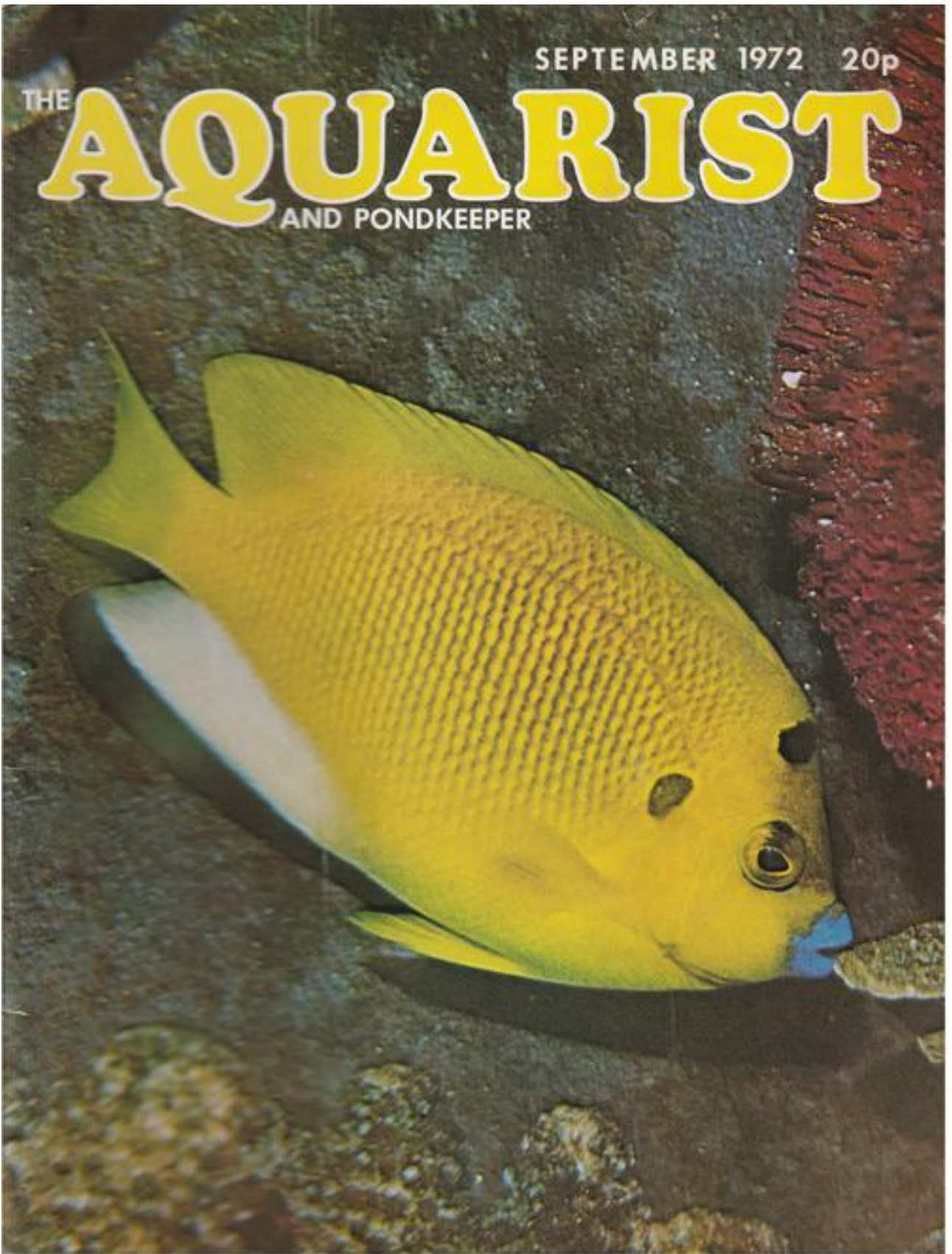


SEPTEMBER 1972 20p

THE **AQUARIST**
AND PONDKEEPER





THE AQUARIST

AND PONDKEEPER

Published Monthly 20p

Printed by Buckley Press,
The Butts, Half Acre,
Brentford, Middlesex.
Telephone: 01-568 8441

Subscription Rates:
The Aquarist will be sent post
free for one year to any address
for £3.06. Half-yearly £1.53

MSS, or prints unaccompanied
by a stamped addressed
envelope cannot be returned
and no responsibility is accepted
for contributions submitted.

Founded 1924
as "The Amateur Aquarist"
Vol. XXXVII No. 6, 1972

Editor: Laurence E. Perkins
Advertisement Manager:
J. E. Young

Our Cover
Holacanthus trimaculatus
(by courtesy of
Sea Aquariums Ltd.)

September, 1972

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The Editor accepts no responsibility for views expressed by contributors.

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WHAT IS YOUR OPINION?

by B. Whiteside

Photographs by the Author



THE BALL is set rolling this month by an American reader, Mr. Brad Gulliford, and he writes from 4002 Circle Avenue, Crestwood Reading, Pennsylvania 19606, U.S.A., on the subject of Gro-Lux lighting. His experiences have taught him that it is great for showing off fishes and plants, but is not strong enough for plant growth. He finds that "warm white bulbs" are better. He considers that Malawi cichlids are too expensive in this country as he can buy a baby *Pseudotropheus auratus* in the States for the equivalent of £1.25. He thinks that a coldwater tank is refreshingly different from a tropical one, and feels that it would certainly interest school pupils. Discussing aquarium books, Mr. Gulliford finds that the best policy is to attempt—by trial and error—to find a book which appeals to one, and then to "stick with it." He says that too many books are written by self-styled "experts" who rely solely on their own experiences, and that such "experts" often write about subjects on which they are "ignoramuses." He feels that aquarium books are not for beginners; they should seek advice from an experienced aquarist if possible. His favourite books are Innes' "Exotic Aquarium Fishes," and Sterba's "Aquarium Care" and "Freshwater Fishes of the World." Mr. Gulliford thinks that Mr. Aslett's suggestions for new features "are very good ones." One thing he would like to see included in *The Aquarist* is an index page at the end of a volume. With the page numbering system in use he considers that it should be easier to compile. He writes about a U.S. research team which made a list of the best fish foods, and out of sixteen foods earthworms came first—followed by beef-heart and *tubifex*: white worms were thirteenth on the list.

Having got great piles of *The Aquarist* stacked about the house, I recently decided to send for a "New Look" Aquarist Binder" to see if I could sort some of the more recent issues into order. The new look binder is bound in maroon rexine with the title gold blocked out of a blue flash on the spine. It costs £1, including postage and packing, and I must say that I consider my £1 well spent. I can now easily find recent editions, and the binder looks well and fits easily on a bookshelf. The binder is made to hold 24 copies of the magazine, but I found that I could only fit 23 into it comfortably. I suppose the reason is that the magazine has increased its number of pages

recently. I'll certainly be buying a few more to hold earlier editions neatly and attractively! (Binders can be obtained from *The Aquarist*.)

Mr. C. Greenman writes from 29 The Heights, Northolt, Middlesex, and he finds Monos to be lively, fascinating fish. He considers that the use of a net for catching fish in aquaria is somewhat inhuman, and he has had difficulty in netting certain fishes. He wonders if no one has yet designed some sort of trap which could be used in the tank—something, possibly, with a hinged flap like a trap door. (Do you have any comments on this topic?)

Mr. G. A. Lovis, whose home is at 192 Blenheim Drive, Allestree, Derby, sent me two very attractive coloured slides of the dolphins at the Miami Seaquarium, Florida. He took the slides with a £5 camera, in 1970, and they are certainly a credit to his photography—especially considering the limitations of a £5 camera! Mr. Lovis says that the Seaquarium has not only dolphins, but also a fine collection of marines and tropical freshwater fishes, and it is the best aquarium he has seen. He states that the Shedd Aquarium in Chicago has also got a very reasonable selection of fishes and invertebrates. He notes that his own plants of water wistaria behave as mine do, but he cannot suggest a reason. (Any further comments from readers?)

Mr. C. Bradley's letter comes from 30 Woodhall Street, Stoneferry Road, Hull, and he writes to say that his pair of Discus were shy, like mine, and often turned dark in colour. He followed a "cure" about which he read in a recent *Aquarist*, and raised the temperature to 94°F for a few days, and then lowered it to between 82-86°F. He notes that the use of an exchange resin to soften the tank water will affect plant growth. In his 36in. tank he has two corner filters: one containing filter wool and resin, the other peat and charcoal. He has found that most plants have not grown well—with the exception of dwarf lily and *Aponogeton crispus*. He uses a 20-watt Gro-Lux tube for about eight hours per day, and lets the filters operate for 24 hours per day. He is going to try turning off the filters for a few hours per day to see if the plants improve. (I would suggest that you increase the lighting over your tank considerably, and that you leave it on for about 12 hours per day, to improve your plant growth. My own experiments

with leaving filters off to supposedly allow plants to have more carbon dioxide in their tank water have led me to believe that it does not make any difference to plant growth; however, I'll let the experiments continue for a longer period before I draw any final conclusions. Photograph 1 shows the jungle-like growth of plants in my own Discus tank, the water in which was softened using exchange resins.)

Dr. J. N. Carrington, of Interpet, says that there could be several causes of cloudy eyes on fishes. He had this trouble once or twice on angel fish and invariably managed to overcome it using Liquitox. Dr. Carrington agrees with Mr. Anderson that most fishes will withstand and thrive in a fair temperature fluctuation, and with many species this is much more like their natural surroundings than is a constant temperature. He says that many fishes live in relatively small pools which get quite hot during the day, and

keeping goldfish about two years ago and failed dismally because of lack of knowledge. After this she read as many books as possible, but she could only find a few about goldfish in her local library. She started again, with a 20 in. tank and five fancy goldfish; the fish thrived and she recently bought a 36 in. tank. Her original 1 in. fish are now 3½ to 4 in. long. She always reads the coldwater section of the magazine first and it has helped her a great deal. Her enthusiasm must be catching because her neighbour went and bought a 36 in. tropical tank after seeing Miss Idziak's tank.

Mr. B. Woodhouse has been keeping fish for five years and he has tried all kinds of aquarium filters. At the moment he prefers outside filters and they run for 24 hours per day without any ill effects on plants. At present he has two 2 ft. Gro-Lux tubes installed over 3 ft. tanks, and has had to put a 40 watt bulb alongside each of them because the tubes did not give



cool down to even maybe 60°F at night; however, other fishes which come from large bodies of water probably have a reasonably constant temperature environment. Dr. Carrington uses a wide temperature range with his fishes, and he also advocates keeping them nearer to 70° than 80°F. He believes that this is why, in general, his fishes live for so long, and it is also easier to stimulate fishes for breeding purposes by playing with temperature fluctuation. One very good way of stimulating many fishes—such as angel fish—to breed, is by raising the temperature to 80° to 85°F for a day or two, and then suddenly dropping the temperature to about 78°F. This can be done by the addition of fresh water, or by adding a few ice cubes from the refrigerator.

2 Windsor Avenue, Washbrook, Chadderton, Lancashire, heads the letter from Miss I. Idziak, and she is wholly in favour "of your excellent magazine being published every two weeks." Miss Idziak started

off enough light. With the bulbs in place, the plants have to be thinned out every couple of months. Mr. Woodhouse lives at 99 Watson Street, Central Estate, Hartlepool, County Durham.

Photograph 2 shows a new tropical aquarium plant which you may not yet have tried. It's available from Cheltenham Aquatics, 40 High Street, Cheltenham, Glos., and is being sold under the name of giant *Ambulia* at 60p for five plants. I bought a few plants, and the firm was kind enough to supply me with the following information about the plant. It comes from Malaya, and the firm have produced some splendid plants under aquarium conditions, with good feeding via the roots and strong lighting to give good, substantial growth. They tentatively identify the plant as *Limnophila heterophylla*, but I feel that this is incorrect. Having tried to grow the new plants in a tank in which "ordinary *Ambulia*" thrives, I have had no success so far—but I'll keep on trying and let you know if I can

get the plant to grow for me. If you happen to try the new plant yourself, let me know of the conditions under which you get it to grow and I'll try to include your findings in a future feature.

The next letter comes from Mr. J. R. Chalmers, of Hobby-Fish Farm, Watling Street, Bears Watering, Nr. Old Stratford, Wolverton, Bucks., and he reads, with interest, about my problems with *Bacopa monniera* (July edition). He says that many people have problems with plants such as this—which are bog plants being grown submerged. He says that *Bacopa* likes very bright lighting conditions, such as it would get in nature when growing as a bog or marsh plant. Mr. Chalmers points out that when this plant is grown in about 12 in. of water, the amount of useful light which reaches the plant is cut down by the water and by "the suspensions of natural protective algae of the types which are invisible to the naked eye, but give to aquarium water a slight greenish-yellow tint when compared with fresh tap water." This causes the *Bacopa* to stretch towards the best lighting conditions, leaving very few leaves on the submerged stems where there is a deficiency of light. Mr. Chalmers cultivates *Bacopa* in large, fibre-glass, rectangular pools, installed in his 1,500 sq. ft. tropical aquarium plant house. He uses a mixture of coarse sand, soil and peat, covered with only 1 in. of water. The *Bacopa* cuttings are initially laid out flat on the compost, and they root themselves and produce new shoots along the stem at the leaf nodes. New cuttings are taken when the plants grow to about 6 in., and they are then either packaged and sold, or replanted for further stocks. Mr. Chalmers has not been able to conduct any experiments to determine why wistaria closes its leaves at certain times during the day. He notes that Brunner, who first described the plant as *Synnema triflorum* in 1956, observed that the species showed the interesting sleep position of the leaves. The writer of the letter says that Brunner refers to *Nomaphila stricta* (Giant Hygrophila—which Mr. Chalmers says is, in fact, *Hygrophila costata*) "taking on the recurving sleep position of the leaves at night time." Mr. Chalmers guesses that *Nomaphila* closes its leaves for night time protection from chilling, or enemies, whereas wistaria maybe opens and closes its leaves during the day to regulate its total daily light requirement—rather like an automatic blind. He would like to hear from any readers who have novel ideas on the cultivation of aquarium plants. (Mr. Chalmers has certainly put forward some interesting facts and opinions. I must admit I have never heard of *Nomaphila stricta* being called *Hygrophila costata*, or seen it in print.)

Mrs. B. Buller, of Kingsnorth Aquaria, Homeplace, Magpiehall Road, Kingsnorth, Nr. Ashford, Kent, sends some views on the marine side of the hobby—a side which seems to be growing considerably in popularity. Mrs. Buller has six marine aquaria, five

of which are lighted by Gro-Lux. In the sixth tank an ordinary white fluorescent tube was used because algae was wanted for marine invertebrates. Ironically, the five Gro-Lux tanks are absolutely covered in algae on grit and glass; the sixth tank has no algae whatsoever!

Mr. S. Wolstenholme's letter comes from 185 Smithy Bridge Road, Littleborough, Lancs., and he says that a good growth of marine algae prevents carbonic acid building up in the tank. Adding buffers to the water



upsets the balance, he considers. Tanks without algae deteriorate faster, are plagued by mysterious deaths, and also require regular, expensive water changes. Mr. Wolstenholme says that he doubts very much if a tank will last longer than six months, in good condition, without algae; but he thinks that algae look horrible. His technique is to use undergravel filtration, and propagate algae under the filter by using two or three tier stands and putting marine tanks on top—so that the lights from the lower tank supply the

algae. Fishes which eat *algae* can always nibble the pieces creeping up the sides. Top lights can be regulated to prevent the *algae* spreading to the top of the filter, he says. This, plus a regular dose of U.V. light, keeps the water in good condition, and he considers that "good" water contributes to 75 per cent of the success with marines.

"On 27th February of this year, I set up an 18 in. tank with organ pipe, stags and crushed shells. After waiting one week I purchased a yellow-tailed damoiselle and a domino, costing £1.25 and 65p respectively. Both are still in good condition, and eating well on a diet of white worms, *Tubifex*, brine shrimp, and shrimp flakes," writes Mr. R. McGilvray, from 84 Peddie Street, Dundee, Scotland, DD1 5LT. He had an eight-watt Gro-Lux tube over the tank, lighted for 10 hours per day, and there were still no *algae*. An eight-watt warm white tube was added; still no *algae*! Mr. McGilvray then obtained some scrapings of *algae* from the cover glass of a friend's tank—and within one week he had a healthy growth of *algae* in his tank. He has found that, after topping up his tank with distilled water, the *algae* growth is retarded for three days. He thinks that the *algae* have only got aesthetic value in the tank. He has tried Gro-Lux, Wotan and warm white tubes, and has found that if a tank is deeper than 15 in. the Wotan does not penetrate—but that it gives best results at shallower depths; Gro-Lux is better at 15 in. or deeper. Mr. McGilvray ends by saying that he would like to see at least one paragraph on marines included in W.Y.O.? each month. (I'll certainly be pleased to include marine topics—if aquarists interested will send me a few suggestions for topics which they would like to have discussed, by readers, in this feature. As I do not have any marines myself, and know nothing about tropical marines, readers' suggestions for interesting topics would be very useful. If you do write to me about marines, please print the names of animals clearly as I can't afford a book on marines to check the spelling!)

"I would like to thank you for putting out such a varied and interesting feature," writes Mr. A. S. Pearce, from his residence at 133 Beckford Road, Croydon, Surrey, and his letter also deals with marines—which should please Mr. McGilvray. Mr. Pearce has just returned from holiday and his first thought was for his 20 gal. marine tank. He had checked density, pH and nitrate level the night before he went away, and all was well. He had arranged that a friend feed his fishes on a frozen meat cube every other day. He was away for two weeks and, on his return, checked his tank again. Only the density had changed—by 0.002. The water had taken on a brown colour, so he cleaned the floor and glass; this did not help. He then noticed that the green *algae* had all gone. As the tank had received no artificial light while he was away, he switched on the Gro-Lux for six hours, and repeated

this for two days. The water cleared and the green *algae* returned! He has one Koran angelfish, two domino damselfish and a Picasso triggerfish, and the tank has an undergravel filter operating for 24 hours per day. He hopes that this information will be of use to readers.

Master Peter McCartney is 13 years old, he lives at 33 Warrington Road, Rye Hill West, Newcastle upon Tyne, 4, and he would like to see *The Aquarist* produced every two weeks. He says that the best way to disinfect a diseased tank is to throw out gravel and plants, and scrub the aquarium out well, before buying new plants and gravel—but it's expensive! He thinks that my Discus are nervous because of their switch to a larger home; he thinks that they should soon settle down in their more spacious home. Peter ends his letter by asking if, when writers talk of the lengths of fishes, the measurements are taken from the tip of the nose to the tip of the tail, or to the caudal peduncle. (The latter, usually.)

Mrs. D. A. Hanning, of 11 Seaton Place, Ford, Plymouth, PL2 1PS, writes to say that the best aquarium which she has visited is at Totnes, S. Devon. Although it is not big, it has a wonderful collection of tropical fishes. A recorded commentary describes the inmates of each tank, and all the tanks are beautifully clean and contain "enormous" fishes. Old age pensioners are admitted for half price, and the staff are very friendly and helpful. Mrs. Hanning had one plant of *Vallisneria spiralis* which just existed in her tank for the past two years, but recently, when she cleared the tank of *Cobomba*, the *Vallisneria* suddenly started spreading all over the tank. She thinks the reason is that the *Vallisneria* now gets much more light. Mrs. Hanning informs us of the sad news that the elderly goldfish, whose fishy adventures she described in the July edition, has now died. She thinks that it had dropsy as it was very swollen. The fish must have been at least 28 years old, and was over 6 in. in length. (When I recently visited the house of a friend, Mr. R. H. B. Workman, I found him peering into his goldfish tank at one quite large fish which was floating on the water surface. The fish had jumped out of the tank, on to the floor, during the night, and was found to be in a very desiccated state in the morning. He placed the apparently dead fish back into the tank, and massaged it for about an hour—after which time it began to show signs of life. When I arrived the fish looked as if it would not last very much longer, and I suggested that, as a last resort, it should be given a few drops of neat brandy. This was done—but the fish finally died later that morning; however, it does show that the equivalent of "the kiss of life" can be applied to fishes, even if it was not too successful in this instance!)

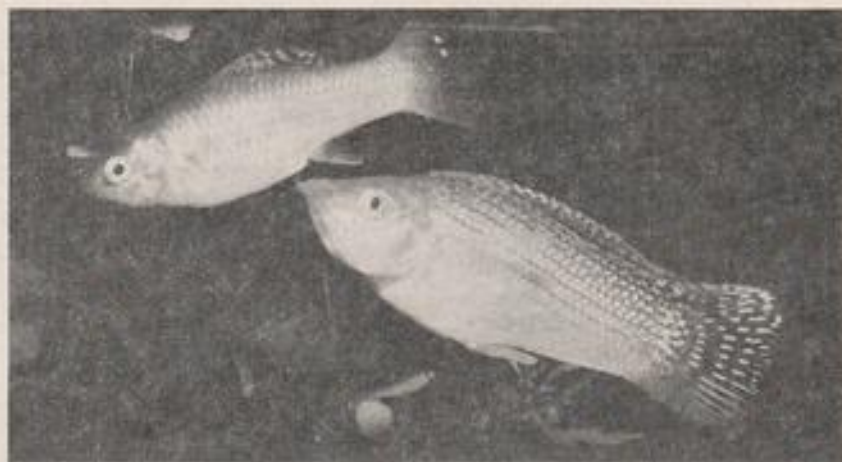
Last month I told about my pair of green sailfin mollies producing a brood of youngsters. I'm pleased

to say that the babies are now growing well, and the mother appears to be due to have another brood soon. Photograph 3 shows the male fish of the pair (the larger one) nosing round the vent of the female prior to mating. As can be seen, the female is the smaller of the two fish, and is much less "exotic" than the male as regards finnage. I would certainly recommend these fish to anyone who has not yet kept them.

46 Fitzjohn Avenue, Barnet, EW5 2HW, is the address from which 14-year old R. W. McArthur writes to tell us that he has been feeding his fishes on two different types of aphides (small insects, such as greenflies). He collected black and greenflies from *unprayed* plants, and fed them in profusion to his fishes—which were very keen on them. He wonders if anyone else has tried aphides as food for fishes. (I have had aphides living on upper parts of aquarium plants which were above water in a number of tanks, at different times, but my fishes did not seem to very be interested in the flies and I did not encourage them.

Mr. Smith had noticed that some of his fishes—especially his school of eight tiger barbs, and his four chocolate gouramies—had taken to resting under the floating bark, and so he left it in the tank. Not only does the "raft" look attractive, but it also provides a useful patch of intense shade for those fishes not over-fond of prolonged electric lighting. Once, quite by accident, the tank received a rather heavy knock, and Mr. Smith was interested to find that almost the entire community of twenty-four fishes had taken refuge under the comparatively small piece of bark. It would appear that the depth of shade gives the fishes a sense of security not provided by the floating plants. Also, as the bark moves about the surface, it does not keep the light off any of the gravel bedded plants for long enough to cause them any harm. (Would such a floating raft make my Discus feel secure and wanted, I wonder?)

I have two rather lengthy letters in front of me, and they come from Mr. J. Worley, of 15 Harden Road,



I would prefer healthy aquarium plants to this novel form of live food!)

I recently asked about the use of cork bark as a form of internal aquarium decoration, and my question brought a reply from Mr. K. Smith, whose home is at 49 Marlfield Street, Manchester, M9 1BA. Some time ago he bought a baby red-eared terrapin which he housed in his smaller community tank. A piece of cork bark, measuring 9 in. x 4 in., was floated on the surface to provide a "sunbathing" platform. The tank is 20 in. deep, but is usually filled to a depth of 17-18 in. as Mr. Smith finds that this gives an interesting perspective and also enables him to see his floating plants to best advantage. Eventually the terrapin had to be returned to the pet shop as it suddenly discovered the food potential of the tank's inhabitants and tried, unsuccessfully, to expand its eating habits. However,

Stockwood, Bristol, 4. Both letters are about Discus, and Mr. Worley has been keeping these fish for two years now. He has two 5½ in. Heckels, and two 3½ in. "reds," and they are fed exclusively on chopped earthworms—which he considers to be a very good food, which is free. The Discus are housed in a 30 gallon tank, fitted with a Nuova filter and U.V. sterilising unit. The water has a pH of 4, 10 ppm hardness, and was obtained by de-ionising rain water. Mr. Worley says that the bad name which young Discus get is due to an infestation of the flagellate *Spironucleus*, and that it can be killed by raising the temperature to 95°F for a week. He thinks that the shyness in my Discus is due to a high bacteria count in their water, and he suggests that I stop feeding them live foods at once, change half of the tank water for pure, boiled, soft water, and start

Continued on page 217

OUR READERS WRITE

Up the Marines

Whenever I get into conversation with cold or tropical freshwater Aquarists, I naturally try to convert them to my own hobby, Marines. The answer I invariably get is: "They're too expensive, Mate." I would like to counter this by saying: "How many Guppies or Neon Tetras have you lost this year?" Because these fish are reasonably cheap, losses over a period of time go unnoticed as they are easily replaced when one goes into the shop round the corner and perhaps adds a couple of Neons to the tin of Tetramin just purchased. A marine fish for the beginner costs usually around £1.25. Believe me, this fish gets much more care and attention than the majority of its freshwater brothers. *A. Percula* (Clown) may, if well looked after, have a life span of a couple of years. Add up how many Guppies, Mollies, Swords, Neons, etc., lost in the same period; balance up cash-wise.

The British Marine Aquarist Association was formed to encourage and further the knowledge of Marine fishkeeping and is doing a first-class job of it by the interchange of ideas and experiences via the media of the monthly "Marine News" journal.

Keeping Marines is not confined to fish, but also includes Anemones, Crustaceans, Fan Worms, etc.

Finally, it is possible to keep Marines without being:

- (1) In the surtax bracket; (2) A Marine Biologist.

LEWIS DOUBLEDAY,
Hon. Group Secretary,
South-Western Group,
B.M.A.A.

Paper Tigers?

I hope you will print this letter as a warning to fellow aquarists. Last year, I paid a visit to a well-known aquarist shop in West London. There, I found in one tank some red tiger oscars, selling at £1 each. I was an enthusiastic oscar fan, and so I bought a couple of these fish. Taking them home, I was able to examine them closely in their tank. They resembled ordinary oscars in every way, except for the colouring between the mottled black pattern, which was deep red instead of the usual white. They grew well, but in doing so the red colouring completely disappeared, being replaced by the normal pattern. I waited until now before expressing my views to my aquarist friends, who all agree that I have been taken for a ride. How-

ever, I still see these red tiger oscars for sale. Although some specimens retain their colour, by asking around, I have discovered that the majority lose it after a few months. It appears nowadays that money is above all things, even in the aquarist trade. Let this be a warning to people taken in by exotic names that disguise very ordinary fish.

T. STRAIGHT,
Red Roofs,
Ditton Grange Close,
Long Ditton, Surbiton,
Surrey.

Poisonous Worms?

I have read, to my great surprise, that the Brandling Worm, *Eisenia foetida*, is looked upon as being poisonous to fish! No lesser an authority than Alfred Leutscher, B.Sc., F.Z.S., states this on page 240 of his book "Vivarium Life." I have fed my fish upon these worms and found no ill effects whatsoever! My collection consists almost exclusively of temperate species all housed in coldwater; even the more delicate species, such as Blue-spotted Sunfish, devoured these worms enthusiastically and no illness resulted.

However, when feeding any of the larger worms, I always stun them, cut them open and wash out the gut contents. Could it be this partly digested food that is poisonous to fish? After all, it does frequent dung heaps. Have any readers had any ill effects from feeding Brandlings to their fish? These worms, easily available from fishing tackle shops, I find to be a good standby for times when earthworms are not available—such as winter and during the odd drought! For some of my fish will not take dried food or chopped raw meat, and feeding such animals as bullheads solely on white worms and *daphnia* would be prohibitive.

KENNETH G. ATTWOOD, B.Sc.
33 Bilboe Road,
Bradley,
Bilston,
Staffs.

LOST AND FOUND

A lady's ring was found and handed in at the Aquarist Stand during the Exhibition. Would the owner please write with full details to: The Show Organiser, The Butts, Brentford, Middx., TW8 8BN



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, TW8 8BN

TROPICAL QUERIES

by Jack Hems

Is the yellow swordtail a sport of the ordinary swordtail (*Xiphophorus helleri*) or has it been developed over the post-war years out of red or gold platy stock?

Cross-breeding *X. variatus* (the variegated platy) with the green swordtail (*X. helleri*) has resulted in the development of yellow or golden forms of the swordtail, but a true yellow swordtail does exist in nature. It is known to science as *Xiphophorus clemenciae* and is said to occur in the Rio Sarabia, Mexico. In some quarters, though, it is held that *X. clemenciae* is merely a sub-species or yellow race of *X. helleri*.

The water in my aquarium is reasonably free of dissolved minerals, but the pH value never seems to sink below 8.0. What should I do to bring it down?

If you have an air-pump it should not be difficult to remove the water from the aquarium by means of an air-lift and return it through a filter chamber filled with previously moistened sedge peat. A week of this treatment should show a lowered pH value. If little difference is seen (under a pH test), then repeat the procedure with fresh peat. Alternatively, add a few drops of tartaric acid to the water and stir it round with a glass or non-toxic rod or stick. Bear in mind, though, that a rapid change of pH is bad for fish.

What size does *Alestes longipinnis* attain? Also, does this species make a good community fish? In my particular case, I wish to keep it with various barbs.

Ordinarily *A. longipinnis* reaches about 5 in. It will not molest your barbs, but it does need plenty of swimming space in well-aerated water.

What information can you give me about the behaviour, maximum size, and breeding habits of *Balantiocheilus melanopterus*?

B. melanopterus, better known as the silver or bala

shark, is no trouble at all in a mixed collection of fishes, provided they are about its own size. It attains a length of about 6 to 7 in. In its natural haunts in south-east Asia, it may reach a foot or more. I do not think *B. melanopterus* has bred in captivity.

How can I deal with a plague of thread algae?

Wind the strands round a notched stick and pull them out of the aquarium. When you have cleared away as much of the growth as possible, fill most of the bottom area of your tank with fast-growing plants such as *Hygrophila polysperma* or *Cryptocoryne affinis* (choose the plant to suit your light). As the higher plants bush out and compete for what keeps them alive and flourishing, in short, light and nutrients in the water, the algae will weaken and die.

Is there a catfish called *Hypostomus plecostomus*? I bought one under this name a week ago, but up to the time of writing I cannot find it listed in any of the fish books I have looked at in our local library.

The answer to this one is quite simple: our old friend *Plecostomus plecostomus* is now described, in some up-dated books, under the formal name of *Hypostomus plecostomus*.

About six months ago, I set up a community tank with real and artificial plants, rocks, plastic ships, treasure chests and other ornaments, together with an expensive air-pump and filter. Before I introduced any fish I added a drug to kill any germs in the water. Yet for all the care and attention I have lavished on my tank, the fish never stay alive for more than a week. Please tell me where I am going, or have gone, wrong?

You have thrown away your money on unnecessary and, perhaps, dangerous novelties instead of buying one or two reliable aquarium books. If you care to write in again, I will be pleased to furnish you with the

names of some books on aquarium keeping that will point the way to success. But in the meantime, remove all the bizarre furnishings from your tank and siphon the water away. Test the compost and rockwork for alkalinity (spot them with a few drops of neat sulphuric or hydrochloric acid and if they splutter and fizz clear them out). Now, fill up with water drawn from the coldwater tap and allow it to stand for a few days, with the heater switched on, before introducing any fish. Do not buy more than one pair of guppies or, say, Schubert's barb, and if the fish are still alive after a month, then you can assume that there is nothing wrong. But something will go wrong if you buy fish that bite and fight, or you feed too generously, or you do not give the aquarium sufficient light and the plants decay and pollute the water. In a word, aquarium keeping is quite easy once you learn the rules.

I have just bought a pair of *Pseudotropheus auratus* and would very much appreciate some information on the care and breeding habits of this African cichlid.

P. auratus, like most, if not all, cichlids from the great inland lakes of Africa, flourish best in hard and alkaline water. They should have greenfood included in a varied (dried and alive) diet. The males are more aggressive than the females and, generally speaking, the species is not suited to sharing a tank with other species unless they are hardwater fish and are large enough to take care of themselves. *P. auratus* grows to a length of about 4 in. and is a fairly free mouth-brooder.

What thickness and quality of glass should I buy to glaze an aquarium frame measuring 60 in. x 18 in. x 18 in.?

Plate glass $\frac{1}{2}$ in. thick should be used.

Can small tetras, such as the black neon, happily share a tank with larger species?

In general it is best to keep fishes of about the same size together, but there are a few larger species that

will live at peace with smaller species provided the tank is large enough to afford plenty of swimming space, and there are plenty of plants to give shelter. The larger species I have in mind are *Danio malabaricus*, *Rasbora elegans*, *Geophagus jurupari*, and *Aequidens maronii*.

Recently I bought a piece of cork bark from my local aquarium shop. The dealer told me he sells a lot of it for tank decoration. Yet though I washed this bark well it soon turned my aquarium water brown. Not only this, but some of the fish showed every sign of distress. Do you think a dealer who sells goods that destroy the appearance of an aquarium and upset the fish is dishonest?

Not at all. The customer should find out something about the goods he buys and not blame the dealer for the mistakes brought about by his own ignorance or apathy. After all, we should know that tree bark under water leaches out acid. So before any bark is placed in a tank it should be soaked in several changes of water until the water stays clean. Then, and only then, is the bark ready for introduction into the aquarium.

Is it true that if White Cloud Mountain minnows and zebra fish are kept together in a tank it is not long before one or the other species dies out?

This is only true if the temperature is too high for the White Cloud Mountain minnows or too low for the zebra fish; for ideally, the White Cloud Mountain minnow should be kept at a temperature range in the fifties or sixties ($^{\circ}$ F), that is for general maintenance, but raising this to the low or middle seventies for breeding. If White Cloud Mountain minnows are kept at a temperature in the upper seventies for any length of time they will weaken and die. On the other hand, the zebra fish loves warmth, but will not die if the temperature is maintained at a range of from about 72 $^{\circ}$ F (22 $^{\circ}$ C) to 75 $^{\circ}$ F (24 $^{\circ}$ C).

GOLDWATER QUERIES

I intend making a pond in my garden but the only place I can site it is near a Laburnum tree. I realise that the tree can be poisonous in certain respects. What should I do?

As I have stated often, these trees are poisonous in all their parts. My advice is to cut the tree down and replace it with a safer one. After all, it only flowers for about ten days in the whole year. The leaves and seeds are the ones which could be dangerous but if you watched the pond in the autumn and netted off all the leaves you find on the water it could be all

by Arthur Boarder

right. The amount of poison available to the fish would depend on the quantity of fallen material in proportion to the amount of water in the pond.

I am a beginner in the hobby of keeping goldfish and wonder if I use the oxygenating tablets I can buy to prevent me from ever changing the water?

It would be unwise to use these tablets all the time. They might put oxygen into the water but they cannot remove foul gases which could pollute the water. Any tank of goldfish can be kept in good order for many years by giving it the weekly servicing. This amounts

to cleaning the inside of the front glass only, then siphoning up most of the mulm from the front base of the tank. In doing so you will probably remove up to a third of the water. This is then replaced with fresh. You must remember that fishes continuously void waste matter when they are feeding well, and this could pollute the water. Growing water plants in the tank help to use up much of the waste matter, but not all.

I have four fancy goldfish in a tank, with specks of white on their fins. I suspect White Spot disease. One preparation I have bought as a cure suggests changing the fish to another tank but I have not got one. What do you think?

Without any preparations it is possible to clear a tank of the trouble by changing the fish to a clean tank each day. You could use one of the plastic washing-up bowls you can get at a chain store. The idea of changing is that the pests only leave the fish when mature; they then drop to the bottom and encyst. Any which fall to the bottom are washed away before they have time to hatch out fresh parasites. In warm water the parasites develop quite quickly and so by changing the tanks every day you can get rid of the pests without any special preparation. Once these get a hold under the skin of a fish it is not possible to put anything in the water strong enough to kill them without also killing the fish.

I have a fair-sized pond with nine golden orfe, each about a foot long. I feed them on maggots and they seem to prefer the casters (chrysalis) to the actual maggots. Are they good for the fish?

The casters are just as good for the fish as the actual maggots. You state that you feed them exclusively on these and that they do not appear to take garden worms. This is the first time I have heard of orfe refusing garden worms. As a rule they are not at all fussy about their food and take anything offered. I think that if you refrain from feeding with maggots for a couple of days, the fish will be eager to take any of the dried foods as given to goldfish and any form of live food also. I think you should try this gradually as your supply of maggots could dry up and you could then be in trouble.

I have a number of mature common and comet goldfish and would like to know an economical way of breeding them. Can you help, please?

The cheapest way to breed such fish is to leave them alone in the pond and make sure that there is a very good supply of fine-leaved water plants in the pond. Healthy goldfish will spawn without any interference from you and providing the water plants are fairly dense, even if only in one part of the pond, the fish will spawn there and the fry may escape the attentions of the parent fish. To be certain of rearing some fry you will have to use bunches of water weed, anchored near the side at the shallowest part of the pond. When the fish spawn and eggs are seen, this is the time to

remove the bunches of weed to a safe place for hatching. The types of weed preferable are *Elodea canadensis*, *Egeria densa*, *Lagarosiphon major* and *Ceratophyllum demersum*.

Can you tell me if there is a weekly or monthly magazine solely concerning coldwater fishes. I really want to know what to look for in good fish as I would like to show and judge at shows?

I know of no magazine concerned just with coldwater fishkeeping. *The Aquarist* usually publishes articles on the subject every month, but at the moment I do not think that there are sufficient coldwater enthusiasts to justify a special magazine. If you get a book of standards you can see what the main points of a show fish are and then, by joining an Aquarist Club, you can learn a lot at table shows and lectures.

Can you suggest some species of tropical fishes which would tolerate temperatures which suit goldfish?

There are several fishes which could be kept in a coldwater tank as long as it is indoors. Many of the fishes termed tropicals are just exotic and can stand the usual temperatures at which goldfish are kept in tanks. You could use the White Cloud Mountain Minnow (*Tanichthys albonubes*); the Paradise Fish (*Macropodus opercularis*); Platys (*Xiphophorus variatus*) and Guppies (*Lebistes reticulatus*); it would also be possible to keep some of the barbs, such as *Barbus conchomius*, also some of the Danios as long as the tank is in a living room where the temperature does not fall below 50°F at any time. It is surprising how many of the so-called tropicals can be gradually brought down to a lower temperature and under such conditions they would probably live far longer but may not breed.

This last month I have had six female goldfish go into what I think might be a form of dropsy. Their bodies swell out and their scales seem to stand out. I feed my fish with a handful of carp pellets every day. What do you think is the trouble?

The fish may be attacked by dropsy disease but their bruising could have been caused by vigorous chasing by male fish in the pond. If you feed them solely on pellets I wonder if this could be the answer. I use these but with discretion, keeping up a frequent change to other foods including live foods. I have heard from aquarists that some pellets are so nourishing that the fish can outgrow their scales if fed too frequently. I cannot say that I can believe this statement, but now I wonder if there is anything in the suggestion. In any case, do add some live foods and something quite different for a change.

Can you give me some advice as to how to keep my fish whilst I am on holiday?

My advice is to leave the fish completely alone and do not get a well-meaning neighbour to feed them

for you. For very many years I leave my fish for at least two weeks at a time and have never lost a fish through this treatment. See that the tank water is in good condition before you leave and only feed the usual amount before you go. Never give some extra to keep them going. The fish will not eat the extra which will go bad and pollute the water. I usually find, on my return, that the tanks are far cleaner than when I went away as the fish have cleaned up every bit of *algae*, etc., from the plants. There are gadgets on the markets which only allow a certain amount to be fed to the fish each day, but my method has been successful for very many years.

I have a good-sized tank and plan to keep two pairs of fancy goldfish in it. Which of the following is the easiest to keep: Orandas, pom poms or lionheads?

As the orandas have rather large and flowing fins they are not quite as easy as the other two mentioned. However, the pom poms can be of two types, the old type which were actually veiltails with the enlarged nasal protuberance and a fish shaped more like a fantail goldfish. The latter would be easier to keep.

I wish to keep some fancy goldfish and would like to know if they must have special food to keep them in good health?

There is no need to give fancy goldfish any different foods to that as given to ordinary goldfish. After all they have all been produced from the original goldfish. A good varied diet is best. Any dried foods, whether flake or pellets, should always be implemented with occasional feeds with live foods. Some of the dried cat foods are also taken by goldfish quite eagerly.

I have kept ordinary goldfish for years but cannot keep fantails for long. They appear healthy when bought but soon go off their food and mouth at the surface. Why is this?

Fantails are just as hardy as common goldfish and I have been keeping and breeding some in an outdoor pond in Middlesex for the past thirty-five years and they give no trouble. I can only think that the fish you bought had been bred under tropical conditions and if they had not been gradually brought down to the temperature of your pond, they could have become upset by the colder water. When purchasing fish for the pond always enquire from the dealer as to the temperature at which they have been kept, but I doubt very much if all of them would know at what temperatures they had been bred and reared.

I have wintered goldfish in my pond for three years but this spring two died. They showed no signs of illness or disease. Why do you think this is?

Apparently the water in the pond became foul through rotting vegetation during the winter. At such times the water plants are dormant. In the warmer part of the year these plants use up much of the foul matter and tend to keep the water clear. Also many pondkeepers continue to feed their fish in the pond after the water has cooled down. As the appetites of the fishes have lessened considerably, the food is not eaten and the water becomes polluted. It is safer to clean out any pond which is not very large, at the beginning of the winter so that the water has a good chance of remaining pure until the spring when the plants can get growing again to do their work.

WHAT IS YOUR OPINION?

continued from page 212

using peat moss in my filter to keep the bacteria count down. I should raise the temperature as stated above, and not feed the fish for three days. They should then be given small amounts of clean food—such as well-washed chopped earthworms, chopped liver and spinach. Mr. Worley says that the sick behaviour of the discus is due to the parasites forming small crystals in the kidneys of the fish, thus impairing the action of these organs. The gills of the fish have then to take over the action of excretion. He points out that the raising of the temperature does not kill bacteria, as stated by Mr. D. K. Brown, but kills the flagellate *Spironucleus*. (There is certainly food for thought in this condensed version of Mr. Worley's letters, and I wish him luck with his hopes of breeding discus in the fish house which he is now building.)

As usual, the space has been used up, but not the letters! I look forward to using more next month—

and to receiving your opinions. Remember, do PRINT your name and address, don't make the letter too long, and include an S.A.E. if you require a reply. For the next edition let me have your opinions on the following: (a) What have been your experiences with the breeding of tetras? (b) How have you overcome problems of *algae* in garden ponds? (c) Most people would agree that "rough service" light bulbs last longer over aquaria than do ordinary bulbs—but do plants grow as well with such bulbs, especially as the bulbs age? (d) What marine fishes and invertebrates would you recommend for beginners in the marine branch of the hobby, and what are the attractions of each species which you suggest? (e) What have been your experiences with the keeping of the red piranha? (f) What topics would you like to see discussed in future W.I.Y.O.? features? I hope to receive a letter from you for next month. Enjoy your fishkeeping!

REARING

Ophicephalus micropeltes

by Graham Page (aged 16 years)

IT WAS through a friend that I first heard of a young snakehead being sold at a dealer's shop in Beckenham.

I paid a visit to this shop the following week, and found the fish to be a young specimen of *Ophicephalus micropeltes*, about 3½ in. long. He was beautifully marked, with a bright orange stripe running the length of his body, from his eye to his orange spade-shaped caudal.

I bought this snakehead two days later for £1.25. He was brought home to a 24 in. × 12 in. × 15 in. tank, containing two 3 in. blue acaras, with which he mixed quite happily. I have since found he is not a vicious fish, but more of a greedy one—he will eat anything he can swallow—and he never harmed the acaras (although I moved them when he seemed to be large enough to consume them!).

The next day he took a small goldfish, and after this hefty meal retired to the back of the tank, resting in *Elodea* plants that were planted thickly in the tank. However, the next day he was very active and he took two female guppies. I was amazed at his enormous appetite, and foreseeing future problems in coping with this constant supply of live fishes that he seemed to require, I decided to try feeding him the occasional earthworm once he had become well settled in.

Later that week I dropped an earthworm into his tank, loosely tied with a piece of cotton. This enabled the "bait" to be waggled about, making it more lifelike and tempting. He investigated the worm, but refused to eat it. He went hungry that evening.

I tried again the next evening and coaxed him into taking the food. I replaced this with another worm, and he swallowed this down without hesitation, and now I give him several worms each week. However, I gave him a couple more goldfish and several adult guppies the following week, all of which he ate with apparent relish.

With this incredible demand for food increasing, I began experimenting with other food. I was eventually successful in getting him to take lumps of raw stewing steak. This I buy from the local butcher for 10p per quarter pound. At the first, second and third time he refused this food stubbornly, thus totally depriving

himself of food for three days, but on the fourth day, encouraged by the acaras' enthusiasm for the meat, and, no doubt, getting somewhat "peckish" himself by this time, he tried a small piece of meat. As with the worms, once he found the meat edible, he was very content with it. He now accepts raw stewing steak, liver and dog meat regularly, along with the goldfish and guppies. I believe he should have a certain amount of live food, as he is, by nature, a predator, and in the wild he would probably live entirely on other fish. Personally, I am able to cope with his guppy and goldfish requirements as I am now working at a dealer's shop, and I have access to plenty of cheap or sick fish.

At the moment, my snakehead has grown to a size approaching 18 in., and is still growing well. He is living in a 36 in. × 15 in. × 15 in. tank, furnished with plastic sword plants, and natural *Elodea densa*, which, in my experience, is the only live plant that is sturdy enough to stand up to his wild lashings at feeding time.

I have recently bought a secondhand 48 in. × 18 in. × 18 in. tank, in which he will be rehoused as soon as I can set it up; I hope this will not be too long, as he is fast outgrowing his 3 ft. tank.

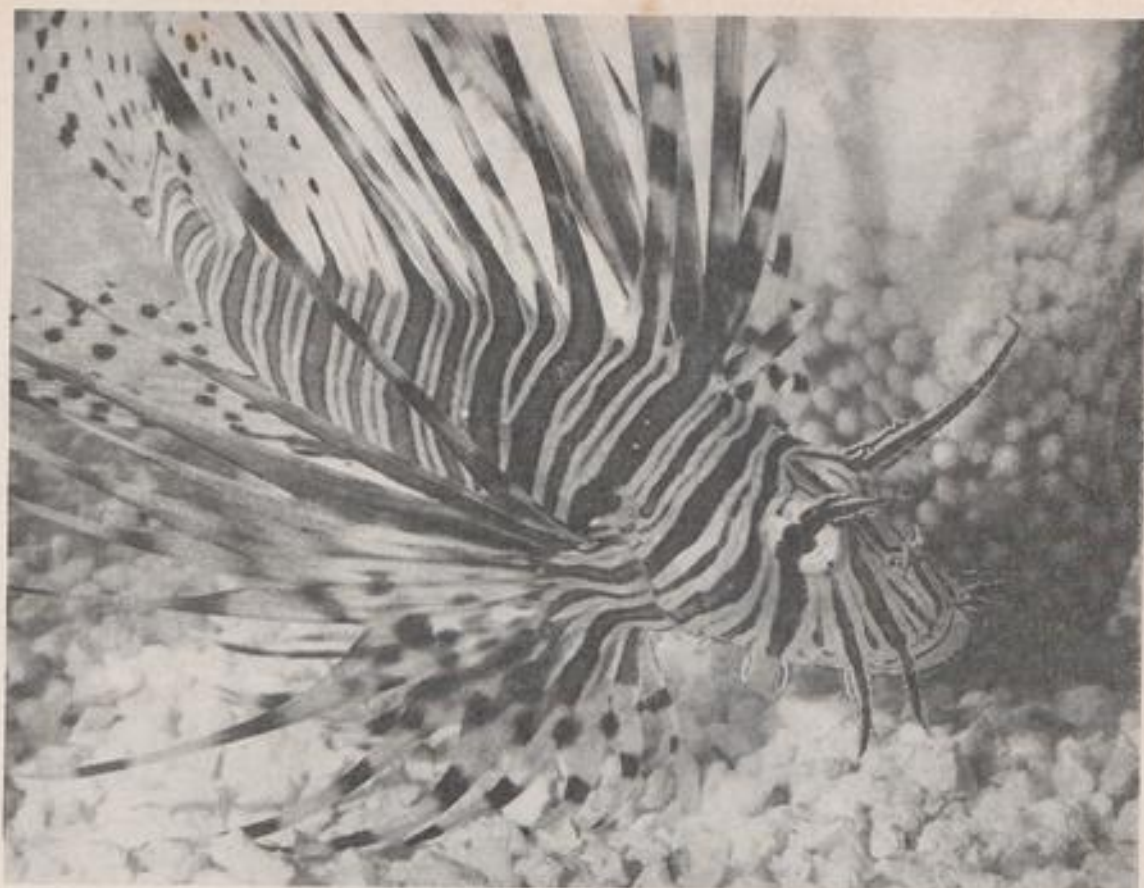
According to the books, *Ophicephalus micropeltes* grows to a maximum of 35 in., and though I doubt if I will ever rear him up to this giant size, I hope I will be able to get him to a reasonable size. It is my intention to show my snakehead when he is of the necessary size required. I believe he is in good condition as regards finnage, colour and general health, so I have wild hopes of him becoming a winner.

Meanwhile I have two queries about snakeheads in general, to which either *The Aquarist* or its readers may know the answer:

(1) Is there any truth in the statement that goldfish fed to snakeheads regularly are possible causes of mouth infections?

(2) Do you think my snakehead will refuse meat as he gets older? As one or two books state that "only young specimens will take raw meat."

I hope someone will be able to enlighten me and my fishkeeping friends on these points.



Scorpion fish (*Pterois volitans*)

HOW I PHOTOGRAPH MY AQUARIUM FISHES

by *P. Styles*

A small tank (I use an 18 in. × 8 in. × 8 in.) is set up in the normal manner with gravel, rocks, plants, etc. The decor must be kept at the rear of the tank, however, so that it does not obstruct view of the fish to be photographed.

A thin sheet of glass cut to run the length of the

aquarium is placed between 1 in. to 3 in. from the front of the tank. This partition is to keep the subject within the very shallow depth of field obtained at close focussing distances. This can be less than $\frac{1}{2}$ in., so movement of the subject must be restricted.

A reflex camera is a decided advantage here, as



Cheilmon rostratus

focusing can be continuously observed. I use a Nikon fitted with a 3-dioptre close-up lens; this enables me to focus down to about 6 in., and fill the frame with most fish—this is to keep enlarging to a minimum.

A polarising filter is perhaps an advantage, but I personally have not found one necessary. This will be explained in the next stage.

A flashgun, preferably electronic, is then placed at an angle of 45° to the subject, and angled down slightly from above; this is to give a natural direction, and good modelling light to the subject. Reflections will

then be angled away from the camera, and a polarising filter will be unnecessary.

With 125ASA film and a Metz 181 flashgun I have found that with the flashgun held 2 ft. from the aquarium an exposure of one-sixtieth of a second at an aperture of f16 gives the best results. For different equipment, optimum results can easily be obtained after a short trial. Try, for example, apertures of f8, 5.6, 11, and 22.

I hope that this will be of help to those who have not been successful in fish photography.

THE AQUARIST FISHKEEPING EXHIBITION

by A. Boarder

THE EXHIBITION was held in the Palm Court, Alexandra Palace, London, on 15 and 16 July, 1972. It was a great success and attracted far more visitors than ever before. The weather, once again, was perfect, and the hall was well filled with aquarists and friends the whole time. However, the fact that splendid rose gardens were available for resting was not overlooked by many, especially the ladies while their husbands were worshipping the fishes. It seems that this exhibition has been favoured with the best weekend weather of the year for some time now, and although it did become rather warm in the hall during Sunday, it was always possible to enjoy the splendid breeze which this high vantage point enjoys. I can think of no place near the Capital where such a panoramic view of London can be obtained. Added to this, there is plenty of parking space for the motorists.

Some aquarists, myself included, were disappointed to find that there were no individual classes for cold-water fishes. However, this was decided upon because of the heat which can be generated inside this huge glass-windowed building. Last year a large Golden Orfe was in trouble and, as most aquarists will appreciate, these fish require a cool, well-aerated water. The tropicals must have enjoyed the climate and I imagine that very little artificial warmth was needed for most of the show.

The awards were presented to the winners from the *Aquarist & Pondkeeper* stand by David Attenborough who certainly appeared to enjoy his inspection of the show very much indeed. The many people present for the prize-giving were greatly appreciative of his time which he kindly gave from his busy life. There were forty-one classes, mostly for tropicals and plants, but three were for Coldwater Furnished tanks.

The classes were very well supported and some fine specimens were on view. The best fish in the show was a fine *Ctenopoma kingsleyae* which was greatly admired. The furnished tanks were again of a high standard, but one or two appeared to have no fishes in whatsoever, at least when I visited them.

I remember making the same remark last year, but my comments do not seem to have been noted by some of the exhibitors. Some tanks were very well planted with fine specimens but not a fish could be

seen. I cannot see what the object can be to show fishes, whatever their standard, if they are of the type which hide in the dense foliage all the time; one might as well not have any fish in the tank at all. Surely most tropical enthusiasts know that there are many species of tropical which shoal well and keep on the move continually. What about a nice group of Tiger barbs to just mention one of them?

The entries came from many places but one which intrigued me was from Canada. A Mr. Eric McQuade, of Canada, sent by post a pair of Fighters (*Betta splendens*), and I was delighted to note that he received a first and a sixth with his two fish. The fish were sent by special post to Mr. Brian Baker, the Show Secretary, who immediately floated them in a tank prepared beforehand. Eric McQuade also donated the fish to an interested aquarist. It seems almost a miracle that these two fish travelled in a small plastic bag such a distance with apparently no harmful results. I would like to congratulate the owner of the fish on his enthusiasm.

There were visitors from all over the British Isles and from overseas, and they had plenty to attract them all the time. Once again the marine tropicals exhibited by the dealers attracted a large crowd for the whole time, and indeed some of these fish appeared to be out of this world. I heard remarks from visitors who could not believe that they were real fishes. The very fine Koi at the dealers' stands were also admired and some of them were very finely coloured and the British Koi Association were inundated with inquiries at their stand.

Very many coaches arrived with Aquarist clubs from far and near and with such grand weather I feel sure that the journeys were well worth the effort. The attendance was larger than ever and especially on the Sunday many visitors were ranked four deep round the dealers' stands. These stands are always a great attraction as they can supply practically all the needs of the aquarist, whether it is in the form of tanks, equipment, books or foods. This year the dealers were grouped mainly all round the perimeter of the hall which gave much more open space near the centre for visitors to walk and inspect the rows of tanks.

Besides the stands of the dealers there were exhibits from the following Societies:—The Goldfish Society



of Great Britain; The British Koi Keepers Association; The British Cichlid Association and the Fancy Guppy Association. Their fine stands with exhibits added to the general interest and their particular followers were glad to have the opportunity of conversing with the occupiers of the stands.

There were also non-competitive exhibits from Broad Green Aquarium; Anglo Aquarium Plant Co.; and Greenery Limited. The organisers were also very pleased to have a last-minute request from Peter Stott, of Goodmayes, for permission to exhibit a number of reptiles and amphibians. The display which was put on was most attractive and thoroughly

admired by visitors. Another feature, which appears to be coming well to the fore these days, was the class for Aquascapes. Most of these were very well constructed and added to the general interest.

I must place on record the splendid work carried out by the show secretary, Brian Baker, and his band of stewards. Without these dedicated aquarists no show would be possible but their keenness in the hobby can be well appreciated by anyone who has had anything to do with exhibitions of fishes. I am sure the ladies in the group did a sterling job as it was no light task to get all prizes and award cards ready in time for presentation. I did not realise what this meant until I was asked to

THE AQUARIST

announce the winners over the 'Mike' at the presentation. As there were forty-one classes with six awards in each class one can imagine that I was rather dry at the end.

The Federation of British Aquatic Societies was responsible for the classification and running of the

exhibits and its stand provided a mine of information for many aquarists. The Federation's list of associated societies and the numerous badges of the clubs made an imposing array, and the Federation is to be congratulated on its efforts both in the general exhibition and its stand.



Mr. H. De Bruin of the British Koi Keepers Society examining some Koi eggs belonging to Mr. Ken Fawcett, (left) President of the BKKS.



Mr. H. Watts of Hendon A.S. receiving his award from David Attenborough during the presentation ceremony on 'The Aquarist' Stand



The Aquarist Stand had a constant supply of enquirers

Part of the dense crowd which thronged the hall throughout the Exhibition



From a Naturalist's Notebook

by Eric Hardy

IN SCOTLAND recently, I visited the sphagnum-bogs and pools on Rannoch Moor for Britain's last haunt of the rare semi-aquatic plant the Rannoch Rush, *Scheuchzeria palustris* which, until 1940, grew on Shropshire's Welshampton Moss, near Methven in Perthshire, until 1896 on Wybunbury Moss, Cheshire, and until 1932 on Ceckby Carr, near Thirsk, in north Yorkshire. I've visited Rannoch before, but never found it so wet and boggy as this summer. By road, one long way is the A82 Glencoe Road from Glasgow and Callander to the roadside Loch Ba, in Argyle, where the black-throated divers nest, and a fairly good, if wet, path along its north shore, and a long, long way east. Or nearer by slow, but scenic Mallaig and Fort William train from Glasgow Queen Street to Rannoch Station, for the Perthshire side of the moor. Or the B846 from Kinloch Rannoch and Pitlochry.

It isn't a true rush, but its long narrow leaves, less than a foot long, resemble one though it bears a spike of small, starry, yellow-green, 6-petal flowers in early summer. It flourishes in pools among the marsh-andromeda, bog-myrtle and water-lobelia, and has been found in central Ireland. The interest is that it is the only British member of this northern genus in arctic marsh plants, a relic of pre-glacial times. *Vallisneria* is its nearest relative.

Prior to this, on a week's fieldwork in Lakeland, I was interested to find the so-called water hog-louse *Asellus aquaticus* come through the tap with the drinking water at Coniston, probably encouraged by algal growth in the mains. This freshwater crustacean is rapidly replacing *A. meridanicus* which was formerly the commoner species in south Lakeland. The sedge *Cladium mariscus* grows in Cunswick Tarn, while bog-bean flowered freely at the blackheaded gullery pools on Lower Oxen Fell, beyond Yewdale. Britain's highest haunt of this sedge is Sunbiggin Tarn, below the Selaginella clubmoss at Orton Moor, between Tebay and Kirkby Stephen, where it grows with bog-rush and slender and common spike rushes, as well as with the freshwater shrimp *Isonychia lacustris* which is confined to small lakes and forms food for its trout. The American slender rush *Juncus tenuis* found at Thirlmere in 1906 is still extending its range. Two uncommon natives are the mountainous *J. alpinus* at Cumberland's East Side Tarn and the lakeside *filiformis* on the shores of Coniston, Esthwaite, Crummock, Derwentwater, Bassenthwaite and Buttermere, though now exterminated at Thirlmere.

A wealth of pondweeds range from lesser *Potamogeton pumilus* and hornwort in Esthwaite and Windermere, to tall, slender *berchtoldii* there and at Coniston, Derwentwater, Bassenthwaite and Ullswater, and the grassy *obtusifolius* in Grasmere. Bog-pimpernel skirts Elterwater and floating bur-reed is in the mountain tarn above Grasmere. Ennerdale, one of the least hospitable lakes to waterlife, is England's only haunt of the freshwater shrimp *Mysis relicta*, of marine origin and of the tiny copepod *Limnocalanus macrurus*.

Most tarns are girt with sedges, a thick sward of shoreweed filling the shallows with water-bugs and beetles. Then, in open deeper water, the broad, oval floating leaves of *Pot. natans* form resting places for the red dragonfly *Pyrrosoma*. The depths have water-milfoil, home of caseless web-spinning caddis *Holocentropus dubius*, free swimming larval mayfly or "Lake Olive" *Gleone similis*, and the blue dragonfly *Enallagma*. The spider *Aranea cornutus* is common around marsh reedbeds and the northern wolf-spider *Lycosa agricola* occurs by river and lake verges.

Lakeland rivers harbour 80 per cent of British stonefly species, 66 per cent of the mayflies including *Protonemura montana* (a comparatively recent addition), and 56 per cent of the caddis-flies. A small stream near Coniston is Britain's only haunt of the caddis *Glossosoma intermedia* whose large case is rounded at the top and flat beneath.

Yellow balsam marks the banks of Rydal, Ambleside and Bowness streams and water lobelia is in Brathay and Rothay, viviparous fescue grass at Aira Beck, marsh St. John's wort in the Duddon Valley and lesser wintergreen and filmy ferns at Stock Gill Force.

Motor-boats reduced the once famous rise of green drakes, the first winged dun of the common mayfly, on Windermere and Derwentwater; but Bassenthwaite has been spared the petrol invasion and Ullswater has a phenomenal evening rise. In 1960, *Stenelmis canaliculatus* was discovered as a new British water beetle in Windermere, near Ferry House. Windermere, Coniston and the River Brathay harbour the large caddis *Athripsodes nigroervovus*. Even in high tarns, the spiral vegetable cases of the caddis *Phryganea obsoleta* with three bands on its head are in Grizedale Tarn, near Helvellyn's Dollywagon Pike. Lower down, its relative *veria* is in Moss Eccles and Bore Tree Tarns and *striata* appears in Bore Tree as well as Windermere, whereas *Traumatodes bicolor* and *Molanna angustata* (whose tube has lateral extensions) inhabit high

and low waters, the latter in Bore Tree (high) and Esthwaite (low). The rare *Limnophilus xanthodes* inhabits Blelham Bog in quantity.

The shallow lakes hold most interest for the plant-hunter, like Esthwaite where a footpath opposite the Grizedale lane beyond Hawkshead leads one to its North Fen where bog-myrtle, *Sphagnum* and *Molinia* spread out to the lake with its grebes, mergansers and Canada and grey lag geese. Here grows the wiry, pale green, brittle and submerged *Hydrilla lithuanica* (syn *Blodea nuttallii*) in about 8 ft. of water, with the slender naiad which is more branched above, with shorter internodes, lesser and grassy pondweeds and autumnal starwort. It also grows near Renvyle in Connemara and in 1950 was found in south-west Westmorland and previously at Crossens in Lancashire, all introductions.

Though *Hydrilla* grows in Germany and Lithuania, there is no evidence that migratory wildfowl brought it here, as its discoverer, Persall, suggested. Botanists too often attribute the appearance of isolated aquatic plants to wildfowl instead of to aquarists. Another big *Sphagnum* bog at the north-west end of Blelham Tarn, not far away, is a haunt of white-beaked and downy sedges, great sundew and the true swamp or raft spider *Dolomedes fibriatus*.

Quillwort grows on the stony bed of Coniston Water below Brantwood, and in Hawes Water, though

books often imply that it is always a mountain plant. Its smaller relative *echinospora* joins it at Derwentwater. I noticed globe-flowers, which aren't always mountain-flowers either, among the bistort in the north-east bank of Coniston—and beside some lochs in Scotland near the new Highland Way from Fort William. Sand leeks are in the banks of Windermere, bog-pimpernel, marsh-orchids, twayblade, Solomon's Seal, saw-wort, etc., around Grasmere. Ullswater's shores have the variety of lesser meadow rue called *majus* at Pooley Bridge, as well as yellow loosestrife and floating bur-reed. Water-lobelia pokes its pale lilac flowers out of Derwentwater, Windermere, Rydal, Coniston and Ullswater. Bogbean grows so high as Glanamara in Cumberland.

The original site of purple-dotted American yellow loosestrife, *Lysimachia terrestris* was built upon at Bowness, but it flourishes at the south end of Windermere. American monkey musk, found at Howtown in 1906, is now widespread by Lakeland streams.

The highest tarn in Lakeland, Broad Crag on Sca Fell is 3,746 feet up. Most of them have diatomaceous deposits. 25 species of mayfly dance over its lakes and rivers. 20 different dragonflies are here and on hot July days you may see the southern *Aeschna cyanea* attack the dark green fritillary butterflies on Hampsfield Fell, near Grange-over-Sands.

Bacopa

by Philip J. Brown

ONE of the more popular groups of background plants kept in both the coldwater and tropical aquarium today is the genus *Bacopa*. It is a genus of swamp plants belonging to the Family Scrophulariaceae, a family of which only *Bacopa* is used in any numbers.

They are all easily cultivated and prove to be hardy growers. Flowering may occur but this is rare unless they are grown in conditions close to those in their natural habitats. *Bacopa* species prefer good light whilst growing submerge but a more shaded one once they become emerge. They thrive best at room temperature but will grow at a range of from about 60-80° F. At high temperatures the leaves will become very flaccid and the whole plant may be easily damaged. The normal tropical aquarium temperatures seem to have little effect upon these plants. It prefers water that is not too hard and will bloom more easily in such conditions.

A substrate of clean sand with a little clay will produce strong plants. It should be remembered that this is a genus of swamp plants and all of this group will thrive better in such conditions.

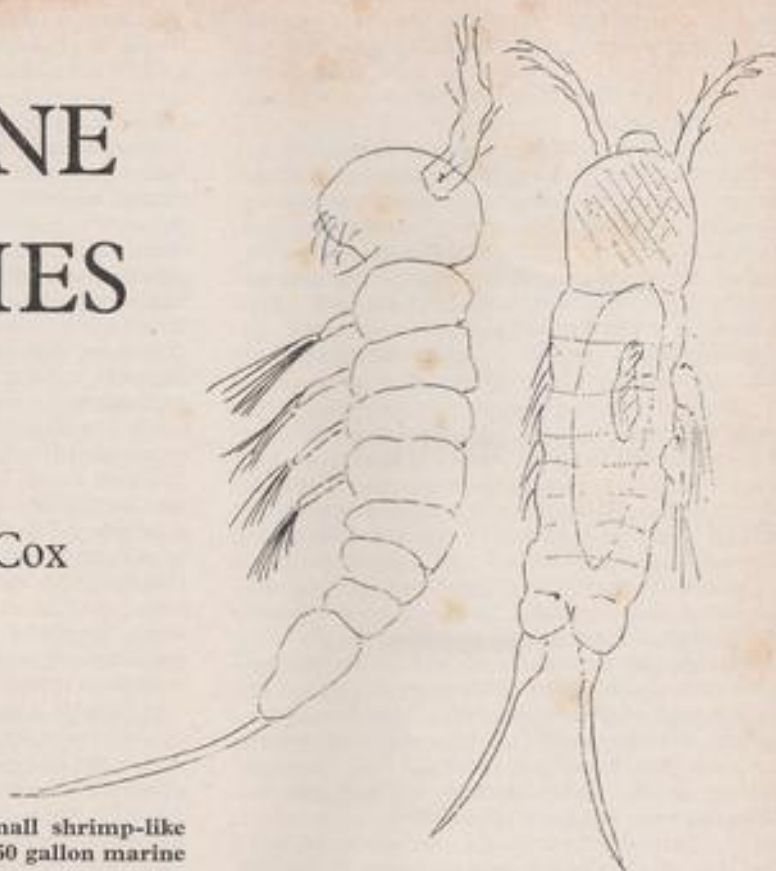
Bacopa caroliniana (Walt.) Robinson (sometimes called *B. amplexicaulis* (Pursh) Wettstein).

This is the most popular species of *Bacopa*. It comes from marshy regions on the Atlantic coast of Southern and Middle America. It can grow up to twenty inches or so in height and will often reach fifteen inches in a well lit aquarium. It has rather brittle stems that often bend slightly upwards especially when it has reached a fair height. They bear opposite oval leaves which, like the stems, are bright green in colour. The leaves often droop, especially in older plants, and in mature specimens they can measure up to three quarters of an inch in length. They will be

Continued on page 220

MARINE QUERIES

by
Graham F. Cox



Attached is a sketch of a small shrimp-like creature that is thriving in my 50 gallon marine tank (approx. size 0.5 mm.).

The tank temperature is 80°F and I am using a power-driven U.G. filter (turnover approx. 300 g/h) and has been set up some nine months using "Synthetica Salt."

The occupants are three assorted butterflies, one cleaner wrasse, one cardinal, two yellow-tailed blue damsels and a clown, all in good health. They seem neither troubled by, nor interested in the smaller occupants, who periodically shoal onto the front glass like a cloud of dust and then disappear from sight again.

The small creatures are between one-sixty-fourth in. and one-hundredth in. long, very mobile and only really noticeable when a few hundred of them gather on the front glass.

I have tried a dosage of "Cuprazin," but it seems to have had little effect on these uninvited guests.

The question is:—

1. What are they?
2. Are they doing any harm in being there?
3. If they are harmful, how do I get rid of them?

These creatures probably originated from either a hatching of brine shrimps, or were guests of a mussel or prawn (both of which had been deep frozen).

It is apparent from your drawings that the creatures which have established themselves in your marine aquarium belong to a family of microscopic and near-microscopic crustaceans called Copepods.

There are already many different species of copepods known to the biological sciences, many of which are so alike that only a trained specialist in their recognition and identification is able to differentiate between them.

Some of these tiny creatures are *saprophytic*, i.e. feed on non-living organic matter such as dead fishes and plants. Others are definitely *parasitic*, i.e. they infest living fishes and other aquatic animals, and feed on the still-living tissues—invariably to the detriment of the host animal. Yet other species of copepods appear to be in a state of evolutionary flux. This is to say that either they were (a) parasitic copepods which are in the process of evolving a free-living mode of existence, or (b) they were saprophytic copepods which are degenerating increasingly into a parasitic mode of

behaviour. To further complicate the issue, there are many species of copepods which are free-living but non-saprophytic, i.e. they feed on living animals and plants (i.e. algae and diatoms) which are even smaller than themselves.

In the *Aquarist and Pondkeeper* of March, 1971, I dealt with a query from a marine aquarist who said that *Recently all my butterflies and angels have gone off their food and spend all their time hanging dismally in corners, occasionally jerking convulsively as if to try and get rid of something on their flank. Twitching and scraping are almost continual. I have tried copper sulphate at a dangerously high level . . . no result. Not even "Cuprazin" gives more than temporary relief.*

I had personally lost a beautiful specimen of *Euxiphipops neverchus* (majestic angelfish) only a few weeks before receiving this particular marine query, so I recognised the symptoms immediately. However, I made it plain in a detailed two-page reply that I was unable at that time to isolate the causal pathogen, and neither could the staff of a famous Pathological Research Laboratory to whom I had sent infested specimens. A few months later, however, Mr. Ray Mayer of *Mayer Aquatics*, Bedworth, near Coventry did succeed in isolating the pathogens by the novel and necessarily unhygienic method of suspending a piece of raw steak in one of his tanks overnight. The following morning the piece of meat was removed from the tank and shaken into a test tube of unused synthetic sea water. Mr. Mayer later reported to me that within a few seconds, the sea water in the test tube was swarming with hundreds of just-visible creatures. A small culture of these creatures were sent to me and I was then able to identify them as copepods. Juvenile specimens of *Chaetodon auriga* and *Pomacanthus semicirculatus* living in a newly matured tank of "Natural" sea water were deliberately infested with sample Crustaceans. Within a few days both the "guinea-pig" fishes were showing what we have now come to recognise as the classic symptoms of copepod infestation.

I described these symptoms and the subsequent effect in 1971 as follows:—

The manifestations of the disease in question appear to be severe dermal or sub-scale irritation, producing chronic jerking, scratching movements against shells, rocks, corals, etc. This irritation may become so severe as to cause a butterfly-fish or angelfish which is in the terminal phases of the disease to completely dislocate some scales over a wide area of the body, thus exposing the underlying unprotected tissues to massive broad spectrum pathogen attack, etc.

From March, 1971, till recently, I have pursued a cure for these apparently indestructible parasites. Certainly "Cuprazin" has no effect on them and one wouldn't reasonably expect it to since it was originally formulated as a medication for use against protozoan

pathogens, i.e. *Cathyocaradon irritans*, *Oodinium*, *Benedenia* and *Ichthyophthirius*. Ozonisation of an infested aquarium similarly produced no improvement in the situation. The only ways I discovered of combating copepods in those early days was by means of heavy ultra-violet irradiation of the aquarium water and/or freshwater baths. Unfortunately, the former method involved the use of expensive equipment, and the latter was often as lethal to the sufferer as to the cause of the suffering. Once the parasites had been identified as small crustaceans, however, the problem became relatively simple. I slowly worked through a list of crustaceacidal/insecticidal compounds, but found that most were unsuitable owing to high-toxicity, resistance to bio-degradation (and therefore necessitating a water change on completion of cure) or ineffectiveness. Until recently we had most success with an organo-phosphorus compound which we told many enquirers about. Effective though this compound was, the borderline between its destructive effect on copepods and that on fishes was so narrow as to cause us to discontinue experimental work with the product. Eventually we found two compounds which had a pronounced synergic effect on crustaceans without being dangerous to fishes or invertebrates (except crustaceans of course) if used strictly as directed. This medication is now marketed as "Sterazin."

Since producing "Sterazin," we have found it to be effective not only as a means of destroying free-swimming marine copepods but also against their freshwater relatives such as *Lernae* and *Argulus* which parasitise tropical fishes, goldfishes, orfe and Nishiki Koi. The symptoms in these fishes are the same as for coral fishes, i.e. continual flicking and twitching actions coupled with occasional scraping on the gravel or rocks. These same symptoms are, of course, manifested in the early stages of other diseases, *Oodinium* particularly, but in the case of the latter disease, the flickings are always accompanied by a corresponding increase in respiratory rate from the normal rate of 80-100 gill beats per minute up to 100+ g.b./min. Under these circumstances a normal course of "Cuprazin" would eradicate the *Oodinium* protozoan parasites.

On re-reading your letter, I feel that you already suspect that these "uninvited guests" came into your aquarium along with sea-food. In my experience even deep-freezing does not destroy the eggs of these creatures although it may well destroy the adult and larval forms. I would suggest that all dead sea-foods be boiled before feeding to fishes and/or marine invertebrates, whilst living mussels should be kept in a solution of "Sterazin" at four times the stated dosage for three-four days before being used as food. This massive overdose doesn't appear to worry the mussels one iota but renders them copepod-free.

Copepods appear in an aquarium usually after a spell of prolonged over-feeding. The aquarist then notices

these creatures swarming in his aquarium and promptly cuts back on feeding to a more sensible level. For a while the copepods remain happy eating the backlog of decomposing uneaten food, detritus and faeces in the aquarium. Eventually, however, a stage is reached where, due to the tightening-up of the aquarists' feeding regimen, the copepods, which by now may number hundreds or even thousands, exhaust all the waste food. Rather than just lay down and die, it appears to me that these resourceful creatures simply turn their attention to any source of available organic matter in the aquarium. I have known cases where hordes of ravenous copepods have turned well-matured corals, rich with green, red and brown algae pure white overnight—so rapacious is their appetite. Having eaten all the algae in a tank they (the copepods) then turn their attentions to the fishes in the aquarium, although the fishes are sometimes attacked prior to the algae.

The species of coral fishes which undoubtedly suffer the most from the depredations of the copepods, skin and gill flukes are the members of the family *Chaetodontidae*, i.e. the angelfishes and butterfly fishes. Fishes in the genera *Hemichus*, *Forcipiger*, *Chaetodon*, *Pomacanthus*, *Holocanthus*, *Eucichthys*, *Centropyge*, *Pygoplites*, etc., all have relatively large and loose scales compared with coral fishes such as the surgeons, tangs, batfishes, triggers, etc., etc. Unlike the wrasses and parrot fishes (which also have relatively large scales), the *Chaetodontidae* have no thick protective mucous in which ectoparasites like copepods and flukes can become ensnared. However, as many aquarists will testify, even this mucous "armour" is not always proof against large-scale copepod attack. I have even known *Labroides dimidiatus* (the cleaner wrasse), which normally make at least a partial living on the reef by detaching the parasites and eating them, become severely infested by copepods.

"Sterazin" is extremely effective against copepods, skin-flukes and gill-flukes, but because of its extraordinarily active nature due to its twin-component synergic formulation, the following precautions must be taken when using it:—

- (a) Avoid all skin contact with the drug.
- (b) Estimate the tank gallonage very carefully and make generous allowance for rocks, corals, shells, gravel, etc.
- (c) Although a full 10-day treatment is necessary to destroy some of the many species of pathogens involved, when the symptoms, i.e. twitching, flicking and scratching subside, suspend the treatment immediately. After seven days have elapsed since the final "Sterazin" addition, add one more "mopping-up" dosage at the normal rate.
- (d) There is no need to do even a partial water-change after using "Sterazin" as the product is

bio-degradable, i.e. it is broken down naturally by microbial and plant activity within the aquarium.

- (e) All charcoal filtration should be suspended whilst the medication is in use as highly-activated marine charcoal such as "Seacoal" and the "Eheim" power filter charcoals for saltwater quickly remove "Sterazin" from solution.

We are often asked if "Sterazin" can be used in a sea aquarium containing invertebrate animals and marine algae. The answer is a very definite YES in both cases (i.e. invertebrates and plants), EXCEPT that even large crustaceans such as boxing shrimps, hermit crabs, mantis shrimps are killed by "Sterazin" and so these hardy creatures should be floated in a glass or plastic container in the aquarium for the duration of the treatment. In the lengthy period of time for which "Sterazin" was under development, the following control animals were exposed to "Sterazin" at double the stated dosage for eight week periods with no ill-effects: Anemones (*Radianthus* spp. *Stoicactis* and *Discosoma*), living corals, feather-duster worms, sponges, cowries, clams, flame scallops, conches, starfishes, brittle-stars, crinoids, octopus, sea-urchins. None of these animals appeared to suffer in the slightest degree during the treatment and all continued feeding normally. Marine algae in the test aquaria were actually stimulated into additional growth as the "Sterazin" decomposed in the system.

Repeat warning: Crabs, shrimps, lobsters, prawns, barnacles are all killed by "Sterazin" at the stated dosage.

Whilst doing water-changes on freshwater tropicals and koi, goldfish, etc. I have often observed that the fishes begin to flick on stones and plants, etc. I now realise that the chlorine content of tap-water is an irritant to freshwater crustacean parasites as well as gill-flukes, so we now successfully use "Sterazin" to destroy these debilitating parasites on freshwater fishes as well as on marines. In addition, the parasites of the head region which so often attack *Symphysodon* (discus) spp. are also destroyed by "Sterazin."

To date cultures of the following parasites have all been destroyed by the use of "Sterazin" at the stated dosage:—

Argulus spp. *Caligus spinosus*, *Cleidodiscus* spp. *Dactyogyrus* spp. *Ergasilus sieboldi*, *Erpobdella punctata*, *Gerris* spp. *Gyrodactylus* spp. *Icthyophthirius* spp. *Illinobdella moorei*, *Lernae* spp. *Philometra* spp. *Piscicola salmositica*, *Piscicola geometra*, *Plazobdella parasitica*, *Theromyzon* spp. *Trichodina* spp.

It will usually be observed that the twitching and flicking symptoms so characteristic of both copepod and fluke infestations are exacerbated by this new therapeutic solution. However, as the death-throes of the parasite subside, so does the aggravation caused

to the host and scratching activities become less and less pronounced as the therapy takes effect. Indeed, heightened irritation on the part of the host—fish shortly after the "Sterazin" is added to the aquarium may be taken as confirmation of the aquarist's diagnosis that copepods and/or flukes are the cause of the malady.

During, and for some time after the usage of "Sterazin" the diet should have a high protein and vitamin content, but be equally low in carbohydrates and roughage. Chopped liver, earthworm or well-washed Tubifex worms are ideal sources of protein and the high-vitamin concentrate—"Seavita" should be used concurrently as follows: Dissolve one whole packet of "Seavita" crystals in a pint of cold tap-water. Refrigerate this stock solution continuously when not in use. Add one tablespoonful of the stock vitamin solution to each 10 gallons of aquarium water once

every three days, until full appetite colour, and vigour are restored. Previous users of "Seavita" will note that this convalescence dosage is in excess of the normally prescribed level of use.

It will be seen from the early part of this text that the frequent cause of copepods and flukes establishing themselves in an aquarium in the first place is over-feeding. More experienced marine aquarists will forgive me for yet again stressing the dangers inherent in careless, sloppy feeding. Let me repeat that in the sea aquarium an ounce of prevention is worth more than a ton of cure.

Finally, it will be obvious that any fish offered for sale which is continually scratching should not be purchased in the first place, as there is thus a risk of populating an otherwise clean and hygienic aquarium with unwelcome parasites.

Bacopa—continued from page 226

found to be slightly arched and on the underside small hairs can be detected. These very fine glandular hairs give the underside of the leaves a rather oily sheen. Roots grow from the base of the plant but will also be found to be growing downwards from the leaf axils into the substrate. New plants and flowers branch upwards from these leaf axils towards the surface of the water. These offshoots tend to develop into new plants when the stem is underwater; flowers when the stem has become emerge. New plants on submerge stems can be replanted into another part of the aquarium when they have reached a size of about two to three inches. As with adult plants, these offshoots should ideally be cultivated first as bog-plants and then later transferred to the aquarium. However, for the ordinary aquarist with no such special facilities, specimens of two or three inches will often take in undisturbed parts of the aquarium. Offshoots will usually be ready to be planted out when roots are growing from where the new plant joins the old stem.

If growing emerge these stems will produce blue or lilac flowers (rarely white) from the leaf axils. These flowers have four petals and are dark inside with white stamens.

Like all *Bacopa* species, it is best grown in a bunch to give a bushy appearance.

Bacopa monniera (Linné) Wettstein.

From the tropical and sub-tropical parts of Africa, Asia, America, and Australia comes the less common *B. monniera*. It is generally a smaller plant growing to about fifteen inches. The leaves are smaller with oval to spatulate leaves, these being arched like *B. caroliniana*. It has no hairs on the underside of its leaves these being on the upperside. Because of these hairs this side shows a more oily sheen than the underside of the leaf. It flowers only when the stem is emerge and produces small white or pale blue flowers that grow

from the leaf axils.

It can stand a greater range of temperatures than *B. caroliniana* and is suitable for both the cold and tropical aquarium. It should be noted that rarely will any of the *Bacopa* species transplant totally successfully from, say, a cold aquarium to a tropical one and care should be observed when buying to see what type of conditions they have been kept in. Like the former species, it is propagated by cuttings.

Bacopa myriophylloides (Bentham) Wettstein.

This species comes from Brazil and doesn't resemble either of the other two species very closely. It is a small plant with whorls of short spiky leaves that tend to curl upwards. It is a pale to mid-green in colour tending to be darker out of the water. Like the other two species, it can be grown in either the cold or tropical aquarium and in good conditions will grow emerge. *B. myriophylloides* is an attractive plant that looks well in small groups situated amongst rockwork, etc.

Another even rarer species is *B. reflexa* (Bentham) Edwall from the tropical regions of South America and the West Indies. It is seldom seen in aquarists shops in this country and resembles *B. myriophylloides* more than the two other species. Colin D. Roe has described it as looking like a "rather weak and weedy *Myriophyllum*" and this is a good description of its appearance. It is reported to produce mauve flowers but few aquarists will have a chance to see these due to its scarcity.

The genus *Bacopa* is a good one for the aquarist, the species being generally hardy and able to tolerate a wide range of conditions. However, the stems tend to be a little brittle and care should be taken when planting. All of the species are fairly cheap and make good background plants that provide a change to the whorls of *Cabomba* or the thin erect leaves of *Vallisneria*.



THE LAKE OF THE TERRAPINS

by Henry Tegner

THE NEW TOWN of Nueva Andalucía is on the coast road between San Pedro de Alcántara and Marbella on the banal Costa del Sol. It has its four-star hotel, brand new bullring and quite magnificent and extremely expensive golf course. Behind the course, and in the shadow of the Sierra Blanco lies the Lago de las Tortugas. It takes some finding as it is up a rough track through which the backbone of Spain appears to erupt after heavy rain. Ubiquitous multi-storey hotels are beginning to rise within view of the old wooden sign which points in the direction of the Lago de las Tortugas.

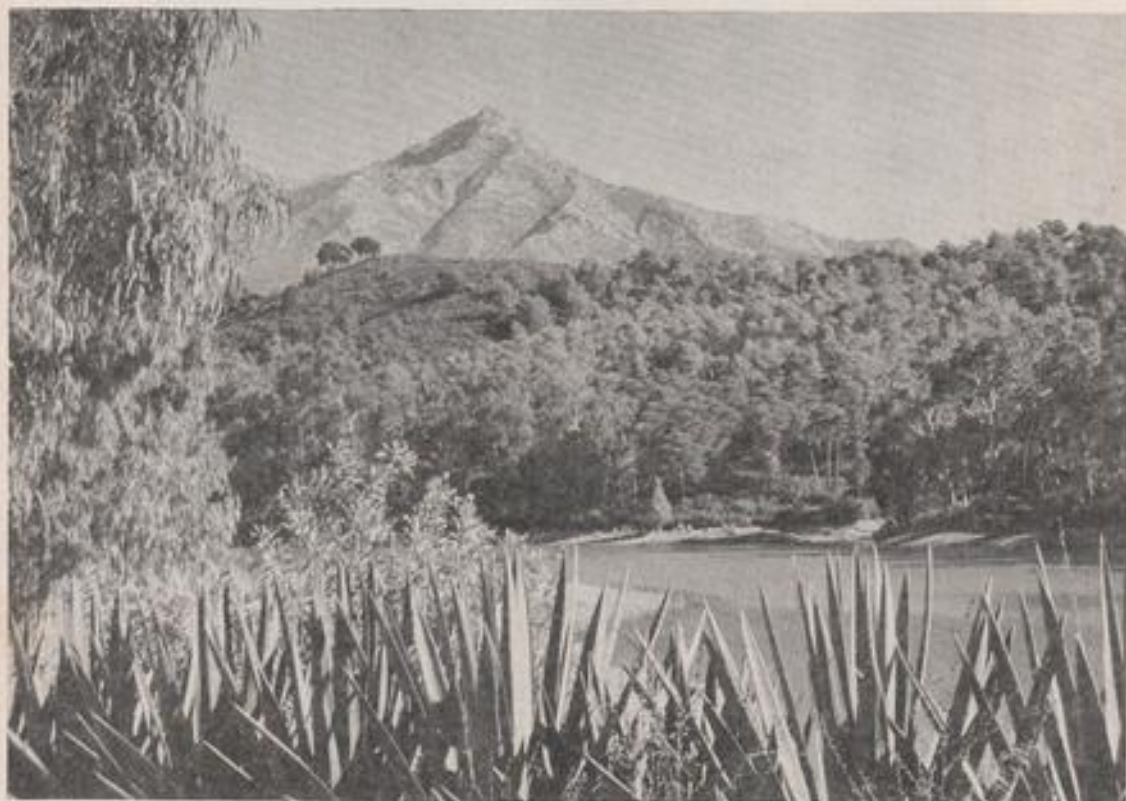
I came across the sign whilst searching for booted-eagles in the still unspoilt and lovely foothills of the

majestic Sierra Blanco. The pond, for it is scarcely more than that, has been formed in the past by the damming of a trickle which eventually leads into the Mediterranean. The Lago is oval in shape and its waters are the colour of *café au lait*. Twice I went to the pond to find it bare of all wild life except for two very wary water wagtails. Then one evening after a day of warm sunshine I went up to the Lago once more. Tall eucalyptus trees come down to its western shore, the stripped bark from which covered the earth like some criss-cross woven mattress. Across the pond's muddy waters Corsican pines sprouted amidst a dense undergrowth of various shrubs, small palm trees and

genista. Without being precipitous, the verges of the eastern shore are steep. I found a comfortable enough seat on the natural mattress beneath a great eucalyptus. There was not a breath of wind and the sun was beginning to set towards Gibraltar. Its last rays still shone on the steep banks opposite my seat beneath the pleasantly odoriferous eucalyptus.

Suddenly, I saw what appeared to be an oval shaped stone move on the eastern shore. From out of the stone emerged a long snake-like head. It was my first view of a terrapin. As I watched through my field-glasses the reptilian forms came out of the water to

big eucalyptus, the voices of the two sightseers were harsh and loud until they came in view. The man's light-blue jersey and the woman's scarlet jacket struck a strident note in the umber surroundings. The terrapins, across the water, now became greatly activated. They slid down the banks towards the Lago's muddy water exactly like a lot of alerted grey seals diving for safety. The noise of their going and the plops of their immersing interrupted the clamour of the human invaders. What surprised me as much as anything about these freshwater tortoises was their extreme wariness and speed when once disturbed,



scramble quickly up the steep slope. Slimy when they first left the muddy water, their shells seemed to dry in seconds in the sunlight. Scuttling in groups of five and six individuals, they somehow reminded me of coveys of brown partridges. It was, I think, their colour and their long necks and beak-like heads which gave this impression. By now there were between thirty and forty terrapins on the bank opposite. Most of them had become largely quiescent. They appeared to be enjoying a last sun bath in the rays of the fading sun.

As I watched from my observation post beneath the

Back in the waters of the Lago de las Tortugas a solitary head would appear above the water's surface like a periscope on the lookout for some potential enemy.

The sightseers now passed close to where I sat. They still chattered incessantly whilst staring steadily over the now nearly black waters of the pond, for with the disappearance of the sun the surface had darkened. I do not think they ever saw me or any terrapins. I never discovered, for I got up quietly from my seat on the eucalyptus mattress and walked through the woods to where I had left my SEAT sicento.

NOTES ON DEVELOPMENT AND BEHAVIOUR OF *Haplochromis burtoni*

by Jorgan & Pamela Hansen

IN THE JANUARY 1972 edition of *The Aquarist and Pondkeeper* we dealt with identification and spawning of *H. burtoni*, so those topics will be more or less avoided here. It should suffice to say that *H. burtoni* is a mouthbrooder, originating from various lakes and rivers of East and Central Africa. The most widely-known of these are Lakes Victoria and Tanganyika, but *burtoni* are also to be found in Lakes Albert, George, and Edward, in the Albert Nile river, and in the Al-bahr-al-Jabal river in the Sudan.

As a point of interest, *H. burtoni* is presumably named after the English explorer Richard Burton (1821-90), famed for his *Arabian Nights* translation and for, among others, the expedition with Speke which led to the discovery of Lake Tanganyika.

Mouthbrooders are always exciting to keep: they indulge in spectacular battles, and one never knows when a mouthful of eggs is suddenly going to appear. In our mouthbrooder tank are to be found 8 *H. burtoni* (1 male and 7 females), 5 *Tilapia mossambica* (3 males and 2 females) and a pair of *Pseudotropheus elongatus*. It is advisable to have several females of the species for each male (hence the 1 male and 7 female *burtoni*), as in this way there are almost always eggs and young, and never a dead female. If one has only 1 male and 1 female, then it often occurs that the male kills the female if she is unwilling and can't escape his attentions; in the case of there being 2 or 3 males to the 1 female, which is even worse, the males also attack each other, perhaps with fatal results.

For this reason it is also important to provide a spacious tank containing an adequate number of caves or other hiding-places. In the right-hand side of our mouthbrooder tank (95 x 40 x 40 cm.), at about 15 cm. distance from the front glass, we have built a 15-20 cm. high terrace with pieces of slate, which thus provide a multiplicity of cracks and caves large enough to conceal a fish 10 cm. in size. Along the back glass and right end glass, pieces of slate are stacked vertically, providing more caves and tunnels. Finally

along the left-hand side of the tank, artificial crevices have been built with the aid of large stones placed together. The area behind these stones is filled with gravel, and contains a large Amazon sword plant (*E. brevipedicellatus*), whose leaves hang over the stones and help to form hiding-places. On the surface float two types of plants, *Pistia stratiotes* and *Riccia*, which, however, need to be thinned frequently as otherwise they absorb too much of the light.

The light, from a 30-watt tube, is left burning for 16 hours a day, which results in a strong growth on slate and stones of green algae, which is then consumed by the fish. This growth of algae helps to re-create their natural environment, as mouthbrooders tend to keep to the rocky coast or bank of their respective lake or river, and devour the algae to be found there.

H. burtoni males are polygamous and spawn frequently with any available female of the species. Often up to 5 of our 7 females have eggs in the mouth at the same time. All the *burtoni* are from the first generation we ourselves have bred, so we were in a position to note the age at which they matured, namely 4 months, as after that period of time eggs were to be seen in the mouths of the young females. As we didn't then have much tank space, only one female was isolated in order to save the brood. It was small in number, in all 15. Later we obtained broods from the other females, which consisted respectively of 12, 22, 21, 13, 50, and 27 young. The female which produced the brood of 50 was 6 cm. in size as opposed to the others' 4 cm.

When a female with eggs in the mouth is to be moved, we net the fish, place her immediately in a small plastic jar, and transport her thus to the tank she is to inhabit until the young are released; if the fish is kept too long in the net she spits out the eggs. This can also occur if she is placed in water quite different (for example, in pH, DH, and temperature) from that in her previous tank.

NOTES ON DEVELOPMENT AND BEHAVIOUR OF *Haplochromis burtoni*

by Jorgan & Pamela Hansen

IN THE JANUARY 1972 edition of *The Aquarist and Pondkeeper* we dealt with identification and spawning of *H. burtoni*, so those topics will be more or less avoided here. It should suffice to say that *H. burtoni* is a mouthbrooder, originating from various lakes and rivers of East and Central Africa. The most widely-known of these are Lakes Victoria and Tanganyika, but *burtoni* are also to be found in Lakes Albert, George, and Edward, in the Albert Nile river, and in the Al-bahr-al-Jabal river in the Sudan.

As a point of interest, *H. burtoni* is presumably named after the English explorer Richard Burton (1821-90), famed for his *Arabian Nights* translation and for, among others, the expedition with Speke which led to the discovery of Lake Tanganyika.

Mouthbrooders are always exciting to keep: they indulge in spectacular battles, and one never knows when a mouthful of eggs is suddenly going to appear. In our mouthbrooder tank are to be found 8 *H. burtoni* (1 male and 7 females), 5 *Tilapia mossambica* (3 males and 2 females) and a pair of *Pseudotropheus elongatus*. It is advisable to have several females of the species for each male (hence the 1 male and 7 female *burtoni*), as in this way there are almost always eggs and young, and never a dead female. If one has only 1 male and 1 female, then it often occurs that the male kills the female if she is unwilling and can't escape his attentions; in the case of there being 2 or 3 males to the 1 female, which is even worse, the males also attack each other, perhaps with fatal results.

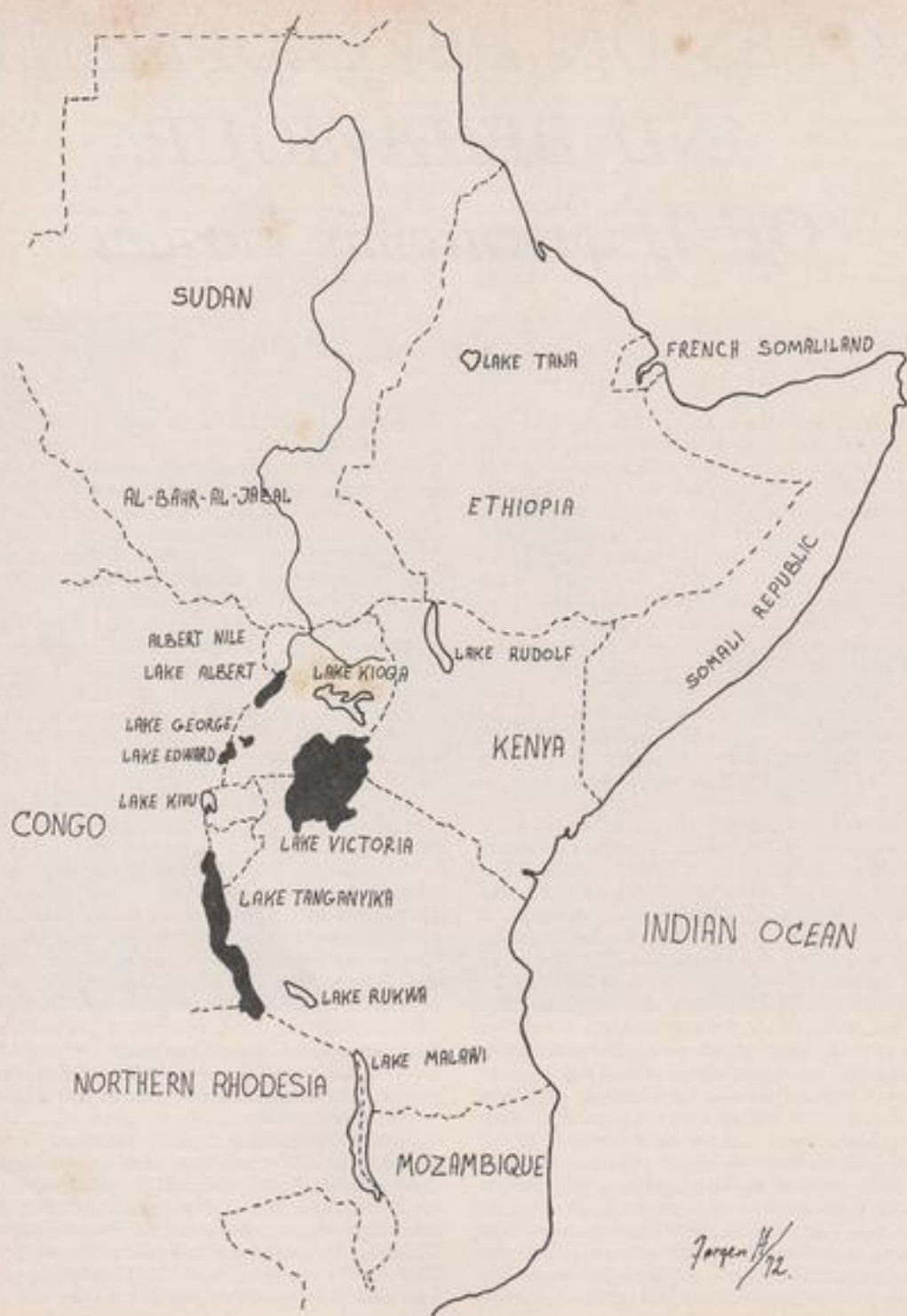
For this reason it is also important to provide a spacious tank containing an adequate number of caves or other hiding-places. In the right-hand side of our mouthbrooder tank (95 × 40 × 40 cm.), at about 15 cm. distance from the front glass, we have built a 15-20 cm. high terrace with pieces of slate, which thus provide a multiplicity of cracks and caves large enough to conceal a fish 10 cm. in size. Along the back glass and right end glass, pieces of slate are stacked vertically, providing more caves and tunnels. Finally

along the left-hand side of the tank, artificial crevices have been built with the aid of large stones placed together. The area behind these stones is filled with gravel, and contains a large Amazon sword plant (*E. brevipedunculatus*), whose leaves hang over the stones and help to form hiding-places. On the surface float two types of plants, *Pistia stratiotes* and *Riccia*, which, however, need to be thinned frequently as otherwise they absorb too much of the light.

The light, from a 30-watt tube, is left burning for 16 hours a day, which results in a strong growth on slate and stones of green algae, which is then consumed by the fish. This growth of algae helps to re-create their natural environment, as mouthbrooders tend to keep to the rocky coast or bank of their respective lake or river, and devour the algae to be found there.

H. burtoni males are polygamous and spawn frequently with any available female of the species. Often up to 5 of our 7 females have eggs in the mouth at the same time. All the *burtoni* are from the first generation we ourselves have bred, so we were in a position to note the age at which they matured, namely 4 months, as after that period of time eggs were to be seen in the mouths of the young females. As we didn't then have much tank space, only one female was isolated in order to save the brood. It was small in number, in all 15. Later we obtained broods from the other females, which consisted respectively of 12, 22, 21, 13, 50, and 27 young. The female which produced the brood of 50 was 6 cm. in size as opposed to the others' 4 cm.

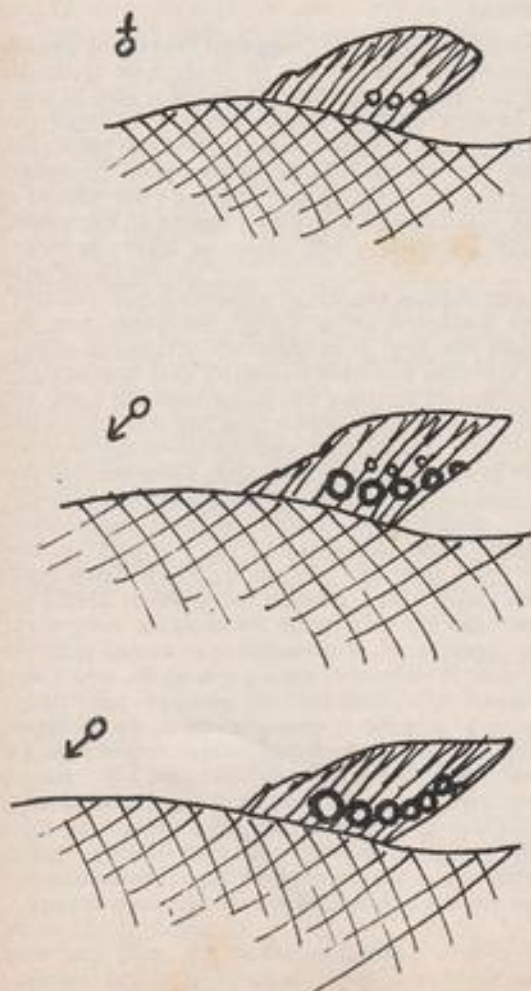
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the fry are quite capable of surviving on their own. It thus appears that the crucial period is limited to 5 days later, not one having died.

Later the same day the female repeated the sequence, but merely lay on their sides on the bottom of the tank. At this stage of development they were unable to move. At disturbed, collected the fry again into the mouth. When the embryonic fry were 10 days old, she spat them out, consumed some algae, and, when tank containing a growth of thread algae along the

Male & female egg spots

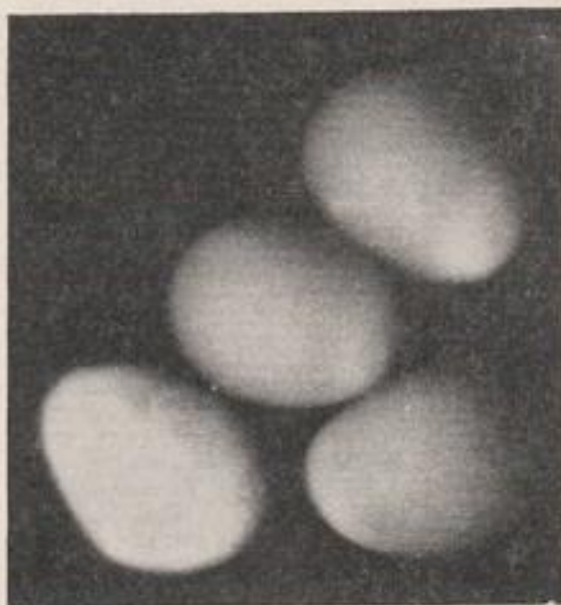


A large female with eggs was moved to a breeding-pattern occurred, for example, the following:

On several occasions a slightly different behavioural factors were involved.

enough condition before spawning, but perhaps other because the females in question were not in good Perhaps these broods were prematurely released swam freely.

removed the female, and three days later the young account of their large yolk-sacs, but in any case we first saw them we didn't think they would survive on in jerks, a couple of centimetres at a time. When we and tail were developed and the fish were able to move the same size as the original egg. Mouth, eyes, gills, over the bottom of the tank, their attached yolk-sac show any more interest in them. They lay spread from the mouth when only 12 days old, 15 days being On three occasions the young have been released

Eggs of *Haplochromis burtoni*

The eggs are relatively big, 2.2-5 mm, and slightly oval in form. They are orange-red in colour, more or less the same shade as the egg spots on the male's anal fin, and of a slightly lighter shade at one end than over the remaining area. They are also quite sensitive, and it is more difficult for the aquarist than for the *burtoni* female to care for them successfully. We have tried in vain to hatch artificially a spawning of 54 eggs. They were placed in a sterile 12-litre tank; on the second day after the spawning two small dark spots could be seen on those eggs which had not fungused; on the third day all had fungused.

provided, that is, that they are alone in the tank, and thus free from the danger of being devoured or harmed by other fish.

Already when they are released from the mouth and free-swimming the fry are large enough to take brine shrimp, *Cyclops*, and small *Daphnia*, but they also enjoy very much the different brands of dry food. They grow very fast on a varied diet and with frequent feeding. We have had very good results with tinned fishballs, cooked oatmeal embedded in agar-agar, and during the winter season, frozen *Daphnia*.

Both male and female have egg spots on the anal fin. The female has from 3-5 small indistinct egg spots in the same pattern or arrangement as in the male, but in the latter the spots are larger, from 2-3 mm., and the orange colour much stronger. In a brood that swam freely on 5.8.71, the first egg spots could be seen on 18.10.71, that is, 2½ months later: 2 spots could be seen clearly and a third was developing. On 18.1.72, when the fish were 5½ months old, we noticed that in some males what seemed to be 2 sets of egg spots had developed, the usual large ones on the upper part of the anal fin, and smaller ones below. Two fish had 4 egg spots above and 3 smaller underneath. Unfortunately both males died before we were able to observe the further development of their egg spots. We later discovered further males possessing this characteristic but disposed of the fish without taking notes on the subject.

The first male we owned had 6 egg spots when bought, but 2½ months later half of a further spot was to be seen, and a fortnight later the whole egg spot had developed. Seven months after purchase the development of egg spot number 8 was under way, when the fish was killed by a *Pseudotropheus elongatus* male as a result of their spending too long a time together in an unsuitable tank devoid of hiding-places. (The *burtoni* had, in any case, some lives on its own conscience—

its first mate, 3 black tetra, and 2 Hi-fin platy). The conclusion seems to be that after adequate observation of the species one could deduce the age of each individual according to its number of egg spots.

We have had some noteworthy experiences with regard to the effect of *burtoni* on plant life. In a 100-litre tank containing 130 *burtoni* we planted 20 small *E. magdalenensis* in newly-laid gravel and fresh water. Normally these plants grew sturdily and well, but now their growth was practically non-existent. Now and then a new leaf appeared but it grew very slowly and not to its proper size. There was no sign that the fish were actually eating the plants. Immediately the tank was vacated the plants began to grow normally again, whereas the plant-life in the *burtoni*'s new 170-litre tank began to suffer.

The fish began by eating all the *Sagittaria* and then the duckweed on the surface, but didn't touch the *Riccia* or *Pistia stratiotes*. From time to time they swam in a shoal up and down the tank to see if there mightn't just be a bite of *Sagittaria* left, and then it was the turn of the *V. spiralis* to be consumed, and this was strongly decimated. No new leaves appeared on the Amazon sword plant, although its original leaves were not eaten.

At this point 70 fish were sold and the remaining 60 were moved to a 180-litre tank with a considerable growth of *V. spiralis*. The plant life in the vacated tank as usual recovered, whereas the *V. spiralis* in the new tank stopped growing, although this time there was no sign that it was being eaten.

It thus seems as if *H. burtoni* has an adverse effect on certain plants, either by eating them or by excreting waste materials which the plants cannot consume. No other of our fish have had a similar effect on plant life. In a tank with a large number of *burtoni* it might therefore be appropriate to exclude, at any rate, certain plants.

See previous page

Figure 1: Anal fin of *H. burtoni* male, showing 6 completed egg spots and 1 under development.

Figure 2: Anal fin of *H. burtoni* male, showing a second set of 3 small egg spots below normal egg spots.

Figure 3: Anal fin of *H. Burtoni* female.



THE BRITISH AQUARISTS' FESTIVAL,

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Breeding Goldfish

THE FANCY VARIETY

by *Arthur Boarder*

I AM OFTEN asked about the various types of fancy goldfish and there seems to be some doubt among many aquarists as to what constitutes a fancy goldfish. There can be a difference of opinion here but for one type, the common goldfish, there is no doubt that it cannot be considered as a fancy variety. The only other type in question is the Comet. I would prefer to omit this fish from the fancies, but all the other varieties could be rightly termed fancy.

There are many different varieties, some of which are recognised by the Federation of British Societies, but many others have not yet been given a British name. I suppose that there are over a hundred varieties of goldfish, if one included all the varied forms which have been produced or which have happened by accident. Although it is known that goldfish, as such, were bred in China several hundreds of years ago, and probably some of the fancy types were produced about three hundred years ago in that country; there are very old prints produced in China many years ago which depicted fishes with abnormal finnage or body shapes. These no doubt appeared as sports or mutations and were bred from so that a strain was established from the more outstanding types.

On old china and wall prints, fishes may be seen with tri-tails or protruding eyes, and even some with abnormal or oddly shaped fins were illustrated. The selection of particular types was made from time to time and so many of the oddly shaped goldfish seen today were introduced over the years. My reason for referring to the origin of the fancy goldfish is that so many aquarists write to me to complain that from even very good fancy goldfish they get a large number of misshapen fish or runts. This is quite understandable when one considers that all these varieties were originally produced from the common goldfish.

My own particular variety of fancy fish is the fantail, and I have been breeding this strain since 1937. Instead of all the youngsters turning out show specimens, I find a large number which are

of no value at all as far as exhibition or breeding purposes are concerned. One will always find that from a good pair of fish with double tails, among their progeny may be some with single tails, some with tri-tails and some with web-tails. The proportion of really good fish may vary from season to season, but probably is caused by the fact that among the spawning fish there are one or two which repeatedly throw many runts. Of course, it is possible for such fish to produce a few good ones if they are allowed to breed, but the schemes of success are too remote for one to waste time in using such fish.

A couple of years ago, among a fair spawning, I found a few fish with very long tails and as they appeared rather spectacular I decided to keep a few away from the others in an indoor tank. These fish had slimmer bodies than the normal fantail and their tails were very long and ribbon-like. They were very much admired by visitors as they were more active than veiltails. Also, instead of the rather deep oval body of the fantail, they were more streamlined and so were not as liable to be affected by swim-bladder troubles as often occurs with the deep bodied fish. The tails were much longer than their bodies, very forked but slender, not full as in the veiltail. Having decided to call these Ribbon-tails, I put them in a separate pond and hoped that they would breed.

This year they have done so and I have some youngsters. It is too early as yet to be able to say whether they will turn out as spectacular as their parents, but I expect to get at least a few good ones from which I can establish a strain. I do not suggest that they will be exhibition fish but as fancy varieties for the indoor tank I do not think that they can be improved upon. Their hardiness and graceful actions will make them most attractive.

Many of the fancy fish which are sold today, may have come from a mixed breeding as it is impossible to tell from what type of fish some of them have been bred. For instance, if one crossed a single tail with a double tail it is possible to get, among the

youngsters, some of many types such as single, tri-tail, web-tail and double-tail. If one procured a pair of such double-tails from this crossing, one might expect to get a good number of double-tails in the progeny, but it is more likely that not one single fish would be of any value, and the pairing could produce nothing but useless runts.

I have often recommended readers to try to obtain their breeding stock from an established strain but so often I am told that really good fish are impossible to obtain. Few beginners realise that even from one of the best pairs, it is not possible to get all the youngsters of a good type. There is sure to be many which do not come up to expectations and so when one goes to a good breeder and expects to get a perfect specimen for a few pence, it is being very optimistic indeed. The few fish which a spawning may produce good enough to exhibit may be quite valuable and almost worth their weight in gold. It is probable, however, for the beginner to buy some good fish which, even if not capable of winning in good company, are at least capable of producing youngsters which may make winners. The genes of inheritance would be running through the strain and any fish from such a strain is capable of throwing at least a few good ones.

From the above it can be seen that the best way to start a good strain would be to visit a few of the larger shows and examine the winning fish of their choice. Then find out the owner of the good fish and try to get a few youngsters from that strain. It is not an easy task to get such a strain but one could be lucky and from half-a-dozen fish from a good strain one might hit on a few winners in the first year's spawnings. After the first year it is not difficult to sort out those fish which are likely to give the best results. Some judicious pairings could be made. For instance, if one has a fish with a caudal fin which is too large, it could be paired with one with a short tail. The result could be some excellent

fish from the fry. Also the shape of the body can be determined so that a very deep-bodied fish can be used with one which has not such a deep body but has other worthwhile attributes.

If one can breed in large tanks and so choose the actual pairs it will make the production of special types far more easy, but it is a slower task. I have always favoured the method of breeding in the garden pond with several breeders. It is true that I cannot tell the actual parents of any particular fish, but as long as some of the fish turn out well I am not so concerned. As I only put good quality fish in the breeding pond I know that it is possible to produce a number of good fish from them. On the other hand I can have six males and six females in the pond so that the possibilities of obtaining some good youngsters is increased greatly and it would take a long time to match the pairs of fishes if used in separate tanks. The fish in the breeding pond practically always spawn in the one shallow corner where I place the bunches of weed. Unfortunately, the ribbon-tails which I put in the smaller pond were not so obliging. Their pond is round and runs from a fairly deep centre to gradual shallow at the edges. There is no part more shallow than another. I had placed a bunch of Hornwort at one side but there was a quantity of duck weed on the surface of the pond and the fish preferred to spawn on that. The duck weed is inclined to get rather tangled up and after I had seen the fish spawning it was almost impossible to see any eggs at all. The white roots of the weed made it difficult to see the eggs. However, I had a small hatching from the first spawning. A second spawning has produced more fry but still the fish did not choose the bunch of weed which I had provided but again used the duck weed.

It will be very interesting to see whether the youngsters from these fish turn out to be as good as their parents and even if only a few are acceptable it will make a good beginning for this strain.

BOOK REVIEW

THE STANDARDS OF THE GOLDFISH SOCIETY OF GREAT BRITAIN

I HAVE been interested to consider the thirteen types of goldfish for which standards are now introduced in this booklet. In the first place I must say that I am glad that at long last the Society has largely dropped their original ideas of recognising only four basic varieties. Although I cannot agree with all their decisions, I am at least thankful that they have gone some long way to bringing the varieties of goldfish back to somewhere near to what they were before the Goldfish Society was heard of.

However, I am bewildered by their first fish. This

reads: G.S.G.B. Bristol type shubunkin and goldfish. Now, I have never heard of a Bristol type goldfish and find it hard to believe that it is intended to have two distinct types of the common goldfish. Later in the booklet there is a heading: London Shubunkin and Common Goldfish. The difference between the two goldfish appears to be that the first is rather slimmer in the body with a large caudal fin. Therefore we shall be faced with a goldfish which has too large a caudal fin to be classed as a common goldfish to be entered in the class for the Bristol goldfish.

I wonder what the Bristol aquarists will have to say about this, also the strange colour requisite for the Bristol shubunkin. When the Federation of British Aquatic Societies published their first standards they agreed to use the Bristol standards for this fish. Now

instead of the colour recognised by the Bristol Society which is: Blue ground splashed with black, interspersed with violet, red, brown and yellow, they allot points as follow for colour: Blue, 9; orange or yellow, 5; black, 5. There is no mention of red, one of the outstanding characteristics of the Bristol. This is a relic of the ideas dreamed up by the late Robert Affleck, who always said that the red was orange, but this is not so as I have fantails which are red. I know that there are many degrees of red, as there are for orange, but a distinct red can be found on many fish among fancy goldfish. If the Society would not stick to the colour as recognised by the Bristol Society they have no right whatsoever to call the fish a Bristol but just shubunkin.

The standards for the Veiltail are quite good as far as the shape is concerned but again we have the same colour requirements for the calico type as for the shubunkin. Now we have a globe-eye, another one of the dreamed-up names. This fish is called a moor if black, but yet there is another moor later in the booklet called a broadtail moor. The only difference I can see in the two fish is that the former has a more pointed dorsal and forked caudal fin, with the caudal fin of the latter fish straight at the base.

The pearlscale is of the fantail shape with a very short tail. There are points for a calico type, but how in the world can you have a "scaleless" fish with cupped-shaped scales as is required for this fish?

The lionhead is called a bramblehead, another of the freak names. The outline drawing again shows a fish with a small caudal fin which gives it the appearance of being top (head) heavy. There are also pointings for a calico type, if there is such a fish. The celestial has once more been shown with a small caudal fin. A fish called the pompom is a specimen with no dorsal fin, a small caudal fin and extra large nasal appendages. Pointed for a metallic (visibly scaled) and for a calico, I cannot remember ever seeing a scaled type, but I have only been keeping coldwater

fishes for over seventy-two years and so may have missed this fish. I was introduced into the aquarist world as soon as I could walk and had my first tank when five, in 1900.

The bubble-eye has a standard and looks in its drawing as repulsive as it does in reality. The oranda has at last been called an oranda instead of a bramblehead and the outline drawing differs from the type which has been recognised heretofore which had a straight-based caudal fin, whilst the new type has a forked caudal fin. The outline has a fair shape for the fantail but again the caudal fin is too short and makes the fish look unbalanced.

The outlines for the London shubunkin and common goldfish are quite realistic and I have no fault to find here. The broadtail moor is a good outline of what the fish should resemble but there is no mention of the popular variety the fantail moor. There are standards for the comet and although the caudal fin is rather exaggerated I suppose that this is the size to be aimed for and I hope that perhaps, one day, I shall see such a fish.

The pointing tables for most of the fish are complicated and the judges will have to have the standards booklet to hand at any show unless they have an exceptional memory. What a change from the original system of judging brought in by the Society soon after it was formed. Then we were told to use five twenties as it was stated that the pointings as recommended by the Federation were too complicated for the judges.

There is a lot more in the booklet than I have covered in this brief review but I hope that what I have said will encourage all coldwater fishkeepers to rush out and buy a copy if only to be able to make their own assessments of my criticisms.

The booklet is priced at 40p, post paid, from: R. A. Dodkins, 107 Cobham Road, Seven Kings, Ilford, Essex.

By Arthur Boarder

PRODUCT REVIEWS

Phillips "Aquavite," essential food vitamins for freshwater tropicals and marines, manufactured by Phillips Yeast Products Ltd. (Aquatic Division), Park Royal Road, London, N.W.10. I do not yet know the price of this product.

The advertising literature supplied with a sample of this new product points out some surprising findings concerning the vitamin requirements of fishes. Research has shown that compared with other animal species—such as humans, dogs, guinea pigs, mice, etc.—fishes have a very much higher requirement of vitamins. The leaflet points out that for each pound

of bodyweight, fishes need four times more vitamin B1 than man, five times more nicotinic acid, and sixteen times more vitamin B2. Similar high requirements were found for almost all known vitamins. As a result of these findings, Phillips have developed "Aquavite" tablets. They are designed to provide nine essential vitamins, and to provide them in such a form that they are absorbed by the fishes even when they are not actively feeding. Freshwater fishes absorb dissolved nutrient materials at their gill surfaces by the process of osmosis; by the same process of osmosis, marine fishes lose tissue water to the more concentrated salt

water of their environment—and to compensate for this loss by dehydration the marine fishes continuously swallow water, and at the same time take in such vitamins as may be present in the water. If vitamins are present in the aquarium water, the fishes can absorb them.

Phillips "Aquavite" supplies the necessary vitamins in soluble tablet form for easy, controlled dosage. When tablets are added to the aquarium water, they dissolve quite quickly and become immediately available for absorption by the fishes. The regular use of "Aquavite" is recommended by the makers for all aquarium fishes, and is said to be especially valuable for fishes which are not feeding well due to either disease, or loss of appetite when introduced into a new home aquarium. "Aquavite" is recommended by its makers to stimulate appetite and promote health, fertility and colour brilliance.

The tablets contain vitamins A, D3, E, B1, B2, nicotinic acid, choline, calcium pantothenate and B6. In use, one tablet is added to each 25 gallons of freshwater twice per week; and every other day for marines.

I have not yet had time to evaluate this new product—and indeed evaluation would be difficult for someone who is not a professional scientist; but one could certainly see if fishes appeared to improve in appearance and behaviour if the tablets were used. They are certainly an interesting and potentially useful addition to the aquarists' store of aquatic supplements, and I look forward to seeing how they improve my fishes' health, etc. The tablets are supplied in bottles of 50, and my fishes certainly did not seem to be "put out" when I made use of a tablet in one tank for the start of a trial. My one complaint would be that a tablet made for 25 gallons of water produces problems when one wants to use it for very much smaller volumes of water in smaller tanks. One can, of course, dissolve the tablet in a known volume of water, and add the appropriate amount of solution to any given aquarium—but this is a time-consuming exercise. Perhaps Phillips would consider producing smaller-sized tablets which could be used in tanks of five-gallon size. One could then add multiples of tablets depending upon the volume of water to be treated, and use the present-sized tablets for much larger tanks.

B.W.

Zoomedica Frickhinger, of West Germany, have recently produced a wide range of new aquarium products and remedies, and these are being distributed in Britain by Hillside Aquatics, of 29 Dixons Hill Road, Welham Green, nr. Hatfield, Herts. Hillside Aquatics state that the products are "manufactured by a firm of fully qualified chemists in West Germany."

As there are thirteen new products in this range which I received, I have been unable to test them,

and can only quote from the literature which accompanies each one. Information is given in nine different languages, so wide sales are obviously expected. Dynoplant fertiliser for water plants is for use in established aquaria. It is supplied in tablet form to dissolve slowly in aquarium water. The cost is 40p for the 133 gallon size, and £1.50 for the 660 gallon size. Dynophyll is supplied in granular form, and is a bottom fertiliser for aquatic plants. It is for feeding plants through the roots, and is mixed with the gravel when a new tank is set up. Enough for 44lb. of aquarium gravel costs 34p; for 176lb. of gravel, £1.10. Algo-Stop is for destroying algae in fresh water, and consists of both liquid and tablets. It is said to restrain the growth of algae for months. The 44 gallon size costs 50p, the 220 gallon size £2, and the 4,450 gallon size £36. Aqua-Tonic is a vitamin tonic for tropicals and marines. It comes in the form of tablets which dissolve in the aquarium water, and costs 56p for the 130 gallon size, and £2.24 for the treatment of 660 gallons of water. (Prices include P.T.) Biocoryn H3 is a biological filter converter suitable for freshwater and marine tanks. It comes in the form of capsules, and contains enzymes. It is said to "transform the tank itself into a biological filter system." The 110 gallon pack costs 50p, and the 555 gallon pack £2. Stellacoryn water conditioner adds biological qualities to tap water. It comes in powder form and costs 40p and £1.04 (volumes to be treated not given). Poolcoryn destroys algae and fungi in garden ponds. It comes in capsule form and costs 72p for the 200 gallon size, and £2.70 for the size which treats 1,000 gallons. Liqui-Fit vitamin concentrate comes in liquid form, and costs 42½p and £1.67 (including P.T.). Volumes treated are not given.

Faktor S is a combination of vital elements for producing "black water." It is in liquid form, and costs 38p and £1.50—volumes to be treated not being given. Hexa-Ex is a cure for "holes in Cichlids" disease—especially in Discus—and comes in tablet form to be dissolved in aquarium water. It costs £1.08 to treat 66 gallons of water, and £4.35 to treat 330 gallons (including P.T.). Exrapid is a combined cure for white spot, Oodinium, Costia, etc., and is also suitable for marines. It is a liquid, and costs 43½p to treat 44 gallons, and £1.72 to treat 220 gallons. Limnacid kills snails, hydra, leeches and planaria. It comes in liquid form and costs 38p to treat 44 gallons and £1.50 to treat 220 gallons. And, finally, Biomarin which is a vitamin concentrate for marines. It costs 56p to treat 133 gallons of water, and £2.24 to treat 660 gallons of water (including P.T.). It comes in tablet form.

This is a most interesting new range, and will surely contain some items which should be of use to many aquarists.

B.W.



from AQUARISTS' SOCIETIES

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.

RESULTS of the Aquarist Fishkeeping Exhibition at Alexandra Palace were as follows: Society Furnished Aquaria: 1 and 6, Hensel Hempstead; 2, Walthamstow; 3, F.G.A.; 4, Leytonstone; 5, Independent Society Furnished Coldwater: 1, Portsmouth; 2, Walthamstow; 3, United. Individual Furnished Tropical: 1, Owen Watts; 2, A. Welsh; 3, June Sabury; 4, P. Cairn; 5, Mrs. Arrow; 6, M. Cross. Individual Furnished Coldwater: 1, H. Watts; 2, M. Cross; 3, Mrs. V. Reich; 4, W. F. Woodward. Junior Furnished: 1, P. Richardson; 2, I. Netherell; 3, T. Rice. Individual Aquascapes: 1, J. Batts; 2, B. Salisbury; 3, D. J. Cruceffs; 4, J. M. Sheppard; 5, Cheryl Sheldon; 6, Mrs. Applin. Barb: 1, S. Mason; 2, J. Batts; 3, J. Howe; 4 and 5, June Sabury; 6, P. Felton. Characins: 1, J. Howe; 2, Mr. and Mrs. Davies; 3, R. G. Higgins; 4, P. Coyle; 5, J. H. Jackson; 6, T. F. Butler. Hypheosobrycon, Hemigrammus and Chirodon: 1, D. Dare; 2, P. Coyle; 3, J. H. Jackson; 4, S. Applin; 5, D. Adams; 6, May Netherell. Cichlids: 1 and 5, K. Adams; 2, A. J. Kimbley; 3, May Netherell; 4, J. Jones; 6, M. Strange. A.V. Angul: 1, J. Batts; 2, D. Dare; 3 and 4, F. A. Pimm; 5, D. Prati; 6, R. Michaelides. Apistogramma, Pelmatochromis and Naenacara: 1 and 2, W. H. Goodwin; 3, R. Kerridge; 4, 5 and 6, R. F. Rummy. A.O.S. Labyrinthis: 1, Sybil Hedges; 2, J. Batts; 3, T. Woolley; 4, D. Armour; 5, D. G. Putnam; 6, A. Blake. Beta Splendens: 1 and 6, E. McQuade; 2, A. Welsh; 3, S. Applin; 4 and 5, A. Hagland. A.V. Egg-layer Toothcarp: 1 and 3, W. E. Goodwin; 2, B. Bissoun; 4, R. J. Johnston; 4, D. Dare; 6, A. Walker. A.O.S. Tropical Cat: 1, May Netherell; 2, Mrs. S. Mason; 3, R. S. Thompson; 4, D. H. Wall; 5, B. Penock; 6, R. Goodson. Corydoras and Brochis: 1, M. Strange; 2, 3 and 4, Sybil Hedges; 5, J. Marsh; 6, A. Welsh. Rasbora: 1 and 4, S. Mason; 2, J. Howe; 3, R. Kerridge; 5, F. Marsh; 6, A. Blake. Danio W.C.M.M.: 1, B. Salisbury; 2 and 3, P. A. Maye; 4, Mrs. S. Mason; 5, May Netherell; 6, M. Carter. Loaches: 1, Mrs. V. Reich; 2, Mrs. S. Mason; 3, A. Hagland; 4, Darrel H. Keen; 5, M. Carter; 6, T. Woolley. Catfish, Loach and A.O.S. Tropical Egg-layer (Pairs): 1 and 5, D. J. Cruceffs; 2 and 3, D. Adams; 4, F. Marsh; 6, T. F. Butler. Rasbora Danio W.C.M.M. (Pair): 1, B. Bissoun; 2, S. Mason; 3, May Netherell; 4, F. Marsh; 5, A. Blake; 6, R. Kerridge. Guppy (Pair): 1, 4 and 5, D. Phillimore; 2 and 6, E. R. Manning; 3, R. Harper. Swordtail, Platy and Molly (Pairs): 1, May Netherell; 2, A. Blake; 3, D. Dare; 4, D. E. Keen; 5, B. T. Mather; 6, P. K. Lorne. A.O.S. Livebearer (Pairs): 1 and 4, A. Blake; 2, 3 and 5, S. Adams; 6, M. Strange. Best Junior Entries: 1, Ian and Tina Batts; 2 and 3, S. Adams. Best Fish in Show: Sybil Hedges with a *Cunoptima Kingisrae*. A.O.S. Egg-layer: 1 and 2, D. Adams; 3, Rita Coyle; 4, B. Salisbury; 5, May Netherell; 6, R. Goodson. Male Guppy: 1, 2 and 6, D. Phillimore; 3 and 4, D. W. L. Baggott; 5, J. Howe. Female Guppy: 1, P. Coyle; 2, R. Harper; 3, 4 and 6, D. Phillimore; 5, D. W. L. Baggott. Swordtails: 1, Mr. and Mrs. K. Davies; 2, F. A. Pimm; 3 and 6, B. J. Mather; 4, S. Mason; 5, D. J. Cruceffs. Platys: 1, A. Blake; 2, J. Batts; 3, Mrs. G. Howe; 4, D. Dare; 5, R. C. Burton; 6, D. W. L. Baggott. Mollies: 1, 2 and 4, P. A. Maye; 3 and 5, May Netherell; 6, Miss J. Frostick. A.O.S. Livebearer: 1, D.

Armour; 2 and 5, S. Adams; 3, B. Bissoun; 4, R. J. Logmayer; 6, A. Blake. Rooted Plants: 1 and 3, H. Watts; 2, Mrs. Arrow; 4, 5 and 6, M. J. Allen. Plant Cuttings: 1, 4 and 6, J. Hughes; 2 and 5, M. H. Allen; 3, H. Watts. Floating Plants: 1, May Netherell; 2, J. Batts. Barb (Pairs): 1, F. A. Pimm; 2, S. Mason; 3, A. R. Chandler; 4, L. G. Draper; 5, A. Blake; 6, B. Davies. Characin (Pairs): 1, R. Wallis; 2, May Netherell; 3, R. J. Johnston; 4, K. Adams; 5, M. Carter; 6, T. Woolley. Cichlid (Pairs): 1, R. S. Thompson; 2, A. Welsh; 3, T. Woolley; 4, L. G. Draper. Labyrinth (Pair): 1, A. Hagland; 2, Mrs. G. Howe; 3, T. F. Butler; 4, May Netherell. Toothcarp (Pairs): 1, A. Walker; 2, Christine Batts; 3, Ian and Tina Batts; 4, R. J. Johnston.

OFFICERS elected at the annual general meeting for the forthcoming year of **Stockton-on-Tees A.S.** are: W. Bowman, chairman; C. W. Buck, secretary, 22 Danby Grove, Thornaby, Teesside, TS17 8BX, tel. Stockton 65294; L. Osman, treasurer, E. Simpson, show secretary, Other officers: D. Keithley, L. Collins, A. Stephens, Mrs. E. Bowman and E. Urwin. Meetings are held every first and third Mondays at the Tillery Inn, Maritime Place, Stockton, Teesside. New and old members always welcome.

AT THE July meeting, members of the Hanbury and District A.S. heard a very interesting talk and slide show given by B. Fox on building fishhouses. Winners of the Table Show on Livebearers were: 1, 2 and 3, E. Holmes; 4, B. Hall; 5, L. Poole.

THE results of the second annual open show of the Sandgrounders' A.S. were as follows: Guppies: 1, B. Dawson (Middleton); 2, Mr. and Mrs. Mitchell (Macclesport); 3, H. Roe (Loyne). Swordtails: 1, D. Walker (Runcorn); 2, Mrs. Rhodes (Four Star); 3, H. R. Saphron (Grimwood). Platys: 1, B. W. Carter (Merseyside); 2, L. Kaye (Top Ten); 3, J. S. Hall (Aireborough). Mollies: 1, J. S. Hall (Aireborough); 2, Mr. and Mrs. Waring (Lytham); 3, Mike Swain (Grimwood). Small Anabantids: 1, R. I. Payne (Merseyside); 2, Miss J. Gullane (Buxton); 3, Mr. and Mrs. Bailey (Sherwood). Large Anabantids: 1, Miss A. Gregory (Nelson); 2, P. Mulla (Merseyside); 3, D. and R. Standen (Loyne). Fighters: 1, S. A. Holland (B.K.A.); 2 and 3, J. S. Hall (Aireborough). Small Characins: 1, Mrs. Rhodes (Four Star); 2, R. Norris (Sandgrounders); 3, M. Tonge (Oldham). Large Characins: 1, J. A. Whitley (Aireborough); 2, D. and R. Standen (Loyne); 3, Mr. and Mrs. Bailey (Sherwood). Angels: 1, I. Rowbottom (Hyde); 2, L. R. Saphron (Grimwood); 3, T. Wayles (Hoylake). Small Cichlids: 1, J. A. Whitley (Aireborough); 2, W. Hickman (Dudley); 3, B. W. Carter (Merseyside). Large Cichlids: 1, K. Parkes (Merseyside); 2, R. Atherton (Grimwood); 3, J. A. Whitley (Aireborough). Small Barbs: 1 and 2, Mrs. Rhodes (Four Star); 3, B. W. Carter (Merseyside). Large Barbs: 1, R. Clarke (Sherwood); 2, T. Smith (Sheffield); 3, R. Clift (Sandgrounders). Rasboras: 1, P. T. Richardson (Merseyside); 2, P. and H. Batchelor (Loyne); 3, M. Tonge (Oldham). Minnows: 1 and 2, B. Dawson (Middleton); 3, A. Waterhouse (Sandgrounders). Danios: 1, Master G. Wilkinson

(Hyde); 2, T. Smith (Sheffield); 3, P. and H. Batchelor (Loyne). Toothcarps: 1 and 2, J. Mesley (Keighley); 3, T. O'Brien (B.K.A.). Small Catfish: 1, P. and H. Batchelor (Loyne); 2, Mr. and Mrs. Waring (Lytham); 3, Mr. and Mrs. Bailey (Sherwood). A.O.V. Catfish: 1, J. S. Hall (Aireborough); 2, P. and H. Batchelor (Loyne); 3, C. Beckenham (Oldham). Loaches: 1, Mr. and Mrs. Norris (Loyne); 2, Mr. and Mrs. Linstead (Four Star); 3, H. Marshall (Oldham). Sharks: 1, H. Ormesher (Sandgrounders) (Best in Show—86 points); 2, T. Smith (Sheffield); 3, R. I. Payne (Merseyside). Flying Foxes: 1, P. and H. Batchelor (Loyne); 2, Carl Norton (Sandgrounders); 3, J. Hall (Runcorn). Pairs (Livebearers): 1, Mr. and Mrs. Stephenson (Sherwood); 2, Mr. and Mrs. Buxton (Hyde); 3, H. Ormesher (Sandgrounders). Pairs (Egglayers): 1, Mrs. M. Igoe (Sherwood); 2, Mr. and Mrs. Thorne (Northwich); 3, W. Hickman (Dudley). Breeders (Livebearers): 1, Mr. and Mrs. Thorne (Northwich); 2, T. and S. Tasker (Sandgrounders); 3, J. S. Hall (Aireborough). Breeders (Egglayers): 1, Mr. and Mrs. Hart (Keighley); 2, Mr. and Mrs. Thorne (Northwich); 3, J. Mesley (Keighley). A.O.V. Tropical: 1, D. and R. Standen (Loyne); 2, P. and H. Batchelor (Loyne); 3, Mr. and Mrs. F. H. Haydon (Hyde). Common Goldfish: 1, 2 and 3, J. S. Hall (Aireborough). Fancy Goldfish: 1, J. S. Hall (Aireborough); 2 and 3, S. Walsh (Accrington). A.O.V. Goldfish: 1, C. Whitley (Accrington); 2, J. S. Hall (Aireborough); 3, S. Walsh (Accrington). Junior Livebearers: 1, Master A. Atherton (Grimwood); 2, Master M. Titterton (Hyde); 3, Andrew Waterhouse (Sandgrounders). Junior Egglayers: 1, Master A. Kaye (Top Ten); 2, Miss J. Gullane (Buxton); 3, Miss T. Lang (Nelson). Ladies (A.V.): 1, Mrs. Standen (Loyne); 2, Mrs. Linstead (Four Star); 3, Mrs. Kall (Eliemore Park). Marines: 1, H. Ormesher (Sandgrounders); 2 and 3, J. Igoe (Sherwood).

MEMBERS of Castleford & District A.S. were very pleased with the success of their fourth annual open show which attracted over 700 entries. Best in Show award went to Mr. and Mrs. Gabe of Chesterfield, with a Dwarf Cichlid. Best Exhibitor award to J. S. Hall of Aireborough, and the Society with most points was Aireborough. Results were as follows: Guppies: 1, Mr. Laycock (Sheffield); 2, Mr. Parke (St. Leeds); 3, Mr. and Mrs. Shipley (Goole). Swordtails: 1 and 2, Mr. and Mrs. Sowley (Mr. Pleasant); 3, T. Douglas (Hull). Platys: 1, D. Stood (Swillington); 2, Mr. and Mrs. Daines (Doncaster); 3, Mr. and Mrs. Copley (Doncaster). Mollies: 1 and 2, P. Harrison (Sherwood); 3, J. S. Hall (Aireborough). A.O.V. Livebearers: 1, J. S. Hall (Aireborough); 2, A. Moss (Huddersfield); 3, Mr. and Mrs. Davidson (Gainsborough). Barbs (up to Roy): 1, R. Clarke (Sherwood); 2, L. S. Hunter (York Dist.); 3, Mr. and Mrs. Stone (Chesterfield). Small Characins: 1 and 3, D. Wragg (Independent); 2, D. Baker (Wellbeck). Large Characins: 1, Mrs. J. A. Whitley (Aireborough); 2, E. Williams (Hartlepool); 3, D. Kennedy (Keighley). A.V. (Female): 1, D. Paschford (Castleford); 2, Miss Denise Stevens (Castleford); 3, Mr. and Mrs. Blades. Large Anabantids: 1, A. S. Allison (York); 2, Miss J. Gullane (Buxton); 3, Mr. and Mrs. Cohen (Castleford). Fighters: 1 and 3, Mr. and Mrs. Toyne (Sheffield); 2, J. S. Hall (Aireborough). Small Anabantids: 1, K. Allen (Workop); 2 and 3, G. Gillespie (Castleford). Sharks and Foxes: 1, T. Smith (Sheffield); 2, Mr. Searle (Goole); 3, J. Heptinstall (Castleford). Danios and Rasboras: 1, A. Moss (Huddersfield); 2, Mr. Weater; 3, T. Smith (Sheffield). Carps and Minnows: Mr. Footit (Alfreton). Loaches: 1, Mr. and Mrs. Davidson (Gainsborough); 2, Mrs. Linstead (Four Star); 3, S. and P. Baker (Wellbeck). Corydoras: 1, Mr. and Mrs. Downing (Sherwood); 2, H. Hubbard (Peterslee); 3, Mr. and Mrs. Bailey (Sherwood). A.O.V. Catfish: 1, Mr. and Mrs. Lowe (Cleveland); 2, Mr. and Mrs. Shipley; 3, R. Shanks (Mr. Pleasant). Livebearers (Pairs): 1, Mr. and Mrs. Blades (Cresswell); 2, Mr. and

Mrs. Hishop (Swillington); 3, P. Reynolds (Swillington). Egglayers (Pairs): 1, R. Dyson (Blackpool); 2, Mr. and Mrs. Hodgson (Scunthorpe); 3, Mr. Powell (Thorne). Dwarf Cichlids: 1, Mr. and Mrs. Gale (Chesterfield); 2, G. Thickbroom (Wellbeck); 3, Mr. Linstead (Four Star). Large Cichlids: 1, Mr. Dyson (Blackpool); 2, J. Whalley (Aireborough); 3, Mr. and Mrs. Gates (Castleford). Livebearer (Breeder): 1, T. Douglas (Hull); 2, G. Thickbroom (Wellbeck); 3, K. Allen (Workshop). Egglayers (Breeder): 1, Mr. Dyson (Blackpool); 2, Mr. and Mrs. Tomlinson (Chesterfield); 3, Mr. and Mrs. Cohen (Castleford). A.O.V. Tropical: 1, D. Kennedy (Keighley); 2, G. Thickbroom (Wellbeck); 3, D. Baker (Wellbeck). Toothcarps: 1, A. Robinson (Huddersfield); 2, Mr. and Mrs. Lofthouse (Huddersfield); 3, A. Cichon (Swillington). Coldwater: 1 and 2, J. S. Hall (Aireborough); 3, B. J. Rodgers (Cresswell). Fancy Goldfish: 1, 2 and 3, J. S. Hall (Aireborough). Juniors: 1, R. Downing (Sherwood); 2, G. Thickbroom (Wellbeck); 3, C. and A. Skinner (Wellbeck).

THE Hastings and St. Leonards A.S. pride themselves on having some of the best speakers in the hobby. Amongst the most recent was G. Cox who gave an illustrated lecture on the increasingly popular marine fishes. R. Ilmes spoke on the complex but rewarding art of Guppy breeding and the most unusual lecture was given by D. J. Halley, herpetologist, who passed several of his pet snakes among the audience. Fish show enthusiasts enjoyed the annual Alexandra Palace fish show held in magnificent weather as usual. Recent club Table Show results were as follows: Dwarf Cichlids: 1, Mrs. A. Adams; 2, H. Carey; 3, Mrs. M. Greig. Male Guppies: 1, Mrs. French; 2, Mrs. A. Adams; 3, Mrs. M. Greig. Mollies: 1, Mrs. French; 2, H. Carey; 3, P. Maxwell.

RESULTS of the Basingstoke A.S. (F.B.A.S.) annual Open Show were as follows: Barbs (Large): 1, Mrs. P. Coyle (Independent); 2 and 3, K. Smith (Runnymede); 4, R. Cooper (Kingsdon). Barbs A.O.S.: 1, A. Blake (Basingstoke); 2, May Netherell (Riverside); 3, B. Funnell (Uxbridge); 4, Mrs. J. Garrad (Runnymede). H. H. and C. I., R. Cox (High Wycombe); 2, J. Jackson (Andover); 3, P. Rushbrook (Reading); 4, D. Childs (Becknell). N. and P.: 1, D. Reilly (Anson); 2, P. Cottle (North Kent); 3, B. Bisson (Basingstoke); 4, J. Batts (Ealing). Characins A.O.S.: 1, R. Hoare (Harlech); 2, R. Sellers (Ealing); 3, S. Mason (Roehampton). Angelfish: 1, J. Batts (Ealing); 2, M. Chapman (Basingstoke); 3, D. Dare (Independent); 4, D. Pratt (Roehampton). Dwarf Cichlids: 1, R. Weston (Basingstoke); 2 and 3, F. Willis (Portsmouth); 4, P. Grosvenor (Runnymede). Haplochromis-der: 1, D. Haines (Gosport); 2, Mr. and Mrs. Burtles (Mid-Sussex); 3, V. Valley (Ealing); 4, A. Houghton (Gosport). Cichlids A.O.S.: 1, J. Batts (Ealing); 2, May Netherell (Riverside); 3, L. Derrick (Croydon); 4, H. Mears (Basingstoke). Fighters: 1, L. Brazier (Sudbury); 2, S. Applin (Independent); 3, A. Taylor (Independent); 4, J. Scott-Morgan (Bournemouth). Gouramis: 1, C. Martin (North Kent); 2, Mrs. N. Sawford (Kingsdon); 3, J. Batts (Ealing); 4, P. Contant (Riverside). Labyrinth A.O.S.: 1, A. Blake (Basingstoke); 2, J. Blackwell (Caterham Nomads); 3, K. Bisson (Basingstoke); 4, B. Smith (Kingsdon). Killifish: 1, D. King (Kingsdon); 2, R. Weston (Basingstoke); 3, K. Bisson (Basingstoke); 4, B. Smith (Kingsdon). Killifish A.O.S.: 1, D. Dare (Independent); 2, R. Wright (East Dulwich); 3, H. Armitage (Havant); 4, G. Foster (Newbury). Tropical Catfish: 1, R. Goodson (Roehampton); 2, D. Walls (Basingstoke); 3, May Netherell (Riverside); 4, D. Lambourne (Roehampton). Corydoras and B.: 1, R. Sellers (Ealing); 2, Mrs. V. Marsh (Ealing); 3, R. Wright (East Dulwich); 4, F. G. Marsh (Ealing). Rasboras: 1, E. Jones (Weymouth); 2, D. Reilly (Anson); 3, Mrs. G. Carter (Becknell); 4, R. Hoare (Harlech). Danios W.C.M.M.: 1, Mrs. S. Mason (Independent); 2, 3 and 4, J. Wood (Reigate and Redhill). Loaches: 1, J. Wood (Reigate and Redhill); 2, M. Carter (Becknell); 3, A. Wood (Sudbury); 4, H. Armitage (Havant). Labos: 1, May Netherell

(Riverside); 2, K. Ross (Gosport); 3, D. Dare (Independent); 4, Mary Bance (Newbury). Egglayers A.O.S.: 1, R. Biley (Basingstoke); 2, R. Hoare (Harlech); 3, J. Pumphord (Whiteley); 4, D. Lambourne (Roehampton). Pairs Egglayers: 1, J. Kellers (Andover); 2, R. Wright (East Dulwich); 3, Mr. and Mrs. Hudson (Roehampton); 4, K. Wilton (Uxbridge). Pairs Livebearers: 1, J. Blackwell (Caterham Nomads); 2, D. King (Kingsdon); 3 and 4, K. Dryden (Croydon). Guppy Male: 1, A. Taylor (Independent); 2, C. Bees; 3 and 4, H. Gregory (F.G.B.S.). Guppy Female: 1 and 3, H. Gregory (F.B.A.S.); 2, A. Taylor (Independent); 4, M. Mansbridge (Southampton). Swords: 1, I. Pierce (High Wycombe); 2 and 3, S. Mason (Roehampton); 4, J. Batts (Ealing). Platies: 1, A. Blake (Basingstoke); 2, J. Blackwell (Caterham Nomads); 3, D. Dare (Independent); 4, A. Wood (Sudbury). Mollies: 1 and 2, D. King (Kingsdon); 3, B. Funnell (Uxbridge); 4, D. Reilly (Anson). Livebearers A.O.S.: 1, A. Blake (Basingstoke); 2, M. Mansbridge (Southampton); 3, M. Strange (Basingstoke); 4, B. Funnell (Uxbridge). Goldfish: 1, Miss C. Ridley (Basingstoke); 2, V. Voysey; 3, Paul Voysey; 4, P. Pinder. Shobunkins: 1, D. Letts (G.S.G.B.); 2, L. Merbennet (New Forest); 3, E. Binstead (Portsmouth); 4, C. Bees (Twintails); 5, V. Hunt (Havant); 2, R. Rich (Basingstoke); 3, R. Dray (Roehampton); 4, A. Marshall (Basingstoke). Centrarchidae: 1 and 3, V. Voysey; 2 and 4, E. Binstead (Portsmouth). Coldwater A.O.S.: 1, R. Ridley (Basingstoke); 2, V. Hunt (Havant); 3, R. Rich (Basingstoke); 4, D. Pope (Croydon). Breeders (Egglayers): 1, P. Willis (Portsmouth); 2, Mrs. Parrish (Hounslow); 3, D. Lambourne (Roehampton); 4, I. Pierce (High Wycombe). Breeders (Livebearers): 1 and 4, K. Bisson (Basingstoke); 2, A. Blake (Basingstoke); 3, L. Brazier (Sudbury). Marines: 1, Mr. and Mrs. Burtles (Mid-Sussex); 2, 3 and 4, L. Doubleday (B.M.A.A.). Plants: 1, J. Hughes (Roehampton); 2, K. Glough (Gosport); 3, D. Lyne (High Wycombe); 4, B. Funnell (Uxbridge). Furnished Aquaria: 1, Mrs. W. Voysey; 2, R. Lewis (Roehampton); 3, L. Jordan (Becknell); 4, D. Reilly (Anson). Mrs. J. Arnold presented the prizes and the Best Fish in Show was a *Dichodus Sex fasciatus*, owned by R. Hoare of Harlech A.S. (Wales). The Junior trophy was won by Kevin Bisson of Basingstoke A.S. and the Best Exhibit by a Lady went to Mrs. Janet Pumphord of Whiteley A.S. (Bristol). The Highest-pointed Visitors Cup went to Roehampton A.S. and the F.B.A.S. Championship Trophy for Class Cb (Pencils) was won by D. Reilly of Anson A.C. Thirty-five societies were represented with 149 competitors entering a total of 919. The continual downpour of rain possibly had its effect in reducing this total to 854 exhibits judged, but had little effect on the spirits of the exhibitors. The standard of the fish was an even higher quality, coming from a very wide area. There were 15 entries in the Marine class, plus two marine furnished aquaria which created a centre of interest and must mean that we have to cater for this exciting and fast-expanding part of the hobby in future shows. At the meeting on 21 July, John Adams of the Ark Pet Centre, near Guildford, gave another talk on the Marine side of the hobby and this time his subject was about marine invertebrates. His many samples were of great interest, in particular the samples of living rock and the algae growths he has encouraged to grow.

RESULTS of the July show of the Dudley and District A.S. at the Zoo, were as follows: Goldfish: 1, J. Vickery; 2, W. Hickman. Goldfish Novice: 1, 2 and 3, R. Clarke; 4, C. Hickman. Marines: 1 and 3, E. Hodgetts; 2 and 4, R. Edwards. Marines (Novice): 1, 2, 3 and 4, S. Fleetwood. Best Fish in Show: R. Clarke, 79 points.

SECOND Open Show results of the Runcorn A.S. were as follows: Guppies: 1, Mrs. Seymour (Merseyside); Mollies: 1, B. W. Carter (Merseyside); 2, R. I. Payne (Merseyside); 3, P. Hall (Runcorn). Platies: 1, B. W. Carter (Merseyside); 2 and 3, Susan Clarke (Barnsley). Swordtails: 1, Mrs. Winstanley (Runcorn); 2, D. Walker (Runcorn); 3, Parish School (Independent). Section winner: B. W. Carter (Merseyside). Small Barbs: 1, Miss A. Gregory (Nelson); 2, B. W. Carter (Merseyside); 3, Mrs. Winstanley (Runcorn). Large Barbs: 1, Mr. and Mrs. Ward (Rochdale); 2, Mr. and Mrs. Thorne (Northwich); 3, Mr. and Mrs. Clarke (Barnsley). Section winner: Miss A. Gregory (Nelson). Labos, Sharks and Flying Fox: 1, Mrs. D. Armour (Ellesmere Port); 2, J. Hall (Runcorn); 3, R. I. Payne (Merseyside). Section winner: Mrs. D. Armour (Ellesmere Port). Loaches: 1, C. Ellison (Leigh); 2, Mrs. Winstanley (Runcorn); 3, D. Walker (Runcorn). Section winner: C. Ellison (Leigh). Corydora Catfish: 1, D. Walker (Runcorn); 2, Mrs. D. Armour (Ellesmere Port); 3, Mrs. Winstanley (Runcorn). A.O.V. Catfish: 1, Mrs. D. Armour (Ellesmere Port); 2, J. Kell (Ellesmere Port); 3, D. Walker (Runcorn). Section winner: Mrs. D. Armour (Ellesmere Port). Anabantids: 1, D. Armour (Ellesmere Port); 2, R. I. Payne (Merseyside); 3, C. Ellison (Leigh). Fighters: 1 and 2, Mr. and Mrs. Clarke (Barnsley); 3, Mrs. Seymour (Merseyside). Section winner: Miss A. Gregory (Nelson). Dwarf Cichlids: 1, P. Gibson (Merseyside); 2, Miss A. Gregory (Nelson); 3, Mrs. Seymour (Merseyside). Large Cichlids: 1, Mrs. D. Armour (Ellesmere Port); 2, Mr. and Mrs. Thorne (Northwich); 3, T. Almsworth (Osram). Angels: 1, Susan Clarke (Barnsley); 2, Mr. and Mrs. A. Gregory (Nelson); 3, I. Kell (Ellesmere Port). Section winner: Mrs. D. Armour (Ellesmere Port). Small Characins: 1, B. Ellison (Leigh); 2, K. Sparkes (Merseyside); 3, B. Wilson (Merseyside). Large Characins: 1, J. Hall (Runcorn); 2, P. Gibson (Merseyside); 3, B. Ellison (Leigh). Section winner: J. Hall (Runcorn). Toothcarps: 1, B. Smith (Merseyside). Section winner: Rasboras and Danios: 1, Mrs. Seymour (Merseyside); 2, J. Alcock (Warrington); 3, P. Gibson (Merseyside). Section winner: Mrs. Seymour (Merseyside). Breeders (Egglayers): 1, Mr. and Mrs. Thorne (Northwich); 2, D. Walker (Runcorn). Section winner: Mr. and Mrs. Thorne (Northwich). Breeders (Livebearers): 1, B. Newport (Runcorn), also Section winner. True Pairs (Egglayers): 1 and 3, Mr. and Mrs. Thorne (Northwich); 2, K. Parkes (Merseyside). True Pairs (Livebearers): 1, D. Walker (Runcorn); 2, S. Addison (Warrington); 3, P. Hall (Runcorn). Section winner: Mr. and Mrs. Thorne (Northwich). A.O.V. Tropical: 1, G. Blease (Merseyside); 2, K. Parkes (Merseyside); 3, P. Hall (Runcorn). Section winner: G. Blease (Merseyside). Junior A.O.V.: 1, Miss A. Gregory (Nelson); 2, Andrew Thorne (Northwich); 3, B. Newport (Runcorn). Section winner: Miss A. Gregory (Nelson). Ladies A.O.V.: 1 and 3, Mrs. Sparkes (Independent); 2, Mrs. J. Kell (Ellesmere Port). Section winner: Mrs. Sparkes (Independent). A.O.V. Coldwater: 1, 2 and 3, Mr. Harris (Nelson), also Section winner. Best Fish in Show won by Mrs. D. Armour (Ellesmere Port). Club with most points in show: Merseyside. Runcorn senior member with most points: Mrs. Winstanley and D. Walker. Runcorn junior member with most points: J. Hall. The Jack Faulkner Memorial Trophy won by D. Walker.

MEMBERS of the Brighton and Southern A.S. were warmly welcomed by Dr. N. Carrington, B.S.A.S., to Inter-Pet's new offices and factory. After an informal talk about how it all started, Dr. Carrington and a member of his staff showed the party round the offices and despatch centre. A display of products was on view and these were explained to members. Members went on to lunch with Dr. Carrington and then to Inter-Pet's fish farm at Walton-on-the-Hill. Such a good day out that will be remembered for a long time thanks to Dr. Carrington and his staff.

halamid A FRACTION A DAY, KEEPS ALGAE AWAY
Hillside Aquatics London N12

THE Chesterfield and District A.S. outing to Marineland Morecambe, was blessed by sunny weather and the aquarist who took members behind the scenes was most helpful. There were some very nice Marines and the tanks were in first class condition. The Dolphin display was also very good. This was a members' and their families outing, and it is hoped to make this type of outing an annual event.

Miss M. Lindly, daughter of the late Mr. Lindly, kindly came along to the Society meeting in July and showed coloured slides of furnished aquaria and fish taken at B.A.F. shows, Belle Vue, Manchester, over the last three years. A most enjoyable evening was had by all, thanks to Miss Lindly. Recently two members achieved success at Castleford, winning Fish of Show with a Lake Malawi Cichlid, and this fish can now be entered for the Champion of Champions at B.A.F. show, Belle Vue.

EXHIBITORS representing twenty clubs from London and the South entered fish in the annual Open Show of **Salisbury and District A.S.** The show was very successful, being held in the new larger hall. Best Fish in the Show was an *Anadoras* Cat, entered by D. Lambourne (Rochampton). Best Coldwater was a Pumpkin Seed Sunfish, entered by D. Lewis (Bristol). The show committee would like to thank all clubs and exhibitors for their support.

At the **Bristol A.S.** monthly meeting, Brian Jacobs and John Phillips led a discussion on "Fry Feeding." As a result, several Coldwater fans are now considering brine shrimps as a source of clean live food and some Tropical breeders are happy in that they do not have to cope with hatching that often exceed the thousand mark. Meetings are held on the second Monday of the month at Bishopston Parish Hall at 7.45 p.m. Visitors welcome.

The July meeting of the **Privateers A.S.** was a rather frustrating experience. A visit had been arranged to an aquarist's establishment 25 miles away, but when eight cars arrived from the Privateers, no-one was there—the proprietor having forgotten all about it! The situation was saved by a drive back to their own territory where coffee and refreshments were provided by Mr. and Mrs. A. Davis at their shop in Shipley. Many thanks to them indeed.

RESULTS of Billingham A.S. Annual Open Show were as follows: Best Fish in Show: K. Ross. Best Exhibitor: H. Hubbard. Purchased Jar: 1, M. Senior; 2, J. Blackwell; 3, Mr. and Mrs. Ruffell. Fighters: 1 and 3, K. Hornby; 2, H. Hubbard; 4, P. Newton. Labyrinth: 1, R. Thompson; 2, G. Lee; 3, Mr. Clark; 4, D. Turnbull. Large Cichlids: 1, Mr. Peacock; 2, J. R. Lockwood; 3, J. A. Hellens; 4, D. Turnbull. Large Barbs: 1, K. Adams; 2, J. Blackwell; 3 and 4, G. Lee. Small Barbs: 1 and 2, G. Lee; 3, Mr. and Mrs. J. Atwell; 4, L. A. Finight. Large Characins: 1, Mr. Sonley; 2, E. Williams; 3 and 4, Mr. Hutchinson. Small Characins: 1, J. A. Hellens; 2 and 3, T. Moore; 4, J. Blackwell. Platy: 1, Mr. Cooper; 2, E. Smith; 3, J. Blackwell; 4, H. Hubbard. Swords: 1, K. G. Hellens; 2, Mr. and Mrs. Hunt; 3, Mr. Clark; 4, M. Potts. Mollies: 1, H. Hubbard; 2, Mr. and Mrs. Kennard; 3, P. McCree; 4, J. Ryan. Catfish and Loach: 1, A. Bebbington; 2, E. Williams; 3, Mr. Gardner; 4, Mr. Robinson. Corydoras: 1, E. Smith; 2, H. Hubbard; 3, Mrs. Bings; 4, W. Hall. Guppy: 1, K. Hornby; 2, H. Hubbard; 3, M. Hope; 4, Mr. and Mrs. Ruffell. Small Cichlids: 1 and 2, M. Watson; 3, Mr. and Mrs. J. Atwell; 4, Mr. and Mrs. Brown. Rabbits

or Danio: 1, H. Hubbard; 2, Mr. Gardner; 3, D. Sudron. E.L.T.C.: 1, Mr. Gandler; 2, Mr. Sonley; 3, Mr. Hollis; 4, Mr. Murrayfield. A.O.V. Tropical: 1, Mr. and Mrs. Liddle; 2, G. Lee; 3, Mrs. Skellan; 4, B. Steele. Breeding Pairs (Egglaying): 1, Mr. Hollis; 2, J. Cutting; 3, D. Turnbull; 4, C. A. Enright. Breeding Pairs (Livebearers): 1, P. Newton; 2, C. W. Robinson; 3, G. Lee; 4, H. Hubbard. Breeders Class (Egglaying): 1, 2, 3 and 4, Mr. Sonley. Breeders Class (Livebearers): 1, D. Fleet. Coldwater: 1 and 2, Mr. Furlong; 3, T. Corbett; 4, J. Marsh. Junior Class: 1 and 3, S. Bowen; 2, J. Marsh; 4, M. Atwell. Angeli: 1, C. A. Enright; 2, A. Crossley; 3, J. Cooper. Sharks: 1, K. Ross; 2, Mr. and Mrs. Walker; 3, Mr. Adams; 4, G. Brown.

A TALK and slide show on "Fish I have kept and bred" was given by Dave Edwards of the Southern Leigh and District A.S. at a recent meeting of the **Chesterfield A.S.** Results of the Table Show were as follows: Characin class: 1 and 2, J. Henderson; 3, C. French. Fry-raising Comp.: 1, C. French; 2, P. Meadows; 3, M. Drake.

FISH entered at **Loyne Open Show** totalled 461. The Best Fish in Show was a Chequer Barb owned by F. E. Gregory. Results: Coldwater, Class 1: 1, 2 and 3, J. S. Hall (Aireborough). Class 2: 1 and 3, S. Walsh (Accrington); 2, J. S. Hall (Aireborough). Class 3: 1, S. Walsh (Accrington); 2 and 3, J. S. Hall (Aireborough). Class 4: 1 and 3, J. S. Hall (Aireborough); 2, C. H. Whites (Accrington). Class 5: 1, J. S. Hall (Aireborough); 2 and 3, S. Walsh (Accrington). Guppies: 1 and 2, L. Leadbetter (Blackpool); 3, L. Peck (P.G.A.). Livebearers, Class 1: 1 and 3, B. Black (Blackpool); 2, G. Wilkinson (Hyde). Class 2: 1, B. Black (Blackpool); 2, L. Peck (Loyne); 3, R. Jones (Rorder). Class 3: 1, Mr. and Mrs. Gimshaw (Sunnybush); 2, J. S. Hall (Aireborough); 3, L. Leadbetter (Blackpool). Class 4: 1, J. A. Whitley (Aireborough); 2, J. S. Hall (Aireborough); 3, L. Leadbetter (Blackpool). Characins, Class 1: 1, L. Peck (Loyne); 2, F. E. Gregory (Oldham); 3, H. and R. McKenna (Nelson). Class 2: 1, D. and R. Standen (Loyne); 2, J. A. Whitley (Aireborough); 3, L. Rowbottom (Hyde). Cichlids, Class 1: 1, J. A. Whitley (Aireborough); 2, G. Scott (West Cumberland); 3, I. Rowbottom (Hyde). Class 2: 1, J. A. Whitley (Aireborough); 2, L. Leadbetter (Blackpool); 3, R. Dyson (Blackpool). Angeli: 1, L. Rowbottom (Hyde); 2 and 3, H. and R. McKenna (Nelson). Barbs, Class 1: 1, 2 and 3, F. E. Gregory (Oldham). Class 2: 1, L. Rowbottom (Hyde); 2, F. Mulla (Merseyside); 3, Mr. and Mrs. Shaw (Morecambe Bay). Carps and Minnows, Class 1: 1 and 3, Mr. Strand (West Cumberland); 2, B. Dawson (Middleton). Class 2: 1, P. and Mrs. Ham (Morecambe Bay); 2, L. Rowbottom (Hyde); 3, Miss H. Johnson (Ashton). Anabantids, Class 1: 1, A. E. Heap (Keighley); 2, J. S. Hall (Aireborough); 3, R. I. Payne (Merseyside). Class 2: 1, D. and R. Standen (Loyne); 2, Miss A. Gregory (Nelson); 3, D. Charlton (Merseyside). Rasboras: 1, Mr. Strand (West Cumberland); 2, P. and H. Bachelor (Loyne); 3, M. Tonge (Oldham). Danios: 1 and 3, F. H. Hayden (Hyde); 2, M. Titterton (Hyde). Toothcarps: 1 and 2, Mr. and Mrs. Ham (Independent); 3, Mr. Hart (Keighley). Paies, Class 1: 1 and 3, L. Leadbetter (Blackpool); 2, J. S. Hall (Aireborough). Class 2: 1, F. E. Gregory (Oldham); 2, D. Charlton (Merseyside); 3, Mr. Strand (West Cumberland). Breeders "W", Class 1: 1, J. A. Whitley (Aireborough); 2, M. Smith (Loyne); 3, L. Leadbetter (Blackpool). Class 2: 1, R. Dyson (Blackpool); 2, Croft and McPherson (Fleetwood); 3, G. Scott (West Cumberland). Catfish: 1 and 2, P. and H. Bachelor (Loyne); 3, G. Scott (West Cumberland). Loaches: 1, W. and M. Nooria (Loyne); 2, F. E. Gregory (Oldham); 3, F. Mulla (Merseyside). A.O.V. Cat: 1, D. Charlton (Merseyside); 2, E. Hodgson (Rorder); 3, R. Walker (Morecambe Bay). Mariner: 1, Gardner and Haslam (Independent); 2, L. Leadbetter (Blackpool); 3, V. Barnett (Morecambe Bay). A.O.V. Tropical: 1, D. and R. Standen (Loyne); 2, P. and H. Bachelor

(Loyne); 3, J. S. Hall (Aireborough). Best Fish in Show: F. E. Gregory.

The July meeting of the **Keighley A.S.** took the form of a general discussion on the tank, fish and equipment the members would advise a new enthusiast to invest in. Table Show results were as follows: Fish of the Month—Breeders: 1, J. Mosley; 2, Mrs. Gee; 3, M. Hart, A.O.V.; 1, J. Mosley; 2 and 3, M. Hart, Novice A.O.V.; 1, D. Mosley; 2, Mr. Ibbotson; 3, Mr. Emmott, Junior A.V.; 1, Master Cook; 2, Master Bordgett; 3, Master Jones. The committee regretfully accepted H. M. Smith's resignation from the positions of president and newsletter editor and expressed their gratitude for all he has done for the Society. A. Asquith was elected to succeed in both offices.

ABOUT sixty aquarists were present in July when the **Bournemouth A.S.**, F.B.A.S., were hosts to the Weymouth and District A.S., F.B.A.S., at an inter-club quiz and bottle show. The show was judged jointly by R. Matley and T. Hutton, and the result was a well-deserved win for Weymouth and District A.S., with 22 points to Bournemouth A.S. 8 points. The quiz was devised and presented by L. James. The normal Table Show was judged by J. Jeffrey, and the results were: A.V. Molly; 1, Mr. Watkins, Labyrinths (except Fighters); 1 and 2, Mr. Watkins; 3, Mr. Greenhalgh.

THIS month's meeting of the **West Midland Group of the British Marine Aquarists Association** began with T. Lewis giving out the new car key fobs with the B.M.A.A. emblem on the key ring. In future there will be marine fish on show every month for members to look at, and also to see what points to observe, as in the coming year the B.M.A.A. hope to have some good judges of marine fish. E. Hodgson came along with some very fine photographs of his marine house.

DURING the past months, the **Leicester A.S.** have taken part in the "Leisure Exhibitions" held at the Grosby Hall, Leicester, where a competitive display of furnished tanks were staged. The award winners being as follows: Junior Tropical: 1, D. Matthews; 2, T. White. Senior Tropical: 1, M. Witham; 2, D. Harding; 3, E. Calver. H. Conn, was D. Matthews Junior in overall section. Best Tropical Fish: C. Cartwright. Coldwater Section: 1, C. Cartwright; 2, H. Brakes; 3, G. Pepper. Best Coldwater Fish: G. Pepper. There has also been an outing to Windor, where a visit was made to the Safari Park, the Saville Gardens, the Punch Bowl and a wonderful display of azaleas and maples down by Virginia Water.

THE committee for the coming year of **Hemel Hempstead A.S.** is as follows: Chairman, A. Tuff; vice-chairman, A. Dibley; treasurer, G. Whitty; secretary, Mrs. Josephine Stewart; assistant secretary, R. Holliday; show secretary, S. Collins; assistant show secretary, E. Barr; social secretary, Mrs. Mary Whitty; press officer, Mrs. Ian Collins; librarian, A. Gowerlet; catering officer, Miss Suzanne Tuff; junior representative, D. Whitty.

THE **Romford and Becontree A.S.** announce the results of the Dagenham Town Show, 1972, held in July. Class A: 1, H. G. Berger (Ilford); 2, R. F. Victory (Romford); 3, W. F. Woodward (Freetown). Barbs: 1, R. Argent (E. London); 2, L. R. Baker (E. London); 3, J. M. London (Thurrock). Characins: 1 and 2, R. Argent (E. London); 3, Mrs. L. Murdoch (Harlow). Cichlids: 1, A. R. Stanley (Ilford); 2, Ron Kerridge (Harlow); 3, Mrs. J. Murdoch (Harlow). Labyrinths: 1, Sybil Hedges (Bethnal Green); 2, R. C. Burton (Freetown); 3, D. G. Putman (Freetown). Toothcarps (Egglaying): 1, B. L. Wright (Thurrock); 2, D. Bundy (Bethnal Green); 3, J. A. Compton (Romford). Tropical Catfish: 1, J. A. Compton (Romford); 2, E. Stainer (Freetown); 3, Sybil Hedges (Bethnal Green). Rasboras: 1, P. Vicker (E. London); 2, D. Bundy (Thurrock); 3, P. O. Bryan (Thurrock). Danios W.C.M.M.: 1, J. M. London (Thurrock); 2, Ron Kerridge (Harlow); 3, Mrs. I. Murdoch (Harlow).



A.O.S. Egglayers: 1, Mrs. Sybil Hedges (Bethnal Green); 2, D. Adams (Bethnal Green); 3, I. Murdoch (Harrow). Swordtails: 1, J. A. Compton (Romford); 2, Mr. and Mrs. Burlington (Southend); 3, P. O. Bryan (Thurrock). Platies: 1, B. Peacock (Walthamstow); 2, B. L. Wright (Thurrock); 3, E. Stainer (Freelance). Mollies: 1, G. Putman (Freelance); 2, J. M. London (Thurrock); 3, Ron Kerridge (Harrow). Livebearers: 1, D. Bundy (Bethnal Green); 2, B. L. Wright (Thurrock); 3, Steven Adams (Bethnal Green). Single-tailed Goldfish: 1 and 2, H. G. Berger (Ilford); 3, Mrs. Sybil Hedges (Bethnal Green). Twin-tailed Goldfish: 1 and 2, J. Linsal (Ilford); 3, Miss Rita Berger (Ilford). A.O.S. Coldwater: 1 and 2, Mrs. Sybil Hedges (Bethnal Green); 3, I. N. Rowe (Ilford). Breeders Egglayers: 1, W. Matthews (Harrow); 2, F. Vicker (H. London); 3, V. C. Green (Suffolk A.P.A.). Breeders Livebearers: 1, W. S. Clarke (Suffolk A.P.A.); 2, Mrs. V. M. Woodward (Freelance); 3, F. Vicker (H. London). Plants: 1, W. F. Woodward (Freelance); 2, I. N. Rowe (Ilford). Junior Tropical: 1, Steven Adams; 2 and 3, Trudy Hedges. Junior Coldwater: 1, Trudy Hedges; 2, Miss M. Linsal; 3, K. R. Clarke (Suffolk A.P.A.). Inter-Club Trophy: 1, Bethnal Green; 2, Ilford; 3, Thurrock. Best Fish in Show (John Mills Trophy): A. Argent (E. London) with Bleeding Heart Tetra.

THE BRACKNELL A.S. (P.B.A.S. affiliated) entertained Guildford A.S. at their first meeting in June. There was a discussion on the fish in the Table Show, followed by an auction which caused considerable amusement. At the second meeting, Roy Skipper (of the House of Fishes) paid a second visit to Bracknell by popular request and talked about the Syngnathodon Discus, aided by excellent slides. Members of the other Three Counties Clubs were invited to hear Mr. Skipper's most interesting talk.

RESULTS of the Exeter and District A.S. Open Show were as follows: Class B: 1 and 4, W. Woodbury (Exeter); 2, A. Kirby (Plymouth); 3, Mrs. M. Pudner (Plymouth). Class C: 1, Mrs. B. Lucas (Plymouth); 2, Mr. Woolley (Torquay); 3, T. Mudge (Exeter); 4, J. Edwards (Llanwit Major). Class Ca: 1, J. Bowhay (Totnes); 2, D. Pidsley (Plymouth); 3 and 4, E. Jones (Weymouth). Class D: 1, W. Woodbury (Exeter); 2, W. Hoaking (Plymouth); 3, D. Young (Honiton); 4, C. Fidoek (Exeter). Class Da: 1, H. Gardner (Plymouth); 2, K. Forrester (Weymouth); 3 and 4, Mrs. Clark (Plymouth). Class Db: 1, 2 and 3, J. Bragg (Torbay); 4, G. Kendall (Plymouth). Class E: 1, T. Mudge (Exeter); 2, D. Medway (Torpoint); 3, Mr. Woolley (Torbay); 4, K. Forrester (Weymouth). Class Ea: 1, J. Rundle (Plymouth); 2, Mrs. R. Matthews (Torbay); 3, Mrs. C. Hoaking (Plymouth); 4, Master N. Cole (Plymouth). Class F: 1, Mr. and Mrs. Purnford (Bath and Bristol); 2, R. Davis (Totnes); 3, H. Stoneman (Totnes); 4, J. Rundle (Plymouth). Class G: 1, Master N. Tully (Torbay); 2, M. Poole (Torbay); 3, J. Southcot (Totnes); 4, D. McRae (Torbay). Class H: 1, Mr. and Mrs. Purnford (Bath and Bristol); 2, 3 and 4, A. Kirby (Plymouth). Class I: K. Forrester (Weymouth); 2, Master S. Ham (Torbay); 3, M. Leader (Plymouth); 4, M. Poole (Torbay). Class K: 1, Master J. Edwards (Llanwit Major); 2, Mr. and Mrs. A. Taylor (Plymouth); 3, E. Sampson (Torpoint); 4, J. Bragg (Torbay). Class L: 1, M. Poole (Torbay); 2 and 3, C. Saunders (Exeter); 4, Mr. Woolley (Torbay). Class M: 1, L. Doubleday (B.M.A.A.); 2, Mrs. J. Griffiths (Torbay); 3, Mr. and Mrs. Purnford (Bath and Bristol); 4, E. Jones (Weymouth). Class N: 1, Mr. and Mrs. Purnford (Bath and Bristol); 2, R. Lucas (Plymouth); 3, M. Poole (Torbay); 4, J. Rundle (Plymouth). Class O: 1, 2 and 3, W. Reid (Plymouth and F.G.A.); 4, T. Burn (Plymouth). Class P: 1, T. Bowhay (Torbay); 2, J. Bragg (Torbay); 3, W. G. Reid (Plymouth and F.G.A.); 4, W. B. Hoaking (Plymouth). Class Q: 1, T. Smyth (Torpoint); 2, J. Mayne (Ilfracombe); 3, W. Woodbury (Exeter); 4, Mrs. J. M. Griffiths (Torbay). Class R: 1, Mrs. J. Griffiths (Torbay); 2, Mr. and Mrs. Taylor (Plymouth); 3, J. Davis (Torbay); 4, H.

Stoneman (Totnes). Class S: Master J. Gardner (Plymouth); 2, R. Bowell (Honiton); 3, H. Gardner (Plymouth); 4, Mrs. J. Griffiths (Torbay). Class T: 1 and 4, Mr. and Mrs. Purnford (Bath and Bristol); 2 and 3, J. Rundle (Plymouth). Class Ua-b: 1, G. Axe (Yeovil); 2, J. Davis (Torbay); 3, J. Hulbert (Yeovil); 4, Mr. Thompson (Torbay). Class Uc-d: 1 and 3, J. Hulbert (Yeovil); 2 and 4, M. Poole (Torbay). Class V: 1, G. Thompson (Torbay); 2, M. Poole (Torbay); 3, T. Cox (Torbay). Class W: 1, 3 and 4, G. Thompson (Torbay); 2, M. Matthews (Torbay). Class Wa-c: 1, 2 and 4, J. Thompson (Torbay); 3, G. Axe (Yeovil). Class X B-M: 1, 3 and 4, M. Poole (Torbay); 2, M. Leader (Plymouth). Class X O-T: 1, D. Weeks (Plymouth); 2, T. Woolley (Torbay); 3, M. Poole (Torbay); 4, J. Bragg (Torbay). Class Y: 1, C. Fidoek (Exeter); 2 and 3, L. Doubleday (B.M.A.A.); 4, B. Havers (Exeter). Class Yb: 1, 3 and 4, L. Doubleday (B.M.A.A.); 2, D. Medway (Torpoint). Best Fish in Show: Scatophagus Argus, L. Doubleday (B.M.A.A.). Aquarist Gold Pin and Woolley Trophy for Best in Show. A total of 322 entries were received.

PRIZEWINNERS at the Bishops Cleeve A.S. Open Show were: Guppy (Male): 1, A. Williams; 2, A. Heels; 3, N. Dooley; 4, Miss B. Collins. Guppy (Female): 1 and 3, G. King; 2, Mr. and Mrs. Eager; 4, B. R. Gole. Mollies (Sailfin): 1 and 3, H. R. Phippen and Son; 2, A. Thomas; 4, M. J. Illick. Mollies A.O.V.: 1, S. Thorne; 2 and 3, P. Greenwood; 4, M. J. Ellick. Swordtails: 1 and 2, D. White; 3, B. R. Gole; 4, L. R. Slater. Platies: 1 and 2, R. Hough; 3, C. Higgs; 4, R. J. Hoare. Barb (under 3 in.): 1, A. J. Hilliard; 2, A. K. Holmes; 3 and 4, T. M. Fowler. Barbs (over 3 in.): 1, A. K. Holmes; 2 and 3, B. R. Gole; 4, A. R. Thomas. Rasboras, Danios, Minnows: 1, L. Maschin; 2, R. J. Hoare; 3, K. Thomas; 4, R. North. Botia, Loaches, Sharks, Flying Fox: 1, R. J. Hoare; 2, Mrs. J. A. Clayton; 3, A. J. Hilliard; 4, Mr. and Mrs. Eager. Hypheobrycon, Hemigrammus, Cheirodon: 1, R. J. Hoare; 2, Mrs. J. A. Clayton; 3 and 4, T. M. Fowler. A.O.V. Characins: 1 and 2, J. R. Hoare; 3, D. Barnett; 4, Mr. and Mrs. Eager. Dwarf Cichlids, Agostogramma, Nannacara only: 1 and 2, R. J. Hoare; 3, C. Muddimer; 4, J. R. Hoare. Large Cichlids, Cichlasoma: 1, M. Strange; 2, R. Hough; 3, B. R. Gole; 4, F. Rowell. Angels: 1, R. Hough; 2, B. R. Gole; 3, P. J. Greenwood; 4, Mr. and Mrs. Eager. Siamese Fighters: 1, Master K. Daniels; 2, B. R. Gole; 3, N. Furness; 4, A. R. Aldridge. A.O.V. Anabantids: 1, D. Barnett; 2, F. Rowell; 3, Atwood and Williams; 4, A. Thomas. Corydoras Catfish: 1, Mr. and Mrs. Purnford; 2, Miss M. Bancro; 3, T. M. Fowler; 4, A. R. Aldridge. A.O.V. Catfish: 1 and 4, Whitfield Aldridge and Massey; 2, H. R. Phippen and Son; 3, C. Sadler. A.O.V. Tropical Fish: 1, M. Strange; 2, Atwood and Williams; 3, Mr. and Mrs. Purnford; 4, Whitfield and Massey. Sexed Pairs (under 3 in.): 1 and 3, F. Rowell; 2, D. Emblins; 4, C. Fletcher. Sexed Pairs (over 3 in.): 1, Mr. and Mrs. Purnford; 2, R. Hough; 3, Mrs. K. Press; 4, Mr. and Mrs. Lee. Killifish: 1, C. Muddimer; 2, M. Booth; 3, Master K. Daniels; 4, R. Hough. Breeders Egglayers: 1, R. North; 2, B. Trippas; 3, M. Strange; 4, A. J. Hilliard. Coldwater: 1, C. Giles; 2, Mrs. G. Press; 3, N. Wood; 4, A. J. Hilliard. Breeders Livebearers (team of four): 1, Mrs. Moore; 2, M. Strange; 3, P. J. Greenwood. Coldwater: 1, D. Emblins; 2, Mrs. G. Press; 3, F. Rowell. Best Fish in Show was owned by J. Hoare (Class 12). The prizes were presented by Mr. Cotton and there were 381 entries. Table Show results for June were A.O.V. Cichlids: 1 and 3, M. Bishop; 2, P. Greenwood; 4, N. Dooley. Mrs. J. Bishop is the new chairman.

THE Catford A.S. request all prize winners at the 1971 show to return trophies as soon as possible to D. C. Barton, Catford Institute, Holbeach Road, Catford, London, S.E.16.

An interesting talk on tortoises and reptiles was given at the Slough and District A.S. meeting, by Roger Winter, who also brought

along eight of his pets. There was also a Table Show on Catfish and Coldwater, the results being as follows: Tropical Cat: 1, Mrs. Knight; 2, 3 and 4, K. and A. Ferris. Corydoras: 1, R. J. Miles; 2 and 3, R. Winter; 4, A. Kerr. Coldwater: 1, A. Allen. The 20 September meeting will include an exhibition of 4 x 4 furnished show jars, table show, breeders, any variety, and egg-laying toothpicks.

AT the first meeting in July, **Whitley Bay A.S.** held an auction of surplus aquarium equipment, followed by a members' discussion on the Marbleheadstander. The jar show for the night was Siamese Fighting Fish and Labyrinth fish. Results were: Siamese Fighting Fish: 1 and 3, R. Massingham; 2, G. Emmerton. Labyrinth: 1, R. Massingham; 2, M. Rodgers; 3, R. Mallion. The fish were judged by D. Glynn and A. Liddell. The trophy for Best Fish in Show, which was donated by R. Forster, who is secretary of the R.A.F.A. Club, was won by R. Massingham. At the second meeting there was an auction of books, followed by a very interesting slide show on the construction of all-glass aquariums. The jar show for the night was Swordtails and Platies. Results were: Swordtails: 1 and 3, R. Massingham; 2, J. Patterson. Platies: 1 and 2, R. Robinson; 3, R. Mallion. Special: R. Massingham. The trophy for Best Fish in Show, which was donated by R. Massingham, was won by R. Robinson.

MANY topics were discussed at the annual meeting of the **British Koi Keepers Society**, which was held in July. The following new officers were elected: President, K. D. Pasceri; chairman, P. Ahrens; vice-chairman, E. A. Allen; newsletter editor, M. Wainman; hon. secretary, Mrs. H. M. Allen; hon. treasurer, Mrs. C. J. Holley; committee: H. de Bruin, B. Chapman, E. A. Gibbins, A. A. Laurence, W. R. Seal and M. Shaw. Anyone interested in Koi keeping will be sent full details of The British Koi Keepers Society upon applying to the secretary: Mrs. H. M. Allen, 1 Anthony Close, Peterborough, PE1 3XU.

THE Newbury and District A.S. was involved in two twelve-a-side Inter-Club matches during July. The first took place with Reading and District A.S. at Reading. Results: 1, G. Foster (Newbury); 2, P. Merrit (Reading); 3, P. Rushbrook (Reading); 4, M. Bancro (Newbury). Breeders' Team: 1, M. Bancro (Newbury); 2, P. Rushbrook (Reading). Final points: Newbury 204; Reading 191. The match with Didcot A.S. resulted in a win for Newbury A.S. Results: 1, G. Foster (Newbury); 2 and 4, M. Bancro (Newbury); 3, Didcot. Final points: Newbury 192; Didcot 123. Newbury and District A.S. would like to extend its thanks to A. Blake of Basingstoke and District A.S. who kindly judged on both occasions and also to thank Reading A.S. and Didcot A.S. for two very enjoyable evenings.

IN July the **Dunmow and District Society** held their annual general meeting. The chairman is still Ian Farlow and Mrs. E. Andrews remains secretary, but the new treasurer is C. De-Cruze, vice-chairman is D. Perry and show secretary D. McMurdie. Other additions to the committee were: Librarian, Mrs. M. Linn and social secretary, Mrs. P. Perry. On the same evening the annual awards for 1972 were presented by P. Vicker of East London, as follows: Reapers' Competition (Angel fish): 1, M. Green; 2, C. De-Cruze; 3, Eileen Andrews; 4, Brenda Parlow. Fish of the Year: Blue Acara, D. McMurdie. Table Show results over twelve months: 1, Mrs. Eileen Andrews; 2, R. Thoday; 3, C. De-Cruze; 4,

IN AQUARIUM OR POND
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Mrs. Phyll Perry. Breeders' Competition: 1, D. McMurdie; 2, J. Farlow; 3, R. Thoday; 4, Eileen Andrews. Home Furnished Aquarium: 1, Eileen Andrews; 2, K. Andrews; 3, Brenda Farlow; 4, S. Linn.

AT a recent meeting of the **Smethwick and District A.S.**, members enjoyed a talk by Margaret Scott on natural and novelty Aquascaping. The Table Show for Livebearers was won by D. Johnstone with a Golden Sailfin Molly. He also won the Guppy class.

THE **Littlehampton and Bognor A.S.** had a record attendance of forty members at their recent meeting when Mr. Kail from Brighton came and gave a most interesting and helpful talk on the subject of "General Fish Keeping." Mr. Kail brought some small Java Fern plants for club members and gave advice on how to grow this plant. The L.B.A.S. summer outing was a trip to Alexandra Palace to the Aquarist and Pondkeepers' Fishkeeping Exhibition. The coach party had a most enjoyable day at the exhibition and several members bought a number of fish. On the return journey a special visit was made to Henden Aquatics, and members also went sightseeing at Boxhill. Meetings are held on the first and third Thursdays of each month at 8 p.m. at the Crown Hotel, High Street, Littlehampton.

SECRETARY CHANGES

Ashton-under-Lyne and District A.S.: J. Dunn, 33 Armadale Road, Dukinfield, Cheshire.

Leeds Post Office A.S.: D. Hudson, 61 Calverley Lane, Bramley, Leeds, 13.

Sherwood A.S.: C. Huckle, 19 Woodland Grove, Mansfield Woodhouse, Notts.

CHANGE OF NAME

The **Nomad A.S.** has been changed to **Caterham Nomad A.S.** The secretary is Elizabeth Blackwell, 9 Bourne Lane, Caterham, Surrey, CR3 5SP.

CHANGES OF VENUE

Leicester A.S.: The meetings are now held at St. Matthews Community Centre, Malabar Road, off Humberstone Road, Leicester.

The **North Warwickshire A.S.** now meet every fourth Thursday in the month at Pype Hayes Congregational Church, Chester Road, Pype Hayes, Birmingham, 24 (opposite Pype Hayes Park).

Chesterfield and District A.S.: From the 7th September meetings will be held fortnightly in the Lecture Rooms, New Square, Chesterfield, at 7.45 p.m. Any prospective members can be assured of a warm welcome.

CHANGE OF ADDRESS

Association of Yorkshire Aquarist Societies: E. Storey, 139 Radford Avenue, Greatfield Estate, Hull, Yorkshire.

NEW SOCIETIES

The **Cresta Club, North Shields**, has formed an aquarist club, to be known as the **Cresta Club A.S.** Meetings for this society are to be held every alternate Wednesday evening at 8.30 p.m. The secretary is George W. Wilson, 6 Stanley Street West, North Shields, and new members will be welcome.

A new aquarist society has been formed in Abingdon near Oxford. Anyone interested in helping to get the society off the ground will be warmly welcomed and should contact Graham R. Hall, 24 Lower Radley Park, Abingdon, Berks. It is intended that the society will have a full programme and will liaise with existing clubs in the area to provide shows, talks and socials, etc. Application for affiliation to the F.B.A.S. will be made at the earliest opportunity.

AQUARIST CALENDAR

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. F.B.A.S. Championship Trophy Class O—Male Guppy.

3rd September: Whitley Bay A.S. Open Show has been postponed to a later date.

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

3rd September: Morecambe Bay A.S. First Open Show, to be held at the Ambulance Hall, Alice Street, Morecambe. Time of benching 12 noon-2 p.m. Show Secretary, Mrs. H. Booker, 18 Gringley Road, Morecambe.

10th September: Peterlee and District A.S. Annual Open Show at Edenhill Community Centre, Peterlee. Schedules will be obtainable from A. D. Bebbington, 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 Souths A.S. Open Show, Marmion Centre, Marmion Road, Hove, Sussex. Schedules from C. P. Coebin, 80 Marlborough Drive, Burgess Hill, Sussex.

10th September: Barnsley T.F.S. Open Show at the Mappelwell & Staincross Village Hall, Mappelwell, Barnsley.

10th September: Nuneston A.S. Open Show, Friary Youth Centre, Abbey Street, Nuneston. Details from show secretary, Mrs. P. Deakin, 1 Greenhill Drive, Barwell, Leicester. Tel: Earl Shilton 427888.

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.

10th September: British Killifish Association (Collingham Group), Collingham Memorial Hall, Collingham, near Wetherby, Yorks. Classes: Killifish only.

15th-18th September: Bristol A.S. Open Show, St. Michael's Parish Hall, Bishopston, Bristol. Details from H. C. B. Thomas, 2, Grove Park, Bristol, BS6 6P.

16th September: Havant and District A.S. Second Annual Open Show will take place at the Deverell Hall, Purbrook. The show secretary is V. B. Hunt, "Caeglas," 120 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, Egremont, 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: 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. Schedules from J. R. Davis, 6 Barewell Close, St. Marychurch, Torquay.

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

24th September: Northampton and District A.S. Open Show, Drill Hall, Clare Street, Northampton. Show schedules from Mr. G. Allatt, 80 Chiltern Avenue, Northampton.

24th September: Washington A.S. Open Show at the Oval Community Centre, Washington, Co. Durham. Details from show secretary, I. Gardner, 62 Douglas Terrace, Washington, Co. Durham, or W. Hall, 17 Gladstone Terrace, Washington, Co. Durham.

24th September: Pelsall A.S. first Open Show, Pelsall Community Centre, Station Road, Pelsall, nr. Walsall. Details from D. Boswater, 182 Chantry Ave., Leamore, Walsall.

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

1st October: Herton County A.S. Annual Open Show at Stephenson House, Richard Street, Herton-le-Hole, Co. Durham. Benchng 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.

1st October: Herton A.S. Second Annual Open Show, Herton Community Association Centre, South Market Street, Herton-le-Hole, Co. Durham. Further details from secretary, R. Riley, 32 The Meadows, West Rainton, Houghton-le-Spring, Co. Durham, DH4 6NP.

1st October: Leicester Fishkeepers Club is holding its Open Show at St. Marks Church Hall, Belgrave Road, Leicester. Benchng will be from 11 a.m.—1 p.m. and further details can be obtained from D. Freeman, show secretary, 30 Sheffield Street, Leicester, LE3 0GX.

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.

8th October: Ashington and District and Blyth and District Aquatic Societies first Open Show will be staged in the Y.M.C.A. Hall, Station Road, Ashington. Details and show schedules from G. Hunt, 9 Tyne Street, Ashington.

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

22nd October: Sherwood A.S. Open Show, Ramsworth Recreation Centre, Warsop Road, Ramsworth, nr. Mansfield, Notts. Show secretary, J. Igoe, 25 Marples Ave., Mansfield-Woodhouse, Notts.

28th October: Doncaster and District A.S. Third Open Show.

28th October: Newcastle Guppy and Livebearer Society. Open Show at Central Hall, Gosforth, Newcastle upon Tyne 13. Livebearer classes, 17 Egg-layer Classes. Schedules from J. A. Laidler, 19 Aln 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: Crewwell 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 Longcar Hall, Seaton Carew. Schedules and details available from show secretary, J. D. Watson, 42 Sydenham Road, Hartlepool, Co. Durham, TS25 1PZ.

26th November: Aireborough and District A.S. Annual Open Show, Yeaton Town Hall, Schedules from secretary, 3 Greenlea Avenue, Yeaton, nr. Leeds, Yorkshire.

3rd December: Horsforth A.S. Third Open Show at the New Civic Hall, Bradford Road, Stanningley, Pudsey. Schedules from the hon. show secretary, Miss Helm, 29 Wellington Road, New Wortley, Leeds, 12. Phone Leeds 21025.