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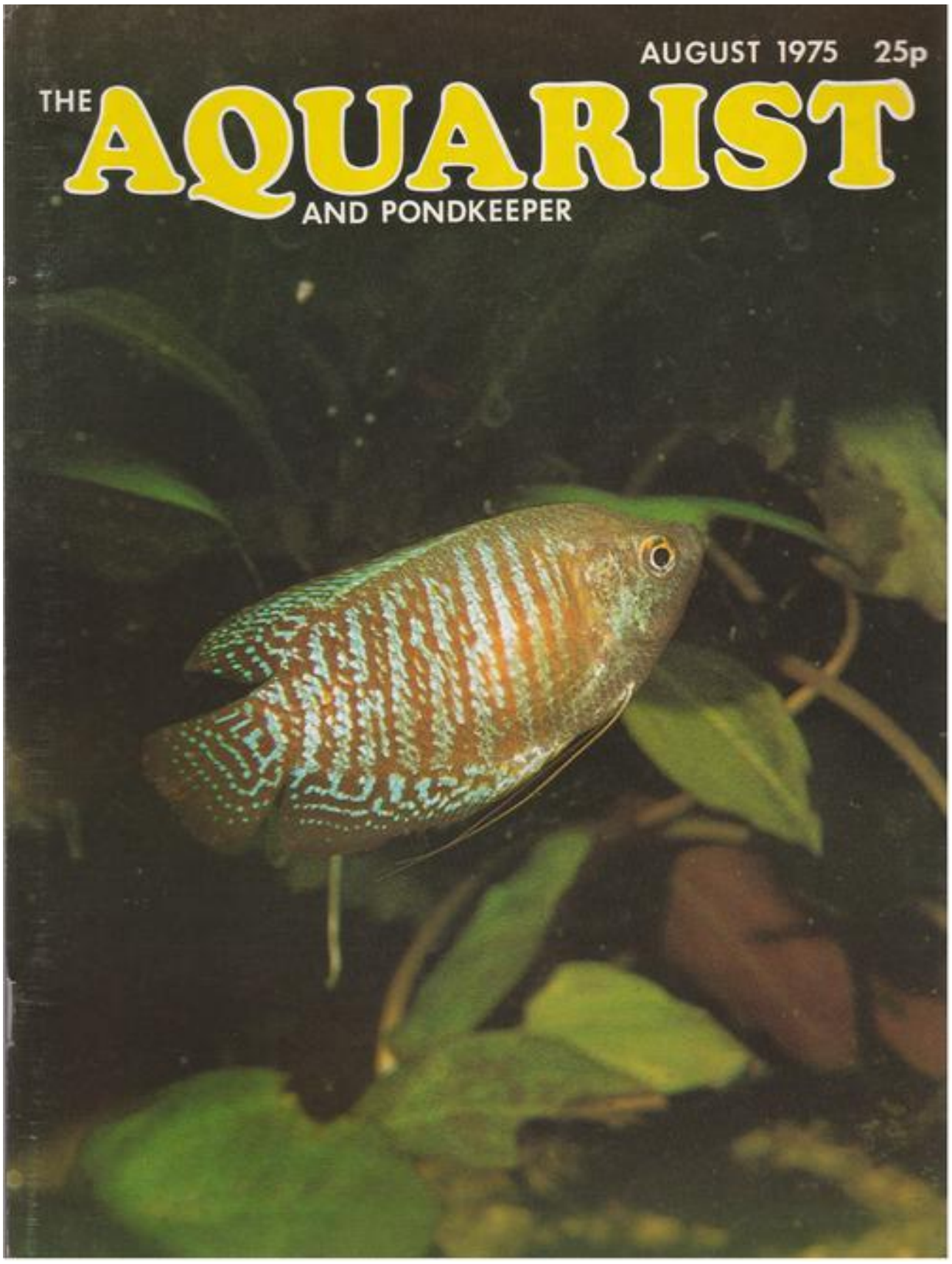
THE AQUARIST AND PONDKEEPER



THE AQUARIST AND PONDKEEPER

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Dwarf Gourami (*Colisa lalia*)
Courtesy of The Highgate Aquarium

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VICTORIAN AQUARIUMS

by Sonia Roberts

"THE AQUARIUM is unsurpassed as a domestic adornment. It graces the drawing room, the conservatory or greenhouse. It extends the sphere of domestic education for the young, enlivens the solitary hours of the invalid and gives delight to all".

So wrote Victorian gardening expert and journalist Shirley Hibberd in 1856. The success of Hibberd's illustrated treatises on marine and freshwater aquarium management, which were best sellers both when initially issued as part-work magazine features, and again in bound volume form running into a host of editions with suitable up-dating over the next twenty years, underlines the popularity of fish-keeping as a hobby in the 19th century.

The Victorian did not, of course, invent the notion of fancy fish as household pets and/or live *objet d'art*. The credit for that, like so many innovations of civilisation, goes to the Chinese who were known to be breeding carp selectively for colour and fancy from a thousand years earlier.

Certainly professional goldfish dealers were a well established fraternity by the time the second dynasty Chin emperors decided to add an ornamental pool to the attractions of the gardens of their Peking palaces—a structure which is today pointed out to tourists as the oldest feature of its type in the world.

To the Chinese also goes the credit of producing the world's first textbook on aquarium management, by Chang Ch'ien Te published in 1596.

Although pools containing carp and other edible freshwater fish were a feature of most European mediaeval monastery and manor house complexes, the purpose of such ponds, or stews, was strictly utilitarian. They provided ingredients for the meatless Friday meals which were obligatory for every Christian household affluent enough to actually dine on flesh with regularity.

A conservatory aquarium of the 1870's. Elaborate water-freshening systems are concealed by the oversize cherub statue.

The change of emphasis came at the beginning of the 18th century with the arrival of the first goldfish from China. Their introduction was inspired by the general craze for furniture and decorative objects *"a la Chinoiserie."*

Initially they were extremely expensive and when in 1791 the Russian Prince Potemkin entertained his royal mistress, Catherine the Great, at his country palace he could think of no more extravagently royal

gesture of luxury than placing a bowl of live goldfish beside the plate of each diner.

Meanwhile in Great Britain where the first goldfish had been introduced in 1711, the poet Gray was busily recording the kind of domestic incident which all fish (and cat) lovers dread, the death of his favourite cat, Selina, "drowned in a bowl of goldfish."

When we re-read Gray's elegy we are tempted to picture Selina meeting her unfortunate fate in a glass sphere. In fact the fatal vessel was almost certainly of opaque china.

Eighteenth century goldfish bowls still occasionally turn up in salerooms and antique auctions. A relatively large specimen, the size of a biggest baby bath, was included among the exhibits of the 1974 London Antiques Fair. With a blue and white, typical Chinese design on the outside and a white glazed interior with a motif of a scarlet fantail to designate its purpose, it was eagerly snapped up by a collector within a few hours of going on show, despite a price tag of several thousand pounds, and a large crack which would render it quite useless for its original purpose.

In the 1830s when Nathaniel Ward began his experiments with the use of miniaturised greenhouses for the transport and maintenance of rare and exotic plants, he discovered that his "Wardian Cases" as the structures were subsequently called, could equally well be adapted to keeping insects, reptiles and fish.

At that stage, however, the tax on glass made its use for anything as frivolous as domestic aquaria prohibitively expensive.

It was the repeal of the glass tax in 1845 which created not only a positive explosion in large scale glass architecture culminating, of course, in the 1851 Crystal Palace, but for a huge range of glass encased items for the domestic interior.

The fashion for wax fruit, stuffed birds, shellwork, or plants, especially ferns, enclosed in a glass dome, was also responsible for the development of the aquarium as we know it today.

When cheap glass made "Wardian Cases" available for the amateur fern enthusiast, as well as professional/scientific collectors, the desire for picturesque miniature landscapes with the glass walled enclosure encouraged the planting of the fern contents beside mini pools.

It was a logical progression for the pools themselves to then be given the added attraction of fish, and subsequently for these live exhibits to take over as the more important feature of the display with the plants as their subsidiary.

Early aquaria kept their freshness by a delicate natural balance of flora and fauna. However, although giving instructions on how to achieve this was an extremely profitable occupation for writers on aquatic affairs, such as Mr. Hibberd himself, it was never an easy accomplishment for the beginner. Some displays must have quickly become very smellily stagnant—and although from the first attempts were made to re-create marine waters with artificial mineral salt additives it is obvious from reading between the lines of technical books written at the height of the 19th century aquarium boom that most seascape aquariums especially were expected to offer their inhabitants only the most limited life span.

Combined aquarium and "Wardian case" fernery for the parlour dating from the 1850s.

Beginners were, therefore, often advised to concentrate on the more hardy specimens and to make, for example scientific observations on the way that tadpoles turned into frogs! But it is interesting to note, however, that the bulk of failures could be attributed to the traps which still ensnare many modern beginners.

Shirley Hibberd for example ceaselessly urges his readers against the overstocking of their tanks: "the

smallest fishes will require a minimum of three gallons of water and all larger types at least three or four" he cautions.

For a river tank "suitable for display in an entrance hall or foyer" Hibberd recommends "gold carp, roach and minnows" as suitable subjects.

Public enthusiasm for fish-keeping was meanwhile being stimulated not only by literature such as Charles (Water Babies) Kingsley's "Glaucus—or the wonders of the seashore" published in 1855 but also by the opportunities which cheap rail travel provided to take family outings to the zoo, where aquarium sectors were the latest novelties.

The first public aquarium in the world was opened in the gardens of the Zoological Society of London in 1853. The fish were kept in table-top tanks, the water content of which was circulated by pumps to a high level cistern, overflowed into tanks and then into cisterns below and re-circulated.

This method of ensuring continuous freshness was christened the fountain system and developed and improved in subsequent similar projects.

For example, in the first aquarium at the Dublin Zoo visitors were encouraged to assist in keeping the water oxygenated by using bellows to bubble air through the water.

The Paris aquarium which opened in 1859 used high pressure water mixed with compressed air, and a similar system was adopted by Hamburg Zoo when it installed an aquarium in 1864.

In Hamburg the seawater required to maintain marine exhibits was stored in reservoirs and circulated partly by a water pressure engine which was set in motion by the town waterworks, and partly by a steam engine, each engine driving a pair of water pumps.

In Continental aquariums fanciful decoration was the rule. The Hanover Aquarium which opened in 1866 was in the form of a single large simulation grotto. Rockwork forming the tank outers was projected from the walls and suspended from the ceiling.

The aquarium which was a prime attraction of the 1867 Paris exhibition was designed to be viewed from beneath, the base of the tank forming the ceiling of a passage walkway for spectators.

At Le Havre the entire aquarium interior represented the views that might have been enjoyed by the Israelites while passing through the parting Red Sea. The ceiling of the aquarium hall was modelled in the form of giant waves arrested in motion.

Diagram from a contempory journal showing the workings of the filtration and water circulation system at the London Zoo Aquarium when first opened in 1853.

While in Britain public aquarium architecture remained relatively restrained, putting maximum emphasis on exhibits and minimum on environment by the 1870s home aquaria had inevitably developed the fantasy opulence typical of late Victorian baroque with oversize statuary used to conceal pump workings and aquarium bases tortured into vases of wrought iron flowers, grimacing dolphins etc.

It was just this unfortunate stress on the irrelevant tank design which, apart from a hard core of fish enthusiasts who would always remain devotees of the pursuit, would ultimately phase out indoor aquaria as a mass appeal until the mid 20th century renaissence of interest in tropical fish.

WHAT IS YOUR OPINION?

by B. Whiteside, B.A.

Photographs by the Author

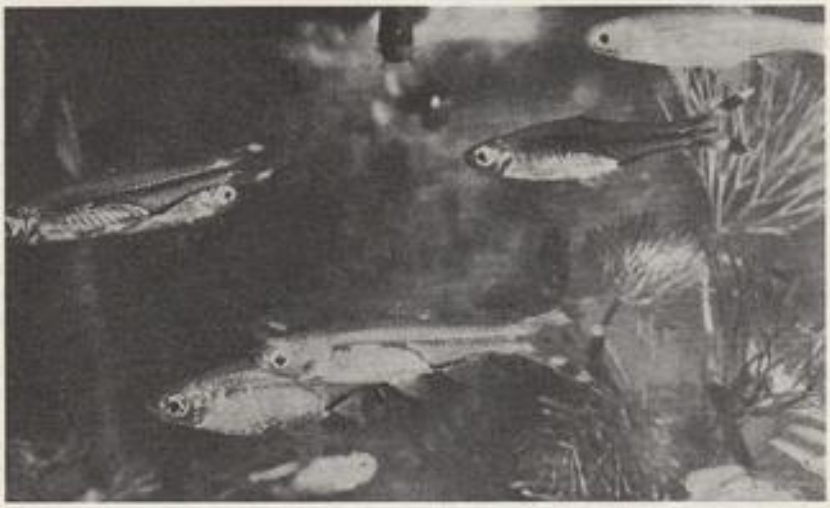
ALTHOUGH THIS feature is primarily directed towards readers in the U.K., it is encouraging to know that it is read in various parts of the world. Further confirmation of this fact comes with our first letter this month. It reached me from Gaspar Cabrera Roca, Ingeniero Industrial, Luis Antunez, 32 Las Palmas De Canaria, Spain. He writes: "First of all I ask you to excuse my bad English. I hope you will have no problem to understand what I mean. I am a reader of *The Aquarist* and I enjoy especially your column as it gives me the feeling I am in animated talk with other hobbyists. I have read in the May issue the following passage of W. Heiligenburg quoted by Dr. Robert J. Goldstein in his book *Cichlids:* "When the fish (*Pelmatochromis*) are bred in acid water (pH 4-5) there may be 90 per cent males; at neutral pH there may be 90 per cent females. It is therefore suggested that species of *Pelmatochromis* be bred at varying pH values to assure enough of both sexes. The sex determining mechanisms remain unknown."

"Perhaps the next information could be of interest. Dr. L. B. Shettles, Professor of Medicine in the University of Columbia, author of several books such as *Ovum Humanum* and *Your Baby's Sex: You Can Choose*, discovered, examining under a microscope of contrasts of phase many samples of sperm of mammals, that there are two types of spermatozoos in the same sperm—those with the smaller head, which he named androspermatozoos, presumptive bearers of the Y chromosomes which give rise to males; and others with the larger head, which he named gimnospermatozoos, presumptive bearers of the X chromosomes which give rise to females. In many tests in capillary tubes in the laboratory Dr. Shettles watched that when the medium was suitable the androspermatozoos (smaller head) moved faster than the gimnospermatozoos, and so they should be the first to reach the ovule, fertilizing it and giving origin to males. But when the medium was not very suitable the first to die were the androspermatozoos, the larger and slower survivors being the gimnospermatozoos which should give origin to females. The suitability of the meidum depends on its pH. For instance, in the case of man the most suitable medium is alkaline; when vinegar is added the acidity builds up and the smaller androspermatozoos die quickly, the gimnospermatozoos remaining much longer; but when instead bicarbonate of soda is added the alkalinity and the suitability of the medium is increased, and it is seen in capillary tubes how the smaller androspermatozoos move faster, winning the race to the other end of the tube—where, theoretically, the ovule should be. I think this should be of application to fishes and that fishes are the perfect subjects to prove the theory of Dr. Shettles, to my knowledge not yet proved, and with detractors. At this moment I have in one of my tanks more than one hundred *Epiplatys chaperi* born from three different pairs in the same water. All except two are females!" (I have left most of the letter in its original English as its meaning is quite clear—and its charm is retained. Unfortunately I have not had the time to continue my experiment to study the effects of pH on the production of male/female *P. kribensis* babies. The single adult male in my 'krib' tank has continued to mate with a number of the many adult females; many youngsters have resulted. None of those that have grown large enough to sex is a male. One point is worth remembering in this connection: in most species of animal one male is capable of fertilizing several or many females.)

"Being a lover of *P. kribensis* (makes me keen to) read articles, with avid interest, on this species, although pictures—whether line drawings or photographs—attached to said articles, or in *The Aquarists'* Bible (mine's Sterba's *Freshwater Fishes*), never seem to do the species justice. Hence I started to try to take some photographs of my own. Usual photographs, in colour, are either overdone or look touched up. In Sterba's *Freshwater Fishes of the World* (1st issue, 1965-66) the 'kribs' illustrated are either an old pair or are suffering from some form of poisoning—as indicated by the blue gill covers. I've witnessed the blue gill effect only on two occasions when the air had been denied to my undergravel filter. I no longer use gravel filters inside a tank. During power cuts my fish died by the dozen—but only in the tank with the over efficient U/G filter." These comments come from Mr. R. Hutchinson, 49 Greentop, Pudsey, West Yorks. LS28

8JB. He continues: "At the moment I have a male 'krib' which I am crossing with his daughters as his mate died three weeks after their second spawning. The male I have spawned almost one dozen times; and only when they had no choice did he and his current mate spawn in a flowerpot as per the book. . . The reason I am crossing him back to his daughters will be obvious if you look at the enclosed coloured transparency." (The fine male in Mr. Hutchinson's photograph has got eleven black dots on its orange topped caudal fin and about eight on its dorsal fin.) "I've not managed another like him yet. As I'm currently using second generation females I'm about halfway towards a seven spot male (tail only). I don't know if I'm using the correct procedures but I will keep on trying."

"In the June issue Mr. C. Davidson, of Aberdeenshire, was wondering if acidifying the water



would produce males. I can state that it will—but only if, as far as I know, it is done before eggs are laid. Also, I've found that by removing half of the parents' water *with* the fry, the fry can be raised away from the parents, allowing the latter to spawn again. It is put into their new container first and then the fry are added. Fresh water can be added, slowly, until the required water level is reached. Using this method the age of the fry, when moved, becomes almost unimportant. It is a system that works with other dwarf cichlids, e.g., *Apistogramma agasizzi, borelli, ortmanni, kleei* and *parva*." Mr. Hutchinson lists the following details of his *P. kribensis* (*P. pulcher*) spawnings. "1st—under 7 in. diameter clump of Java moss; male also fanned eggs. 2nd—Java moss again. Male again fanned eggs and also raised fry after female died. 3rd—changed tank. (2nd spawning raised 40 fish; 35 females; one used here. Spawned on under side of piece of 1¼ in. plastic pipe. This female's first spawning. Young eaten. 4th and 5th—same female, same result. 6th—removed pipe with eggs. 7th—changed females. Eggs eaten. 8th—second daughter again ignored pipe but spawned under a dark red 2 in. pebble. How I don't know! Removed the young on the fourth day to old hollow *Aponogeton* bulb. Perfect mother. 9th—ignored pebble and used plastic pipe. Both parents fanned the eggs. Pipe was floating at the surface. Perfect parents again. The water here had been acidified for the last two spawnings. Spawning 8 has given 100 per cent males—30 in number. 9th as yet unknown. 10th—in plant pot—possibly because I had removed the plastic piping. The young from the 9th spawning still in the same 2 ft. tank with their parents; but the young from an earlier spawning are bullied and chased as would be strangers or other adults of the same species. I will soon alter the water to be more alkaline or neutral as I want to try third generation females. I do have one other problem in my quest for a male like my special one. He only had four spots when I first bought him and only reached his peak at almost 2 years of age. I think it will make a change when I don't have to search the whole tank when a spawning occurs.

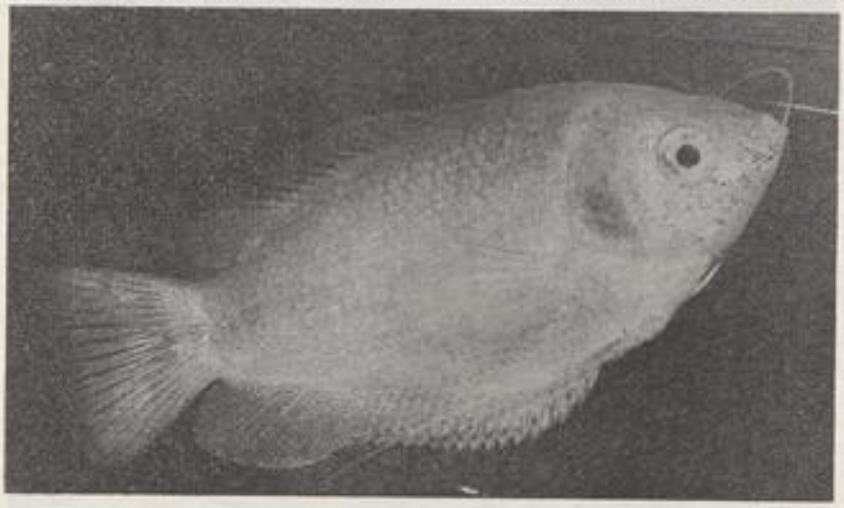
"If the plant I call Java moss is indeed Java moss then I can tell you how I grow it. I use a 36 in. × 12 in. × 15 in. deep tank. Across the back of it, at an angle of 45°, is a large flat rock which is directly under one of the three 60 watt bulbs; and this rock is covered with the moss. The tank is lit for six hour daily and is 4 ft. away from a window which faces north and receives quite a bit of late evening sunshine in the summer. I have a second tank full of breeding white cloud mountain minnows. This tank receives only a couple of hours of afternoon

sunshine through a south facing window, and is lit by a 4ft. Gro-Lux tube. Growth is very much reduced and dependent on depth of water. It becomes rampant when the water level is reduced to 5 in. or less. The water in both tanks is neutral but the first tank has softer water. I don't use size of fish to decide if a given tank is safe with fish that are added and possibly lacking in size. I use size of mouth—and I still occasionally get a surprise. I have a male of the *A. borelli* species you showed in the April edition . . . He is all I have left from a spawning I did of this species some time ago. To me the interesting point was the number of males which had bright orange spots in their tails—a line that just would not breed for me, unfortunately, and just as suddenly died out. By the way, to anyone who breeds this species and finds, after a few months, a larger male among them, I would say—remove it! It stops other males from growing and sexing. Such latter males show a colour pattern that is very similar to the females' pattern, the difference being that the black leading edge of the ventral fins in the female tends to be lacking or to be very subdued in these under-developed or partial males."

I would point out that I do not necessarily agree with the views expressed by contributors to this feature nor do I accept responsbility for the views expressed. Readers who send me letters should PRINT their name and address—and keep their writing as neat as possible. Some recent letters have been almost impossible to read. As I always have a wide selection of letters from which to choose those for publication, the illegible ones tend to get passed over. Letters should be sent to me c/o *The Aquarist & Pondkeeper*.

Photograph 1 shows a shoal of scissors-tails, *Rasbora trilineata*. Please send me details of your spawning experiences with this attractive little fish. Photograph 2 shows what is surely a female of some species of gourami—yet a batch of these females was recently supplied to a dealer as female paradisefish, *Macropodus opercularis*. The males supplied were certainly paradisefish—but the females were not. Can anyone identify this female gourami in the photograph? The fat, healthy female has no colour on her plain body and looks rather like a colourless giant gourami. Photograph 3 shows a male guppy amongst leaves of *Hydrocotyle* (pennywort) and *Echinodorus* (Amazon sword). Please send me details of the conditions under which you cultivate either plant.

Mr. J. Williams lives at 16 Oxford Street, Griffithstown, Pontypool, Gwent, and he has successfully spawned and raised 'kribs.' The pH of the water in the tank was 7, and 50 per cent of the young were



males. On another subject Mr. Williams writes: "I thoroughly endorse Mr. P. Hegarty's views (June edition) relating to the price of fancy tailed guppies. Having bred these fish myself, on several occasions, I am at a loss to see how this prolific fish commands such a high price. I disposed of most of them to friends and acquaintances, as most pet shops seem reluctant to take them—or do so for a mere pittance, their reason being that they have hundreds of them. Why the great paradox?"

To be quite honest, few if any fishes hold as big an attraction for me as do good quality delta tailed guppies—and indeed I know of few fishes that are harder to produce. Admittedly almost anyone can produce mediocre guppies in large numbers—and with so many such guppies about it is possibly difficult to find a market for them. However, the task of producing good quality guppies is a different kettle of fish. I'll pass the subject into the capable hands

of Mr. J. Hutchings, of 25 Stanley Croft, Woodplumpton, Preston. Mr. Hutchings is editor of the journal of the Fancy Guppy Association. He kindly sent me some recent copies of the journal and they contain a lot of interesting information for the keen guppy breeder. In his letter to me, Mr. Hutchings writes: "... You will see that at present some of us are endeavouring to publicise the F.G.A. nationally and to increase membership. Recently we held our annual International Show at Birmingham, and about 100 people exhibited some 500 beautiful guppies of all standards. Good breeding stock is interchanged among members throughout the country. In your June feature Paul Hegarty writes regarding the price of guppies. If the pair purchased for 75p were a 'pair', in other words, the male and female were of the same strain, then 75p is extremely cheap. What Mr. Hegarty fails to realise is that although guppies are very prolific, the maintenance of a strain involves a great deal of work. When one considers the spawning potential of some egglayers I think his remark is over-stated. Also the size at which the fish are imported reduces the number which comes in, per box, from Singapore." Mr. Hutchings was kind enough to write the following piece, *Notes on Breeding Show Guppies*, for *W.Y.O.?* readers. He writes:

"Origin—The first fact a potential guppy breeder must remember is that the guppy which appears on the show bench today bears little resemblance to the wild type from central America. Enthusiasts throughout the world have bred guppies to produce specific types and today we have many distinct finnage shapes, from the super wide delta of the American I.F.G.A. to the beautiful pintail of the F.G.A. standards. Considering male finnage only, there are probably 20 standard shapes shown throughout the world. But not only shape; many associations split their fish into colour classifications, which are numerous. Hence the beginner must remember that the fancy guppy has come a long way since its discovery in the 1850s."

"Genetic make up—Very often the hobbyist will buy a pair of guppies from a dealer, and raise the young—only to find that they look nothing like the parents. He feels cheated, but may not necessarily have been as the fish he bought may be the result of an outcross where the object is not to provide fish that will breed true, but to produce show stoppers or good sellers. To begin breeding show guppies the hobbyist will do best to obtain fish from an established line. Members of the F.G.A. regularly exchange breeding stock. By selecting only the best for breeding can the breeder maintain his strain for 3 or 4 generations. At this stage he should outcross using one parent from either a completely unrelated strain, or he may have split his original first brood into two and run these parallel, mating brother to sister, and thus the outcross will be to distant cousins. This inbreeding can easily cause a rapid deterioration in the strain and very careful selection must take place. The ability to pick the brains of other breeders to find the dominant and recessive characteristics is extremely useful!"

"Tank requirements—I myself prefer to use unplanted tanks of 5-7 gallons capacity, with a maximum population of 12 adults per tank. Because

of the feeding methods I will explain later, the water in the tanks is completely changed each week. A level teaspoonful of salt is added per gallon. Some people use larger planted tanks quite successfully; I have always found problems. Aeration is through sponge filters as the objective is to circulate the water rather than collect debris."

"Feeding and culling a brood—The fry must be fed to their capacity with foods they can swallow easily and that are palatable. Guppies digest a meal in two hours. For the very young fry Tetra baby food and a daily feed of newly hatched brine shrimps is ideal. As the fish grow then powdered flake can be fed. At three weeks of age the fish are sexed in order to avoid unwanted matings; identifiable females are placed in a separate tank. Any weak or deformed fry should be culled. At six weeks of age the fry will eat larger flake, brine shrimps, liver, beef, heart, microworms, small white worms, etc. The objective is to feed large amounts of live foods or meat products, and the minimum amount of flake. By changing the water regularly, over feeding is irrelevant and the fish should be fed at least five times per day. Between two and three months of age the important decisions have to be made about which fish to keep and which to discard. Out of 100 fry it is unlikely that more than 20 per cent will be of any use. By three months the brood should be down to 10 males and, say, six females."

"Temperature.—At birth 80-82°F, maintained for 6-8 weeks, then gradually reduced to 75°F or lower when the fish show size. Again, some breeders disagree with this and rear their fish at a temperature as low as 70°F. These fish will still produce good show fish but will take longer to reach show size."

"Conclusion—By following these recommendations, having obtained good initial stock, don't ruin hard work by showing your fish in dirty jars; always present your fish to the judge in the best possible manner. As an F.G.A. judge I have often seen good fish ruined by poor presentation."

I was very pleased to hear from yet another specialist group—the Newcastle Guppy and Livebearer Society—and to receive a copy of the latest edition of their useful and interesting journal. The Chairman of the N.G.L.S. wrote me a piece entitled *Breeding Good Guppies*. His name is Mr. D. Renton, and his address is 128 Dunstan Tower, Garth 18, Killingworth, Newcastle upon Tyne, NE12 OTX. He writes:

"The first and most important point is to ignore the standard opinion that ill-informed aquarists have given for as long as I can remember—that livebearers are easy and should be every beginner's fish. Anyone who wants to breed any variety of livebearer, especially guppies, must specilise if he (or she) wants a really good strain that will last. Owing to the fact that females need only one fertilization to last them for the best part of their lives, their mating must be strictly controlled."

"Buying stock—You can do nothing without good stock and advice, so do not be in a hurry; and remember that patience is a virtue. Read all you can, study the correct shape of the fish, the correct finnage and which common faults to watch for. It won't hurt to join one of the specialist societies such as the F.G.A., or the N.G.L.S. which now has a correspondence membership. The variety of good male stock in the shops at the moment, in the North East, at least, is definitely improving, and providing you know what you want, buying the male should not be a problem. However, females are rather more difficult as in my own area it is impossible to purchase a true 'pair'—and I assume it is the same elsewhere. If you know someone already breeding guppies try and obtain a young virgin female; if not, look for the healthiest mature female you can find. It should at least have some of the characteristics you require, even though it will almost certainly be gravid if bought from a dealer's. But always remember, no matter how colourful a female is do not buy it if it is deformed either in body or finnage, no matter how slightly. Once the female is obtained the male should be introduced right away. The female will give birth within 28 days; and although it may be impregnated already with sperm from an unknown male, a more recent fertilization by the male of your choice seems to be dominant to a certain degree. So, if the female gives birth within 20 days after pairing, ignore the fry—unless you have the facilities to rear them—and concentrate on the next brood. Separate males from females as soon as possible and keep the young females virgin until you are ready to mate them with the best of your males."

"Guppies will take newly hatched brine shrimps and crushed flake foods—plus sifted *Daphnia*—from birth. One favourite stand by, spinach, has recently been proved to cause gall stones and bone deformities; but there are plenty of vegetable flake foods on the market that will do just as well. Livebearers fry benefit from an addition of calcium to their diet. My own method is to grind up a tin of 'Super Foods' Dried Shrimp, which consists of large, whole shrimps. They are mostly shell and virtually useless for livebearers in their original form; but ground down to a fine powder, with the help of a household grinder, they are an excellent addition to the normal fry food. The next step is to cull. It is no good keeping every male that takes your fancy: you must decide on the dominant colour strain in your first brood and pick only the best; then, with luck, you will at least have the basis from which to work. There will be plenty of time for

experimentation with different crosses after you have gained more experience."

"Water conditions for guppies are not critical as long as extremes of pH and DH are avoided. Normal tap water should be perfectly adequate. However, clean water is essential and I would recommend changing at least one third of the water once a week. Finally, everyone has a different method of raising good fishes, whether they are guppies or discus, and there is only one way to grow good guppies: go ahead and try. Take the best advice you can get and learn by your mistakes—for experience is the key to learning and success."

Mrs. June Renton is the Secretary of the N.G.L.S. From the previous address she writes: "I would like to recommend a visit to the Edinburgh Botanical Gardens to your readers. Although the prime interest in the aquatic section is obviously plants, the fishes that are displayed in the small number of tanks devoted to tropical plants are exceptional, both in size, condition and coloration." The main attraction, for me anyway, is the huge black sharks, *Morulius chrysophekadion*, which are approximately 2-2½ ft. in length and about 10-12 in. in body depth. These are to be found, along with a colony of tinfoil barbs, *Barbus schwanenfeldi*, several *Gyrinochelius aymonieri*, and literally hundreds of rosy barbs, *Barbus conchonius*, in the large pond containing the Victoria water lilies.

"Our society visited the Botanical Gardens last year and we were so impressed with the display and the beautiful surroundings that we are returning again this year to see how the various species are progressing . . . I must add that I enjoy reading your feature very much, although I do not always agree with the views expressed, especially on any subject related to livebearers; but I hope that you will carry on with the good work."

I hope that readers will have found something to interest them in this month's batch of letters. Unfortunately I do not have space for any of the many others I received; however I shall hold some of them over until next month's feature. For a future edition please send me your opinions on the following topics: (a) What have been your experiences with the combtail, *Belontia signata*? (b) What unusual fishes have you managed to spawn, during the summer months, and under what conditions? (c) Please send me details of any other thriving specialist groups. (d) How can one cut back on the costs of keeping fishes and plants in these times of soaring costs? (e) What recent American books about the hobby have you found most useful? I look forward to hearing from you.

BOOK REVIEW

Sea Water Aquaria *by L. A. J. Jackman. Published by David & Charles (Holdings) Ltd., at £3·25 in U.K.*

Mr. Jackman is a professional aquarist who runs the Plymouth Aquarium. He is also a well-known naturalist, expert on British sea-shore life, and an accomplished aquarium photographer. He is a Fellow of the Zoological Society and a member of the Marine Biological Association.

The book is a replacement for *Marine Aquaria*, originally published in 1957. The text has been revised and updated, and contains drawings and photographs. This edition was published in 1974.

Sea Water Aquaria is a very practical work, written from a background of obvious experience in collecting and keeping British "native" marine creatures. It is full of tips and ideas, and covers very many small points of information which only come to light during the actual aquatic exercises, and would not occur in theoretical situations. For instance, we are told to remove lobster specimens from their aquaria monthly in order to brush off dirt from the carapace and tail segments. We are also shown how to safely pick up a large lobster whose pincers must be avoided.

Mr. Jackman deals with both the fishes and the invertebrates which occur around our coasts and are adaptable to life in captivity. The invertebrates in particular are dealt with very thoroughly. All species are described individually and by common name for easy reference. Details of care and attention, feeding frequency and preferences, and so on are given. The invertebrate data is more comprehensive than I have seen elsewhere.

The section on aquarium maintenance is somewhat limited, and suggests that the author has probably always had access to supplies of natural seawater in good condition. A description of the construction and operation of the Plymouth Aquarium is given, and is of course rather foreign to the methods used by many inland amateur aquarists. In all the impression is given that aquarium maintenance is rather easier than many of us find it to be, and naturally this may be so for a person of Mr. Jackman's experience and with the facilities he has available. Certain suggestions, such as the use of *glass* wool in filters, and biological filter beds of only 1 in. depth, are old-fashioned now and could have been modified for this new edition.

These last comments should not, however, put anyone off reading this book. It is a mine of information on British marine creatures and their care and collection. All marine aquarists, tropical or temperate, will benefit from it, and especially those keeping invertebrate collections in "natural system" aquaria.

A. Jenno

B.K.K.S.

The British Koi Keepers' Society held their fifth annual general meeting on Sunday, 26th June, when the following officers were elected: Mr. G. W. Lupton, chairman; Mr. A. J. Bullock, general secretary; Mrs. P. Bryant, treasurer; Mr. M. G. Waumsley, news editor; Mr. D. C. Davis, membership secretary; Miss V. Frost, public relations officer; Mrs. S. Hedges, minutes secretary.

The committee members elected were: Mr. G. W. Atkins, Mr. T. Freestone, Mr. D. M. J. Hollom, Mr. W. R. Seal.

The retiring chairman, Mr. Eric Allen, was presented with a cigarette lighter as a small token of appreciation for all his excellent and untiring work on behalf of the society for the past three years.

Following the general meeting a film of the recent tour of Japan was shown by Mr. R. G. Woodward, who also provided a delightfully amusing commentary. Slides taken in Thailand and Japan were also kindly shown by Mr. and Mrs. A. Danks and Mr. M. Waumsley.

The next general meeting of the society will be held during the "Aquarium Show '75" in the Royal Horticultural Society's New Hall, Vincent Square, London, on Sunday, 26th October.

Full details of membership of the British Koi Keepers' Society may be obtained from Mr. David Davis, 137 Gayfield Avenue, Brierley Hill, West Midlands DY5 2BX.

ALL GLASS "STYLE AQUARIUMS"

It is regretted that it was not possible to include a review of these products (advertised elsewhere in this issue) which will now appear in the September issue.

MARINE QUERIES

by Graham F. Cox

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.

I have been puzzled by the fact that undergravel filtration has been viewed with disfavour by many aquarists for use in freshwater tanks, because the dirt is retained in the tank under the gravel, yet I have not heard undergravel filtration scorned as far as marine aquaria is concerned. Surely, in marine it is even more essential to remove all dirt from the tank than it is in freshwater? Hope you can answer these queries especially the first, and could you advise me on a completely thorough book to read on marine aquaria?

Is there any advantage in using an ultra-violet tube with a diatom filter to kill bacteria or would the diatom by itself be sufficient as the makers claim it will filter bacteria?

Thank-you.

I didn't know that the undergravel filter had "been viewed with disfavour" by freshwater aquarists. In fact, I know of thousands of extremely successful tropical freshwater and saltwater aquarists who will use nothing other than U/G filtration.

However, I also know of a few tropical freshwater aquarists who "bad-mouth" the U/G filter on the grounds that it destroys their plants when all they are doing wrong is that they have the *turnover-rate* (=the rate of water passage through the filter-bed in gallons per hour) adjusted at far too high a setting for the tropical *freshwater* (i.e., as opposed to *saltwater*) system.

The specific turnover period (i.e., my term for the *time* taken for the total water in the system to pass through the filter-bed *once only*) should be no less than 2 hours for a freshwater system. If certain delicate species of plants are being cultured, e.g., Madagascar Lace Plants (*Aponogeton fenestralis*), the *specific turnover period* (S.T.P.) should be of the order of 4-5 hours plus.

This means that with airlifts having a maximum diameter of ¾ in. it should be possible to count each individual air bubble as it slowly rises within the airlifts.

Having regard to your remark that "dirt is retained in the tank under the gravel," I can only assume that by "dirt" you are referring to fish excretum.

However, I must assure you that this concept is also wrong. Provided that the filter is correctly designed and that the tank is not overstocked and/or overfed, the rate at which fish excretum is drawn into the filter mass is exactly balanced by the rate at which biotic activity within the filter bed "digests" (i.e., de-toxifies) this material.

Returning now to the marine query, I could show you U/G filtered marine and tropical F/W tanks which are five years old and which have yet to receive their first filter-bed overhaul! And these tanks are still in good condition and still well able to maintain their designed optimum loading capacity of 1 in. of fish per two gallons of water!

I am sending you a free leaflet entitled "Starting a Marine Aquarium" which explains the "nitty-gritty" in detail and also lists further reading matter.

The ultra-violet irradiation chamber is of doubtful

(Continued on page 173)

From a Naturalist's Notebook

by Eric Hardy

ANGLERS may appreciate the corpulent carp in England, where surreptitious feeding at some private fisheries tops the competitive scales with weights which please their customers. Elsewhere, this Asiatic fish may become a pest. Southern Australia, which calls it the European carp, finds its continued spread a serious threat to more welcome introductions, like brown and rainbow trout, as well as to native fish.

Until 1960 it was a rarity in Australia. Today it breeds wild in Victoria, South Australia's Murray River, N.S.W. and Tasmania. Eradication is considered impossible, despite penalties for introducing live carp to water. It spread from farm-dams, where it was introduced for food and sport. Biologists have always regarded it with suspicion. When the British handed over their Palestine mandate, they feared the effect of Israeli carp-farms upon the native Tilapia and barbel in lakes Tiberias and Nuleh.

Man-made changes to the Australian environment speeded its adaptable colonisation. It has spread into every state of the U.S. mainland. Crucian carp and goldfish introduced to Australia at the same time have been much slower to extend their range from the Geelong. It is about a century since they were introduced to Melbourne Botanic Gardens. Fifteen years ago, an intensive commercial publicity for importing German carp to farm dams and ponds began the change in its status. By the end of 1961 the sale was prohibited and in 1962 the carp were listed officially as a noxious fish. Then began a carp poisoning campaign. This failed to make a total kill, and the survivors continued to breed, while water continued to be stocked illegally.

Weed-control was one of the reasons for introducing them into Tasmania, but they have not yet occupied the open rivers there. In Australia, they spawn mainly from September to November when water temperature increases to 18°C. They will breed continuously in 32°C, especially favouring shallow, recently-flooded areas. They grow faster in Australia than in Europe because they have a longer growing period of high water temperatures, and reach 1·5 to 2 kgs. after 2 years.

Their chief damage to local fish comes from their feeding habits, destroying the weed beds which shelter young Murray cod and golden perch, already handicapped by man-made locks with constant still water more favourable to carp. Despite the mass of scientific literature on carp, South Australia has a senior fisheries biologist on full time research into its behaviour.

Meanwhile, in Scotland, pancreatic necrosis disease, a notifiable fish-disease since 1974, has been causing losses of young rainbow trout at Argyll's large trout farm at Ford, which produces about 200 tonnes of commercial trout for processing or selling frozen to U.S.A. and Canada. This causes some 80 per cent of the losses in young rainbow trout.

When I was staying recently in Argyll, at Loch Awe House, a lochsider dwelling nearby, trolling this "free" lake from 6 a.m. to noon, brought ashore a fine fresh-run 12-lb. salmon as well as several brown trout to show me. The cast of a 55 lb. salmon of 48½ ins. length and 28½ ins. girth displayed in Loch Awe House was caught on the River Awe in June, 1901. The River Awe also yielded a 56 lb. salmon on fly from Pol Verie after a 2½ hours fight in June, 1923, and a 55 lb. male specimen hooked in the Errochd Pool and landed at Dalraed 1¼ hours later. Old records of 54 lb. fish from the same river were landed in 1877, and another at Taynuilt last century and a 51 pounder there 1907, a 53 pounder in 1913, 51½ lb. in 1937, also three more of 51 lb., also 47 lb, 44 lb, 42 lb. all illustrating its value as a salmon water.

"Monsters," from inventions at Loch Ness to more recent publicity at Barmouth in Cardigan Bay are, like the "visions" of people throughout ages, explained by psychologists and anthropologists as the emotional "after-vision" constructions of perfectly honest, if naive, or emotional people. As I mentioned the other month, the Welsh "monster" story first broke print in March; but in summer it still flourished, with imaginative picture postcards selling to gullible tourists who already swallowed the ficticious dog's grave at Beddgelert and the unnatural history of Bangor Cathedral bible-garden.

As part of a team from Granada television, I investigated these stories on the spot. Like other "monster" claims, there was no evidence that the various witnesses had seen the same thing, none of them had sufficient basic knowledge of marine zoology to know or identify the regular and likely animal life visiting the bay, and none had watched their "experience" long enough, or produced sufficient carefully observed details, to identify anything

at all. What was acclaimed the monster's "young," found on the beach, were half-eaten rays, and a photo displayed in a shop as probably the monster, was the shadow of anything ashore falling on the water, and well out of focus.

A bunch of young schoolgirls returning along the shore at dusk one day in March saw something on the shore, which hurried, humping up its back as it made for the sea. One saw its fang-like teeth, another said that it dragged its tail-end. But they lost no time running home, scared about it. The biology teacher at their school wasted no time on it. Nobody returned to watch the shore at the same state of tide on subsequent days. But from this brief frightening experience, without any personal observation, their art master constructed for sale, a commercial postcard, outlined similar to the long-necked prehistoric monster type of drawings in mediaeval legends!

When I asked why he had drawn front legs the same length as the hind legs, and given them 3-clawed toes rather than four, why the eyes were drawn at the front instead of the top of the head, for instance, these turned out to be the assumed positions, with no real evidence. The girls probably saw briefly a bull grey seal in their panic; but up the coast, at Llanbedr, another witness claimed to have seen the hump and beaked head of a huge animal basking in the sea, which dived with a vaulting movement—presumably a basking dolphin or small whale. Another "recollected" encountering on the road one night 35 years before, a monster "like a crocodile"! All the would-be monster-lovers followed up their experiences by gossip and assumption; none went back to conduct a calm and serious observation.

Monster-publicists, Press and public, cannot appreciate that a single prehistoric, plesiosaurian type of creature, as depicted on the Barmouth post-cards, could not survive alone for thousands of years. A large breeding population would eventually produce specimens, like the famed but often misunderstood coelacanths, once modern deep-trawling methods reached the area, as they reached South Africa after the war. I may add that the Granada reporters, who conducted the investigation fairly, had never fallen for the unsubstantiated claims from the start. An academic anthropologist, who accompanied the team as an observer without taking part, had perfectly scientific explanation for these stories from the start. Newspapers, too, don't necessarily believe the stories they print, if these are bright and extend their readership, like horoscopes, among the less thoughtful, less informed and naive. It is news that somebody claims it, even if it is ignorant rubbish.

During the Wild Creatures and Plants Conservation Bill's recent committee stage in the Lords, the question was raised of controlling skin-divers who are raiding rivers for mussel-pearls. Unlike the few professional searchers, who return mussels with pearls to small for use, it was alleged that the amateurs discard them, thus reducing the future stock or river-pearls. By licensing lobster-fishermen, South Wales fishery district is effecting some control over skin-divers' predations on these crustaceans. I've seen skin-divers in Anglesey's western bays collecting large crabs and lobsters, and examining specimens in the fishermens' pots.

Apropos my comments on the mild winter's effect on the early emergence of natterjacks, etc., this year, I was surprised to see, in the new Exmoor Natural History Society's mimeographed journal's first issued, that their first adders were not reported on the North Hill at Minehead until April 10, whereas one was abroad in North Wales at the end of April, a usual date. Others were on the lower slopes of Dunkery, on Grabbist and in Woodcock Lane, Exmoor. A few slowworms were also reported in a Wootton Courtney garden. They find their best marine-life collecting-shore around Hurlstone Point and along the shingle, sand and mud shore around Minehead, in contrast to the huge rock pebbles of Porlock Bay and the rocks from Combe Martin, where shorelife is more limited.

Are people who criticise societies for holding fish-exhibitions and shows, whether recent correspondents or Freshwater Biological Associations and British Herpetological Society's representatives I've heard speak in this vein, snobs? Either that, or they don't know much about fish-shows, I thought when, in June, I had the honour of opening, then presenting the awards at, the first open show of the Dunlop Aquarium Keepers' Society which attracted a record of over 800 entries in their great factory hall at Speke, a very overcrowded Liverpool suburb. At least 1,000 people were there when I arrived. Over 55 years ago, when I wrote the nature notes in my junior school magazine in Liverpool, I often included notes of carp, bream, rudd, perch and eels in the field-pits on the farms at Speke when very few people lived there, except the farmers scattered around the isolated lonely church. Now, those pits have gone, except for a few left in factory grounds. This show was the only opportunity many would have of seeing such a rich variety of freshwater fish from almost all over the world. Its educational value to adults and the many children was immense. There were academic biologists there too; but the practical work of too many academics begins and ends with their research-grants. Most of us are interested in live fish, not pickled in museum specimen-jars, and the fish-show is just as good an introduction to fish-zoology as a TV film or some of the "papers" I have suffered at learned societies!

MORE ABOUT ANEMONES AND *Amphiprion* SPECIES

by Steve Foley

MANY articles have been written about anemones and *amphiprion* (clown fish) and this is but one more, but one in which the distilled sightings and personal experience of many years will, I hope, give a new facts and shed a little more light.

Textbooks tell us that there are at least 1,000 species of anemone ranging in size from ½ in. to over 4 ft. diameter, the range of which is worldwide, occurring at depths from the intertidal zone to several thousand feet deep.

Anemones belong to the phylum *Coelenterata* now more commonly *Cnidaria* (stinging jellies) which is a group characterised by a simple body structure containing a single opening through which food is taken and waste ejected. This group also includes jellyfishes, corals and hydras. *Coelenterata* was derived from Greek; koilos—cavity, and enteron —intestine, because anemones, etc., use their body cavity as an intestine.

For the aquarist, identification of more than a few dozen species is impossible and, on the whole, unnecessary. With countless colour variations in some species and different sizes with vastly different numbers of tentacles, even biologists find identification difficult, especially without dissection and microscopic examination. What concerns most marine aquarists is not the taxonomic information and technical jargon, but down-to-earth, good old-fashioned fishkeeping, which quite recently seems to be getting lost somewhere along the way. In a nutshell, keeping, feeding and breeding.

Anemones (and that goes for other coelenterates too), require good water conditions free from toxins present in newly set-up aquariums and overcrowded ones and those that have not had regular partial water changes. Fairly strong water movement is also a must. While vitamin and trace element additives may be beneficial, regular partial water changes are still recommended since this is the only sure way of removing toxic wastes and replacing trace elements to the system in the correct proportions.

The correct substrate should be provided, i.e., sand for the burrowing or sand anemones and rocks for the stick-on types having large basal discs.

Lighting is of paramount importance to practically all marine life and an anemone's light requirements vary enormously. Deep water and cave-dwelling species obviously require light or subdued light and lighting such as the Grolux types, rich in the red rays of the spectrum, should be avoided. The majority of anemones, however, which concern us as aquarists, and particularly those species which are hosts to *amphiprion* (clown fish) are found in relatively shallow, clear water and their light requirements are high. Natural light is by far the best, but for most this is impractical and so daylight type fluorescent tubes and 100 to 150 watt tungsten lamps are necessary.

A great deal of experimentation by aquarists is still required in the lighting field to achieve the various conditions present at the vastly different depths in nature. We are all pioneering the marine hobby, so don't sit back—get stuck in! In the case of many anemones, *e.g.*, *Anemonia sulcata* which is bright green due to the *algae* symbiont (*zooxanthellae*) living in the anemone's body and tentacles, absence of light causes the *algae* to die, followed shortly by the anemone. Other anemones containing *algae* will change colour when the *algae* dies, but often will survive in the different, usually white, colour phase.

Feeding presents little problem for the giant anemones, such as *Stoichactis, Radianthus, Condylactis* and other true predators. Any meaty or fishy offering will be accepted. With the small anemone species, which are particle feeders, the same foods liquidised will be accepted. A varied diet for anemones is just as important as for fishes. Feeding every other day will usually be adequate, although feeding a little each day may be better.

Not all species of anemone are compatible and if maintained in the same aquarium they must be kept apart. The arch villains are undoubtedly *Cerianthus* species and are quite lethal to other species, at least to all the types I personally have kept with them. Over the years, I have lost at least five giant *Radianthus* species, several over 10 in. diameter. *Cerianthus*, once on the move, can easily travel six feet, or more, in a night and anything its tentacles brush against will be no more next day. Huge lumps of *Radianthus* anemone have completely withered away, as though touched with a red hot poker. Complete disintegration usually occurs within a few days. Live corals, too, are quickly killed by *Cerianthus* which, incidentally, do not sting one another, unlike some other anemones that can, in fact, kill their own kind. One of these is reported to be our own native beadlet anemone (*Actina equina*). There are no fish, to my knowledge, which are immune to a *Cerianthus* anemone's lethal stinging cells (the *Cnidoblast* or *Nematocysts*).

Reproduction

Of the four methods of possible reproduction, I have witnessed the first three listed.

Methods:

1. Internal incubation of eggs to give rise to miniature live-born anemones ejected from the mouth. Our own native beadlet anemone can eject several baby anemones ranging in size at birth from 1/16 in. to ½ in. at daily intervals for several weeks. Optimum temperature seems to be about 60°F.

2. Division. The anemone divides longitudinally. Once again, our own native snakelocks anemone, which is bright green, reproduces in this way. The roughly cylindrical body becomes oval with a gradually increasing constriction at the middle until a figure 8 shape is quickly reached, culminating in a complete break resulting in two perfect anemones, each with half the number of tentacles of the original. During growth extra tentacles appear on the periphery of the oral disc. I must mention here that it is said that both beadlet and snakelocks anemones are dangerous to *amphiprion*, but I have not put this to the test.

3. Egglaying. Some species (e.g., *Halcampa*) eject an egg mass which eventually lodges on the substrate until hatching occurs. Other species shower eggs into the aquarium like an underwater fountain in slow motion. This I have witnessed with *Cerianthus* species on two occasions—eggs flattened and oval in shape, similar to a "flying saucer", and of dark brown coloration. On *each* occasion, about 1,500 eggs were laid. Also *Radianthus malu* in which the eggs are dark green and float. Under the microscope, minute hairs around the surface of the eggs can be seen, but since they are opaque, nothing else is visible. The text books tell us that some anemones have male and female sex glands and so eggs are automatically fertilized, but that with other species, male and female specimens are required. The release of sperm by the male is reported to be either through the mouth, tip of tentacles, or special pores along the column. Unfortunately, authors never say which anemone species are which. The eggs give rise to free-swimming sea anemone embryos called planula *larvae*. I can only assume that the minute jelly-fish type creatures up to ¼ in. diameter that I often have in my tanks containing anemones are these planula *larvae*, but of this I will not be sure until they attach themselves the "right way up" and begin to look more like anemones. These creatures, whatever they may be, eat newly-hatched brine shrimp and other similar-sized creatures with relish.

4. Budding-off (Laceration). In this type of reproduction a small piece of the base of the adult breaks away (buds-off) to eventually develop into a miniature replica of the species. This type of reproduction has not been witnessed by me, but it is reported to occur with *Metridium* (Plumose) species which, once again, inhabit U.K. waters.

The true growth rate in aquaria seems to be to be rather slow and, considering the fact that some of the giant anemones are reputed to have life spans in excess of our own, it would not seem to me to be a practical proposition breeding these creatures in aquaria. However, since we are hobbyists, the time factor is immaterial and we may still yet hear of someone who has raised them to an appreciable size from birth.

It is interesting to note that anemones are divided internally into compartments, each dividing wall being known as a septa. The compartments, however, are joined together via holes in the septa which allow water-flow through the creature. As the anemone grows, the number of septa increases in multiples of six to give rise to more compartments. These compartments are filled with water under a slight pressure and this gives rise to vastly different sizes of the same anemone through the deflated to fully inflated condition. Using these compartments and strong muscles in the anemone, slow locomotion can be achieved. When threatened, anemones can deflate themselves quite quickly, the water being ejected through small pores, some of which are around the periphery of the oral disc. I have seen jets of water of 6 in. or more issue from *Radianthus malu* when being handled, so be careful you don't get an eyeful!

An aquarium containing an assortment of anemone species, colours and sizes can be a beautiful sight, especially when sprinkled with a few tube worms and live corals. A garden full of roses and dahlias is no finer show. Add to this the beauty and movement of *Amphiprion* species and perhaps a few other fishes too and we have a truly wonderous sight. Under these conditions clowns readily spawn and the time of writing this article, a pair of *Amphiprion percula* in my living room tank have spawned thirty-one times, averaging approximately 10 days between spawnings.

MARINE QUERIES *(continued from page 168)*

merit in a home marine aquarium, *unless* the aquarist has had a very scientifically-biased education up to at least first degree physics. My reasons for stating this are very numerous and involved—too involved, in fact, to be dealt with in the space available here. However, I am sure that "older" readers will forgive me for stating yet again that unless you have a *good* microscope, half a gross of petri dishes, an autoclave, a *good* incubator etc., etc., and a great deal of experience in both practical and theoretical bacteriology, you are probably wasting both your time and money in purchasing an ultra-violet sterilizer. *The number of widely-varying parameters affecting their effective usage is almost astronomical.*

The diatom filter is something else. These filters, which originally found favour in World War II as a means of semi-purifying "doubtful" drinking water, can, once they are partially clogged with debris, remove most pathogens down to the smaller bacteria, although viruses still pass through the diatomaceous earth "cake" with ease.

In fairness to both the manufacturers of D.E. filters and yourself I must warn you that, whereas the D.E. (=diatomaceous earth=Kieselguhr) filter may possibly be useful to you under certain bizarrely-abnormal circumstances, if you come to regard it as the panacea for all ills, you will never progress beyond the "beginner-stage" in the marine hobby. There is no substitute for sound animal husbandry—no matter how much money you are prepared to spend.

VIEWPOINT

by A. Jenno

THE power of television as an advertising medium was proved rather remarkably during May in the Midlands I.T.V. area by the local gardening advice programme "Gardening Today," when the resident experts, Cyril Fletcher and Bob Price, gave a demonstration of the ability of Acurel E to clarify dirty pond water. A small bottle of cloudy water was dosed with one drop and while viewers watched the dirt could be seen to form heavy accumulations which immediately sank to the bottom of the bottle, leaving the water relatively clear. During the ensuing week all stocks of this product in the area were bought up by excited pool owners and the demand continues unabated. Acurel E is now the magic potion as far as Midlands pool owners are concerned. I only hope it lives up to their expectations, otherwise there will be a lot of very disappointed people about. We were shown the product being put into the programme's own pool at Kings Heath Park in Birmingham, but no indication of the results achieved was given.

On the subject of these televised advisory programmes, it would seem that the gardening experts are automatically considered to be pool experts also, simply because the pool forms part of the garden. On both channels, i.e., in the programme mentioned above and also on Percy Thrower's "Gardener's World" the following week on B.B.C., we were treated to some very dubious advice on the mysteries of pond aquatics. One of the aquarist's basic rules, that of temperature equilisation, was completely ignored when Mr. Fletcher transferred fishes into his pool straight from small plastic containers which had apparently been sitting on the poolside paving in the full sun for some time. Obviously these should have been floated in the pool for a while first, even at the cost of making the television presentation difficult. We also saw *Egeria densa* being planted at about five short strands per square yard of pool area.

On the other programme, on B.B.C., my faith in Mr. Thrower was completely destroyed when he stepped into a muddy hole half-hidden by small bushes and announced that this was his garden pool. He then proceeded to plant water-lily roots into unlined perforated baskets so that the soil washed out into the water when they were submerged, and to put two large roots into a basket only big enough for one. Surely the producers of these programmes could have their "experts" advised by competent people before the filming, at the very least. I get the impression that the need to make a visual impact in the available time is considered more important than the quality of the advice given. Presumably the technicians decide the actual programme content after discussing the most convenient way to film the various subjects.

Birmingham's newest retail aquarium opened recently at Lewis's large department store in the city centre. Organised by John Harvey of Fins and Wings Aquariums, of London, the unit is being run as a concession shop inside Lewis's. Mr. Harvey has a similar operation at Selfridges in London. Stock includes tropical, coldwater and marine fishes and the usual range of equipment and foods. When questioned Mr. Harvey admitted that his prices are likely to be towards the top of the scale, due to his "partnership" with Lewis's and the need for both parties to profit, but he feels that the advantages of using that company's delivery and credit facilities helps offset this. Certainly the fish prices at the time of my visit were a little higher than I expect in the area.

Whether this kind of dealer operation can compete with the more usual aquarium shop prevalent in the Midlands, owned by prominent local hobbyists and mostly run as family businesses, remains an interesting speculation. The difficulties of car parking and bringing purchases home quickly from city centres such as Birmingham must go against the idea. Mr. Harvey, however, feels that he will be appealing to a section of the potential market not presently covered by the suburban shops, and that he can provide services not previously available. Whatever the outcome, his display is a treat for the hordes of office workers who spend their lunch-hours browsing in the big stores, and should stimulate aquatic interest among the general public.

I have been having fun and games with airstones in use in my fish-house lately. My usual practice has been to instal the small cylindrical type in the lift tubes of my Algarde filters, in the belief that the resultant fine bubble stream encourages more efficient operation. After some few week's use, however, I find that some of the stones disintegrate (some are only half their original size), and that the powdered residue is deposited under the filter plates. Others were blocking up equally quickly. Airstones of this kind are made of fine glass particles fused together so the material thrown off should be inert and harmless,

but it is not very convenient to have to replace the stones so frequently. At about ten pence one airstone is perhaps neither here nor there, but when twenty-five or more are considered their regular replacement becomes an unwanted and significant expense. I notice that Algarde do not supply or apparently recommend the inclusion of an airstone, and possibly this is the reason. At any rate, I have abandoned the use of diffusers and now simply poke the air piping down the lift tube. Results so far indicate that for practical purposes any fall-off in the efficiency of the filter systems which has occurred is negligible.

My own air supply is derived from a Datam compressor which has been in service for about nine months. The compressor itself has been completely reliable to date, but certain routine maintenance measures are needed in the complete supply system. The input air filter fitted on the compresser is a laminated mesh arrangement rather like the air filters fitted on petrol engines years ago. This periodically becomes blocked by dust, etc., from the air drawn in, as would be expected, and this condition is shown by a falling-off in the amount of air supplied by the compressor. Datam recommend that the filter be washed in soapy water and then cleaned with methylated spirits. This method is effective, or alternatively a supply of clean, high-pressure air can be connected to the filter in the reverse direction and the accumulated dust blown out again, if dry and fairly loose. In my case the filter benefits from monthly attention.

Clamps and T-pieces create trouble sometimes. When plastic air tubing is used this seems to harden gradually over a few months and supply lines which are clamped well down become more restricted during this process, and also by the collection of small particles at these restrictions. Thus clamps need periodic adjustment to re-establish the proper air flows. Plastic T-pieces often contain internal fraze or flashings left behind by the moulding processes which can cause blockages, either initially or later after moving under the influence of the transported air. I have experienced brand new T-pieces with one outlet completely blocked by odd bits of plastic inside. Blow through each exit before use and employ a small round file to clean up where necessary.

A ring-main supply piping system is more efficient than just a straight run of tubing from the source to the most distant outlet. This entails using more piping during installation, but the later ease of adjustment makes it very worthwhile. The ring system ensures more equal supply pressures at all points of use, so that the available air is used more beneficially. The complicated balancing of one air-operated appliance against the requirements of the others then tends to be minimised. If several diaphragm pumps are used together to supply a common piping system they should not be installed close together so that they tend to pump into each other, but instead should be spaced around the system to have as little influence on each other as possible. Where the aquarist is trying to get as much benefit as possible from a small air source it will be found that lifting the airstones or pipe-ends up towards the surface will encourage more air to pass through them. In cases where only surface agitation is required this innovation has no real disadvantage, but in filter lift systems there may be some loss of efficiency. Experiment and the measurement of water flows achieved might be advisable.

Further dabbling with the breeding of Whiteworm has led to some interesting conjectures. During the construction of my fish-house and while the tanks on the first two walls were being installed and set up, the worms were breeding very satisfactorily in large cultures kept under the aquarium stands on the floor. An ambient temperature of 68°F. was the maximum observed in the room over a long period and at and below this value the worms bred well, with frequent feeding and attention to the water content of the culture compost. Following the installation of tanks on the other two inside walls of the fish-house, however, the ambient temperature rose to a *minimum* of 70°F and the worms immediately stopped breeding. Conditions were otherwise unaltered so I am now convinced of the importance of the culture temperature. With the return of warmer outside temperatures in the spring new cultures were set up in an unheated garden shed. These were kept inside a large wooden cupboard to give darkness and some measure of temperature stabilisation. Daytime values swing between 50-65°F., depending on the weather, and the worms are breeding again quite nicely. It would seem that to continue successfully through next winter some form of artificial heating must be provided in the cupboard. With polystyrene insulation inside I expect an electrical system, using an aquarium thermostat and some kind of low wattage electrical element designed for use in air, might prove reasonably economical.

One other point is that the worms have recently been fed their Readybrek dry by simply shaking it over the culture surface. This saves having to mix it with hot water and mess about generally, and gives just as good results. One advantage is that if a little goes into an aquarium with the worms it is not as fouling as a wet lump of half-rotten mixture and the fishes soon clear it up. Application needs to be more often, but if the culture is being visited every day anyway for worms this is no problem. A little more attention is needed to keep the moisture content of the compost correct, i.e., damp but not wet, as for potted plants, but otherwise the method is much more convenient.

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

What plants would you recommend for a 2 ft. tank illuminated by a 20 watt Gro-Lux fluorescent lamp?

The plants that jump to mind are *Cryptocoryne affinis*, *Microsorium pteropus*, the aquatic moss called *Vesicularia dubyana*, *Hygrophila polysperma* and the Amazon Sword Plant (*Echinodorus*). Both *Hygrophila* and the Amazon Sword Plant should be planted in the lightest part of the aquarium. The others mentioned do very well indeed in partial shade.

I have two *Synodontis angelicus* catfish. Where are they found in the natural state and to what length will they grow?

This beautifully marked catfish is native to West Africa and will probably reach 8 in. in a spacious aquarium. It is a peaceful species, but like all peaceful species with big mouths it will not think twice about swallowing your favourite fishes if they are of a swallowable size.

My local dealer says there is no such fish as a striped platy. I have been told there is. Is my dealer right?

Some *Xiphophorus variatus* have vertical stripes or narrow bars on the sides.

I wish to build an all-glass tank 48 in. × 15 in. × 15 in. What thickness of glass should I use?

The critical factor in deciding on the type of glass needed for a particular tank is the depth. The water pressure exerted on the tank side depends on the depth of water. Your tank will be 15 in. deep so ¼ in. plate glass is sufficient.

For tanks 20 in. to 24 in. deep, ⅜ in. plate glass would be required. The length of the tank can also be important as the longer the glass is there is a greater tendency to bow under pressure.

I should be most grateful for any information you can give me on the genus *Distichodus*.

This genus, which was once included in the family *Characidae* is now referred to the family *Citharinidae*. It is a family widespread over most of Africa excluding the extreme south and the northern half excepting the Red Sea area. Species of *Distichodus* are lower level fishes and are characterised by well-fleshed and compressed sides rising in a gradual slope from a tapering head to the dorsal fin and then down again to the caudal peduncle. Another distinguishing feature are scaled areas on the adipose and caudal fins. Most *Distichodus* grow large and are used as human food. Not a few attain a weight of about 4 lb and more. A number of these fish are attractively marked with black bars on a golden, orange or silvery green ground. They eat plants, so the smaller species sold for aquarium decoration require tanks furnished with non-calcareous stonework or non-toxic tree branches. Apart from greenstuff, *Distichodus* eat almost any food normally given to omnivorous fishes. They are not snappish fishes and can be placed with other species of about their own size.

Could our native spined loach (*Cobitis taenia*) be kept in the tropical aquarium?

This species is used in the natural state to shallow running water ranging in temperature from the forties to the sixties) °F). Therefore I do not think a spined loach taken from the wild would live long or very happily in a heated aquarium.

I am aware that at one time the guppy was popularly referred to as the millions of fish, but what is a striped millions fish?

The striped millions fish is an uncommon livebearer known to science as *Phalloptychus januarius*. It is from south-east Brazil and a full-grown female

reaches a length of 2 in. The male seldom exceeds half this size. Both sexes show seven or more dark vertical markings on an olivaceous body overcast with a greeny gold to bluish sheen. Yet some colour forms of this fish bred in the aquarium or collected in the wild display blotches of dark colour, or spots, and almost melanistic forms are known. The male of this species has an elongated gonopodium and is the livelier and better coloured of the two. You will find references to this fish in the standard book on livebearers by Kurt Jacobs and in books on exotic fishes by Hervey and Hems.

I have just bought two firemouth cichlids. How can I tell if I have a true pair?

Wait until the fish have grown to a fair size and then see if one has a more prolonged and pointed dorsal fin and a bigger splash of red colour anteriorly. This fish will be a male.

I have been told that Malawi cichlids require very special conditions, namely very hard and alkaline water, no plants, and the like, and is this true because I have my eye on some *Pseudotropheus auratus* **in a dealer's shop?**

There is no question that some species of fish from Lake Malawi do demand rather special conditions, but go ahead with your intention of owning *P. auratus*. They do appear to flourish well in ordinary tapwater. Bear in mind though that this species can be spiteful and do demand a tank to themselves. Furnish it with a good depth of well-washed sand or fine grit, some large stones, and keep the temperature in the middle to upper seventies (°F). They do require vegetable matter included in their diet, but prefer the more lowly forms of plant life such as mossy algae, nitella, and delicate leaved plants such as cabomba, Indian fern, and so on.

I have a *Hyphessobrycon herbertaxelrodi* **which I bought with some other members of the same species in 1970. All but this solitary specimen have died over the last couple of years. Is it unusual for** *H. herbertaxelrodi* **to enjoy such a long life span?**

H. herbertaxelrodi is a very durable species and it is not at all unusual for it to live for five years or longer. Indeed, the black neon, to give this species its common name, will usually outlive the ordinary neon tetra which itself is a long-lived species.

I have come across, infrequently, *Geophagus jurupari* **in local dealers' shops, and seen illustrations of** *G. surinamensis* **and** *G. acuticeps* **in the literature of the hobby. Yet no other species of these interesting cichlids seem to turn up in the popular books or in dealers' stock tanks. Therefore I would like to know whether there are many other species of** *Geophagus* **known to the aquarist?**

When I was a young man some four or five different species of *Geophagus* were commonly seen in London dealers' tanks, the most common being *G. braziliensis*, *G. jurupari*, *G. acuticeps*, and *G. gymnogenys*. Today, however, about ten or more different species are known—at least to hobbyists in the U.S.A. if not over here. Probably the reason these cichlids are not very popular (except among specialist collectors of cichlids) is because the larger ones can be very aggressive and all are great diggers. *G. jurupari* is the best behaved earth-eater I have ever come across and it never seems to harm other fishes smaller than itself. Again, the holes it digs are not deep. It merely sifts the top of the compost for particles of dried food or buried worms.

What can you tell me about a little livebearer called *Qunitana atrizona*?

I imagine I was one of the first aquarists to keep this livebearer in the 1930s. It is a shy little fish and really needs a small tank to itself, though it would get on well with *Heterandria formosa*. The female is the larger of the two, and may reach about 2 in. It is a sort of translucent silvery olive, with some narrow vertical lines on the sides. A blue sheen is present on the body and fins, but only when the fish is caught in a good top or side light. Broods of young are small and are delivered about every two months or at more irregular intervals. It eats anything taken by an omnivorous fish, but all food offered must be small.

About four months ago, I bought a pair of beautifully coloured guppies (even the female had colour in her dorsal and caudal fin). The interesting thing is that though the female always looks pregnant she never produces any young. What is wrong?

It is difficult to say. I have experienced the same thing myself. I can only assume that the female looks fat around the abdomen (most adult female guppies do) but is sterile. Or the male is sterile. Or the male is not active enough. Try another male of a good type with your female. Or buy another female of similar type to the one you have now and place it with your original male.

What is an Odessa barb?

The so-called Odessa barb is an extra long finned *Barbus conchonius* said to have been developed in Russia and now appearing with increasing frequency in East Germany and Czechoslovakia. Whether it has been introduced into this country I cannot say.

(Continued on page 197)

COLDWATER QUERIES

by Arthur Boarder

In "Coldwater Queries" you refer to small, medium and large ponds. What would my pond be, it is 15 ft. × 7 ft. and approximately 2 ft. deep?

I have often given my own assessment as to what constitutes sizes in garden ponds. Yours is about medium, as I reckon a medium pond is roughly 14 ft. × 10 ft., give or take a little, and one not so large is a small pond and one larger a large pond. This is of course my own opinion and can be referred to in any of my articles. Naturally these measurements may not be agreed to by some people but I find that my estimation is useful for comparisons.

I have had for some time now four golden medicca (coldwater). The shop from where I bought them could tell me nothing about them. I'm enclosing a sketch as I don't know if that is their correct name. Where do they come from and what is their food.

The fish is known as the golden medaka, and its Latin name is *Oryzias latipes*. They are commonly known as the Japanese rice fish and are more of a tropical fish than coldwater. I understand that a strain has been bred which can stand cooler water, but to breed them I suggest a temperature approaching 80° F. Your feeding programme is correct, as they are not fussy over their food and will take the foods as given to goldfish.

I have a mystery fish. It has a bronzy rounded body with well-developed fins. I think these fish are relatively common and are caught by anglers. It has been suggested in the angling press that they are a cross between a crucian carp and a shubunkin. Any suggestions, please.

I doubt very much if there is much, if any, shubunkin blood in the fish, as if so one would expect an earlier change of colour. My guess is that the fish has been discarded by a pond-keeper and is just a throw-out from a hatching of scaled fantails. I have, occasionally, had one of these turn up in hatchings over the past thirty-five years. Although I have not found that such fish do not change colour, it is possible that some from another strain could not do so. The fish I am thinking of are often termed Nymphs. The fish I have produced have had a body like a fantail but with fins at least half as large again as a common goldfish. Many pondkeepers finding such a fish in their pond would discard it, as if kept with the others any goldfish which fails to change colour within a couple of years could remain uncoloured and pass on this trait to the other fish bred. Such fish might then be dumped into a pond, river or stream. Over twenty years ago I came across a fish at a Hendon show which no one could name. It was caught in a local pond and I recognised it as a North American mud fish, or minnow, *Umbra pygmaea*. Exotic fishes are sometimes found in natural waters where they may have been introduced by an aquarist, sometimes with the purpose of trying to establish the species in this country.

I have three stone sinks, about 2 ft. by 1½ ft. and 10 in. deep. Can I breed fantail goldfish and shubunkins in them.

Your tanks will hold two males and one female. I suggest that you use one for the fantails and the second for the shubunkins. Keep the third one for any eggs to hatch and be reared in. Do not try to keep too many parent fish in a tank as you are not likely to succeed with your project if you do.

I have recently received a goldfish as a present and would like to know how to tell the male from the female?

It is not easy to tell the difference when it is not near the breeding season. At such times the female will be fatter in the body than the male and the male fish will show small white tubercles on the gill plates. If the enquirer reads this, I want him or her to know that, as there was no address sent with the query, I was unable to answer by letter.

I have read many books but cannot find any information about the following fishes and would be glad if you can give any advice. The fishes are: Fee fish, Japanese weather fish and Miller's Thumb?

In the first place, I have never heard of a Fee fish, and so am unable to help; I suppose that you have the name right? The Japanese weather fish is known as (*Misgurnus anguillicaudatus*), and is found in parts of Central Asia and China. It can stand cold water but likes to be in a tank with plenty of mulm or mud at the bottom so that it can almost bury itself in it at times. It is a peaceful fish and can grow to 22 cm., but is not likely to reach near this size in a tank. The Miller's Thumb or Bull-head (*Cottus gobio*) is a common British fish and it inhabits streams and rivers which have a clean gravelly bottom. It will hide under a stone and the easy way to catch them is to turn over

stones in a shallow stream and a fish is likely to be hiding underneath. In length it is about 17 cm., and will eat most foods as given to goldfish, but small live foods are preferred.

I have a 6 ft. circular pool by 16 inches deep. I have a fountain and waterfall going 12 hours a day. I have four Koi, three Golden Orfe, three Blue Shubunkins and eight other Goldfish. The fish seem very sluggish, do not feed and spend most of the time under the water falling from the waterfall. Can you tell me what is wrong, please?

I suspect that the water is foul. Even a fountain and waterfall will not clear harmful chemicals and other matter from the water. The fall may be providing a little extra oxygen but it appears that the pond water is lacking in oxygen or in other words over-charged with foul gases, etc. I think that part of the trouble can be that you have too many fishes for your pond. If you have been feeding rather heavily also, this could have polluted the water. I suggest that you change the water and check up on the number of fishes you have and reduce the number of goldfish, especially if they are on the large size.

I would be most grateful for information on any book with details of the history, etc., of the goldfish.

The book, "The Goldfish" by Hervy and Hems will give you the information you require.

Last month I constructed a pond, about 45 square feet in area. I treated the concrete with Silglaze and filled the pond with a fifth part rain water and the rest tap water. I left it for a week and then put in two Perch. In two hours they were dead. A week later I put in another two Perch and the next morning they also were dead. I want to keep Perch and Roach in the pond. What can I do?

If you had scrubbed round the pond well with a stiff broom, emptied it and repeated the treatment after a couple of days, you would have removed the free lime from the cement. The fish died from lime poisoning. I have known lime-impregnated water kill a fully grown frog and so one can imagine its effect on a fish. Do not use rain water unless you are sure of its purity. Any caught from a roof will surely contain harmful chemicals and plenty of filth. Tap water is to be preferred. I suggest that you empty the pond and treat it as I stated. The chemical treatment you gave it is all right as long as it is quite intact, but if it leaves the concrete in places the danger from free lime occurs. I note that you propose keeping Perch and Roach; watch out that the Perch, if lacking in live food, do not attack the Roach.

I have a tank of goldfish and after I have fed them they go to the bottom and stir up all the organic matter there. What can I do to clear this away?

The fish go to the bottom to search for any pieces of food which have fallen. In doing so they are sure to stir up some of the mulm. This does not matter much as it will soon settle again. When your water plants grow more strongly they will use up much of this matter which is mainly the droppings from the fish.

What is the difference between a goldfish and a shubunkin? I have always thought that a shubunkin has some large scales on its sides and the goldfish has none. I entered my fish in a shubunkin class but it was moved to a goldfish class as it was not speckled, or so I was told.

A shubunkin should show no visible scales at all and should have soft gill-plates. A goldfish is scaled with hard gill-plates. A good shubunkin, besides showing no scales, should have a ground colour of blue with red, brown, yellow and black markings. The black is preferred to be as speckles or small blotches all over the fish. Why not join an aquarist society where you can exhibit your fish in a club or table show so that you can gain some experience in exhibiting before launching out in the open?

I have recently noticed some small black spots on some of my Koi carp in the pond. Can you explain this?

With some kinds of fancy fish which have varied colours it may be found that if any part of the skin or flesh is damaged, the new growth will often be black. This is very obvious in goldfish and it follows the development of colour from the original bronze in goldfish as what was bronze will turn quite black on those parts of the fish to change colour last. This black usually fades away after a time. Examine your fish as I suspect that they may have had an infestation of white spot or have been injured by a sucking pest.

I have a fairly large goldfish in a tank and it continually throws up the compost at the bottom of the tank all about the water. I need the compost for the plants but would be glad to know if I could grow any water plant without the compost.

A good plant for your purpose is Hornwort *Ceratophyllum demersum*. This plant never makes any roots but appears to have the capacity to be able to obtain its nourishment through the leaves and stems. If you make a bunch or two of stems and tie them, not too tightly with thread, the base of the bunch can be laid on the bottom and a fairly large stone or piece of rock used to anchor it down.

LIVING ROCK

(PART 1)

INTRODUCING SOME SMALLER OCCUPANTS OF THE MARINE AQUARIUM

by H. G. B. Gilpin & Q. G. B. Gilpin

UNQUESTIONED though the fascination of tropical fish may be, few things are more attention-holding than a marine tank devoted to "living rock." Even those normally indifferent to aquatic life find their eyes constantly turning in its direction. Our own interest was first aroused a couple of years ago and the tanks then set up are still in constant use.

We started with two aquariums, one three feet long, illuminated with a pair of Grolux tubes (in use for 12-16 hours a day, augmented by a 100-watt spotlight, turned on when required), the other two feet long, lighted from above by a single 100-watt bulb. Both were equipped with undergravel filters, an aerator and two air lifts to keep the water in constant motion, and floored with coarse sand. The larger was kept at 75°F. and the smaller at 80°F. Both were equally successful.

Once set up and in operation, they were left to settle for three weeks and then lumps of "living rock," newly imported from the Mediterranean—much more rewarding than specimens left in the hands of the stockist for any length of time—were introduced.

The pieces of rock were attractive in themselves. Of interesting shapes and plentifully supplied with miniature "caves" and crevices, they supported a rich surface growth of seaweed, sponges, red *algae* and dense clusters of tiny Jewel Anemones.

For several days no active animal life was observed but slowly, as they became habituated to their new surroundings, various living creatures emerged from their hiding places. It is this gradual appearance of intriguing and, in some cases, unfamiliar animals which one finds so absorbing. It becomes virtually impossible to pass the aquarium without examination, just in case some hitherto unsuspected creature has come into view.

Apart from the sponges, the first animals to attract our attention were several tiny Feather Duster Worms, delightful little creatures each with a cone of tentacles fanning out from the anterior end of a sandy tube. The base of the tube was attached to the rock surface. One with a one-inch long tube was topped with red tentacles and another had a white tube and pink tentacles. The tentacles of several others were almost transparent. The slightest disturbance of the water produced an instant retraction of the tentacles. With the restoration of the *status quo* they slowly re-emerged, waving gently in the water as they filtered out minute particles of food.

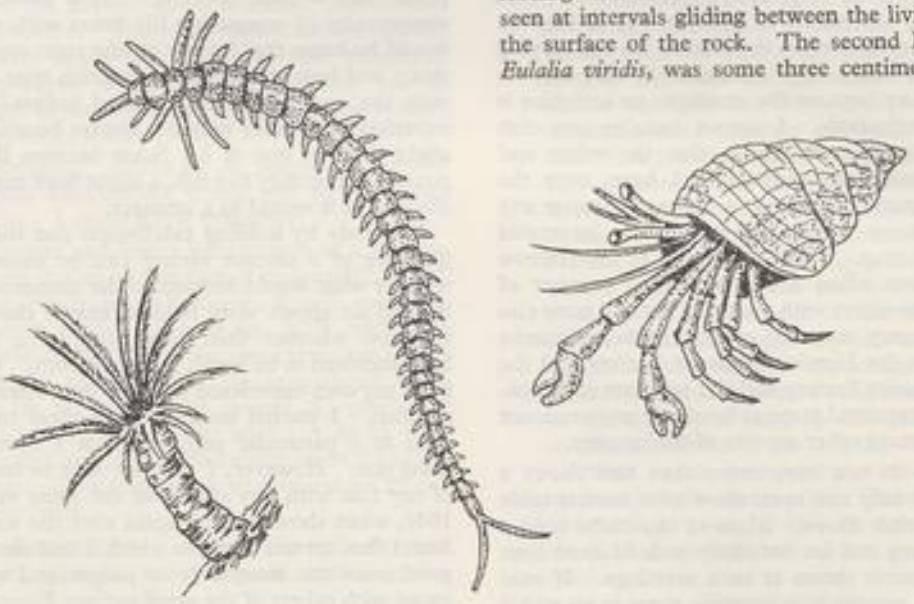
The first free-moving animals to vacate their hiding places in the rocks were a number of baby shrimps, in appearance indistinguishable from the shrimps commonly found on the British shore lines. These were followed at lengthy intervals (the first was not seen

until the rock had been in position for a couple of weeks) by eight baby crabs. The largest, ¼ inch across the carapace, with relatively long legs, was fawn in colour, fairly heavily barred with brown and densely covered over the whole of its surface with hairs. Another, slightly smaller and closely resembling an edible crab in appearance, possessed a cream carapace with six brown spots around its edge and white legs. This crab became something of a character and when, after a considerable time, it had become thoroughly familiar with the terrain, it could be relied on to leave its hole each evening about 8 p.m. and traverse a pathway, invariably the same one, along the side of the rock. Having reached the edge of the rock, feeding as it went, it descended to a slightly lower level and returned to its retreat. The occasional presence of another crab on the pathway aroused it to instant fury and it advanced in short bursts, with frantically agitated claws, until the intruder was routed.

The one flaw in this crab's otherwise blameless character was its intermittant assaults on the seaweeds. Selecting a vigorously growing specimen about two inches tall, the crab severed it close to the base with its relatively powerful chela and dragged the trophy, with considerable labour, to the entrance to its hole. Having done so, it lost all interest in the same and left it lying untidily on the rock until moving currents wafted it away, often several days later.

Another interesting crustacean which appeared three months after the tank was first set up, was a minute hermit crab, encased in a conical shell, so small that a magnifying glass was needed to observe it in detail. Unlike the other crabs this animal, having once emerged into the open, spent much of its time on the sandy base of the aquarium, traversing it by a series of erratic jumps.

Especially intriguing inhabitants of the rock, rarely seen before late evening, and only then if one kept absolutely immobile, were two Bristle Worms. The first to be seen, *Eunice harassi*, was dark, reddish brown in colour and four centimetres in overall length. It had five yellowish *antennae* on its head and a black-jawed proboscis which projected from the mouth when feeding and afterwards retracted. This animal was seen at intervals gliding between the living growth on the surface of the rock. The second Bristle Worm, *Eulalia viridis*, was some three centimetres long and dark green in colour, the green paling slightly towards the anterior end. Its rounded head supported five *antennae*.



Left: Feather Duster Worm. Centre: *Eulalia viridis*. Right: Hermit Crab

These Bristle Worms were easily the most retiring members of the community. The *harassi* spent almost all its time buried in the sand immediately under the middle of the larger piece of rock, only emerging when food was introduced and even then remaining on or under the shelter of the rock. The *viridis* was slightly more venturesome. It lived under the sand near the edge of the smaller rock. When food was dropped into the water it normally extended half its length above the sand and waited for particles to come within its reach. Very occasionally it emerged completely and moved across the surface of the sand. At the slighest disturbance both worms vanished instantly and rarely reappeared again until the next evening.

TO SHOW OR NOT TO SHOW

by Arthur Boarder

THE QUESTION of the advisability or otherwise of showing arises periodically and one finds that whilst some people are in favour, others are against it. There will always be differences of opinion but it may be interesting to try to explain the reasons for the varying views. I have heard some aquarists say that they do not join a society because the emphasis on activities is on showing exclusively. I cannot imagine any club being so occupied with shows that the other and important matters are neglected. I have, over the years, visited many societies as a judge or lecturer and have yet to come across any which was interested solely in exhibiting. I was a member of the Harrow Aquarist Society when it had a limited number of one hundred members with a waiting list and have also been an honorary member of the British Aquarist Study Society, the Hendon Aquarist Society and the Uxbridge Aquarist Society and the interests of exhibitors has never appeared to me to be of any more concern than the important other aspects of fishkeeping.

Most clubs do not have more than two shows a year, probably only one open show with several table club or inter-club shows. Most of the clubs hold a monthly meeting and are not likely to hold more than three or four table shows at such meetings. If only a few fish are present at a meeting there is an added interest for the members as points of discussion and every lecturer knows full well what a great help it is to him to have even a few fishes on hand with which to demonstrate certain points. If one visits any club where there are a few fishes on the table it is certain that, before the actual meeting starts, there are many members crowding round the table discussing the various points about the fishes and exchanging views on the quality of such fishes.

The exhibitor has to be a keen and efficient aquarist to have any chance at a show and if he was not dedicated he would never be successful. I have never found any exhibitor to be in the cards for long unless he was a really expert fishkeeper. It may be asked, why any aquarist needs to exhibit? And it is not difficult to answer this question. For instance, if we take the case of an aquarist who is breeding a strain of fancy goldfish. He wants to keep and breed from only a really good strain and to discard any which are not up to a high standard. A good fish costs no more to keep than a throwout and although it might cost more in the first place, its progeny will always fetch a better price than a poor specimen. If a breeder had no opportunity of comparing his fishes with others how would he know that he was on the right track with his strain and how would he know which type of fish met with the approval of experienced judges? Even an experienced breeder may not always be able to spot a slight fault in one of his fishes because if one is in constant proximity to a fish, a slight fault may not be so obvious as it would to a stranger.

It is only by holding exhibitions that the necessary qualities of a certain variety can be assessed and I wonder what would happen to the numerous types of dogs if no shows were held to enable the exhibitors to know whether their dogs were of a sufficiently high standard to be worth breeding from. I can quote from my own experience with my own strain of fantail goldfish. I started breeding with these in 1937 and bred to a particular pattern which I thought was a good one. However, I was not able to compare any of my fish with any others of the same variety until 1946, when shows started again after the war. I then found that certain features which I had thought quite good were not acceptable to judges and when compared with others of the same variety, I was able to see what was wanted and what was considered to be a fault. If I had not been able to exhibit and make comparisons I would never have been able to establish the prize winning strain that I was able to do.

I often exhibited three fish in one class and although some suggested that I was pot-hunting, this was never further from my mind, as I only wanted to find out which fish others thought was the best to keep and breed from to improve the strain. Once I thought that I was sufficiently experienced to be able to do the judging myself I stopped exhibiting completely and after 1950 I never did so again in competition. Although there are a few aquarists who do not approve of shows, I am certain that thousands of others do so, and a visit to any large exhibition such as the B.A.F. at Belle Vue will soon convince the disbelievers that their view is a very small minority one. I consider that aquarist exhibitions are not only important for the hobby but are absolutely essential if the standards of types is to be perpetuated and perhaps improved.

OUR READERS WRITE

Illumination

As a relative newcomer to the science of tropical fish keeping, I am becoming increasingly confused by the articles published in the *Aquarist*. As a biochemist I am amazed at the scientific inaccuracies which are featured. The May edition shows, exactly, the dichotomy facing the readers of your magazine. Two independent articles concerning the use of artificial light in aquaria must have left most readers with a sense of frustration.

The "Viewpoint" article by A. Jenno was littered with technical inaccuracies which will have mislead many readers. I quote a few examples:

1. "The power and hence light output of a fluorescent tube in a *direct* function of its length".
   This is partly true, however, if one compares the lumen output of a 24 in. 20W with that of a 40W 48 in. tube of the same type, the lumen output per watt increases in logarithmic ratio, i.e., a 24 in. 20W tube (brand X) gives 870 lumens or 43·5 lumens per watt. A 48 in. tube (also brand X) gives 2,180 lumens or 54·5 lumens per watt. This represents an increase of 25 per cent per watt.
2. "For discussion purposes, we can split daylight in four separate colour bands, blue, green, yellow and red . . ."
   To split light up like this for comparison with daylight in this context is totally misleading. Daylight comprises (as most infant school children know) the spectural colours: red, orange, yellow, green, blue, indigo and violet. Further simplification leaves the three prime "visible" colours: red, yellow and blue. The C.I.E. standard is: red, orange, yellow, green, blue, violet, near UV and mid-UV. The prime colours do not contribute in any way to the ultra-violet "invisible" wavelengths. To ignore the ultra-violet content of light is similar to ignoring the Carbon Dioxide content of air.
3. The lumen/surface area relationship is also misleading. The depth of the tank should also be taken into consideration. The French magazine "L'Aquariophile et Plongee sous-marine," in an article concerning lighting, recommends fitting a tube of the nearest length to that of the tank to obtain equal illumination and then the addition of extra tubes depending on the depth. How many tubes will depend on the lumen output and the illumination level required. This necessary calculation is demonstrated by the following figures:

   2 × 40W fluorescent lamps give, at a point 6 in. perpendicular to the tubes, approximately 700 foot candles, at 12 in., 400, and at 18 in., 315. From this it can be seen that a tank 1m × 30cm × 30 cm will need more lumens than a tank 1m × 30cm × 45cm if the same bottom of tank level of light is required, and yet both tanks have the same surface area.

The second article on light, by J. D. Adams, was informative from both a technical and experience based point of view. In addition the graphs used to illustrate the Chromatic Index of both natural daylight and True-Lite were of a significantly more accurate standard than those in the "Viewpoint" article. I have seen articles in Holland concerning these lights and it may be of interest to your readers, and indeed Mr. Adams, to know that a Dutch book entitled "60 Aquaria Planten in Kleuren" by A. Spenderse, specifically quotes True-Lite as the best source of light for plant growth. I have not yet had the opportunity to use True-Lite tubes myself, although I will do so at the earliest opportunity. Like Mr. Adams I believe light is of paramount importance in the successful keeping of both marine and freshwater tanks, I am hoping to set up two identical tanks, one using conventional light methods and one using True-Lite. These tanks will be used not only by myself but also by the "A" level students at the college where I teach.

Yours faithfully,
MISS V. A. WATSON, B.SC.
72 Quaves Road,
Slough, Bucks.

Refraction

I MUST first of all thank Miss Watson for taking the trouble to write in. All hobbyist magazines are improved when readers are sufficiently interested to criticise the contributors. However, I doubt whether more experienced aquarists would actually agree that fishkeeping, as practised by most of us, is a science. It is more likely a hobby with a scientific background, which is not quite the same thing. While newcomers to the hobby such as the present correspondent may be sufficiently interested in studying the very smallest details of any particular scientific principle and its possible application to aquarium use, we must remember that most aquarists are just ordinary hobbyists, to whom reasonable simplifications are more useful

than masses of technical data whose practical reference is negligible.

I resent Miss Watson's statement that my article was "littered with technical inaccuraces." Even in the interest of brevity it is hardly fair to say this, and then to quote only three examples and to leave the impression that many other points could have been raised. I would also mention that my column is entitled "Viewpoint" deliberately because I am an electrical engineer by profession, which makes me even less of a *qualified* aquarist than does being a biochemist. My writings represent my *opinions*, gained from my own experiences and information obtained from other aquarists.

To take the printed criticisms in detail:—

1. By using the word "direct," I mean that if we want more light then we need a longer tube-length, either in the same tube or by using more than one unit. Which choice is made will depend on the available space above the aquarium. I did not say that the function was *linear*. As Miss Watson kindly points out, it is not and therefore there is an advantage in having, for instance, one 48 in. tube (brand X) rather than two 24 in. tubes. Cost of lighting units would make this automatic anyway I should think.

2. To simplify the spectral colour range of light to the groupings "blue, green, yellow, red," is a reasonable approximation which clarifies the situation for aquarium use and for the hobbyist's easy under standing. In the context of my article this abbreviation contains sufficient information to allow the appreciation of the points under discussion. I agree that the diagrams in the other article were more precise than my own, and apologise for my inferior drawing, but my diagrams were attempts to interpret similar illustrations from lamp manufacturers for better comprehension. Ultra-violet light of any significant intensity is not available from the commoner kinds of artificial lighting, so there would be no point in extending my graphs into this area. The application of artificial U.V. light to aquaria entails using specialised lamps, and hence even more complication than originally discussed.

3. The depth of the tank *was* taken into consideration. The quotation from Mr. de Graaf's book mentioned "water not greater than 18 in. deep." There is no earthly point in getting carried away with small points of calculation when the number of commercially available light-source powers is so limited that practical approximation will occur on purchase of equipment anyway. The figures given by Miss Watson are meaningless as we are not told whether they represent absorption by air or by water. I would think that if Mr. de Graaf feels that tanks up to 18 in. deep can be treated similarly, as a general example, then he is enough of an authority on the subject to provide the rest of us with a good starting point.

It was quite co-incidental that my own and Mr. Adams' articles appeared in the same issue, and I personally found the latter extremely interesting. Agreement with Mr. Adams' description of the new "True-Lite" tube should hardly negate my comments on the older types and the general principles involved.

A. JENNO,
Wilnecote,
Staffs.

Appreciation

May I, through the pages of your magazine, express my gratitude to Uno Products of Nantwich for their excellent attention regarding a faulty heater/thermostat. Not only was this replaced by a new one free of charge, but the whole matter took no more than five days. Many thanks for this first-class service.

P. R. Chadwick,
28 Stadium Avenue,
Blackpool FY4 3OB.

Instant Discus

On a Monday in April I purchased two Brown Discus from a person in Birmingham. I drove home with them in the back of my car and I arrived home at 3.10 p.m., put the bags they were in in the tank and floated them for 1½hrs. I then put an upright piece of slate in the tank and released both fish. They spawned at 6·10 p.m. the same evening.

B. A. MIDDLETON,
7 Underhill Crescent,
Abergavenny,
Mon.

Obituary

It is with deep regret that I have to announce the death of Mr. Charles Katritsky, on May 8th last, at the grand old age of 90.

Mr. Katritsky was a Vice President of the F.B.A.S., and was actually the first Specialist on Plants to enter the lists of the Federation as a lecturer many years ago. He was also a Life Member of the Hendon Society.

His services to the Federation, in extending to us the benefits of his knowledge and experience of the Plant World, have been second to none.

His gentlemanly manner, and respect for others, always held him in high esteem, and the hobby will be the poorer without him.

I am sure that all Members of the F.B.A.S., will join me in extending to his son, and others of his family circle, our deep condolences in their sad loss.

F. C. TOMKINS,
Chairman F.B.A.S.

FOR THE HERPETOLOGIST'S BOOKSHELF

by Andrew Allen

PREVIOUS articles have evaluated books upon the general biology of Reptiles and Amphibians, the unifying principles of living phenomena. Today I move to works describing the range of species, with emphasis on living diversity. The two aspects are complementary, but demand different treatment and even attitudes of mind.

Volumes reviewed to date have possessed powerful central themes, integrating the threads of embryology, anatomy, evolution, ecology into balanced compositions depicting the herpetiles in a context of biological theory. By contrast descriptions of species tend to become catalogues; the skill of an author resides in ability to add colour and fascination to what are basically lists. A good study in this field should create wonder in the reader's mind, wonder at the varied forms (some of them apparently bizarre) in which these animals achieve equilibrium with the environment, scientific wonder at the source of such diversity, aesthetic appreciation of their beauty.

The books I mention attempt an illustrative spectrum across the entire range of form in different groups, habitats and continents. I shall discuss works dealing with narrow taxa or herpetofaunas of specific countries at a later date.

At the less detailed end of the scale is *Reptiles and Amphibians of the World* by Hans Hvass, Methuen 1964, translated from German by Dr. Gwynne Vevers. In a compact columne of 125 pages this covers a selected 230 species. For each there are apparently haphazard, brief comments on distribution, colour, habits, supplemented by numerous passable colour paintings. There is no bibliography! Overall effect is moderately agreeable, and the book could occupy a couple of hours reading or make a good present for a youngster.

A French volume to beautify the bookshelf or stimulate the kids is *Les Plus Beaux Reptiles* by Jean Guibé, in the Larousse Quarto Edition. The trifling text can be dismissed from consideration instantly. But the glossy photos are glorious, displayed to give a sumptuous volume of the "coffee table" genre. It won't serve any practical purpose, for few species are illustrated. But the aesthetic value compensates. And the irrelevence of the text, plus use of Latin names, means that the language should bother no-one.

Rather more serious is *Reptiles and Amphibians of the World* (I apologise for the unimaginative titles; you will have to endure more of the same) by Maurice Burton, Orbis £2.50. Copies are in many bookshops at time of writing.

At first glance this also looks like a "coffee table" book, big and thin, profusely illustrated. Those illustrations meet the highest standards of modern colour photography, represent an artistic experience. Not only are they technically superb; they also show the beasts actually *doing* things. Lizards and toads spend long periods at rest, and may be simply snapped by anyone with equipment and competence. The resultant photos will identify the species, but otherwise possess all the vivacity of bad monumental sculpture. The art of reptile photography is in taking the picture at just that moment when the animal snaps up a passing wasp, courts, fights, dies.

But the text is somewhat better than trifling, more than just a pretty face on glossy paper. Maurice Burton has a reputation for writing good natural history prose. The account reads smoothly, moving swiftly from group to group, highlighting "characteristic" members and also certain aspects of general biology. The result is a definite and coherent text rather than an interjection of spurious comments between the photos.

The standard is not very demanding. A fifteen year old might lap up the new vistas, so entertainingly presented. Anyone arriving a novice to the subject would benefit from succulent foretaste of pleasures to come. But the experienced herpetologist feels a sense of *deja vu;* the information is too familiar, the examples legion. So browse happily, but do not expect much instruction or a work for future reference.

PRODUCT REVIEW

The Interpet Aqua-Joy Motor Filter.

1. Description

A rapid turnover water circulating box filter fitted internally for various combinations of cascade filtration.

The unit consists of a strong dark-green, heavy-plastic box fitted with a rigid flat lid which is clamped down by eight knurled finger-screw nuts which pressurise a circumferential water-tight rubber seal. All functions are internal and the only external features, besides the clamping nuts, are the input and output water flow connections fitted into the lid, a double-insulated mains cable which has a sealed entry into the side of the motor compartment, and the four rubber feet fitted for floor-standing operation. The top surface of the lid is dished, and this catches any slight spillage encountered when starting the input siphon.

Inside the filter box the water falls in turn through two horizontal chambers, each of approximately twenty-eight square inches surface area, and is then returned via a magnetically coupled impeller and a sealed lift pipe to the output connection in the lid. The electric motor which provides the driving force for the impeller is completely isolated from all parts of the water circulation system in a sealed lower chamber whose sides are slotted for heat dispersion by air convection. All necessary piping and small fittings to circulate water between the filter and an aquarium are supplied as standard, together with a comprehensive assembly diagram.

The whole thing is built in a simple functional manner which encourages easy installation and operation.

2. Functions

The unit is supplied with a poly-foam pad which covers the base of the lower filter chamber and is impregnated with "biological life." This is said to act as a biological filtration stage. There is room in the same chamber for the inclusion of another filter medium, such as activated charcoal, and the top compartment where the water first enters can be filled with nylon wool, gravel, or other mechanical straining material. It is therefore possible to derive a two or three stage cascade filtration system with various media combinations.

The unit can be used as a free standing box capable of easy transfer from one aquarium to another, or it may be installed permanently on one aquarium if a suitable shelf or simple hanging bracket is constructed. Enough piping and small parts are supplied to enable end-to-end circulation systems to be fitted to aquaria up to four feet long.

3. Comments

I have installed the filter as a permanent fixture on a freshwater tropical aquarium of about a hundred gallons capacity which already has an extensive biological filtration system. The Aqua-Joy is being used as a carbon chemical filter to supplement the biological function, and so is loaded with nylon wool as a preliminary strainer, activated carbon as the main medium, and the biological pad supplied has been left in to stop carbon particles being pumped out into the aquarium. Water is drawn off near the top of the aquarium so that large quantities of heavy debris do not find their way into the filter, and the output is returned to the opposite end of the aquarium through the perforated spray piping supplied. The filter has only recently been installed so an evaluation of its long-term efficiency is not possible now, but will be made at a later date.

The manufacturer's instruction leaflet is somewhat short, but gives enough information to get the filter operational, the assembly diagram being particularly useful. I doubt whether the biological pad has enough surface area to perform a useful function for any length of time on anything other than a small aquarium, and the German manufacturers are reluctant to disclose the source of the "biological life" used in the impregnation process as they consider this a trade secret, apparently arrived at after much experimentation. Thus no real estimate of the efficiency of this process can be made. The main advantage of this type of filter is its adaptability to a cascaded system and so I would think that experienced aquarists will be more likely to use it as a mechanical-chemical and/or peat filter and to leave the biological pad in anyway, as I have.

The instruction leaflet recommends that the impeller bearing, which is a polished vertical rod, be lubricated periodically with "a drop of oil." No indication of the type of oil to be used is given so I was rather concerned that this might lead to aquarists dropping any available oil in, and was similarly apprehensive regarding the possible effects of even the correct oil on sensitive environments such as marine aquaria. Dr. Carrington of Interpet was very co-operative and took this and other points up with the German manufacturer. Consequently I have a

copy of a letter from A. L. Engels and Co. stating that "a very tiny drop of paraffin oil" should be used, or that alternatively the filter can be operated without lubrication at all, in which case the pump section may become slightly noisy after a time but should not be otherwise affected. Both the manufacturer and Interpet state that they have not heard of any case of the filter lubricant causing trouble in an aquarium. I shall run the unit which I have on test without any lubrication and so may be able to comment further on this point at a later date.

4. Specification (all figures approximate)
Water flow rate with clean filter materials—50 galls/hr.
Filter chamber surface area—2 × 28 sq. ins.
Electrical power consumption—10 watts.
Length of mains supply cable—6 feet.
External measurements—7 in. × 5 in. × 8 in. deep.

5. Accessories supplied
1 Biological filter pad.
2 lengths of flexible hose approx. 36 in. long.
2 lengths of rigid piping approx. 6 in. long.
2 lengths of perforated spray piping approx. 6 in. long
2 90° piping elbows.
2 straight piping junctions.
3 rubber suckers with retaining rings.
1 inlet water strainer.
1 outlet spray pipe plug.

6. Price and distribution
£25·37 (at time of writing). Interpet code no. 1050. Interpet, Curtis Road, Dorking, Surrey, RH4 1EJ. For list of retail stockists see the advertisement in the August 1974 *Aquarist and Pondkeeper*.

The Rena 301R Air Pump.

Readers will no doubt be familiar with the range of Rena aquarium air pumps due to their well-established reputation for reliability and the availability of spare parts. The model 301R is not a new pump, but a very welcome modification of the largest pump in the present range, the Rena 301. The "R" in the type number indicates that the pump is electrically adjustable.

The older method of adjustment, whereby a pointed plug was screwed into a by-pass orifice inside the valve chamber, has been dropped and instead an electrical potentiometer has been fitted in the mains voltage supply circuit. Alteration of the potentiometer setting, by use of the knob mounted outside on the pump casing, will regulate the power available to the operating coil and will hence determine the air output. Under the previous method the pump worked more or less flat out at all times and the by-pass setting varied the overall efficiency by spilling unwanted air. The new modification allows reduction of the working rate of the pump components and so should minimise wear and tear and increase life expectancy.

The 301R is thus ideally suited to those aquarists who only want the pump's full output occasionally, or who use varying air-flows. In all other details the pump is exactly as the familiar model 301, which needs no recommendation.

On test the adjustment was smooth and gave a good range of air flows. At the lower rates the pump was hardly working so the consequent saving in wear and tear must be appreciable. I would expect valve life to be longer and the necessary cleaning intervals greater because the pump only takes in an amount of air similar to that pumped out again.

One warning for absolute beginners: the instruction leaflet says, "ensure that the pump is above the water level in the aquarium." A lady I heard of not only put her pump below the water level but also inside the aquarium under water. She said she couldn't see how the pump could be in the aquarium and above the water level at the same time. The pump was ruined of course, but luckily there were no other consequences. A small point, but perhaps the leaflet should be rewritten for absolute clarity. Otherwise, the instructions are good and a twelve month's guarantee is included.

All parts can be purchased as spares and are easily fitted.

Price (at time of writing)—£6·55 plus VAT.

Distribution to the trade by Impelec Ltd., Unit 2, Farnburn Industrial Estate, Farnburn Avenue, Slough, Bucks, SL1 1PX. Telephone: Slough 34437.

A. JENNO

The Rena R505 Circulating Pump.
1. Description

A robust, versatile power unit for filtration or other water-circulating exercises in aquaria. The equipment consists of a mains-driven synchronous electric motor fitted inside a strong impact-resistant plastic case. The motor drive shaft is extended through the bottom of the case, through water seals, to the impeller chamber. The motor is fitted with a cooling fan and has a protective thermostatic cut-out to prevent overheating.

The impeller mechanism is removable for cleaning and has a direct drive system through a keyed shaft. The chamber casing is transparent so operation can easily be checked. A strong supporting bracket is supplied which allows installation on most types of aquarium construction very simply. Alternatively, the unit can be used remote from the aquarium when employed solely as a circulating pump. The mains supply is led in via a heavy-duty double-insulated three-core cable of good length.

2. Application

The pump is applicable to various working configurations. It can be simply a circulation power unit to move water about, it can be built into a loop to an external filter box, it can drive a protein skimmer or U.V. steriliser, or may be included in other cleansing systems. When combined with Rena filter cartridges (which are plugged onto the water inlet pipe) it can be used as a compact filtering unit suspended over the aquarium, and which can easily be transferred from one tank to another, as required. The pump is located in position on its mounting bracket by protruding rubber studs which fit into recesses in the bracket platform. If extra brackets were obtained, one for each aquarium, then transfer would be simple indeed.

3. Remarks

An extremely adaptable water pump for the aquarist who likes to experiment with his own cleansing systems or who needs a compact unit which can be moved about easily. The water-tight impeller chamber allows the pump to be positioned almost anywhere in a circulation system; for instance, it could be wall-mounted or even just placed on the floor. The priming requirements must, of course, be observed. Like all impeller-operated water pumps, it cannot suck water up and so must be fitted in a low position in any system.

Its use as a cleansing tool with its own cartridges will appeal to those with several aquaria to service regularly. It can be fitted directly onto the aquarium for the required period, and there is no struggling with lengths of pipe or other external parts. The cartridges are designated as Rena "F" (filter) and Rena "C" (carbon) and are stackable for use together.

On test the pump was silent and efficient. The direct drive system seems an advantage over the more conventional magnetic methods used elsewhere, and I particularly liked the way the impeller chamber could easily be opened for access to the moving parts. No complaints at all. A useful piece of equipment.

4. Specifications

Supply voltage—220V. a.c. 50 Hz.
Power consumption—8 Watts.
Auto cut-out at 75 C motor coil temperature.
Mains cable length—approximately 6 ft.
Motor speed—2,500 r.p.m.
Dimensions (motor chamber)—3½ in. × 3 in. × 2½ in. high, with impeller chamber extension 5 in. below.
Support bracket fitting adjustable to aquarium top lips up to 2 in. wide.
Pipe connections—input ⅜ in. o.d., output ½ in. o.d.

No water-flow figures are specified, but on test the pump compared favourably with my other well-known power filters. The flow-rate will obviously vary with the application because, like all water pumps, the determining factor is the height to which the water is to be pumped. Used as a compact unit with the Rena cartridges fitted, the lift is only a few inches, so the flow is at the maximum rate save for any resistance caused by the filter materials and the dirt, etc., collected.

5. Price and Distribution

Price (at time of writing)—R505 unit £18 plus VAT. "F" filter, £1·40 plus VAT. "C" filter, 84p plus VAT.

Distributed to the trade by Impelec Ltd., Unit 2, Farnburn Industrial Estate, Farnburn Avenue, Slough, Bucks, SL1 1PX. Telephone: Slough 34437.

A. JENNO

POSTAGE STAMPS OF ST. VINCENT

New definitive Series Depicting Fish and Sea Mammals

THIS NEW range of stamps, depicting nineteen marine fishes and mammals, was issued on April 10th last and replaces the Birds of St. Vincent series. Denominations and subjects are as under:—

Denominations: 1 cent French Angelfish, 2 cents Spotfin Butterfly-Fish, 3 cents Horse-Eyed Jack, 4 cents Mackerel, 5 cents French Grunt, 6 cents Spotted-Goatfish, 8 cents Ballyhoo, 10 cents Sperm Whale, 12 cents Humpback Whale, 15 cents Cowfish, 20 cents Queen Angelfish, 25 cents Princess Parrotfish, 35 cents Red Hind, 45 cents Atlantic Flying Fish, 50 cents Porkfish, $1·00 Queen Triggerfish, $2·50 Sailfish, $5·00 Dolphin Fish, $10·00 Blue Marlin.

SOME LESSER-KNOWN AMAZON SWORD-PLANTS (PART 2)

by Phillip J. Brown

THE GENUS *Echinodorus* (Family Alismaceae) is a very popular one with tropical aquarists but few species are offered for sale in general aquarists' shops (and therefore consequently grown) other than the Broad leaved Amazon Sword (*E. paniculatus*) and the Texas Mud Baby (*E. cordifolius*). Yet this is a large genus of plants containing some of the most interesting and attractive species that can be grown submerse. Many of them are still little known to science and productive research work can be done by aquarists.

Echinodorus species are naturally amphibious mostly coming from regions around the Amazon river (hence their popular name). They can withstand a wide range of water conditions but (with certain exceptions) need a temperature over 60°F in the summer and a good bottom substrate in which to grow. I obtain good results using deep mature gravel with some clay added to it, in a flowerpot if necessary. Species that persist in throwing up aerial leaves can usually be kept in the "juvenile" submerse state by restriction of their roots in a small flowerpot with clean gravel.

Echinodorus berteroi (Sprengel) Fassett, sometimes seen as *E. rostratus* (Nuttall) Engelmann, but popularly known as the Cellophane plant. It originates from the Central and Southern states of North American and the West Indies. It is a beautiful species that can reach a height of thirty inches including the petioles. The leaves go through a succession of different forms dependent upon age and conditions. They start as strap-like leaves rounded at both ends and light green in colour. The next set of leaves that develop are broader and longer with a bold midrib and from one to three slender longitudinal veins either side of the midrib. These are connected by short, dark-green cross-veins. The final set of leaves are decidely heart-shaped with a broad rounded tip. They will grow under, on or above the surface of the water but the emersed leaves appear toughter and more shiny. This final set of leaves can reach a length of four inches and a width of over two inches. Under good conditions this may be followed by the flowering stalk (inflorescence) which can be over a yard in height and bearing up to six whorls of small white flowers each with twelve stamens. The fruits are an inch to an inch and a quarter in length.

E. berteroi prefers water that is rather soft and acid and a summer temperature range between 68-77°F that should be somewhat reduced in winter to allow it to rest. It prefers a well-lit position but light and heavy substrate feeding tend to lead to the formation of floating and emerse leaves. It can be propagated from seed but far easier is division of the rootstock or replanting the new plants that arise from the base of the plant.

Echinodorus grandiflorus (Chamisso et Schlechtendal) Micheli is a large plant from South America. It has large ovalate leaves that have seven to seventeen conspicuous primary veins that are best seen on the underside of the leaf. In colour they are a shiny mid-green. This is a plant that is of limited use in the smaller aquarium, the leaves growing out of the water if it is less than about twenty inches in depth. It grows even taller when grown as a marsh plant in shallow water. The flowers are white.

Colin Roe mentions that a root temperature of at least 80°F is desirable but it will grow at temperatures above 75°F. It prefers a good substrate but does not seem fussy as to water conditions.

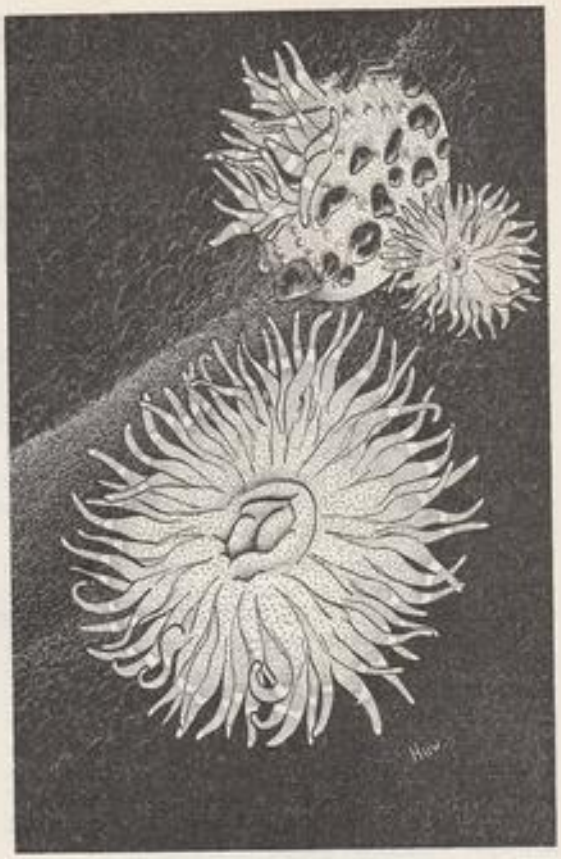
Echinodorus longistylis Buchenau. A rather uncommon species but worth cultivating in larger tanks. The eliptical leaves are up to nine-and-a-half inches long by four inches in width. Including the midrib there are up to seven prominent veins on the bright green leaves and they can reach a height of twenty seven inches. The inflorescence can reach a height of one yard and bears from ten to fifteen whorls of six to nine white flowers. Grown submerse the inflorescences usually produce adventitious plantlets.

It flowers easily when grown in shallow water producing emerse leaves soon followed by the flowering stem. Sunlight seems to be important for this. In mature plants shoots may form from the rhizome and these can be planted out when of sufficient size. The rootstock can also be divided. When dividing rootstocks always brush the two cut halves with charcoal dust before replanting them. This helps to prevent them rotting. *E. longistylis* originates from Brazil and is sometimes seen under the name Melon Sword plant.

Junior Aquarist

MARINES ARE EASY

Written and Illustrated by Huw Collingbourne



Dahlia Anenomes

BUT, COME OFF IT, everybody knows that marines aren't easy—and, what is more to the point, they are not cheap either! You think not? I suppose it all depends on what you are determined to spend on them—of course, they can be as expensive as you want to make them. And it also depends on what "marines" you want to keep: moorish idols, long-nosed butterflies and clown triggers no doubt—but all in good time, surely. Beginners to freshwater aquarium keeping would be foolish indeed to insist on keeping discus first time off.

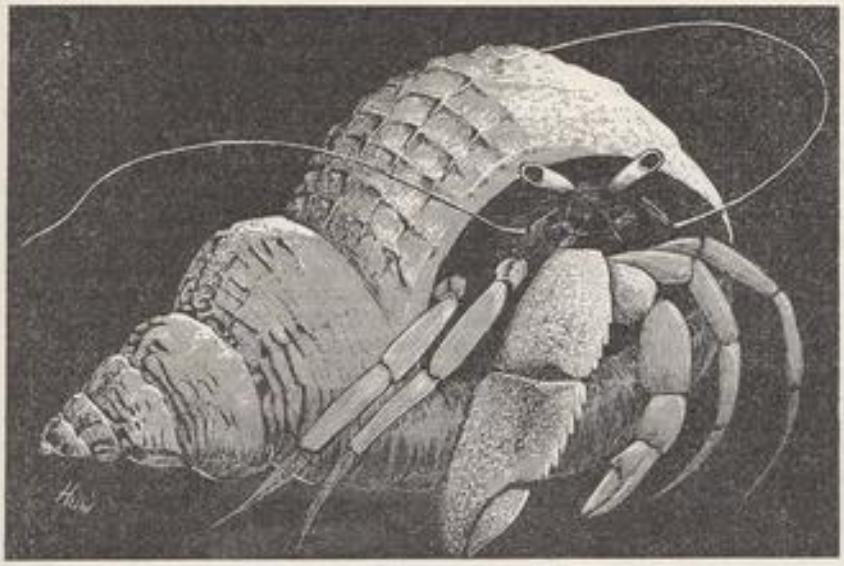
Unfortunately, the prospective marine aquarist is very easily conned into buying all sorts of ridiculously expensive and often totally unnecessary equipment which, he is persuaded, is absolutely essential. Only experience reveals the true simplicity of the hobby. There's really nothing to stop any freshwater aquarist from trying his hand at marines.

Ah, yes, that's all very well for me to say, but isn't it true that, however simple the arrangement, marine tanks must be fitted with all manner of unfamiliar and costly appliances? Filters, for example (even sub-gravel filters do demand some time and trouble to prepare), as well as hydrometers, pH test kits, nitrite kits and a myriad other rather technical water-testing devices—"But," you say, "I'm not even sure I'll be interested enough to want to go on keeping marines, and I haven't got the time or the money to waste on all this equipment just on the off chance."

I reckon it's this sort of worry that prevents many aquarists from taking the plunge, so to speak. And I know that the "marines for under £50" approach is unlikely to persuade many people not already fanatically interested in the subject—so here's my answer to the problem—a sort of "marines for under £5," if you like, or even, wait for it, "Marines For FREE!" (And they said it couldn't be done). . . . What, still not convinced? Then read on.

To start with, you can forget *all* the "essential" equipment. You won't need any of it for your first marine aquarium. Of course, if you do go on to enlarge your marine collection, you may well equip yourself with these things eventually—but, for your first tank, absolutely none of it is essential. Any freshwater aquarist will already have all the equipment needed to keep a marine aquarium—and even a non-aquarist will be able to set up a marine tank with little fuss or expense.

Basically, the same common-sense approach holds good for a first sea-water tank as for a first freshwater tank. Remember the advice? Begin with a few hardy, non-aggressive species, don't overcrowd, don't overfeed and a rule of my own—Don't overspend



Hermit Crab

(for goodness sake, don't fritter away all your savings on your first marine tank—you wouldn't have dreamt of it with your first freshwater tank, so don't with a marine tank. I can assure you that it is absolutely unnecessary).

Now, conforming to my two golden rules, (i.e., keep it simple; keep it cheap) what is the best way to start? Well, fairly obviously I would say, start with native marines—remember, it is just a start and there's nothing to stop you going on to coral fish in the future—but as a beginner you must realise that *you will make mistakes*—so, for heaven's sake, make sure you can financially afford your mistakes. You can always go and collect more British shore animals—few of us can always afford to go and buy more tropical marines. Hopefully, of course, if you follow my advice in this article, you won't need to go and collect replacement specimens very often—because, remember, if you begin in the right way, there is no reason why your aquarium inmates should die, save from natural causes.

Now, you'll need an aquarium of some description—but if this is your first attempt at keeping marines, don't immediately run out and buy a fantastically expensive "special marine aquarium"—all stainless steel and specially designed, scientifically compounded, anodised thingummybobs. Goodness knows the price of those things, but, unless you already happen to have one lying about the place, please don't consider buying one specially—because, remember, when you've spent nothing, you've got nothing to lose.

So what can you use? Well, if you already have a plastic moulded aquarium (18 in. or larger by preference) then this will be ideal—so would an all glass aquarium or one with a nylon or plastic coated frame. Even an ordinary angle-iron framed aquarium can be used with success; iron, unlike most metals, is not toxic to marine organisms but sea-water does cause corrosion at a frightening rate, so angle-iron frames are best coated with either a good bituminous paint such as "Bituros" (which is used for drinking-water tanks) or one of the more durable epoxy resin based paints.

But, even if you haven't got any spare tanks or if you don't want to bother with the preparation of iron-framed aquaria, there are numerous other containers which are suitable For example, plastic bowls or buckets (on the whole, bowls are better, providing a greater water to air surface area), ceramic sinks or just about any large, shallow container well lined with a couple of large plastic bags. (For more ideas, read Mr. L. A. J. Jackman's excellent book, "Marine Aquaria").

Now, what else do we need? An air line, of course, is a great advantage, and the more turbulent you make the water (within reason), the better. But, luckily for us, our chosen tank-occupants come from rock pools, which, for much of the time are left completely stagnant, and there are some animals which can be kept without mechanical aeration—more of this later. But, if possible, I really would advise you to provide aeration—it makes things easier for you, helps your aquarium to look after itself, and vastly increases your choice of inhabitants for a marine community. But if you don't have an aerator and don't want to buy one at this stage, well, don't be put off—I'll tell you how you can prepare an incredibly simple but infinitely rewarding system later on.

But, for the time being, let us assume that you are able to provide continuous mechanical aeration. You

are now ready to collect some animals for your aquarium. Where should you go? And what should you look for?

The answer to the first question is fairly simple: you should go to the sea-side—any sea-side. Even the most commercialised, most polluted shore-line will provide you with enough varieties of ocean life to make your first collection a good one; but the most productive places to look are likely to be in the nooks and crags of weedy rock pools.

And what do you look for? Well, for a start, you do not look for fish. I am not saying that fish cannot be kept in an aquarium as simple as I am describing, for they certainly can, but if this is to be your first attempt, I'd like you to have every chance of success, and fish would provide additional complications. In any case, there's so much else on the shore that there is really little point in including fish at this stage (even in advanced marine aquaria, the invertebrates tend to steal the scene!).

Perhaps the best thing to do would be to make a list of the things that are likely to do best in the most simple of aquaria; these include:

Beadlet Anemones (*Actinia equina*)
Dahlia Anemones (*Tealia felina*)
Common Prawns (*Palaemon* spp.)
Common Shrimps (*Crangon crangon*)
Hermit Crabs (*Eupagurus bernhardus*)
Starfish (*Asterias rubens*)
Various bivalve and univalve molluscs.

All these are easily found and caught and should live quite contentedly in your simple aeration-only aquarium, with the minimum of care. Let us examine each of them a little more closely.

Anemones: The beadlet anemone is by far the most common species. Found in a variety of hues from brilliant red to emerald green, it looks no more than a blob of coloured jelly stuck to a rock when out of water, but opens into a beautiful flower-like form when submersed. Numerous blue, light-sensitive beads at the base of the tentacles give this anemone its name. It will breed rapidly and will frequently "spit out" tiny little anemones through the tentacle-surrounded mouth aperture.

Dahlia anemones, a little less common, are often found with numerous small stones stuck to their warty bodies. They can be extremely beautiful, very colourful creatures, but do need to be maintained in pure, clean water to thrive.

Other, less abundant varieties include the snakelocks or opelet (*Anemonia sulcata*) which is normally brown with green tentacles (in which reside tiny algal plants). These are fantastically beautiful animals but they do require a lot of light for the symbiotic algae to flourish.

The plumose anemone (*Metridium senile*), normally found in deeper water, is another creature of startling appearance, with a profusion of minute ostrich-feather tentacles, but these are difficult to feed, as they normally devour planktonic creatures, and they rapidly decompose in less than perfect water conditions and are, therefore, not advised for the absolute beginner.

Incidentally, a word about collecting anemones. They adhere very firmly to rocks and are best removed by *carefully* sliding a pen-knife blade or finger-nail beneath the base and gently working them free. But you must be careful, for if you damage the animal it is unlikely to recover. Of course, if you find anemones on small stones, then you can bring the whole thing home. Or you could chisel off the piece of rock complete with anemone, but if this method can be avoided, so much the better.

Unstuck anemones should be placed on stones in an unaerated aquarium for a few hours to give them time to resettle. Active animals like crabs are best excluded at this stage, until the anemones have settled down properly.

Prawns and shrimps are abundant everywhere and prawns are usually more evident than shrimps. They are easily caught by hand or in a net swept round the weedy margins of rock pools. They make excellent, highly entertaining scavengers, and prawns especially, may often be found with hundreds of little eggs stuck to their swimmerettes (the swimming appendages under the abdomen) which, with any luck will hatch and, eventually, grow in the aquarium.

Hermit crabs, unlike most other sorts of crabs, may safely be included in community aquaria. Common on most rocky shores, they seem especially fond of areas highly polluted by human effluent. One must remember to collect whelk and winkle shells of larger sizes for hermit crabs to move into when they grow out of their last home.

Starfish are sometimes found in large numbers; at other times they are impossible to find. If you do find one, you may try to keep it, but remember, they do eat molluscs and these cannot be included in the same aquarium except as food. Live Cockles bought at stalls may be used as food, but they must always be cleaned first as described below. If a starfish begins shedding its limbs, this is a sign that something is very wrong with your aquarium water and the animal should at once be removed and isolated before it pollutes the water.

Bivalve molluscs like cockles and mussels can be kept in small aquaria and they act like little living water filters. Before introducing them, however, they should be put into a jar of clean sea-water for a while, allowing them to push out the waste from their gut. Now it may seem ideal, having little living filters in your tank. But there are problems. For a start, they need a great deal of food—baby brine shrimp perhaps—and they are wont to die without prior

notice and this is very difficult to detect. However, if you have any doubts, tap their shells and if they do not immediately close (dead bivalves always have open shells) then they must be removed at once, as flesh decays very rapidly in sea-water. Therefore, I would say that they are not ideal animals for the beginner unless they occupy only one tank of at least two tanks being kept (if the water then becomes polluted, any living animals may be immediately transfered to the other tank).

Little univalves like periwinkles get on well in small aquaria, but before including them, please check that you are able to provide a proper diet (it may be algae; it may be meat). Leave the deeper water varieties like whelks to the more advanced aquarist.

Now you have your tank population, what problems will you have from now on? What about the water? What sort do you need? Well, as you have to go to the sea-side to collect your animals, why not collect your water there too; at best from a large rock pool where the water is clear and not too concentrated due to evaporation and not too diluted due to any rain-fall.

Sand? Unless you intend to provide an under-gravel filter (read one of the books or articles by Graham Cox for more details of this) then I would advise no sand, or, at least, only enough sand to cover the base of the tank to a depth of a couple of grains.

Hydrometer? For those unfamiliar with the name this is an instrument which provides a reading which indicates the density or specific gravity of the water, and as this relates to the salt content, it tells the aquarist when the water needs topping up with fresh, for as water evaporates, the salt becomes more concentrated in the volume which remains and needs to be diluted with distilled water or rain water.

One way of indicating the need for topping up the water without a hydrometer is to mark the original water level on the side of the tank, but, though this is often recommended, I do not approve of the idea, as I have found that a certain ammount of salt-water is lost too (due to aeration splash, spillage, etc.), and with nothing to indicate this you would be liable to replenish your aquarium with freshwater up to the mark, and end up by over-diluting the water.

But, you know, it is quite a simple matter to make your own hydrometers and this is highly desirable. All you need to do this is a small test-tube and cork, a piece of paper, an elastic band and a small weight.

First, put the weight at the bottom of the test-tube (the lead weights used by anglers are ideal for this, but anything small enough and heavy enough will do)—It need be just heavy enough to make the test-tube float upright in water. Gently cork it and put it in some newly collected sea-water, making sure it floats away from the edges of the container where surface tension would influence the reading. Now, slip the elastic band round the outside of the tube and work it down to the point where the water surface touches the tube. Then take the tube from the water and slip in a piece of paper with a line drawn across it at one point. Move the paper till the drawn line corresponds with the position of the elastic band. The paper may be secured with a tiny blob of glue if so desired. The tube may then be corked firmly and the elastic band removed. In your aquarium the density of your water may now be checked accurately with this instrument. Simply switch off the aeration, float the hydrometer in the middle of the aquarium and take a reading. If the drawn line is floating above the water surface, then top up with freshwater till it is back at the water level. If it is floating beneath the water level, then I would guess you have been too generous in your topping up and there is little you could do in this case, except perhaps wait until some water has evaporated.

Once you have this sorted out, feel free to stock your aquarium—but take care not to overstock. There aren't any rules about what constitutes over-stocking, but use your discretion—remember, you'll get no problems from understocking, so play on the safe side. As an example, an 18 in. aquarium could easily accommodate half a dozen anemones, two or three prawns, two small hermit crabs and a few periwinkles—but don't get carried away—it's so easy to collect literally hundreds of animals in just an hour or two on the shore, and then find you do not have the space to keep them.

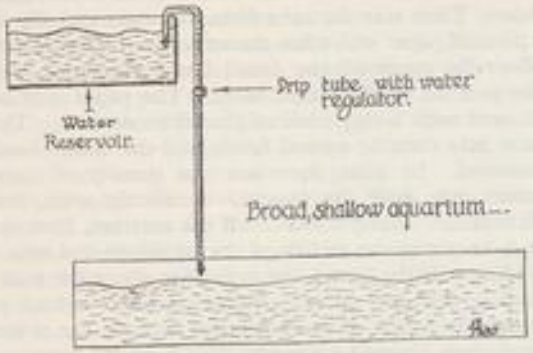
Now, what about feeding? Well, excepting the specialist feeders which I've mentioned, most common sea-shore invertebrates pose little problem. Prawns, crabs and anemones will eat most types of meat, including fish, shrimp, chopped earthworm or thoroughly washed tinned dog food. Little pieces should be dropped directly into the anemones' tentacles and the crabs and prawns will finish off the scraps.

Any bits of food left must be syphoned off at once. It is best syphoned through a fine net into a plastic bowl or bucket, so that the valuable sea-water may then be returned to the aquarium. Scrupulous cleanliness is of supreme importance, especially in unfiltered aquaria.

Well, for the time being, I think that's all you need to know to enable you to keep a marine aquarium costing next to nothing and requiring little subsequent maintenance. Really, I don't see the reason for the mystique surrounding marines. If you can keep guppies, then I'm sure you will be able to keep marines.

Oh, but one last point. Earlier on, I said that it was possible to keep marines without mechanical aeration. Now, let me expand upon this. While mechanical

aeration is preferable if available, there is no reason why a sea-water drip system (see diagram) should not be employed to circulate the water instead. Of course, there are one or two points which you need to keep in mind for this arrangement to be successful. Obviously, the water-reservoir must never be allowed to run dry, but the system is likely to be most effective for wide, shallow tanks or ponds with a large surface area.



I am sure that if you follow my advice in this article your first marine aquarium will provide you with so much enjoyment that you will be unable to resist the temptation to go on to set up more advanced aquaria perhaps employing the semi-natural, under-gravel filtered system previously mentioned, which I can thoroughly recommend as it greatly facilitates the simple maintenance of more complex types of marine aquarium.

TROPICAL QUERIES

(continued from page 177)

I have been told that household salt added to the aquarium every week keeps fish in good health. Is this true?

About a level teaspoonful of pure salt introduced into an aquarium at the start, that is a teaspoonful to every gallon of water, can hardly do any harm even if it doesn't do any good, but to add salt every week is just asking for trouble. For it must be perfectly clear that the more salt is added the water becomes increasingly briny and as the weeks go by the freshwater fishes become kippered and the plants turn transparent or soggy yellow and die.

Have you ever come across a plant called *Tillaea recurva*? I have been told this plant is suitable for the warmwater or coldwater aquarium. Furthermore, that it is decorative and provides excellent cover for fry and scary adult fish. If you know this plant, what is you opinion of its use in the aquarium?

Tillaea recurva is the old botanical name for a moisture-loving plant now placed in the genus *Crassula*. I know the plant well. It grows like fury in a pond outdoors (under about a foot of water). When it reaches the surface it produces rather glossy and closely-packed sedum-like aerial foliage and then proceeds to spread over habitually damp stonework or a moist soil. Beneath the surface it throws up a multitude of slender vertical stems clothed at short intervals with spikey leaves. These grow in pairs. A single leaf may measure up to an inch long, Curiously enough, although this plant is native to 'down under'—that is Australia and Tasmania, it does better in coldwater over here than it does in the tropical aquarium. Another thing, it demands a strong light. You will find an illustration of this crassula and some interesting text about it in Mr. Colin Roe's admirable book called *A Manual of Aquarium Plants*.

I am a newcomer to aquarium keeping and although my fishes appear to be in perfect health and eat well they do occasionally scrape their sides against the glass of the aquarium and the plants. Permit me to say, however, that there are no signs of parasites on the fish or any other visible symptoms of trouble. Please can you tell me the cause of the strange behaviour?

If your aquarium has not been set up for very long it is not unlikely that the fish have a skin irritation brought about by fresh tapwater. As the water matures and the plants establish themselves, I think you will find that the fish will stop rubbing themselves against objects in the aquarium.

Kindly give me the scientific name and maximum size of the species of *Botia* called the skunk loach.

The so-called skunk loach is formally known as *Botia horae*. It grows to a length of between 3½ to 4 in.

Recently I owned a pair of Siamese fighting fish, the female of which refused to spawn. Always after the male displayed and built a bubble nest she would meet his advances with spiteful bites. In the end, her aggressive tactics resulted in the death of the male. Is it unusual for a female fighting fish to refuse to respond to the advances of a male?

It is not unusual for a female fighting fish to beat up her spouse. Usually, this happens when the female is not in the mood for love and she is blessed with great strength of character and the determination to resist the approaches of the male.

THE ORANGE-FINNED BLUE LOACH

by M. Delaney

UNDOUBTEDLY THE most attractive Botia, and one of the most beautiful of all freshwater fish is *Botia macracantha*, the Clown Loach. The Clown Loach, however, has a cousin, *Botia modesta* which, although not as striking in contrast, or as well-known, is nevertheless a very attractive Botia.

Botia modesta differs from the others in the genus (except *Botia horae*) in the absence of bars or stripes, or combinations of spots and bars, as in *Botia sidthimunki*, although it does possess a darker band down the caudal penduncle, but this is hardly visible in a healthy fish.

The body coloration is a dark purple, getting progressively lighter towards the underside of the fish, with a darker purple band down the caudal penduncle. The fins are all a brilliant orange, although if the fish doesn't receive regular feedings of live food, the fins yellow.

Like the vast majority of Botias, *B. modesta* originates from Thailand where in its natural waters it attains a size of 25 cm, being one of the larger Botias. However, in the home aquarium they rarely exceed a size of 12 cm.

B. modesta, although aggressive is not pugnacious. It is very territorially minded, especially at breeding time, when often intruders, unwitting fish, are unmercifully slain by this loach.

If more than one *B. modesta* are to be kept in a single tank, caves and shelters must be erected as they often fight amongst themselves using their sub-orbital spines as weapons. A slash caused by one of these spines on another *modesta* may be as deep as 8 mm, as these are heavily built fish. Their sub-orbital spines can be used against the aquarist so these fish must be handled carefully.

Botia modesta prefers live food, especially *tubifex*, white worms and chopped earthworms. I've also found that my *modesta* likes the occasional squashed pea (the processed type) with the skin removed. Although they will accept dried food if deprived of live food, over a long period colour will deteriorate.

Although not too particular about water conditions, this species seems to prefer warmer water (78°-80°F) which is slightly acidic (pH 6·8).

As yet they haven't been successfully bred, but on occasions when a group have been kept in a large tank, there have been mentions of a "golden mass' which could be the eggs. But the "golden mass' was always eaten. To accompany the golden mass there was always a dead Botia (thought to be the female), slashed by the sub-orbital spine of another *modesta*. The female is the deeper-bodied fish, and overall it is the plumper fish. I first became interested in this fish after observing its antics in the local aquatic shop. At one time the fish would be lying against a rock or plant. But the next time I would visit the shop and look in its tank it would have disappeared. Then on visiting the tank another day there would be "Ol' Blue Eyes" (as I named him) propped up against a rock or plant.

Intrigued at how Ol' Blue Eyes did this "vanishing trick," I bought him and introduced him to his new home, a 115 cm × 29 cm × 36 cm tank with under gravel filters. As if to show me the solution to the "vanishing trick," Ol' Blue Eyes would often dart under the gravel in front of my eyes, often remaining there for several days at a time, although he probably came out at night to feed.

Eventually I moved Ol' Blue Eyes to a 144 cm × 43 cm × 36 cm tank, and as the gravel wasn't deep enough for him to burrow under, I erected a cave for him which he immediately entered and staked his claim, expelling any intruder, until it was understood that the cave was "off-limits." Eventually, with this understanding, peace was restored until I introduced two *Synodontis nyasa*.

When they were introduced, the *modesta* was out of his cave, but on seeing the Nyasas swimming into his cave, he darted over, sub-orbital spines erect, and rushed the Nyasas out of the cave. Although the Nyasas still make spasmodic attempts to take over the cave, ignoring the cave I built for them, it is more of a moralistic gesture than a serious threat.

Although *Botia modesta* is not as attractive or as well-known as *Botia macracantha*, it has, I feel, a great potential in a large tank. Specimens cost about half as much as *Botia macracantha*. They are hardy fish with great character and should be given every chance to fulfil their potential.

News from AQUARISTS' SOCIETIES

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

ALTHOUGH the entries for the **Trowbridge and District A.& P.S.** were slightly down on last year, the overall standard was very much higher and the show was a great success.

Anyone interested in fishkeeping is cordially invited to attend meetings held at the Rowing Club, Bradford-on-Avon at 8 p.m. on the second Tuesday every month. The show results were as follow: Class Ba: 1, Mr. and Mrs. Chaplin; 2, Master J. Edwards; 3, R. F. Adams. Class Bz: 1, Mrs. P. Newbury; 2, Mr. and Mrs. Dore; 3, R. F. Adams; 4, Mr. Burville and M. Strange. Class Ca: 1, J. Burville; 2, C. Giles; 3, H. Booty; 4, R. Dodson. Class Cb: 1, G. Press; 2 and 4, W. Burton; 3, J. H. Jackson. Class Cz: 1, A. C. Tull; 2, R. Onslow; 3, Mrs. P. Newbury; 4, H. Booty. Class Da: 1, Mrs. P. Newbury; 2 and 3, R. Steggles. Class Db: 1, A. C. Tull; 2 and 3, Mrs. P. Newbury; 4, M. H. Carter. Class Dz: 1, R. F. Adams; 2, M. H. Carter; 3, M. Strange; 4, Mr. and Mrs. Dore. Class Ea: 1 and 4, G. Press; 2, F. Rousrell; 3, Master Amaldi. Class Ez: 1 and 3, D. Warmeant; 2, G. Bainton; 4, W. Burton. Class F: 1, T. Brown; 2, J. H. Jackson; 3, M. Strange; 4, F. Gibbs. Class G: 1, 2 and 4, Master J. Edwards; 3, M. Patrick. Class H: 1, M. H. Carter; 2 and 3, R. Dodson; 4, G. Press. Class J: 1, Mrs. P. Newbury; 2, A. Chaplin; 3, M. Jenkins; 4, Mrs. Day. Class K: 1, M. Stange; 2, R. Onslow; 3, Mrs. P. Newbury; 4, R. Dodson. Class L: 1, R. Bond; 1 and 3, A. C. Tull; 4, K. Owen. Class M: 1, R. Onslow; 2, R. Warmeant; 3, J. Burville; 4, M. H. Carter. Class N: 1, J. Burville; 2, A. Chaplin; 3 and 4, M. H. Carter. Class O: 1, W. West; 2, D. and R. Clarke; 3 and 4, J. Wheeler. Class P: 1, A. Chaplin; 2, A. C. Tull; 3 and 4, M. Bishop. Class Q: 1, K. John; 2, C. Giles; 3, J. Burville; 4, N. Owen. Class R: 1, R. Onslow; 2, J. H. Jackson; 3, N. Owen, 4. M. Bishop. Class S: 1 and 3, J. Wheeler; 2, R. Warmeant; 4, F. Gibbs. Class T: 1, J. Burville; 2, R. Dodson; 3, M. Strange; 4, K. Owen. Class Xbm: 1, M. H. Carter; 2 and 4, M. Strange; 3, R. Onslow. Class Xot: 1, W. West; 2, Mrs. P. Newbury; 3, J. Wheeler; 4, A. Chaplin. Class Uad: 1, M. Bishop; 2, M. Strange; 3 and 4, L. Menhennet. Class Ubc: 1, L. Menhennet; 2, T. M. Fowler; 3 and 4, G. J. Axe. Class V: 1, 2, 3 and 4, G. J. Axe. Class W: 1, D. Warmeant; 2, 3 and 4, G. J. Axe. Class Z: 1 and 2, M. Butcher; 3 and 4, J. Edwards.

* * *

TABLE show results at the May meeting of the **Barry A.S.** were as follow:—1, J. C. Webber; 2, A. Wallace; 3 and 4, M. C. Guthrie.

The evening was completed with a slide show, and talk on the Rift Lake Cichlids in the capable hands of W. Gocwill.

New members and guests always welcome, juniors and senior citizens at reduced rates. The meeting place is Castle Hotel, Jewel Street, Barry (private room), on the fourth Monday of every month.

* * *

RESULTS of the West Midlands league match between **Darlaston and District A.S.** and Stourbridge A.S. were as follow: Barbs: 1 and 2, S. Whitehouse (D. & D.A.S.); 3, B. Price (Stourbridge). A.V. Cats: 1 and 3, M. Nixon (D. & D.A.S.); 2, C. Baskerville (Stourbridge). Livebearers: 1 and 2, S. Whitehouse (D. & D.A.S.); 3, C. Baskerville (Stourbridge). Rasboras: 1 and 2, S. Whitehouse (D. & D.A.S.); 3, C. Baskerville (Stourbridge). Points: Stourbridge A.S., 5; D. & D.A.S., 19. Best Fish in Show (Rasboras): S. Whitehouse (D. and D.A.S.), 73 points.

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OPEN show results of the **Northwich and District A.S.** were as follow: Guppies: 1, K. Houghton (Southport); 2, Mrs. B. Mahoney (Southport); 3, D. Hindley (Leigh). Swordtails: 1, J. Drake (Runcorn); 2, E. Seymour (Merseyside); 3, P. Mullen (Warrington). Mollies: 1, B. Bamber (Sandgrounders); 2, Mr. Poulton; 3, Mr. and Mrs. A. Davies (Dunlop). Platies: 1, Mr. and Mrs. G. Bond (Southport); 2, Mrs. B. Mahoney (Southport); 3, E. Southport (Merseyside). Barbs (small): 1, T. Hampton (Dunlop); 2, Mrs. Winstanley (Runcorn); 3, B. Bamber (Sandgrounders). Barbs (large): 1, Mr. and Mrs. G. Bond (Southport); 2, K. McLeod (Runcorn); 3, (Southport); 2, K. McLeod (Runcorn); 3, A. P. Vassiere (Merseyside). Characins (small): 1, Miss S. Goddard (Macclesfield); 2, R. and A. Johnson (Hyde); 3, J. Drake (Runcorn). Characins (medium): 1, B. Bamber (Sandgrounders); 2, P. J. Whelan (Blackburn); 3, T. Hampton (Dunlop). Characins (large): 1, F. Thorne (Village); 2, J. and G. Waterhouse (Sandgrounders); 3, Mr. and Mrs. Houghton (Southport). Fighters: 1, L. Thorne (Northwich); 2, K. and F. Tarburton (Warrington); 3, S. Royle (Northwich). Anabantids (up to and including Thicklips): 1, D. Carr (Wythenshore); 2, B. Wilson (Merseyside); 3, J. Taylor (Merseyside). Anabantids A.O.V.: 1, Mr. and Mrs. Goddard (Macclesfield); 2, D. Carr (Wythenshore); 3, E. Seymour (Merseyside). Angels: 1, C. and K. Davies (Northwich); 2, and 3, A. Axon (Ashton-U-Lyne). Cichlids (dwarf): 1, A. Chadwick (Oldham); 2, F. Thorne (Village); 3, A. Jenkenson (Sandgrounders). Cichlids (large): 1, P. J. Whelan (Blackburn); 2, J. Taylor (Merseyside); 3, S. Seymour (Merseyside). Danios and Minnows: 1, 2 and 3, B. Bamber (Sandgrounders). Rasboras: 1, P. Hegarty (Runcorn); 2, B. Wilson (Merseyside); 3, J. and G. Waterhouse (Sandgrounders). Sharks: 1, T. Hampton (Dunlop); 2, H. Buckley (Northwich); 3, Mr. and Mrs. G. Bond (Sand grounders). Flying Foxes: 1, R. M. Vassiere (Merseyside); 2, H. Buckley (Northwich); 3, S. Seymour (Merseyside). Corydoras and Brochis: 1, Mr. and Mrs. Houghton (Southport); 2, P. Mullen (Warrington); 3, B. Newport (Runcorn). Catfish A.O.V.: 1, Mr. and Mrs. G. Bond (Southport); 2, M. and S. Gullane (Buxton); 3, A. Hopwood (Wrexham). Loach and Botia: 1, M. and S. Gullane (Buxton); 2, Mrs. Winstanley (Runcorn); 3, J. Drake (Runcorn). Toothcarps: 1, S. Seymour (Merseyside); 2, L. Thorne (Northwich). A.O.V. Freshwater Tropical: 1, P. J. Whelan (Blackburn); 2, K. and F. Tarburton (Warrington); 3, Mr. and Mrs. A. Davies (Dunlop). A.O.V. Marines: 1, Mr. and Mrs. A. Davies (Dunlop). Pairs livebearers: 1, J. Taylor (Merseyside); 2 and 3, Mr. and Mrs. G. Bond (Southport). Pairs egglayers: 1, A. P. Vassiere (Merseyside); 2, Mr. and Mrs. Houghton (Southport); 3, T. Hampton (Dunlop). Breeders livebearers: 1 and 2, Mr. and Mrs. G. Bond (Southport). Breeders egglayers (easy): 1, Mr. and Mrs. A. Davies (Dunlop); 2, J. Buckley (Northwich). Breeders egglayers (hard): 1 and 2, A. P. Vassiere (Merseyside); 3, G. Hassal (Wythenshore). Goldfish (common): 1, M. and D. Valentine (Northwich); 2, Mr. and Mrs. G. Bond (Southport); 3, H. Buckley (Northwich). Goldfish (fancy): 1, M. and S. Gullane (Buxton); 2 and 3, B. Newport (Runcorn). A.O.V. Coldwater: 1, E. Seymour (Merseyside); 2 and 3, M. and D. Valentine (Northwich). Juniors (livebearers): 1, A. Whittaker (Macclesfield). Juniors (egglayers): 1 and 3, P. Wrench (Northwich); 2, P. Rathbone (Warrington). Furnished mini jars: 1, E. Jones (Wrexham); 2, L. Bradley (Northwich); 3, L. Thorne (Northwich). Society gaining most points: 1, Merseyside, 34; 2, Southport, 33; 3, Northwich, 29; 4, Runcorn, 18.

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SHOW results from **Osram** were as follow: Anabantids: 1, D. Carr (Wythenshawe); 2, Mr. and Mrs. Newton (Blackburn); 3, Mr. and Mrs. K. Crowley (Middleton). Fighters: 1, Mr. and Mrs. Muckle (Sandgrounders); 2, J. Bates (Sandgrounders); 3, T. Davies (Heywood). Small Barbs: 1, Mr. and Mrs. Stock (Farnworth); 2, Mr. and Mrs. Smith (Osram); 3, Mr. and Mrs. Burton (Blackburn). Large Barbs: 1, A. Goddard (Macclesfield); 2, E. Mahoney (Southport); 3, L. Beckenham, (Oldham). Labeos, Sharks and Foxes: 1, G. Horrocks (Osram); 2, J. and G. Waterhouse (Sandgrounders); 3, J. and K. Reid (Loyne). Characins (Small): 1, P. and H. Batchelor (Loyne); 2, Mr. and Mrs. Muckle (Sandgrounders); 3, Mr. and Mrs. Baldwin (Sandgrounders). Medium: 1, Mr. and Mrs. Newton (Blackburn); 2, Mr. and Mrs. G. Bond (Southport); 3, Mr. and Mrs. R. Houghton (Southport). Large: 1, J. and G. Waterhouse (Sandgrounders); 2, J. Ridley (Heywood); 3, F. Thorne (Village). Cichlids (Dwarf): 1, F. Thorne (Village); 2, E. Lees (Wythenshawe); 3, A. and P. Jervis (Sandgrounders). Angels: 1, C. Norton (Sandgrounders); 2, A. Maltby (Osram); 3, I. Essex (Heywood). A.O.V.: 1, S. Wolstenholme (Heywood); 2, D. Gregson (Blackburn); 3, P. and H. Batchelor (Loyne). Toothcarps: 1 and 2, S. Barrat (Wythenshawe); 3, H. G. Bartley (Sandgrounders). Rasboras: 1, J. and G. Waterhouse (Sandgrounders); 2, A. Goddard (Macclesfield); 3, Mr. and Mrs. Muckle (Sandgrounders). Danios and Minnows: 1, K. Houghton (Southport); 2, W. Bamber (Sandgrounders); 3, D. Newton (Heywood). Guppies: 1, G. Bond (Southport); 2, T. J. Selby (Wythenshawe); 3, K. Smith (Middleton). Swordtails: 1 and 3, E. Lees (Wythenshawe); 2, D. Carr (Wythenshawe). Mollies: 1, Mr. and Mrs. Baldwin (Sandgrounders); 2, W. Bamber (Sandgrounders); 3, Mrs. B. Guiver (Heywood). Platies: 1, Mr. and Mrs. Bond (Southport); 2, W. Bamber (Sandgrounders); 3, J. Brown (Blackburn). Loaches: 1 and 2, Mr. and Mrs. Muckle (Sandgrounders); 3, C. Beckenham (Oldham). Corydoras: 1, Mr. and Mrs. Newton (Blackburn); 2, Mr. and Mrs. Houghton (Southport); 3, Mr. and Mrs. Bond (Southport). Catfish A.V.: 1, P. and H. Batchelor (Loyne); 2, P. T. Whelan (Blackburn); 3, Mr. and Mrs. Baldwin (Sandgrounders). Goldfish: 1, Mr. and Mrs. Wolstenholme (Blackburn); 2, C. H. Whitsey (Accrington); 3, D. Adams (Wythenshawe). Shubunkins: 1 L. Dean (Middleton); 2 and 3, S. Foote (Accrington). Veiltails: 1, S. Foote (Accrington); 2, C. H. Whitsey (Accrington). Orandas: 1 and 3, C. H. Whitsey (Accrington). Lionheads: 1, H. Penhall (Osram); 2, C. Wallbank (Blackburn). Fantails: 1 and 2, C. Whitsey (Accrington); 3, S. Walsh (Accrington). Moors: 1 and 2, W. Dawson (Heywood). A.O.V. Fancy: 1, H. Penhall (Osram); 2, S. Foote (Accrington); 3, C. H. Whitsey (Accrington). A.O.V. Asian or U.S.A.: 1, D. Harvey (Sandgrounders); 2, G. Harvey (Sandgrounders); 3, C. Whitsey (Accrington). A.O.V. European: 1 and 3, C. Whitsey (Accrington); 2, S. Walsh (Accrington). Breeders (Egglayers) Class 1-10: 1, A. and P. Jervis (Sandgrounders); 2, J. Ridley (Heywood); 3, I. Essex (Heywood). Class 11-20: 1 and 2, S. Hooson (Sandgrounders). Breeders (Livebearers). Class 1-10: 1 and 2, Mr. and Mrs. Bond (Southport); 3, Mr. and Mrs. Newton (Blackburn). A.O.V. Not Listed: 1, P. T. Whelan (Blackburn); 2 and 3, P. and H. Batchelor (Loyne). Pairs (Egglayers): 1, A. Oldham

(Wythenshawe); 2, B. Mahoney (Southport); 3, Mr. and Mrs. Muckle (Sandgrounders). Pairs (Livebearers): 1, Mr. and Mrs. Newton (Blackburn); 2, Mr. and Mrs. Bond (Southport); 3, M. Jervis (Sandgrounders). Mini Jars (Natural): 1, K. Smith (Middleton); 2, Mrs. Ham (Wytham). Mini Jars (Novelty): 1 and 2, Masters N. and M. Rimmer (Sandgrounders). Marine A.V.: 1, P. Squirrel (Wythenshawe); 2, K. Smith (Middleton). Osram Juniors (Livebearers): 1, D. Dawson; 2 and 3, I. Walker. Egglayers: 1, D. Dawson; 2 and 3, W. Carroll.

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THE annual general meeting of the **Clyde Aquarist Club Rutherglen** was held in the club rooms when the following officials were elected: chairman, J. Lang; secretary, D. Allan; treasurer R. Thomson; the other committee members elected were M. Smeddon, W. Mallen and J. Dickson. After the election of officials the club discussed the successes and failures of the entries exhibited at the Motherwell Aquarist Festival.

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OPEN Show results of the **Southend, Leigh & District A.S.** held in May were as follow: Class Aa-b: 1 and 3, A. Kudesovitch (Bethnal Green); 2, H. Preston (S.L.A.D.A.S.); 4, P. Roche (Dunmow). Class Ac: 1, W. R. Dale (Bethnal Green); 2, Mr. and Mrs. Tolladay (Chingford); 3, D. Eaton (Corringham); 4, D. North (Corringham). Class Ak: 1, Master S. Emptage (Walthamstow); 2, D. Eaton (Corringham); 3, Sybil Hedges (Bethnal Green); 4, D. North (Corringham). Class Ba: 1 and 2, Mr. and Mrs. Hubert (Unattached); 3, I. Farlow (Dunmow). Class Bz: 1, D. Durrant (S.L.A.D.A.S.); 2, M. Strange (Basingstoke); 3, R. F. Thoday (Dunmow); 4, F. Vicker (East London). Class Ca: 1, T. Frazer (Basingstoke); 2, C and J. Richards (Sudbury); 3, R. Wylie (S.L.A.D.A.S.); 4, M. Strange (Basingstoke). Class Cb: 1, C. and J. Richards (Sudbury); 2, Mr. and Mrs. S. J. Harris (Chingford); 3 and 4, C. W. Goddard (Sudbury). Class Cz: 1 and 3, K. Adams (S.L.A.D.A.S.); 2, P. Moye (Sudbury); 4, D. J. Walkerdine (Corringham). Class Da: 1, K. Martin (Thurrock); 2 and 3, A. F. Ward (Corringham); 4, K. Usher (Doncaster). Class Db: 1 and 2, T. Frazer (Basingstoke); 3, C. Breitkreutz (S.A.P.A.); 4, J. Leahy (S.L.A.D.A.S.). Class Dc: 1, 3 and 4, R. F. Thoday (Dunmow); 2, P. A. Moye (Sudbury). Class Dz: 1, C. J. Lyon (S.L.A.D.A.S.); 2, R. Plume (Symonds); 3, E. Mifsud (Dunmow); 4, K. Adams (S.L.A.D.A.S.). Class Ea: 1 and 2, C. Breitkreutz (S.A.P.A.); 3, D. North (Corringham); 4, R. G. Stearne (Gt. Yarmouth). Class Eb: 1, Mr. and Mrs. B. Fry (North Kent); 2, C. Welford (S.L.A.D.A.S.); 3, A. E. Noronha (Orpington); 4, R. C. Burton (Walthamstow). Class Ez: 1, K. Adams (S.L.A.D.A.S.); 2, A. Chandler (Walthamstow); 3, K. Collings (Unattached); 4, K. Martin (Thurrock). Class F: 1 and 2, V. C. Green (S.A.P.A.); 3, P. F. Capon (S.L.A.D.A.S.); 4, P. Dearing (Crawley). Class G: 1, D. Lambourne (Riverside); 2 and 4, K. Adams (S.L.A.D.A.S.); 3, C and J. Richards (Sudbury). Class H: 1, P. A. Moye (Sudbury); 2, T. Frazer (Basingstoke); 3 and 4, Mr. Walden (P.F.A.). Class J: 1, T. Frazer (Basingstoke); 2, D. Edwards (S.L.A.D.A.S.); 3, D. Durrant (S.L.A.D.A.S.); 4, R. J. Brown (S.L.A.D.A.S.) Class K: 1, M. Strange (Basingstoke); 2, T. Frazer (Basingstoke); 3, P. A. Moye (Sudbury); 4, D. Durrant (S.L.A.D.A.S.). Class L: 1, K. Usher (Doncaster); 2, D. Durrant (S.L.A.D.A.S.); 3, D. V. Wylie (S.L.A.D.A.S.); 4, R. Vanderstein (Harlow). Class M: 1, Mr. and Mrs. Copper (Corringham); 2, Sybil Hedges (Bethnal Green); 3, R. F. Thoday (Dunmow); 4, R. Vanderstein (Harlow). Class N.b-m: 1, G. Biggs (Riverside); 2, C. Breitkreutz (S.A.P.A.); 3, R. Wylie (S.L.A.D.A.S.); 4, C. and J. Richards (Sudbury). Class No-t: 1, T. Frazer (Basingstoke); 2, B. Brett (North Kent); 3, K. Usher (Doncaster); 4, D. M. Chewright (S.L.A.D.A.S.). Class O: 1, A. E. Noronha (Orpington); 2, K. Maltin (Thurrock); 3, Mr. and Mrs. Fry (North Kent); 4, W. S. Clarke (S.A.P.A.). Class P: 1, 2 and 4, A. E. Noronha (Orpington); 3, Mrs. Ann (North Kent). Class Q: 1, K. Usher (Doncaster); 2, A. E. Noronha (Orpington); 3, R. F. Thoday (Dunmow); 4, Master S. Emptage (Walthamstow) Class R: 1 and 2, G. Smith (Walthamstow); 3, Master S. Emptage (Walthamstow); 4, V. Green (S.A.P.A.). Class S: 1, R. C. Burton (Walthamstow); 2, P. A. Moye (Sudbury); 3, C. W. Goddard (Sudbury); 4, R. C. Burton (Walthamstow). Class T: 1 and 4, K. Usher (Doncaster); 2, J. H. Preston (S.L.A.D.A.S.); 3, M. Strange (Basingstoke). Class U: 1, T. Bullock (Bethnal Green); 2, B. Brett (North Kent); 3, J. Wylie (S.L.A.D.A.S.); 4, Mr. and Mrs. B. Fry (North Kent). Class V: 1 and 3, A. Bullock (Bethnal Green); 2, Mr. and Mrs. B. Fry (North Kent). Class W: 1, Sybil Hedges (Bethnal Green); 2, Mr and Mrs. B. Fry (North Kent); 3, K. Martin (Thurrock); 4, S. Hatlen (Thurrock). Class Xb-m: 1, M. Strange (Basingstoke); 2, C. Breitkreutz (S.A.P.A.); 3, P. A. Moye (Sudbury); 4, P. Lambourne (Riverside). Class Xo-s: 1, G. Smith (Walthamstow); 2, 3 and 4, A. E. Noronha (Orpington). Class Xt: 1, 2 and 3, K. Usher (Doncaster); 4, Mr. and Mrs. W. F. Woodward (North Kent). Class Y: 1, I. Farlow (Dunmow); 2, M. Strange (Basingstoke). Class Za: 1 and 2, D. M. Chewright (S.L.A.D.A.S.); 3, R. Davis (S.L.A.D.A.S.); 4, D. Little (S.L.A.D.A.S.). Class Zb-c: 1 and 4, D. Durrant (S.L.A.D.A.S.); 2, A. Chandler (Walthamstow); 3, D. Little (S.L.A.D.A.S.). Class B-Ty: 1 and 2, D. Wylie (S.L.A.D.A.S.); 3, C. Sharp (Corringham); 4, M. Cooper (C.A.D.A.S.). Class V-Wy: 1, D. Wylie (S.L.A.D.A.S.); 2, A. M. Durrant (S.L.A.D.A.S.); 3 and 4, P. Brett (North Kent).

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OFFICERS elected at the annual general meeting of **Nelson A.S.** were: President: H. Illingworth. Chairman: R. J. Dicken. Secretary: J. Stokes, 3 Beckenham Court, Burnley. Treasurer: A. Baldwin. Show Secretary: T. Truby. Assistant Show Secretary: S. Pratt. This meeting was held in May and the Society has had a large influx of new members. A move to larger rooms has been found necessary and the new venue is "The Civic Centre," Stanley Street, Nelson.

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IN April the **Merseyside A.S.** held their annual open show and a record number of 545 entries was received. Results: Small Barbs: 1, Mr. and Mrs. Stock (Farnworth); 2, To Rowlands (Dunlops); 3, B. Wilson (M.A.S.). Large Barbs: 1, A. Vaissiere (M.A.S.); 2, Mr. and Mrs. G. Bond (Southport); 3, P. & H. Batchelor (Loyne). Small Characins: 1, P. & H. Batchelor (Loyne); 2, F. Oliver (Wrexham); 3, J. and G. Waterhouse (Sandgrounders). Large Characins: 1, A. Chadwick (Oldham); 2, E. Leadbetter (Fleetwood); 3, R. Forsyth (St. Helens). Dwarf Cichlids: 1, S. Thompson (M.A.S.); 2, E. Leadbetter (Fleetwood); 3, E. Lees (Wythenshawe). Large Cichlids: 1, D. Gregson (Blackburn); 2, J. Ridley (Heywood); 3, P. R. Batchelor jnr. (Loyne). Tooth Carps: 1, E. Lees (Wythenshawe); 2, C. H. Whitsey (Accrington); 3, A. J. Manser (Sandgrounders). Rasbora and Danios: 1, T. Hampton (Dunlops); 2, A. Goddard (Macclesfield); 3, Mr. and Mrs. Muckle (Sandgrounders). Anabantids: 1, E. Seymor (M.A.S.); 2, C. Norton (Sandgrounders); 3, Mr. and Mrs. Newton (Blackburn). Labeos and Sharks: 1, C. Avery (M.A.S.); 2, Mrs. R. M. Vaissiere (M.A.S.); 3, T. Hampton (Dunlops). Loaches: 1, E. Leadbetter (Fleetwood); 2, Mr. and Mrs. Muckle (Sandgrounders); 3, T. Hampton (Dunlops). Corydoras Catfish: 1, Mr. and Mrs. Newton (Blackburn); 2, T. Rowlands (Dunlops); 3, K. Houghton (Southport). A.O.V. Catfish: 1, Mr. and Mrs. G. Bond (Southport); 2, R. Robinson (St. Helens); 3, F. Oliver (Wrexham). Fighters: 1, R. Payne (M.A.S.); 2, Mr. and Mrs. Muckle (Sandgrounders); 3, C. H. Whitsey (Accrington). Pairs (Egglayers): 1, A. Chadwick (Oldham); 2, A. Vaissiere (M.A.S.); 3, Mr. and Mrs. Muckle (Sandgrounders). Pairs (Livebearers): 1, Mr. and Mrs. Jervis (Sandgrounders); 2, E. Seymor (M.A.S.); 3, T. Wayles (Hoylake). Breeders (Egglayers, 1-10): 1 Mr. and Mrs. Davis (Dunlops); 2, Mr. and Mrs. Jervis (Sandgrounders); 3, T. Ridley (Heywood). Breeders (Egglayers, 11-20): S. Heaton (Sandgrounders); 2, A. Vaissiere (M.A.S.); 3, R. I. Payne (M.A.S.). Breeders (Livebearers): 1 and 2, Mr. and Mrs. G. Bond (Southport); 3, Mr. and Mrs. Newton (Blackburn). A.O.V.: 1, D. Shaw (Dunlops); 2, P. and H. Batchelor (Loyne); 3, T. Hampton (Dunlops). Ladies' A.V.: 1, R. Davies (St. Helens); 2, Mrs. P. A. Taylor (M.A.S.); 3, Mrs. B. Guiver (Heywood). Junior A.V.: 1, S. Foote (Accrington); 2, P. Rathbone (Warrington); 3, P. Hinchley (Loyne). Guppies: 1, E. Seymor (M.A.S.); 2, K. Smith (Middleton); 3, K. and P. Tarburton (Warrington). Swordtails: 1, A. Chadwick (Oldham); 2 and 3, Mr. and Mrs. Burton (Blackburn). Platies: 1, Mr. and Mrs. Bond (Southport); 2, B. W. Carter (St. Helens); 3, L. Burt (Wythenshawe). Mollies: 1, Mr. and Mrs. Baldwin (Sandgrounders); 2, E. Leadbetter (Fleetwood); 3, W. Bamber (Sandgrounders). A.O.V. Livebearers: 1, C. Norton (Sandgrounders); 2, J. J. Selby (Wythenshawe); 3, Mr. and Mrs. Bond (Southport). Fancy Goldfish: S. Foote (Accrington) 79 pts., best fish in show; 2, E. Jenkins (St. Helens); 3, C. H. Whitsey (Accrington). Common Goldfish: 1, E. Leadbetter (Fleetwood); 2 and 3, M. and D. Valentine (Northwich). A.O.V. Coldwater: 1, D. Harvey (Sandgrounders); 2, E. Leadbetter (Fleetwood); 3, K. Smith (Middleton).

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AT the May meeting of the **Goldfish Society of Great Britain** quite a time was spent discussing the forthcoming "Midland Aquatic Festival 75" to be held at Bingley Hall, Birmingham. The general feeling of the members present was to exhibit as many fish as possible. Mr. H. Berger, 74 Barons Gardens, Barkingside, Ilford, Essex, will be making arrangements to carry members' fish to Bingley Hall for the benching on Wednesday, 13th August. He has also arranged for a coach to leave Red Lion Square, Holborn, London at 9 a.m. on Saturday 16th August, to take members and friends to Bingley Hall.

The main item of the meeting was a lecture by that well-known breeder of Moors and Orandas, Mr. A. Roberts. He explained his way of conditioning fish ready for spawning, and also the need to disinfect fish for both body and gill flukes. He told the members that by crossing in a male Red Cap Oranda to his Oranda strain he had produced a strain of Orandas which coloured quicker and the colour was more intense. In his opinion, sunlight did not make fish colour quicker.

He brought along six adult fish to illustrate the points he was making, and about a dozen six weeks old Moors to show members how quickly baby fish will grow, given plenty of space. The raffle was won by Mr. Lesurf.

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THE results of the **Gloucester A.S.** open show were as follow: Guppies (male): 1, P. Greenwood (Bishops Cleeve); 2 and 3, D. Parry (Bishops Cleeve); 4, R. and D. Clarke (Bath). Guppies (Female): 1, D. Parry (Bishops Cleeve); 2, R. Webb (Bath); 3, H. Bishop (Bishops Cleeve); 4, J. Hawkins (Bishops Cleeve). Platies: 1, J. Canning (Newbury); 2, L. Poole (Banbury); 3, M. Bishop (Bishops Cleeve); 4, R. Jarvis (Gloucester). Swordtails: 1 and 3, P. Greenwood (Bishops Cleeve); 2, D. Elliot (Newbury); 4, J. Bartlett (Gloucester Fishkeepers). Mollies: 1, R. Cripps (Newbury); 2, D. Wilson (Midland Tropical); 3, D. Elliot (Newbury); 4, J. Cole (Strood). Barbs: 1, B. Dews (Midland Tropical); 2, F. Timmins (Gloucester); 3, R. Jarvis (Gloucester); 4, W.

and S. (Banbury). Barbs: 1, D. Iles (Rhondda); 2, N. Wing (Evesham); 3, K. Hillier (Newbury); 4, A. Phillips (Rhondda). Characins: 1 and 2, F. Timmins (Gloucester); 3 and 4, B. Dews (Midland Tropical). A.O.V. Characins: 1, C. J. Nightingale (Midland Tropical); 2, P. Greenwood (Bishops Cleeve); 3, D. Wilson (Midland Tropical); 4, S. Dodson (Cotswold). Siamese Fighters: 1 and 3, C. Press (Bath); 2, C. Rossiter (Gloucester); 4, C. J. Nightingale (Midland Tropical). Labyrinths: 1, S. Dodson (Cotswold); 2, B. R. Goll (Evesham); 3, K. Gill (Gloucester); 4, J. Smith (Cotswold). Labyrinths: 1, D. Reed (Yate); 2, E. Morgan (Merther); 3 and 4, C. J. Nightingale (Midland Tropical). Corydoras (Catfish): 1 and 4, F. Timmins (Gloucester); 2 and 3, P. Greenwood (Bishops Cleeve). A.O.V. Catfish: 1, J. Canning (Newbury); 2, S. Dodson (Cotswold); 3, R. Whitfield (Rubery Select); 4, D. Iles (Rhondda). Botias and True Loaches: 1, K. Hillier (Newbury); 2, F. Timmins (Gloucester); 3, S. Owens (Bath); 4, M. Rogers (Evesham). Rasboras: 1, G. Perkins (Gloucester); 2, D. Wilson (Midland Tropical); 3, F. Timmins (Gloucester); 4, R. and D. Clarke (Bath). Danios and Minnows: 1, 2 and 3, B. Dews (Midland Tropical); 4, R. Jarvis (Gloucester). Labeos: 1 and 2, F. Timmins (Gloucester); 3, M. Rogers (Evesham); 4, R. Jarvis (Gloucester). Cichlids: 1, C. J. Nightingale (Midland Tropical); 2, L. Phippen (Bath); 3, W. and S. (Banbury); 4, D. Wilson (Midland Tropical). Angels and Discos: 1, C. Cowles (Bristol); 2, M. Rogers (Evesham); 3, J. Canning (Newbury); 4, B. R. Goll (Evesham). A.O.V. Cichlids: 1, J. Canning (Newbury); 2, S. Wood (Delson Aquatics); 3, B. R. Goll (Evesham); 4, D. Wilson (Midland Tropical). A.V. sexed pairs: 1, R. Jarvis (Gloucester); 2, C. Whittaker (Stroud); 3, F. Timmins (Gloucester); 4, A. Phillips (Rhondda). Breeder (Live Bearers): 1 and 3, R. A. Poots (Yate); 2, B. R. Goll (Evesham); 4, J. Canning (Newbury). Breeders (Egglayers): 1, M. Bishop (Bishops Cleeve); 2, R. A. Poots (Yate); 3, W. and S. (Banbury); 4, D. Willson (Midland Tropical). Shubunkins: 1, P. Moxham (Bath); 2, F. Coles (Bristol Tropical); 3, S. Norman (Gloucester); 4, D. Smith (Rubery Select). Goldfish: 1, M. Rogers (Evesham); 2, S. Dixon (Gloucester); 3, M. C. Graham (Bristol Tropical); 4, F. Timmins (Gloucester). A.V. Pond or River: 1 and 4, B. R. Goll (Evesham); 2 and 3, W. and S. (Banbury). A.O.V. Tropicals: 1, J. Ferguson (Bath); 2, C. J. Nightingale (Midland Tropical); 3, M. Bishop (Bishops Cleeve); 4, R. Hyett (Yate).

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SPEAKER at the June meeting of the **Gloucester A.S.** was W. V. De Thabrew who gave a very interesting lecture on aquarium plants native to Ceylon which was enjoyed by all members. The business discussed comprised of the success of the recent open show which was agreed by all members. Results of the monthly table show, Botias, Loaches and Sharks, were as follows: 1 and 2, F. Timmins; 3 and 4, R. Jarvis.

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DURING April the **Association of Midland Goldfish Keepers** staged the coldwater section of the Coventry Pool and A.S. open show, and many fine fish were entered which drew favourable comment from visitors.

The May meeting gave members the opportunity to hear vice-chairman, David Easingwood, describe the construction of his new fish house—together with the costs involved. Each stage was illustrated by projected colour slides and examples of the materials used were displayed. This led to much animated discussion afterwards and the speaker was warmly applauded for a most interesting talk.

Future meetings at the Foleshill Community Centre, Foleshill Road, Coventry, are as follow: 28th September: T. L. Dodge will talk of the early days and personalities he has known during his many years in the goldfish hobby. 30th November: The annual general meeting.

Visitors are welcome and details of membership can be obtained from the secretary, F. W. Orme, 94 Newman Way, Rubery, Birmingham B45 9LZ. Please enclose a self-addressed and stamped envelope with your enquiry.

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THE West Midland group of the **British Cichlid Association** held the annual general meeting in June, when the following officers were elected. Chairman, Mrs. J. Johnson; treasurer, T. J. January; group secretary, P. J. Baugh and area representative, J. Reeves. The rest of the evening was spent discussing the B.C.A. convention that had been recently arranged and plans for the display stand at the aquatic exhibition at Bingley Hall. The meetings are held on the second Tuesday of every month at the Midland Vaults, Upper High Street, Wednesbury, 8 p.m. All will be made very welcome.

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THE May meeting of the **Bristol A.S.** was given over to a report of the society's visit to Mr. J. Linale's Fish house, and to Tisbury's, which proved to be very successful.

A short talk on metric measurements of volume was given by Mr. H. C. B. Thomas, and this helped to clarify the measurements refered to on many of the commercial disease cures etc. Time was also allowed for a discussion on rearing fry, there being fry of two and three weeks of age on show. After the interval these fry were auctioned and there was a sale of plants.

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DUE to expansion the **North Gwent A.S.** changed their meeting place and date of meetings to the second and fourth Tuesday of each month at the "Welfare Sports Club," Ebbw Vale. New members, ladies, gentlemen and juniors will all be made welcome. The society to date has enjoyed a full programme with such items as Inter-club K.O's Slide Shows, Lectures given by various speakers, quizzes and many other enjoyable and interesting items for the Tropical Fish enthusiast. On 27 September the first Annual Open Show will be held. For information regarding the Club, please write to Mrs. Gwynne Slade, Hon. Sec., North Gwent A.S., 10 Cwm Hir, Ebbw Vale, Gwent, and any enquiries regarding the Open Show should be made to Hon. Show Sec. Ian Jones, 2 Little Rhyd, Carriel Town, Ebbw Vale, Gwent, or phone 30-2841.

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RESULTS of the **Dunmow & District A.S.** third open show were as follow:—Best Fish in Show: T. Woolley, Harlow; Highest Pointed Club: Doncaster; F.B.A.S. Trophy (K): P. A. Moye, Sudbury. Class Ag: 1 and 4, D. North, Corringham; 2, Mrs. Eaton, Corringham; 3, E. Mifsud, Dunmow. Class B: 1, Mrs. R. Coyle, Walthamstow; 2, R. Thoday, Dunmow; 3, D. Henman, Dunmow; 4, S. Jordan, Harlow. Class Ca: 1, D. P. Ingle, Chingford; 2, P. A. Moye, Sudbury; 3, R. Rowland, Dunmow; 4, R. Thoday, Dunmow. Class Cb: 1 and 3, L. A. Humphreys, Corby; 2, A. Thacker, Vauxhalls; 4, Mr. and Mrs. Cooper, Corringham. Class Cx: 1, A. E. Noronha, Orpington; 2, R. Thoday, Dunmow; 3, A. Chandler, Walthamstow; 4, Mrs. S. Wood, Haverhill. Class Db: 1, Mrs. R. Coyle, Walthamstow; 2, R. Vandersteen, Harlow; 3, R. Thoday, Dunmow; 4, C. Breitkreutz, S.A.P.A. Class Dc: 1, R. Thoday, Dunmow; 2, A. E. Noronha, Orpington; 3, A. Worth, Dunstable; 4, T. Manson, Symonds. Class Dz: 1, T. Woolley, Harlow; 2, R. Plume, Symonds; 3, E. Mifsud, Dunmow; 4, R. Thoday, Dunmow. Class Ea: 1, R. G. Stearne, Gt. Yarmouth; 2, A. Thacker, Vauxhalls; 3, C. Breitkreutz, S.A.P.A.; 4, Miss. C. North, Corringham. Class Ez: 1, A. E. Noronha, Orpington; 2, A. Chandler, Walthamstow; 3, R. Thoday, Dunmow; 4, B. Meech, Dunmow. Class F: 1 and 2, V. Green, S.A.P.A.; 3, K. Usher, Doncaster; 4, R. Ott, Haverhill. Class G: 1, T. Woolley, Harlow; 2, 3 and 4, R. Thoday, Dunmow. Class H: 1 and 3, P. A. Moye, Sudbury; 2 and 4, C. Breitkreutz, S.A.P.A. Class J: 1 and 3, A. I. Feast, Tunbridge; 2, R. Thoday, Dunmow; 4, P. A. Moye, Sudbury. Class K: 1, 2 and 3, P. A. Moye, Sudbury; 4, Mrs. R. Coyle, Walthamstow. Class L: 1, A. Thacker, Vauxhalls; 2, D. Wood, Haverhill; 3, R. Thoday, Dunmow; 4, C. Sharp, Corringham. Class M: 1, E. Mifsud, Dunmow; 2, W. S. Clarke, S.A.P.A.; 3, R. Thoday, Dunmow; 4, Mr. and Mrs. Cooper, Corringham. Class Nb-m: 1, D. Wood, Haverhill; 2, R. G. Stearne, G. Yarmouth; 3, Mrs. B. Emerson, 4, T. J. Blackmore, S.L.A.D.A.S. Class No-t: 1, K. Usher, Doncaster; 2, G. Smith, Walthamstow; 3, S. Jordan, Harlow; 4, L. A. Humphreys, Corby. Class O: 1, Mr. Sharp, Corringham; 2 and 3, A. E. Noronha, Orpington; 4, L. A. Humphreys, Corby. Class P: 1, A. E. Noronha, Orpington; 2, L. A. Humphreys, Corby; 3 and 4, R. E. Smith, S.A.P.A. Class Q: 1 and 2, K. Usher, Doncaster; 3, A. E. Noronha, Orpington; 4, B. Meech, Dunmow. Class R: 1 and 2, G. Smith, Walthamstow; 3 and 4, A. E. Noronha, Orpington. Class S: 1, S. Jordan, Harlow; 2, P. A. Moye, Sudbury; 3, T. Woolley, Harlow; 4, Miss. M. Wood, Haverhill. Class I: 1, 2 and 3, K. Usher, Doncaster; 4, D. Cheswright, S.L.A.D.A.S. Class U: 1, T. Woolley, Harlow; 2 and 3, M. Butcher, Diss; 4, A. V. Gall, Dunmow. Class V: 1, M. Butcher, Diss. Class W: 1 and 3, D. Cheswright, S.L.A.D.A.S.; 2, K. Usher, Doncaster; 4, E. A. Humphreys, Corby. Class Xb-m: 1, A. E. Noronha, Orpington; 2, P. A. Moye, Sudbury; 3, E. A. Humphreys, Corby; 4, M. Pearson, E.L.A.P.A. Class Xo-t: 1, 2 and 3, K. Usher, Doncaster; 4, D. Cheswright, S.L.A.D.A.S. Winner of the Novices Award was R. Rowland of the Dunmow & District A.S.

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THE results of the **Reigate and Redhill A.S.** Open Show were: Class Ad: 1, R. Paine (Haslemere); 2, R. Hard (Haslemere); 3, I. Marshall (Gosport). Class Ba: 1, J. Hughes (Rochampton; 2, G. Owen (B.K.A.); 3, B. and T. Tester) (Mid-Sussex); 4, T. Woolley (Saracens). Class Bz: 1, Mrs. P. Newbury (Gosport); 2 and 3, J. Bellingham (Tonbridge); 4, Mr. Carter (Southampton). Class Ca: 1, T. Burvill (Basingstoke); 2, B. Nicholls (Mid-Kent); 3, P. Dearing (Crawley); 4, Mrs. A. Holmes (Crawley). Class Cz: 1, A. C. Roffe (Horsham); 2, K. S. Doswell (Havant); 3, E. and T. Tester (Mid-Sussex); 4, J. Brown (Croydon). Class D: 1, B. Sayer (Brighton and Southern); 2, Mrs. M. Nethersell (Riverside); 3, P. Brown (Littlehampton); 4, J. Packham (Henden). Db: 1, Mrs. P. Newbury (Gosport); 2, Mr. Feek (Brighton and Southern); 3, B. Nicholls (Mid-Kent); 4, P. Brown (Littlehampton). Class Dc: Mr. Feek (Brighton and Southern); 2, D. Pope (Croydon); 3, Mr. Groves (Horsham); 4, R. Todman (Horsham). Class E: 1, J. Hughes (Rochampton); 2, E. and T. Tester (Mid-Sussex); 3, C. Saunders (Tonbridge); 4, G. Owen (B.K.A.). Class Ba: 1, K. Witts (Reigate and Redhill); 2, T. Woolley (Saracens); 3, D. Pope (Croydon); 4, R. Baker (Tonbridge). Class F: 1, Mrs. G. Sandford (Reigate and Redhill); 2, R. Paine (Haslemere); 3, J. H. Jackson (Basingstoke); 4, A. C. Roffe (Horsham). Class G: 1, Mrs. M. Nethersell (Riverside); 2, T. Woolley (Saracens); 3, B. Nicholls (Mid-Kent); 4, T. McKenzie (Caterham Nomads). Class H: 1 and 3, Mrs. Nethersell (Riverside); 2 and 4, M. Rooney (Brighton and Southern). Class J: 1, A. Feast (Tonbridge); 2, T. G. Marshall (Gosport); 3, Mrs. P. Newbury (Gosport); 4, T. Woolley (Saracens). Class K: 1 and 2, Mrs. I. Bellingham (Tonbridge); 3, Mrs. P. Newbury (Gosport); 4, Mrs M. Moulton Godalming). Class L: F.B.A.S. Championship Class. 1 and 4, K. F. Groves (Horsham); 2, K. Usher (Doncaster; 3, A. C. Roffe (Horsham). Class M: 1, J. Brown (Croydon); 2, Mrs. B. Lough (Kingston); 3, T. Burvill (Basingstoke); 4, Mrs. M. Nethersell (Riverside). Class Nb-m: 1, J. Brown (Croydon); 2, C.

Brook (Independants); 3, Mrs. J. Owen (B.K.A.); 4, J. H. Jackson (Basingstoke). Class Ns-t: 1, Mrs. P. Newbury (Gosport); 2, 3 and 4, K. Usher (Doncaster). Class O: 1 and 3, E and T. Tester (Mid-Sussex); 2, Mr. and Mrs. Nurse (Croydon); 4, Mrs. P. Lambert (Kingston). Class P: 1, T. Woolley (Saracens); 2, J. Randell (Haslemere); 3, A. Chaplin (Basingstoke); 4, Mr. and Mrs. LeCuirot (Roehampton). Class Q: 1 and 4, B. Nicholls (Mid-Kent); 2, K. Usher (Doncaster); 3, T. Woolley (Saracens). Class R: 1, T. Woolley (Saracens); 2, J. H. Jackson (Basingstoke); 3, C. Lewis (Roehampton); 4, T. Moulton (Godalming). Class S: 1, K. S. Doswell (Havant); 2, J. Woods (Reigate and Redhill); 3, T. Stacey (Reigate and Redhill); 4, Mr. and Mrs. LeCuirot (Roehampton). Class T: 1, 2 and 4, K. Usher (Doncaster); 3, K. Dryden (Croydon). Class U: 1 and 2, J. Randell (Haslemere); 3, R. Hard (Haslemere); 4, A. Feast (Tenbridge). Class V: 1, Misses D. and S. Jackson (Basingstoke); 2 and 4 Mr. and Mrs. Pannell (Southern Independent); 3, Miss H. Gardner (Reigate and Redhill). Class W: 1, N. Winford (Croydon); 2, E. Rinstead (Portsmouth); 3, T. Woolley (Saracens); 4, G. Owen (B.K.A.). Class Xb-m: 1, Mrs. P. Newbury (Gosport); 2, G. Brown (Not known); 3, T. McKenzie (Caterham Nomads); 4, Mrs. M. Moulton (Godalming). Class Xo-t: 1, 2, 3 and 4, K. Usher (Doncaster). Class Z: 1, J. H. Jackson (Basingstoke); 2, T. Woolley (Saracens); 3, R. Shirley (Haslemere); 4, J. Hughes (Roehampton). Best Fish in Show: Mrs. M. Nethersell (Riverside, Catfish Association) with a Synodontis clarias.

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MEMBERS of the **Hastings & St. Leonards A.S.** held a special general meeting when new officers were elected as under:—chairman, C. Waddell; vice-chairman, R. Freer; hon. secretary and F.B.A.S. delegate, P. R. Martin, 20, Silverlands Rd., St. Leonards-on-Sea; assistant secretary, Mrs. J. Pannell; hon. treasurer, Mrs. C. Pollard; show secretary, C. Pannell; publicity officer, Mrs. G. E. Coleman; bulletin editor, D. Young; committee members, D. Hunt, Mrs. S. Tyrer, T. Illiott and E. Messetter. This new election will in no way affect the date or venue of the third Open Show, where old and new friends will find a warm welcome. Enquiries should be made to: The Open Show Manager, Mrs. A. Adams, 17, Lower South Road, St. Leonards-on-Sea.

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THE **Salisbury & District A.S.** held their Annual Open Show in June. Sixteen societies exhibited in spite of the number of shows that were staged that weekend. The full results were: Class Ad-f: 1, Mrs. L. Doubleday. Class Ba: 1, A. Chaplin; 2, R. F. Adams; 3, T. L. Wooley; 4, B. Durrant. Class Bz: 1, T. Burvill; 2, S. R. Broome; 3, M. Carter; 4, P. Brown. Class Ca: 1, T. Burvill; 2, R. F. Adams; 3, A. C. Tull; 4, Miss J. Jolliffe. Class Cz: P. Rushbrooke; 2, A. C. Tull; 3, Mr. and Mrs. Medway; 4, Mrs. M. Nethersell. Class Da: 1, R. Onslow; 2, Mrs. A. Weaire. Class Db: 1 and 3; M. Carter, 2, A. C. Tull; 4, T. Taylor. Class Dc: 1 and 3, R. Batten; 2, M. Carter; 4, Mrs. P. Newbury. Class Dz: 1 and 3, R. F. Adams; 2, D. Jackson; 4, Mr. C. Robinson. Class Ea: 1, Mrs. S. Batten; 2, D. Mills; 3, P. J. Inkpen; 4, T. L. Wooley. Class Ez: 1, T. Taylor; 2, R. F. Adams; 3, K. S. Gibbs; 4, Mr. and Mrs. Bebb. Class F: 1, A. Weaire; 2, P. Rushbrooke; 3, A. Chaplin; 4, W. West. G: 1, Mr. and Mrs. Medway; 2, T. L. Wooley; 3, W. West; 4, A. Weaire. Class H: T. Taylor; 2, M. Carter; 3, T. A. Cruickshank; 4, Mr. Fox. Class J: 1, Mr. and Mrs. Medway; 2 and 3, G. Palmer; 4, T. Taylor. Class K: 1, T. Taylor; 2, R. Onslow; 3 and 4, W. West. Class L: 1, A. C. Tull; 2, A. Weaire; 3, R. F. Adams; 4, R. Matthews. Class M: 1, T. Burvill; 2, Mrs. M. Nethersell; 3, T. A. Cruickshank; 4, T. L. Wooley. Class N: 1 and 2, A. Chaplin; 3, T. Burvill; 4, Mrs. Medway. Class O: 1 and 2, Mr. and Mrs. Bebb; 3, T. A. Cruickshank; 4, W. West. Class P: 1, Mr. and Mrs. Bebb; 2, A. Chaplin; 3, T. L. Wooley; 4, K. S. Gibbs. Class Q: 1, B. Durrant; 2 and 4, Miss J. Jolliffe; 3, Mr. and Mrs. Bebb. Class R: 1, R. Onslow; 2, T. L. Wooley; 3, Mrs. P. Newbury; 4, M. Carter. Class S: 1 and 2, Mr. and Mrs. Bebb; 3, T. Taylor; 4, Mrs. T. Cruickshank. Class T: 1, A. Weaire; 2, K. S. Gibbs; 3, T. L. Wooley 4, W. West. Class U: 1, R. F. Adams; 2 and 3, W. West. Class W: 1, D. Russo; 2, Mrs. T. Cruickshank; 3, P. Brown; 4, K. Blanchard. Class Xb-m: Mr. and Mrs. Medway; 2, Mr. and Mrs Bebb; 3, R. Onslow; 4, P. Rushbrooke. Class Xo-t: 1, M. Carter; 2, A. Weaire; 3, W. West; 4, Mr. and Mrs. Bebb. Class Ys: 1, L. A. Wilkins; 2, Bell and Howell; 3, P. Dillon; 4, T. Taylor. Class Yb: L. Doubleday; 2, F. B. Braley; 3 and 4, L. A. Wilkins. Class Z: 1, R. F. Adams; 2, W. West. The "Best in Show" award went to the Platy variatus exhibited by R. Onslow, and the F.B.A.S. Championship Award for Class Ys-tropical marine went to L. A. Wilkins.

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SPEAKER at the **New Forest A.S.** (affiliated to F.B.A.S.), June meeting was society member L. Menhennett, who dealt with the siting and building of a fish pond, and the different materials that may be used. The table show was judged by Mr. Jack Jeffrey. Results were: Bristol Shubunkins: 1 and 2, L. Menhennett. London Shubunkins: 1 and 3, L. Menhennett; 2 and 4: R. Travers.

Meetings are held on the third Monday every month, and information on membership may be obtained from the secretary:—R. Travers, 6, Auckland Avenue, Brockenhurst, Hants. SO4 7RS.

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MEMBERS of the **South Park Aquatic (Study) Society** would like to thank all those who came along to their 5th Annual Invitation Coldwater Show in May. While the fish were being judged by Messrs. J. Blundell, G. King, J. Limale and J. Pollard, Mr. B. Wyman gave a most informative talk illustrated with colour slides on his recent trip to Japan. The awards were kindly presented by one of the society's founder members, Mrs. J. Smith. Results:—Veiltail: 1, W. G. Cook; 2, B. Cook; 3, T. Longstaff. Bristol Type Shubunkin: 1 and 2, Miss D. Morris, 3, W. Leach. Globe-Eye: 1, Mrs. M. Dudley. Bramblehead: 1, Miss D. Morris; 2 and 3, T. Longstaff. Bubble-Eye: 1 and 2, D. Seymour. Pearlscale: 1, M. D. Close; 2, R. Smith; 3, Mrs. M. Dudley. Common Goldfish: 1, Mrs. M. Dudley, 2, F. Pinder, 3, T. Longstaff. London Shubunkin: 1 and 2 Mrs. P. Whittington; 3, W. Leach. Oranda: 1, F. Pinder; 2, E. Binstead. Broadtail Moor: 1 and 2, D. Kingsland. Fantail: 1, J. A. Pollard; 2, G. Herring; 3, D. Seymour. Comet: 1, V. B. Hunt; 2, Mrs. M. Dudley; 3, T. Longstaff. Goldfish Breeders: 1 and 3, T. Longstaff; 2, G. Herring. Native and Foreign: 1, V. B. Hunt (Bitterling); 2, E. Binstead (Bitterling); 3, R. L. Trim (Golden Rudd). Centrarchidae: 1, E. Binstead, 2, T. Longstaff; 3, Mrs. M. Dudley. Koi: 1, D. Herman; 2, S. Herman; 3, R. Herman. Trophies for Best Basic Variety Goldfish and Best Fish in Show were awarded to W. G. Cook for his Veiltail.

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RESULTS of the **Rotherham & District A.S.** Open Show were as follow—Platies: 1, Mr. and Mrs. Laycock (Sheaf Valley); 2, Mr. Green (Castleford); 3, W. Blundell (Doncaster), Mollies: 1, Mr. and Mrs. Tyson (S. Humberside); 2, Mr. and Mrs. Emerson (Castleford); 3, Miss Cavill (Doncaster). Swordtails: 1, Mr. Thorpe (Doncaster); 2, Mr. and Mrs. Fletcher, (Doncaster); 3, Mr. and Mrs. Roberts (Doncaster). Guppies: 1, Mr. and Mrs. Roberts (Doncaster; 2 and 3, P. and M. Laycock (Sheaf Valley). A.O.V. Livebearers: 1 and 2, McArdle and Kirk (Castleford; 3, Mr. and Mrs. Feasey (Doncaster). Barbs: Small Barbs: 1 and 3 Mr. and Mrs. Emerson (Castleford); 2, Mr. and Mrs. Fletcher (Doncaster). Large Barbs: 1, T. Nicholson (Sherwood); 2, Mr. and Mrs. Chester (Retford); 3, Mr. and Mrs. Tyson (S. Humberside). Small Characins: 1, Mr. and Mrs. Fletcher (Doncaster); 2, D. and M. Laycock (Sheaf Valley; 3, Mr. and Mrs. Copley (Doncaster). Large Characins: 1, D. and D. Redcar 2, A. Frisby (Hull); 3, Mr. and Mrs. Ottoner (Retford). Egglaying Toothcarps: A.V. Toothcarps: 1 and 2, Mr. and Mrs. Brett (Retford); 3, Mr. South (Rotherham. Catfish Loaches and Sharks: Sharks and Foxes: 1, D. and D. (Redcar); 2, McArdle and Kirk (Castleford); 3, Mr. Carrick (Scarborough). Corydoras Catfish: 1, Mr. and Mrs. Emerson (Castleford; 2, McArdle and Kirk (Castleford); 3, Mr. and Mrs. Copley (Doncaster). A.O.V. Catfish: 1, Mr. and Mrs. Scott (Castleford); 2, Mr. Binley (Sheaf Valley); 3, J. Dunn (Rotherham). Loaches: 1, Mr. and Mrs. Binns (Scunthorpe Mus.); 2, McArdle and Kirk (Castleford; 3, Mr. and Mrs. Daines (Doncaster). Rasboras Danios and Minnows: 1, Mr. and Mrs. Copley (Doncaster); 2, Mr. and Mrs. Roberts (Doncaster); 3, S. White (Retford). Dwarf Cichlids: 1, Mr. and Mrs. Brett (Retford); 2, McArdle and Kirk (Castleford); 3, Mr. and Mrs. Hopkinson (Darfield). Large Cichlids: 1, Mr. and Mrs. Sellars (Lincoln); 2, D. D. (Redcar); 3, Mr. and Mrs. Caldow (Scunthorpe Mus.). Angels: 1, Mr. and Mrs. Sellars (Lincoln); 2, Mr. Carrick (Scarborough); 3, Mr. and Mrs. Lancaster (Retford). Anabantids: Fighters: 1 and 3, Mr. Thorpe (Doncaster); 2, Mr. and Mrs. Copley (Doncaster). A.O.V. Anabantids: 1, Mr. and Mrs. Lake (S. Humberside); 2, W. Blundell (Doncaster); 3, K. Lancashire (Doncaster). A.O.V. Tropical: 1, Mr. Bellard (Hull); 2, Mr. and Mrs. A. Binns (Scunthorpe Mus.); 3, Mrs. Frisby (Hull). Breeders (six): Livebearers (1 to 10 points): 1, W. Blundell (Doncaster); 2, Mr. Jackson (Doncaster); 3, McArdle and Kirk (Castleford). Livebearers: (11 to 20 points): Mr. and Mrs. Povey (Sheaf Valley); 2, Mr. and Mrs. Scott (Sheaf Valley). Egglayers (1 to 10 points): 1, Mr. and Mrs. Fletcher (Doncaster); 2, Mr. and Mrs. Jackson (Doncaster); 3, Mr. and Mrs. Scott (Sheaf Valley). Egglayers (11 to 20 points): 1, Mr. and Mrs. Feasey (Doncaster); 2, Mr. and Mrs. Fletcher (Doncaster). Livebearers (Pairs): 1, Mr. and Mrs. Feasy (Doncaster); 2, McArdle and Kirk (Castleford); 3, W. Bundle (Doncaster). Egglayers (Pairs): 1, Mr. and Mrs. A. Binns (Scunthorpe Mus.); 2, S. White (Retford); 3, McArdle and Kirk (Castleford). Common Goldfish and Comets: 1 and 2, Master D. Frisby (Hull); 3, Mr. and Mrs. North (Hull). Shubunkins: 1, Mr. Green (Castleford). Fancy Goldfish: 1, P. Lawton (Rotherham). A.O.V. Coldwater: 1, A. Frisby (Hull); 2, Mr. and Mrs. Rawlings (Castleford); 3, Mr. and Mrs. Steels (Retford). Mini-Jars: 1, A. Taylor (Rotherham); 2, Mr. and Mrs. Chester (Retford); 3, Mr. and Mrs. Riley (Leeds P.O.). Plants: 1, Mr and Mrs. Roberts (Doncaster).

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THE first Open Show results of the **Cotswold A.S.** were as follow: Guppies (Male): 1 and 3, D. W. Parry; 2 and 4, D. and R. Clark. Guppies (Female): 1, 2 and 4, M. Bishop; 3, D. W. Parry. Platies: 1, P. Greenwood; 2, 3 and 4, G. Ludlow. Swordtails: 1, C. Nightingale; 2, M. Rodgers; 3, M. A. Smith; 4, P. Greenwood. Mollies: 1, D. Head; 2, B. Holder; 3, A. and M. Smith; 4, J. Cole. A.O.V. Livebearers: 1, Mr. and Mrs. R. Dodson; 2, C. Nightingale; 3, C. Whittaker; 4, D. W. Parry. Barbs (under 3 in.): 1, L. Phippen; 2, P. Timmins; 3, Mr. and Mrs. K. Hodges; 4, D. Head. Barbs (3 in. and over): 1 and 2, N. Wing. Characins H.H.C. and P.: 1, 2 and 4, Mr. and Mrs. K. Hodges; 3, P. Timmins. A.O.V. Characins: 1, Mr. and Mrs. K. Hodges; 2, Mr. and Mrs. S. Dodson; 3, D. W. Parry; 4, A. J. Lusty. Siamese Fighters: 1, R. Toone; 2 and 3, Mr. and Mrs. K. Hodges; 4, C. Rossiter. Anabantids A.O.V.: 1, Mr. and Mrs. F. Dodson; 2, G. Ludlow; 3, C. Nightingale; 4, Mr. and Mrs. R. Dodson. Corydoras Brochis: 1, P. Timmins; 2, 3 and 4, Mr. and Mrs. R. Dodson. Catfish A.O.V.: 1 and 3, C. Nightingale; 2, K. Owen; 4, Mr. and Mrs. R. Dodson. Sharks, Botias and Loaches:

1 and 3, F. Timmins; 2, M. Poole; 4, K. Owen. Rasboras, Danios, Minnows: 1 and 3, D. and R. Clark; 2 and 4, F. Timmins. Angels and Discus: 1, M. Rodgers; 2, M. Bish; 3, Mr. and Mrs. F. Dodson. Cichlids A.O.V.: 1, T. Owen; 2, T. and D. Sullivan. Egglaying Toothcarps: 1, R. Tooze; 2, J. Cole; 3, C. Nightingale; 4, R. Poots. Any Variety Pairs: 1, S. Sargent; 2, L. Phippen; 3, K. Owen; 4, A. Lusty. Breeders (Livebearers): 1, R. Poots; 2, C. Nightingale; 3, M. Bishop; 4, C. Whitaker. Breeders (Egglayers): 1 and 2, R. Poots. A.V. Fish (juniors): 1, and 4, S. Owen; 2, K. Bishop; 3, L. Phippen. A.O.V. Tropical: 1, J. Ferguson; 2, D. and R. Clark; 3, G. Ludlow. Common Goldfish: 1, M. Bishop. Shubunkins: 1, M. Bloxome. A.O.V. Coldwater Fish: 1, M. Rodgers; 2, M. Bloxome. A.O.V. Pond and River Fish: 1, T. Poole; 2, 3 and 4, M. Bloxome. Best Tropical Fish: Mr. and Mrs. K. Hodges. Best Coldwater Fish: M. Bishop. Best Fish: Mr. and Mrs. K. Hodges.

The show secretary, Mr. K. Hodges, is extremely appreciative of the efforts of everyone who helped to make the society's first open show a success, and takes this opportunity of thanking all concerned.

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MEMBERS of **Brighton & Southern A.S.** had a Bring and Buy at their June Meeting and there was a large selection of Fish, Plants and Equipment going cheap to anyone who required them. Members were sorry to hear of the passing of Mr. A. Riley a Fellow member.

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FORTY-FOUR members, friends and relatives of the **Stroud A.S.** enjoyed a coach trip to a Redditch Aquaria to see the premises of Mrs. Beryl Ryan who visited the Stroud Club in April and this visit proved very popular.

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RESULTS of the June monthly table show, of the **Mid-Sussex A.S.** were as follow: Characins: 1, P. Dearing; 2 and 4, E. and T. Tester; 3, A. Holmes. Junior Novice Award: D. Isted. Catfish: 1, R. Stanger; 2 and 3, D. Soper; 4, E. and T. Tester. Junior Novice Award: D. Anscombe. H. Corydorrs: 1, D. Soper; 2, S. Burtles; 3, D. Anscombe; 4, B. Burtles. Junior Novice Award: D. Anscombe.

During the evening Mr. C. Corbin announced that the profit from the Fish Exhibition held over the Spring Holiday was approximately £195, but it was decided that there would not be an exhibition in 1976. Anyone interested in joining the club are welcome to attend a meeting as a visitor. Further information may be obtained from the Secretary, Mr. B. Slade "Sandown" Bolney Road, Anstye. Tel: Haywards Heath 53747.

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THE **Gosport & District A.S.** Annual Open Show held in June was supported by 593 entries. The Best Fish in Show winning the Aquarist Gold Pin went to R. J. Canning of Newbury. Other trophies and results were as follow:—Class Ag: 1, R. Paine (Haslemere); 2, B. Bargery (Haslemere); 3, R. J. Hard (Haslemere); 4, D. Langford (Haslemere). Class Aa-Af: 1, M. Cox (Gosport); 2, D. Haines (Gosport); 3, A. Houghton (Gosport); 4, R. Paine (Haslemere). Class B: 1, Mrs. P. Newbury (Gosport); 2, R. Leslie (High Wycombe); 3, R. Gray (Havant); 4, D. Reilly (Runnymede). Class C: 1, C. and J. Richards (Sudbury); 2, T. Smith (Independant); 3, J. Brown (Croydon); 4, R. Leslie (High Wycombe). Class Ca: 1, M. Strange (Basingstoke); 2, I. Clarke (Gosport); 3, R. J. Hard (Haslemere); 4, J. H. Jackson (Basingstoke). Class D: 1, R. J. Canning (Newbury); 2, D. Turner (Gosport); 3, I. Pierce (High Wycombe); 4, C. Kislingbury (Runnymede). Class Da: 1, Mrs. P. Newbury (Gosport); 2, R. J. Canning (Newbury); 3, J. H. Jackson (Basingstoke); 4, K. Connolly (Gosport). Class Db: 1 and 2, Mrs. P. Newbury (Gosport); 3 and 4, T. Fraser (Basingstoke). Class Dc: 1, W. Knight (Gosport); 2, R. Taylor (Havant); 3, D. Turner (Gosport); 4, K. Connolly (Gosport); 4, A. Tracey (Gosport). Class E: 1, J. Hughes (Roehampton); 2, D. Reilly (Runnymede); 3, G. Lucas (Sudbury); 4, S. Bartlett (Sudbury). Class Ea: 1 and 3, C. and J. Richards (Sudbury); 2, P. Brown (Southampton); 4, D. Langford (Haslemere). Class Fa-f: 1 and 3, D. Brooks (Hounslow); 2, D. Reilly (R'mede); 4, Mr. and Mrs. Hallum (Southampton). Class Fz: 1, D. Reilly (Runnymede); 2, P. Brown (Southampton); 3, J. Jupe (Gosport); 4, J. H. Jackson (Basingstoke). Class G: 1, J. Dickinson (Havant); 2, G. Lucas (Sudbury); 3, W. Knight (Gosport); 4, R. J. Canning (Newbury). Class H: 1, T. Fraser (Basingstoke); 2 and 3, K. Taylor (Havant); 4, C. Kislingbury (Runnymede). Class J: 1, T. Fraser (Basingstoke); 2, D. Reilly (Runnymede); 3, P. Brown (Southampton); 4, A. Weaire (Southampton). Class K: 1, M. Strange (Basingstoke); 2, C. McKay (Sudbury); 3, D. Langford (Haslemere); 4, Mrs. I Marshall (Gosport). Class L: 1, R. Leslie (High Wycombe); 2, K. A. Hillier (Newbury); 3, S. Crabtree (Havant); 4, D. Reilly (Runnymede). Class Ma: 1, J. Brown (Croydon); 2, K. Connolly (Gosport); 3 and 4, D. Reilly (Runnymede). Class Mz: 1, D. Reilly (Runnymede); 2, G. Lucas (Sudbury); 3, Mrs. K. Clarke (Gosport); 4, R. Leslie (High Wycombe). Class Nbm: 1, C. Kislingbury (Runnymede); 2, R. J. Canning (Newbury); 3, J. H. Jackson (Basingstoke); 4, K. A. Hillier (Newbury). Class Not: 1, Mr. and Mrs. Hallum (Southampton); 2, T. Fraser (Basingstoke); 3, Mrs. P. Newbury (Gosport); 4, A. Weaire (Southampton). Class O: 1, G. Lucas (Sudbury); 2 and 4, R. J. Hard (Haslemere); 3, D. Langford (Haslemere). Class P: 1 and 4, C. and J. Richards (Sudbury); 2, A. Noronha (Orpington); 3, S. Bartlett (Sudbury). Class Q: 1 and 2, I. Pierce (High Wycombe); 3, K. A. Hillier (Newbury); 4, A. Noronha (Orpington). Class R: 1, R. Cripps (Newbury); 2, R. J. Canning (Newbury); 3 and 4; A. Noronha (Orpington). Class S: 1, R. Cripps (Newbury); 2, K. Doswell (Havant); 3 and 4, B. and L. Turner (Basingstoke). Class T: 1, A. Weaire (Southampton); 2, T. Fraser (Basingstoke); 3, J. Randell (Haslemere); 4, D. Reilly (Runnymede). Class U: 1 and 2, B. Cowley (Gosport); 3, E. Binstead (Portsmouth); 4, L. Yates (Petersfield). Class V: 1, J. Jupe (Gosport); 2, Mr. and Mrs. Hallum (Southampton); 3, Sharron Blofield (Havant); 4, E. Binstead (Portsmouth). Class W: 1, E. Binstead (Portsmouth); 2 and 4, J. Jupe (Gosport); 3, R. J. Canning (Newbury). Class Xot: 1, S. Crabtree (Havant); 2, A. Weaire (Southampton); 3, Mr. and Mrs. Bebb (Bournemouth); 4, A. Noronha (Orpington). Class Xbm: 1, M. Strange (Basingstoke); 2, J. Dickinson (Havant); 3, R. J. Canning (Newbury); 4, M. Turner (Bournemouth). Class Za-Zb: 1, 2 and 4, J. Hughes (Rochampton); 3, J. H. Jackson (Basingstoke).

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FOR **High Wycombe A.S.** (**F.B.A.S.**) the first May meeting was reserved for a talk on catfish by Derek Lambourne and at the second there was a discussion on breeding good guppies, most of the information being supplied by Reg Cox an F.G.B.S. member. There was also news about the three counties and their show on the 14 September. On 29 May there was an eight a side against Aylesbury which Aylesbury won by 72 points to High Wycombe's 64 points. In June the club discussion was about the recent F.B.A.S. assembly, on the changing of a show rule without the affected societies permission.

The society meets at 8 p.m. on alternate Thursdays at "The White Horse," West Wycombe Road, High Wycombe. Visitors are welcome to come to the meetings. The society is now open to juniors aged 14-18 years on recommendation of any club member.

The forthcoming schedule is as follows: 7 August, Club discussion; 21, August, 3 Counties Fish League; 4 September, Talk; 18 September, 8-a-side; 2 October, Talk; 16 October, 8-a-side. Further details can be obtained from the secretary, J. Bushby, 3, Hawthorn Walk, Harlemere, Bucks. Tel: Penn 3825.

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RESULTS of **Whiteway & District Fishkeepers Society's** third Open Show were as follow:—Guppy Male: 1, J. Ferguson; 2, Miss T. Sullivan; 3, J. Cole; 4, P. J. Greenwood. Guppy Female: 1 and 4: R. G. Harvey; 2, Master L. Phippen; 3, Master J. Humpage. Platy: 1, R. Onslow; 2, Mr. Scriven; 3, Master D. Sullivan; 4, Miss T. Sullivan. Swordtail: P. J. Greenwood; 2, Master D. Calley; 3, D. Calley; 4, K. Owen. Sailfin Molly: 1, R. Dodson; 2, J. Cole; 3, Master J. Phippen; 4, D. Head. A.O.V. Molly: 1, R. Harvey. Specified Barb: 1, R. Hamilton; 2, Miss T. Sullivan; 3, Miss M. Calley; 4, D. Bradley. A.O.V. Barb: 1 and 2, Master L. Phippen; 3, L. Menhennett; 4, R. Harvey. H and H Characin: 1, Mr. Timmins; 2, J. Ferguson; 3, Master A. Davis; 4, W. H. Booty. A.O.V. Characin: 1, W. H. Booty; 2, P. J. Greenwood; 3, Mr. Timmins; 4, R. Dodson. Siamese Fighter: 1, R. Tooze; 2, W. H. Booty; 3, Miss K. Fielding. A.O.V. Anabantoid: 1 and 2, D. Dodson; 3, R. Harvey; 4, D. Reed. Corydoras and Brochis: 1, J. W. Morris; 2 and 4, P. J. Greenwood; 3, K. Owen. A.O.V. Catfish: 1 and 2, D. Head; 3 and 4, K. Owen. Botia, Loach and Eel: 1 and 3, Mr. Timmins; 2 and 4, K. Owen. Rasbora: 1 and 2: D. and R. Clark; 3 and 4, Mr. Timmins. Danio and Minnow: 1, R. Onslow; 2, D. and R. Clark; 3, Master J. Humpage; 4, K. Owen. Shark: 1, Mr. Timmins; 2, T. Fryer; 3, M. Bish; 4, G. Lucas. Dwarf Cichlid: 1, K. Owen. Angel: 1, 3 and 4: R. Steggles; 2, M. Bish. A.O.V. Cichlid: 1, C. Pawley; 2, Mr. Timmins; 3, Master L. Phippen; 4, D. Calley. A.V. Pair: 1, Master L. Phippen; 2, D. Reed; 3, Master D. Sullivan; 4, D. and R. Clark. Killifish and Tooth Carps: 1, R. Tooze; 2 and 3, J. Cole; 4, Miss T. Sullivan. A.O.V. Tropical: J. Ferguson; 2, R. Dodson; 3, R. Harvey; 4, Miss T. Sullivan. Breeders Livebearer: 1, R. G. Harvey; 2, R. Hamilton. Breeders Egglayer: 1, R. Onslow. Shubunkin: 1, 2 and 3, G. Jennings; 4, Paul Moxham. Single Tail Goldfish: 1 and 2, Master J. Phippen; 3, G. Jennings; 4, T. Morris-Davies. Twin Tail Goldfish: 1, 2 and 3, G. Jennings; 4, Master J. Phippen. Juvenile any fish: 1, Master L. Phippen; 2, Master S. Owen; 3, Miss N. Taylor; 4, Miss A. Moxham. Furnished Jar: 1, D. Reed; 2, Miss T. Sullivan; 3, R. G. Harvey; 4, Miss K. Fielding. Best Coldwater Fish in Show: G. Jennings. Best Tropical Fish in Show: Mr. Timmins. Best Fish in Show: Mr. Timmins. Highest number of Points: Junior Club Member: Miss T. Sullivan. Highest number of Points: Club Member: G. Jennings.

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EARLY in June **Llantwit Major A.S** Open. Show was held and proved to be a great success. Winner of the F.B.A.S. Championship trophy was C. E. Morrison (P.T.A.S.). Winner of Best Fish in Show was H. Chick (L.M.A.S.). Class winners were: Class Ao: 1, G. Lewis (L.M.A.S.); 2, P. Thomas (S.A.S.); 3, Mrs. S. Best (S.A.S.); 4, Mr. and Mrs. M. C. Guthrie (B.A.S.). Class Ag: 1, Master John Edwards (L.M.A.S.). Class B: 1, R. Brown (B.G.F.C.); 2, Mr. and Mrs. Daws (N.A.S.); 3, C. Webb (N.A.S.); 4, G. Lewis (L.M.A.S.). Class C: 1 and 4, C. Turner (C.A.S.); 2, M. and H. Williams (R.A.S.); 3, R. Satterly. Class Ca: 1 and 4, C. Turner (C.A.S.); 2, H. Chick (L.M.A.S.); 3, J. Thomson (L.M.A.S.). Class D: 1, M. and H. Williams (R.A.S.); 2, J. Bagan (P.T.A.S.); 3, A. Gibbson (N.A.S.); 4, P. Merrit (T.C.G.). Class Da: 1, P. Thomas (S.A.S.); 2, Mrs E. Brown (B.G.F.C.); 3, J. Norriss; 4, C. J. and J. A. Davies. Class Db: 1, G. Best (S.A.S.); 2, J. Eagan (P.T.A.S.); 3, J. Thomson (L.M.A.S.); 4, C. Turner (C.A.S.). Class E: 1, D. R. Warmeant (C.A.S.); 2, N. and C. Bowles (R.A.S.); 3, I. M. Jones; 4, G. Best (S.A.S.). Class Ea: 1, R. Newton (L.M.A.S.); 2, C. J. and A. J. Davies; 3, T. Click (R.A.S.). Class F: 1, B. Purdy (N.G.A.S.); 2 and 3, C. Moerison (P.T.A.S.); 4, G. Lewis (L.M.A.S.). Class G: 1 and 2, C. Turner (C.A.S.); 3 and 4, Master John Edwards (L.M.A.S.). Class H: 1, G. Best (S.A.S.); 2, M. and H. Williams (R.A.S.); 3, Mr. and Mrs. M. C. Guthrie (B.A.S.); 4, N. and C. Bowles (R.A.S.). Class By-Sy: 1, Master John Edwards (L.M.A.S.); 2 and 4, Master K. Williams (R.A.S.); 3, N. Shepperd. Class J: 1, C. Turner (C.A.S.); 2, Mr. and Mrs. M. C. Guthrie (B.A.S.); 3, A. M. Smith (R.A.S.); 4, T. Click (R.A.S.). Class K: 1, Mr. and Mrs. R. Dawes (N.A.S.); 2 and 4,

T. Click (R.A.S.); 3, G. Best (S.A.S.). Class L: 1, C. Turner (C.A.S.) ;2 and 4, Master K. Williams (R.A.S.); 3, Master P. Glover (L.M.A.S.). Class M: 1, H. Chick (L.M.A.S.); 2, R. Newton (L.M.A.S.); 3, N. and C. Bowles (R.A.S.); 4, K. Player (C.A.S.). Class N: 1, C. Turner (C.A.S.); 2, A. and M. Smith (R.A.S.); 3, Master K. Williams (R.A.S.); 4, Master John Edwards (L.M.A.S.). Class O: 1, G. Heppenstall (D.C.A.S.); 2, R. S. Wigg (L.M.A.S.); 3 and 4, Mrs. P. Purdy (N.G.A.S.). Class P: 1 and 2, M. Bishop (B.C.A.S.); 3, M. Jenkins (B.C.A.S.); 4, A. E. B. Fouracre (P.T.A.S.). Class Q: 1, G. Fry (L.M.A.S.); 2, G. Heppenstall (D.C.A.S.); 3, Mr. B. Purdy (N.G.A.S.); 4, A. Ibberson (L.M.A.S.). Class R: 1, G. Best (S.A.S.); 2 and 3, M. Bishop (B.C.A.S.); 4, C. Turner (C.A.S.). Class S: 1, C. Morrison (P.T.A.S.); 2, G. Best (S.A.S.); 3 and 4, N. and C. Bowles (R.A.S.). Class T: 1, 2, 3 and 4, A. and M. Smith (R.A.S.). Class X.o-t: 1 and 3, C. Turner (C.A.S.); 2, A. and M. Smith (R.A.S.); 4, M. Bishop (B.C.A.S.). Class X.b-m: 1, C. Turner (C.A.S.); 2 and 4, P. Merritt (T.C.G.); 3, G. Lewis (L.M.A.S.). Class U: 1, M. Bishop (B.C.A.S.); 2, A. C. Weller; 3 and 4, Miss C. Rupert (P.T.A.S.). Class Ua: 1, 2, 3 and 4, Miss C. Rupert (P.T.A.S.). Class V: 1 and 4, R. Davies (Wiltshire); 2 and 3, Miss C. Rupert (P.T.A.S.). Class W: 1, D. R. Warmeant (C.A.S.); 2, M. Bishop (B.C.A.S.); 3 and 4, Miss C. Rupert (P.T.A.S.). Class Y: 1, D. R. Warmeant (C.A.S.). This was the Society's most successful show to date and there were 555 entries.

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JUNE was a very successful month for the **Blaenau Gwent Fish Club** and two more members joined. The Club had a stand at the Hospital Fete, where much interest was shown and over £45 was handed over to the Fete committee. All members agreed the effort was worth while. Meetings are held on alternate Tuesdays at 7.30 p.m. at the Blaenau Gwent Working Mens Club, Lewis St., Cwmtillery Abertillery, Gwent. Dates and subject for August meetings are August 5, impressions of Layhill Aquaria. August 19, Discussion on future activities. Visitors are assured of a warm welcome.

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THERE were over 400 entries for the **Lincoln & District A.S.** annual open show. Mr. and Mrs. C. Sellars received the award for the Best Fish in the Show with their Auratus. Results: Guppies: 1, Mr. and Mrs. Copley (Doncaster); 2 and 4, G. and S. Dlastowe (Immingham); 3, Mr. and Mrs. Roberts (Doncaster). Swordtails: 1, Mr. and Mrs. G. Tyson (South Humberside); 2, 3 and 4, N. Blenkin (Bridlington). Mollies: 1, Mr. and Mrs. K. Kennington 2, S. A. Evans (Lincoln); 3, Mr. and Mrs. Lancaster (Retford); 4, K. Prendergbast (Boston). Platies: 1, W. Blundell (Doncaster); 2, G. M. Binley (Sheaf Valley); 3, Mr. and Mrs. J. Brett (Sheaf Valley); 4, P. Gorwood (Worksop). Small Barbs: 1, P. Watts (South Humberside); 2, W. E. Neville (Grantham); 3, S. A. Evans (Lincoln); 4, Mr. and Mrs. Daines (Doncaster). Large Barbs: 1, M. Hall (Worksop); 2, Mr. and Mrs. Fletcher (Doncaster); 3, Mr. and Mrs. G. Tyson (South Humberside); 4, W. E. Neville (Grantham). Small Characins: 1, Mr. and Mrs. Fletcher (Doncaster); 2 and 3, Mr. and Mrs. J. F. Richardson (Scarborough); 4, K. Prendergast (Boston). Large Characins: 1 and 2, Mr. Ottowell (Retford); 3, P. Prisby (Hull); 4, Mr. and Mrs. Roberts (Doncaster). Rasboras: 1, Mr. and Mrs. Copley (Doncaster); 2, Mr. and Mrs. Feasey (Doncaster); 3, Mr. and Mrs. Lake (South Humberside); 4, W. Blundell (Doncaster). Killiefish: 1, Mr. and Mrs. J. Brett (Independent) 2 and 3, Mr. and Mrs. D. Glenwood (Immingham); 4, Mr. and Mrs. P. Morrissey (Immingham). Pairs of Egglayers: 1, Mr. and Mrs. P. Morrissey (Immingham); 2, Master S. White (Retford); 3, Mr. and Mrs. A. Binns (Scunthorpe Museum); 4, Mr. and Mrs. G. Tyson (South Humberside). Pairs of Live Bearers: 1, J. F. Hawdon (Grimsby & Cleethorpes); 2, Miss J. Cavill (Doncaster); 3, N. Blenkin (Bridlington); 4, Mr. and Mrs. Feasey (Doncaster). Junior Egglayers: 1, A. Bottamley (Scunthorpe District); 2, Master Neville (Grantham); 3, Miss J. Cavill (Doncaster); 4, Master S. White (Retford). Junior Live Bearers: 1, Miss F. Gell (Rotherham); 2, P. Spittalhouse (Lincoln). Breeders Egglayers 1/10: 1, B. Jackson (Doncaster); 2, Mr. and Mrs. Sellars (Lincoln); 3, Mr. Short (Sheaf Valley); 4, Mr. and Mrs. Fletcher (Doncaster). Breeders Egglayers 11/20: 1, Mr. and Mrs. Fletcher (Doncaster). Breeders Live Bearers: 1, W. Blundell (Doncaster); 2, Mr. B. Jackson (Doncaster); 3, W. E. Neville (Grantham); 4, N. Blenkin (Bridlington). Novice Class: 1, Miss M. Lake (Grimsby); 2, C. Allan (Sheaf Valley); 3, Mr. C. M. Binley (Sheaf Valley); 4, Master D. K. Steels (Retford). A.V. Marine Fish: 1, G. Simpson (Goole); 2, S. A. Evans (Lincoln); 3, Mr. Short (Sheaf Valley). A.O.V. Tropical: 1, 2 and 4, A. Onslow (Loughborough District); 3, Mr. and Mrs. Chester (Retford). Ladies Class: 1, Mrs. C. Clayton (Immingham); 2, Mrs. Copley (Doncaster); 3, Mrs. Riley (Leeds); 4, Mrs. Daines (Doncaster). Minnows and Danios: 1, 2 and 3, Master S. White Retford; 4, Master Roberts (Doncaster). Sharks and Foxes: 1, S. Bamford (Independent); 2, T. Sands (Boston); 3, Master Ottowell (Retford); 4, Mr. Onslow (Loughborough). Botias and Loaches: 1, Mr. and Mrs. Fletcher (Doncaster) 2, W. Blundell (Doncaster); 3, Mr. and Mrs. A. Binns (Scunthorpe Museum); 4, Mr. and Mrs. Daines (Doncaster). Dwarf Cichlids: 1 and 4, Mr. and Mrs. Sellars (Lincoln); 2, Mr. and Mrs. Vernon (Retford); 3, Mr. and Mrs. Lake (South Humberside). Large Cichlids: 1, Mr. and Mrs. Sellars (Lincoln); 2, Mr. and Mrs. J. F. Richardson (Scarborough); 3, Mr. and Mrs. Caldow (Scunthorpe Museum); 4, Mr. and Mrs. Kennington (South Humberside). Angels: 1, K. Golding (Immingham); 2, Mr. and Mrs. Sellars (Lincoln); 3, Mr. and Mrs. Lancaster (Retford); 4, Mr. and Mrs. D. Caldow (Scunthorpe Museum. Corydoras (including Brochis): 1 and 2, Mr. and Mrs. Fletcher (Doncaster); 3, Mr. and Mrs. Lake (South Humberside); 4, Mr. and Mrs. Vernon (Retford). A.O.V. Catfish: 1, Mr. and Mrs. Binley (Sheaf Valley); 2, W. Blundell (Doncaster); 3, J. A. Dunns (Rotherham); 4, Mr. and Mrs. P. Morrissey (Immingham). Fighters: 1, Mr. and Mrs. Feasey (Doncaster); 2, Mr. and Mrs. Copley (Doncaster); 3, R. Gibbs (Doncaster); 4, Master Ottowell (Retford). Small Anabantids: 1, Mr. and Mrs. G. Tyson (South Humberside); 2, Mr. and Mrs. Chester (Retford); 3, and 4, A. Clayton (Immingham). Large Anabantids: 1, W. Blundell (Doncaster); 2, 3 and 4, J. Stone (Grantham). Goldfish and Comets: 1, G. Prisby (Hull); 2 and 4, Mr. and Mrs Barlow (Grantham); 3, Mr. and Mrs. Rumbold (Boston). Shubunkins and Fancy Goldfish 1, Mr. Short (Sheaf Valley); 2, Mrs. H. B. Walden (Peterborough); 3, Miss S. Barlow (Grantham). A.O.V. Coldwater: 1 and 2, Mr. and Mrs. Feasey (Doncaster); 3, W. Blundell (Doncaster); 4, P. Taylor (Lincoln). Furnished Tanks: 1, R. Fletcher (Lincoln); 2, Mr. and Mrs. D. Glenwood (Immingham); 3, Mr. J. Woodliffe (Lincoln).

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ANNUAL Show results of the **South Shields A.S.** held in June were as follow: Class Ba: 1, B. Black, Fleetwood; 2, C. Robinson, Stanley; 3, L. Southall, South Shields. Class Bz: 1 and 2, J. Page, Half Moon; 2, E. Leadbetter, Fleetwood. Class Ca.b. 1, F. Myers, Independant; 2, G. Nixon, Independant; 3, M. Strange, Basingstoke. Class C.z: 1, D. Russell, Stanley; 2, J. Fosser, Mount Pleasant; 3, L. Southall, South Shields. Class D.a: 1 and 2, A. E. Standley, Redcar; 3, R. Leydon, South Shields. Class Db: 1, T. Frazer, Basingstoke; 2, Mr. and Mrs. Brewster, Bimbi; 3, Mr. and Mrs. Ruffell, South Shields. Class Dc: 1, G. Maguire, Hartlepool; 2, Mr. King, Redcar; 3, R. Atherton, Hartlepool. Class Dz: 1, R. Atherton, Hartlepool; 2, W. Kidd, Killingworth; 3, M. Moreland, Stockton. Class Ea: 1, B. Jackson, Redcar; 2, J. Ryan, Billingham; 3, B. Forster, Bimbi. Class E: 1, R. Atherton, Hartlepool; 2, P. Redman, Hartlepool; 3, M. Noble, Redcar. Class Fc: 1, R. Sanderson, South Shields; 2, J. Middlemast, Stanley; 3, Laidler family, Killingworth. Class Fz: 1, B. Forster, Bimbi; 2, Mr. and Mrs. Risbridger, South Shields; 3, J. Middlemast, Stanley. Class G: 1, Mr. and Mrs. Saunders, Stockton; 2, H. Garthwaite, Hartlepool; 3, Mr. Wynn, Killingworth. Class H: 1, T. Frazer, Basingstoke; 2, C. Mallaby, Mount Pleasant; 3, E. Leadbetter, Fleetwood. Class J: 1, Mr. and Mrs. Saunders, Stockton; 2, F. Myers, Independent; 3, E. Leadbetter, Fleetwood. Class K: 1, M. Strange, Basingstoke; 2, A. King, South Shields; 3, P. Wright, South Shields. Class L: 1 and 2, E. Hodgson, Penrith; 3, P. Wright, South Shields. Class M: 1, D. Turnbull, Bimbi; 2, M. Meerland, Stockton; 3, Mr. and Mrs. Duffill, Redcar. Class Ma: 1 and 2, M. Meerelands, Stockton; 3, Mr. and Mrs. Wright, South Shields. Class Nom: 1, M. Holman, Priory; 2, M. Strange, Basingstoke; 3, J. Forster, Mount Pleasant. Class Not: 1 and 2, F. Myers, Independant; 3, Kane family, Billingham. Class O: 1, R. T. Walton, Hartlepool; 2 and 3, A. E. Standley, Redcar. Class P: 1, R. T. Walton, Hartlepool; 2, P. Askew, South Shields; 3, Kane family, Billingham. Class Q: 1, B. Jackson, Redcar; 2, M. Noble, Redcar; 3, P. Turnbull, South Shields. Class R: 1, R. Onslow, Basingstoke, 2, Mr. Dudley, Hartlepool; 3, W. Kidd, Killingworth. Class S: 1, J. Beavers, Hartlepool; 2, F. Myers, Independent; 3, K. Noble, Redcar. Class T: 1, T. Frazer, Basingstoke; 2, J. Beavers, Hartlepool; 3, P. Wright, South Shields. Class W: 1, E. Leadbetter, Fleetwood; 2, H. Potts, South Shields; 3, A. E. Standley, Redcar. Class Xot: 1, Mr. Dudley, Hartlepool; 2, L. Osman, Stockton, 3, Mr. and Mrs. Sowerby, Mount Pleasant. Class Xbm: 1, J. K. Alder, Hartlepool, 2, Mr. Firth, Priory; 3, Mr. Goodall, Redcar. Class Z: 1 and 2, W. Walton, Priory; 3, Mr. and Mrs. Ruffell, South Shields. Aquatic reptile class: 1, Mr. and Mrs. Leydon, South Shields; 2, C. R. McKenna, Independant; 3, Kane family, Billingham. Best fish in show (Class G): Mr. and Mrs. A. R. Saunders, Stockton A.S. Best exhibitor in show: F. Myers, Independent. Society with most points: Hartlepool A.S. Total entries: 411. F.B.A.S. Championship class trophy was awarded to class Nom.

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THE **North Staffs A.S.** announce a change of committee as follow: D. Cliff, secretary; 5 Bell Lane, Wedgwood Estate, Barlaston. J. C. Ankens, assistant secretary. A. Ankens, chairman. D. Ankens, show secretary and J. Cartwright, treasurer. Meetings are held first and third Tuesdays of every month at the Arts Centre, Newcastle, Staffs. at 8.15 p.m.

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CHANGES in officials are reported from **Gosport & District A.S.** as follow: D. Haines, chairman; Mrs. P. Turner, treasurer; I. Calker, show manager; D. J. Turner, secretary, 60, Ocean Close, Stow Estate, Fareham; Mrs. K. Clarke, show secretary, 36, Cambridge Rd., Lee-on-Solent.

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RESULTS of the Killingworth leg of the four-way inter-club show, held in June, at Killingworth were: Killingworth A.A. 92 pts; South Shields A.S. 75 pts; Bimbi A. & F.S.G. 57 pts; Winlaton Mill A.S. no entries. Best Fish in show award went to Mr. and Mrs. D. Renton K.A.A. for a Flying Fox.

The show was judged to F.B.A.S. rules by the following judges: G. Hunt, J. Laidler, Mr. and Mrs. Bell, M. Hunt, J. Patterson, W. Redhead and I. Danskin and there were 182 entries. The next leg will be at South Shields sometime before October.

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SOME very interesting meetings have been held by the **Mid-Herts. A.S.** this year. There has been a table show competition each month for inter-club cups, and speakers booked for each meeting. The society meet on the fourth Friday of each month at 8 p.m. in Birkland's Annexe, London Road, St. Albans, Herts. Anyone interested in fish will be most welcome.

For further details please contact: Mr. S. Birch, 7, Station Terrace, Park Street, St. Albans, Herts., Park Street 72425.

RESULTS for the West Midland League match between **Darlaston and District A.S.** and **Stourbridge A.S.** were as follow: Cichlids: 1, J. Edmonds S.A.S.; 2, K. Hall D. & A.S.; 3, D. Rickhuss D. & A.S. Anabantids: 1 and 3, D. Hallett S.A.S., 2, S. Whitehouse D. & A.S. Characins: 1, K. Hall D. & A.S.; 2, B. Price S.A.S.; 3, S. Whitehouse D. & A.S. True A.O.V.: 1, K. Hall D. & A.S.; 2, D. Rickhuss D. & A.S.; 3, S. Dixon S.A.S. Darlaston & District A.S. 14 pts; Stourbridge A.S. 10 pts., with Darlaston going into the final on aggregate score. There was also an interesting talk by K. S. Hall on Catfish.

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THE **British Discus Association** held a meeting in Birmingham in June. This was the first Birmingham meeting, and there was a disappointingly small turnout. After a general discussion on many aspects of Discus keeping, Mr. Frank Ashworth gave a very informative talk on "setting up a discus tank" which included a section on discus medicine. After the meeting most of the members went to the home of Mr. Graham Guest to look at his discus set up and were treated to the sight of a pair of Brown Discus nursing their ten day old brood. The next meeting will be in London, the date and place to be announced. All interested parties should contact Mr. F. Ashworth, 41, Pengwern, Llangollen, Denbighshire, N. Wales.

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BRITISH CICHLID ASSOCIATION

The first B.C.A. convention was held early in June. There was a very interesting programme which included several well known lecturers. It commenced with a lecture and slides on the breeding of Angel fish by Mr. H. Cooper of Bury A.S. After lunch Mr. M. Hardy of Aquatic Nurseries gave a talk illustrated with slides on Lake Malawi and other regions where cichlid fish are found. Dr. Trewavas of the British Museum then gave a talk on cichlids of the Camerooms. After coffee Mr. R. Skipper was going to give a talk and slides on the discus but unfortunately he was taken ill, but Mr. Ian Sellick was good enough to take his place. Thanks are due also to Mr. J. Reeves representative of the West Midlands section of the B.C.A. for doing most of the organising for the convention.

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OBITUARY

It is with deep regret that the **Lincoln & District A.S.** announce the death of Mrs. Thomas Dobbs of 67, Foster Street, Lincoln. She together with her husband, President for a great number of years, and their son were founder members of the Society.

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NEW SOCIETIES

A new marine club has just been formed and meets at the Stocks Hotel, Manchester Road, Walkden, Worsley, Lancs. Anybody who is interested in marine fishkeeping of all kinds can be assured of a warm welcome should they wish to visit or join the club and are requested to contact the secretary Mrs. J. Knowles, 12 Medway Road, Worsley, Lancs. Tel: 061 790 5142.

A new aquarist society has been formed in Wallsend and the first meeting of the **Wallsend A.S.** was held at The Robin Hood, High Street East, Wallsend-on-Tyne on Monday 23 June. Meetings will follow once fortnightly from this date at 8 p.m. All aquarist and fishkeepers are welcome and any enquiries should be sent to M. D. Eggo, Secretary, 58 Matfen Gardens, Wallsend, Tyne and Wear enclosing a S.A.E.

The Jersey A.C. have already held two open meetings, and the last one at the end of May was attended by 45 people. There are over thirty members, already and it is expected this number to double in the next few months. The meetings are held on the last Wednesday of each month and members of aquarium societies in England and elsewhere visiting the Island will be most welcome to attend the meetings. The secretary is Mrs. P. Duhamel of 34 Devonshire Place, St. Helier, Jersey. Tel: Central 35966 and the society would like to make contact with mainland aquarium societies, with a view of the exchange of newsletters etc.

VENUE CHANGES

The meeting place of the **Taunton & District A.S.** has been changed from the Wyndam Hall, Taunton to the Railway Club, Station Road, Taunton.

The Guildford and District Aquarist Club moved house this year and is now in Christchurch Rooms, Waterden Rd., Guildford (not far from London Road Station). Old friends and new are welcome, and the society meet from 8.00 p.m. on the second and fourth Wednesdays of each month.

The **Snaith & District A.S.** meetings will now be held at the Plough Inn, Snaith on the first Thursday of each month from 7 p.m. to 9.30 p.m. The secretary is R. R. Ducken "Field View" Drax Hales, Selby, Yorks.

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SECRETARY CHANGES

Yorkshire Association of Aquarist Societies: W. D. Gilding, 28 Retford Road, Woodbeck near Retford, Notts. Tel. Rampton 594.

Taunton District A.S. Mrs C. E. Vellacott, 18, Thomas Street, Taunton, TA2.

South Derbyshire & District A.S.: J. Towers, 56 Valley Rise, Swadlincote, Burton-on-Trent, DE11 0GE.

Llantwit Major A.S.: R. Newton, 8, The Glen, Bryncethin, Bridgend, Mid Glam., S. Wales. Tel. Aberkenfig 721747.

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SHOW INFORMATION

The **Yorkshire Association of Aquarist Societies** are this year holding their first Yorkshire Festival on a National scale.

Since the Association changed its name to allow societies out of Yorkshire to become affiliated, it has trebled in size. Regular monthly meetings are held alternatively for management and delegates, permitting a very close liasion with society members.

Yorkshire also has its own Judges and Standards Committee who meet every month besides regular meetings with other Judges within the Confederation of United Kingdom Aquarists. They also run a Judges training scheme which every Judge on the panel has to take part in. The idea being to raise the standard of Judging to the highest possible degree.

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AQUARIST CALENDAR

1-2 August: Hull A.S. (Hull Show "Aquarist Section"), East Park, Holderness Road, Hull.

2nd-3rd August: Tottenham and District A.S. open cold water show will be held at Harringay Recreation Grounds, Lordship Lane, London, N.22. Judges to be G.S.G.B. Details and show schedules from Mrs. S. Townson, 1 Haslam Court, Waterfall Road, London, N.11. Telephone: 01-368 2091.

3rd August: Tonbridge & District A.S. Open Show. Show secretary, S. Feast, 19 Eardley Road, Sevenoaks, Kent TN13 1XX. Sevenoaks 54998.

3rd August: Blackpool and Fylde A.S. 25th Annual Open Show (judging starts 2 p.m.) at the Blackpool Boys Club, Laycock Gate, off Devonshire Road, Blackpool.

4th-9th August: Portsmouth A.S. Open Show and Exhibition will be held at the Wesley Central Hall, Fratton Road, Portsmouth. Benching on Saturday, 2nd August. Judging on Sunday, 3rd August. Schedules from J. Stillwell, 34 Salcombe Avenue, Copnor, Portsmouth, Hants PO3 6LD.

8th August: Newport A.S. Open Show at St. Johns Hall, Victoria Avenue, Maindee, Newport, Gwent. Further details and show schedules available from P. Jordan, 16 Rosslyn Road, Newport, Gwent. Tel: 75436.

10th August: Grimsby and Cleethorpes A.S. Open Show Memorial Hall, Cleethorpes, Schedules from: Show Secretary—T. P. Walker, 51 Cheshire Walk, Grimsby, South Humberside.

17th August: Oldham & District A.S. Annual Open Show, Werneth Park, Oldham. Details from A. E. Chadwick, 341 Broadway, Chadderton, Oldham.

17th August: Newcastle Guppy and Livebearer, Society, Second All Livebearer Open Show, British Legion Headquarters, Bentinck Road, Newcastle. Details Mrs. J. Renton, 128 Dunstan Tower, Garth 18, Killingworth, Newcastle-on-Tyne, NE12 0TX.

17th August: Stroud and District A.S. at Stroud Subscription Rooms as last year. Details from Mrs. Cole, "Avignon", The Hill, Randwick, Stroud, Glos. Tel: Stroud 4504.

17th August: Huddersfield T.F.S. Open Show, Deighton Civic Youth Club, Deighton Road, Deighton, Huddersfield. Details from D. Hough, Flat 5, Sycamore Court, Sycamore Avenue, Golcar, Huddersfield. Tel.: Huddersfield 57147.

17th August: Bedworth A. and P.S. open show at Nicholas Chamberlaine School, Bulkington Road, Bedworth, nr. Nuneaton. Schedules from J. Salisbury, 261 Gadsby Street, Attleborough, Nuneaton.

24th August: Corby and District A.S. at the Corby Leisure Activities Exhibition, Civic Centre, Corby a "Mini-Show" (10 Classes) for members of the *Northamptonshire Societies only.*

24th August: Fleetwood and District A.S. annual open show at Fleetwood Grammar School, Poulton Road, Fleetwood, Lancs. Show secretary, N. D. West, 40b Mowbray Road, Fleetwood.

24-25th August: Yarmouth and District A.S. Third Annual Tropical and Coldwater Fish Exhibition to be held at Hopton Village Hall (on A.12 between Gt. Yarmouth and Lowestoft). Plenty of parking space this year.

30th August: Hounslow and District Open Show will be held at Hounslow Youth Centre, Cecil Road, Hounslow. Show schedules and all relevant information can be obtained from E. Shepherd at 9 Moulton Avenue, Hounslow, Middlesex. Tel.: 01-570 6127.

31st August: The Castleford A.S. third Annual Open Show at the Castleford Civic Centre, Ferrybridge Road, Castleford, Yorkshire. Details from Mrs. E. Asquith, 32 Lower Oxford Street, Castleford, Yorks WF10 4AE.

31st August: Morecambe Bay A.S. Open Show at the St. John's Parochial Hall, Norton Road, Morecambe. Show secretary, Mrs. B. Booker, 18 Gringley Road, Westgate, Morecambe.

31st August: Stretford & District A.S. Annual Open Show, Salford Grammar School, Bulle Park, Salford. Details from Mrs. P. Bowden, 310 Claremont Road, Moss Side, Manchester 14. Tel.: 061-226 1264.

September: Bishop Auckland A.S. annual Open Show. Details later. Show secretary, B. Misso, 111 Craddock Street, Spennymoor, Co. Durham.

6th September: Federation of British Aquatic Societies General Assembly, Conway Hall, Red Lion Square, Holborn, London, W.C.1. 2.30 p.m.

7th September: Bethnal Green A.S. Open Show to be held at The Bethnal Green Institute, 229 Bethnal Green Road, E.2. Schedules and further details available from the Show Secretary, Sybil Hedges, "Koi Konor," 150 Ashburton Ave; Seven Kings, Ilford, Essex, IG3 9EL. Tel.: 01-590 3239.

7th September: Killingworth Aquarist Association First Open Show at "Communicare," Killingworth, Newcastle. Schedules from, D. B. Hickman, 14 Crumstone Court, Longmeadows, Killingworth, Newcastle NE12 0SZ.

7th September: Wellingborough and District A.S. Open Show Weavers Sport Centre, Weavers Road, Wellingborough. Schedules from D. Bischenor, 1A, George St., Wellingborough.

7th September: Buxton and District A.S. Open Show, Pavilion Gardens, Buxton. Judges F.N.A.S., and points gained will be awarded to the League. Further details from Mr. Gullane, 18 Derwent Road, Buxton, Derbyshire.

7th September: Nuneaton A.S. Open Show, Priary Youth Centre, Abbey Street, Nuneaton, Warks. Schedules from show secretary, M. Sheet, 8 Greenhill Road, Stoke Golding, Nuneaton, Warks. CV13 6HJ.

7th September: Bishops Cleeve A.S. open show at the Community Centre, St. Marks, Cheltenham. Show secretary, Mrs. J. Bishop, 36 Clarence Square, Cheltenham.

13th September: Malvern & District A.S. Second Open Show to be held at Barnards Green Cricket Club, North End Lane, Malvern. Schedules available later.

13th September: Bristol A.S. Coldwater Show. Schedules from show secretary, E. N. Bowden, 12 Stoneleigh Walk, Knowle, Bristol BS4 2RL. Tel.: 775355.
14th September: Torbay A.S. will be holding its Seventh Annual Open Show at the Torquay Town Hall. Show schedules will be available from Mr. J. R. Davis, 43 Haldon Road, Torquay, Devon.
14th September: Hoylake A.S. sixth open show at Y.M.C.A., Market Street, Hoylake, Merseyside. Show secretary, Mr. D. W. Morris, 9 Pump Lane, Greasby, Merseyside L49 3PW.
14th September: Three Counties Group 21st Annual Open Show run by the Basingstoke, Bracknell, Didcot, High Wycombe and Reading A.S.'s at the Reading University, with 50 classes which will include a 'specialist' Killie Show. Schedules from, R. Leslie, 29 Meadow Walk, Tylers Green, High Wycombe, Bucks, HP10 8DG, or M. Strange, 10 Loddon Court, Neville Close, Basingstoke, Hants.
14th September: Cleveland A.S. annual Open Show at the Guisborough Parish Church Hall, Whitby Road, Guisborough (same venue as last year). Schedules will be available later, from the show secretary, R. W. Begg, 35 Tyreman Street, Lingdale, Saltburn, Cleveland TS12 3ES.
20th-21st September: Littlehampton and Bognor A.S. will be holding its annual two-day exhibition at Bognor Regis.
20th-21st September: Dublin Aqua Show, organised by the Beecough Aquarists Society, The Dublin Society of Aquarists and The Irish Tropical Fish Society at the Oblate Hall, Inchicore, Dublin 8. Show schedules and details from hon. show secretary, Maurice Cassidy, 357, The Donaghies, Grange Road, Raheny, Dublin 5.
21st September: Hastings and St. Leonards A.S. Third Open Show at Ore Centre. Show schedules and further details from, P. Martin, 20 Silverlands Road, St. Leonards-on-Sea, Sussex.
21st September: Hucknall & Bulwell A.S. Annual Open Show. Details to follow.
21st September: Loyne A.S. Open Show, St. Pauls Hall, Scotforth, Lancaster. Show secretary, Mrs. B. Hammond, 30 Wharfedale Road, Lancaster, LA1 5ND.
21st September: Chesterfield and District A.S. annual open show, Clay Cross Social Centre, Chesterfield Road, Clay Cross, nr. Chesterfield, Derby. Exit 29 off M1. Follow signs 4 miles to show. The venue is situated on the A61. Details from show secretary, P. Morton, 56 Salisbury Crescent Newbold, Chesterfield.
21st September: Priory A.S. Tynemouth. Open Show St. Aidans Church Hall, Billy Mill Lane, North Shields. Schedules from W. J. Walton. 25, Rutherford Street, High Howdon, Wallsend, Tyne & Wear. NE28 0AW.
27th September: Goldfish Society of Great Britain Open Show to be held at Sutton Adult School, Benhill Avenue, Sutton, Surrey.
27th September: North Gwent A.S. First Annual Open Show at the Leisure Centre, Ebbw Vale. Schedules from show secretary, I. M. Jones, 2 Little Rhyd, Carmeltown, Ebbw Vale, N. Gwent NP3 3PN.
28th September: Newbury and District A.S. Third Open Show at the Plaza, Market Place, Newbury, Berks. Details and schedules from S. Canning, 6 South End, Thatcham, Newbury, Berks.
28th September: Northampton and District A.S. Open Show at the Drill Hall, Clare Street, Northampton. Show schedules will be available from Mrs. S. Taylor, 25 Rowley Crescent, New Duston, Northampton, NN5 6PU shortly.
28th September: The Ealing and District A.S. Open Show. Northfields Community Centre, Northcroft Rd., Ealing, London, W.13.
3-5th October: German Livebearer Association Open Show, Breeding Pairs only. Further details and application forms from DGLZ, 11 Intern, Leistungsschau, Herr Hans Kroger Gluckstrasdter Weg. (Schule am Barls) 2000, Hamburg 53, West Germany.
4th October: East London Aquatic and Pondkeepers Association Open Breeders' Show. Schedules available from M. Pearson, 42, Parkway, Ilford, Essex.
4th October: Haslemere and District A.S. first Open Show, at the Haslemere Town Hall, Bridge Road, Haslemere, Surrey. Schedules and further details from show secretary, R. J. Hard, 6 Lower Hanger, Woolmer Hill, Haslemere, Surrey. Tel.: Haslemere 51812.
5th October: Eboracum Aquarists Open Show to be held at Nunthorpe Grammar School Hall. Enquiries to show secretary, Mr. A. S. Allison, 14 Bewley Street, Bishopsthorpe Road, York.
5th October: Second Open Show of the Scunthorpe and District A.S. at the North Lindsey College of Technology Annexe, Cole Street, Scunthorpe. Schedules are now available from L. Burr, 6 Saxby Road, Scunthorpe, South Humberside.
11th-12th October: British Aquarists' Festival, Belle Vue Zoological Gardens, Manchester. Details from G. Cooke, Spring Grove, 33 Field Hill, Batley, Yorks.
12th October: Ilfracombe and District A.S. Open Show at the Ilfracombe Junior School, Princess Avenue as last year. Details from Mrs. S. Lipscomb, 8 Foxbeare Road, Ilfracombe, N. Devon.
12th October: Vauxhall Motors A.S. open show. Schedules from A. D. Phillp, show secretary, 15 Hollybush Road, Luton.
19th October: Chelmsford A.S. Open Show at the Broomfield Community Centre, Chelmsford. Enquiries should be made to I. R. Fountain, 10, Brograve Close, Galleywood, Chelmsford, Essex.
26th October: Doncaster A.S. Open Show Brodsworth Miners Welfare Hall, Welfare Road, Woodlands, Nr. Doncaster. Benching 12-2.15.
2nd November: Blackburn Aquarist Waterlife Society Open Show, Windsor Hall, Blackburn. Details to T. Burton, 21 Henry Street, Rishton nr. Blackburn BB1 4JJ.
9th November: Halifax A.S. Open Show, Forest Cottage Community Centre, Cousin Lane, Illingworth, Halifax. Schedules from D. Shields, "Cobblestones", Gainest, King Cross, Halifax. Phone: Halifax 60116.
9th November: Glossop A.S. open show at Adult Education Centre, Talbot Street, Glossop, Derbyshire. Show secretary, Mr. S. Turner, 56 Arundel Street, Glossop. Tel.: Glossop 3409.
16th November: Bradford & District A.S. annual open show at the East Bowling Unity Club, Leicester Street, Wakefield Road, Bradford, 4 (same venue as last year). Details from show secretary, D. Sugden, c/o 18, Southmere Crescent, Great Horton, Bradford, BD7 3NP.
22nd November: Fur, Feather & Aquaria Show, King's Hall, 39 Lower Clapton Road, E.5. Schedules and further details from show secretary, Sybil Hedges, "Koi Kornos" 150 Ashburton Avenue, Seven Kings, Ilford, Essex, IG3 9EL. Telephone 01-590 3239.
22nd November: Goldfish Society of Great Britain, Conway Hall, Red Lion Square, Holborn, London W.C.1.
30th November: Horsforth A.S. open show at the New Civic Hall, Bradford Road, Pudsey. Show secretary, C. Coens, 15 Thornleigh Grove, Leeds 5S9 8QR Yorks.
6th December: Federation of British Aquatic Societies Annual General Meeting, Conway Hall, Red Lion Square, Holborn, London, W.C.1. 2.30 p.m.