scene is therefore set for such refined developments as mouthbrooding.

Some pairs will have all their eggs, and others all their young, eaten, and some few fish will perhaps be attacked by egg-robbers during the spawning, and have to chase away their presumptuous attackers; if this happens several times it perhaps becomes an established part of spawning ritual. We have here interplay between two types of fish: the one type which is concerned with propagation of the species, and the other type which is concerned with subsistence. The clever fool the less clever, which must therefore die or even die out, whether they be hunter or hunted. Guarding of the eggs only until they hatch is extended to guarding of the eggs while hatching, at which time they are perhaps frequently moved around to various places, in order to avoid spread of disease, and to escape from enemies.

Those of the young which survived the first weeks of life and became free-swimming would, together with other broods, form large shoals. These would of



course be severely reduced in number by larger fish and other creatures but, thanks to the great number of young and their good camouflage, there would still be enough individuals left to ensure survival of the species.

But at a later point in the development of certain cichlids, this wasn't enough either. The young were eaten before they swam freely, or the eggs were eaten by fish large enough to chase the parents away. At one or another epoch-making period (which lasted perhaps 1,000 or 10,000 years) the fish became so pressed by the other fish masses that, to hinder others from taking their eggs, they had to take them themselves, into their own mouths. Others of the family which didn't do this perhaps died out. Not even an enormous spawning made any difference if all the eggs were eaten before they could hatch. But development couldn't end here, as it didn't make much difference if the fry were eaten anyway as soon as they hatched or swam freely. So some mouthbrooders kept their fry in the mouth for a considerable time; which necessarily resulted in lack of space, as the fry, after all, needed space in which to grow. And now that the fry were cared for so well, it wasn't necessary to have so many of them.

Those fish that produced a large number of fry were obliged to release them early and thus risk that they were all devoured before being able to propagate themselves. It was the individuals with the few fry which were blessed with more ample space and a longer period of oral residence, which survived as a genus; these thereafter divided into different species, and this is happening in our own tanks: we are in the midst of perpetually occurring development.

Let's take an example from the Mbuna group (recently evolved from *Haplochromis*) in Lake Malawi (Nyasa). These are fish with a maximum length of 20 cm., elongate body, two imperfect lateral lines (skin canals containing small groups of special sensory cells), tooth-formed (ctenoid) scales, short snout, and teeth with basic characteristics in common but differing from species to species. The number of spiny rays in the dorsal fin is from 15-19, with 7-11 soft rays; in the anal fin there are 3 spiny rays and 7-9 soft rays. Both testicles of the male function, but the female's left ovary is appreciably reduced in function. The fish is a maternal mouthbrooder, the male being polygamous.

It is evident that long ago a mutation must have occurred, and as a result the fish can produce only a small number of young. This particular group of fish (*Pseudotropheus zebra* is an example from this group) therefore managed to survive whereas others from the same area who were not so lucky no doubt died out.

In other areas mouthbrooders were able to survive without reducing the birth-rate. Amongst *Tilapia*

and *Haplochromis* the number of young is high, up to several hundred.

Incidentally, in certain species it is the male which broods the eggs (*Tilapia dolloi*). In others (*Tilapia gallilaea*) both male and female do so, while in others again they take turns (*Chromidotilapia guentheri*).

An approximate description of the mouthbrooder's general appearance might be in its place here. The male has strong colouring, and as a rule possesses clear egg spots on the anal fin. Females tend to be a rather drab brownish-grey, with in some species faint traces of egg spots. In a number of species from Lakes Tanganyika and Malawi the female has almost the same colouring as the male. The ability to change over to female colouring if danger threatens, or if a larger male dominates the tank, is common to almost all mouthbrooder males.

And what about the fish which lived on the eggs of our potential mouthbrooder? Certainly through the centuries the boldest of these individuals have survived and now there exists a fairly small stock of fish which live by egg robbery. And who is the most audacious of all egg robbers? Why, he who steals the egg while the hen is still sitting on it: in Lake Victoria lives a species of *Haplochromis* (one of the hundreds in Lake Victoria) which gets its daily omelettes by simply sticking its head into the mouth of the mouthbrooder and stealing the eggs. What the next development will be only the future can reveal but in any case we needn't hope to witness it, as the development of a new species takes roughly 50-60,000 years, and moreover it is not certain that there will be any fish left in the lakes by that time. Perhaps life will have to start all over again.

### Crossword Solution

T	H	E	R	M	O	M	E	T	E	R	C	O	S
R	M	A	A	A	O	O							
A	M	P	H	I	B	I	A	N	L	A	B	E	O
C	T	D	N	G	I	L							
E	Y			S	O	E	O	N	M				
E		B		O	R	E							
L	A	M	P	R	E	Y		S	T	O			
E	A	O	E	F	A	K	I	R	R				
M	P	A	W		A	A							
E			N		P	L	A	T	Y	P	U	S	
N	I	C	H	T	J	A	R		E	P	H		
T	I	R	R	E	N	T		E	I				
S	E	A	H	O	R	S	E		E	V	A	D	
		N	U	O	N	C	E						
		T	I	T	A	N		M	E	N	D	E	L



## THE HARDY EUROPEAN REPTILES AND AMPHIBIANS IN CAPTIVITY (Part 4)

by *Andrew Allen*

### 7. The Midwife Toad (*Alytes obstetricans*)

*Description.*—The general appearance is toad-like, but in fact this species is more closely-related to the Painted frog than to the true toads. It is a member of the Discoglossidae, and possesses the characteristic discoid tongue. It is small, growing to between 4 and 5.5 cms., with a compact body. The back is covered with tiny warts, and there are two longitudinal rows of larger warts down both sides. The ventral surface is granular in texture. The tympanum is partially concealed, and there are no vocal sacs. The dorsal surface is in various shades of grey and grey-brown, with a red tinge on the larger warts. Ventral coloration is cream, sometimes with grey or black spots on the throat.

*Distribution.*—Mainly found in South-West Europe, including Spain, Portugal, France, Belgium, Switzerland and parts of West and South Germany. Hilly country is favoured, and it may be found far from open water.

*Breeding Habits.*—The unusual breeding habits of this species are of great interest to the scientist, and a source of fascination to the amateur. Mating takes place on land over a period of several months, and spawning may take place more than once in the same year. The position of the amplexal grip during courtship varies widely, starting at the loins and sometimes finishing round the neck. As the string of spawn emerges from the cloaca of the female, the male winds it round and round his hind limbs. Eggs are usually produced in batches of about a hundred. For a period of two or three weeks the male maintains the eggs in a moist condition, before finally entering shallow water. The eggs hatch, and the subsequent development of the tadpoles is unremarkable. The



Photo: W. S. Pitt

harmonious call of this batrachian during the mating season has given rise to the alternative name of Bell toad.

*Care in Captivity.*—Very few species cause less trouble in captivity than the Midwife toad. All it requires is a small shallow pond, some dark, damp hiding places and an abundance of natural vegetation. All this can be easily supplied in the indoor vivarium, even of fairly modest dimensions—say three feet in length. The soil should be slightly moist and loose in texture, allowing it to dig hiding places beneath logs or stones.

But even better is an outdoor reptiliary, or, best

of all, a small walled garden. Under these conditions all worries about hibernation, feeding, and maintaining a suitable atmosphere, are relieved. The Midwife toad settles down very happily in the English climate and is thoroughly hardy. In a shady walled garden it will live and breed for many, many years from generation to generation. This being the case, the protection given by a greenhouse or cold-frame is plainly superfluous, whilst the extra heat on really sunny days may be harmful to any spawn that is being carried.

A wide range of food is taken, exclusively on land. Any small invertebrate, be it adult insect, insect larva, woodlouse, earthworm or spider, will be grist to the mill. There are no problems here.

This is a rather small species, and so it should only be associated with other small species in the balanced community. Snakes, terrapins, large lizards, and the larger frogs should all be avoided. In the indoor vivarium it is good company for Fire salamanders, Common, Green and Natterjack toads and Common, Moor and Agile frogs. In outdoor vivaria the choice of companions is obviously much wider, and size is the only important criterion. With its nocturnal habits the Midwife toad is not the most spectacular member of any community, but it is well worth inclusion for its undemanding nature and remarkable breeding habits.

There is one sub-species, *A.o.boscai*, found in the Iberian Peninsula. *A.cisternassii* is a separate species found in Southern Spain, but is similar in most respects to its more familiar relative.

#### 8. The Fire-Bellied Toad (*Bombina orientalis*).

*Description.*—This is a very small toad, growing to no more than 5 cms., with all the typical characteristics of the Discoglossidae, i.e., discoid tongue, no external vocal sacs and no external tympanum. There are internal vocal sacs. There are numerous small warts and a few spines on the dorsal surface, which is dark grey in colour, with some even darker patches. The ventral surface is blue-black, dominated by splashes of glorious red, orange or vermilion. There are also some white specks. This is a highly attractive species.

*Distribution.*—Occurs in large areas of Central and Eastern Europe, including Southern Scandinavia, Eastern Germany, Austria, Yugoslavia, Rumania, Hungary, Bulgaria and parts of Russia. It is a lowland animal, found in or near water of almost any description, ponds, ditches, puddles or wheel-ruts.

*Breeding Habits.*—Lumbar amplexus takes place at any time during late Spring, and spawn may be produced more than once in the same year. The eggs are laid in small batches, sometimes even singly, on the floor of the pond or amidst clumps of water weed.

*Care in Captivity.*—The Fire-Bellied toad is thoroughly hardy, and very undemanding in its requirements.

It settles down well in the indoor vivarium, to which it is perfectly suited because of its small size. For instance half a dozen specimens can readily be accommodated in a vivarium of four foot in length. Indeed, the sociable nature of these charming toads should always be taken into account, and fairly large numbers in a large vivarium are greatly preferable to small numbers in a small vivarium. Basic planning of the interior design should be related to the semi-aquatic habits of this animal, and is best achieved by sinking a large pool into a thick layer of soft, damp soil. Obviously a pool of irregular outline, either ready-bought or modelled from plastic sheet or cement, is more aesthetically pleasing than a plastic lunch box or the like, and also allows for the construction of a suitable slope to the sides of the pond. Abundant vegetation, and hiding places carefully harmonized into the background will complete the design. The vivarium should be placed away from strong sunlight, though indirect sunlight will cause no harm.

These toads should over-winter fairly comfortably, though their life span will inevitably be reduced somewhat as a result. The alternative is to place them at the onset of colder weather in a large box packed with moss and leaves, which should be placed, covered of course, in a frost-proof garage or outhouse. This method, though it can be perfectly successful, requires constant vigilance. It also requires delicate judgment, for the toads must be transferred to and from their winter quarters at just the right moment. Ideally this should happen when temperatures in the outhouse and in the vivarium are very similar, and so it would help if a thermometer were to be kept permanently in both places.

Greenhouse and cold-frame make even better homes, with their extra space, and with worries about hibernation alleviated. Equally good is an outdoor reptiliary or walled garden pond. As long as there is a substantial pool and some dense cover these animals will live happily for a good many years, though they may be somewhat reluctant to breed. Because they appear to be active throughout both day and night, and as a result of their fiery coloration, these toads are more prominent than most batrachians. They always seem to be in evidence, and will grow to be very tame indeed. Feeding is a very easy matter, for they will take the entire range of small terrestrial invertebrates, with size the only limiting factor.

Because of their warning colours few other Reptiles or Amphibians will molest them, and as a result they can be included in a surprisingly wide range of communities. Indeed, there are recorded instances



where they have been left in the company of voracious terrapins, and emerged to tell the tale! However, I would hesitate to take this as a precedent, and would certainly keep them well away from terrapins, snakes and the larger frogs. But most other small Amphibians, tortoises and lizards, will make acceptable companions. In their turn they are thoroughly harmless, and will instigate no trouble at all.

In conclusion, this is a very hardy species that can scarcely be bettered as an inmate for all types of vivarium, and one that will bring joy through its lively habits and sociable nature.

There are no sub-species.

#### 9. The Yellow-Bellied Toad (*Bombina v. variegata*).

*Description.*—This species is very similar to the preceding one, growing to the same length, having the same build, and a similar dorsal coloration. The major difference is in the ventral coloration, for the orange or red markings are replaced by bright yellow ones, and there are fewer white dots, if any at all. In addition it has no vocal sacs of any type.

*Distribution.*—The Yellow-Bellied toad replaces *B. bombina* in Western Europe, being found in nearly

all of France, most of the Alps, Belgium, Holland, West Germany, and parts of the Balkans. In addition it is not a creature of the plains, but occurs often in hilly, or even mountainous country, up to an altitude of about 2,000 ms.

*Breeding Habits.*—Except for minor differences in timing these are identical in outline to those of the preceding species. The call note is similar.

*Care in Captivity.*—This species can be given identical treatment to the Fire-Bellied toad. It is thoroughly hardy, will breed with greater readiness in confined conditions, and may live for many years in the outdoor vivarium. A number of these toads are on record as living for sixteen years in a reptiliary, and this may be by no means a maximum figure.

There are three sub-species:

*B. v. pachypus* is widespread in parts of Southern Italy.

*B. v. scabra* and *B. v. kolombatovica* both come from the Balkan countries.

The next article considers the two European members of the Pelobatidae, namely the Spade-foot toad and the so-called Mud frog.

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## SPAWNING THE THICK-LIPPED GOURAMI

by Michael D. Rose (aged 15 years)

AFTER A YEAR of keeping tropicals and breeding the usual livebearers I decided to try to spawn some egglayers. Whatever the species I didn't really care as long as it was to be a medium-sized pair of cichlids or gouramies. I foolishly bought a breeding pair of 4½ inch Blue Acara which I found were too old to spawn following the donation of a huge clutch of eggs—infertile. I therefore pass this message on to fellow aquarists: when buying a breeding pair of fish always enquire about their age as they may be too old to spawn successfully.

When obtaining a pair of Thick-Lipped Gouramies, one must make sure that the fish you buy are *Colisa labiosa* and not the Giant Gourami, (that not being *Ostiphrenus gorami*) *Colisa fasciata*. According to Pinter, *Colisa fasciata* has an elongated body and a dorsal fin which is quite distinct from the caudal fin and it is red at the top. It grows larger and the anal fin is pointed at the tip with a metallic blue

colour and a red edge.

The thick-lip is native to Burma, Indo China and Assam; water composition is no great problem with this species and a temperature of 74°-78°F. is suitable for maintaining them. For breeding 78°-85°F. is ideal.

Its basic coloration is greenish brown overlaid with eight or nine reddish-brown vertical bars. The tips of the blunt-edged anal and dorsal fins are blood-red as are the thin ventral fins of the male. Just recently a giant Thick-Lipped Gourami has been brought on to the market. Specimens can grow to 5 in. and the colours are much more opaque and brighter than the ordinary thick-lip.

When I bought mine, the male was a giant thick-lip, and the female was ordinary, but she was well rounded. She was about 2½ inches long and he was about 3½ inches long. I bought them on the 11th March, 1972. I took them home and put them in a 24 in. × 8 in. × 8 in.

tank with a sub-gravel filter. At the back I planted vallis, and dwarf crypts, and on the surface I left a lot of water sprite. The temperature was 80°-83°F, and the water was neutral. Next morning I found hundreds of bubbles amongst the water sprite but no actual bubble-nest had been built. I then left off the light during the day and left it on overnight. Next morning nothing had happened so I went to school confident that I might, after all, be able to watch them spawn.

When I returned home from a school play rehearsal at 8 o'clock, the male had built a huge bubble-nest and the pair had spawned. I was surprised to find that the eggs were strewn all over the tank with not so many in the nest; but this may have been because I left the light off. The light was now on and the pair were seen to eat their eggs. I therefore removed both fish. Next day out of about 300 eggs laid 250 had fungused. The rest had hatched with the fry using up their yolk-sacs. I immediately started to add liquifry (at the rate of 10 drops a day) and a small amount of Biol with the intentions of turning the tank into a tank of *infusoria* providing food for the babies at all times. In the third to sixth week after birth the labyrinth organ develops at which time great care must be taken to keep the temperature of the air above the water equal to the actual water temperature. This I failed to do and I was therefore only left with 10 fry. At four weeks they were taking *tubifex*, were growing rapidly and were already just under the size of a neon tetra.

On April 3rd the pair were moved back from a 24 in. x 12 in. x 12 in. tank in which they had refused to breed into the 24 in. x 8 in. x 8 in. tank. The female had been well conditioned on day food and *daphnia* and she was well rounded so, assuming that the pair would spawn the next day, I once again left the light on overnight. The top of the tank was covered in water sprite and in the morning the male had built a huge nest. He blew large bubbles at first and then smaller ones. They were blown by the nest and then taken in his mouth into the centre of the nest. The biggest shock that I got was over the colour of the male. He had gone a deep purple with black bars and the edge of his anal fin, dorsal fin and his ventral fins had turned brilliant orange.

In between blowing bubbles the male would leave the nest and chase the female. After about half an hour of being chased the female swam under the nest and the first of several mock matings took place, with no eggs being extruded. Then the female came up to the male and he literally wrapped himself around her (she was at a 45° angle to the nest). Being a giant thick-lip his head was touching his tail and the two fishes' genital pores were almost touching. The two fish began to quiver and then the male

jerked suddenly and about 10 eggs were laid. They are transparent with a milky white bottom and they floated up into the nest. It was at this point after the embrace that hundreds of tiny bubbles were seen to come out of the male's gills.

Six hours later the spawning had finished, I reduced the level of the water in my 24 in. x 12 in. x 12 in. tank to 6 ins. and transferred the whole of the nest and plants into it. Next day I had 300-400 babies which were absorbing their yolk sacs and once again I started to add liquifry and later biol. I raised the water level to 12 ins. when the fry were free swimming and I am now hoping to raise them to a size at which I can sell them. At 3-5 weeks they can take sifted *daphnia* and *tubifex* and on this diet they grow quite rapidly.

I also noticed that as soon as I removed the nest and plants the male built another nest which he tended for two days but no more eggs were laid. Also when two fish spawn the number of infertile eggs rapidly decreases with the number of spawns.

Therefore as a community tank fish I would strongly recommend the thick-lipped Gourami, and as a first breeder of egg-layers it is also excellent, the only difficulty being found when the labyrinth organ is developing.

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#### Obituary

The Southampton Aquarists Society regret to announce the sudden death of their President, Mr. V. Fish, on 31st March. They have not only lost their President and Founder Member but also a real friend, who was only too pleased to help them with his experience from a life time of fish-keeping.

Back in 1948, having become interested in tropical fish as well as his first love of fancy goldfish, Vic advertised in the local paper to make contact with similarly interested people and Southampton and District Aquarist Society, came into being. He served the Society as Committee Member, Treasurer and Vice-Chairman before accepting the Presidency, but it was his friendly advice and help, freely given, which endeared him to all. He always enjoyed the expression of disbelief on newcomers' faces when they were introduced to "Mr. Fish," and when he won the trophy presented by himself for the Annual Pond Competition, it was a popular decision.

To his family we extend our deepest and sincere sympathy. He has left his mark on the Hobby and he will be sadly missed but not forgotten.

NIGEL L. JENNINGS,  
85 Manor Farm Road,  
Bitterne Park,  
Southampton, SO2 4NU.



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

**THE Midland Association of Aquarists Societies** held an inter-society competition in May when 21 societies entered the total entries being in excess of 400. It was very pleasing to see that the official winner was a newly formed society which has only recently joined M.A.A.S. The final placings and points were as follows: Pelsall, 39; Midland Tropical, 38; Haden, 37; Rubery Select, 35; Tamworth & District, 34; Watley & District, 33; North Warwick, 31; Spa Aquatic, 30; Nuneaton Aquarium, 29; Redworth Aquarist & Pool, 27; Lucas Aquarium & Pool, 27; Loughborough & District, 26; Midland Aquarium & Pool, 25; North Staffs, 24; Warwick County Pter Brigade, 22; Cannock & District, 21; Leicester Fishkeeping, 10; G.K.N., 17; Henley & District, 16; Tamworth Killifish, 7; Wombourne & District, 4.

**MEMBERS** elected at the first annual general meeting of the **Slough and District A.S.** were as follows:—Chairman, E. J. Honey; Vice-Chairman, J. Jordan; Secretary, E. Knight; Treasurer, B. Withers; Show Secretary, R. Knight; Committee, A. Ferris, R. Winter, K. Ferris, C. Roberts, G. Evans, A. Allen. A shield was awarded to A. N. Young for the Best Fish of the Year, which was donated by the Committee.

The newly-formed Club is flourishing with over forty members. At least thirty members regularly attend the meetings held at the Friends Meeting House, Ragstone Road, Slough, on the third Wednesday in every month at 8 p.m. New members always welcome.

In the meeting on 19th July a talk will be given by Roger Winter on Amphibians and Reptiles, together with a table show on Catfish and Coldwater.

**RESULTS of the Trowbridge and District A. and P.S.** open show were as follows: Barbs: 1 and 3, S. Bethel; 2, R. Hiley; 4, D. Warrneast. A.O.V. Barbs: 1, D. Phippen; 2, M. Fischer; 3, B. Snell; 4, A. Hilleard. H and H: 1, M. Strange; 2, C. Russell; 3, M. Patrick; 4, W. Burton. A.O.V. Characins: 1, R. Hyett; 2, R. Forward; 3, M. Patrick; 4, Mr. and Mrs. Purnford. Angels: 1 and 3, M. Patrick; 2, D. Warrneast; 4, R. Gale. Cichlids: 1, 2 and 3, J. Brazier; 4, M. Butcher. Kribensis: 1, J. Fildock; 2, D. Warrneast; 3, G. Herven; 4, G. Purber. A.O.V. Cichlids: 1, H. Mears; 2, M. Emery; 3, P. Lewis; 4, S. Green. Fighters: 1, S. Daniels; 2, G. Ball; 3 and 4, Mrs. Matthews. A.O.V. Labyrinth: 1, S. Green; 2, P. Rowvall; 3, M. Strange; 4, C. Russell. Killies: 1, H. Mears; 2, F. Gibbs; 3, J. Jackson; 4, A. Gaynor. Catfish: 1, J. Edwards; 2, R. Lawrence; 3, R. Cotterill; 4, M. Patrick. Corydoras and Brochis: 1, P. Lewis; 2 and 3, T. Flower; 4, G. Herven. Rasboras: 1, C. Russell; 2, D. Walsh; 3, P. Lewis; 4, D. Phippen. Danios and Minnows: 1, M. Butcher; 2, Mrs. Butcher; 3, J. Brazier; 4, R. Hiley. Bots, Loaches, Flying Foxes and Sharks: 1, J. Wheeler; 2, G. Herven; 3, A. Hilleard; 4, N. Gray. A.O.V. Tropical: 1, T. Fowler; 2, M. Emery; 3, Mr. and Mrs. Purnford; 4, H. Mears. Sexed Pairs: 1, Mrs. Cuss; 2, Mr. and Mrs. Purnford; 3, R. Wagg; 4, F. Rowvall. Guppies (Male): 1, A. Heals; 2, W. Burton; 3, J. Wheeler; 4, J. Lane. Guppies

(Female): 1 and 2, W. Burton; 3, M. Patrick; 4, J. Brazier. Swordtails: 1 and 2, S. Daniels; 3, R. Lawrence; 4, C. Russell. Platies: 1, L. LITTLE; 2 and 3, S. Huxley; 4, J. Fildock. Saltin and Veltiera: 1, S. Bethel; 2, D. Phippen; 3 and 4, J. Wheeler. A.O.V. Mollies: 1, A. Holmes; 2, J. Lane; 3, Mrs. Martin; 4, J. Edwards. Common Goldfish: 1, G. Axe; 2, G. Pearce; 3 and 4, L. Menhenret. Shubunkins: 1 and 2, G. Ball; 3, S. Daniels; 4, C. Pearce. A.O.V. Coldwater: 1, P. Lewis; 2, G. Axe; 3, M. Butcher; 4, L. Menhenret. A.O.V. Fancy Goldfish: 1, F. Rowvall; 2, R. Rich; 3 and 4, J. Wheeler. Egg-layer Team: 1, J. Webb; 2, A. Hilleard; 3 and 4, D. Warrneast. Livebearer Team: 1, Mrs. Martin; 2, Mrs. Cuss; 3, J. Wheeler; 4, A. Heals. Best Tropical Fish in Show: H. Gulcher, owned by M. Strange. Best Coldwater Fish in Show: Common Goldfish, owned by G. Axe. Best Fish in Show: Common Goldfish, owned by G. Axe.

**IN April** the first round of the inter-club quiz between **Billerica A.S.**, **Brentwood A.S.**, **Southend A.S.** and **Witham A.S.** was held. The meeting was very well attended by all clubs involved and Southend won the shield by 6 points. Table shows for the evening were: Breeders Class (Livebearers): 1 and 3, Mr. Finch (S.L.A.D.A.S.); 2, Mr. Platford (Brentwood). Breeders Class (Egglayers): 1, E. Coe (S.L.A.D.A.S.); 2, E. Greengrass (Billerica); 3, Master S. Underwood (Billerica). Characins: 1 and 2, S. Norris (S.L.A.D.A.S.); 3, K. Graves (S.L.A.D.A.S.). Toothcarps: 1, 2 and 3, R. Kane (Billerica). Best Fish of the Show: S. Norris (Southend, Leigh and District A.S.). Final points for quiz were: Southend 1; 2, Billerica; 3, Brentwood; 4, Witham.

**OPEN SHOW** results of the **Croydon A.S.**, affiliated to the F.B.A.S., were as follows: Barbs: 1, K. Bisson (Basingstoke); 2, S. W. Applin (Independent); 3, B. W. F. Smith (Kingston); 4, A. Marshall (Basingstoke). A.O.S. Characins: 1, A. Marshall (Basingstoke); 2, R. Wright (East Dulwich); 3, T. R. Hine (Tonbridge); 4, A. Kinsey (Independent). Hyphessobrycon, Hemigrammus, and Cheridon: 1, Mr. Taw (Kingston); 2, Mrs. M. Nethersell (Riverside); 3, A. Kinsey (Independent); 4, R. Bowes (Independent). Percin: 1, K. Bisson (Basingstoke); 2, J. H. Jackson; 3, A. Marshall (Basingstoke); 4, R. Bowes (Independent). A.O.S. Cichlids: 1, A. A. Houghton (Gosport); 2, H. Mears (Basingstoke); 3, R. Baker (Tonbridge and District); 4, Mrs. M. Nethersell (Riverside). Angels: 1, D. J. Wiltshire (Croydon); 2, E. Stainer (Frelance); 3, R. G. Leslie (High Wycombe); 4, Mrs. M. Nethersell (Riverside). Dwarf Cichlids: 1, R. Weston (Basingstoke); 2, L. Wood (Croydon); 3, L. J. Brazier (Anson); 4, R. Bowes (Independent). Labyrinth: 1, C. J. Martin (North Kent); 2, J. W. Blackwell (Nomad); 3, D. Adams (Bethnal Green); 4, G. A. Lefevre (Kingston). Fighters: 1 and 4, L. J. Beazier (Anson); 2, L. Jermy (Suffolk A.P.A.); 3, Mrs. B. G. Martin (North Kent). Egg-laying Toothcarp: 1, Mr. and Mrs. Fagan (Clapham); 2, J. E. Bellingham (Tonbridge); 3, B. W. F. Smith (Kingston); 4, L. J. Seemp (Reigate

Redhill). A.O.S. Catfish: 1, J. M. Wood (Reigate Redhill); 2, Mrs. M. Nethersell (Riverside); 3, R. Lefevre (Kingston); 4, R. Wright (East Dulwich). Corydoras-Brochis: 1, 2 and 4, R. Wright (East Dulwich); 3, R. Bowes (Independent). Rasboras: 1, R. J. Brenchley (East Dulwich); 2, A. Kinsey (Independent); 3, D. Haines (Gosport); 4, S. Mason (Roehampton). Danio and W.C.M.M.: 1, R. Bowes (Independent); 2, P. A. Moye (Apex); 3, T. A. King (Irith & Dist.); 4, R. C. Burton (Frelance). Loach: 1, A. Wood (Anson); 2, R. Wright (East Dulwich); 3, Mrs. J. Good (Tonbridge); 4, C. J. Martin (North Kent). A.O.S. Egg-layer: 1, H. Mears (Basingstoke); 2, Mrs. M. Nethersell (Riverside); 3, Mr. Blackwell (Nomad); 4, D. Adams (Bethnal Green). Sexed Pair (Egg-layer): 1, J. E. Bellingham (Tonbridge); 2, A. J. H. Smith (Croydon); 3, R. Wright (East Dulwich); 4, J. W. Blackwell (Nomad). Sexed Pair (Livebearer): 1, A. Kinsey (Independent); 2, J. W. Blackwell (Nomad); 3, Mrs. M. Nethersell (Riverside); 4, Mrs. D. Cruickshank (Ealing). Male Guppy: 1, E. Stainer (Frelance); 2, Miss B. Quennell (East Dulwich); 3, L. J. Brazier (Anson); 4, R. A. Ott (Haverhill). Female Guppy: 1, K. Shoebridge (Tonbridge); 2, P. A. Moye (Apex); 3, Mrs. M. Nethersell (Riverside); 4, P. A. Moye (Apex). Swordtails: 1 and 3, S. Mason (Roehampton); 2, C. Lamb; 4, D. Putnam (Frelance). Platy: 1, Mrs. D. Cruickshank (Ealing); 2, L. Wood (Croydon); 3, R. C. Burton (Frelance); 4, D. Smith (Croydon). Molly: 1, P. A. Moye (Apex); 2 and 3, H. Mears (Basingstoke); 4, Mrs. D. Cruickshank (Ealing). A.O.S. Livebearer: 1, R. Bowes (Independent); 2 and 4, J. W. Blackwell (Nomad); 3, M. Strange (Basingstoke). Singletail Goldfish: 1, W. F. Woodward (Frelance); 2, A. Marshall (Basingstoke); 3, Miss E. Page; 4, D. Pope (Croydon). Twinstail Goldfish: 1, K. Johnson (Portsmouth); 2, Miss B. Quennell (East Dulwich); 3, Mrs. Card (Suffolk); 4, K. Dryden (Croydon). A.O.S. Coldwater: 1 and 2, D. A. G. Stokes (Portsmouth); 3, Mr. Bowes and A. Kinsey (Independent); 4, W. F. Woodward (Frelance). Brooder (Livebearers): 1, S. Mason (Roehampton); 2, K. Bisson (Basingstoke); 3, M. Strange (Basingstoke); 4, K. Dryden (Croydon). Breeders (Egglayers): 1 and 2, Mr. and Mrs. Fagan (Clapham); 3, P. Martin (Haverhill); 4, R. Carter (Haverhill).

**THE Independent A.S.** has had two very entertaining talks in the past month. One on characins given by Frank Tomkins, who covered the subject generally bringing out the main features of the fish belonging to that species. The second talk was by Bren Martin on marine fish, who described the correct tank to buy and how to set it up properly. He then gave examples of the easiest fish to start with and how to treat diseases marine fish are likely to get. The month ended with a knockout competition between the members. The winner was Mr. Coyle and the runner-up was Mr. Lanchlan.

**THERE** was a total of 725 entries at **Roehampton A.S.** First Open Show. The F.B.A.S. Championship Trophy Class DC was won by R. Bowes. Best Fish in Show went to G. Greenhalf and Kingston won the Club Trophy with the highest total points. Results: Class AD: 1, J. Salisbury; 2, K. Lewis; 3, D. Dare; 4, Mrs. B. Cowell. Class B: 1, R. Brooke; 2, D. J. Mackay; 3, Mrs. M. Nethersell; 4, J. Salisbury. Class Ba: 1 and 2, K. Smith; 3, J. F. Davidson; 4, Mrs. R. Coyle. Class C: 1, T. R. Hine; 2, J. Pollard; 3, Mrs. S. Hodges; 4, M. West. Class Ca: 1, T. Kinsey; 2, D. Adams; 3, R. Bowes; 4, P. Brown. Class D: 1, R. Baker; 2, D. King; 3, T. Kinsey; 4, J. Batts. Class Da: 1, D. Pratt; 2, D. Dare; 3, J. Batts; 4, M. D. Chapman. Class Db: 1, L. J. Brazier; 2, B. Bisson; 3, R. Bowes; 4, J. W. Blackwell. Class Dc: 1, R. Bowes; 2, R. Baker; 3, P. Hayward; 4, D. Haines. Class E: 1, G. Greenhalf; 2, Mrs. S. Hodges; 3, D. M. Tobin; 4, T. Kinsey. Class Ea: 1, S. W. Applin; 2, P. Watson; 3 and 4, L. J. Brazier. Class Eb: 1, J. Batts; 2, C. J. Martin; 3, Mrs. C. Sawford; 4,



Mrs. A. Lefevre. Class F: 1 and 3, Mr. and Mrs. Hudson; 2, B. Bisson; 4, M. Collins. Class G: 1 and 3, G. Greenhalf; 2, J. Barry; 4, R. Wright. Class H: 1, R. Wright; 2 and 4, Mrs. M. Netherwell; 3, Mrs. S. Hodges. Class J: 1 and 3, D. J. Mackay; 2, A. Wood; 4, S. Cowell. Class K: 1, D. Pratt; 2, J. H. Jackson; 3, R. Mason; 4, Mrs. S. Hodges. Class L: 1, Mrs. J. Rood; 2, P. Coyle; 3, B. Bisson; 4, M. Strange. Class M: 1, Mrs. S. Hodges; 2, Master A. Cowell; 3, L. Monk; 4, D. Adams. Class N/B/M: 1, Mrs. V. Marsh; 2, S. Mason; 3, D. Adams; 4, M. West. Class NQ/T: 1, Mrs. M. Netherwell; 2, D. King; 3, C. J. Martin; 4, M. Mansbridge. Class O: 1, P. W. Cottle; 2, Mrs. M. Netherwell; 3, R. Dray; 4, R. Bowen. Class P: M. C. Golding; 2, M. Mansbridge; 3, M. D. Chapman; 4, D. Darre. Class Q: 1, S. Mason; 2, A. Blake; 3, T. Cruikshank; 4, R. Newman. Class R: 1, Mrs. D. Cruikshank; 2, D. Holmes; 3, J. W. Blackwell; 4, A. Blake. Class S: 1, D. King; 2, Mr. and Mrs. Hudson; 3, B. Funnell; 4, T. Cruikshank. Class T: 1, R. Newman; 2, R. Bower; 3, A. Blake; 4, T. Kinsey. Class U: 1, E. Binstead; 2, 3 and 4, Mrs. S. Hodges. Class V: 1, V. B. Hunt; 2, Miss D. Dray; 3, K. Johnson. Class W: 1, V. P. Voysey; 2, Mrs. S. Hodges; 3, D. J. Mackay; 4, E. Binstead. Class X/B/M: 1, D. King; 2, M. Strange; 3, B. Bisson; 4, D. Lynn. Class X O/T: 1 and 4, A. Blake; 2, S. Mason; 3, M. Strange. Class Z: 1, G. Rolfe; 2, V. B. Hunt; 3, J. Hughes; 4, D. King. Silver medals for best juniors were: 1, Master S. Adams (Bethnal Green); 2, Miss T. Hodges (Bethnal Green).

The first meeting of the Rhondda A.S. in May took the form of an Inter-Club Meeting with Newport on their home ground. It was held under F.B.A.S. and C.N.A.A. rules, and without a doubt it was a success. The President of Rhondda H. Thomas gave an interesting lecture on his Fish Keeping experiences. Results: Egglayers: 1 and 4, M. Endicott (Newport); 2 and 3, M. Williams (Rhondda); 5, H. Thomas (Rhondda). Livebearers: 1, D. Richards (Rhondda); 2, M. Williams (Rhondda); 3, D. Hailey (Rhondda) and the winners were Rhondda.

ARRANGEMENTS are well ahead for the show of the Cymru National Aquarists' Association on 9th-13th August. Benching can be done on the evening of the 9th and all day on the 10th.

As a comparatively new Association, all Clubs are asked to support this venture. The next meeting of the C.N.A.A. will be on 30th July at the Gabalfa Community Centre, Gabalfa, Cardiff at 2.30 p.m. If anyone other than Club Representatives would like to attend, they will be welcome.

IN April the Bishops Cleeve A.S. held their annual general meeting. The chairman is still N. Binding, but there is a new treasurer in F. Scriven and R. Bond is the new secretary. The show secretary is Mrs. M. Scriven. Also in April the Society had an Inter-Club Competition in which there were eight clubs. The results were as follows: 1, Bishops Cleeve 867 pts.; 2, Stroud 864 pts.; 3, Glos. A.S. 857 pts. The May table show was for Corydoras. Results: 1, M. Bishop; 2 and 3, N. Dooley; 4, F. Scriven. The speaker for the night was Mr. Brimson who gave a talk on a number of fish.

THERE was a good attendance of members at the last meeting of the Welbeck A.S. when Mr. Foden of Huddersfield gave a very interesting talk on the culture of white worm and plants. There was also a small table show judged by Mr. Foden, the results were as follows: 1 and 3, Mrs. Asquith; 2, L. and S. Pitchford. Dwarf Cichlids: 1, P. Baker; 2, R. Hunt; 3, J. Baker. Large Cichlids: J. Baker. Juniors:

1, N. Ibbotson; 2, A. Barrett; 3, J. Baker. Best in show awarded to N. Ibbotson. Further meetings to be held the third Wednesday of each month at the British Legion Club, Welbeck Street, Castleford.

OFFICERS elected at the May meeting of the New Forest A.S. were as follows: Chairman: A. Williamson; Vice-Chairman: C. Knapp; Secretary: R. Travers; Treasurer: B. Higginson; Show Secretary: D. Lane; Assistant Show Secretary: D. Harding; Publicity: E. Newton; Committee: S. Bray, R. Pierce. The table show was judged by L. James and B. Coomber. Results: Champion Tropical: 1, D. Harding; 2, M. Aust; 3, R. Peirce; 4, A. Williamson. Champion Coldwater: 1 and 4, L. Menhennet; 2 and 3, D. Harding. The Tropical Points Trophy was won by D. Harding and the Coldwater Points Trophy by L. Menhennet.

MR. DENNIS SANDERSON (late of Malta), presented a film and slide show to the British Marine Aquarist Association, West-Midland Group, which was of great interest to the members. Mr. Brian Fleetwood also did a film show on some of the member's tanks, including a tank set up in the Natural system.

THE Weymouth A.S. were host to the Dorchester Club recently and in the inter-club fish competition of show fish judged by Mr. Jack Jeffries of Bournemouth A.S., the result was a dead heat. 24 fishes were individually marked and each team had 864 points. Dorchester Club was asked to hold the trophy until the return boat next year. Young Paul Taylor who is just seven years old won the Junior competition with his goldfish. After the slide show on showing fish a panel of members, Messrs. A. Cox, M. Medway, E. James and P. Carter answered queries on showing fish from newcomers to fish showing. The table show winners were: Labyrinth: 1 and 4, A. Worth; 2, K. Forrester; 3, R. Peel. Siamese Fighters: 1, P. Crocker; 2, D. Rogers.

AT the May meeting of the Yate & District A.S., members thoroughly enjoyed an illustrated talk on Cichlids, presented by Mr. W. Gorwill of Cardiff. As so little is known about Lake Malawi Cichlids, listening to an expert on this subject was most interesting and enlightening. New members are always welcome to the meetings which are held at 7.45 p.m. on the first Monday of every month at "The Hall Moon Inn," Coalpit Heath, Bristol.

AN extremely interesting talk was given at the May monthly meeting of the Privateers A.S. (Shipley, Yorkshire) by Mr. J. Hemmingway on his experiences of fishkeeping and collecting in Africa. Many questions on interesting points arose, and much interest was aroused.

THE speaker at the recent meeting of the Semethwick & District A.S. was E. Woodward, who gave a very interesting talk on "His experiences with breeding Rosy Barb". Table show winners were as follows: A. V. Barba: 1 and 2, R. Walker; 3, A. Lakin. Killis: 1, 2 and 3, J. Harris.

RESULTS of the open show of the York and District A.S. were as follows—Best Fish in Show: R. Dyson (Blackpool) with Breeders Egglayers. Best Exhibitor: J. S. Hall (Aireborough). Guppies: 1, R. Shanks (Mount Pleasant); 2, Mr. and Mrs. Shipley (Goole); 3, Mr. and Mrs. Stephens (Castleford). Section Winner: R. Shanks. Swordtails, Mollies, Platies, A.O.V. Livebearers: Swordtails: 1, F. Cooke (Huddersfield); 2, Mr. and Mrs. Sowerby (Mount Pleasant); 3, G. Andrews (Hull). Mollies: 1 and 2, Mr. Igoe (Sherwood); 3, Miss A. Gregory (Nelson). Platies: 1, C. Ward

(Doncaster); 2, Mr. and Mrs. Cohen (Castleford); 3, R. Shanks (Mount Pleasant). A.O.V. Livebearers: 1 and 3, J. S. Hall (Aireborough); 2, S. and A. Thomas (Castleford). Section Winner: Mr. Igoe (Sherwood). Barbs, up to and including Nigger Barbs: 1, Mrs. Rhodes (Four Star); 2, Mr. and Mrs. Brown (Half Moor); 3, Mr. Warrall (Peterlee). Barbs, over Nigger Barbs: 1, R. Clarke (Sherwood); 2, Mr. and Mrs. Cohen (Castleford); 3, L. S. Hunter (Y.D.A.S.). Section Winner: R. Clarke (Sherwood). Characins, Small, Medium, Large: Small Characins: 1, Mr. and Mrs. Blades (Cresswell); 2, Mrs. Rhodes (Four Star); 3, Master R. Swallow (Y.D.A.S.). Medium Characins: 1, Mr. Warrall (Peterlee); 2, T. Smith (Sheffield); 3, Mr. and Mrs. Gates (Castleford). Large Characins: 1, E. Williams (Hartlepool); 2, J. A. Whiteley (Aireborough); 3, Mr. Somsley (Independent). Section Winner: Mr. and Mrs. Blades (Cresswell). Ras, Danios and Minnows: 1, A. S. Allison (Y.D.A.S.); 2, J. Downing (Sherwood); 3, Master R. Swallow (Y.D.A.S.). Sharks and Flying Foxes: 1, G. and M. Thickbroom (Wellbeck); 2, T. Douglas (Hull); 3, K. Ross (Independent). Section Winner: G. and M. Thickbroom (Wellbeck). Siamese Fighters: 1, Mr. and Mrs. Low (Cleveland); 2, Mr. Newworthy (Peterlee); 3, Mr. and Mrs. Toyns (Sheffield). Section Winner: Mr. and Mrs. Low (Cleveland). Anabantids over Thick-Lipped Gouramis: A.O.V. Anabantids up to Thick-Lipped Gouramis: 1, J. A. Whiteley (Aireborough); 2, Mr. and Mrs. Kilvington (Doncaster); 3, Mrs. Rhodes (Four Star). Anabantids over Thick-Lipped Gouramis: 1 and 2, Mr. Newworthy (Peterlee); 3, Mr. and Mrs. Cohen (Castleford). Section Winner: J. A. Whiteley (Aireborough). Cichlid Dwarf: 1 and 3, C. Huckle (Sherwood); 2, J. A. Whiteley (Aireborough). Cichlid Large: 1, C. Dyson (Blackpool); 2, J. A. Whiteley (Aireborough); 3, Mr. and Mrs. Gates (Castleford). Angels: 1, W. Downing (Sherwood); 2, R. Clarke (Sherwood); 3, Mr. and Mrs. Milne (Doncaster). Section Winner: R. Dyson (Blackpool). Corydoras: 1 and 3, A. S. Allison (Y.D.A.S.); 2, B. M. Booth (Leeds). Loach and Betta: 1, R. Bailey (Sherwood); 2, T. Smith (Sheffield); 3, J. Baker (Wellbeck). A.O.V. Catfish: 1, Mr. and Mrs. Shipley (Goole); 2, J. Stephenson (Ebenscum); 3, M. Patterson (Grantham). Section Winner: Mr. and Mrs. Shipley (Goole). I.L. Toothbeards: 1, A. Curchin (Swillington); 2, Mr. and Mrs. Blades (Cresswell); 3, T. Smith (Sheffield). Section Winner: A. Curchin (Swillington). Breeders (Livebearers): 1, J. S. Hall (Aireborough); 2, T. Douglas (Hull); 3, Mr. and Mrs. Clarke (Barnsley). Section Winner: J. S. Hall (Aireborough). Breeders (Egglayers): 1, R. Dyson (Blackpool); 2, Mr. Somsley (Independent); 3, Mr. and Mrs. Cohen (Castleford). Section Winner: R. Dyson (Blackpool). Matched Pairs (Livebearers): 1, E. W. and J. C. Robinson (Cleveland); 2, R. Holt (Goole); 3, Shipman and Co. (Grantham). Section Winner: E. W. and J. C. Robinson (Cleveland). Matched Pairs (Egglayers): 1, R. Bailey (Sherwood); 2, R. Dyson (Blackpool); 3, P. Carey (Y.D.A.S.). Section Winner: S. Bailey (Sherwood). Common Goldfish: 1, 2 and 3, J. S. Hall (Aireborough). Fancy Goldfish: 1, S. and A. Thomas (Castleford); 2 and 3, J. S. Hall (Aireborough). Shubunkins: 1 and 3, J. S. Hall (Aireborough); 2, K. and M. Wood (Independent). A.O.V. Coldwater: Mr. Whitey (Accrington); 2, Mr. and Mrs. Blades (Cresswell); 3, J. S. Hall (Aireborough). Section Winner: J. S. Hall (Aireborough). Junior: 1, A. C. Skinner (Wellbeck); 2, A. Thomas (Castleford); 3, G. Bailey (Sherwood). Section Winner: A. C. Skinner (Wellbeck).

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A.V. Proved Female; 1, D. Pitchford (Wellbeck); 2, Mr. and Mrs. Gates (Castleford); 3, Miss Lindley (Alferton). Section Winner: D. Pitchford (Wellbeck). A.O.V. Tropical: 1, Mr. Singleton (Eboracum); 2, B. Rodgers (Creswell); 3, I. Stephenson (Eboracum). Section Winner: Mr. Singleton (Eboracum). Furnished Show: 1, Mrs. Hardman (Cleveland); 2, R. Shanks (Mount Pleasant); 3, Mr. and Mrs. Copley (Doncaster). Section Winner: Mrs. Hardman (Cleveland).

RESULTS of the May table show of the **Tombridge and District A.S.** for livebearers, except Guppies, were as follows: 1, 2 and 3, I. Mathieson; 4, R. Rood. During the evening a very interesting talk was given by Pete Code on live foods and dry foods.

A VERY enjoyable evening was experienced by the club members taking part in the Inter-Society Show held by the **Privatereers A.S.** in May. Best in Show was a Sunbass shown by J. S. Hall (Aireborough), and the other results were as follows: Livebearers: 1, D. Stead (Swillington); 2, D. Truby (Nelson); 3, J. S. Hall (Aireborough). Barbs: 1, Miss A. Gregory (Nelson); 2, K. Asbery (Privatereers); 3, J. Hart (Keighley). Characins: 1 and 2, H. Smith (Keighley); 3, Mr. Greenwood (Nelson). Cichlids: 1, D. Truby (Nelson); 2, J. A. Whiteley (Aireborough); 3, Miss A. Gregory (Nelson). Anabantids: 1, P. Reynolds (Swillington); 2, J. S. Whiteley (Aireborough); 3, D. Stead (Swillington). Catfish, Loach and Botia: 1, D. Stead (Swillington); 2, Mr. and Mrs. Caslake (Swillington); 3, J. Hart (Keighley). Carps and Minnows: 1, Mr. Greenwood (Nelson); 2, H. Smith (Keighley); 3, Mr. and Mrs. Hislop (Swillington). Sharks and Flying Foxes: 1, R. Whitaker (Privatereers); 2, J. Aubrey (Privatereers); 3, D. Truby (Nelson). Toothcarps: 1, J. Hart (Keighley); 2, J. Mosley (Keighley); 3, D. Mosley (Keighley). A.O.V.: 1, D. Stead (Swillington); 2, J. Hart (Keighley); 3, B. Morrill (Privatereers). A.V. Breeders: 1 and 3, Mr. Birch (Swillington); 2, J. Mosley (Keighley). Pairs: 1, J. A. Whiteley (Aireborough); 2, D. Mosley (Keighley); 3, Mrs. Hislop (Swillington). Coldwater: 1, 2 and 3, J. S. Hall (Aireborough). All the classes were judged by P. Moorhouse (Huddersfield).

THE fourth Open Show of the **Dukeries A.S.** proved to be their best to date and 500 entries were benched. The final results were: Livebearers: 1 and class winner, S. Harrison (Sherwood); 2, P. Harrison (Sherwood); 3, D. Stead (Swillington). Guppies: 1, Mr. and Mrs. Gates (Castleford); 2, Mr. and Mrs. Daines (Doncaster); 3, M. Laycock (Sheffield). Cichlids: 1, J. A. Whiteley (Aireborough); 2, A. Mawson (Worsnop); 3, A. Chapman (Gainsborough). Dwarf Cichlids: 1 and class winner, H. Kuhn (Lincoln); 2, T. and R. Heptinstall (Castleford); 3, P. P. and E. Reynolds (Swillington). Anabantids: 1 and class winner, J. H. Whiteley (Aireborough); 2, Mr. and Mrs. Ellis (Creswell); 3, S. Bailey (Sherwood). Fighters: 1, A. Mawson (Worsnop); 2, Mr. and Mrs. Cohen (Castleford); 3, Mr. and Mrs. Toyne (Sheffield). Large Characins: 1, Mr. and Mrs. Downing (Sherwood); 2, A. Cass (Macclesfield); 3, B. Bailey (Sherwood). Small Characins: 1, class winner and Best Fish in Show, Mr. and Mrs. Blades (Creswell); 2, G. Allen (Worsnop); 3, Mr. and Mrs. Jowle (Derby Regent). Large Barbs: 1 and class winner, R. G. Clark (Sherwood); 2, A. West (Sherwood); 3, D. Stoe

(Chesterfield). Small Barbs: 1, Mr. and Mrs. Jowle (Derby Regent); 2, Mr. and Mrs. Blades (Creswell); 3, J. A. Whiteley (Aireborough). Toothcarps: 1 and class winner, Mr. and Mrs. Blades (Creswell); 2, T. Smith (Sheffield); 3, G. Thickbroom (Wellbeck). Catfish and Loach: 1 and class winner, Mr. and Mrs. Shipley (Goole); 2, M. Buxton (Sheffield); 3, T. Smith (Sheffield). Sharks and Foxes: 1, 3 and class winner: G. Thickbroom (Wellbeck); 2, I. and R. Heptinstall (Castleford). Rasbora and Minnows: 1 and class winner, Mr. and Mrs. Blades (Creswell); 2, I. and R. Heptinstall (Castleford); 3, T. Smith (Sheffield). A.O.V.: 1, R. Harris (Derby Regent); 2, T. W. Mawson (Worsnop); 3, R. Haslow (Derby Regent). Coldwater: 1, J. A. Whiteley (Aireborough); 2, Mr. and Mrs. Blades (Creswell); 3, C. Hockley (Sherwood). Pairs (Livebearers): 1, Mr. and Mrs. Blades (Creswell); 2, J. Igoe (Sherwood); 3, Shipman and Co. (Grantham). Breeders (Livebearers): 1, G. Thickbroom (Aireborough); 2, J. Douglas (Hull); 3, Mrs. Bishop (Swillington). Breeders (Egglayers): 1 and class winner, J. Wright (Alferton); 2, Mr. and Mrs. Wells (Doncaster); 3, Mr. and Mrs. Cooke (Castleford). Pairs (Egglayers): 1 and class winner, Mrs. Heptinstall (Castleford); 2, J. Igoe (Sherwood); 3, R. Clark (Sherwood).

THAT though fish were feeding round a sewage effluent the water of the same river may well be incapable of supporting fish life a short distance downstream, was revealed by Mr. M. Amey of the Bristol Avon River Authority, speaking to the **Bristol A.S.** at their monthly meeting in May. New pollutants such as silage liquor and fertilisers were also hazards in re-stocking rural stretches of water, emerged as the speaker discussed the many facets of his work.

THE **Gloucester Fishkeeping and Social Club** held their April meeting at the club's new venue, The Hucclecote Community Centre. Mr. A. E. Moulder in the chair. The President, J. Wyatt presented the flight tickets for the weekend for two to the Tulip Fields, Holland, to Mr. and Mrs. A. Eys, the local winners of the Gloucester Carnival Draw.

After club business had been disposed of, a lecture by T. Collier on his method of breeding Angels proved very interesting. The Table Show was judged by N. Binding, chairman of Bishop Cleeve Society. Result: 1, W. Kirk; 2, D. Merritt; 3, J. Adlam; 4, D. Merritt.

THE following are details of meetings and changes of officers of the **Colwyn Bay and District A.S.** Chairman: S. R. Bell; Vice-Chairman and Show Secretary: M. Proffiani; Secretary: H. Towse, 93 Penryn Avenue, Rhos On Sea, Denbighshire; Treasurer: J. K. Mitchell. The Annual Dinner and Prize giving of the society was held in April and the winners of the annual trophies were: Aquarist of the Year: 1, G. Pies; 2, S. R. Bell. Table Show Trophy: 1, S. R. Bell; 2, H. Towse; 3, R. Noble.

THE South Western Group of the **British Marine A.A.** held its May meeting at Baxter, the hosts being Mr. and Mrs. Colin Fidock.

Congratulations was accorded to L. Doubleday for winning the F.B.A.S. Marine Tropical Trophy at Ilfracombe Open Show. Colin Fidock had lost some biennies which he had had only for two days, the water although well aerated had turned a milky grey. General consensus being that the water was polluted. It was suggested that water should be collected only on the turn of ebb and that the area was well clear of estuaries and sewer outlets. J. Monks and L. Doubleday gave members a detailed resume of their visit to the Midlands and their lucky meeting with Denis Sanderson, who, by now, will have taken up residence once again in Malta.

Plans for a beach Safari have been discussed for July, August which we hope will include some members from the Midlands and London.

AT the first Inter-Club meeting of the year at **East London Assoc. H.Q.** An enjoyable evening was had listening to Brian Baker talking on "Anabantids". Cyril Brown and Harry Towell also had something to say, after judging the table show. The results were as follows: Platys: 1, J. London (Thurrock); 2, B. Wright (Thurrock); 3, D. Edwards (Southend); 4, P. O'Bryan (Thurrock). Fighters: 1, P. Vicker (East London); 2, P. Capon (Southend); 3, J. London (Thurrock); 4, W. Corby (East London). Barbs: 1, G. Coe (Southend); 2, W. Corby (East London); 3, K. Baker (East London); 4, J. Boss (East London). Totals: 1, East London 11 pts.; 2, Thurrock 10 pts.; 3, Southend 9 pts.

AN illustrated lecture was given by Mr. J. R. Chandler, biologist to the Sussex River Authority to the **Hastings & St. Leonards A.S.** on the work of this body, which must be regarded as a major contributor to regulated conservationism. Another contributor to mass health was revealed by a visit to the local reservoirs and water treatment works conducted by Mr. G. Coleman of Hastings Water Undertaking.

Mr. P. Ginger (F.B.A.S. judge) provided the society with a most informative lecture on Barbs and in an inter-club show Hastings were beaten by **Tombridge A.S.**, the judge being Mr. C. West, F.B.A.S.

ENTRIES for the **Yeovil & D.A.S.** were a record, the total being 549. The results were as follows: Best Fish in Show: Mr. Illey (Basingstoke); Best Junior Entry: Miss Karen Rendell (Yeovil); Pairs of Fish: A. Blake (Basingstoke).

Barbs: 1, A. Blake (Basingstoke); 2, J. J. Edwards (Llantwit Major); 3, E. Barnham (Taunton); 4, M. Fischer (Yeovil). Characins: 1, Mr. and Mrs. Medway (Weymouth); 2, D. Lewis (Yeovil); 3, M. Ciall (Dorchester); 4, Mrs. Scudamore (Bradford on Avon). Cichlids: 1, R. C. Adams (Salisbury); 2, P. A. Lewis (Bristol T.F.C.); 3, P. Hayward (Gosport); 4, K. Forrester (Weymouth). Dwarf Cichlids: 1, 2, 3 and 4, J. Bragg (Buckfastleigh). Labrynthia: 1, A. Blake (Basingstoke); 2, D. A. King (Kingston); 3, R. Gale (Ringwood); 4, J. Edwards (Llantwit Major). Toothcarps: 1 and 3, P. A. Lewis (Bristol T.F.C.); 2, M. Traves (Bristol); 4, G. Carter (Weymouth). Tropical Catfish: 1 and 2, D. Lambourne (Rushampton); 3, K. Wright (Yeovil); 4, Mr. and Mrs. Medway (Weymouth). Corydoras and Brochis: 1, P. A. Lewis (Bristol T.F.C.); 2, G. Carter (Weymouth); 3, M. Fischer (Yeovil); 4, D. King (Kingston). Rasbora: 1, Mr. and Mrs. Medway (Weymouth); 2, T. Jones (Weymouth); 3 and 4, A. Blake (Basingstoke). Danios and W.C.M.M.: 1, L. G. Little (Bracknell); 2, R. Illey (Basingstoke); 3, Mr. and Mrs. Medway (Weymouth); 4, J. Jeffrey (Bournemouth). A.O.S. Egglayers: 1, R. Illey (Basingstoke); 2, C. Russell (Bath); 3, A. Hilliard (Bath); 4, D. Lambourne (Rushampton). Pairs of Fish: 1 and 2, A. Blake (Basingstoke); 3, P. Lange (Yeovil); 4, C. Russell (Bath). Guppies—Male: 1, 2 and 4, W. Burton (Trowbridge); 3, Mr. and Mrs. Lane (Ringwood). Guppies—Female: 1, J. Bragg (Buckfastleigh); 2, P. A. Lewis (Bristol T.F.C.); 3, C. Brake (Torbay); 4, J. J. Edwards (Llantwit Major). Swordtails: 1 and 2, C. Russell (Bath); 3, Mrs. Griffin (Ringwood); 4, Mrs. Langdown (Ringwood). Platys: 1, L. G. Little (Bracknell); 2, B. Marshfield (Yeovil); 3, Miss K. Rendell (Yeovil); 4, P. A. Lewis (Bristol T.F.C.). Mollys: 1 and 2, Mrs. Griffiths (Brixham); 3, K. Forrester (Weymouth); 4, Mrs. Stamp (Froelance A.S. London). Common Goldfish: 1, G. J. Aze (Yeovil); 2 and 4, Mr. King (Kingsington); 3, J. Jeffrey (Bournemouth). London Shubunkins: 1, Mrs. Ricketts (Yeovil); 2, R. Heather (Yeovil); 3, J. Lamboll (Portsmouth); 4, K. Whitting (Havant). G.S.G.B./Bristol Shubunkins (King of the South Cup): 1, 2, 3 and 4, D. S. Langdon (Yeovil). Twinstail Goldfish: 1, 2 and 4, V. Collins (Yeovil); 3, K. Wright (Yeovil). A.O.S. Coldwater: 1 and 2, V. Collins (Yeovil); 3, P. A. Lewis (Bristol T.F.C.);

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4, Mr. Matthews (Torbay). Breeders (Bilaggers): 1, A. G. Worth (Dorchester); 2, M. Poole (Torbay); 3, A. Hilliard (Bath); 4, K. Forward (Yeovil). Breeders (Livebearers): 1 and 2: A. Blake (Basingstoke); 3 and 4: L. G. Little (Bracknell). Breeders (Coldwater): 1, D. S. Langdon (Yeovil); 2, 3 and 4, Mr. King (Kingsington). Plants (Phlox Trophy): 1, J. Jeffrey (Bournemouth); 2, V. Collins (Yeovil); 3 and 4, F. Lange (Poole).

Yeovil Challenge Cup—Best Fish in Show: R. Hiley (Basingstoke). Collins Cup—Best Junior Entry: Miss K. Rendell (Yeovil).

THE Littlehampton and Bognor A.S. have had an influx of new members at their last two meetings. At a recent meeting the attendance and the number of surplus items for auction around the committee members organising the evening. Every item brought was sold, however, and most members took home some excellent bargains of fish and plants.

On another evening club members worked together to make a large number of all glass aquaria. Enthusiasm is at a high peak and this is undoubtedly due to the fact that all the club members have something to look forward to, and that all the members, experienced aquarists or beginners, can all play an important part in the running of the show. On the same evening, A. Caruthers, the club's Vice-Chairman, judged a table show. The table show results were as follows: Cichlids: 1 and 3, H. Maddison; 2, N. Martel. Livebearers: 1, R. Mills; 2 and 3, D. Humphries. Catfish and Loaches: 1, H. Maddison; 2, R. Newton; 3, M. Lane. Anabantids: 1 and 3, R. Minsay; 2, H. Maddison.

AT the annual general meeting of the Association of Yorkshire Aquarist Societies, the officers elected were as follows: President: P. Reynolds; Vice President: D. Cohen; Secretary: B. Sorey; Treasurer: D. Dunford; Show Secretary: F. Toyn. The Association has decided to extend its boundaries beyond Yorkshire. Previously only societies with headquarters within the Yorkshire area were accepted to membership.

ACTIVITIES of the Uxbridge and District A.S. so far this year have included talks by Mrs. P. Payton, Guppies; R. Porter, Plants; R. Litt, Foods and Diseases; Livebearers, K. Purbeck; and Killies, R. Armstrong. The usual table shows have also been held at the Open Show. Three inter club shows against High Wycombe, Bracknell, and Runnymede resulted in a win against High Wycombe and defeats by Bracknell, and Runnymede. Further inter club competitions are planned for later in the year and also a coach outing.

THE Morecombe Bay A.S. plan to hold their first Open Show in the St. John's Ambulance Hall, Alice Street, Morecombe, on Sunday, 3rd September, and extend a hearty welcome to all fellow aquarists.

Recent events have been a slide lecture on "Exotic Marines," a talk on pond-keeping by Mrs. Loads, a well-known local aquarist and wife of Mr. Fred Loads, the gardening expert.

The last meeting was a visit to the local water board, where no effort was spared to make the visit an interesting one. Members were not only shown the catchment areas, on the hills around Lancaster, and the new filter house in Lancaster itself, but were even taken into a tunnel under one of the reservoirs. The Board also offered to show members the new pumping station on the River Lune on a future visit. Next meeting Jack Swain of the Oceanarium, Cleveleys, will once again give more good advice on marine specimens. The following meeting will be a special visit of Marineland in the home town of Morecombe.

IN May Mid-Sussex A.S. were hosts to Brighton and Southern A.S. for the return leg of

the "Over The Downs" competition. Brighton had a lead of 44 points in the first leg.

When the table show results were announced it was found that Mid-Sussex had retained the "Over The Downs" trophy by 784 points overall. Brighton first leg 1,356; second leg 1,290; total 2,626. Mid-Sussex first leg 1,332; second leg 1,373; total 2,705. Best fish in show was a Botia Modesta with 81 points. New members and guests are always welcome at Oakley Lodge, Keymer. 8 p.m. on the third Thursday of every month. Details from the Secretary, John Reeves, 36 Rumbolds Lane, Haywards Heath, Sussex.

AT the May meeting of the Dunmow and District A.S., the Table Show which was for "Fish of the Year" was won by D. McMurdie with a Blue Acara, which he had bred himself. There was also a very interesting talk on Dwarf Cichlids given by F. Vickers.

VISITS to Liverpool and Southport were made by the Border A.S. and these proved enjoyable, although the weather was rather poor. A meeting was also held at a fish hatchery, about ten miles from Carlisle. This was very interesting and all members agreed that the visit had been worthwhile. The society meets fortnightly at the Morton Community Centre, Wigton Road, Carlisle; meetings commence at 7.45 on a Monday night.

A full programme was carried out by Bracknell A.S. (F.B.A.S. affiliated) in May. Early in the month they took part in a Three Counties Quiz at Didcot. Two days later the Club hired a double decker bus and went to Brighton to see the Dolphins in particular and the Seals and Aquarium in general. They were also lucky as there was a vintage commercial vehicle rally at Brighton.

At the first actual Club Meeting there was a demonstration by M. Carter of how to set up a miniature tank in a short time, and a demonstration by D. Arkell on making all glass tanks. Also in May Bracknell, with other Three Counties Clubs, met the I.M.A.A.S. Group at Loughton, Bucks., in a match to F.B.A.S. show rules and judged by C. A. T. Brown and B. Baker, F.B.A.S. "A" Class Judges. The Match was won by the Three Counties Group. At the second Club Meeting the table show was for Mini Aquaria and Furnished 4 in. Jars. M. Carter, F.B.A.S. "B" Class, judged them and then the whole club judged them and then discussed the results. They finished the month with a social evening. The Annual Darts Meeting held at Bracknell to entertain the rest of the Three Counties Group, and Bracknell emerged as champions of the evening.

EACH year the members of Mid-Sussex A.S. hold a Fish Exhibition which is a non-competitive event designed to stimulate the public interest in the hobby. On show this year were a wide variety of Tropical, Coldwater and Native Marine Fish from all over the world including "Ossie," a 25 1/2 in. Osphronemus Gourami and "Herbert," a 24 in. Snakehead. As some 1,500 people attended the Exhibition it was felt to be a success and Mid-Sussex A.S. are already planning for next year's show which will be the fourth one held by this powerful young club.

AT recent meetings of the Wrexham Tropical Fish Society there have been several talks. F. Oliver spoke on the make-up of water and the part it plays in fishkeeping, which surprised many of the listeners. C. Pritchard gave a talk on collecting and keeping local marines, also a talk on feeding and R. Ellis gave an illustrated talk on breeding Discus with which he has had much success in partnership with G. James.

At the halfway stage in the Endeavour Trophy the table is still very close with the leading three being F. Oliver with 326 points, Miss V. Jones with 317 points and T. Pound with 313 points. The meetings are held the second and last

Thursday of the month at the Fellowship Hall, Bradley Road (near the junction of Watery Road) Wrexham and all visitors are welcome.

SPEAKERS at the Brentwood A.S. May meetings were John Boss from East London A. & P. and Mr. Corby, a F.B.A.S. Mr. Boss gave an interesting lecture on Pencil Fish with special emphasis on his methods of breeding these attractive fish. Mr. Corby, an F.B.A.S. speaker, spoke on Killifish. This was an interesting and informative lecture filled with hints on keeping and breeding these colourful fish. The junior members were enthralled by a plastic lunch box, produced by Mr. Corby, which contained Killie eggs in the process of hatching.

Also this month the society held the Home Aquaria competition. This was judged by a team of members, the results being as follows: Junior: 1, K. Quarmby; 2, I. Quarmby; 3, K. Casham; 4, D. Green. Senior: 1, R. Taylor; 2, B. Bean; 3, G. Green; 4, L. Dwight.

AT the May meeting of the Bford and District Aquarist and Pondkeepers' Society V. J. Morrice, a well-known judge and lecturer throughout the aquatic world in this country, gave a detailed account of the snags and considerations that occur when deciding to set up "the first aquarium." He covered everything from correct positioning to foods and lighting requirements; a lot of good tips were recorded by all who attended, particularly new members to the society.

Results of the monthly table show at this meeting are enclosed herewith.

Following a request by the local Borough of Redbridge, the society combined with other fellow members of the Arts and Crafts sections of the community, to give a display of their work at the Wanstead Library in May. All who contributed to this exhibition of Crafts were well pleased with the response from members of the public who attended these displays. Monthly Table Show results: Any Variety Labyrinth: 1 and 3, W. Rowe; 2 and 4, F. Hartum. Any Variety Swordtail: 1 and 2, Miss J. Frostick; 3, W. Rowe; 4, Mr. Hackshall. Any Variety Singletail Goldfish: 1, W. Rowe; 2, 3 and 4, H. Berger.

Anyone who is interested in furthering their knowledge in this hobby should contact the Hon. Sec. Ron Ruth, 103 Heath Road, Chadwell Heath, Romford, Essex.

THE annual general meeting of the Ilfracombe and District A.S. was held in May, when the following officers were elected: Chairman: P. Clemence; Secretary: B. Eggleton; Vice-Chairman: G. Cox; Asst. Secretary: Mrs. B. Cox; Treasurer: H. Hancock; Asst. Treasurer: K. Hancock; Social Secretary: Mrs. B. Riches; Asst. Social Secretary: Mrs. P. Pearson; Show Secretary: C. Lipscombe; Asst. Show Secretary: G. Cox; News Editor: G. Crowe; Asst. News Editor: Mrs. Horton; Catering Officer: Mrs. Birchell; Asst. Catering Officer: Mrs. Matthews and Miss Arscott. The club wishes to extend its thanks to the last committee without whose hard work the first Open Show would not have been possible.

RESULTS of the Corby and District A.S. Open Show were as follows: Class (B): 1, Mrs. I. Boss (I.L.A.P.A.); 2, J. H. Boss

**holamid** A TABLET A DAY, SENDS WHITE SPOT AWAY  
Hillside Aquatics London N12



(E.L.A.P.A.): 3, P. Coyle (Ind.); 4, Mrs. D. Cruickshank (Baling). Class (C): 1 and 3, P. Coyle (Ind.); 2, J. H. Best (E.L.A.P.A.); 4, R. Wright (East Dulwich). Class (D): 1, Mrs. B. Oakley (Dunstable); 2, B. Sargent (Betchley); 3, A. M. Kinsey (Ind.); 4, J. H. Dainty (Kettering). Class (DB): 1, 2 and 3, W. A. Hickman (Dudley); 4, R. Bowes (Ind.). Class (Da): 1 and 3, K. Dainty (Kettering); 2, D. M. Dare (Ind.); 4, G. & S. (Ind.). Class (E): 1, J. Phillips (W.A.D.A.S.); 2, D. Harding (Leics. A.); 3, M. Chambers (Betchley); 4, R. L. Gillard (Dunstable). Class (Ea): 1 and 2; C. Pratt (Bedworth); 3, R. Jermy (S.A.P.A.); 4, F. Vicker (E.L.A.P.A.). Class (F): 1, D. M. Dare (Ind.); 2, R. Shakespeare (Bedworth); 3, B. Sargent (Betchley); 4, T. Cruickshank (Baling). Class (G): 1, T. Cruickshank (Baling); 2, R. Wright (East Dulwich); 3, F. Marsh (Baling); 4, D. M. Dare (Ind.). Class (H): 1, R. Wright (East Dulwich); 2, Mr. and Mrs. R. A. Crossbee (T.A.D.A.S.); 3, Mr. Hickman (Dudley); 4, R. Bowes (Ind.). Class (I): 1, F. G. Marsh (Baling); 2, D. Barnett (Leics.); 3, R. Bentley (W.A.D.A.S.); 4, F. Vicker (E.L.A.P.A.). Class (K): 1 and 3, R. Bowes (Ind.); 2, D. M. Dare (Ind.); 4, D. Barnett (Leics.). Class (L): 1, R. Bowes (Ind.); 2, P. Coyle (Ind.); 3, A. Harland (W.A.D.A.S.); 4, R. Wright (East Dulwich). Class (M): 1, P. Coyle (Ind.); 2, Mr. and Mrs. Crossbee (T.A.D.A.S.); 3, D. M. Dare (Ind.); 4, R. Bowes (Ind.). Class (N.B.—M): 1, T. Cruickshank (Baling); 2, R. Wright (East Dulwich); 3, D. Buchner (W.A.D.A.S.); 4, W. Hickman (Dudley). Class (N.O.—T): 1, D. Howitt (C.A.D.A.S.); 2, Mrs. B. Phillips (W.A.D.A.S.); 3, T. Cruickshank (Baling); 4, D. A. Page (C.A.D.A.S.). Class (O): 1, R. Bowes (Ind.); 2, and 3, T. Cruickshank (Baling); 4, Mrs. L. Slow (C.A.D.A.S.). Class (Q): 1, T. Cruickshank (Baling); 2, R. L. Gillard (Dunstable); 3, R. A. Marshall (Npsen); 4, G. and S. (Ind.). Class (R): 1, Mrs. D. Cruickshank (Baling); 2, Mrs. V. Marsh (Baling); 3 and 4, L. G. Little (Bracknell). Class (S): 1 and 2, P. Pamoye (Apex); 3, Mrs. D. M. Dare (Ind.); 4, J. Dainty (Kettering). Class (U): 1, 2, and 4, G. and S. (Ind.); 3, C. Cartwright (Leics.). Class (X.B.—M): 1, K. Wrighton (East London); 2, M. Pearson (E.L.A.P.A.); 3, Mr. and Mrs. R. A. Crossbee (T.A.D.A.S.); 4, J. Best (E.L.A.P.A.). Class (X.O.T.): 1, L. G. Little (Bracknell); 2, D. A. Page (C.A.D.A.S.); 3, A. Weatherby (Kettering); 4, D. Howitt (C.A.D.A.S.).

Best in show: Chequer Barb, Mrs. J. Best (E.L.A.P.A.). Best Brood: Pulchers, K. Wrighton (East London). Best in Class (Db): Kribsten: W. A. Hickman (Dudley). F.B.A.S. Class (H) Championship Class: R. Wright (East Dulwich).

**EVALUATION** and the upkeep of coldwater fish was the subject of a very enjoyable talk given to **South Shields A.S.** by Mr. Harvey Furlong, ex-show dog breeder and judge, who is also a member of S.S.A.S. The Society also had an unexpected visit from a prominent German Killifish breeder and column writer, Mr. George Cattanach.

**MEMBERS** of the **Whitley Bay A.S.** heard a taped lecture, followed by a slide show both on the subject of labyrinth fish at the first May meeting. The jar show for the night was Guppies male and female and the trophy for Best Fish in Show was won by R. Mallion. At the second meeting the members saw a slide show on the various parasites and worms which can wreck havoc in a fish tank. There followed an excellent talk on fish diseases by a local expert, Mr. Ainsley, who very ably answered them any questions fired at him by the members. The jar show for the night was Characin and A.O.V. The trophy for Best Fish in Show was won by Mr. R. Robinson.

**RESULTS** of inter-club table show between **Bethnal Green A.S.** and **Roehampton A.S.** in May were as follows: Class M: 1 and 3, R. Goodson (R.); 2, Sybil Hodges (B.G.);

4, P. Arnold (B.G.). Class G: 1, P. Arnold (B.G.); 2, R. Goodson (R.); 3 and 4, D. Lambourne (R.). Class B: 1, Sybil Hodges (B.G.); 2, J. Connolly (B.G.); 3 and 4, D. Adams (B.G.). Class C: 1, B. Martin (B.G.); 2, S. Mason (R.); 3, Sybil Hodges (B.G.); 4, J. Connolly (B.G.).

Total points, **Bethnal Green 25**, **Roehampton 15**. Colour slides covering various types of fish were shown by P. Arnold and J. Gosser, which were greatly appreciated by both clubs, while Frank Tomkins of the F.B.A.S. was judging the exhibits. The Society is now looking forward to the return match at Roehampton later in the year. Mr. R. D. Eason, chairman of the F.B.A.S. was guest speaker at Bethnal Green in May and gave a most interesting talk on coldwater fish, which also brought in numerous aspects of fishkeeping in general including lions.

**THE Stratford and District A.S.** open show results were as follows:—Guppies: 1, Mr. and Mrs. Mitchell (Flewood); 2 and 3, L. Leadbetter (Blackpool); 4, Mollies: 1, L. Leadbetter (Blackpool); 2, A. Morrison (Kraft); 3, J. Alcock (Warrington). Swordtails: 1, J. Smart (Stratford); 2 and 3, A. Thomas (Lucas A.P.S.). Platies: 1, J. Alcock (Warrington); 2 and 3, J. Murray (Salford). Dwarf Cichlids: 1, C. Hunt (Stratford); 2, L. Leadbetter (Blackpool); 3, A. Thomas (Lucas A.P.S.). Med. Cichlids: 1, J. Gillane (Buxton); 2, B. J. Rodgers (Cresswell); 3, T. Evans (Glossop). Large Cichlids: 1, R. Barber (Ashton); 2, W. Nickson (Sunnybrook); 3, G. Ellison (Leigh). A.O.V. Anabantids: 1, Mr. McQuade (Canada); 2, L. Leadbetter (Blackpool); 3, G. Crook (Stratford). Gouramis: 1, J. Oliver (Wrexham); 2, P. Onslow (Stratford); 3, J. Alcock (Warrington). Small Barbs: 1 and 2, E. E. Gregory (Oldham); 3, S. Robinson (Sunnybrook). Large Barbs: 1, J. Murray (Salford); 2, G. Pritchard (Wrexham); 3, J. Smart (Stratford). Small Characins: 1, R. Ellison (Leigh); 2, G. Pritchard (Wrexham); 3, B. Wilson (Merseyside). Large Characins: 1, D. and R. Standen (Loyne); 2, H. Johnson (Stratford); 3, V. Wood (Kraft). Carps and Minnows: 1, B. Wilson (Merseyside); 2, R. and A. Johnson (Ashton). Corydoras Cats: 1, Mr. White (Kraft); 2, L. and P. Graham (Loyne); 3, J. Onslow (Stratford). A.O.V. Catfish: 1, V. Wood (Kraft); 2 and 3, J. Onslow (Stratford). Loaches and Eels: 1, K. Thomas (Lucas A.P.S.); 2, F. E. Gregory (Oldham); 3, F. Onslow (Stratford). Sharks and Flying Foxes: 1, J. Alcock (Warrington); 2, B. W. Carter (Merseyside); 3, W. Catterall (Stratford). Goldfish: 1, Mr. Whitley (Accrington); 2, A. Morrison (Kraft). Shubunkins: 1, Master A. Kaye (Top Ten); 2 and 3, S. Walsh (Accrington). Fancy Goldfish: 1, J. Walsh (Accrington); 2 and 3, Mr. Whitley (Accrington). A.O.V. Coldwater Fish: 1, Mr. and Mrs. Mitchell (Flewood); 2, Mr. Whitley (Accrington). Pairs (Livebearers): 1 and 2, L. Leadbetter (Blackpool); 3, R. Barrow (Independent). Pairs (Egglayers): 1, C. Pritchard (Wrexham); 2, L. and P. Graham (Loyne); 3, A. Morrison (Kraft). Breeders (Livebearers): 1 and 2, Master A. Kaye (Top Ten); 3, R. Smith (Warrington). Breeders (Egglayers): 1, M. Tonge (Oldham); 2, Mr. Marshall (Buxton); 3, T. Lyons (Stratford). A.O.V.: 1, D. and R. Standen (Loyne); 2, K. Hardy (Stratford); 3, B. J. Rodgers (Cresswell). Junior Livebearers: 1 and 3, M. and L. Stear (Stratford); 2, Master A. Kaye (Top Ten). Junior Egg-layers: 1, D. Stear (Stratford); 2, Miss M. Johnson (Ashton); 3, J. Gillane (Buxton). Killies: 1, H. Tonge (Oldham); 2, B. Ashford (B.K.A.); 3, F. Oliver, Ranboea: 1, F. Johnson (Stratford); 2, B. Wilson (Merseyside); 3, F. Johnson (Stratford). Mini Jars: 1, M. Thomason (Leigh); 2, B. J. Rodgers (Cresswell); 3, M. Thomason (Leigh). Best in Show: D. and R. Standen (Loyne). Siamese Tiger Fish. Junior Best in Show: Master D. Stear, Weather Loach.

ON the first of the twice monthly meetings in May members of the **Grimsby & Cleethorpes A.S.** listened to an interesting talk by B.

Pulford who gave his own experiences in breeding C. Soverums. There was also a question and answer on Killies by J. Clovis. Table show results: Breeders Livebearers: 1, A. Metcalf; 2 and 3, R. Jennings. Killies: 1, J. Clovis; 2 and 3, D. Hughes. Male Platies: 1, T. Walker; 2, A. Whitehead; 3, B. Pulford. Best in Show: T. Walker.

A social evening was very well supported at the second meeting, and the club gained some new members. Table show results: Small Characins: 1, B. Pulford; 2 and 3, J. Clovis. A.O.V. Catfish: 1 and 2, T. Walker; 3, A. Metcalf. A.V. Coldwater: 1, D. Hirst; 2, D. Kirk; 3, P. Metcalf. Best in Show: B. Pulford.

**THE** [There] was a good table show entry of 99 at the March meeting of the **Manchester Section P.G.A.**, at which H. Baldwin gained Best in Show with a Short Dorsal Veil. M. Delingpole who came up from Birmingham Section had the best female in show with a Superba, and the best breeders award went to T. Hallett with matched pairs of bottom swords. For the April meeting there were 81 entries for the table show. Best in Show and Best Breeders award went to T. Hallett with his bottom swords again. Best male went to A. Charlton with a Short Dorsal Veil and Best Female award went to the hard-working show secretary, J. Hesketh with a Superba.

The show bench for the May meeting was well supported with 106 entries, due to an excellent turn up of P.G.A. members from the Lancaster and Birmingham Section. Best in Show and Best Female was awarded to L. Kierles Wedgetail female, making his trip from York all worthwhile and a great boost to a new member. Best Male went to J. Snowden's Short Dorsal Veil, and Best Breeders went to a team of Master Breeders team, which consists of nine fish, of albino exhibited by M. Delingpole. The members were highly entertained by a session of twenty questions, with a team consisting of M. Delingpole, J. Hutchings, F. Campbell and R. Young.

Anyone interested in Guppies should attend one of the meetings, which are held on the first Sunday of every month, commencing at 2.30 p.m. at the Tudor Room, Longlight Hotel at the rear entrance to Belle Vue, Manchester.

**WINNERS** at the **Northwich and District A.S.** fourth Open Show were as follows: Best Fish in Show: Mr. and Mrs. Kennerly (Valley A.S.). Best Livebearer: Mr. and Mrs. Mitchell (Blackpool A.S.). Best Breeders: Master A. Moss (Huddersfield). Best Catfish: Mr. K. Askern (North Staffs.). Society Gaining Most Points: North Staffs. A.S. Northwich Member Gaining Most Awards: Mr. and Mrs. L. Thorne. Guppies: 1, Mr. and Mrs. Mitchell (Blackpool A.S.); 2 and 3, L. Leadbetter (Blackpool A.S.); 4, C. Beckenham (Oldham A.S.); 2, Master A. Kaye (Top Ten A.S.); D. Walker (Runcorn A.S.). Mollies: 1, Miss A. Gregory (Nelson A.S.); 2, J. Howard (Valley A.S.); 3, B. Black (Blackpool A.S.). Platies: 1, L. Kaye (Top Ten); 2, Clark Brothers (North Staffs.); 3, B. Black (Blackpool A.S.). Small Barbs: 1, Mr. and Mrs. Jowle (Derby Regent); 2, C. and K. Davies (Northwich); 3, Clark Brothers (North Staffs.). Large Barbs: 1, B. Pearson (Northwich); 2, N. Day (North Staffs.); 3, Mrs. C. Pritchard (Wrexham). Small Characins: 1 and 2, Mr. and Mrs. Jowle (Derby Regent); 3, Mr. and Mrs. Clark (Morecambe Bay). Large Characins: 1, P. T. Richardson (Merseyside A.S.); 2, B. Booker (Morecambe Bay). Fighters: 1, Mrs. A. Lord (Valley); 2, Mr. and Mrs. Toynay (Sheffield); 3, Mr. and Mrs. Clark (Barnsley). Small Anabantids: 1, Clark Brothers (North Staffs.); 2, Mrs. D. Weir (Ind.); 3, Mr. and Mrs. Kilvington (Doncaster). A.O.V. Anabantids: 1, Miss A. Gregory (Nelson); 2, F. Oliver (Wrexham); 3, Miss J. Gillane (Buxton). Angels: 1, G. W. and A. K. Jackson (Belle Vue); 2, L. Leadbetter (Blackpool); 3, B. Smith (Sheffield). Dwarf Cichlids: 1, Miss J. Gillane (Buxton); 2,



K. Ankers (North Staffs.); 3, J. S. Booth (North Staffs.); A.O.V. Cichlids: 1, H. Williams (Crewe); 2, M. J. Paterson (Buxton); 3, Mr. Hooton (Sandgrounders). Danios and Minnows: 1, Mr. and Mrs. L. Thorne (Northwich); 2, T. Smith (Sheffield); 3, Miss V. Jones (Wrexham). Rasboras: 1, Mrs. A. Loed (Valley); 2, P. Hyland (Northwich); 3, P. T. Richardson (Merseyside). Sharks: 1, J. A. Clayton (Lucas); 2, H. Buckley (Northwich); 3, T. Smith (Sheffield). Flying Foxes: 1, Mr. and Mrs. Kennerly (Valley); 2, Mr. and Mrs. Frediani (Colwyn Bay); 3, B. Copeland (Ind.). Corydoras Catfish: 1, Clark Brothers (North Staffs.); 2, R. Holmes (Derby Regent); 3, T. Smith (Sheffield). A.O.V. Catfish: 1, K. Ankers (North Staffs.); 2, L. Kaye (Top Ten); 3, R. Walker (Moorcambe Bay). Loaches and Botias: 1, K. Thomas (Lucas); 2, B. Ellison (Leigh); 3, T. Smith (Sheffield). Toothcarps: 1, B. Ashford (British Killifish Association); 2, J. Lee (Ind.); 3, B. Ashford (British Killifish Association). A.O.V. Tropical: 1, D. and R. Standen (Loyne A.S.); 2, K. Ankers (North Staffs.); 3, G. Healdley (North Staffs.). Pairs (Livebearers): 1 and 3, L. Leadbetter (Blackpool); 2, S. Dobbs (Ind.). Pairs (Egglayers): 1, Mrs. C. Pritchard (Wrexham); 2, Miss A. Gregory (Nelson); 3, Mr. and Mrs. L. Thorne (Northwich). Breeders (Livebearers): 1, Master A. Kaye (Top Ten); 2, B. Black (Blackpool); 3, Mr. Hooton (Sandgrounders). Breeders (Egglayers): 1, Master A. Moss (Huddersfield); 2, R. Dyson (Blackpool); 3, A. Thomas (Lucas). Common Goldfish: 1 and 3, Mr. and Mrs. Mitchell (Blackpool); 2, Mr. and Mrs. Toyne (Sheffield). Fancy Goldfish: 1 and 2, Mr. and Mrs. Toyne (Sheffield); 3, Miss J. Gullane (Buxton). A.O.V. Coldwater: 1, A. C. Harris (Nelson); 2, B. Newport (Runcorn); 3, Mr. and Mrs. Mitchell (Blackpool). Juniors (Livebearers): 1 and 2, Master A. Moss (Huddersfield); 3, Clark Brothers (North Staffs.). Juniors (Egglayers): 1, Master A. Moss (Huddersfield); 2 and 3, Clark Brothers (North Staffs.). Furnished Mini-Jar: 1 and 2, Mr. and Mrs. L. Thorne (Northwich); 3, B. Pearson (Northwich). A total of 32 Societies exhibited fish and the number of entries was 509.

THE annual general meeting of the **Derby Regent A.S.** was attended by fifty members and the election of new officers resulted as follows: President, R. Trench; Honorary Vice-Presidents, The Mayor of Derby, Councillor G. Guest, The Deputy Mayor, Councillor J. J. Carty; Chairman, L. Wilson; Vice-Chairman, C. Cooper; Treasurer, T. Jeram; General Secretary, J. Bland; Assistant General Secretary, Mrs. N. Robertson; Assistant Show Secretary, T. Bullock; Librarian, D. Shaw; Entertainments Officer, D. Robertson; Editor, R. Holmes; Press Officer, B. Wood.

THE **Horsforth A.S.** monthly meeting was held in May, on the first Tuesday in the month, which is now the new meeting night. The Table Show was quite a success with more fish than for the past few months. Mr. R. Hampson gave an excellent slide show and talk on livebearers which was much enjoyed by all. There were some new members present and if anyone would like to join please ring the Secretary, Mr. Smith, Leeds 675712.

THERE were over six hundred entries at the **Derby Regent** annual show. The results were as follows: Guppies: 1, A. Milfin (North Staffs.); 2, S. Smith (W.K.F.B.); 3, B. J. Rodgers (Cresswell). Mollies: 1, J. Igoe (Sherwood); 2, S. Harrison (Sherwood); 3, A. Thomas (Lucas). Swordtails: 1, F. Cooke (Huddersfield); 2, T. Shepherd (Doncaster); 3, Mr. and Mrs. Deakin (Nuneaton). Platies: 1, Mr. Heath (Derby Regent); 2, C. Ward (Doncaster); 3, A. Thomas (Lucas). Small Barbs: 1, Mr. and Mrs. Jowle (Derby Regent); 2, Mr. and Mrs. Blades (Cresswell); 3, T. Shepherd (Doncaster). Large Barbs: 1, S. Hill (Alfreton); 2, R. Clarke (Sherwood); 3,

Mr. and Mrs. Stone (Chesterfield). Small Characins: 1, Mr. and Mrs. Jowle (Derby Regent); 2, Mr. and Mrs. Blades (Cresswell); 3, Mr. and Mrs. Heap (Belle Vue). Large Characins: 1, Mr. Kinsey (Independent, London); 2, R. Harlow (Derby Regent); 3, S. Bailey (Sherwood). Fighters: 1, Ashton and Atkinson (Chesterfield); 2, C. Pratt (Bedworth); 3, K. Brass (N. Staffs.). Small Anabantids: 1 and 2, B. Bailey (Sherwood); 3, Mr. and Mrs. Kilvington (Doncaster). Large Anabantids: 1, Miss J. Gillane (Buxton); 2, Messrs. Day (N. Staffs.); 3, Mr. and Mrs. Deakin (Nuneaton). Dwarf Cichlids: 1, Mr. and Mrs. Thorne (Northwich); 2, Miss J. Gillane (Buxton); 3, Mr. Dean (T.K.A.S.). Large Cichlids: 1, Mr. Kinsey (Independent, London); 2 and 3, D. Robertson (Derby Regent). Angels: 1, K. Sax (Derby Regent); 2, Mrs. Lindley (Alfreton); 3, B. Hewitt (Independent). Sharks and Foxes: 1, Mr. Whitelaw (Dukeries); 2, Mr. Clayton (Lucas); 3, Mr. Bowes (Independent London). Loaches and Botias: 1, K. Thomas (Lucas); 2, Mr. Mighall (Nottingham); 3, R. Clarke (Sherwood). Corydoras: 1, T. Smith (Sheffield); 2, Mr. Holmes (Derby Regent); 3, R. Bowes (Independent London). A.O.V. Catfish: 1, Mr. Madeley (Independent); 2, Mr. Ankers (N. Staffs.); 3, Mr. and Mrs. Kilvington (Doncaster). Killifish: 1, S. Hill (Alfreton); 2, A. Churchin (Swillington); 3, Mr. and Mrs. Blades (Cresswell). Minnows and Danios: 1, Mr. and Mrs. Blades (Cresswell); 2, R. Mayer (N. Staffs.); 3, R. Bowes (Independent London). Rasboras: 1, Mr. and Mrs. Downing (Sherwood); 2, W. D. Gilding (Gainsborough); 3, Mr. and Mrs. Stone (Chesterfield). Livebearer (Pairs): 1, Mr. Shipman (Grantham); 2, G. and S. (Northampton); 3, Mr. and Mrs. R. Gabe (Chesterfield). Egglayer (Pairs): 1, Mr. and Mrs. Stone (Chesterfield); 2, J. Derris (Dukeries); 3, R. Bowes (Independent London). Livebearers (Breeders): 1, G. Thickbroom (Castleford); 2, Mr. and Mrs. Thorne (Northwich); 3, Mr. and Mrs. Simpson (Bedworth). Egglayer Breeders: 1, Mr. and Mrs. Thorne (Northwich); 2, J. Derris (Dukeries); 3, Mr. and Mrs. Blades (Cresswell). A.O.V. Tropicals: 1, R. Harlow (Derby Regent); 2, J. Thickbroom (Castleford); 3, K. Ankers (N. Staffs.). A.V. Juniors: 1, Master A. Robinson (Huddersfield); 2, A. Milfin (N. Staffs.); 3, G. Givins (Gainsborough). A.V. Novice: 1, Miss J. Shipman (Grantham); 2, G. and S. (Northampton); 3, S. Smith (W.K.F.B.). A.V. Coldwater: 1, Mr. and Mrs. Blinn (Sheffield); 2, R. Commander (Tamworth); 3, Mr. and Mrs. Blades (Cresswell). Decorative Aquaria: 1, Mr. Thorne (Northwich); 2, Mrs. J. Rogers (Cresswell); 3, R. Harlow (Derby Regent).

AN inter-club show organised by the **Goole and District A.S.** took on enthusiasts from Hull and Thorne and won by a clear 14 points (Goole 48, Hull 34, Thorne 15).

Full results, from an entry of 124, were: Livebearers: 1, Mr. and Mrs. Shipley (Goole); 2, Mrs. Batch (Hull); 3, Mrs. Lockwood (Goole). Barbs: 1, Miss Coates (Goole); 2, C. Green (Thorne); 3, Mr. and Mrs. Scall (Goole). Characins: 1, Mr. Green (Thorne); 2, Mr. and Mrs. Scall (Goole); 3, T. Collingwood (Hull). Rasboras, Danios and Minnows: 1 and 2, Mr. and Mrs. Shipley (Goole); 3, L. Bunnage (Goole). Fighters: 1 and 3, A. Douglas (Hull); 2, T. Brown (Goole). Anabantids: 1, T. Collingwood (Hull); 2, J. H. Stabler (Hull); 3, P. Walker (Goole). Cichlids: 1, Mr. and Mrs. J. Scall (Goole); 2 and 3, T. Collingwood (Hull). Catfish and Loaches: 1, Mr. and Mrs. Shipley (Goole); 2, Mr. and Mrs. Scall (Goole); 3, J. H. Stabler (Hull). Toothcarps: 1 and 3, R. Snowdon (Thorne); 2, Mrs. A. Scall (Goole). Sharks and Foxes: 1, Mr. and Mrs. Scall (Goole); 2, Mr. Jewison (Thorne); 3, T. Collingwood (Hull). Breeders and Egg-layers: 1, Mr. and Mrs. Scall (Goole); 2, Mr. Banks (Thorne). Breeders and Livebearers: 1, T. Douglas (Hull); 2 and 3, G. Andrews (Hull). Pairs Egg-layers: 1, Miss Coates (Goole); 2 and 3, Mr. Bunnage (Goole). Pairs Livebearers: 1, R. Holt and Miss J. Harvey (Goole); 2, Mr. Jewison (Thorne); 3, T. Douglas (Hull). Coldwater: 1, Mr. and Mrs. Shipley (Goole).

A.O.V.: 1, T. Douglas (Hull); 2, Mrs. A. Batch (Hull); 3, Mrs. J. Bunnage (Goole). Best Fish in Show: T. Douglas (Hull).

AS the invited speaker was unable to attend the May meeting of the **Bradford and District A.S.**, the president and vice-president chaired a very lively and informative discussion on the following topics: the keeping and colouring of daphnia, brown, green and blue algae, breeding and keeping certain anabantids, colouring infusoria, lighting and the growth of plants, and various other topics were touched upon.

Although there was a small increase in the numbers of table show entries, there still was room for many more. Results of the table show were as follows: Barbs: 1, M. Soffley; 2 and 3, T. Trevelyan, A.O.V.; 1, T. Trevelyan; 2, M. Soffley; 3, P. Chorley. The secretary is Mr. J. P. Choeley, 31 Speeton Avenue, Bradford 7, and new members can be assured of a warm welcome.

THE **Keighley A.S.** May meeting took the form of groups discussing the different aspects of a new tank, fish, and equipment, most suitable for a beginner, to assist new and junior members with ideas from the more experienced members. There were 41 entries for the monthly table show and the results were as follows: Fish of the Month—Anabantids: 1, Mr. Hinds; 2, Mr. Heap; 3, J. Mosley, A.O.V.; 1 and 3, J. Mosley; 2, D. Mosley, Novice A.O.V.; 1, D. Mosley; 2, Mr. Sagar; 3, Mr. Illingworth. Junior A.V.: 1, 2 and 3, Master P. Beckett.

#### NEW SOCIETY

THE present meeting place of the newly formed **Exmouth and District A.S.** is the Lounge of the Leisure Centre, Imperial Road, Exmouth. Meetings are held on alternate Fridays 7th and 21st July. Meetings thereafter to be decided. Further details may be obtained from the Chairman, Philip Ashton, "Dunstan," Mast Road, Exmouth, Devon. (S.A.E. would be appreciated). The Society would also be interested to hear from other Societies in regards lecturers, slide or film shows relating to the hobby, etc.

#### NOTICE

THE **British Koi Keepers Society** will be holding its second annual general meeting on Sunday afternoon, 16th July, at *The Aquarist* and *Pondkeeper* Fishkeepers Exhibition at Alexandra Palace. All who are interested in keeping Nishiki Koi will be most welcome, including non-members. With a membership now exceeding 150 there is evidence of widespread enthusiasm for these handsome fish. Further details will be sent upon application to the Secretary, The British Koi Keepers Society, 1 Anthony Close, Francis Gardens, Peterborough, PE1 3XU.

#### CHANGE OF VENUE

THE **Gloucester Fishkeeping and Social Club** now meet on the last Thursday in every month at the Hucclecote Community Centre, Old Barnwood Road, Gloucester.

#### SECRETARY CHANGES

**Association of Yorkshire Aquarist Societies:** E. Storey, 141 College Grove, Preston Road, Hull, E. Yorkshire.  
**Hfracombe and District A.S.:** R. R. Eggleton, Kenwin House, Furlington Road, Woolacombe, North Devon. New members will be welcomed.  
**Great Yarmouth and District A.S.:** M. Weekley, 22 Arundel Road, Great Yarmouth.  
**Huddersfield T.P.S.:** G. Walker, 55 Ravenshoe Road, Salendine Nook, Huddersfield.  
**York and District A.S.:** New Show Secretary: P. Rees, 30 Don Avenue, Deringhouses, York.



**AQUARIST CALENDAR**

1972

**2nd July:** Lytham A.S. Open Show at Lowther Gardens Pavilion, Lytham, Lancs. All enquiries to show secretary, O. Wright, 13 Cambridge Road, Ansdell, Lancs.

**2nd July:** Castledon and District A.S. Annual Open Show at Carleton Community Centre, Carleton, Pontefract, Yorks. Details from secretary B. Stevens, 72 Falcon Drive, Love Lane, Castledon, Yorks, or phone Mrs. Gates, Pontefract 3213.

**2nd July:** Exeter and District A.S. first Open Show, Kennford Village Hall, Exeter. Benching by 12 noon. Show schedules and entry forms available from the secretary, W. F. Rye, 14 Beaworthy Close, Exeter, EX2 9LH. Tel: Exeter 78936.

**2nd July:** North Warwickshire A.S. Open Show, The Settlement, Kingstanding Road, Kingstanding, Birmingham. Details from T. Stow, 108 South Road, Edington, Birmingham, 23.

**2nd July:** Salisbury and District A.S. Open Show, City Hall, Salisbury. Show Secretary, C. Lennon, 15 Fossil Dene Cres., Salisbury.

**8th July:** Basingstoke A.S. Open Show, Carnival Hall, Basingstoke. Schedules from M. Strange, 10 Loddon Court, Neville Close, Basingstoke.

**8th-9th July:** Romford and Becontree A.S., Dagenham Town Show, Central Park, Dagenham, Essex. Schedules as soon as available. Show secretary, D. G. Kent, 74 Lynwood Drive, Collier Row, Romford, RM5 2QT. Tel: 70-67804.

**9th July:** Loyal A.S. Show, Lancaster University, Lancaster.

**9th July:** Grantham and District A.S. Third Open Show. Please note new venue this year, Walton Girls Secondary Modern School, Kitty Briggs Lane, Grantham. All on ground floor. Details and schedules from the Secretary, G. Piatt, 85 Granley Street, Grantham, Lincs.

**15th July:** Weston-super-Mare and District T.F.S. Third Open Show at St. John's Hall, Oxford Street, Weston-super-Mare. Show Secretary is J. Clarke, St. Jude's, North Street, Cheddar, Somerset.

**15th and 16th July:** Aquarist and Pondkeeper Fishkeeping Exhibition, Alexandra Palace, London, N. Show Secretary, G. Greenhalf, 39 Garth Close, Morden, Surrey.

**16th July:** Sandgrounders A.S. second Open Show, St. Andrews Hall, Part Street, Southport. Benching 12-2. FNAS and AMDAS Show. Details from P. F. Ground, 30 Norbury Close, Southport. Tel: 84398.

**22nd July:** Port Talbot and District A.S. Open Show at the Y.M.C.A., Port Talbot, under P.B.A.S. rules. Show secretary, M. John, 36 Golden Avenue, Sandfields, Port Talbot.

**22nd July:** Teasdale Show at Stewart Park, Middlesbrough. Schedules from J. McGlenaghan, Show Secretary, 54 Manor Street, Middlesbrough.

**23rd July:** South Shields A.S. Details from J. A. Curving, 53 Dunelm Drive, West Boldon, Durham. Tel: Boldon 4259.

**23rd July:** Kraft A.S. first open show to be held in the Hulme Labour Club, Bonnaal Street, Manchester, 15. Schedules available from V. M. Wood, 77 Otterburn Close, Hulme, Manchester 15.

**5th-12th August:** Annual Open Show of Portsmouth A.S. at the Portsmouth Community Centre, Twyford Avenue, Portsmouth. Show schedules from J. Stillwell, 34 Salcombe Avenue, Copner, Portsmouth, Hants.

**6th August:** Tonbridge and District A.S. First Open Show. Show schedules from I. T. Mathison, 33 Nortons Way, Five Oak Green, Tonbridge, Kent.

**11th-13th August:** Cymric National A.A. Three-Day Open Show at the T.A. Drill Hall, Cardiff. Benching on 9th and 10th August. Further details from B. Gorwill, 21 Gabaifa Road, Llandaff, North Cardiff.

**12th August:** Bracknell Aquarist Society 11th Open Show, Priestwood Community Centre, Priestwood Court Road, Bracknell, Berks. Show secretary: L. Jordan, 62 Fernbank Place, Ascot, Berks. Tel: Winkfield Row 3400.

**12th August:** Harlow A.S. Annual Open Show.

Show secretary, P. Murdock, 21 Brook Lane Field, Harlow, Essex.

**13th August:** Valley A.S. Open Show, Civic Hall, Ramsbottom, via Bury, Lancs. Details from show secretary, M. D. Berry, 8 Leyland Street, Blackford Bridge, Bury, Lancs. Benching 12 noon to 2.15 p.m.

**13th August:** North Staffs. A.S. Annual Open Show to be held at the Victoria Hall, Hanley, M.A.A.S. Rules. Schedules available from Show Secretary, John S. Booth, 536 Beverley Drive, Bentilee, Stoke-on-Trent.

**13th August:** Bedworth A. and P.S. Open Show, Nicholas Chamberlaine School, Bulkington Road, Bedworth. Schedules from T. Pagett, 74 Lister Street, Arleborough, Nuneaton.

**16th-19th August:** Midland Aquatic Open Show. Show secretary, J. R. Witta, 120 Franklin Road, Kings Norton, Birmingham, 30.

**19th August:** Kingston and District A.S. and South Park A.S.S. Second Combined Open Show at new venue, Ham Hall, Ham Close, Ham, Richmond, Surrey. 50 classes judged to F.B.A.S. and G.S.G.B. Schedules apply to G. Greenhalf, Show Secretary, 39 Garth Close, Morden, Surrey. Tel: 01-337 4042.

**20th August:** Oldham and District (A.S.) Annual Open Show, at Werneth Park, Oldham. All enquiries to show secretary, R. Birchwood, 20 Inverness Avenue, Blackley, Manchester, 9.

**20th August:** Stroud and District A.S. Open Show, Mid-Gloucestershire Technical College, Stratford Road, Stroud. Venue, same as previous year, write to show secretary, M. Jones, P.R.O., C. Whittaker, 14 Erin Park, Lightpill, Stroud, Glos.

**20th August:** Salford A.S. Open Show at the Beoughton Liberal Club in Great Clowes St., Lr. Broughton next door to the Great Clowes St. warehouse. Schedules from J. Lamas, 37 Beech Street, Lr. Beoughton, Salford, 7.

**26th August:** Plymouth A.S. Open Show at Plymouth Y.M.C.A.

**26th August:** Plymouth District Aquarist and Pondkeepers Society Open Show at Y.M.C.A., Plymouth.

**27th August:** Tamworth and District A.S. First Open Show at Moorgate School Tamworth. Show schedules available from the Secretary P. J. Rollin, 35 Fontenaye Rd., Coton Green, Tamworth, Staffs.

**2nd September:** Yate & D.A.S. Open Show at Newmans Canteen, Yate, Nr. Chipping Sodbury, Glos. Schedules from show secretary, M. Emery, 134 Sundridge Park, Yate, Bristol. Tel: Chipping Sodbury 313645.

**2nd September:** Bethnal Green A.S. Open Show at Bethnal Green Institute, 229 Bethnal Green Rd., E.2. Show Secretary, D. Bundy, 30 Eversham House, Old Ford Rd., Bethnal Green, E.2. P.B.A.S. Championship Trophy Class O—Male Guppy.

**3rd September:** Whitley Bay A.S. Open Show to be held in the Empress Ballroom, Whitley Bay. Show schedules will be available at a later date.

**3rd September:** Wellingborough and District A.S. Annual Show at the Drill Hall, Wellingborough. Show secretary, D. Bitchener, 1a George Street, Wellingborough.

**10th September:** Peterlee and District A.S. Annual Open Show at Edenhill Community Centre, Peterlee. Schedules will be obtainable from A. D. Birbington, 40 Marlborough Road, Hastings Hill, Sunderland.

**10th September:** Weymouth & District A.S. Third Open Show, Small Sidney Hall. Details E. R. Jones, 11 Ludlow Road, Weymouth.

**10th September:** Brighton and Southern A.S. Open Show. Schedules from C. P. Cochin, 80 Marlborough Drive, Burgess Hill, Sussex.

**10th September:** Barnsley T.F.S. Open Show at the Mappellwell & Sainscross Village Hall, Mappellwell, Barnsley.

**10th September:** Nuneaton A.S. Open Show, Friary Youth Centre, Abbey Street, Nuneaton. Details from show secretary, Mrs. P. Deakin, 1 Greenhill Drive, Barwell, Leicester. Tel: Earl Shilton 42788.

**10th September:** Huddersfield T.F.S. Open Show at Huddersfield Town Hall, 44 Plaques. Further details from the Show Secretary, M. Jessop, 8 Ryedale, Kirkheaton, Huddersfield.

**15th-16th September:** Bristol A.S. Open Show, St. Michael's Parish Hall, Bishopston, Bristol. Details from H. C. B. Thomas, 2, Grove Park, Bristol, BS6 7P.

**16th September:** Havant and District A.S. Second Annual Open Show will take place at the Devereil Hall, Purbrook. The show secretary is V. B. Hunt, "Caeglas," 129 London Road, Widley, nr. Portsmouth, Hants.

**16th September:** Hounslow and District A.S. Open Show at Hounslow Youth Centre, Cecil Road, Hounslow.

**17th September:** Stone A.S. Annual Show, Walton Community Centre, Stone. Show secretary, K. W. Evans, 42 Friars Avenue, Walton, Stone, Staffs.

**17th September:** Cleveland A.S. Annual Open Show, details later.

**17th September:** West Cumberland Aquarists Club Second Open Show to be held in the Civic Hall, Whitehaven, Cumberland. Show details will be supplied later by the Club Secretary, J. Parker, 2 Southey Avenue, Oregill, Egrement, Cumberland.

**23rd September:** Rhondda Open Show. The hall will be decided at a later date. For further information please contact M. Williams, 122 Top Trebanog, Trebanog, Rhondda, Show Secretary.

**24th September:** Northampton and District A.S. Open Show. Details later.

**24th September:** Oram Open Table Show, Recreation Hall, Refuse Street, Shaw, Oldham.

**24th September:** Torbay A.S. Annual Open Show will be held at The Torquay Town Hall. Full details will be advised later.

**24th September:** Hucknall and Bulwell A.S. are holding their Annual Open Show at Bulwell Youth Club, Coventry Road, Bulwell. Schedules may be obtained from G. P. Swanwick, 74 Westleigh Road, Strelley, Nottingham.

**1st October:** Baling and District A.S. Open Show at the usual meeting place: Northfields Community Centre, Northcroft Road, W.13.

**1st October:** Hetton County A.S. Annual Open Show at Stephenson House, Richard Street, Hetton-le-Hole, Co. Durham. Benching 12 noon to 2 p.m. Further details available from Secretary, Mrs. C. Wilkinson, 4 The Meadows, West Rainton, Houghton-le-Spring, Co. Durham.

**1st October:** Chesterfield and District A.S. The First Open Show will be held at Clay Cross Social Centre, Chesterfield Road, Clay Cross, Near Chesterfield, Derbyshire, Exit 29 off M1, 4 miles to Clay Cross. Details from Show Secretary, D. Stone, 237 North Wingfield Road, Grassmoor, Near Chesterfield.

**7th October:** East London Aquarists and Pondkeepers' Association Open Breeding Show, Ripple Road School, Barking, Essex. Schedules from show secretary, J. Vickers, 13 Irons Way, Romford, Essex.

**8th October:** Buxton and District A.S. Second Open Show, The Pavilion Gardens, Buxton. Full details later.

**14th-15th October:** British Aquarists Festival, Belle Vue Zoological Gardens, Manchester.

**22nd October:** Sherwood A.S. Details later. Show secretary, J. Igoe, 25 Marples Ave., Mansfield-Woodhouse, Notts.

**29th October:** Doncaster and District A.S. Third Open Show.

**29th October:** Newcastle Guppy and Livebearer Society. Open Show at Central Hall, Gosforth, Newcastle upon Tyne 13. Livebearer classes, 17 Egglayer Classes. Schedules from J. A. Laidler, 19 Alm Avenue, Gosforth, Newcastle upon Tyne 3.

**5th November:** Mixenden T.F.S. Open Show at the Mixenden Community Centre, Clough Lane, Mixenden, Halifax, Yorkshire. Further information from the Secretary, S. Leedham, 74 Clough Lane, Mixenden, Halifax.

**12th November:** Crewell and District first Annual Open Show to be held at Workop Sports Centre, Valley Road, Workop. Schedules available from show secretary, Mrs. H. Blades, 13 Westminster Close, Workop, Notts. Tel: Workop 6563.

**12th November:** Hartlepool A.S. Open Show in the Longscar Hall, Seaton Carew. Schedules and details available from show secretary, J. D. Watson, 42 Sydenham Road, Hartlepool, Co. Durham, TS25 1PZ.