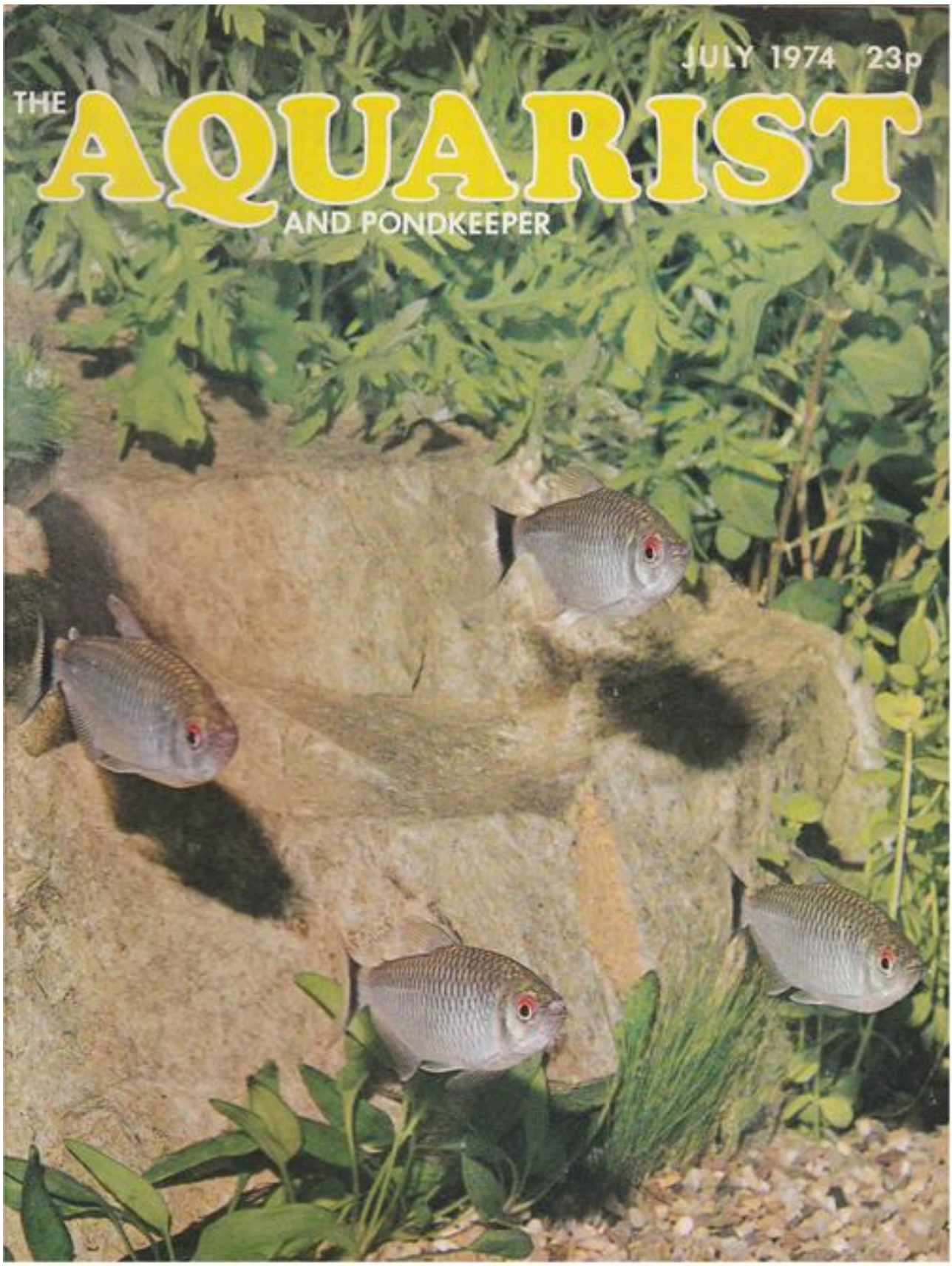

JULY 1974 23p
THE
AQUARIST
AND PONDKEEPER

THE AQUARIST AND POND KEEPER

The Aquatic Magazine with the Largest Circulation in Great Britain

Published Monthly 23p

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

Subscription Rates:
The Aquarist will be sent post free for one year to any address for £3·45. Half-yearly £1·72.

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

Founded 1924
as "The Amateur Aquarist"
Vol. XXXIX No. 4, 1974

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

ABC
MEMBER OF THE AUDIT BUREAU OF CIRCULATIONS

Our Cover

Yellow-banded Moenkhausia
(Moenkhausia sanctae-filomenae)

Contents

VARIATIONS OF

Carassius auratus

by Morris Cluse

(President of The Goldfish Society of Great Britain)

THE WIDE distribution of the common goldfish throughout the homes and gardens of the world is a tribute to its hardiness and to its beautiful colour. Centuries ago among the bronze carp in ponds the Chinese noticed some fish which were an orange golden colour. They segregated these and bred them in separate pools or bowls. By continued selection they built up strains of fish which although starting life with bronze coloration changed to gold or perhaps also silver in the conditions of temperature and environment in that region of China. They became very popular as pets and were often kept in ceramic bowls, which in later times were decorated with illustrations of the fancy varieties which evolved. Kept in the sheltered conditions of captivity mutations occurred which could not have survived in wild or natural conditions. Selective breeding from these mutated forms produced extraordinary variations in colour and shape over a period of several hundred years. At first fishes with divided tail fins may have been a speciality of a certain area, while in another area perhaps protruding eyes were the favourite. The goldfish industry was only a relatively small part of an enormous industry, which provided the Chinese people with freshwater fish in high tonnage for thousands of years. There exists in fragmentary form, a book on pisciculture the Yang Yu Ching, which dates from the Han period about 1st century A.D. These expert fish-keepers had an eye to business. When they produced a new variety it would be lauded as very rare and high prices would have been asked. They would always have been on the look-out for any new shape or characteristic. Consequently many mutations became more or less "fixed". That is to say a proportion with the new characteristic would appear in every spawning from the selected parents. Many of these mutations appear in different genes and consequently an individual goldfish can show several distinct variations. It appears that present-day goldfish may have evolved from an earlier form by polyploidy. Russian geneticists have discovered that some species have more than the recognised chromosomes per cell. For species in the family Cyprinidae the number of chromosomes is 52, but in the carp (*Cyprinus carpio*) it is 104 and in the goldfish (*Carassius auratus*) and crucian carps (*Carassius carassius*) it is 94. This means that the genotypes of fancy goldfish are various as the mutations are carried on separate but numerous chromosomes. Only by careful line breeding can a fair proportion of the young be as good as their selected parents. This is the fascination for the goldfish breeder. He never knows when he is going to hit the jackpot. There are so many variables which do not breed true.

The permutations of these variables could lead to the formation of countless mongrel varieties. The Goldfish Society of Great Britain therefore has selected only 13 varieties which between them cover the usual mutations seen in this country. These we hope will be concentrated upon so that the strains can be improved. The accompanying schedule illustrates the genetic characteristics which appear with each variety. The common goldfish is not included as it is regarded as the normal for shape and proportions. Any variety of fish on the show bench which shows very obvious signs of a characteristic not proper to it may be disqualified, e.g., a "hood" on a Pompom.

When one considers that in addition to the characteristics listed there are the intermediate types, e.g., not normal or long but medium, the necessity of limiting the number of show varieties and keeping them quite distinct can be appreciated.

VARIETY	Comet	Bristol	Globe-eye	Veiltail	Pearl-scale	Bramble head	Celestial	Pompom	Bubble-Eye	Oranda	Fantail	Broadtail Moor
Characteristics:												
Body Normal		×										
,, Slim	×											
,, Deep			×	×	×	×	×	×	×	×	×	×
Fins Rounded		×		×	×	×	×	×	×		×	×
,, Pointed	×		×							×		×
,, Long	×	×	×	×						×		×
,, Anal Paired			×	×	×	×	×	×	×	×	×	×
,, ,, Single	×	×										
,, Caudal Paired			×	×	×	×	×	×	×	×	×	×
,, Caudal Single	×	×										
,, Lacking Forking				×								×
,, Forked	×	×	×		×	×	×	×	×	×	×	
,, Dorsal Present	×	×	×	×	×					×	×	×
,, Dorsal Absent						×	×	×	×			
Scales Normal	×	×	×	×		×	×	×	×	×	×	×
,, Domed					×							
Head Normal	×	×	×	×	×		×	×	×		×	×
,, Hooded						×				×		
Eyes Normal	×	×		×	×	×		×		×	×	×
,, Protruding			×									
,, Pointing Upwards ..							×					
,, Sacs Beneath									×			
Nasal Septa Normal	×	×	×	×	×	×	×		×	×	×	×
,, ,, Enlarged								×				

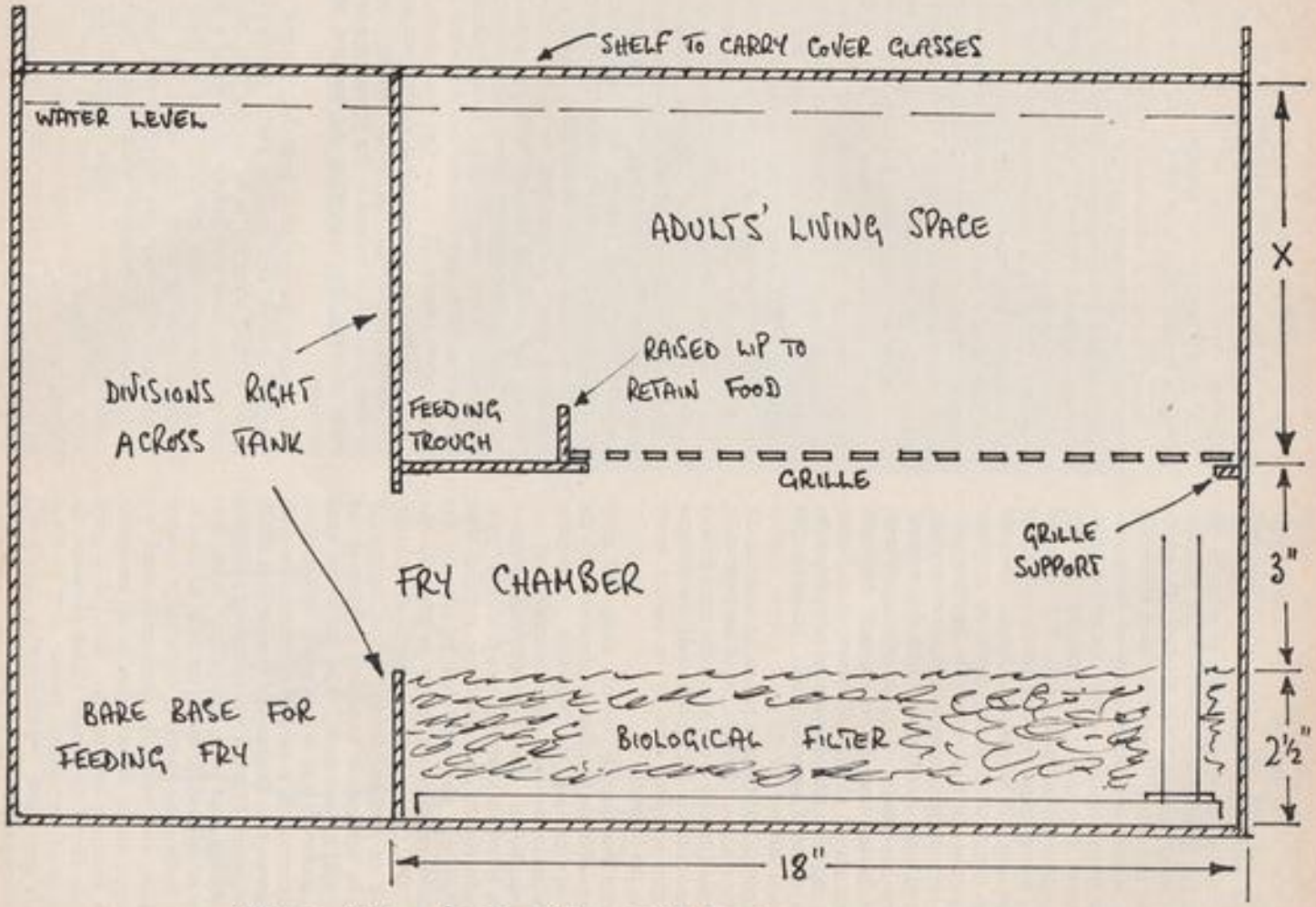
VIEWPOINT

by A. Jenno

MY EARLIER comments on the earthing of aquarium installations brought some interesting letters in the April issue. Mr. Austin of Crawley has made an attempt to earth his stainless steel tank with a metal strip from the frame to the water. The efficiency of this method will depend upon whether the junction between the stainless steel strip and the frame and the earth wire is electrically effective, and also upon whether the conducting abilities of the metal strip surface remain good after prolonged immersion in the aquarium. He will need to clean his earth strip regularly, and should ensure that its size is sufficient to carry enough current to blow out whatever fuse he has in the circuit quickly in the event of an emergency. The earth wire to the tank frame must also be of adequate size. Marine aquarists are nowadays moving away from stainless steel as an aquarium material due to some types being unsuitable for saltwater immersion, and so this method would hardly be applicable there unless a guaranteed marine-grade metal could be obtained. Mr. Parkin, of Walsall has a similar idea, but if we attach an earth probe to the hood as he has, then what happens if the hood is removed while maintenance, etc., is carried out? The immediate answer is that the electricity should be switched off, but I personally do not know of even one aquarist who does this as regular practice (except of course when changing most or all of the water), and while I would be the first to recommend it to others, we all know that such advice will not often be taken, especially amongst those with multiple installations. I am afraid that I must repeat my original advice that generally we are better off without earthed aquarium frames, for the reasons originally given. I would point out to both writers that I am a qualified electrical/electronics engineer by trade and as such feel competent to discuss the matter. I doubt that any qualified person or professional body could make an acceptable definitive statement on the problem. I know of no other similar situation occurring elsewhere than in aquaria with so many principles to be considered, and do not think the matter can be effectively solved in one way for all cases and types of aquatic environments. Again I repeat that perhaps the manufacturers should include earth terminals inside all immersible equipment. We must also remember that not everyone who buys aquarium equipment is in a position to fit metal strips and probes themselves, and that the average electrician, with no special knowledge of the requirements of aquarium inhabitants nor the effects of metals on some of them, would hardly be able to offer an appropriate solution. My original advice is borne out, I believe, as the best general *compromise* by the fact that commercially-made aquaria are not supplied fitted with earth terminals. After all we do not have to build our own terminals into electric kettles and steam irons, and suchlike.

My recent experiments with the large breeding traps led on to the development of what we might call a "trap-tank" I include a drawing. The unit built was 24 in. × 12 in. × 12 in., but on reflection the same sized trap section would probably be better built into a 36 in. tank so that there would be more room available to the fry, to avoid the necessity of moving them to other quarters too soon after birth. The problem was demonstrated by a large female swordtail which dropped about 200 fry at once. It might also be a good idea to include a removable division or gate at the end of the trap section to stop the fry hiding in the space under the grille when they are eventually being caught for transfer. The main reason for developing the idea further was that the business of feeding mainly floating foods in the other traps did not seem to provide such a good diet, and especially did away with the use of cooked peas as a source of vegetable food. The trap-tank includes a sizeable feeding trough for catching and holding sinking foods and, indeed, is the point of the whole construction. The tank at the moment holds a trio of large swordtails and is working well. The fishes look better on the complete diet and do not seem affected by living permanently over the grille. The grille is made of perspex strips glued together with Tensol No. 6 as before, but all of the other construction was carried out with glass pieces and silicone Sulober Sealant. One small point is that if the tank has a turned-in angle top, or glass ledges for supporting cover glasses, then the distance between these top pieces and the grille supports (distance X on drawing) must be deep enough for the removable grille to be fed into and out of the tank at an angle from its flat final position. Otherwise the grille could be made in parts and installed or removed in sequence.

A topic of interest to aquarists engaged in raising large numbers of fry in crowded environments is the study of the organic substances called Pheromones. These compounds are released into the water by the fishes from their bodies and act as a regulator upon the growth of the shoal or group when the available water volume is too small for the number of fishes present. A concentration of pheromones in the water thus results in stunted fishes, and is one of nature's methods of automatically controlling



SECTIONAL VIEW OF TRAP-TANK

excess population. Fishermen experience similar difficulties when small pools are overstocked through inexperience and find that forever afterwards only small fishes are caught, whatever their age. An interesting discussion on the matter is given in the book "Fish and Invertebrate Culture—Water Management in Closed Systems" by Stephen H. Spotte (John Wiley and Sons). One of the most interesting comments is that apparently many of these substances are species specific. Thus due to the action of pheromones the aquarist may provide the very best food, otherwise adequate space, and may deal with the nitrogeneous wastes satisfactorily, but after all this may still have stunted fishes. The only solution at the moment would appear to be some degree of regular water changing (Mr. Spotte recommends 10 per cent per fortnight as a general measure, but not specifically in connection with this subject), and perhaps the mixing of fry in growing-on tanks instead of having one species in each container. The subject should also be of interest to importers and large stockists who frequently keep fishes by species in crowded water volumes. It seems that however sophisticated air filtration systems become there still always occurs some reason for carrying out partial water changes. Perhaps one of our progressive suppliers could provide a test kit on the same lines as the present successful Nitrite kits. At the moment only the true scientists seem to be paying much attention to the subject.

As marine fish-keeping becomes easier and more popular, aquarists are keeping sea-anemones with the intention of studying the symbiotic relationship which can occur between these creatures and the small clown fishes. One common misconception is that this symbiosis is mutual, i.e., that both "partners" benefit equally and are better together than apart. While this may very well be true for the fish concerned, it does not appear to be so for the anemone. The Common Clown (*Amphiprion percula*) is sensitive to various diseases when improperly kept, and an anemone is invariably sensitive to the medicines used to cure them. The size of the usual aquarium anemones sold is not really sufficient for the establishment of a successful relationship with one fully grown fish, let alone the three or four which are often included. Fighting may occur over possession of the anemone, and when one of the fishes does acquire it as its base, it will often hide food in it. It is not feeding the anemone deliberately as some people think, and when the anemone is small the fish may put into it larger lumps or accumulations than the anemone can handle. Also, if a small anemone is forced to remain closed to escape the attentions of an enthusiastic partner then its *flooan thellae* may not be able to gather enough light and a general deterioration may set in. Finally, it must be remembered that not all of the available anemone species are symbiotic anyway in the wild, and that those which are not usually sand-dwellers by choice and so should be provided with rocks or corals for anchoring themselves. The use of a chemist's "clock glass" dish in the inverted position might provide a smooth clean base for a small anemone.

I recently bought a white-worm culture from one of the regular advertisers, and for the price of one pound and fifty pence received a gallon-sized plastic ice-cream container filled with soggy peat and containing, by generous estimate, about a desert spoonful of worms. Kept at a temperature of about 60°F and maintained just moist to the touch, the culture went sour after a month. A similar culture started with worms from an experienced friend, and kept on his recommendation in a mixture of two parts peat to one part fine sand (that sold for budgie cages was used) has now been going for three months with no sign of souring. Both were fed a cereal-and-water mixture in such quantities that the worms cleared it up within a week without any fouling from the food. The sand keeps the peat open and stops clogging, and also seems to reduce the number of small insects which eventually populate the culture. I wonder whether the professional worm breeders actually keep and breed their stocks in peat alone, or just sell it in this way. Another acquaintance recommends the inclusion of one or two earthworms in each culture, the idea being that they eat the unwanted insects (or perhaps their eggs) but do not affect the worm colony itself. This seems a doubtful assumption, but nevertheless worth a try particularly where cultures have to be kept indoors. Next to the inclusion of sand with the peat, and proper feeding, temperature seems most important. The worms do not seem to breed in any quantities below about 55°F, and leave the compost when it is heated above about 75°F, so for best results the cultures do need to be maintained at some reasonable temperature constantly. A small empty coffee jar with some holes bodged in the lid makes a handy water sprinkler for moistening the compost when necessary.

A concrete garden pool built last autumn was recently cleaned and refilled ready for stocking. A few goldfish were put in to test for lime content, and as these were still healthy after about a week, other fishes were then installed. One of these was a largish tench of about three and a half pounds weight, and after only two days this fish was seen to be covered in excessive white slime. On close examination in a small container the fish's back and sides were found to be covered with large lumps beneath the slime. These were under the skin as the skin pattern could be clearly seen over the lumps. A small tench was then found to be similarly

affected and was likewise producing large amounts of slime. None of the other fishes, which were goldfish, shubunkins and koi were affected at all. Both tench were put into clean, aged water in non-concrete containers, but died about a week later. It would seem that the tench must be more sensitive to lime in the water than other fishes, perhaps due to its having a proper skin without large scales, and thus would make a better indicator of lime content than a goldfish, although the method is obviously cruel and a chemical content test would give a better idea of conditions anyway. It might be better not to include any tench at all until the second year, there being no real need for their immediate inclusion in the pond as the other fishes will scavenge just as efficiently if they are not overfed.

Miss Beverley Hobson of Berry Brow, Huddersfield displays some of the rosettes which have won a large order from Japan for the show section of Regent (Printers) Ltd., Huddersfield.
Picture by *Huddersfield Daily Examiner*

1200 BRIGHTLY COLOURED rosettes will soon be despatched from the Show Section of Regent (Printers) Ltd., Huddersfield to a pet shop in Kyoto, Japan owned by Mr. Hirokazu Fukuoka.

These trophies in red, blue, green and gold will be awarded to prize-winning members of the Japan International Budgerigar Association.

This is the first order to be won from Japan by Regent (Printers) although they already export rosettes to many countries including France, Germany, Holland, Malta, South Africa, Australia, and U.S.A., and during 1974 it is forecast that production will exceed 250,000. Rosettes and other show emblems are manufactured in Huddersfield by a team of women, in a variety of styles and designs from high quality satin ribbon, which is first pleated and then sewn onto a joined piece of board and card, being finished by the addition of a personalised centre and the choice of pin, clip, or tie string attached. Over 400 copies of the Regent (Printers) Show Catalogue and price list are despatched each month to officials in the Livestock/Showfields of Birds, Rabbits, Horses, Cats, Dogs, Fish, other large and small animals and agriculture. Copies are available free of charge from Regent (Printers) Ltd., Wakefield Road, Aspley, Huddersfield HD5 9AA. Tel: (0484) 30919.

"After my Aquarium Heater failed I decided to take up taxidermy."

OUR READERS WRITE

Masoten

I'd like to take this opportunity to reply to Mr. D. Cook's letters published in the April and May editions of the *Aquarist and Pondkeeper*.

In his letter in the April issue he states that he is not acquainted with this drug, whereas by the May issue he rectified this gap in his knowledge to the point of being dogmatic about its use. I fully agree with him; it is not a novel treatment; experienced aquarists have been aware of this drug and its uses for very many years; Mr. Cook is quite wrong to suggest that "Neguvon" and "Masoten" is the same drug; they certainly have the same active ingredient, but "Neguvon" is a 98 per cent formulation whereas "Masoten" is only a 80 per cent formulation.

Although Mr. Cook is quite correct in saying that this drug can be absorbed through the human skin and therefore care should be taken by anyone handling it—in the recommended dosage of 0·4 mg/l, even a prolonged contact with the hands will do no harm. The obvious precaution of not getting any chemicals or drugs in close proximity to the mouth, eyes or open wounds should be observed, but it would seem reasonable to presume that commonsense will be shown by aquarists who are sufficiently experienced to use such pharmaceuticals. The active ingredient of these drugs breaks down very rapidly and if there were a danger period it would only be in the first few hours. It might be appropriate to mentioned that in case of an accident an antidote (Atropin-sulphate 1 per cent) is available.

As for "Flagyl," I have been aware that this drug has been used successfully in the treatment of various diseases including the hole-in-the-head disease in discus, but I should like to inform fishkeepers that since "Flagyl" is used in the treatment of V.D., the purchase of same, particularly from chemists, might be a rather embarrassing experience, especially for some of the younger or female hobbyists.

EBERHARD SHULZE,
London, N.W.10.

Delayed Opening

Having been to last year's open show of Southampton Aquarists Society, I looked forward to this year's show. However, what should have been a pleasant and interesting afternoon turned out to be fruitless, cold and annoying.

The show had been widely advertised and "Radio Solent" had given the opening times. On arrival, we saw a small notice postponing the opening till 3 p.m. Thinking there might be problems setting up a show of this size, we duly wasted time, only to find a second notice saying it would now open at 3.30 p.m. We waited on in the cold with a crowd of about two hundred, many of whom were young children. It was at 3.45 p.m. that a member emerged from the fastness of the hall to tell us that the judges hadn't finished as there were a lot of fish and he couldn't say when they would open.

We left at that stage, rather annoyed and disappointed at a wasted afternoon. Many others did likewise. I can only hope that those who kept their vigil in the cold were eventually rewarded. I cannot help feeling that if you advertise and wish for public support you should keep your word and open on time.

I hope that the next open show in Southampton is properly organised with the judging showing some consideration for its supporters waiting patiently for the sight of a fish.

R. J. MOODY,
c/o 34 Abbots Road,
Abbots Langley,
Watford, Herts.

Theory and Fact

In Readers' letters published in the May issue of *The Aquarist*, someone who signs himself (or herself) Goldfish breeder, has taken the trouble to instruct me on Mendel's Law of Inheritance. I am grateful for the attempt to improve my education and it was so kind of him or her. However, the writer was not to know that I was taught all about this law before I left school in 1909.

If anyone thinks that this law can be applied categorically respecting breeding fancy goldfish, that person must be living in cuckoo land. Let us take a pair of fancy goldfish, and call them X and Y. What are the chances of the fish reared from a spawning all being classified as 50 per cent XY, 25 per cent X and 25 per cent Y? We will assume that 1,000 eggs are laid. Some may be eaten and the parent fish, not being aware of Mendel's law, will eat the eggs at random, not taking one each of the eggs likely to produce the desired results. Then not more than half can be expected to be fertile and probably not more than half of the remainder will produce healthy fish. We are then left with 250 fish and these could could be either all X, all Y or all XY. The law may be all in order for judging the heredity of green peas, but to apply it rigidly to goldfish-breeding is, I think, more than even Gregor Johann Mendel ever intended.

I have been breeding goldfish since before the first

war and for the past 37 years have been breeding a line of fantail goldfish.

Youngsters raised from one pair can differ greatly from another batch from the same pair later in the season, no doubt due to the proportion of each type which eventually reach maturity.

A. BOARDER,
Ruislip.

Why Not Tidy Up Your Air System

Since setting up my tanks some time ago, I have put up with the usual conglomeration of plastic tubing and G clamps.

At best this is an unsightly and not very efficient system, so I decided to do something about it. My set-up consists of one 4ft. community tank on stand-with two 2ft. tanks for breeding and rearing set into the lower part of the stand. The community tank has three U/G filters and an airstone, and the two lower tanks each contain one inside box filter and one air stone.

I purchased two lengths of ½in. plastic overflow tubing from a plumbing merchant, each piece 3ft. 6in. long. I plugged each end by cementing a piece of round plastic into them, then made five holes along the tubing, four to correspond with the position of the filters and airstones and act as outlets, and one in the centre to act as inlet. Into the centre hole I cemented a piece of plastic tubing 6in. long. This reaches the air pump which is fixed to the wall just above the tank top frame. Into the other four holes I cemented four plastic air control valves. The unit was then fixed to the back of the tank with clips.

One of these units runs both 2ft. breeding tanks.

G. THOMPSON,
488 Scot Lane,
Marsh Green,
Wigan, Lancs.

Safe Failsafe

Regarding the article "Failsafe . . . Unit" in the May *Aquarist*, I would like to make the following points.

(a) The battery must be kept in a well ventilated area, well away from the aquarium, this is because in charging, storage, and use, "wet" batteries give off fumes which are dangerous to all life.

(b) Cables on the heating side of the circuits must be of the correct type, capable of carrying the amperage required. I would refer you to the table shown on page 62, and suggest that for the heating circuit, cable capable of taking 15 amps at least is used for a 100W heater.

(c) Consider using 12V for the control circuit, this would increase reliability without undue increase in cost. Twelve volt parts are readily available from the motor and model engineering trade. This would enable you to use a twelve volt transformer which could easily be used as a trickle charger to your 12V battery.

(d) If at any stage you are not sure, seek advice from someone with expert knowledge in electronics, or your own electrician. As Mr. Tunstall points out, this unit must be safe electrically.

BRIAN W. HAYNES,
Chairman,
Clwyd A.S.

B.M.A.A.

As most aquarists know the Midland Aquatic Festival will be held at Bingley Hall on August 15th, 16th and 17th. The West Midlands Group of the B.M.A.A. will be having a Tableau there, and hope to meet aquarists from the Midlands and all parts of the country. The show has all the promises of great success, and we at the West Midlands Group wish the organisers all the very best in their venture.

GRAHAM DALE,
Group Secretary,
West Midland Group, B.M.A.A.

Vitamin Requirements of Fish

I have read with interest Mr. Whiteside's article "What is your Opinion?" in the current issue of your magazine and I write to reply to Mr. Simmons' question on page 58, "How do we know if our fishes need extra vitamins—and are we doing any harm by giving them?"

To answer the question fully perhaps we should first of all understand what vitamins are and what they do.

It is well understood that the main ingredients of the diet are protein, carbohydrate and fats—the percentages of these ingredients are often quoted on fish food packs. These items of the diet make up the bulk food for the production of new body-tissue during growth, the continuous replacement of worn-out body mass during adult life and the provision of energy throughout the lifetime of the fish. But in order that all these processes should go on, the diet must also be supplied with additional substances called vitamins. Without them the bulk protein, carbohydrate and fat in the diet cannot be put into use by the body.

We can perhaps illustrate this by likening the body to the motor car. The food for the car is petrol—the material that provides the energy and makes the car go. But petrol cannot be burnt unless we provide a spark to release the energy.

Vitamins are the vital spark. They release the energy from the food so that it can be utilised by the

Continued on page 131

? 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.

COLDWATER QUERIES

by Arthur Boarder

Please tell me how to grow Water Lettuce in a pond, as no one seems to know.

Water Lettuce (*Pistia stratiotes*) is not a very suitable plant for a garden pond as it is usually deemed to be a tropical plant for a tank. Also this plant prefers to grow in fairly shallow water when its fine roots can reach down to the bottom of the pond and get nourishment from the base compost.

I have recently obtained some young fantail goldfish and now find that they have developed a blackish-brown coloration on the gill covers, around the mouth and edges of the fins. What is the disease and how can it be cured?

If the fish appear to be otherwise in perfect health I think that the coloration may be the result of a previous trouble. If the fish have had an attack of fungus on the parts named it is probable that after the disease had been cleared the new flesh or skin has started to grow. This is often blackish and if this is the cause then the black should soon disappear. If the black persists it would do no harm to give the fish a two-hour bath each day for a week in a solution of a desertspoonful of sea salt to a gallon of water.

I have a fibre glass pool, 8 ft. by 3 ft. with water 10 in. deep. I have a fountain and waterfall but the water keeps a dirty black and full of green *algae*. I cannot seem to keep the water clear. What can I do?

The pond is not very large and the water is not deep enough to function properly. As you have a fountain and waterfall it is a pity that you did not have a larger pond to begin with, as it is much easier to keep a larger pond in good condition. I expect that you have placed some form of loam in the bottom which is stirred up by the waterfall or fountain and that you have not enough growing water plants to choke out the *algae*. I note that you only have a tench and some gudgeon in the pool and these being mostly bottom feeders could stir up the mulm, etc., from the bottom. Clean out the pool and start again with no base compost but plant in small containers of soil only. Then go easy with the feeding and when the plants grow, all should be well.

I have a garden pond, 10×5×1½ ft., and I treated the water to kill green *algae* but now the water is brownish in colour and a brown sediment appears in the water if plants or the base of the pond are disturbed. What is the cause please?

If this brownish matter appears only when the water is disturbed then it is probably dead *algae*. If, however, the water looks beer colour most of the time then it can be a form of bacteria infesting the water. This can disappear as the water plants grow and should not be any cause for alarm.

We have just taken over a house which has a pond in the garden. We know nothing of fish-keeping and would like to know if snails are in order for the pond and how do we feed the five goldfish?

I advise you to get the book "Coldwater Fish-keeping" as advertised in *The Aquarist*. Meanwhile, the snails will do little harm in the pond even if they do little good. They can eat water plants and some of the food given for the fishes. Their young can be a source of food for the fishes but they are likely to be eaten before they are large enough to make much of a meal, and if they grow could be too hard for goldfish to eat. Feed the fish very sparingly as there is sure to be some natural food in the pond. Garden worms are appreciated by goldfish, but large ones should be broken before being fed to the fish. Suitable packet foods can be bought at pet shops.

I have a three-foot tank with filter and heater with 17 fancy goldfish therein. However, I cannot keep moors. Can you tell me why?

You may already have the limit of fish in your tank for its size and then if you add any more the newcomers can be in trouble. You did not state the sizes of the fish you already have in the tank. Providing it is 12 inches wide then it can hold 18 in. of body length of fish. Even with filter this does not help much. Also with a heater you are raising the temperature of the water which means that it will not hold as much oxygen as would a cool tank. Moors should be no more trouble to keep than any other fancy goldfish. Before buying any more fish check up on the number and sizes of fish you already have and if you keep below the limit you will find that you will be more successful.

I have recently moved to a property with a large natural pond, about 120 square yards in area and about 3-5 feet deep. There is no water running into it but I suspect there may be a spring. At present there are various water plants, a number of newts and the occasional grass snake. I would like to stock the pond with fishes and would like to know if carp will be all right?

Carp will do well in your pond, but they are not likely to be seen very much as they are dark in colour and like to remain fairly low down in the water. Some golden orfe and goldfish will show up better and higoi carp will do well. Watch out for the grass snakes as they can eat fish, I have even known a medium-sized one eat a fully grown frog. A book on coldwater fishkeeping will be a great help to you as you have no previous knowledge of the subject.

During the next three months I hope to take over a bar I have leased in Spain and wish to install two or three tanks for fishes, each about five feet long. Do you think I can get these out there or should I try to take them with me?

I do not know the position as to purchasing the tanks you need in Spain. I am enclosing the name of a man who deals in and exports tanks all over the world. He will be either able to supply the tanks or at least give you some information which will be useful to you. I am sorry I cannot give you any more definite information as this is rather outside my province.

I have an old goldfish pool which was made with concrete about twenty-five years ago. It is now leaking badly and I am getting on in years and cannot face remaking it with concrete. It has an awkward shape and so I do not think that a liner would do. What do you suggest?

I think that the only sure way of preventing any more leaks is to install a good type of liner such as Butyl. As for the odd shape, it is possible to join on any extra piece of liner to fit the shape of your pond. Send a rough sketch with the measurements of your pond to the dealer whose name I will include with my letter. Once this liner is fitted you should have no further trouble with leaks.

I am thinking of setting up a tank for coldwater fishes. What sort should I have and will it need a cover?

I advise you to get a plastic framed tank in preference to an iron-framed type. The former will need no more attention in the form of painting as it will not rust. A cover is always advisable as this not only keeps out the dust but can house a lamp. A light over the tank will increase its attractiveness and give a little extra warmth. A cover glass should almost cover the top beneath the main cover as this will prevent some loss of water due to evaporation.

TROPICAL QUERIES

by Jack Hems

Is the red-chinned panchax easy to breed and what is the breeding procedure?

This little cyprinodont is a ready breeder if it is given a small aquarium to itself and the surface is carpeted with floating myriophyllum or, say, riccia or ivy-leaved duckweed. Feed the fish well on live food such as gnat larvae, *Daphnia* or enchytraeus worms dispensed from a perforated worm-feeder, and leave them to court and lay eggs in the aquatic vegetation. This they will do every so often at almost any time of the year if the temperature is raised to about the upper seventies (°F). Eggs are laid over a period of days or weeks and the fry hatch in about a fortnight. Feed the free-swimming fry right away on brine shrimps, micro eels and large infusoria. In a thickly-planted tank there is really no need to remove the parents.

I have just bought two *Pelmatochromis guentheri*. Could you give me information on breeding, sexing or caring for this fish?

P. guentheri is a mouthbreeder and both parents

scoop out a depression in the planting medium for the eggs. After the female has laid the eggs and the male has fertilized them, he takes them into his mouth and carries them about until incubation is completed. All this time the female hovers about and drives away any other fishes present. Commonsense demands, however, that a pair are housed on their own. When the fry are free-swimming, the female still protects the male and the fry, that is against what she may believe to be threatening behaviour or molestation. Sexing during courtship is not difficult because the female assumes a reddish hue in her lower parts and plumper sides. In any case, she is usually the better coloured of the two.

Is it possible to mate a black molly with a platy?

I have seen several youngsters born of a mating between a molly and a guppy but I have never come across or heard of molly X platy hybrids.

Please give me some information about cultivating infusoria.

Fill some glass jars with water taken from an established aquarium, a healthy field pond or a filled vase in which cut flowers have stood for a time. Now introduce into these jars bruised lettuce leaves, thin slices of raw potato or pieces of the decaying skin of an over-ripe banana. Stand the jars in a warmish and rather shady place. Before a week is out the water in the jars should turn cloudy and develop a nasty smell. Soon, however, the smell and the cloudiness will die down. If, on holding the jars up against a strong light, you observe a moving cloud, or clouds, of white specks or microscopic "hairs" moving about, then you can be certain infusorians are present.

I have been told that the female dwarf gourami (*Colisa lalia*) dies during courtship or after laying her eggs. Is this true?

It is not true. All the same, it is a habit of most male anabantids to bully the opposite sex, and when nest-building and egg-tending are in progress this bullying becomes markedly more spiteful. Therefore in order to protect the female from too much bullying, which sometimes proves fatal, it is necessary to give her plenty of plants to hide in. Better still, leave the male with his beloved eggs and remove the female to another tank.

I have about 40 lb of coral in a tank originally intended for marine species. Recently, however, I decided to go in for freshwater tropicals. Do you think I should remove the coral before adding any freshwater fish to this tank at present filled with water from the tap and left standing for about a fortnight?

Take out the coral and water and begin all over again. If you leave things as they are you will soon have a tank of water too hard and alkaline for most of our popular species of fish.

Please can you tell me something about *Myloplus schultzei*?

In its natural state *M. schultzei* attains a length of about 8 in. As a rule, it does not grow so large in captivity. It thrives well on a diet of green food such as algae and soft-boiled table greens, various worms, dried food, and meat, and does best at a temperature in the upper seventies (°F.).

I should like to know how large the giant gourami will grow in captivity?

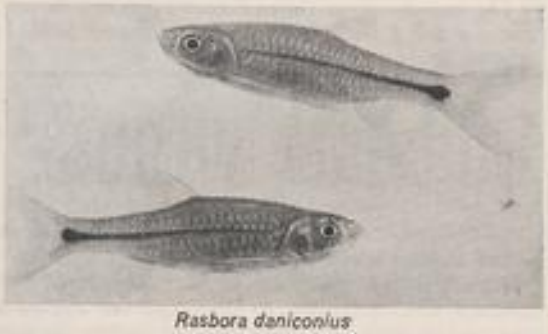
If you mean *Osphronemus goramy*, the brownish fish marked with dark vertical bars, then the answer is about 15 to 18 in. On the other hand, if the fish you have in mind is brownish red adorned with blue vertical stripes, then the maximum length is about 4 to 5 in. The scientific name of this species is *Colisa fasciata*. It is usually called the giant striped gourami.

What information can you give me on the behaviour and requirements in the way of temperature and food of the dragon fin?

The dragon fin or *Pseudocorynopoma doriae* from Paraguay and Southern Brazil flourishes well at the regular tropical range of temperature and is neither a bully nor a faddy feeder. In short, it is suitable for a community tank and takes any live or dried food.

Please supply me with the scientific name of the cockatoo cichlid.

The cockatoo cichlid is known to science as *Apistogramma cacatuoides*.



Rasbora daniconius

Would you recommend the slender rasbora as a suitable inhabitant for a community tank?

Yes, providing its future home is of a fair size and not short on oxygen; for *Rasbora daniconius*, to give this fish its proper name, is an active swimmer that reaches 4 in. or thereabouts.

FOR YOUR INFORMATION

NO ALLY PALLY!

For the past five years, the month of July has been notable for the presentation of London's largest and most popular aquatic event. We refer of course to the Alexandra Palace Fishkeeping Exhibition which regretfully will not take place this year.

The Federation of British Aquatic Societies which has contributed a great deal to the success of past Shows, felt unable to offer its services on this particular occasion, and there was insufficient time to consider other arrangements. Consequently we had no alternative but to abandon the project for 1974.

Numerous enquiries have been received from the trade, members of the public and aquatic clubs throughout the country. We can only offer sincere apologies for disappointment caused by the action taken, which in this instance was dictated by circumstances entirely outside our control.

Once again we shall be playing our not inconsiderable part in the organisation of the British Aquarists Festival, now reputed to be the largest Show of its kind in Europe. Don't forget the dates which are 12th and 13th October. The venue will be Belle Vue, Manchester, as usual.

1973 TROPHIES

The F.B.A.S. have asked that all 1973 award winners should now return their trophies to the Show secretary:—D. Lambourne, Esq., 7 Wheeler Court, Plough Road, London, SW11 2AX.

SOUVENIR ISSUE

As you may know, 1974 is the year in which we celebrate our golden jubilee. The event is to be marked by a very special edition which was originally scheduled for this month. However, due to various industrial troubles earlier in the year, plus other factors, this intention did not prove to be practical and it has now been decided that the **Souvenir Issue** will in fact, be published in October. We expect it to be considerably larger than usual, containing many special articles in addition to all our regular features. May we suggest that you order your copy early! !

OUR READERS WRITE

continued from page 127

body. Modern fish nutritional research has established over the last decade, with reasonable accuracy, the fishes' requirements of all the dozen or so vitamins they need and it is especially interesting that some of the most recent work has drawn attention to the particularly high vitamin requirements of fish as compared with other species. Therefore a modern scientifically formulated fish food can include these vitamins at just the level required by the fish to ensure maximum natural benefit from the food.

Mr. Simmons expresses concern about over-dosing with vitamins. This can occur, not only with fish but with other animals and human beings as well and is known as hypervitaminosis. But this is the result of gross overdosing, i.e. regular feeding, over long periods with a diet containing *many times* the true vitamin requirements of the fish.

For instance, an actual case of hypervitaminosis resulted in an area of North America where salmon were being farmed. It happened that a large supply of raw seal and whale liver became available at low cost and this was used as a major protein source in a salmon diet. The *very* high vitamin D content of these livers resulted in hypervitaminosis in the young salmon. But it is only with such extremely unbalanced diets that such trouble occurs—it will never result from the use of correctly balanced foods.

As to Mr. Simmons' other query—How to recognise if fish are short of vitamins—this is a difficult one to answer. Not because there is any shortage of descriptions of vitamin deficiency symptoms—but because there are so many. To quote from one modern text book on fish nutrition, deficiency symptoms can include, "paralysis, cataracts, convulsions, anaemia, slime patch disease, scoliosis, clubbed gills, poor growth, anorexia and increased mortality." Perhaps the practical way to look at it is that if your fishes are not doing well and if there is no sign of infection or infestation and if the aquarium water is in good condition—then consider that the diet may be inadequate and, in particular, that the vitamin content is insufficient. The problem can be dealt with in two ways—either by adding vitamins to the aquarium water as in the form of our own product Phillips Aquavite; this method is especially suitable where fish are not actually feeding. Or, ideally, by feeding a food with a formula based on the vitamin levels indicated by the latest nutritional research, such as our Phillips Superfood.

DR. J. ELLISON,
Phillips Yeast Products Ltd.

WHAT IS YOUR OPINION?

by B. Whiteside, B.A.

Photographs by the Author

During the twenty-five or so years for which I've been keeping fishes, I've had to contend with a variety of different problems; however, at the moment I'm experiencing my most difficult period in fish-keeping —like many other aquarists—as in my part of the world we are suffering the effects of severe power cuts of ten or more hours at a time; and there's the possibility of a complete power shut down at any moment. I'm writing this during the month of May and although the weather is not cold it's still cool enough to require a coal fire in the living-room all day. Fortunately the fire provides hot water and, at required intervals, I've been removing some cool water from each of my six aquaria and adding hot water. To date none of my fishes has been lost; but it's a rather trying time. I'll keep you informed of my continuing experiences as this feature progresses. Any further designs for battery operated heating units, from readers, will be gratefully received!

A much more cheerful note creeps into the feature now with another letter from Mr. David Richards, of "Greenroofs," Newport Road, St. Mellons, Cardiff. Regular readers will recall my earlier requests for aquarists to write to Mr. Richards. He informs me that he thinks his spate of letters has ended with a final total of **151** replies, including some by air mail from Canada. He hopes that the postman will now pass him by to allow his typewriter to cool down. (I'll bet he does!) Mr. Richards thinks that his long list of names and addresses—which includes a good many ladies who are very keen aquarists—could be provided to those readers who would like to correspond with other aquarists. Let me know what you think of Mr. Richards' idea. He concludes his communication by saying: "I must not end this letter without again adding my thanks to you for the wonderful response to the appeal you made." (It was a pleasure to be able to help, Mr. Richards.)

Mr. P. Jones lives at 20 Chatham Grove, Withington, Manchester, 20. He writes: "At present I have two adult (2 years old) brown discus and six blue-faced red discus (approximately 2 in.). Can anyone provide sexing tips for discus? I understand there are experts out there who lay claim to this feat. I feed my discus on *tubifex*, white worms and *daphnia*. Occasionally I gave them a pinch of Vit-a-min flake food. I find this to be an especially good flaked food for the larger fish as the flakes are quite solid and don't disintegrate in the water. I'm presently trying to fathom out the ifs and buts of cation-anion exchange resins for providing my discus with pure water. Can anyone provide information on how to obtain exchange resins fairly cheaply? I've heard of a company called Puraqua, of 5 Beech Avenue, Lane End, Bucks., which sells ion exchange water kits which use disposable resin cartridges. The volume of high quality water provided per cartridge is, dependent on the type of water being demineralised, Manchester 80 gallons and London 13 gallons. The cost per cartridge is £1·80—not very good value to the average person. I'd like to see your excellent magazine start an exchange column as I'd rather give my fry away or exchange them than sell them to a dealer for a pittance, then find he's charging the ceiling for them. Does anyone have any first hand tips on the rearing and breeding of discus?

"I have used a Wotan tube over one of my 36in. × 15in. × 12in. tanks for ten months and have not noticed any beneficial plant growth. I've no success in growing plants at all! In both my 36in. tanks I have Algarde U/G filtration and Airstream outside filters. I use a tip I picked up for my outside filters. I put my sphagnum moss in the cut off foot of a pair of tights and it keeps the outside filter from getting clogged up with peat. I have just fitted one of my tanks with plastic plants for the first time; this tank contains three firemouths, five *P. kribensis* and a bronze catfish. Since they now have more hiding places the firemouths seem to venture into view only when they're sure there's 'no-one out there.' The first few times I used *tubifex* I was plagued by white spot. I used S.W.3, which makes the water green but clears the white spot in no time at all. I found that the method I used for cleaning the *tubifex* seemed to be at fault. After washing thoroughly I stood the *tubifex* in a Diseasolve solution, then rinsed this out and stood the *tubifex* in clean water until required for feeding. I now think that the *tubifex* should be left in a weak Diseasolve solution as the contents of the gut were not being touched by the first method and were re-polluting the clean water after the Diseasolve treatment. I've heard a nasty rumour that Sterba's new edition will cost £7·50. I hope this is just a rumour as I am hoping to purchase a copy in the region

of £5 to £6. I'd be glad to hear from any cichlid enthusiasts who would like to exchange ideas and information." (It would be cheaper to collect some clean, pure rainwater than to purify tap water; however, the former is not often possible—particularly in July. Your plants might grow better with the addition of some tungsten bulb lighting combined with a cut down in filtration levels, particularly U/G filtration levels. Many tanks are kept so clean that plants die of starvation).

Mr. W. F. Clark's home is at 56 Braeside Road, Greenock, Renfrewshire, and he writes in reply to a reader's recent letter about vitamin supplements for fishes. Mr. Clark states: "Like other substances such as sugar and salt, vitamins are known to be toxic in excess. Health food people have known this for a great many years but accept that the quantities which would adversely affect humans are so high as to present a negligible risk to someone using supplements. In medical experiments people have been given high dosages of vitamins in order to build up strong residues in the body. Vitamin C has often been used in this way in experiments with the common cold." (I'll break off here to say that I'm a firm believer in the use of large doses of Vitamin C for treating the common cold—as advocated by the eminent scientist and winner of two Nobel Prizes, Dr. Linus Pauling). Mr. Clark continues: "Vitamin E, as an ointment is believed to have antiseptic qualities and aids healing. I have dissolved aborting live bearers' eggs using vitamin solution, but on the two occasions when I have tried it the fish have eventually died, although one, a platy, appeared to be clear in death. Vitamin supplements can perk up fish, fed exclusively on dried foods, quite noticeably and can also clear opacity of the lens of telescopic eyed goldfish. Recommended dosages supplied with vitamin supplements for aquarium fish tend to be rather low, and I have on occasion and for periods of months used up to 1 and 1/3 times the dosage and also cut the period between 'shots' by 1/3 with no ill effects. When the fish has become something of a vitamin pill, supplements can serve no purpose whatsoever." (What are other readers' opinions?)

Andrew Ellis is 14 years old and resides at 7 Ullswater Road, Blackpool, Lancs. Amongst other things in his letter he reported that on examining his tortoises on 22nd February he found them both awake. At that time he had not put them into the garden.

No. 33 Shakespeare Avenue, Grantham, Lincs., is the address from which I received Mr. J. McCoy's letter. He says that there is little difference between keeping freshwater tropicals and marines and that he would have kept marines years ago had he known it was so easy. He writes: "My tips for marines are as follows—if keeping them in a tank as small as mine (30in. × 15in. × 15in.) change about 4 to 5 gallons of the water about every eight weeks; give the fish live foods; never give them more food than they can eat in 2 minutes; use a good brand of sea trace booster every week; have plenty of coral in the tank, plus a good layer of coral sand to make the inhabitants feel at home. These 'six' are the basics that I have followed and up to now I have not lost one fish. If you could tell readers just how easy marines are to keep I am sure more would go in for them. I can tell you that in the past I have had more trouble with freshwater tropicals than with marines. When are you going to set up marines, Mr. Whiteside?" Mr. McCoy is fifty years old and has kept fishes all his life. (Douglas Rose had just about persuaded me to enter the field of keeping marines; the continuing

power cuts have changed my mind at present! Photograph 1 shows some of the corals, tube worms, anemones and plants in Douglas's marine aquarium).

My thanks to the Goldfish Society of Great Britain for sending me the latest copy of their Bulletin. Although it only stretched to six duplicated sides of paper, the standard of printing and content was very high. As the Bulletin is copyrighted I cannot quote from it. Perhaps some member of the society would care to let me know if the keeping of exotic goldfishes is as popular as it used to be or if the growth of the tropical side of the hobby has affected it.

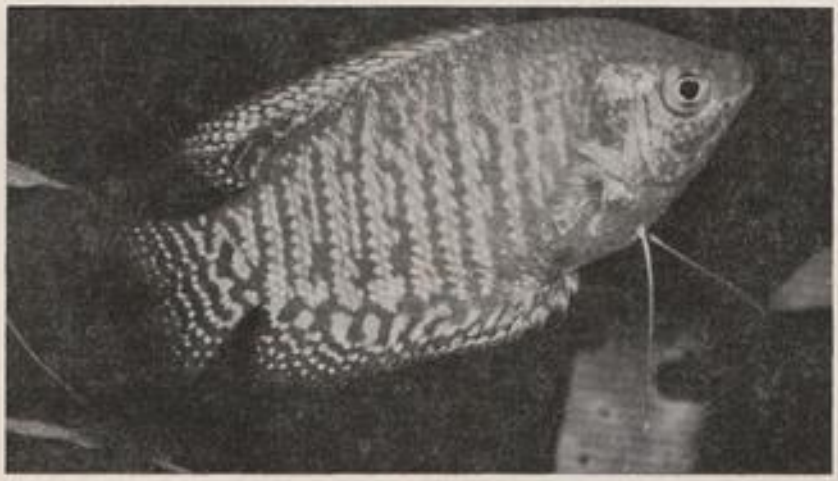
Mr. M. Guthrie is the Hon. Secretary of Barry A. Society, and his home is at 4 Nurston Close, Rhoose, Glam. CF6 9EF. He thinks that those aquarists who like the larger fishes do so because of the challenge connected with producing large fishes of good quality. He writes: "We breed and keep them because they become individuals with characters of their own, and they develop their own peculiarities and identities. The Oscar rates high on this score and is hard to beat for a type of intelligence it displays. Tetras and smaller shoal fish also have their place, but more in the show tank where they add spectacle to a well planted and laid out tank. Re. your request about growing Java moss—I would like to know where you can buy it. I do not seem to be able to get it or see it advertised in the pages of your magazine." (I got mine, several years ago, from the firm of Mr. D. Smith, of 20 Park Street, Kidderminster, Worcestershire. I don't know if this plant is still available from Mr. Smith but I suggest that you write to him and ask. It's worth tracking down. If you are unsuccessful let me know.) Mr. Guthrie continues: "One of the disadvantages of aquarium shows is, in my experience, that they shorten the lives of your fishes considerably. I think we should divide ourselves up mentally into fish keepers—whose best fish never see a show jar; and the so-called 'pot hunters' of the hobby—whose fish are in and out of show jars until not required for further use. But not to decry aquarium shows. They also have advantages in that you meet other fish keepers and talk shop and exchange ideas and experiences that must further your knowledge. You can also see fish standards; and any new products on display. In the end you must form your own opinion. Do you keep fish a short time purely to show, or keep them a long time for your own pleasure?" (I keep my fishes purely for pleasure and am not interested in showing them—except to those who call at my home asking to see my aquaria. I keep aquaria—as opposed to tanks containing fishes. There's a subtle difference in my opinion. What are the opinions of other readers on these topics?)

"Reading through your column . . . I noticed a letter from Mr. J. Cheese, of Kent, concerning some unfortunate experiences with *Colisa lalia*, the dwarf gourami (Photograph 2). I had three pairs in my own community aquarium and, like Mr. Cheese, I lost all but one female through dropsy, though the characteristic scale protrusion was lacking. The disease is a very interesting one and there are a few points I would like to mention concerning it. First, according to van Duijn in *Diseases of Fishes*, *Colisa lalia* is one of the few exotic fish species which is highly susceptible to the disease, comparatively speaking. Secondly, van Duijn also suggests that the disease is contagious, although most exotics are fairly resistant to it. My own experiences seem to confirm this opinion. At the same time that I lost my *C. lalia*, I also lost a male guppy from the same cause. All other fish in the aquarium were perfectly healthy and in tip-top condition. Of course, the deaths may have been coincidence, but I bought a pair of guppies together from the same stock, and the other one of the pair remained perfectly healthy. Third, the scale protrusion characteristic of dropsy is in fact a secondary infection, not directly due to the dropsy condition itself. Fourth, van Duijn recommends treatment of the disease using 60 mg. of chloromycetin per pint of water. This raises a point about the availability to the public of these antibiotics, freely available in the U.S.A., where the drug laws are much less strict than here. I wonder if you or any of your readers know to what extent these drugs are available over here, and where one can obtain them? Of course, the expense of the drugs rules out their use with all but the most expensive fish, I should imagine. P.S. Tetra Werke could make a small fortune with a new market for Tetramin. My cat loves it!" This letter reached me from Mr. M. Biggs, of 5 Salisbury Street, Hull, Yorkshire. (I once published an article on the treatment of a serious fish disease using chloromycetin. That was a number of years ago. I obtained the drug, in tablet form, from my local vet. I had no difficulty in obtaining the drug from him when he knew for what I required it. I suggest that you contact your local vet.)

Although only 13 years old, Neil Sampson, of 53 Kennedy Square, Leamington Spa, Warwickshire, CV32 4SZ, has kept cold water fish for over three years. Neil has the following to say about plants for the cold-water aquarium. "The two best plants that I have found are Amazon Swords and *Elodea crispa* (*Lagarosiphon muscoides* var. *major*). The swords grow at a good, steady rate however much abuse the fish give out. The *Elodea crispa* grows well under good light. The goldfish like to eat it, but the plants always keep a 'full' growth. I have never had any success with floating plants as the goldfish finish them off within a week of their being put in. I would like someone with experience in tropical fish keeping to write to. Can you help?" (Would anyone care to write to Neil, please?)

No. 29 The Heights, Northolt, Middlesex, is the home address of Mr. C. Greenman and the first part of his letter is about his tortoises. He writes: "In the case of our Toby, and her recently acquired companion Tabby, they were still comparatively lively at the beginning of November although no food had been taken for about three weeks previously. We considered it best to put them away in their box of straw on the grounds that however little their movement there would be some use of energy which was not being replaced. We are a little worried as to whether Tabby will survive; she was acquired in the late summer—a cast out pet—and in our opinion was a little light for her size and may not have had sufficient time to feed up well. When Toby emerged from her hibernation last year we found she had worms and we had to treat her with a liquid obtained from the vet. I am afraid I don't know what it was. I believe this is a fairly common experience; but perhaps some readers may have views on this. Toby laid no eggs last year (she laid five the previous year but we were unable to hatch them) and I hoped to get a male; but had no luck. My local dealer had only one batch of tortoises early in the year. I wonder if imports are being restricted? There may be some degree of protection later under the Convention on International Trade in Endangered Species of Wild Fauna and Flora, but this Convention is not operating yet. It would be interesting to know if readers have noticed this lack of tortoises for sale in other parts of the country; it may be just a local occurrence.

"On the 'fish front' our tank has been dominated for the last 2½ years by a pair of tinfoil barbs, but they both died recently within a week of each other. There were no signs of disease so I assume their life span, within the limited confines of the tank, had been completed. They had both attained a length of about 7in. I now have to start re-stocking with fish and plants; and I was interested to read your remarks about the use of lead wire. My own feeling, after the 'heavy metal' scare, is to stop its use; apart from the slight dissolving which you mention I feel that there may be some scouring action from the gravel which may release minute particles into the water. Probably I am being unduly pessimistic on this but I have found that most plants do not need any weighting, especially if they have a fairly good root system; and with *Elodea densa*, the only plant I used whilst the tinfoils were in residence, I found about six pieces together with string and this kept them anchored fairly well. You raised the question recently about tank clearing. I have had an angle iron tank for five years and this necessitated a complete clear out after 2½ years for de-rusting. Since then it has not been completely cleaned out; and in my experience, using a U/G filter plus a small internal filter and the occasional vacuum clean, it is not necessary. The tank is, however, getting badly rusted at the top again and will need to be taken right down again in the near future. Have readers any tips on rust-proofing tanks? I tried galva-froid, zinc based paint before, but it is not the answer. I suspect that the high humidity within the system will always debar any attempt to solve this problem.



"I would like to make one plea about *The Aquarist*: it is extremely good value, but do we have to have so much space devoted to Societies' reports? It would be quite interesting to read about their activities generally—but please, not these interminably long lists of prize winners. I cannot think that these have any interest other than purely local." (I would certainly be pleased to hear from readers who have

Continued on Page 140

From a Naturalist's Notebook

by Eric Hardy

Is THIS year's "Save the Village Pond" campaign to bring any more lasting results than the copy of American Wildlife Week, which received the Cissie title of National Nature Week and became a banner headline for the births and marriages column of the local works magazine?

Britain's 300,000 ponds are declining—about 2 a week in Cheshire. A West Wiltshire farm with 13 ponds on its 120 acres in 1880 has one today. Maybe the term village-pond was too confining. The angler's field-pits are more important to save our 8 rarest dragonflies out of a British total of 27 species. Yet our local county naturalists' trust remained unco-operative to the local campaign when the best stonewort haunt in the area, a pre-war nature-sanctuary, Allerton 40-Pits was filled in by a building speculator recently. The best American wader-ponds in Lancashire were filled in by the local farmer at Hundred End without a complaint. Many an angler has seen his rudd or tench-pit ruined by shippon drainage.

Pond cleaning in action

It is exactly a century since the intrepid Frank Buckland aroused interest when he began the first series of his famous *Curiosities of Natural History* with "A Hunt in a Horse-Pond." There aren't enough horses nowadays to keep the village ponds in use; but in several places people who like to be called bird-lovers turn them into duck-zoos of flightless cripples with half their wings clipped. These eat up the water plants, their droppings encourage an algal bloom, and on the bank they cause bare patches of mud to form. Sticklebacks were numerous enough in Pennant's time to be used to manure the land. Many schools now have difficulty in finding a pond near enough to show them to a nature study class.

For generations freshwater biology was biased towards the frog, so that conservationists find relatively little information available about the ecology of toads, for example, particularly the now scarce natterjack. While it is easiest to sex common toads by their difference in size (the thumb-pad is far more consistent in male frogs) natterjacks often show no such difference. Natterjacks are described as breeding in brackish water; but to what degree? When over 100 breeding natterjacks made a record post-war count on their only Deeside haunt on West Kirby shore marsh below the golf dunes last Easter, some were using partly tidal outer pools with a high pH of 8·54 and a chloride content of 11,360 ppm. In marked contrast, however, others resorted to inner, less alkaline and less salty pools of pH 7·4 to 7·81 and chloride content of only 710 ppm. My pre-war attempts to establish them in North-west waters inland of the coast failed; but the late L. G. Payne told me before the war that he found some in Hampshire's Wolmer Pond, which obviously had none in Gilbert White's time.

1974's mild and early spring, with occasional night frosts of short duration, made a long spawning season with many stops and starts for frogs. Probably more older specimens survived the mild winter, for great quantities of common toad spawn preceded the natterjacks. The editor tells me that he experienced two quite separate spawning sessions of common frogs in 3 of his local areas. In his garden, spawn was deposited Feb. 25 to 28 inclusive, with further depositions on March 25 and 26. Between these dates toads spawned in the same pond. Five miles away, on Amberley Wild Brooks, Sussex, frogs began spawning on Feb 21 and continued for 3 or 4 days. When tadpoles from the first depositions were swimming on

March 15, a second spawning occurred over 2 days. Similar 'gapped' spawnings occurred in another garden pond. Incidentally Mr. Perkins successfully reintroduced frogs to his Sussex pond where they had vanished some years earlier.

Individual frogs can be recognised by distinctive markings and colour pattern, just as wild swans have been individually observed annually.

From the first January spawnings on frost-free elevated areas like Dartmoor, to the last April or later spawnings on more eastern lands where late frosts sink to lower levels, the frog's spawning season is unduly lengthy. The *Quarterly Journal of the Royal Meteorological Society*, Vol. 70, No. 304 (1944) for instance records the first findings of 1943 frog-spawn from January 16 at Widecombe-in-the-Moor (Dartmoor) to April 8 at Thetford in Norfolk, irrespective of later spawnings. That was also after a mild winter and spring, with only brief spells of cold. In Vol. 62, No. 241 (1931) the same journal recorded that 1930 again showed a 12-day break in first frog-spawn dates between S.W. England and South Ireland (the later). An unusually warm February was followed with a frosty spring's lateness of croaking frogs, and out of 161 findings of first frog-spawn, the earliest was Feb 10 in S.W. England, and the latest March 28 in E. and N. Midlands. The mean of all districts was Mar. 11. Frog-spawn was found at 800 ft. on Mar. 8 in Northern Ireland that year, though the frost killed the first frog-spawn at Lemmington, Northumberland.

I was surprised to read in the new Fontana paperback 75p edition of the very informative New Naturalist book on *Dartmoor* that Prof. L. A. Hervey, one of its authors (with the late D. St. Leger-Gordon), states that frogs in Headland Warren Pool are often stimulated by mild weather to begin spawning by early or mid-March. This is much later than what the annual pre-war phenological surveys revealed. He assumes that late frosts kill many of them at this altitude; but the number of tadpoles in summer doesn't show much loss. Despite more rain than Manchester, Dartmoor has few ponds and no natural lakes, only reservoirs. Numerous streams and rivers flow from its bogs, with stoneflies and caddis-flies their main water-life. The only fish mentioned in the book's new edition are salmon, trout, grayling, loach and miller's thumb: no minnow, eel or lamprey.

The larval characteristics of different species of crawfish or spiny rock-lobsters are seldom available for identification of even commercially important species. A helpful 44-page illustrated guide for South African workers, received from the S.A. Association for Marine Biological Research, P. F. Berry's *Palinurid and Scyllarid Lobster Larvae of the Natal Coast*, describes a dozen species and their larval ecology. More distribution details were filed for reference in the S.A. Museum, Cape Town. From Burnham-on-Crouch Fisheries Lab. comes D. Key's 12-page 1973 Survey of *Oyster Grounds in the Solent* (MAFF Shellfish Information Leaflet 31). This covered Stanswood Bay and nearby Calshot Castle, opposite Cowes, which yield an annual crop of 2,000,000 oysters of legal size. At least a similar quantity exists in other less sandy parts of the Solent, some of them getting buried by continual dredgings. More could be cultivated with large quantities of shell-cultch for settlement areas. Working of the fishery has reduced the number of slipper-limpet pests.

I hope that the sponsoring of the Save the Village Pond campaign by Ford Motor Company is a change of heart towards conservation. In 1962, when they built their Halewood factory near Liverpool, I visited them and pleaded in vain with their director to preserve the pondweed-moat of the ancient Hutte of Hale, the oldest known building in Lancashire, with its adjoining plant of lesser periwinkle whose site was the oldest recorded wild plant site in Lancashire.

The term voluntary has different meanings nowadays. Assistance in saving village-ponds may be obtained from conservation volunteers—who will charge about £1 per day per volunteer to cover expenses. The conservation work of local angling clubs seldom gained credit in natural history circles. When ponds were threatened by building projects, these volunteers netted their fish and transplanted them to other waters; or they rented a derelict farm-pond and stocked it with tench or carp. Later, duck-shooters would sometimes plant-up a pond with covering vegetation, thus improving its wildlife. A classic postwar example in Salop excavated and planted up a pool where none existed.

WHAT AM I?

By Hilary Maynard

My first is in ASSAULT but not in FIGHT,
My second is in BLINDNESS but not in SIGHT,
My third is in BRILLIANT but not in HUE,
My fourth is in STICKY but not in GLUE.
My fifth is in VEGETATION and also in PLANT,
My sixth is in OBLIQUE but not in SLANT,
My seventh is in COOKERY but not in BAKING,
My eighth is in MANUFACTURE and also in MAKING.
My ninth is in COMPOST but not in HEAP,
My tenth is in AFFLUENT but not in CHEAP.
My eleventh is in ANYTHING but not in ALL,
My twelfth is in VISITING but not in CALL.
My last is in WEIGHT but not in SIZE,
My whole is white-coloured, but I don't have pink eyes!

Answer on page 151.

SNAKEHEADS

by Jack Hems

EVERY SO OFTEN readers write in asking for information about snakeheads. Reading their letters almost always gives me the impression that they are completely unaware of the predatory habits of the species they are interested in and the large size most of them attain. For clearly snakeheads are among the giants of the waters they inhabit in the wild. Indeed not a few reach a length of about three feet. Yet there is one species, little known, which does not exceed three inches. It is known to science as *Ophiocephalus guacha*.

The *Ophiocephalidae*, to give the snakeheads their family name, range in nature across tropical Africa and through India and Pakistan eastwards to China. They are also widespread in Malaysia and Indonesia.

Essentially snakeheads are elongated fishes rounded anteriorly and compressed posteriorly. The head is bullet-tapered, with a large mouth bristling with conical teeth admirably suited to securing their prey: mostly other fishes of a swallowable size. Small fishes they gulp down faster than the eye can follow. Larger prey they dispose of in a few champing movements of their strong jaws. Two bony prominences, like short stalks, are present on the snout. An accessory breathing organ which takes the form of a pouch-like outgrowth from the gill-chamber enables a snakehead to breathe atmospheric air. Snakeheads, therefore, can stand poorly oxygenated water (yet for how long is anybody's guess). If conditions do not improve or the water goes down it is not uncommon for the fish to migrate overland in a serpentine manner to another and more favourable home. Then again, not infrequently during periods of drought, the fish instead of migrating to pastures new will settle under a thick layer of mud to await the return of rain. In the matter of finnage, the dorsal fin extends like a ribbon along the back from a point above the pectoral fins to the tail. The anal fin is not much shorter. The caudal fin may be rounded in some species; in others shaped like a spear.

Most snakeheads are handsomely garbed. Vertical bars, spots, broken horizontal stripes, solid stripes and a combination of oblique bars and irregular blotches and marblings in bright or subdued hues adorn their sides.

Snakeheads have been known to tropical aquarists for more than sixty years. Arnold and Ahl in their classic work entitled *Fremdlandische Susswasserfische* (Wenzel, 1936) describe and illustrate seven splendidly marked species. In their native lands snakeheads, when captured, are treated badly.

> "In India and China itinerant jugglers carry these fish about in tubs with little or no water, and exhibit them walking on land. They are highly esteemed as food. The cruel practice is adopted of cutting up the fish alive 'the fish selling dear while it retains life, while what remains after death is considered as of little value' (Francis Hamilton, *An Account of the Fishes found in the River Ganges and its Branches* (Edinburgh, 1822)."

So Hervey and Hems in *Freshwater Tropical Aquarium Fishes* (Batchworth, 1952).

In the aquarium the requirements of snakeheads are, first and foremost, room to grow. Next, generous

feedings of live fishes such as cyprinids of various species. However, some species or individual specimens are more accommodating and can be persuaded to take meat or strips of raw cod say or fresh haddock. Clearly, then, snakeheads are not fishes for a community tank, though small ones may be kept for a time with other fishes too large to swallow. For food, earthworms will do. Snakeheads are not active. That is to say they do not swim to and fro in the water like barbs or energetic characins. Indeed, young snakeheads tend to shelter in thickets of plant life. For all that, snakeheads are not timid fishes and soon become used to their owner and, quite naturally for species with an insatiable appetite, associate the removal of a glass cover with the introduction of food. After a few months in captivity they show no fear and make spectacular and interesting inhabitants of an aquarium.

According to Günther Sterba (*Freshwater Fishes of the World*, Vista Books, 1962), a number of species have spawned in captivity. The mating procedure is not described in detail, but it is recorded that the eggs contain an oil which carry them to the surface where they hatch in the space of a few days. At the commencement of their lives, the fry remain in a belly-up position at the top of the water and not until the contents of the yolk-sac is no more do they swim like normal fishes and descend to lower levels. Another interesting observation made by Professor Sterba is that the males of some species exhibit a protective interest in their fry.

Snakeheads can move with great speed when alarmed or when engaged in the act of securing their prey. They can also leap and take advantage of any opportunity to vacate their aquarium. Hence it is of supreme importance to keep the tank properly covered. A temperature range of 72°F (22°C) to 78°F (26°C) is recommended.

PRODUCT REVIEW

Uno Combined Heater/Thermostat, price £1·58 including VAT, manufactured by Uno Products, Arnold Street, Nantwich, Cheshire, England.

When the combined heater/thermostat that was in use in one of my smaller aquaria burned out recently, I decided to invest in a 75 watt version of the Uno combined heater/thermostat. I have used Uno heaters and thermostats separately before and, having been very satisfied with their performance, decided to try one of their combined units. My choice has not disappointed me!

There are still many aquarists who prefer separate heaters and thermostats, and a number of cases have been made out giving the advantages of separate units over combined units—and vice versa. Having obtained equally efficient heating using either type, I must admit that I prefer combined units for their convenience. A single unit, although longer than either a heater or thermostat, I find easier to conceal—and a single length of electrical flex is much easier to contend with than two wires and associated joins. However, in the end, it's a matter of the personal opinion of the individual aquarist.

The 75 watt Uno combined unit is approximately 10¼ in. long by about ¾ in. in diameter and is supplied with a very respectable length of approximately 3 ft. 10 in. of electrical flex. The unit can be fully submerged as it is fitted with a skirted "cork." The unit's stout tube is made from Pyrex glass. A useful additional piece of equipment supplied with the unit is a "soft" plastic suction clip that can be slipped over the unit to hold it in place on the side or back glass of the aquarium. (I found that it was much easier to slide the clip on to the unit if it was wet.)

The working parts of this automatic heating unit appear to be sturdily constructed, and particular points mentioned by the manufacturer are: "new stabilised bi-metal (strip); magnetic "snap" action; and neon indicator." (The psychology of the neon indicator bulb in *all* brands of thermostat interests me as, like many other aquarists, I can never remember if the heater is on when the neon bulb is lit, or if the heater is off when the bulb is lit and I remember one particular brand of thermostat that I used which, when one of the separate heater wires happened to pull out of the connecting plug of the thermostat, still displayed a lit neon bulb! That particular thermostat very nearly cost me a number of cherished and expensive fish. However, although many of us often forget what the neon bulb is supposed to indicate to us, most of us, I think, like to have neon bulbs in our thermostats—whether separate or in combined units.)

The leaflet supplied with the Uno combined unit provides a lot of information about the use of the unit; it also carries a useful guarantee "slip." The unit is pre-set to give a temperature of 75-80°F (24-26·7°C) but it can be quite easily adjusted. The makers recommend that the unit be used upright, or as near upright as possible, with the bottom of the tube just clear of the gravel; they recommend also that the unit be fitted and allowed 24 hours to provide the desired temperature before the fishes are introduced.

Having tested the unit I can recommend it without reservation. No doubt it is available in other wattages for different sizes of tanks.

B. WHITESIDE, B.A.

Uno Hi-Load Slik-Stat External Thermostat With Earth, manufactured by Uno Products, Arnold Street, Nantwich, Cheshire CW5 5RB. Price unknown at the time of writing.

The Uno Slik-Stat is available in two models: the "standard" Uno Slik-Stat for use with Uno Regal Heaters, and the Hi-Load Slik-Stat with earth for use with the Uno "E" Type Heater which is fitted with a three core flex and independent fuse box. Both models are external fitting thermostats designed for aquarium temperature control. They have a black outer plastic casing and a smooth metal base (back) plate. A special stainless steel spring clip is supplied for fitting the units in position. They are held in intimate contact with the outside glass of the aquarium. For accurate control the level of the water in the aquarium must not be lower than the top of the thermostat. A neon indicator, situated at the top of the unit, lights when the heater is operating. For the former of the two models, the makers recommend the use of Uno Regal Heaters—25-200 watts. The recommended maximum load is 400 watts.

Each unit is fitted with a temperature control knob on the front. The circular scale is marked off in "units," ranging from low to high; the approximate range is 60-90°F and the top centre point gives a temperature of approximately 75°F. The unit can be easily adjusted by turning the control knob. The latter is fitted with a push on cover to prevent accidental moving of the adjustment knob. The "standard" Slik-Stat is fitted with a three core flex for connecting to the mains; it is intended for use with twin core flex heaters.

The Hi-Load Slik-Stat as already mentioned, is designed for use with a three core flex heater. It has a recommended maximum load of up to 1,000 watts and is therefore suitable for the larger aquarium. Each model is covered by a guarantee.

The Uno Hi-Load Slik-Stat sample I received for review purposes was soundly and sturdily constructed. Unfortunately I was unable to test it in operation as I was not supplied with an appropriate Uno "E" Type Heater.

B. WHITESIDE.

What is Your Opinion?

continued from page 135

useful tips to give about removing and/or preventing rust on angle iron tank frames. Please let me have your opinions for a future edition. I must also admit that I find the Societies' reports to be a total waste of space in my opinion. They hold no interest for me so I just don't read them. I imagine that each Society likes to obtain a little free publicity—and why not?—but dare I stick my neck out and suggest that *some* of such reports are only there because the 'pot hunters' like to see their names in print regularly? No doubt my suggestion—and it is only a suggestion which *may* apply to a few people—will cause some annoyance to such people. If they'd care to defend themselves I'd be pleased to include their letters in this feature—or I'm sure that our Editor could find space for such letters in another part of the magazine. I'll admit that I've heard several people state that they consider *this* feature contains some letters from people who only want to see their names in print. Such may well be the case; but I try to exclude such letters and only include those written by people who have something to say which I consider will be of interest to a majority of other readers. Please let me have your opinion on any of the above comments. I'm always open to criticism myself—if it's valid).

The previously mentioned power cuts continue and although I have still not lost a single fish I'm beginning to despair of what will happen in the near future as a complete shut-down in power supplies has been predicted and may occur in about four days' time. Another trying factor is that I have had to type most of this month's feature by the light of a single candle and a small oil lamp. As the postal service has also virtually stopped I'm wrecking my brains to find a way to get my article to our Editor in time for the July edition. The converse has also been true in that I have not received any readers' letters for some time because there have been no postal deliveries to my area. Fortunately I still have quite a large bundle of letters that were left from the previous months; however, please keep writing as your letters are bound to get through to me sooner or later and I always look forward to receiving them.

For next month please let me know of your breeding experiences with this species; and let me have your opinions of the following:

(a) How do you dispose of your surplus stock? (b) What are the advantages of external thermostats? (c) What are the best conditions for growing *Hygrophila polysperma*? (d) What is the age of your oldest angle iron tank? (e) Where can one come across good quality guppies? (f) How do you clean your aquarium glass? (g) Under what conditions have you managed to breed *Gyrinocheilus aymonieri*? (h) What is the least common tropical plant that you have managed to grow, and under what conditions? I look forward to hearing from you. Good-bye until next month

INTERZOO 1974

A REVIEW OF THE GERMAN PET TRADE FAIR

by Eberhard Schulze

INTERZOO at Wiesbaden, Germany, is a pet trade fair which has become the most important exhibition of its kind in the world. It takes place every other year in the recently built Rhein-Main Exhibition Complex and for 3 days manufacturers and exhibitors have an opportunity to display their range of products, talk to buyers and enthusiasts, and at last have a chance to present their latest articles to the public. Most manufacturers try to arrange their programmes in such a way that they will be able to present at least one new article at this fair. Although INTERZOO is a general pet trade fair catering for dogs, cats, birds and many other pet animals, the greater part of the exhibition is concerned, one way or the other, with the aquaristic; from the smallest of plastic aquaria to the most superbly made all-glass deluxe models, from aquarium covers—housing all the pipes and electrical cables required for the running of a tank—to a multitude of filters, airpumps and heaters, thermostats, gravel and plants, fish foods and remedies; from underwater aquarium lighting to a variety of measuring instruments: hardness, pH, carbonic acid, oxygen and nitrites; there were even a great number of different kinds of conductivity meters as well as lux meters. Lux meters are for measuring the intensity of the light and are supposed to be a very necessary gadget for anyone hoping to grow beautiful plants—so I was told.

At the 13th INTERZOO—10th to 12th May, 1974—all the well-known German firms were there: Tetra, Brustmann, Eheim, Vitakraft and Frickhinger; but there were also exhibitors from most other European countries and even from the U.S.A. From G.B. Interpet, Springfield Electrical Co. Ltd., King British Aquarium Accessories Ltd., Hillside Aquatics, P.T.I. Products International and Supa Aquatic Supplies Ltd. (only to mention those connected with the aquaristic) took part.

It was expected that visitors from more than 25 different countries would come to the fair and I had the pleasure to meet enthusiasts from countries as far apart as Japan and Canada. It has become, without doubt, a great international affair and judging from the interest and the reactions, I feel that the fish-keeping hobby is bound to become number one pastime in the not too distant future.

Since it is not possible to give a very comprehensive account about such an exhibition or even try to describe most of the products, I have selected a few items which I found interesting and I hope that they might also be of some interest to the readers of this magazine. It is by no means meant to be a list of outstanding new articles but rather a short description of some of the products which caught my eye.

Eheim have made some modifications to their 388 and 386 aquarium filters which they claim will improve their performance and efficiency. They also introduced a new Bottom Filter. This U/G filtering system is used with one of their aquarium filters in either the through-flow or reverse method. It is equally suitable for freshwater or marine water aquaria. According to tests carried out on behalf of Eheim, the use of this filtering system has no effects on plant growth in freshwater aquaria as is sometimes said about other U/G filtering systems.

Brustmann are a little-known firm in this country although they enjoy a great reputation in most other fish-keeping countries. They market, amongst other things, an excellent range of remedies: Ektozone, an active oxygen preparation for preventing and combating parasites, for enriching the water with oxygen and for activating plant growth. Hydropur, a nutritive salt tablet for water plants with an acidic pH value. Cilex, a preparation to combat Ichthyophlhirii, Mycosis and Skin Turbidity, which can also be used as a breeding aid and for the disinfection of live foods. Eumetan, a remedy to control *algae* and hydra in aquaria. And Aci-Toner, a tablet to lower the pH and Alka-Toner to raise the pH values in the aquaria. I have already been using some of these preparations for some time and find them most effective, and therefore I am very glad to learn that they will shortly be available in the U.K.

Hilena showed their range of products and for the first time I was able to see their CO_2 Diffuser in operation. Hobbyists with an unsatisfactory plant growth might very well want to experiment with this apparatus. It fertilizes aquarium plants simply and economically with carbon dioxide. Another new product from Hilena was their Hilenastat 400, a thermostat without any moving parts capable of switching 50 times per second and with an accuracy of 0·1°C.

Tetra's stand is usually one of the busiest but also one of the friendliest and their staff will take as much time and care to show their range of products to a hobbyist buyer as to a important. On display were their already very familiar types of fish foods and remedies and also their range of other articles which are not yet available to hobbyists in this country. Their water testing Laborett, their certified thermometer and their Brilliant filter system are some of the articles the British hobbyist should not be without since they seem at least as good as their competitors. At the fair Tetra introduced two new kinds of fish foods: Tetra Rubin is a specially prepared flake food to intensify the colours in tropical fish to such a point that a difference will be noticed within 2-3 weeks. I understand that Tetra Rubin is not a hormone food but is based on a number of specially selected natural ingredients. The second kind of food is a FD red Mosquito *larva* food. Hobbyists keeping fussy or problem feeders might find this new food quite a useful addition. Both of these foods will probably become available very shortly in the U.K. For marine fish enthusiasts, Tetra Werke produced and published a well written and illustrated Marine Water Fish Feeding Table. It deals with 60 species and states their requirements as to care, feeding, temperature, etc., very much on the lines of their well-known brochure: The Successful Fish Hobbyist. It was also said that an English translation was being prepared which will become available in the near future. Vitakraft had on their stand a super shop display unit and some nice pieces of aquarium furniture as well as all their familiar items. But what was completely new was their Laso-System filter. It cleans 250 litres of aquarium water per hour and the motor is built in such a way that it has no moving parts and therefore, according to Vitakraft, should last for a very long time. What is quite novel about this Laso-System filter is that specially prepared cartridges—two different kinds so far—can be used instead of the usual loose filtering materials.

From the lesser known manufacturers, Tunze displayed the successful Turbelle power filter and a variety of UV sterilising units; Preis Aquaristic, an Organ Planer plus seven, which is a complex water improving remedy; a 24 volt Heating System for aquaria by Schego; a great number of Ion-Exchange Resin Units from Stein, who also markets a number of water conditioning remedies. And there was a new and rather large air filter which guarantees to remove almost all the impurities from the air passing through, manufactured and distributed by Köster and Schönberger. This incidentally, was probably the only really new article I discovered. It is a carbon filled air filter which could very easily be used with a different filling as an ion-exchanger and hobbyists keeping soft-water-loving fishes could produce their own deionized water for just the cost of the regenerating chemicals. New from Sera was their remedy against Oodinium ocellatum and their Morena-Komplex, a black water type of tonic; from Schwarzer Prezision, (Esha) a new cheap air pump; the British manufacturers Interpet displayed their range of products and so did King British Aquarium Accessories Ltd. Hillside Aquatics presented a new White Worm Culture Food and also a special food for raising *Artemia Salina*. Springfield Electrical Co. Ltd., well known in this country as well as on the Continent for their fine range of heaters and thermostats introduced a submersible thermostat based on the thermostat of the Mariner C 200. John Allan showed for the first time in Germany their Gem range of tanks, covers and stands, and P.T.I. Products International introduced their electronic measuring instruments. I know there were many other kinds of articles to be seen but since I had taken very little notice as yet of the different displays of publishers with their numerous books and magazines I felt that I needed a day to browse around their stands and I also did not want to leave the exhibition without having had a closer look at some of the furnished aquaria.

Most hobbyists will be aware of the fact that a great number of tropical fish books are written and published in German and then translated into English. The excellent series of Aquarium Paperbacks published here by Studio Vista are translations of books first

published by the Franckh'sche Verlagshandlung in Stuttgart. The latter have just published a new book about the Discus fish and being a Discus fanatic, I feel that for the very first time a comprehensive and informative book about the discus fish has been written. The author, Günter Keller, will be known to many through his many writings in German or English language publications. He deals with every aspect of the genus, their description, requirements as to water quality, feeding and general care, and a large part of the book is devoted to their ailments and diseases. There are also a number of drawings and colour prints. This book will certainly make the still difficult task of keeping the Discus fish that much easier. Another equally comprehensive and informative Discus book has been written by Hans J. Mayland and is published by Albrecht Philler Verlag in their Lehrmeister Bücher series.

Franckh'sche Verlagshandlung published another series of paperbacks which I saw for the first time at the fair. These books are known as Bunte Kosmos Taschenbücher and so far three titles are available: *Fische fürs Gesellschaftsbecken* (Fishes suitable for a Community Tank), a book dealing with 60 species of fishes. Each fish is shown in good colour and it gives all the necessary information for keeping them in an suitable environment. The second book—*Pflanzen als Aquariumschmuck* (Plants for the Aquarium) deals with 60 of the nicest aquarium plants, and again each is reproduced in colour and states clearly their needs. The third book—*Korallenfische im Aquarium* (Marine fishes for the Aquarium) must be something many marine fish enthusiasts have been waiting for. It shows in beautiful colour 120 marine fishes, it describes each individual fish as well as giving all the information required for the maintenance of these fish. Although these books are quite inexpensive (about £1·30) I was very surprised about their high standard of colour reproductions as well as to their informative values. But then the publishers have had a fair amount of experience since they are also producing the well-known monthly publication: Aquarium Magazine.

A number of other informative books by writers all recognised as experts in their fields—Water Chemistry by Dr. R. Geisler, Tropical Fish Diseases by Prof. Dr. H-H. Reichenbach-Klinke and Food for Aquarium Fishes by Hans Geyer—are published by Alfred Kernen Verlag, Stuttgart, the publishers of the respected DATZ magazine.

The only other book which I would like to mention here was written and published by Zoomedica Frickhinger, known for their tropical fish disease and water improving remedies. It describes most of the common ailments, is written in an easily understandable language and the many colour prints will also aid the hobbyist in his diagnosis. Although all the medications mentioned in this book are only those manufactured by Zoomedica Frickhinger, this book is certainly a worthwhile addition to any hobbyist's library. Of course there were a great many other books on show but these were the ones which interested me most and as they are all going to be translated I felt that I should make their existence known.

The last few hours of the exhibition I spent looking at the different show aquaria. These were mostly all very large—6 ft., 8 ft., or even larger—beautifully aqua-scaped with small rocks and stones, bog wood roots and a great number of plants. What I especially noticed was that hardly any of the larger pieces of rocks were used and also that a variety of different sized gravel—from coarse pebble-like to the finest silver sand were arranged in such a way that it easily could have been a real part of an underwater world. The plants used with great imagination and feeling, and many more than I ever thought possible filled these show tanks. These show aquaria looked very impressive and I feel that it was mainly due to the use of the many different sized and coloured plants, to the very realistic looking pieces of bog wood roots and also to the smallness of the stones. As plants are such an essential part of a well-balanced aquarium, I feel, having seen these show tanks, that their proper use should be emphasised and greater care and thought be given to their very special requirements. To care for fishes does not mean that the care of plants has to be neglected since they are both part of any optimum conditions required or desired.

Klaus Grom of Tagis-Aquarium, Frankfurt, had on show some very new and rare cichlids from Africa; Herr Stein kept in a very large aquarium about 10 big Heckel Discus together with about 1,000 Neons. Aquarium Rio Negro—one of Germany's biggest tropical fish wholesalers—had a great number of well set up show tanks containing mostly a variety of cichlids. Tropicarium Frankfurt, perhaps the best known marine fish establishment in Germany, had on display a number of beautifully coloured marine fish. Even though I am still a freshwater hobbyist, I was very impressed with these displays.

It is hoped that some of the English visitors who also take part at English exhibitions will have learned something and will improve their display of goods and fish at forthcoming shows to encourage enthusiasts to become as knowledgeable and as expert as hobbyists on the Continent.

Having spent three whole days at the fair I must admit that towards the end I became very M.M. (*Messe Müde*—Exhibition tired). It was certainly a fascinating and worthwhile experience, I have gained a certain amount of new knowledge to help me to help my fish and plants and I shall make every effort to visit INTERZOO again when it takes place, two years from now.

THE KORAN ANGELFISH

by Martyn Haywood

Pomacanthus semicurculatus is found throughout the tropical seas of the Eastern hemisphere, from the Red Sea, through the Indian Ocean to the Philippines and Melanasia.

Known as the Koran Angelfish, it is one of the larger species of angel fishes which regularly appear in the shops, reaching in the wild a length of about 14 inches at maturity, although specimens will stay smaller in captivity. Like the related species, *P. imperator*, the Imperial Angelfish, it shows a marked change in colour as it matures, although not such a spectacular shift.

When young—up to about three inches—the Koran Angel shows a pattern of semi-circular bands and arcs —hence the scientific name—of dark brown, blue and white. These colours combine to make small specimens stand out in any aquarium.

As *P. semicirculatus* grows, the dark brown fades slightly to become a dark chestnut colour while the margins of the bands lose some of their sharpness. Even so the fish is still very attractive.

My Koran Angel is about 4½ inches long and is showing an intermediate pattern. It has a mainly brown body with brilliant white arcs while the fins are edged and dashed with bright royal blue. There is a blue sheen over the body when seen in the right light which adds to the fish's attractiveness.

The pattern of white arcs extends into the tail where it breaks up into interesting dots and dashes which are said to form sayings from the Koran—if one uses a little imagination—hence the fish's common name.

As *P. semicirculatus* gets older its colours fade further until the body is a greenish-brown colour, although still showing white bands, and the intense blue lightens to turquoise.

The Koran Angel is one of the more commonly imported species of angelfishes and as such one of the cheaper—being available in my home region of East Anglia from about £6.

My specimen—nicknamed Abdul, a fitting name for a Koran Angel I thought—looked very sleek and healthy in the shop and has since proved very easy to keep. It lives in a 48 in. × 18 in. × 15 in. silicone-sealed tank, holding 32 gallons of water along with a small 1½ inches Humbug damsel (*Dascyllus melanurus*) and a Yellow tail Blue Damsel (*Pomacentrus melanochir*) of about 1¾ inches.

The tank is fitted with a high turn-over under-gravel filter—*a la* Graham F. Cox—and all the fishes seem to get on well together. The angel is not at all belligerent towards the two damsels, or was it to a very small Green Chromis (*Chromis caeruleus*) which was introduced to the tank at one time before being transferred to its permanent quarters.

The only fishes my Koran Angel does not tolerate are other members of the Chaetodontidae—the butterfly and angelfishes. Even if a new addition from this family bears no similarity to it, regarding colour, Abdul will still chase the other fish—although it seems unwilling to make any actual physical contact.

I have come to the conclusion that my Koran Angel will not tolerate any other fishes which have a similar body shape.

In my experience *P. semicirculatus* has proved very easy to feed and keep healthy after surmounting a few initial difficulties. Once it realised the various additions I was making to the tank were food it accepted them eagerly, almost without exception.

Dr. H. Axelrod states in "Exotic Marine Fishes" that the species is primarily a sponge-eater in nature and so might prove difficult to feed. To date, I have

not found this to be so although, of course, as the fish matures so its taste in food might change and problems arise.

After settling in the tank, a process which took two days, it has fed on boiled cod roe, Norwegian brine shrimp, freeze-dried brine shrimp, white worms and Tetramin flake but its favourite food is without doubt, Tetramin conditioning flakes, which are composed largely of *algae* and other vegetable matter. It even beats the two avidly-feeding damsels to this food and it is one I would recommend aquarists trying when keeping fish which eat a lot of plant material in the wild.

As to problems of disease, these have been, thankfully, very few and on the whole *P. semicirculatus* appears to be a fairly hardy fish.

On buying my fish I decided to depart from my normal practise of dosing with copper sulphate to prevent incipient oodinium infection. It was the first fish to go into the tank and I had vague ideas about keeping invertebrates in it at some future date. However, I was prepared to add copper if the need arose. It did not for the fish never showed signs of oodinium or any of the other diseases which commonly occur in new purchases. The only problem arose some three months later when, over a period of four or five days the fish lost some of his colouring, became faintly translucent when seen against the light and its skin took on a milky clouding. With the help of Frank de Graaf's "Marine Aquarium Guide," I diagnosed the disease as trichodine, a ciliate similar to that producing white spot disease according to de Graaf. The treatment recommended was the same as for white spot, i.e., copper sulphate. Foregoing visions of invertebrates, I gave one dose of Cuprazin, at the rate recommended by SeAquariums.

By the following morning—11 hours later—I was amazed at the improvement in the fish. Its colours were as intense, if not more so, as at any time since purchase and generally it seemed in better health. I discontinued the treatment and to date there has been no reoccurrence of the cloudy skin disease—if indeed this is what it was.

All-in-all, *P. semicirculatus* seems to be one of the easier and more accommodating angelfishes and one I would recommend to anyone who wants a fairly large fish to act as the focal point of a tank. My specimen was a little shy at first but after the first few days lost its nervousness and is now a true *prima donna*, gliding at the front of the tank and displaying its magnificent coloration.

THE GOLDEN TILAPIA

by Richard A. Dunleavy

Those of you who have read my first article on breeding *Tilapia ruetti* must be wondering what kind of aquarist I am, because once again I must admit that I do not know the origin of the species now under review. I have searched through all my books and the only reference I could find is a colour plate in the Tropical Fish Hobbyist which simply stated Golden Tilapia photographed by Herbert Axelrod. I am writing this article firstly in the hope that the little knowledge I have gained will help you, my fellow aquarists, to identify this species and encourage you to breed it, thus making the species more available and at a reasonable cost, as at the moment they are quite expensive.

My second reason is that I like to know as much about my fish as possible and it may well be that some of the readers of this magazine may know a lot more about this species than I do, and I would hope that they will be willing to pass their knowledge on to me.

And so on to the Golden Tilapia. When I purchased these fish they were sold to me as red and white cichlids and were about two inches long; the colour was more pink than gold in my three fish, but this changed as they began to grow bigger, which they did at a tremendous rate. They were put into a two foot tank in my fish house where they settled in very quickly and began to feed right away, rising to the top of the tank whenever I approached. They ate everything I offered including flake food, earth worms, baby guppies, rabbit pellets, cod roe, salmon pellets, and even green *algae* scraped from the glass of other tanks. I lost one fish after three weeks as it was badly mauled by the other two which were a bit larger, but I was able to replace it the next day as my local dealer had been able to get another three, only this time one fish, cost me almost as much as the original three had cost. Maybe the price of the first three had been set low to test the market?

My fish were growing so fast that I was forced to move them to a four foot cichlid community tank which they virtually took over in a matter of hours. By this time I had noticed a difference in colour of all three fish, the basic body colour being light gold with pinkish overtones (if you can imagine such a colour), one had two perfect black lines midway along the dorsal fin, a few black speckles on the body and a

dark red edge to its caudal fin, one had a large red patch on its head above the eyes, and the latter third of the dorsal fin, while the third had a beautiful red caudal fin and alternate rays of the dorsal fin had the same beautiful red colour. At first sight of these fish anyone could be fooled into thinking they were all of a differing species.

At the time of writing I have had these fish for six months and they are seven inches long. In sexing them the colouring is of no help at all, the only sure way to my knowledge is the difference in dorsal and anal fin, the male's fins being longer and more pointed.

As I mentioned earlier, the three *Tilapia* were placed in a four foot tank containing other cichlids which I had to remove, as the *Tilapia* did not allow them to get a fair share of the food. My trio turned out to be two males and a female, and when the other cichlids were removed the males proceeded to stake out their territory at either end of the tank. They both dug deep nests in the gravel about twelve inches across and made them almost as deep by piling the gravel high up around the edges. They spent most of their time hovering in or around their nest only emerging to feed, make threatening displays to each other, or try to entice the female into their respective nests. I started to feed them exclusively on earth worms and after two weeks of this treatment I removed one third of the water from the tank and replaced it with water straight from the tap and within hours both males were showing breeding tubes and the female seemed to be spending about equal time in both nests. This caused the males to be almost constantly scrapping with each other during which some damage was inflicted on both. Being in a hurry as I was on night duty in the hospital where I work, I decided I would remove one of the males in the morning when I came home, but unfortunately one of them was so badly battered that it died the next day. I watched the remaining pair as often as I could but was unable to witness the actual spawning although over the next two days I was able to observe some of the spawning ritual. The male would leave his nest and swim over to the female and nudge her in the abdomen, swim round about her and virtually herd her over to his nest where he would adopt a head down position and shake his body from side to side occasionally nudging her with his head. The female would spend long periods resting on the bottom of the nest and then suddenly shoot out and take refuge in one of the rock caves provided for this purpose. She would eventually reappear and go through the whole process again. This gave me the idea that she was not quite ready for spawning, but on the third day she did not rise to be fed and on closer inspection I discovered that her throat was bulging with eggs. The male was removed and she was left with the tank to herself. The water in the tank had a p.H. of 7 and the temperature was 82°F., during the twelve days she had the eggs in her mouth she took a small feeding of flake food every two or three days. On the thirteenth day after spawning I saw the fry for the first time. There were approximately 200 and they were slightly larger than new born guppies. It is a fascinating sight watching the mother taking the fry into her mouth again at the first sign of danger. She did this for four or five days until the fry gradually swam farther and farther away from her in a tight shoal and she gave up any attempt at picking them up again, at which stage she was removed from the tank.

The fry were fed on finely ground flake food for the first week and thereafter on wheatgerm flake, trout food, *tubifex* and *daphnia*.

As I write this the fry are one month old and already one inch in length. Even at this stage I can see that some have dark markings, some have red and others have none.

PRESS RELEASE

H.w. MARINEMIX already outsells all other synthetic saltwater compounds in Europe—the manufacturers, H. Weigandt of Krefeld, Germany, claim an almost 80 per cent share of the market.

Formerly known as h.w. Meeressalz, it has not been available in the U.K. for a considerable time but Wingate and Golding Ltd. of Barton Stacey, Winchester, inform us that they have now arranged for U.K. distribution. It is available from stock in three sizes, attractively packed and competitively priced. A 5 lb pack will make approximately 15 gallons of synthetic seawater at a specific gravity of 1·020, the 10 lb and 40 lb sizes, 30 gallons and 120 gallons respectively.

The makers guarantee, included with every package, is very comprehensive and lists sixty-two trace elements which are present in exactly the same quantities as in natural seawater.

Also available are three other products for the marine enthusiast—h.w. Trace Elements, h.w. Limewood Diffusers which are uniquely designed to permit a greater volume of air to pass through its valve and h.w. Hydrokoll for the biological preparation and stabilisation of synthetic seawater.

Aponogeton crispus

by Jorgen & Pamela Hansen

Aponogeton crispus is a well-known aquarium plant which comes from Ceylon, and was first described by Carl Peter Thunberg. It is mostly used as a background plant which with its dark green crisped leaves sets off excellently foreground vegetation of a lighter green.

The plant is perennial; a triangular 8-15 cm. (3-6 in.) long stem, which bears dark-green leaves 25-30 cm. (10-12 in.) long, 2½-3 cm. wide and with a waved edge, arise from a tuberous rhizome. Besides the central vein there are 3-4 lengthwise veins connected with many cross-veins.

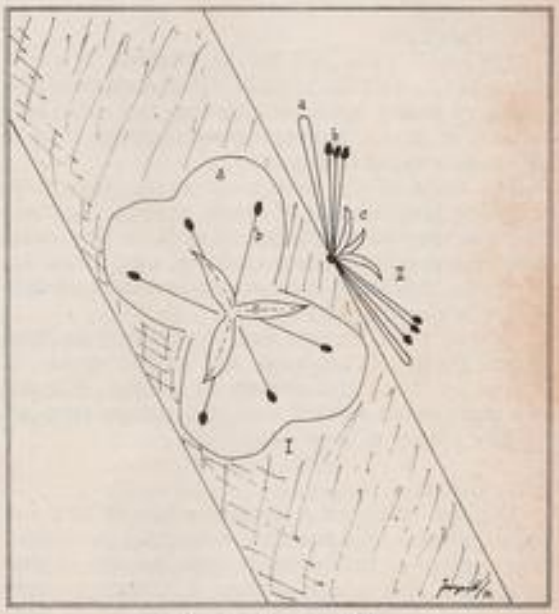
The plant does not grow constantly but has a rest period and a growth period. The rest period lasts for about 3 months and at a temperature of 18°-20°C (64°-68°F) generally occurs between October and February. During this period only seldom if at all do new leaves appear, and if the rhizome is kept in water of a temperature much more than 20°C (68°F) it will very likely become soft and rot away. A number of new leaves will develop throughout the growth period and under favourable conditions (plenty of light and clean water) the plant will flower several times if it has not seeded.

Flowering

The flower develops from a flower-stem of up to a metre long, without nodes, and filled with air to enable it to float. When the inflorescence develops it rises above the water, and the stem directly beneath the inflorescence thickens. The inflorescence is a spike, i.e., each flower is directly connected to the central stem. The spike is snow-white and 10-15 cm. (4-6 in.) in length. If it comes too close to the aquarium lamp, the flowers wither at the tip; and if there is too little space for them above the water level on account of the top glass the stem will be pressed down under the water and fertilisation will not be possible.

The flowers are white and are each composed of two heart-formed petals, six stamens with yellow anthers and three stigmas. The flowers are not self-pollinating, so if one wishes seed, one must oneself transfer pollen from anther to stigma by means of a small fine brush or the like. While the seeds are under development the spike turns light green. With artificial fertilisation not all the flowers will seed, but the process when it does occur takes approximately 2-3 weeks. When the seeds are mature most fall into the water where they almost immediately begin to sprout. When after 3-4 months the young plants have developed light green leaves a small rhizome will then develop at the base of each plant: this is the time when the plant requires the aforementioned rest period before continuing its growth. If one dries the seeds as one does with so many garden plants, and thereafter tries to get them to sprout, one will be disappointed.

Our specimens grow well in coarse gravel, neutral water (pH7) with a hardness of 14 DH and, in the growth period, a temperature of 24°C (75°F). The plant apparently needs plenty of light in order to grow well. We have no experience with it in soft water.



Schematic drawing of flower

a petal
b filament and anther
c stigma
I seen from above
II seen from the side

Junior Aquarist

BEGINNERS' NOTES *by T. Mc Inness*

1. Setting Up The Aquarium

I HAVE BEEN keeping Tropical fish for three years and my first tank was set up on a Christmas Eve. It was 18 in. × 10 in. × 10 in. in size, and was made of plastic. It also had a hood and a small base which were both made of black plastic.

(A) Position

For the beginner I suggest the first thing to do is to find a suitable position for the tank. Near a window where it shall receive sunlight during the day will benefit any plants you may buy and so try to get such a position. (If this is not possible see section (D).)

(B) The Tank

The size I think best for the beginner is round about 24 in. × 12 in. × 12 in. This tank should be equipped with a hood and drip-tray and some kind of table or stand. The stand or table chosen must be secure as water is very heavy.

The make of the tank is up to the individual. The tank may be made of plastic or glass. In these forms it may be all plastic, all glass or have some sort of nylon or angle-iron frame. But whatever the make, check that there are no broken or cracked panels of glass or plastic.

A price range for this size of tank may be from about £5-£6. (The hood and stand would, of course, be extra depending on the quality). Do not get tanks much smaller than this size as they get slightly harder to keep clean.

(C) Heating

The tank will need a constant supply of heat and here a heater is used in conjunction with a thermostat. The wattage of both depends upon the size of your tank and a good rule to use here is 50 watts to every 12 inches of tank, e.g., a 24 in. tank would need 100 watts or 2 × 50 watts.

There are many types of heaters and thermostats on the market which should please you. These are divided into two groups (1) Separate heaters and thermostats; (2) combined heaters and thermostats. Either model would serve the purpose except that the combined one is much more expensive, but it has the advantage of being easier to control especially if it has an external control.

This equipment varies in price and for the separate heating outfit it may cost about 50p for the heater and about 75p for the thermostat. The combined equipment may be about £1·75—£2·50 in price.

Again make sure this equipment is not damaged in any way before fitting. Wiring instructions will be given with the equipment.

(D) Lighting

The lighting of the tank is very important and some thought should be given to it. Tropical fish need light, on average, of 10 hours per day. The wattage of your light depends upon how much sunlight the tank receives during the day. You should allow at least 15 watts per 12 ins. of aquarium, e.g., a 24 in. would require at least 30 watts. The next thing is to decide what kind of bulbs should be used. There are two main types, strip bulbs and ordinary bulbs as used in the home. It depends on what kind of fittings you have in your hood which type you actually choose.

The two lights I have mentioned are only two very simple systems and there are many others such as Gro-lux, ultra violet and Fluorescent. These bulbs are more expensive and when the beginner becomes more advanced he can specialise in these more advanced systems.

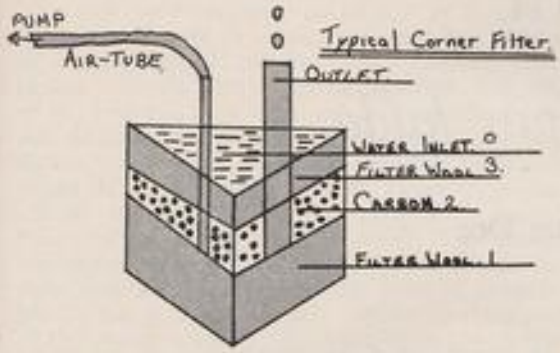
(E) Aeration

The aeration of the tank is quite an important subject and helps to keep the tank clean and fresh. The main reason, though is to successfully keep more fish than would be possible without aeration.

The basic method of aeration is to have an air pump pumping air along a tube to an aeration stone. The pressure of air can be controlled by a small valve in the air tube.

The most expensive piece of equipment here is the air pump; it may cost about £1·50 for a single outlet and £2·50 for a double outlet. The airstone will be in the region of pence.

There is also another method of aeration which also involves filtration. In this method a filter is used. There are quite a few kinds of filters such as under gravel or corner filters which both work off the air pump. First take the corner filter: it is



filled with carbon and filter wool in this order: 1, Wool; 2, Carbon; 3, Wool. The air line is connected to the thinnest of the two tubes and the air flow can again be adjusted.

The other filter is the undergravel model; it does not use carbon, etc., but instead sucks mulm and dirt through the gravel into its body where it is broken down. There is but one disadvantage with this filter; it can sometimes take valuable fertiliser from the plant roots and so hinder them in growing; this is not always the case but it has happened.

These two filters vary in price, but the corner filter will cost about 50p and the undergravel about £1 depending on the size of the base of your aquarium.

Having aeration or filtration is a great advantage and I certainly advise it.

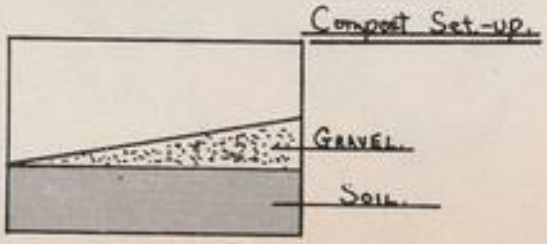
(F) Checking Temperature

For this a thermometer is used and floated in the tank or stuck to the glass inside. The average cost for a cheap one would be about 25p.

(G) Stocking the tank with plants

The tank must be stocked with plants and finally, of course, the fish.

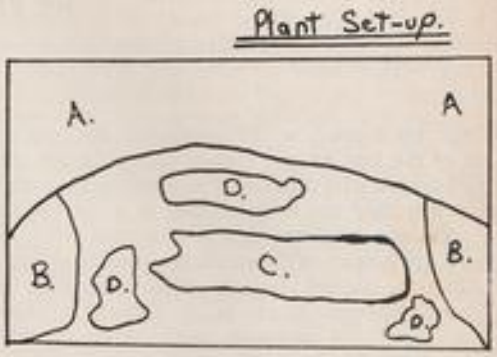
For the plants to grow some kind of compost or medium must be found. A good set-up for this is to have a thin layer of soil on the bottom of the tank and then a 2 or 3 inch layer of gravel on top, sloping up towards the back glass. Into this medium the plants are put, covering the roots well.



The selection of plants for tropical tanks is wide and most dealers have a good stock that should suit your tank.

The key to the diagram is as follows:

(A) Large tall plants such as *Vallisneria* and large sword plant.
(B) *Cabomba* and Wisteria.
(C) Japanese Rush, *Cryptocoryne beckettii*.
(D) Rockwork.



In the aquarium the idea is to make a curtain at the back of the tank and have side plants at either side. In the middle, a centre piece should be planted and to give more effect. Some boiled rocks (to kill disease), should be placed in the tank. Make sure, also, that the plants and rocks have no snails on them or these will eventually infest your tank.

Another point to make sure of is that none of the rocks crumble to the touch or they will dissolve into the water and may be harmful to your fish. Such rocks are sandstone and limestone.

Here is another list of plants suitable for the community aquarium:

For (A) *Egeria densa*.
Elodea crispa.
Sagittaria (most varieties).
Great Amazon sword plant.
Cryptocoryne petti.
Ludwigia.
Vallisneria.

For (B) *Cabomba* and Wisteria.
Dwarf Amazon sword plant.
Echinodorus.
Bacopa.

For (C) Japanese rush.
Cryptocoryne beckettii.
Cryptocoryne willisii.
Cryptocoryne nevilii.

A THRILLING EXPERIENCE

WITH

Hippocampus kuda

by Dermot Dee

KNOWN TO science as *Hippocampus*, the seahorse is one of the best-known marine fish, although there are still people who think of it as a mythical creature. Even when they see it swimming in a marine tank they still cannot believe that it is a true fish. The outward appearance of the seahorse varies considerably according to species, but the most commonly encountered seahorse in shops in Britain is *Hippocampus kuda*. In common with other members of the genus *H. kuda* possesses no stomach and all its digestion is carried out by an alimentary canal and a simple intestinal system. This is the reason why seahorses need several feedings each day to keep them in peak condition. Although they vary in colour from golden yellow to greyish black it should be noted that they can and will change their colour to match their surroundings. Another strange fact is that the male seahorse incubates the eggs in a "brood pouch" which is located at the front of its body and then expels them, after their incubation, alive and ready to start feeding! Recently there has been a lot of interest in the breeding of the marine fish kept in captivity and there has been especially a lot of success reported in the breeding of the dwarf seahorse in the U.S.A. It is of interest to note here that of the births reported many were from males who were "pregnant" on capture, i.e., the actual transfer of eggs from female to male took place in the sea and not in the aquarium! In fact, the only true success in the breeding of *H. kuda* (i.e., more than one brood born) has been at Wilhelma Zoo by Dr. W. Neugebauer.

It was with this in mind that I set up a 40 in. × 15 in. × 16 in. all-glass marine tank and introduced in all three pairs of *H. kuda* over a period of two weeks. Feeding consisted of Mysis shrimp, live and frozen *Daphnia*, live brine shrimp and live young mollies. It was on the 13th February, 1974 (8 months after the introduction of the adults) that I found four young seahorses swimming about the tank. I was very surprised because I had noticed no courtship rites or any of the males' brood pouches

bulging like those shown in most textbooks of male seahorses carrying young. Because I had only found four young seahorses alive I assumed that either there had been cannabilism or, since these were the male's first young, they had been born in a weak condition, perhaps even prematurely. The four survivors were transferred to a gallon-sized bowl floating in another tank and fed initially on Liquifry No. 2 and live, newly hatched, brine shrimp. By the 18th February, however, only one of the seahorses was alive and I could see that it was feeding well on live brine shrimp. This particular youngster is still alive and has reached a length of one-and-a-half inches. However, it was on the 19th February that I observed a female "courting" a brown-coloured male. The female was swimming to and fro in front of and around the male tempting him to leave the piece of coral he was holding on to with his tail. After several minutes of this "dance routine" the male started to follow the female who now swam from coral to coral, all the time tempting the male to follow. This continued for about 20 minutes after which the male seemed to lose interest and give up the chase. Although I did not observe any further behaviour of this nature I did notice that the brood pouch of the male in question was getting larger as the days went by and it was on the 19th March that I saw the male expelling the young from its pouch. I have no doubts that this was the most thrilling event I have ever witnessed! The whole of the pouch underwent muscular contractions with the expulsion of approximately four to six young seahorses about every five minutes. Occasionally only one seahorse would emerge from the pouch by itself instead of in a group of four to six, but this was very rare. In all, over three days about 36 young were born, but approximately 10 of these were stillborn. It was noticeable, however, that many of the young were born with extremely short snouts and seemed incapable of feeding on the brine shrimp. The mortality rate was very high and to date only 20 per cent of the original youngsters are still alive, i.e., five of the twenty-five born alive are still alive and feeding and have now reached a length of ¾ in. Later on the 5th April the second brown male released young, but these all died within hours of birth and some appeared to have yolk sacs, which indicated that they had been born prematurely. I am now hoping that the pairs will breed again, although the original golden yellow male has now died after approximately nine months in captivity. The youngsters are still growing and I look forward to the day that I can cross them with some "wild stock." For those interested in keeping seahorses the only book I can recommend is *The Encyclopaedia of Sea Horses*, by Mildred D. Bellomy. I do hope this has been of some interest to people who are keeping seahorses and to those who are thinking of doing so.

GLEANINGS

Extract from Dundee Evening Telegraph

Southsea Beach Invaded By Sea Mice

An "invasion" affecting several miles of the beach at Southsea and Hayling Island is puzzling marine biologists.

Along the high-water mark are thousands of dead and dying sea mice, normally found only in deep water.

"I have never seen them in such numbers before. The odd one, yes, but nothing like this," a spokesman at the Hayling marine resources laboratory said.

The sea mice—Latin name: aphrodite—are five-inch-long worms.

Matted, greyish hair on their backs give them the name "sea mice."

They crawl on the sea bed scavenging on sandy and muddy bottoms and are normally only seen by occasional divers and trawlermen.

Aquarium Assets

"It must be the storms which have brought them up. I have never heard of as many as this before," marine specialist David Houghton said.

The invasion is being welcomed by local aquarium owners.

Aphrodite is prized because of its almost irredescent hues under water and for its scavenging role in cleaning tank-bottom rubbish.

Extract from Manchester Daily Telegraph

Miner Wants New House to Save His Fish

Mr. Charles Lockett, 26, a miner, is asking to be rehoused because he claims that mining subsidence at his home in St. Bernards Road, Knutton, Staffs., has caused the death of his rare tropical fish.

The most recent subsidence cracked his aquarium, flooding his living room with 40 gallons of water and killing the fish, he said. He is now re-stocking his aquarium.

A council spokesman at Newcastle-under-Lyme said: "We are looking into Mr. Lockett's problem in conjunction with the National Coal Board."

Answer to What Am I?

ALBINO CATFISH

THE BLUE ACARA

Aequidens pulcher (Gill 1858)

by Eberhard Schulze.

MOST aquarists will know this fish by its old name, *Aequidens latifrons* (Steindachner 1878), but as Gill described this species 20 years before Steindachner, the credit has now been given to Gill and the name "*latifrons*" is therefore no longer valid.

A. pulcher is not only one of the most beautiful of the cichlids but is also one of the least demanding. It is not as quarrelsome as most other members of this large family, is a prolific breeder, a parent in the true cichlid fashion and consequently a favourite with hobbyists since it was first seen in Europe at the beginning of the century.

The natural habitat of *A. pulcher* extends from the southern-most part of Central America to the northern region of the South American Continent: Panama, Colombia, Venezuela and Trinidad. They are usually found in thickly planted stagnant, or gently flowing, waters. A large fish, *A. pulcher* will attain a size of 6 to 7 inches. Prof. Guenther Sterba describes these fish as follows: the body is deep and strongly compressed, especially in the region of the caudal peduncle. The forehead is very broad, and the body colouring ranges from a yellow-brown to a greyish-brown; the back is olive; the sides have a bluish sheen, and the belly is lighter in colour. There are five to eight vaguely defined transverse bars on the flanks and a black lateral blotch on the fourth bar. Each of the scales on the body bears a large iridescent blue, pale blue or green-blue blotch, and the gill covers have numerous shining blue-green to metallic blue spots and streaks. The anal and dorsal fins are bluish to greenish; the caudal fin is bright wine red. All fins have curved rows of sky blue dots. The dorsal fin has a pale red to dark red border. The iris is golden-yellow with red periphery, and the lips are pale blue. All the colours become more beautifully iridescent at spawning time and simultaneously a further six to eight longitudinal rows of shining green-gold spots become very prominent.

They are not as quarrelsome as some of the other large cichlids and they could even be kept in a community tank as long as their tank-mates are of more or less the same size. Since these fish will grow to 6 to 7 inches their only requirement is a spacious aquarium. This should not be smaller than 48 inches by 18 inches by 18 inches. The bottom of the tank should be covered with a layer of 1 to 2 inches of a medium-coarse gravel and a few flat rocks or stones. The fish seem to have no special needs regarding water quality; tap water is all that is required since even in their natural habitat these fish are found in waters with a relatively high degree of hardness. The temperature of the water should be 72°F to 77°F, and for breeding should be raised to 76°F to 80°F. A regular partial water change is recommended since these fish are apt to become easily infected or diseased when kept in old water. They do not dig up plants and can therefore be kept in a fully furnished aquarium as long as the most delicate of aquarium plants are not part of the aquascaping. Plants like the Amazon Sword plants, *Vallisneria*, Indian Ferns and Ludwigias are all very suitable but instead of having these planted directly into the gravel they could be planted into little plastic flower pots.

A. pulcher, like most other cichlids, are not very fussy about their food. They will eat all kinds of large live food, like meat, liver, heart, fish-meat and even large dried flakes. In fact, they will eat almost anything and no aquarist should ever experience any feeding problems. But it must be remembered that these fish are large fish, with large appetites and large quantities of food must be provided to keep them in good condition.

Sexing young specimens is impossible, sexing adult fish is very difficult since both male and female are equally brilliantly coloured. The only sure way of obtaining a breeding pair is to raise 6 to 8 young fish together and let them pair—or choose their own mate—naturally. They will reach sexual maturity at about 3 inches or when they are 6 to 8 months old. The others should then be removed from the tank. Mated pairs are usually not quarrelsome when kept by them-

selves and are also very easily spawned.

An indication that the fish are ready to spawn is the darkening of their colours; the female usually becomes even darker than the male. They will start cleaning various spawning sites; large plant leaves or stones but never the sides of the aquarium. They will also start digging holes at different places in the tank. This will continue for anything up to 10 to 15 days. They will also test their mating suitability by interlocking their lips; they will pull each other back and forth and stay in this position for up to 30 minutes at a time. If, during this time, one of the partners loses his colour and shows any signs of weakness, the pairing will fail. The stronger fish will show little mercy towards the weaker one and they should be separated as quickly as possible, before any real damage can be inflicted.

If this mouth-tugging persists for any length of time we can be certain that this pair is compatible. They will continue to dig more holes and clean more spawning sites until they have reached a state of sexual readiness. Dr. J. Vierke, writing in *Das Aquarium* September, 1973, suggests that the ceaseless cleaning of various spawning sites will continue until their sexual readiness coincides and not, as has always been thought, because the spawning site was not perfectly clean. When they are ready, the female will glide over the chosen spawning site, touching the stone or leaf with her genial-papilla which is bigger and more round than the males. After a few practice runs she will start to deposit her eggs, which are laid in neat little rows, about 6 to 10 at a time. The male then glides over the eggs, releasing his sperm and fertilisation takes place. The act of spawning will take a considerable time since a female in good condition is able to release up to 600 eggs.

After spawning both fish will take care of the eggs; they will take it in turns guarding and fanning them. The fry will hatch after about 2 days. They will be sucked free from their shells by the parents and spat into a previously prepared depression in the gravel. At no time will the brood be left unguarded and if one were to disturb the fish at this time the fry would most probably be eaten. After a further 4 to 6 days the fry will have absorbed their egg yolk and they will become free-swimming. They will leave the depression in a shoal, guarded by one or both of the parents, and go hunting for food. They can be given newly hatched brine shrimps, small cyclops and sifted daphnia. As they get older Tubifex, minced meat and larger daphnia should be given. With good feeding the young will grow very rapidly. They should be separated from the parents as soon as they are able to fend for themselves and raised in small numbers—75 to 100—in a 48-inch aquarium.

A. pulcher, like most other cichlids, will pair for life and will raise several broods in one year. During their life span of up to 8 to 10 years they should give a great deal of pleasure to their keeper. They are an ideal fish for the beginner as well as for the more advanced hobbyist.

PRODUCT REVIEW

Tropicure Floatex, a fish food "suitable for all cold water fish in ponds," manufactured by Tropicure Products Ltd., Horsforth, Leeds. The large cardboard carton I received contained 200 grms. (7oz.). Price unknown at the time of writing.

This food, intended for the feeding of pond fishes, comes in the form of pellets that look something like, and are very roughly the same size as, the small rubbers that are sometimes provided on the ends of ordinary wooden pencils. The food is described as being: "A completely new *high protein* fish food which *floats*, so enabling you to watch your fish feeding. During feeding these pellets will slowly disintegrate so that small and large fish can feed."

The directions on the food carton state that fishes should be fed "during March to October, according to appetite;" and that the food is "a scientifically prepared diet, to produce good growth and healthy lively fish, containing vegetable proteins, cereals, fish meal vitamins and mineral elements." Unfortunately no analysis of Floatex is supplied with the product.

I tested the floating quality of the food by scattering a number of pellets on to the surface of the water in a tank that did not contain any fishes. All of the pellets were still floating after a period of several hours. Agitation of the water surface failed to cause the pellets to sink; however, when violently prodded, with a pointed stick, to the point of disintegration, individual pellets finally sank. I then tried the food on some large fishes in another tank—I don't have a pond—and the fishes attacked the food as greedily as they do flake foods. (As I have said in previous reviews, this test has little scientific value as hungry fishes will greedily eat almost any brand or type of fish food. Extended scientific tests, carried out under controlled conditions, would be required to produce valid, objective results.) If you keep coldwater fishes in a pond, the addition of Floatex pellets to their diet could provide variety for the fishes and extra interest for you when observing your fishes feeding.

B. WHITESIDE.

THE WATER BUGS

Written & Illustrated

by

David C. Wareham

SOMETHING in the region of 25,000 different species of bugs have been found and described so far, and, together with the plant-lice, form the order *Hemiptera*. They have a world-wide distribution and vary considerably from one species to another,in colour, shape, habits, and general appearance. Metamorphosis is incomplete with no distinct larval, pupal, and adult stages, development occurring gradually. There are a number of moults during the insect's life, but the wings are fully developed only after the final moult.

Bugs are characterised by their possession of forewings which, for the greater part of their length, have a rather leather-like appearance at their roots. but which become membranous at their tips. They are similar in some ways to the wing-cases, or elytra, of beetles but, because they lack uniformity, they have been called hemelytra or "half-wings." Another feature peculiar to the family is a three-cornered breast shield which extends to the tip of the abdomen.

In some species the body and fore-wings are soft whilst in others they are hard. Some are fully winged in both sexes, in others one or both sexes may be wingless. Although there is a good deal of diversity within the order, there is one feature which is common to them all. The mouth, instead of being equipped for biting as in beetles, has been adapted into a sharp piercing-sucking, tubular proboscis. When not in use, it is bent backwards beneath the head and held flat against the underside of the thorax. These probosces, or beaks (rostra), are made up of several segments and are held at right-angles to the body when feeding on the juices of plants and animals. By piercing the skin of the food supply with two pairs of sharp stylets (setae) the insects suck up the juices through the hollow beak.

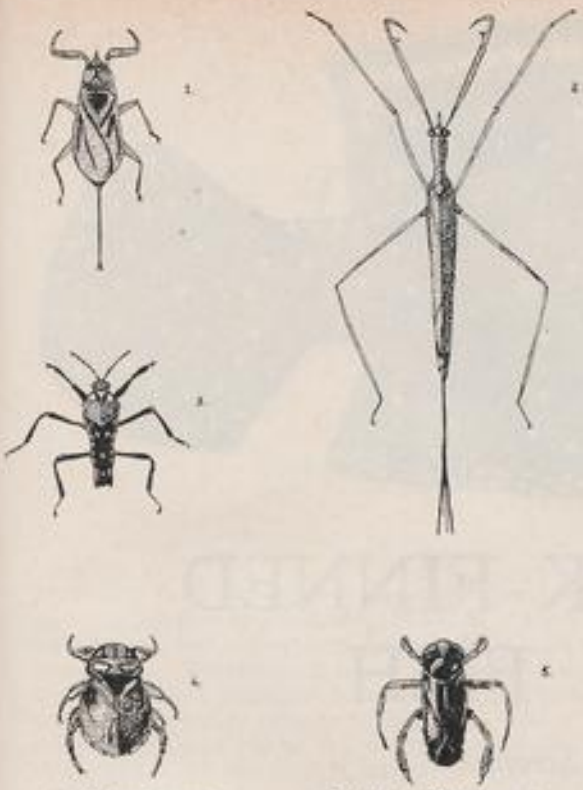
The order *Hemiptera* is divided into two groups; land bugs which have visible antennae—called Gymnocerata or Free Horns—and of which there are about 460 British species, and the water-bugs—Cryptocerata, or Hidden Horns—of which there are about 40 British species. The latter, of which we are going to concern ourselves with here, have their antennae concealed by grooves in the head in which they lie. This protects them from damage from the water in which they live, and is a characteristic feature of water-bugs, helping to identify them readily.

With one or two exceptions they are all carnivorous and feed on the blood of other insects and occasionally that of dead birds and mammals. The prey is seized and contained by the forelegs.

In Britain water-bugs can be found in most stretches of water, from still ponds to fast rivers, but although quite stagnant water is sometimes visited, they are almost always absent from chemically polluted waters. Despite their aquatic habits they nevertheless require a constant supply of oxygen, and must rise to the surface periodically to renew their supply. Most species can fly, although they are by no means strong in the air.

The eggs are laid usually on vegetation in the water, the young swimming off separately when they hatch. Some representatives of this order have a different way of egg-laying however. The females of the giant water-bugs of the tropics cement their eggs all over the backs of the males which are then carried around until they hatch. Giant water-bugs, *Belostomatidae*, achieve lengths of well over four inches and are among the largest insects known.

Probably the most familiar of our native aquatic bugs are the backswimmers. *Notonecta glauca* is common in ponds and the larger expanses of water, and reaches a length of 16 mm. It has a yellowish belly, but this may be darker, and sometimes almost black. It swims upside down in the water, using the



1. Water Scorpion
2. Water Stick Insect
3. Water Cricket
4. Saucer-Bug
5. Lesser Water Boatman

greatly lengthened hind legs, which are flat and covered with numerous hairs, as oars, hence the family's popular name of water boatmen. They can all swim rapidly in jerky movements, and can jump clear of the water and fly without coming to the shore. They are voracious predators and use their needle-like proboscis to attack other insects, tadpoles, and even small fish. Notonectids can inflict painful bites on humans if they should be handled carelessly.

The lesser water boatman, *Corixa punctata*, measures about 15 mm. and is coloured brown. Its wingcovers are mottled and the shield irregularly striped. Lesser water boatmen belong to the family Corixidae, and the males have the ability to make a clearly audible chirping sound which they create by rubbing their forelegs against their beaks. In some places they are called water cicadas. Unlike the Notonectids their bodies are flat instead of keel shaped and they have no bite, but instead rake their way through the mud on the bottom with the shovel-like processes on their front legs and feed on decaying vegetable and animal matter.

Ilyocoris cimicoides, the saucer-bug, is quite a large and common insect in still waters where it lives among the weeds. It delivers a powerful sting and because of this it has, along with similar species, been given the local name of water bee.

Two most extraordinary water dwellers are the water scorpions *Ranatra linearis* and *Nepa cinera* which comprise the family Nepidae. They both differ greatly in appearance. *Ranatra linearis* attains a length of 3 to 4 cm. and has a long, slender needle-like body, brownish green in colour, which is so inconspicuous as to render it almost impossible for the untrained eye to spot when it is hiding in weeds. It is for this reason that this interesting insect is so seldom observed, its presence in many ponds being completely overlooked. *Nepa cinera*, on the other hand, is flattened, looking rather like a dead leaf. It is common around the edges of stagnant ponds where it can be found clinging to the underside of floating or submerged debris. Brownish grey in colour, it reaches a length of about 2 cm.

Although there is this great difference in appearance between the two species, there are one or two similarities. Both have long, double respiratory tubes at the ends of their bodies. These tubes are used as snorkels to bring oxygen to their bodies whilst they are submerged. Their front legs are useless for walking, having been adapted for seizing their prey, and which operate on the jack-knife principle. Both are once again able to deliver painful bites if handled incorrectly. Water scorpions lay their eggs on water plants, and each egg receives a constant supply of air by means of a long thread-like filament which drifts to the water's surface.

A brief note must be made here about another family, the pond-skaters or water-striders. These bugs differ from the former species in that they do not swim about below the water, but instead live on the surface. The family consists of slender, predatory insects which live together usually in large numbers on lakes, ponds, and other slow-moving waters. As their name suggests they glide like skilful skaters over the surface in a series of short, powerful spurts. The under-part of their bodies is covered with a thick coat of tiny hairs which keeps them from being wetted by the water.

Almost every kind of insect that settles on the surface is preyed upon by the pond skaters, and they will also suck the juices from the bodies of dead mammals or small birds which are floating in the water. The common pond skater, *Gerris lacustris*, reaches a length of 10mm. and is particularly common on stagnant waters and ditches. The water cricket, *Velia saulii*, is a rather attractive insect. It is 7 mm. long and a greyish-red with white spots. It runs rather than skates, and occasionally dives beneath the surface in its hunt for food. The water cricket is a more solitary insect than some of the other species.

THE BLACK-FINNED PEARL FISH

by Bill Simms

MANY OF OUR best tropical fish come from South America, and this one, the Black-finned Pearl Fish (*Cynolebias nigripinnis*) rides high on any list of good and easy-to-breed species. The male is velvety black relieved with spots that shine either light green or light blue. The female is different in shape and colour, having shorter fins and a narrower body with a ground colour of light tan to brown, marked with darker spots and mottlings. Normally an adult male reaches about 1¾ in., and the female is a little bit smaller.

The temperature range that suits this fish best is from 72 to 76°F, and the water should be very slightly acid and soft. In a community tank it is peaceful, and sufficiently active to keep away from aggressive neighbours. However, it does very much better when kept with its own kind, and because of the difference between the sexes, an aquarium of black-finned pearl fishes can be really ornamental. Live food suits it best, particularly the smaller kinds, but it will take some frozen foods—reluctantly.

This is one of a group of fishes that live in streams and ponds that are liable to dry up at times. Therefore they have adapted to these conditions in their breeding cycle. Eggs are laid in the pond bottom, and survive the drought. When rains come again the eggs hatch, and the young fishes quickly develop and grow to maturity.

Because of this a sequence of operations has been worked out for breeding these fish in captivity. A layer of peat moss is laid on the bottom, in such a position that it can be lifted out easily. I use very shallow plastic trays with holes in the bottom. The male is an ardent lover, and soon persuades a female to mate. The pair quiver side by side, heads pointing down to the bottom, and then ram themselves into the peat moss to lay and fertilise their eggs. This is a remarkable sight, for in a deep soft mass of peat moss they nearly vanish from sight.

When the mating is over the peat moss is carefully lifted out of the aquarium, allowing it to drain slowly as you remove it, and then transferred to another tank—without any water. A glass on this aquarium should keep it slightly damp, and you must make sure that it does not dry out too much.

After about six weeks in this semi-dry state some water of the correct temperature and acidity is introduced—from the parents' tank for preference. Within quite a short time the babies will hatch, and should be fed and reared as for any small egg-layers.

THE MARBLED ANGEL FISH

by Jorgen and Pamela Hansen

IN RECENT YEARS innumerable variants of different aquarium fish have appeared, and as millions of angel fish (*Pterophyllum scalare*) have through the decades been bred in aquariums, it is not remarkable that favourable colour mutations have occurred, and the fish in question made available to the public. One of these is the marbled angel fish which was produced in the U.S.A. by two persons independently of one another: by Bud Goddard in Florida, whose specimens, however, died before he was able to breed further from them, and five years later by Charles Ash in California who was able to breed his specimens and supply the market both in U.S.A. and Europe.

We obtained our first three small marbled angel fish in the summer of 1970; they were placed together with an ordinary male left over from an earlier pair. Eight months later it became clear that the ordinary male had paired off with one of the marbled fish. This pair presented us with 240 fry, of which half were ordinary striped angel fish and half were marbled to a degree ranging from partial breach of the stripes to a marbling almost as strong as that of the mother.

The genetical factor which gives the marbled pattern is thus not a single dominant gene as the marbled fish do not apparently receive equal amounts of the marbling factor; several genes must be involved.

To further ascertain the genetical nature of the marbling factor we wanted a brood from a pure marbled pair; five of the young with a distinct marbled pattern were thus kept for further breeding. But 10 months later when they were ready to breed, an acquaintance who wanted to learn how to hatch angel eggs artificially, came unexpectedly with a plastic leaf covered with such eggs; he asserted that both parents were strongly marbled. As we in this way saved having to vacate a large tank in which to spawn a pair, we hatched the eggs artificially after our usual method. The leaf with eggs was placed in a small completely clean all glass tank containing water straight from the tap. The temperature was 26°C, pH 7 and DH 14. A single air stream ensured that the water was kept in circulation. With this method only a minority of eggs fungus, in this case 20 during the first two days. These were loosened from the leaf with a sharp pin. whereafter they fell to the bottom from where they were removed with a pipette in order that they might not infect the remaining eggs. After two days the tails broke through, and in 7 days the fry swam freely and were then fed with brine shrimp. We have tried to feed instead with hard-boiled egg-yolk, Liquifry, micro-worms, and cyclops nauplii at this stage but generally the fry don't touch this food and the whole brood dies in the course of three days.

This brood amounted to 230 fry, all of which at the age of one month could be seen to be marbled to a varying extent ranging from lightly marbled to almost black. By the age of two months the colour patterns could be clearly distinguished.

The distribution of the young was as follows, with I representing the marble × ordinary cross and II the marble × marble cross:

	Ordinary	Slightly marbled	Evenly marbled	Almost black
I	50%	5%	45%	—
II	—	25%	50%	25%

A cross between two ordinary angel fish, from the marble × ordinary cross, produced no marbled young, indicating that recessive genes are not involved.

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.

A total of 430 entries were benched at the fourth open show of the **Scunthorpe Museum Society A. G.,** with the Aquarist Gold Pin, the Y.A.A.S. Diploma and Best Fish in Show trophy going to Mr. and Mrs. Burr of the Scunthorpe and District Society. The results were as follow: Guppy: 1 and 2, Mr. Beeching (South Humberside); 3, Mr. and Mrs. Jermany (South Humberside). Swordtail: 1, Mr. and Mrs. Ardron (Doncaster); 2, A. L. Dykes (Sutton in Ashfield); 3, R. Leonard (South Humberside). Mollie: 1, Mr. and Mrs. Guy (Doncaster); 2, J. Igoe (Sherwood); 3, Mr. and Mrs. Emerson (Castleford). Platy: 1, W. Blundell (Doncaster); 2, Mr. and Mrs. Blades (Cresswell); 3, Mr. and Mrs. Kirk (Castleford). A.O.V. Livebearer: 1, Mr. and Mrs. Toyne (Sheaf Valley); 2, G. Wilson (South Humberside); 3, A. Feasey (Doncaster). Small Barbs: 1 and 2, Mr. and Mrs. Jermany (South Humberside); 3, Master S. Neville (Granthams). Large Barbs: 1, A. Feasey (Doncaster); 2, Mr. and Mrs. Roberts (Doncaster); 3, M. Whitelam (Scunthorpe M.S.). Small Characins: 1, Mr. and Mrs. Guy (Doncaster); 2 and 3, Mr. and Mrs. Richardson (Independent). Large Characins: 1, Mr. and Mrs. Blades (Cresswell); 2, Mr. and Mrs. Pogson (Scunthorpe M.S.); 3, Mr. and Mrs. Davison (Scunthorpe M.S.). Dwarf Cichlids: 1, Mr. and Mrs. Borrill and Sons (Lincoln); 2, K. Barrett (Doncaster); 3, Mr. and Mrs. Kirk (Castleford). Large Cichlids: 1, Mr. and Mrs. Blades (Cresswell); 2, J. Igoe (Sherwood); 3, Mr. and Mrs. Toyne (Sheaf Valley). Angels: 1 and 2, Mr. and Mrs. Sellars (Lincoln); 3, M. M. Whitelam (Scunthorpe M.S.). Rift Valley Cichlids: 1, Mr. and Mrs. Kirk (Castleford); 2, Mr. and Mrs. Sellars (Lincoln); 3, Mr. and Mrs. Fletcher (Doncaster). Corydoras: 1 and 3, Mrs. D. Wells (Doncaster); 2, W. Blundell (Doncaster). A.O.V. Catfish: 1, Mr. and Mrs. Fletcher (Doncaster); 2, Mr. and Mrs Burr (Scunthorpe); 3, R. Brown (Scunthorpe). Louches: 1, Mr. and Mrs. A. Binns (Scunthorpe M.S.); 2, K. Barrett (Doncaster); 3, Mr. Toyne (Scunthorpe). Sharks: 1, Mr. Deighton (Immingham); 2, M. Whitelam (Scunthorpe M.S.); 3, Mr. and Mrs. Scarll (Goole). Foxes: 1, W. E. Neville (Grantham); 2, Mr. and Mrs. Kirk (Castleford); 3, Jackson and Belder (Grimsby and Cleethorpes). Small Anabantids: 1, K. Barrett (Doncaster); 2, W. Blundell (Doncaster); 3, Mr. and Mrs. Emerson (Castleford). Siamese Fighters (Plain): 1, Mr. and Mrs. Kirk (Castleford); 2, Mr. and Mrs. Toyne (Sheaf Valley); 3, Mr. Smart (Independent). A.O.V. Anabantids: 1, Mr. and Mrs. Batch (Hull); 2, Mr. and Mrs. A. Robinson (Scunthorpe M.S.); 3, J. Rhoades (Scunthorpe M.S.). Siamese Fighters (Multi): 1, Mr. and Mrs. Borrill and Sons (Lincoln); 2 and 3, Mr. and Mrs. Ardron (Doncaster). A.O.V. Coldwater: 1, Master J. Emerson (Castleford); 2, M. Darley (Sheaf Valley); 3, Mr. and Mrs. Blades (Cresswell). Rivulus: 1, G. White (Scunthorpe); 2, M. Whitelam (Scunthorpe M.S.); 3, J. Rhoades (Scunthorpe M.S.). Aphyosemion: 1, Mr. and Mrs. Blades (Cresswell); 2, Mr. Machin (Independent); 3, Mr. Morton (Scunthorpe M.S.). A.O.V. Killiefish: 1, J. Brett (Gainsborough); 2, J. Rhoades (Scunthorpe M.S.); 3, J. White (Scunthorpe). Danios and Minnows: 1 and 3, Mrs. Wells (Doncaster); 2, Mr. Searby (Grimsby and Cleethorpes). Rasboras: 1, S. Harrison (South Humberside); 2, Mr. and Mrs. Binns (Scunthorpe M.S.); 3, Mr. and Mrs. Fletcher (Doncaster). A.O.V. Tropical (up to 8 in.): 1, Mr. and Mrs. Burr (Scunthorpe); 2, Mr. Darragh (Goole); 3, Mr. and Mrs. Guy (Doncaster). A.O.V. Tropical (over 8 in.): 1, Mr. and Mrs. Burr (Scunthorpe); 2, Mr. and Mrs. Caldow (Scunthorpe M.S.); 3, Mr. Smart (Independent). Pair (Egglayers): 1, Mrs. Wells (Doncaster); 2, Mr. and Mrs. D. Caldow (Scunthorpe M.S.); 3, Mr. and Mrs. S. Pogson (Scunthorpe M.S.). Pair (Livebearers): 1, Mr. and Mrs. Fletcher (Doncaster); 2, Mrs. Wells (Doncaster); 3, Mr. and Mrs. Toyne (Sheaf Valley). A.V. Marine: 1, Mr. and Mrs. D. Caldow (Scunthorpe M.S.). Breeders (Egglayers 1-10): 1, Mr. and Mrs. V. Hardie (Scunthorpe M.S.); 2, Mr. and Mrs. Ardron (Doncaster). Breeders (Egglayers 11 to 20): 1, Mr. and Mrs. Fletcher (Doncaster); 2, J. Rhoades (Scunthorpe M.S.); 3, Mr. Wells (Doncaster). Breeders (Livebearers 1 to 10): 1, W. Blundell (Doncaster); 2, Mrs. Wells (Doncaster). Novice (Single Egglayer): 1, Master G. Allen (South Humberside); 2, Mr. Allen (South Humberside); 3, Mrs. Nicholson (Sherwood). Novice (Single Livebearer): 1, Master G. Allen (South Humberside); 2, Mrs. Nicholson (Sherwood); 3, Mr. and Mrs. Tyson (South Humberside).

* * *

THE new committee elected at the annual general meeting of the **Horsforth and District A.S.** was as follows: Chairman, J. Wood; Vice Chairman, J. Dunn; Treasurer, M. Barker; Show Secretary, C. Corns; Secretary, P. J. Smith; Social Secretary, Mrs. J. Dickenson; Catering, Miss D. Midgeley; Librarian, B. Runnacles, Mrs. B. Helm, Miss Jane Helm and Mrs. C. Corns. An interesting slide show on Anabantids by Ray Hampson rounded off a busy evening.

* * *

RESULTS of the **Alfreton A.S.** last Inter-Society match with Derby Regent were: Best fish in the show was a small Characin owned by J. Wright of Alfreton A.S. Mollies and Swords: 1 and 3, A. Dean; 2, M. Darrington. Large Barbs: 1, Mr. and Mrs. Bull; 2, S. Hill. Small Characins: 1, J. Wright; 2, M. Darrington. 3, A. Lane. Large Cichlids: 1, A. Dean; 2, D. Lee; 3, S. Hill. Killifish: 1, 2 and 3, S. Hill. Sharks and Foxes: 1 and 2, R. Harlow; 3, Mr. and Mrs. Bull. A.V. Catfish: 1, T. Bullock; 2, R. Harlow; 3, A. Dean. Anabantids: 1, S. Hill; 2, P. Walker; 3, Mr. and Mrs. Bull. Egglayers (pairs): 1, R. Harlow; 2, A. Lane; 3, J. Wright. Breeders (Egglayers): 1, S. Hill; 2, J. Wright; 3, R. Harlow. Points: Alfreton A.S. 33. Derby Regent 26.

* * *

OFFICERS for the **Smethwick and District A.S.** for the year are as follow: President, L. Stokes; Chairman, D. Johnstone; Secretary, W. Layland, 67 Cambridge Road, Smethwick, Warley, Worcs. B66 2HW. 021-558 1927.

* * *

A NEW society called **Southern Independent A.S.** has been formed. The committee members are as follow: Chairman, C. Parnell; Secretary, Mrs. Adams; Treasurer, Mrs. French; Asst. Treasurer, Miss French; Show Secretary, T. Adams; F.B.A.S. Delegate, T. Adams; Publicity Officer, Mrs. Adams; Committee Members, Mrs. Pannell, Mr. Phillip, T. Thompson.

The first inter-club contest was held early in May, and the opponents were Tonbridge and District A.S. This proved an enjoyable evening for all concerned. Southern Independent were the winners and the cup for Best Fish in the Show was awarded to Southern Independent member Mrs. A. Adams. A small quiz was arranged while the fish were being judged by two judges from Mid-Kent A.S.

The results were as follow: Best Fish in Show: Mrs. Adams (*S-In.*). Coldwater: 1 and 2, Mrs Adams (*S-In.*). Characins: 1, D. and B. Purchard (*T*); 2, J. Bellingham (*T*); 3, S. Fiest (*T*); 4, C. Pannell (*S-In.*). Labyrinths: 1 and 3, C. Pannell (*S. In.*); 2, Miss H. French (*S. In.*); 4, Mrs. I. Bellingham (*T*). Corydoras: 1, 2, 3 and 4, Mrs. A. Adams (*S. In.*). Sexed pairs N.B.M.: 1, D. and B. Purchard (*T*); 2, J. Bellingham (*T*); 3, N. Ayling (*T*); 4, Mrs. A. Adams (*S. In.*). X.B.M. Breeders: 1, 2, 3 and 4, Mrs. A. Adams.

* * *

THE **British Cichlid Association,** Nottingham area, has started meeting on the first Tuesday of each month. Any member or any one wishing to join the B.C.A. is most welcome to come along and should contact the membership secretary Mr. P. N. Berry at 131 Sherbrook Road, Daybrook, Nottingham for details. Venue and time are to be determined.

* * *

RESULTS of the **Yate and District A.S.** eighth Open Show were as follow: Guppies (male): 1 and 4, C. Whitaker (Stroud); 2, C. Turner (Cardiff); 3, W. Burton (Trowbridge). Guppies (female): 1, D. Walsh (Yate); 2, P. Greenwood (B. Cleeve); 3, W. Burton (Trowbridge); 4, K. Press (Bath). Platy: 1, P. Greenwood (B. Cleeve); 2, Mr. and Mrs. Warmeant (Cardiff); 3, D. Phippen (Bath); 4, Master D. Sullivan (Whiteway). Swordtails: 1, Master K. Williams (Rhondda); 2, R. Poots (Yate); 3 and 4, K. Owen (Bath). Mollies: 1, J. Dooson (Cotswold); 2 and 3, R. Poots (Yate); 4, M. Butcher (Trowbridge). Livebearer A.O.V.: 1, Mrs. S. Onslow (Basingstoke); 2 and 4, J. Dooson (Cotswold); 3, D. Phippen (Bath). Capoeta Barbs: 1, 2 and 3, D. Phippen (Bath); 4, R. Lecombe (Bath). Puntius Barbs: 1 and 4, D. Noble (Yate); 2, C. Higgs (Glos.); 3, R. Hyett (Yate). H.H. Cheredon Paracheredon: 1, K. Owen (Bath); 2 and 3, W. Heywood (Yate); 4, R. Onslow (Basingstoke). Nannostomus Poecilobrycon: 1, Mrs. K. Press (Bath); 2 and 3, D. Phippen (Bath); 4, Mr. and Mrs. Warmeant (Cardiff). Characins A.O.V.: 1, B. Kilminster (Yate); 2 and 3, C. Turner (Cardiff); 4, Mr. and Mrs. Warmeant (Cardiff). Siamese Fighters: 1, M. Brown (Devizes); 2 and 3, Mr. Todd (Whiteway); 4, C. Turner (Cardiff). Anabantids: 1, Mr. and Mrs. Warmeant (Cardiff); 2, K. Owen (Bath); 3, G. Castle (Trowbridge); 4, R. Hyett (Yate). Corydoras: 1, P. Greenwood (B. Cleeve); 2, C. Russell (Bath); 3, Mr. and Mrs. Williams (Rhondda); 4, D. Phippen (Bath). Catfish A.O.V.: 1, D. Phippen (Bath); 2, Mrs. B. Pedersen (B.T.F.C.); 3, Mrs. K. Press (Bath); 4, R. A. Bennett (Yate). Cobitidae: 1, C. Russell (Bath); 2 and 4, G. Miles (B. Aero); 3, Master K. Williams (Rhondda). Rasboras, Danios, Minnows: 1, R. Poots (Yate); 2, R. Onslow (Basingstoke); 3 and 4, Mrs. M. Butcher (Trowbridge). Laboos, Sharks: 1, D. Noble (Yate); 2, P. Greenwood (B. Cleeve); 3, Mr. and Mrs. Warmeant (Cardiff). Dwarf Cichlids: 1 and 3, Mrs. B. Pedersen (B.T.F.C.); 2, M. Trayes (Yate); 4, T. Tovey (Yate). Angels, Discus: 1 and 3, N. Hyett (Stroud); 2, P. Greenwood (B. Cleeve); 4, Mrs. K. Press (Bath). African, Asian Cichlids: 1 and 4, Mrs. B. Pedersen (B.T.F.C.); 2, R. Onslow (Basingstoke); 3, C. Whittaker (Stroud). Cichlids A.O.V.: 1, D. Noble (Yate); 2, Mr. and Mrs. Warmeant (Cardiff); 3, L. Willey (Stroud); 4, M. Trayes (Yate). Egglaying Toothcarps: 1, B. Tooze (B.T.F.C.); 2, Mr. and Mrs. Williams (Rhondda); 3 and 4, B. Tooze (B.T.F.C.). Sexed pairs: 1, Mrs. B. Pedersen (B.T.F.C.); 2, Mrs. S. Onslow (Basingstoke); 3, T. Tovey (Yate); 4, D. Walsh (Yate). Breeders Teams Tropical: 1, G. Castle (Trowbridge); 2, C. Turner (Cardiff); 3, R. Onslow (Basingstoke); 4, T. Tovey (Yate). Breeders Teams Coldwater: 1, J. Phillips (B.A.S.); 2, Mrs. K. Press (Bath); 3, L. Menhennet (New Forest). Junior A.V. Tropical: 1, Master A. Press (Bath); 2, Miss T. Sullivan (Whiteway); 3 and 4, Master D. Sullivan

(Whiteway). Furnished Tanks: 1, Mrs. K. Press (Bath). Shubunkins: 1, L. Meehennet (New Forest); 2, D. Phippen (Bath); 3 and 4, T. Fowler (Bath). Single Tail Goldfish: 1, Mrs. K. Press (Bath); 2, B. Snell (Yate); 3, Mrs. B. Pedersen (B.T.F.C.); 4, J. Powell (Yate). Twin Tail Goldfish: 1, Mr. and Mrs. Warmsear (Cardiff); 2, J. Phillips (B.A.S.). A.V. Pond, River: 1, K. Press (Bath); 2, Master M. Powell (Yate); 3 and 4, J. Powell (Yate). A.O.V. Tropical: 1, D. Noble (Yate); 2, R. Larcombe (Whiteway); 3, T. Tovey (Yate); 4, C. Turner (Cardiff). Rooted Plants: 1, P. Greenwood (B. Cleeve); 2, M. Butcher (Trowbridge); 3, Mrs. K. Press (Bath). Highest number of points in show: D. Phippen (Bath). Best in Show and Highest number of points Y.D.A.S. member: D. Noble (Yate).

* * *

RESULTS of the **Stanley and Consett A.S.** second annual open show were as follow: Breeders Pairs (Egglayers): 1, T. Reed (Worksop); 2, S. Lee; 3 and 4, Mr. Hope and Sons (Hartlepool). Breeders Pairs (Livebearers): 1, 2 and 3, J. Brown (Redcar); 4, Mr. and Mrs. Dorner (Redcar). Breeders Class (Egglayers): 1, T. Reed (Worksop); 2, Mr. and Mrs. Risbridger (S. Shields); 3, Master M. Lister (Stanley). Breeders Class (Livebearers): 1, Mr. and Mrs. Sowerby (Mt. Pleasant); 2, Mr. and Mrs. Hickman (Killingsworth); 3, K. Roadway (Cockerton); 4, W. Caldicott (Priory). A.V. Guppy: 1 and 4, F. Myres; 2, J. Pattison (Priory); 3, J. King (Redcar). A.V. Platty: 1, Mr. and Mrs. Liddle (Ashington); 2, M. Johnson (Stanley); 3, J. R. Millen (Priory); 4, Mr. and Mrs. Saunders (Stockton). A.V. Molly: 1, J. R. Millen (Priory); 2, J. Brown (Redcar); 3 and 4, J. Beavers (Hartlepool). A.V. Swordtail: 1, J. Patterson (Priory); 2, J. King (Redcar); 3, Mr. and Mrs. Sowerby (Mt. Pleasant); 4, F. James (Priory). Cichlids (small): 1 and 3, C. Enright (S. Shields); 2, G. Brown (Mt. Pleasant); 4, Mr. and Mrs. Hunt (Ashington). Cichlids (large): 1, Mr. and Mrs. Saunders (Stockton); 2 and 3, B. Cooper (Peterlee); 4, Mr. Askew (S. Shields). Rift Valley Cichlids: 1, P. Newton (Hartlepool); 2 and 3, C. Enright (S. Shields); 4, Mr. Hope and Sons (Hartlepool). Angels: 1, Mr. and Mrs. Dorner (Redcar); 2, Master E. Hall (Stanley); 3, Master S. King (Stanley); 4, W. Clemenson. A.V. Fighter: 1, J. Beavers (Hartlepool); 2, F. Myres; 3, Mr. and Mrs. Dickson (Hartlepool); 4, Mr. Hope and Sons (Hartlepool). A.V.E.L.T.C: 1 and 4, Mr. Askew (S. Shields); 2, Mr. and Mrs. Saunders (Stockton); 3, Misses C. and J. Sidson (Worksop) A.V. Labyrinths: 1, Mr. and Mrs. Renton (Killingsworth); 2, I. H. Danskin (N.T.F.S.); 3, R. Thompson (B. Auckland); 4, Mr. and Mrs. Simpson (Worksop). Tropical Catfish: 1, H. Garthwaite (Hartlepool); 2, Mr. and Mrs. Simpson (Worksop); 3, M. Holman (Priory); 4, G. Quantrill (Priory). Corydoras, Brochis: 1, B. Docherty (Stanley); 2, Mr. and Mrs. Liddle (Ashington); 3, Mr. and Mrs. Simpson (Worksop); 4, Mr. and Mrs. Risbridger (S. Shields). Rasbora, Danio, Minnow: 1, K. Baxter (N.T.F.S.); 2, Master M. Lister (Stanley); 3, B. Elliot (Stanley); 4, I. H. Danskin (N.T.F.S.). Characins (small): 1, Mr. and Mrs. Richardson (Scarborough); 2 and 4, P. and T. Robinson (Mt. Pleasant); 3, W. Walton (Priory). Characins (large): 1, Mr. and Mrs. Bailey (Sherwood); 2 and 3, Mr. and Mrs. Liddle (Ashintgon); 4, Mr. Hope and Sons (Hartlepool). Barbs (small): 1, B. Elliot (Stanley); 2 and 3, Master E. Hall (Stanley); 4, Mrs. J. Surtees (Stanley). Barbs (large): 1 and 2, S. Stevenson (Stanley); 3 and 4, Mr. and Mrs. Davison (Ashington). Sharks, Labeo, Flying Foxes: 1 and 2, F. James (Priory); 3, B. Elliot (Stanley); 4, Master G. Maguire (Hartlepool). A.O.V.: 1, Mrs. Simpson (Worksop); 2 and 3, Mr. and Mrs. Liddle (Ashington); 4, S. Dawson (Billingham). Loach: 1, Master M. Lister (Stanley); 2, H. Garthwaite (Hartlepool); 3, B. Binks (Billingham); 4, D. Wilson (N.T.F.S.). A.V. Coldwater: 1 and 2, B. Edwards (Stockton); 3, Miss S. Davison (Ashington); 4, W. Foreman (Stanley). Junior Class: 1, 3 and 4, Master T. Corbett (Billingham); 2, Master R. Simpson (Worksop).

* * *

EARLY in May the open show of **Bournemouth A.S.** was held and was a great success due to the entries which were double of that of last year, 440 entries were recorded from 21 clubs. The members felt this was due to having the show a month earlier than last year and also to the weather which brought many more members of the public to the open show. The Society's members obtained many of the prize cards, the highest being B. Coombes with 11 points, Mr. Jeffery and Mr. Middleton being 2nd, Mr. Chatfield and Mr. Turner 3rd, Mr. Gibbs 4th, Mr. Travers and Mr. Haskins and Mrs. Bebb 5th.

Full results were: Barbs: 1, H. Armitage; 2, P. Brown; 3, R. Leslie; 4, E. H. Chatfield. Characins: 1, T. Fraser; 2, T. Hatton; 3, K. Forrester; 4, G. G. Castle. Hemis, Hyphs, Cheirodon: 1, L. G. Little; 2, I. Clarke; 3, T. Fraser; 4, R. Onslow. Cichlids: 1, R. F. Adams; 2, B. Snell; 3, J. G. Dickinson; 4, G. M. Haskins. Dwarf Cichlids: 1, B. Bissoon; 2, K. Forrester; 3, M. J. Turner; 4, G. M. Fox. Labyrinths: 1, E. H. Chatfield; 2, G. G. Castle; 3, R. F. Adams; 4, A. C. Tull. Egglaying Toothcarps: 1, A. E. Weare; 2, L. G. Little; 3, E. Binstead; 4, J. H. Jackson. Tropical Catfish: 1, M. Medway; 2, J. G. Dickinson; 3, B. Bissoon; 4, Mrs. M. H. Seymour. Corydoras: 1, K. Howell; 2, B. Bissoon; 3, T. Hatton; 4, C. N. Middleton. Rasbora: 1 and 2, E. Earnshaw; 3, R. A. Poots; 4, R. P. Christopher. Danio, W.C.M.M.: 1, C. N. Middleton; 2 and 3, J. J. Edwards; 4, K. F. Hale. Loach: 1, T. Hatton; 2, J. Edwards; 3, R. Leslie; 4, H. Armitage. A.O.S. Egglayers: 1, T. Taylor; 2, F. Willis; 3, I. Clarke; 4, R. P. Christopher. Pairs: 1, I. Clarke; 2 and 3, W. A. Cowburn; 2, M. Medway; 4, R. Leslie. Guppy (Male): 1, W. West; 2, K. S. Gibbs; 3, R. F. Adams; 4, D. A. Earnshaw. Swordtail: 1, B. Bissoon; 2, R. A. Poots; 3, G. Penrose; 4, A. Lines. Platty: 1, B. Bissoon; 2, G. M. Fox; 3, R. P. Christopher; 4, J. V. Jeffery. Molly: 1, Mrs. M. H. Seymour; 2, L. G. Little; 3, Mr. and Mrs. Bebb; 4, R. A. Poots. A.O.S. Livebearers: 1, R. Onslow; 2, T. Fraser; 3, B. Bissoon; 4, A. E. Weare. Single Tail Goldfish: 1, 2 and 4, D. S. Langdon; 3, B. Coombes. Common Goldfish: 1, R. P. Christopher; 2, J. V. Jeffery; 3, B. Coombes; 4, B. Snell. Twintail Goldfish: 1 and 2, B. Coombes; 3, Misses D. and S. Jackson. A.O.S. Coldwater: 1, E. Binstead; 2, M. G. Slade; 3, J. V. Jeffery; 4, R. Travers. Breeders (Tropical Egglayers): 1, F. Willis; 2, M. J. Turner; 3, G. G. Castle; 4, C. M. Robinson. Breeders (Tropical Livebearers): 1, R. Onslow; 2, L. G. Little; 3, B. Bissoon; 4, C. N. Middleton. Best Fish in Show: D. S. Langdon (Shubunkin). Best Coldwater Fish in Show: D. S. Langdon (Shubunkin). Best Tropical Fish in Show: B. Bissoon (Platty).

* * *

THE May meeting of the **Association of Goldfish Breeders** consisted of an open night when members and guests enjoyed an evening of slides and a talk by A. Lawman on Japan where he visited recently. He went to many Goldfish breeders and was able to acquire knowledge of their breeding methods and the way they feed their fish. Table Show Results: Singletails: 1, B. Cook; 2 and 4, L. Clements; 3, L. Fleming. All Young Fish: 1, G. Fleming; 2, D. Nutt; 3, R. Elsden; 4, L. Clements. The secretary is G. Fleming, 3 Rutland Road, London E.11.

* * *

EARLY in May **Bedworth A. and P.S.** celebrated their one-hundreth meeting with a buffet dance, to which they invited the friends and helpers of the society, judges and speakers, representatives of M.A.A.S. and M.A.L. In all 172 people attended.

The table show for the evening was the eliminator for the M.A.A.S. inter-society show. Results: Danio: 1 and 2, M. Lee. Characin: 1, R. Shakespeare; 2, D. White. Barb: 1 and 2, M. Lee. Cichlid: 1 and R.I.S.: R. Shakespeare; 2, J. Salisbury. Guppy: 1, R. Shakespeare; 2, D. White. A.O.V.Tropical: 1 and 2, J. Salisbury. A.O.V. Livebearer: 1, D. White; 2, J. Salisbury. Rasbora: 1 and 2 D. White. Catfish: 1, D. White; 2, C. Pratt. Anabantid: 1, J. Salisbury; 2, C. Pratt. Loaches: 1, J. Salisbury; 2, T. Emms. Single Tail Goldfish: 1, C. Pratt; 2, R. Shakespeare. Twintail Goldfish: 1, R. Shakespeare; 2, J. Salisbury. Pond and Riverfish: 1, C. Pratt; 2, R. Shakespeare.

These fish were entered for the M.A.A.S. inter-society show, when the following awards were won. Characin: 1st. Cichlid: 1st and 6th. Guppy: 1st and 6th. A.O.V. Livebearer: 4th and 6th. Catfish: 1st. Anabantid: 6th. Loach: 3rd. Single-tail Goldfish: 1st. Twintail Goldfish 3rd and 6th. Pond and River Fish: 1st and 3rd. These were enough to make Bedworth A. and P.S. the winner with a total of 82 points.

* * *

DI$CU$$ION about the Open Show was the main topic of the **Bournemouth A.S.** May meeting. B. Coombes was awarded a trophy for the highest pointed member in the open show. During the evening the Chairman told the members of an inter-club show to be held by the Portsmouth A.S. Also of an inter-club quiz with Devizes at the June meeting. Table Show Results: Barb: 1, Mr. Middleton; 2, Mr. Greenhalge; 3, Mr. Haskins. Catfish and Loach: 1 and 2, Mr. Watkins; 3, Mr. Middleton. O.B. Prs. (Guppy): 1, Mrs. Bebb; 2 and 3, K. S. Gibbs. A.O.V. Coldwater: 1, Mr. Middleton; 2, Mr. Watkins; 3, Mr. Greenhalge.

* * *

THE final of the **Cymru National Aquarist Association** inter-club competition which started last year with zonal contests, was held early in May. It was decided that as Llantwit Major A.S. was the most centrally situated of neutral societies, they would act as hosts for the evening.

In addition to the final there was also a supporting competition of both A.O.V. Egglayers and Livebearers classes. This extended the interest to all present and resulted in two very large entries of fish benched.

Finalists: Barry A.S., R.A.D.T.F.A. and Rhondda A.S. The winners and holders of the K.O. Trophy for twelve months were Rhondda A.S. who beat R.A.D.T.F.A. by one point with Barry following fairly closely in third place. Final Results: A.O.V. Egglayers: Judged by R. S. Wigg; 1 and 2, M. Williams (R.A.S.); 3, C. Harding (R.A.D.T.F.A.); 4, H. Evans (B.A.S.); 5, M. Guthrie (B.A.S.); 6, T. Click (R.A.S.). A.O.V. Livebearers: Judged by A. Ibbertson; 1, 5 and 6, C. Harding; 2 and 3, M. Guthrie; 4, A. Smith (R.A.S.). K.O. Competition: A.O.V. Egglayers: Judged by C. Harding; 1, (Plaque winner) G. Fry (L.M.A.S.); 2, A. Smith (R.A.S.); 3, J. Egan (P.T.A.D.A.S.); 4, R. Newton (P.A.S.). A.O.V. Livebearers: Judged by C. Turner; 1, K. Williams (R.A.S.); 2, A. Wallace (B.A.S.); Joint 3, J. Egan and Master John Edwards. Whilst judging was in progress the Association's secretary, at extremely short notice, conducted a most interesting and humorous quiz. The next assembly will be held in Penarth on 27th August with the local society acting as hosts. Meeting place to be finalised later.

* * *

THE newly formed **Association of Midland Goldfish keepers** held its inaugural meeting on the 24th March. This meeting was attended by goldfish enthusiasts of varying experience but all with the will to see the Association formed. A guiding committee was elected as follows: A. Roberts, Chairman; F. Orme, Secretary; R. Hancox, Treasurer; D. Denny, and M. Mason to hold office until October when the annual general meeting will be held. It was agreed that, for the time being, the subscription would be £1·00 per member. During April the Association staged a non-competitive display of member's fish as part of the Coventry P. and A.S. Open Show, this was watched over for most of the time by

D. Denny who reported a great deal of interest from the public. If any reader would like further details please write to the Secretary, 94 Newman Way, Rubery, Birmingham.

* * *

THIS year there will be a different presentation at the **Midland Aquatic Show**. The main change will be on the tropical side, in as much as the tableau system similar to the B.A.F. is being adopted where entries are only acceptable through a society. £5 is being given to all societies that have their stand at the show, with cash prizes of £15, £10, £5 and £2 for the best ones.

On the other hand the old system for the Coldwater entries is being retained, as felt that these are sadly neglected at other shows.

Also incorporated are the following specialist societies: British Herbological Society; British Marine Association; British Killifish Association as well as any other such society that wish to have a stand. Full details are available from Mr. J. Witts, 120 Franklin Road, Kings Norton, Birmingham 30.

* * *

AT the meeting of the **South Park Aquatic (Study) Society**, R. D. Esson gave a most interesting talk, illustrated with his own colour slides, on some of the various coldwater fishes to be found in the British Isles, Europe and America.

Anyone interested in coldwater fish within reach of Wimbledon are most welcome to come along. For information please telephone Mr. D. Dudley, 01-540 5662.

* * *

OWING to lack of support, the **Slough A.S.** Invitation Show on 8th September has now been cancelled and the next meeting will be held on 17th July at Friends Meeting House at 8 p.m. At the last meeting a very interesting talk was given by Mr. Tomkins on General Fishkeeping and the table show was won by R. Winter.

* * *

IN May, **Sittingbourne and District A.S.** had a visit from Mr. and Mrs. H. Brock of the South London F.G.A., who gave a most interesting talk on what to do to raise good guppies. At the following meeting the table show classes were; S, O and P. The results were: Guppies: 1, P. Floyd; 2, 3 and 4, Master A. McDonald. Mollies: 1, P. Floyd; 2, A. Scott. The month was finished off by a visit to Tonbridge and District A.S. for the K.A.A.S. League in which Tonbridge won two of the classes, the third being drawn.

* * *

THE second open show of **Whiteway and District Fishkeepers Society** was a great success with 391 fish entered in 30 classes. The results were as follow: Guppy (Male): 1, C. Whitaker; 2, R. Dey; 3, Mrs. M. Scriven; 4, W. Burton. Guppy (Female): 1, G. Ball; 2 and 3, W. Burton; 4, F. Bealing. Platy: 1, L. Littleton; 2, D. Phippen; 3, J. Ferguson; 4, Master D. Sullivan. Swordtail: 1 and 3, J. Ferguson; 2, S. Daniels; 4, T. O'Neill. Sailfin Molly: 1, A. Cripps; 2, R. Poots; 3, M. Butcher; 4, G. Ball. A.O.V. Molly: 1 and 2, T. Taylor and Family. Specified Barb: 1, C. Russell; 2, K. Taylor; 3, B. Dunning; 4, Master M. Calley. A.O.V. Barb: 1, M. Strange; 2 and 3, D. Phippen; 4, G. Press. H. and H. Characin: 1, Mrs. L. Bartolli; 2, S. Daniels; 3, B. Webb; 4, D. Bradley. A.O.V. Characin: 1, J. Ferguson; 2, 3 and 4, D. Phippen. Siamese Fighter: 1, Mrs. P. Rowsell; 2, G. Todd; 3, T. Taylor and Family; 4, M. Brown. A.O.V. Anabantid: 1, A. Cripps; 2, W. Burton; 3, B. Snell; 4, G. Castle. Corydoras and Brochis: 1, G. Press; 2, R. Larcombe; 3, A. Cripps; 4, Mrs. J. O'Neill. A.O.V. Catfish: 1, K. Owen; 2, D. Phippen; 3, G. Press; 4, C. Russell. Botia, Loach and Eel: 1, C. Russell; 2, M. Bransgrove; 3, R. Larcombe; 4, R. Lucus. Rasbora: 1, J. Ferguson; 2, J. Jackson; 3, T. Taylor and Family; 4, D. Calley. Danio and Minnow: 1, M. Butcher; 2, J. Jackson; 3, J. Ferguson; 4, R. Perry. Shark: 1, T. Taylor and Family; 2, T. O'Neill; 3, R. Lucus. Angel: 1, T. Taylor and Family; 2, D. Bradley; 3, F. Bealing; 4, T. O'Neill. A.O.V. Cichlid: 1, T. Taylor and Family; 2, 3 and 4, B. Snell. A.V. Pair: 1, W. Burton; 2, F. Grogan; 3, A. Cripps; 4, M. Mumford. Killifish: 1, M. Strange; 2, J. Jackson; 3 and 4, R. Tooze. A.O.V. Tropical: 1, A. Cripps; 2, M. Strange; 3 and 4, G. Press. Breeders (Livebearer): 1, D. Harding; 2, W. Burton; 3, Miss T. Sullivan. Breeders (Egglayer): 1 and 3, C. Russell; 2, G. Castle; 4, L. Menhennett. Shubunkin: 1, Master K. Daniels; 2 and 3, G. Jennings; 4, L. Menhennett. Singletail Goldfish: 1, Master K. Daniels; 2 and 4, G. Press; 3, B. Webb. Twintail Goldfish: 1 and 2, R. Rich; 3, T. Morris-Davies; 4, Misses D. and S. Jackson. Juvenile (any fish): 1, Master L. Russell; 2, Master K. Daniels; 3, Master M. Owen; 4, Master A. Press. Best Coldwater Fish in Show: R. Rich. Best Tropical Fish in Show: C. Russell. Best Fish in Show: C. Russell. Highest number of points, Club Member: Master K. Daniels.

* * *

THE children of members of the **Gloucester Fishkeeping and Social Club** were given a most enjoyable outing to the Cotswold Farm Park and Wildlife Park on Whit-Sunday, the weather was very good and the outing appreciated by the parents as well as the children. Further outings and dances were also discussed at this month's meeting. Members were asked to set up tanks for the stand at the Gloucester Ideal Homes Exhibition which takes place in Gloucester Park during the week 13th-20th July, and it is hoped to put on as good a show this year as last year.

The speaker for the evening was Mr. Main from the Bibury Trout Farm, and his talk was most interesting being enjoyed by everyone present. It was quite a change of subject, while still being about fish, and there is obviously a great deal of difference in raising commercial fish to raising hobby fish. Members will most certainly be interested in a visit to the trout farm in the near future. The table show for this month were for A.V. Tetras, and all prizes for this class were won by M. Burke and E. J. Bartlett. Coldwater fish winners were Mrs. J. Mitchell, Mr. Palfrey and Master R. Bowd.

* * *

NEW members are urgently needed by **Leytonstone and Stratford A.S.** The society would welcome anybody who would like to come along, particularly beginners, who need not worry that they will find themselves out of their depth. Anybody interested should come along any Thursday at 8 p.m. to Harrow Green Church Hall, Harrow Green Road, Leytonstone High Road, London E.11, or write to the secretary R. Sampson, 59 Bute Road, Barkingside, Essex.

* * *

BECAUSE of lecture difficulties, the June meeting of the **Goldfish Society of Great Britain** took the form of a panel consisting of Miss D. Morris and Messrs. Bundell, Clements and Lawman. Various questions were asked by the members, including the feeding of Alavins and cures for the kind of White Spot disease that some members are having trouble with. Miss D. Morris explained her latest genetical findings on a Mock Metallic strain of Single Tails. Mr. Lesurf briefly explained the method of removing chlorine from tap water. There were various fish of interest on display including a Calico Lion Head and Calico Oranda that Alan Lawman had brought back from Japan. He also brought along some Calico Oranda fry for the members.

* * *

OFFICERS elected at the **Harlow A.S.** annual general meeting were as follows: chairman, R. Kerridge; vice-chairman, P. Allen; secretary, J. Duncan; treasurer, L. Heyes; show secretary, P. Murdock; P.R.O., P. Hynes. APOLOGIES for absence were received at the annual general meeting of the **New Forest A.S.**, from Mr. Lane, and the chairman, A. Williamson. J. Jeffries acted as the chairman. The chairman's report was read by the hon. secretary. In his report he thanked the committee for all work done in the past and stated he would not be standing for re-election. In his absence he was thanked for all the work he had done. The hon. secretary reported that membership was the same as last year. The following officers were elected for 1974/75: chairman, A. Paulley; vice-chairman, C. Knapp; hon. secretary, R. Travers; hon. treasurer, T. Barnes; hon. show secretary, D. Harding; assistant show secretary, C. Knapp; committee, M. Aust and Mrs. C. Barnes; librarian, Mrs. C. Barnes; auditor, Mrs. V. Leavey; press officer, E. Leavey.

The winners of the annual awards were as follow: Breeders Trophy: D. Lane. Tropical Points Trophy: M. Aust. Coldwater Points Trophy: R. Percy. Twintail Points Trophy: N. and L. Percy. Tropical Home Furnished Aquarium: 1, A. Williamson; 2, R. Travers; 3, D. Harding; 4, M. Aust. Coldwater Home Furnished Aquarium: 1 and 2, D. Harding. Champion Tropical Fish: 1 and 4, M. Aust; 2, J. Jeffries, 3, D. Harding.

After the election of officers, various suggestions were made for the programme during the coming season, consisting of quizzes, short talks, slide shows with discussions and different speakers.

* * *

ENTRIES totalled 428 at the **Bridlington and District A.S.** first open show in May. Best Fish in the Show Award, Aquarist Gold Pin and Y.A.A.S. Diploma was won by Mr. and Mrs. Copley of Doncaster A.S. The award for the exhibitor with the most points went to D. and M. Laycock of Sheaf Valley A.S., and the award for the local exhibitor was won by Miss A. Sands, with the most points. Results: Guppy: 1, D. and M. Laycock (Sheaf Valley); 2 and 3, Mr. and Mrs. Kirk (Castleford). Molly: 1, J. Igoe (Sherwood); 2 and 3, Mr. and Mrs. Stephenson (Sherwood). Platy: 1, D. and M. Laycock (Sheaf Valley); 2, Mr. and Mrs. Emerson (Castleford); 3, J. Furness (Castleford). Swordtail: 1, J. Scaill (Goole); 2, D. and M. Laycock (Sheaf Valley); 3, Mr. and Mrs. Batch (Hull). Corydoras and Brochis: 1, Mr. Blundell (Doncaster); 2, Mr. and Mrs. Fletcher (Doncaster); 3, Mrs. Wells (Doncaster). Loaches: 1, Miss S. Clarke (Aireborough); 2, Mr. and Mrs. Toyne (Sheaf Valley); 3, Mr. and Mrs. L. King (Doncaster). A.O.V. Catfish: 1, Mr. and Mrs. Copley (Doncaster); 2, D. Jones (Rotherham); 3, Mr. and Mrs. Richardson (Scarborough). A.O.V.: 1, Mr. and Mrs. Cohen (Pontefract); 2, Mr. and Mrs. Guy (Doncaster); 3, A. Feasey (Doncaster). Sharks and Foxes: 1, Miss S. Clarke (Aireborough); 2, Mr. Blundell (Doncaster); 3, J. A. Whiteley (Aireborough). E.L.T.C.: 1, J. Willerton (Hull); 2, N. Carr (Doncaster); 3, Mr. and Mrs. Blades (Creswell). Rasboras, Danios and Minnows: 1, Miss A. Sands (Bridlington); 2, Mr. and Mrs. Daines (Doncaster); 3, Mr. and Mrs. Emerson (Castleford). Barbs (up to Rosy): 1, Mr. and Mrs. Batch (Hull); 2, D. and P. Birdsall (Aireborough); 3, Mr. and Mrs. Blades (Creswell). Barbs (over Rosy): 1, Mr. and Mrs. Stephenson (Sherwood); 2, Mr. and Mrs. Copley (Doncaster); 3, A. Feasey (Doncaster). Characins (Small): 1 and 3, D. and M. Laycock (Sheaf Valley); 2, Mr. and Mrs. L. Smith (Castleford). Characins (Large): 1, D. Jones (Rotherham); 2, Mr. and Mrs. Daines (Doncaster); 3, Miss S. Clarke (Aireborough). Cichlids (Small): 1, J. A. Whiteley (Aireborough); 2, N. Carr (Doncaster); 3, Mr. and Mrs. D. Kirk (Castleford). Cichlids (Large): 1, J. A. Whiteley (Aireborough); 2, Mr. and Mrs. Stephenson (Sherwood); 3, Miss S. Clarke (Aireborough). Angels: 1, Mrs. M. Igoe (Sherwood); 2, D. and P. Birdsall (Aireborough); 3, Mr. and Mrs. Toyne (Sheaf Valley). Malawi (Cichlids): 1, Mr. and Mrs. Fletcher (Doncaster); 2, D. and P. Birdsall (Aireborough); 3, I. Taylor (Bridlington). Fighters: 1, D. and M. Laycock (Sheaf Valley); 2 and 3, Mr. and Mrs. L. Smith (Castleford). Anabantids (Small): 1, Mr. and Mrs. Daines (Doncaster); 2, Mr. and Mrs.

Emerson (Castleford); 3, Miss S. Clarke (Aireborough). Anabantids (Large): 1, Mr. and Mrs. Blades (Creswell); 2, A. Elliot (Hull); 3, M. Walkington (Bridlington). Pairs (Livebearers): 1 and 2, Mr. and Mrs. Daines (Doncaster); 3, Mr. and Mrs. Fletcher (Doncaster). Pairs (Egglayers): 1, D. and M. Laycock (Sheaf Valley); 2, J. A. Whiteley (Aireborough); 3, Mr. and Mrs. Cohen (Pontefract). Breeders (Livebearers 1-10): 1, Mr. and Mrs. Daines (Doncaster); 2, W. Blundell (Doncaster); 3, J. Furness (Castleford). Breeders (Livebearers 11-20): 1, Mr. and Mrs. Kilvington (Doncaster). Breeders (Egglayers 1-10): 1, Mr. and Mrs. Cohen (Pontefract); 2, Mr. and Mrs. Blades (Creswell); 3, Mr. Blundell (Doncaster). Breeders (Egglayers 11-20): 1, Mr. and Mrs. Fletcher (Doncaster); 2, Mrs. Wells (Doncaster); 3, R. Willerton (Hull). Common Goldfish: 1, Miss S. Clarke (Aireborough); 2, Mr. Bower (Sherwood); 3, Mr. and Mrs. Richardson (Scarborough). Fancy Coldwater: 1, Miss S. Clarke (Aireborough); 2 and 3, G. H. Whitsey (Accrington). A.O.V. Coldwater: 1, Mr. and Mrs Carey (York); 2, Mr. and Mrs. Blades (Creswell); 3, Mr. and Mrs. Wood (York).

* * *

THE **Darlaston and District A.S.** held its first meeting in new meeting quarters of Darlaston Ex-Servicemans Club, Dorsett Road, Darlaston in May and this proved to be a very interesting evening with the President Dr. Paul Hammet giving a talk on the history of fish-keeping.

An outstanding number of fish were on the bench with K. Buxton being first, second and fourth and Keith Hall taking third place. A prize was given by Mr. A. Norman secretary of the Ex-Servicemans Club and also a trophy by the President.

* * *

VISITORS and prospective members will be made welcome at the **Bristol Tropical Fish Club** meetings which are held on the third Thursday of the month at the Black Horse, Old Market, Bristol. The agenda includes Film Show Discussions and Club Table Shows. Last month's table show for Platies and Guppies was won by Mrs. K. Martin.

* * *

AFTER a four month period the **Abingdon A.S.** has decided to change their meeting night back to alternate Thursdays. (July 11, 25, etc) as many members found that Friday evenings interfered with their weekend plans.

With a steadily increasing membership, the club activities are also improving. Plans are underway for an inter-club show, film nights, auctions and a trip to the London shows. The club has recently started its own library which is growing steadily and proving useful to all members.

Meetings are held in the billiard room at the "Barley Mow" West Saint Helen St., Abingdon, and new members and visitors are always welcome. The secretary is G. R. Hall, 16 Morrell Crescent, Littlemore, Oxford.

* * *

THE **Bristol Tropical Fish Club** held their annual open show in April. 432 entries were benched, and were judged by members of the Severnside Aquarist Association's panel of judges. The results were as follow: Best Exhibit in Show: C. Russell (Bath). Highest Individual Points: R. Lawrence (Bristol T.F.C.). Highest Pointed Society: Bristol T.F.C. Results: Fighters: 1, A. Gilbert; 2, Mrs. K. Press; 3, D. Parry. Labyrinths: 1, J. Ferguson; 2, B. Snell; 3, R. Lawrence; 4, D. Phippen. Barbs: 1, R. Lawrence; 2, D. Phippen; 3, S. Larcombe; 4, M. Strange. Hemm and Hyph: 1, R. Tooze; 2, Mrs. B. Pedersen; 3, K. Dunsford; 4, Mrs. I. Strange. A.O.V. Characins: 1, D. Phippen; 2, G. Furber; 3, Mrs. B. Pedersen; 4, R. Lawrence. Angels: 1, P. Greenwood; 2 and 4, B. Purdy; 3, C. Scriven. Dwarf Cichlids: 1, Mrs. B. Pedersen; 2, W. Gibbon; 3, M. Trayes; 4, D. Warmeant. A.O.V. Cichlids: 1, Mrs. B. Pedersen; 2, B. Snell; 3, T. Coggins; 4, B. Purdy. Corydoras and Brochis: 1, A. Gilbert; 2, D. Phippen; 3, R. Lawrence; 4, C. Russell. A.O.V. Catfish: 1, C. Turner; 2, B. Kilminster; 3, D. Phippen; 4, R. Lawrence. Danios, Rasboras and Minnows: 1, R. Poots; 2, R. Onslow; 3, R. Lawrence; 4, S. Larcombe. Botias, Sharks, Loaches and Eels: 1, C. Russell; 2, Master K. Williams; 3, Master J. Edwards; 4, M. Strange. Mollies: 1, R. Poots; 2, Mr. and Mrs. R. Dodson; 3, D. Guy; 4, B. Holder. Swordtails: 1, Master K. Williams; 2 and 3, J. Ferguson; 4, R. Poots. Platies: 1, 2, 3 and 4, Mrs. K. Martin. Guppies (male): 1 and 2, G. Witnaker; 3, D. Guy; 4, P. Greenwood. Guppies (female): 1 and 4, R. Lawrence; 2, Mr. and Mrs. M. Williams; 3, W. Burton. Killifish: 1 and 4, R. Tooze; 2, R. Chapman; 3, R. Lawrence. A.O.V. Tropical: 1, Mrs. S. Onslow; 2, Mrs. I. Strange; 3, Mrs. K. Martin; 4, A. Gilbert. Breeders (Egglayers): 1, G. Castle; 2, R. Chapman; 3, G. Furber; 4, C. Turner. Breeders (Livebearers): 1 and 3, C. Turner; 2, J Ferguson; 4, Mrs. K. Martin. Sexed Pairs: Mrs. B. Pedersen; 2, Mrs. K. Martin; 3, R. Onslow; 4, R. Lawrence. A.V. Egglayer (Jnr.): 1, 3 and 4 Master N. Owen; 2, Master R. Bisp. A.V. Livebearer (Jnr.): 1, Master A. Press. Twintail: 1, 2 and 3 C. J. and H. H. Bell; 4, C. Summers. Goldfish and Shubunkins: 1, R. Pinnock; 2 and 4, C. J. and H. H. Bell; 3, Mrs. B. Pedersen. A.V. Pond and River: 1, 2 and 4, R. Lawrence; 3, J. Phillips.

* * *

IN May, the second leg of the two way inter-club contest between **Mid-Sussex A.S.** and Brighton A.S. was held. During the evening, members and guests answered a quiz which had been compiled by the Chairman, Mr. David Soper, which proved to be of great interest to all. Also, the monthly auction of equipment, plants and fish took place.

The judging was done by Mr. Adrian Blake, F.B.A.S., and he awarded the placings as follows: Rasboras: 1, 2 and 3, Mid-Sussex; 4, Brighton. Livebearers: 1, 2 and 3, Brighton; 4, Mid-Sussex. Cichlids: 1 and 2, Mid-Sussex; 3 and 4, Brighton. Barbs: 1 and 2, Brighton; 3 and 4, Mid-Sussex. Loach: 1, 2 and 3, Mid-Sussex; 4, Brighton. Characins: 1 and 3, Brighton; 2 and 4, Mid-Sussex. Brighton were awarded the trophy by Mr. Soper. Over the two meetings Brighton won 13 points.

Mid-Sussex A.S. meets on the third Thursday of the month at Ockley Lodge, Keymer Rd, Keymer, at 8 p.m. Any further information on the society may be obtained from the secretary, Mr. Reeve, 36 Rumbolds Lane, Haywards Heath. Tel: 3702 (evenings only).

* * *

THE **Suffolk A.P.A.** held the annual general meeting in May, when the committee for the next twelve months was elected as follows: Chairman, L. Jermy; Secretary, K. Cocker; Treasurer, M. Thurlow; Show Secretary, A. Cook; P.R.O., K. Cook; Newsletter Editor, B. Mole. An interesting film was also shown.

* * *

RESULTS of the **Warrington A.S.** Open Show were as follow: Guppies: 1, W. Bamber (Sandgrounders). Mollies: 1, M. Baker (Warrington); 2, C. Norton (Sandgrounders); 3, R. I. Payne (Merseyside). Platies: 1, C. Norton (Sandgrounders); 2, T. Hindley (Worsley); 3, R. Butterworth (Merseyside). Swordtails: 1, G. Harvey (Merseyside); 2, Miss S. Goddard (Macclesfield); 3, Mrs. B. Harvey (Merseyside). A.O.V. Livebearers: 1, Mr. Balch (N. Staffs); 2, D. Jenkinson (Merseyside); 3, R. I. Payne (Merseyside). Small Characins: 1, G. Waterhouse (Sandgrounders); 2, A. Covell (Warrington); 3, R and A. Johnson (Hyde). Small Barbs: 1, B. and C. White (Leigh); 2, C. Norton (Sandgrounders); 3, B. Wilson (Merseyside). Small Cichlids: 1, I. Hopkins (Warrington); 2, Miss J. Gullane (Buxton); 3, Miss A. Gregory (Nelson). Large Characins: 1, D. and B. Booker (Morecambe); 2, Mrs. B. Booker (Morecambe); 3, Mr. and Mrs. Graham (E. Lancs). Large Barbs: 1, A. Vaissiere (Merseyside); 2, P. and H. Batchelor (Loyne); 3, K. Wright (Sandgrounders). Large Cichlids: 1, S. Hooton (Sandgrounders); 2, D. and B. Booker (Morecambe); 3, T. Hampton (Dunlop). Angels: 1, A. Axon (Ashton-u-Lyne); 2, H. R. Sephton (Grimwood); 3, S. Harvey (Merseyside). Fighters: 1, A. Covell (Warrington); 2 and 3, D. Potter (Warrington). A.O.V. Anabantid: 1 and 3, Miss J. Gullane (Buxton); 2, S. Hooton (Sandgrounders). Corydoras: 1, P. and H. Batchelor (Loyne); 2, B. and C. White (Leigh); 3, Mr. and Mrs. Muckle (Independent). Catfish: 1, Mr. and Mrs. Graham (E. Lancs); 2, B. W. Carter (Merseyside); 3, G. Waterhouse (Sandgrounders). Loaches: 1, D. and B. Booker (Morecambe); 2, B. and C. White (Leigh); 3, J. Hall (Runcorn). Labeos, etc: 1, Miss J. Gullane (Buxton); 2, M. Baker (Warrington); 3, T. Hampton (Dunlop). Toothcarps: 1, R. I. Payne (Merseyside); 2 and 3, Mr. and Mrs. Skillen (Hoylake). Minnows: 1, B. and C. White (Leigh); 2, G. Holden (Loyne); 3, K. and J. Hinchey (Loyne). Rasboras: 1, A. Goddard (Macclesfield); 2, W. Bamber (Sandgrounders); 3, Mr. Thorne (Northwich). A.O.V. Tropical: 1 and 2, P. and H. Batchelor (Loyne); 3, G. Billinge (Warrington). Breeders (Egglayers): 1, A. Vaissiere (Merseyside); 2, S. Hooton (Sandgrounders); 3, K. Wright (Sandgrounders). Breeders (Livebearers): 1, Master T. Brown (Warrington); 2, R. Knowles (Northwich); 3, L. Watkins (Grimwood). Pairs (Egglayers): 1, R. Knowles (Northwich); 2, A. Vaissiere (Merseyside); 3, B. and C. White (Leigh). Pairs (Livebearers): 1, Master A. Cook (Warrington); 2, K. and J. Hinchey (Loyne); 3, R. Knowles (Northwich). Common Goldfish: 1, C. H. Whitsey (Accrington); 2, Master G. Millman (Warrington); 3, Master A. Cook (Warrington). Fancy Goldfish: 1, C. H. Whitsey (Accrington); 2 and 3, S. Walsh (Accrington). A.O.V. Coldwater: 1, 2 and 3, S. Walsh (Accrington). Junior Egglayer: 1 and 2, Master A. Hinchey (Loyne); 3, Miss J. Gullane (Buxton). Junior Livebearer: 1, Master A. Atherton (Grimwood); 2, Miss S. Goddard (Macclesfield); 3, Miss K. M. Perkins (Macclesfield). Best Fish in Show: Ticto Barb, B. and C. White (Leigh).

* * *

AN interesting talk was given at the May meeting of the **Bristol A.S.** by Mr. J. Powell a member of the Koi Society. His talk on Koi keeping and breeding touched on the need for pond space, filtration or the need to move water for oxygenating reasons, feeding and purchasing of breeding stock. After the preliminary talk, those present were invited to ask questions and this again proved to be a high point of the evening's entertainment creating a good discussion on the size of fish required for breeding, also on the danger of dwarfing if breeding with undersized fish was carried on.

* * *

THE **Barry A.S.** held their second table show of the year towards the annual trophy. Results: 1 and 3, A. Wallace; 2, M. C. Guthrie; 4, J. Webber. The judge was C. Harding. The following officers have been elected to the committee. C. Webber, Vice Chairman; M. G. Parker, 27 Treharne Road, Barry, Show Secretary.

* * *

MEMBERS who attended the monthly meeting of the **Keighley A.S.** heard Mr. J. V. Hall of Calverley give a lecture and slide show on "Coldwater Fish." Results of the table show were: Fish of the Month: 1, Mr. Ibbetson; 2, Mrs. Gear; 3, Mr. Barker. A.O.V.: 1, Mr. Ibbetson; 2, Master Green; 3, Mr. Jones. Novices A.O.V.: 1 and 3, Mr. Haydock; 2, Mr. Lydon. Juniors A.V.: 1 and 2, Master Bargett; 3, Master Green.

* * *

THERE were 435 entries for the **Port Talbot A.S.** Open Show. The results and classes were as follow: Ad: 1, K. Daniels (P.T.A.S.); 2, W. Evans (Rhondda A.S.). B: 1, M. N. Lovell (Penarth); 2, C. Turner (Cardiff); 3, J. Egan (P.T.A.S.); 4, M. Thomas (Rhondda). Ba: 1, J. Edwards (Llanrwit Major); 2, N. Bowles (Rhondda). C: 1 and 4, C. Turner (Cardiff); 2, C. Harding (Rosth A.S.); 3, M. Williams (Rhondda). Ca: 1 and 2, C. Turner

(Cardiff); 3, K. Usher (Anson London); 4, C. A. Short (Newport). Db: 1, P. L. Player (Cardiff); 2, R. Newton (Cardiff); 3, P. Thomas (Swansea); 4, K. Daniels (P.T.A.S.). Da: 1, K. T. Player (Cardiff); 2, K. Usher (Anson London); 3, A. J. Callister (P.T.A.S.); 4, A. M. Smith (Rhondda). D: 1, C. Morrison (P.T.A.S.); 2, A. S. Gibbon (Reading); 3, R. Lingard (Penarth); 4, C. Harding (Roath). H: 1, M. Williams (Rhondda); 2, K. Usher (Anson London); 3, R. S. Wigg (Llantwit Major); 4, R. Perkins (P.T.A.S.). G: 1 and 2, B. A. Jones (B'stoke); 3, C. Phillipart (Swansea); 4, C. Harding (Roath). L: 1, K. Usher (Anson London); 2, C. Turner (Cardiff); 3, J. Edwards (Llantwit Major); 4, K. Williams (Rhondda). J: 1, D. Egan (P.T.A.S.); 2, C. Harding (Roath); 3, S. Burt (Rhondda); 4, P. Thomas (Swansea). K: 1 and 2, J. J. Edwards (Llantwit Major); 3, R. Newton (Cardiff); 4, M. Thomas (Rhondda). F: 1, 2 and 4, M. Addicot (Newport); 3, D. R. Warmeant (Cardiff). Ea: 1, C. Davies (P.T.A.S.); 2, C. Dennis (P.T.A.S.); 3, R. Perkins (P.T.A.S.); 4, D. R. Warmeant (Cardiff). O: 1, J. Morris (P.T.A.S.); 2, P. A. Player (Cardiff); 3 and 4, P. Purdy (E. Vale). P: 1 and 4, P. Purdy (E. Vale); 2, M. Thomas (Rhondda); 3, J. Egan (P.T.A.S.). E: 1 and 4, R. Perkins (P.T.A.S.); 2, D. R. Warmeant (Cardiff); 3, R. T. Daws (Cardiff). Q: 1 and 3, R. Perkins (P.T.A.S.); 2, K. Williams (Rhondda); 4, G. Best (Swansea). R: 1, P. A. Player (Cardiff); 2, R. Daws (Cardiff); 3, T. Edwards (P.T.A.S.); 4, J. J. Edwards (Llantwit Major). S: 1, G. Best (Swansea); 2, A. M. Smith (Rhondda); 3, N. K. Guy (Cardiff); 4, J. Egan (P.T.A.S.). M: 1, H. Chick (Llantwit Major); 2, M. K. Lovell (Penarth); 3, B. A. Jones (B'stoke); 4, Mrs. L. Jones (B'stoke). T: 1, B. A. Jones (B'stoke); 2, K. Usher (Anson London); 3, C. Morrison (P.T.A.S.); 4, C. Turner (Cardiff). XBM: 1, D. Warmeant (Cardiff); 2 and 4, C. Turner (Cardiff); 3, R. Newton (Penarth). XOT: 1, C. Turner (Cardiff); 2, K. Usher (Anson London); 3 and 4, C. Morrison (P.T.A.S.). N: 1 and 4, Mrs. L. Jones (B'stoke); 2, C. Harding (Roath); 3, A. S. Gibbon (Reading). U: 1, M. Fouracre (P.T.A.S.); 2, 3 and 4, C. Rupert (P.T.A.S.). V: 1, 2, 3 and 4, C. Rupert (P.T.A.S.). W: 1, 3 and 4, C. Rupert (P.T.A.S.); 2, A. M. Smith (Rhondda). F.B.A.S. Award Class XOT: C. Turner. Best Fish in Show and A.Q. Gold Pin: H. Chick (Llantwit Major), 61 Glyn-Y-Mel, Bridgend, Glam. Best Members Fish: M. Fouracre (P.T.A.S.). Highest Agg. Points: C. Turner 745 Pts (Cardiff). Highest Members Points C. Rupert 727 Pts (P.T.A.S.).

* * *

THE May meeting of the **Llantwit Major A.S.** (C.N.A.A./F.B.A.S.) was the first held at their new permanent venue at Llanilltud Fawr Comprehensive School, Llantwit Major.

The Chairman's opening remarks offered congratulations to members on their successes at the first open show in South Wales in 1974, at Port Talbot making particular reference to H. Chick who won his first ever Aquarist Gold Pin for best fish in show, which as he stated was a "milestone" of achievement for any hobbyist. He also expressed the opinion of all who exhibited there on the high standard they obtained in both the administration and presentation of the show, being the best seen for some time.

The evening's table show took the form of a K.O. Each member benching one fish only. These were then paired at Random and the best of each pair progressing to the next round. Best fish being selected from the final three left and the winner receiving an engraved plaque. Results: 1, G. Fry; 2, Master John Edwards; 3, G. Lewis.

* * *

AT the annual general meeting of the **Peterborough Fishkeepers Association**, the Champion of Champions table show resulted as follows: 1, R. Fairchild; 2, J. Butler; 3, R. Walden. Points Champion: J. Butler 98; R. Butler, 85; R. Walden 75; K. Fox, 33; Mrs. E. Brakes, 25; B. Fairchild, 21; D. Fincham, 21; C. Beakes, 15; R. Story, 12; K. Parke, 12; T. Parke, 5.

EARLY in May, the annual open show of the **Osram A.S.** was held when an entry of 367 was recorded. The results were as follow: Anabantids: 1 (plus special), Miss J. Cullan (Buxton); 2, Mr. and Mrs. Muckle (Independent); 3, Miss E. Gregory (Nelson). Fighters: 1, G. Kershaw (Heywood); 2, D. Buckley (Heywood); 3, A. Beasley (Bury). Small Barbs: 1 and 2, F. E. Gregory (Oldham); 3, D. Buckley (Heywood). Large Barbs: 1, Mrs. S. Seymour (Merseyside); 2, F. Mulla (Merseyside); 3, R. Mellelieu (Osram). Labeos, Sharks and Foxes: 1 (plus special), Miss J. Cullane (Buxton); 2, G. Horrocks (Osram); 3, Miss S. Clarke (Aireborough). Small Characins: 1, F. E. Gregory (Oldham); 2, F. Mulla (Merseyside); 3, K. Smith (Middleton). Medium Characins: 1, K. Smith (Middleton); 2, R. Jenkinson (Merseyside); 3, Miss S. Clarke (Aireborough). Large Characins: 1 (plus special), Mr. and Mrs. Grogan (Accrington); 2, R. Mellelieu (Osram); 3, P. Alderslade (Osram). Dwarf Cichlids: 1 (plus special), T. Horrocks (Osram); 2, Mr. and Mrs. Marshallsea (Blackburn); 3, Miss J. Cullane (Buxton. Angels: 1, L. Taylor (Hyde); 2, A. Axon (Ashton); 3, P. Rhodes (Village). A.O.V. Cichlids: 1, Mr. and Mrs. Rigby (Worsley); 2, F. Mulla (Merseyside); 3, J. Mattlin (North Staffs). Toothcarps: 1 and 2, R. I. Payne (Merseyside); 3, Mr. and Mrs. H. Marshallsea (Blackburn). Rasboras: 1 (plus special), R. W. Strand (W. Cumberland); 2, R. Mellelieu (Osram); 3, Mr. and Mrs. Grogan (Accrington). Danios: 1, R. Atherton (Grimwood); 2, R. W. Strand (W. Cumberland); 3, Mrs. E. Dawson (Osram). Minnows: 1, 2, and 3 R. W. Strand (W. Cumberland). Guppies: 1, Mr. and Mrs. Marshallsea (Blackburn); 2, E. J. Brown (Bradford); 3, J. R. Syddall (Worsley). Swordtails: 1, G. Harvey (Merseyside); 2, Miss S. Clarke (Aireborough); 3, Mr. and Mrs. H. Marshallsea (Blackburn). Mollies: 1 (plus special), D. Buckley (Heywood); 2, E. Seymour (Merseyside); 3, A. Atherton (Grimwood). Platies: 1, 2 and 3, T. Hindley (Worsley). A.O.V. Livebearers: 1, A. Jenkinson (Merseyside); 2, R. I. Payne (Merseyside); 3, Mr. and Mrs. H. Marshallsea (Blackburn). Loaches, Best Tropical: 1 (plus special), Mr. and Mrs. H. Marshallsea (Blackburn); 2, J. Pritchard (Grimwood); 3, H. Penhall (Osram). Corydoras: 1, Mr. and Mrs. Muckle (Independent); 2, Miss J. Cullane (Buxton); 3, Mr. and Mrs. Cobb (Belle Vue). A.O.V. Catfish: 1, P. S. Gudgeon (Hyde); 2, G. Horrocks (Osram); 3, Miss S. Clarke (Aireborough). Goldfish: 1, Miss S. Clarke (Aireborough); 2, S. Foote (Accrington); 3, H. Penhall (Osram). Shubunkins: 1, H. Penhall (Osram); 2 and 3, S. Foote (Accrington). Veiltails: 1, Miss S. Clarke (Aireborough). Orandas: 1, H. Whitsey Accrington); 2, H. Penhall (Osram). Lionheads: 1, S. Walsh (Accrington). Fantails: 1, Miss S. Clarke (Aireborough); 2, C. H. Whitsey (Accrington); 3, S. Walsh (Accrington). Moors: 1 and 2 (plus special, plus Best in Show), C. H. Whitsey (Accrington). A.O.V. Asian or U.S.A.: 1 and 2, S. Walsh (Accrington); 3, C. H. Whitsey (Accrington). A.O.V. European: 1 and 2, S. Walsh (Accrington); 3, C. H. Whitsey (Accrington). Coldwater Breeders: 1, H. Penhall (Osram). Breeders Egglayers (1 to 10 difficulty): 1, F. E. Gregory (Oldham); 2, F. Chatburn (Heywood); 3, R. W. Strand (W. Cumberland). Breeders (Egglayers) (11 to 20 difficulty): 1 (plus special), R. Mellelieu (Osram), (Best Osram Exhibit); 2, S. Wolstenholme (Heywood). Breeders Guppies: 1 and 2 (plus special), Miss S. Clarke (Aireborough). A.O.V. Not Listed: 1 (plus special), F. Thorne (Village); 2, R. I. Payne (Merseyside); 3, G. Howarth (Accrington). Pairs (Egglayers): 1 (plus special), F. E. Gregory (Oldham); 2, Mr. and Mrs. Marshallsea (Blackburn); 3, R. W. Strand (W. Cumberland). Pairs (Livebearers): 1 (plus special), P. Armstrong (Heywood); 2, R. I. Payne (Merseyside); 3, A. Jenkinson (Merseyside). Minijars (natural): 1 (plus special), Mr. and Mrs. Cobb (Belle Vue); 2, M. Wild (Accrington); 3, Miss S. Clarke (Aireborough). Minijars (novelty): 1, M. Wild (Accrington); 2, E. Seymour (Merseyside); 3, Miss S. Clarke (Aireborough). Marines A.O.V.: 1, P. Armstrong (Heywood); 2, J. R. Sydall (Worsley). Osram Junior Section: Livebearers: 1 (plus special), D. Dawson; 2 and 3, A. Heugh. Egglayers: 1 (plus special), S. Lord; 2, D. Dawson; 3, A. Heugh. Best Fish in Show: Moor, C. H. Whitsey (Accrington) and Aquarist and Pondkeeper Champion of Champions Gold Pin. Societies with highest points: Accrington, 42 Pts; Merseyside, 33 Pts; Osram 27 Pts.

* * *

RESULTS at the final meeting of the **West of Scotland Exotic Fish Club** season. The Champion of Champions table show placings were as follow: 1 and 2, R. Moore; 3, H. Cameron; 4, T. Currie. The speaker at the meeting was Mr. Cliff Murray who gave an interesting lecture on Dwarf Cichlids.

* * *

NEWLY elected committee members following their election at the annual general meeting of the **Derby Regent A.S.** are as follow: President, R. Tench; vice-president, Councillor G. Guest; chairman, R. Bull; vice-chairman, J. Bland; honorary treasurer, T. Jerram; hon. general secretary, D. Robertson, 28 Shardlow Road, Alvaston, Derby; hon. assistant secretary, Mrs. N. Robertson; show secretary, R. Harlow; assistant show secretary, T. Bullock; entertainments officer, D. Lee; librarian, T. Bullock; honorary auditors, P. Kendrick and Mr. Lane; editor, W. Thompson.

* * *

THE third and final leg of the inter-society show between the **Buxton and District A.S.**, Macclesfield A.S. and the Village A.S., resulted in a victory for Buxton with 76pts, Macclesfield being second with 56pts and Village third with 12pts. The Best in Show award was won for the third consecutive time by Miss J. Gullane and she also won the Second Best in Show award.

* * *

THE **Weymouth A.S.** at their monthly meeting were given a talk on keeping tropical fish by the club chairman D. Rogers. He gave a very interesting outline on the classes of fish, the keeping of fish, fish diseases and the breeding of certain classes of fish. This was followed by a slide show on tropical fish. The table show results were as follow: Labyrinths: 1, Mrs. J. Brooks; 2, J. Brooks; 3, A. Billington; 4, Mrs. J. Grundell. Siamese Fighters: 1, M. Cleall; 2, Master J. Mackie; 3, D. Mullen; 4, P. Tucker. Pairs of Egglayers: 1 and 4, Mrs. E. Hart, 2, G. Fitzgerald; 3, B. Dalley.

Although the society are not holding an open show this year, there will be a club show and this will be held at the Hotel Prince Regent on 1st September. Meetings are held on the second Tuesday of the month at 7.30 p.m. at the Ratcliff Hall, Queens Road, Radipole Spa, Weymouth. New members and visitors are very welcome.

* * *

RESULTS of the **Aylesbury A.S.** club open show held in May. Barb: 1, L. Hills; 2, A. McNicol; 3, J. Grimshaw; 4, P. Hills. Characin: 1, A. Beare; 2, P. Hills; 3, C. Blackman; 4, J. Linington. Cichlids (Db): 1, M. Weedon; 2, L. Hills; 3, A. McNicol. Cichlids (Dc): 1, L. Hills; 2, A. Rollason; 3, D. Hind; 4, C. Blackman. Cichlids (D): 1, D. Cowan; 2, A. McNicol; 3, P. Hills; 4, S. Swain. Labyrinth: 1, L. Hills; 2, D. Mercer; 3, A. McNicol; 4, S. Swain. Tropical Catfish: 1, L. Hills; 2, P. Hills; 3 and 4, D. Cowan. Corydoras and Brochis: 1, L. Hills; 2 and 4, B. Bryden; 3, P. Hills. Rasbora: 1, A. Rollason; 2, D. Cowan; 3, J. Linington. Danio and W.C.M.M.: 1, D. Mercer; 2, L. Hills. Loach: 1 and 2, D. Ellis. A.O.S. Tropical: 1 and 2, A. Rollason; 3, B. Bryden; 4, P. Hills. Pairs: 1 A. Beare; 2, D. Hind; 3, A. McNicol; 4, B. Bryden. Guppy (Male): 1, J. Sale; 2, L. Hills. Guppy (Female): 1, L. Hills; 2, P. Hills. Platy: 1, D. Ellis; 2 and 3, S. Swaine. Molly: 1, B. Bryden; 2, 3 and 4, M. Wiffin. Breeders Classes: 1, A. McNicol; 2, A. Rollason; 3, P. Hills; 4, B. Bryden. Best Cichlid of the Show: L. Hills. Best Fish of the Show: L. Hills. Home Aquaria (Furnished): A. Beare.

* * *

THE **Fancy Guppy Association** held their International Open Show at Glebe Farm Community Centre, Stechford, Birmingham, in May. This show, which includes the F.G.A. World Guppy Championship, attracts entries

from all over the world, and although the entries this year were lower than in previous years, the quality of the Guppies appeared to be of a much higher calibre, as evident in some of the class results by the points obtained. The present F.G.A. World Champion, Don Phillimore, successfully defended his title, and also in partnership with his wife Babs, took all the major awards as they did in 1972. Edmonton Section once more emerged as the Section gaining most points in winning the "Calgary Trophy" for the fifth year in succession with Birmingham Section the runners up. The Association which has sections throughout the British Isles, welcomes those who are interested in the Guppy, and further details can be obtained from, The Association Secretary, Mr. S. Croft, 85 Planks Lane, Wombourne, Staffs.

* * *

RESULTS of the **Coventry A.S.** open show were as follow: Decorative Aquaria: 1, J. Bailey (Coventry); 2, P. Hinde (Coventry); 3, A. Simmons and J. McIntyre (Coventry). Miniature Aquaria: 1, 3 and 4, R. Harlow (Derby); 2, Braimbridge (Jones and Shipman). Male Guppy: 1, D. White (Bedworth); 2, R. Harlow (Derby); 3 and 4, R. J. Farmer (Wednesbury). Female Guppy: 1, E. Sandercock (Goodyers End); 2, C. Cartwright (Leics.); 3, A. Westwood (Tipton); 4, R. J. Farmer (Wednesbury). A.V. Molly: 1, G. Roberts (Uttoxeter); 2, J. and F. Mayle (Uttoxeter); 3, C. Pratt (Bedworth); 4, Mrs. D. Cruickshank (Ealing). A.O.V. Livebearer: 1, Mrs. D. Cruickshank (Ealing); 2, D. White (Bedworth); 3, P. Markham (Spadg.); 4, A. Onslow (Lough). Danios and W.C.M.M.: 1, T. Cruickshank (Ealing); 2, A. Kebble (Coventry); 3, H. Wilson (Corby); 4, Mr. and Mrs Watts (Coventry). Barbs: 1, Attwood and Williams (Rubery); 2, R. Clarke (Pelsall); 3, W. E. Neville (Grantham); 4, K. Done (Pelsall). Barbs: 1, D. Done (Pelsall); 2, D. and H. (Tamworth Killie); 3, D. and A. Smith (Longbridge); 4, A. Simmons (Coventry). A.O.V. Barbs: 1, 2, and 3, A. Nash (Coventry); 4, R. North (Pelsall). Rasboras: 1, G. Perkins (Gloucester); 2, Mr. and Mrs. G. Hayes (Hickley); 3, D. White (Bedworth); 4, Mr. and Mrs. R. T. Bull (Derby). Cichlids: 1 and 4, K. Done (Pelsall); 2, A. Dale (Pelsall); 3, Mr. and Mrs. Ward (Banbury). Angels: 1 and 3, T. Salisbury (Bedworth); 2, D. McIntyre (Spadg.); 4, Mr. and Mrs. Ward (Banbury). Cichlids: 1, G.V.S.R. (Chelmsley); 2, J. Goodman (Wombourne); 3, B. Evans (Kidderminster); 4, D. J. Carnegie (Corby). Fighters: 1, C. Pratt (Bedworth); 2, J. and F. Mayle (Bedworth); 3, B. and S. Weston (Lower Gornal); 4, S. Watts (Coventry). Anabantids: 1 and 3, C. R. Chamberlain (Leamington); 2, C. Pratt (Bedworth); 4, C. J. Nightingale (M.T.A.). Characin: 1, G. Roberts (Uttoxeter); 2, C. Cartwright (Leics.); 3, R. Clarke (Pelsall); 4, J. Goodman (Wombourne). Characin: 1, D. Wilson (M.T.A.); 2, Mrs. L. Gould (M.T.A.); 3, P. Allen (Kidderminster); 4, N. Short (Nuneaton). A.O.V. Characin: 1 and 3, P. Barnett; 2, G.V.S.R. (Chelmsley); 4, B. C. Roberts (Solihull). A.V. Killie: 1, B. and F. Hirst (Coventry); 2, R. J. Farmer (Wednesbury); 3 and 4, S. Walker (Coventry). Corydoras and Brochis: 1, J. Goodman (Wombourne); 2, A. Dale (Pelsall); 3, J. C. Bailey (Coventry); 4, R. Clarke (Pelsall). A.O.V. Catfish: 1, D. Lambourne (Roehampton); 2, J. Goodall (S.A.S.S.); 3, O. Whitfield (Rubery); 4, T. Pilsbury (Northampton). A.V. Loach: 1, B. C. Roberts (Solihull); 2, Braimbridge (Jones and Shipman); 3, D. White (Bedworth); 4, R. Elliott (Corby). Egglayers (Pairs): 1, Mrs. P. Lambourne (Roehampton); 2 and 3, D. White (Bedworth); 4, G.V.S.R. (Chelmsley). Livebearer (Pairs): 1, A. Onslow (Loughborough); 2, D. White (Bedworth); 3, Mrs. Moore (Bedworth); 4, Attwood and Williams (Rubery). Egglayers (Broods): 1 and 3, B. and F. Hirst (Coventry); 2, J. and F. Mayle (Bedworth); 4, D. and H. (Tamworth Killie). Livebearer (Broods): 1, B. and F. Hirst (Coventry); 2, J. C. Sergeant (M.T.A.); 3, S. Walker (Coventry); 4, D. J. Carnegie (Corby). Sharks: 1, K. D. Payne (Pelsall); 2, K. Done (Pelsall); 3, Mr. and Mrs. Watts (Coventry); 4, D. J. Carnegie (Corby). A.O.V. (Tropical): 1, Mrs. L. Gould (M.T.A.); 2 and 4, D. and H. (Tamworth Killie); 3, D. Lambourne (Roehampton). Goldfish: 1 and 2, J. Wileman (Coventry); 3, D. Penwright; 4, Mr. and Mrs. Watts (Coventry). Twintail Goldfish: 1, Attwood and Williams (Rubery); 2, C. Pratt (Bedworth); 3, Mr. and Mrs. Impey (Hickley); 4, R. Hancox (Coventry). Coldwater (Pairs): 1, H. Brakes (Jones and Shipman); 2, C. Cartwright (Leics.); 3, C. Pratt (Bedworth); 4, D. S. Hancox (Coventry). A.V. Coldwater: 1, C. Pratt (Bedworth); 2 and 3, Mr. and Mrs. Watts (Coventry); 4, A. Simmons (Coventry). Best fish in the show was a Catfish by D. Lambourne (Roehampton). Most points (Individual): D. White (Bedworth). Most Points (Society): Bedworth. Most entries by individual: S. Walker (Coventry). Most entries by Society: Midland Tropical Aquarists. 630 entries were benched.

* * *

F.N.A.S. SHOW LEAGUE

THE Show League has been formed to promote the showing of fish by fellow aquarists through member societies and will be an annual event with prizes being given at the British Aquarist Festival. The prizes will be: 1st, £25; 2nd, £20; 3rd, £15; 4th, £10 and 5th £5.

The Show League will commence on 1st July and will run for 14 months until September 1975 and thereafter will be for twelve monthly periods. A printed form will be available on application from the Secretary which must be used when returning the results of each open show. The Show League Secretary is Mr. W. D. Haddow, 18 Laburnum Avenue, Hyde, Cheshire. Phone: 061-368 3066. The Show League is open to all member societies of the F.N.A.S. and the Federation Rules apply. Full details can be obtained from the Secretary.

* * *

CHANGE OF VENUE

The **Tonbridge and District A.S.** has moved to a new venue commencing with the meeting held on 19th June. Meetings are held on the third Wednesday of each month at 8.00 p.m. at the St. Eanswythes Church Hall, Priory Road, Tonbridge.

* * *

SECRETARY CHANGES

Sutton A.S.: Mrs. W. E. Morris, 8 The Hamlet, South Normanton, Derbyshire. Tel: South Normanton 810847.

Smethwick and District A.S.: W. Layland, 67 Cambridge Road, Smethwick, Warley, Worcs. B66 2HW. Tel: 021-558 1927.

Stanley and Consett A.S.: G. M. Connelly, 19 Ernest St., Pelton, Chester-le-Street, Co. Durham. Tel: Beamish 177

Northampton and District A.S.: Mrs. S. Taylor, 25 Rawley Crescent, New Duston, Northampton NN5 6PU.

Worksop Aquarist and Zoological Society: Mr. B. Fisher, 24 Vessey Road, Worksop, Notts.

* * *

NEW SOCIETIES

The **Tinto A.S.** was formed in October last with a membership of ten. During the past six months the club has steadily increased in number until the present figures stand at 35 adults and 10 juveniles. The club premises are at 51A Baunatyne Street, Lanark where the society meet on the first Monday of each month at 8 p.m.

At the inaugural meeting the following office-bearers were elected. President, R. Barr; Vice-President, J. Robertson; Secretary, A. Tweed, 31 Braeside Road, Lanark; Treasurer, K. McLeod; Show Manager, A. Corbett; Asst. Show Secretary, G. Carmichael. The society are also members of the Federation of Scottish Aquarist Societies.

* * *

Darlaston and District A.S. Officers elected at the first meeting were: President, Dr. Paul Hammet; Vice-President, J. Fox; Chairman, T. Lowe; Vice-Chairman, D. Horton; Secretary, H. Horne; Show Secretary, D. Penwright; Asst. Show Secretary, K. Hall; Publicity Officer, G. Leney, 53 Castlebridge Road, Wednesfield, Wolverhampton Staffs. Committee Members: Mrs. K. Lowe, A. Taylor, Mrs. B. Horne, A. Rowley, Mrs. D. Whitehouse, K. Rowley, Mrs. V. Yarnall, H. Hall, P. Whitehouse and Master Steven Whitehouse. Meetings will be held on the fourth Tuesday of every month at the Ex-Servicemens Club, Dorset Road, Darlaston, Staffs. Anyone is welcome to come and join or just come along as a visitor.

* * *

A new club has been formed in Nottinghamshire called the **Retford and District A.S.** At the initial meeting there were twenty one people and it is found that the potential is nearly seventy. The first meeting was held in June at the Blackboy, Retford and the Secretary is Mr. D. Shadbolt, 23 Albert Road, Retford, Nottinghamshire.

* * *

Details are given regarding the intended formation of a new society to be called the **Characin Study Society**, all initial enquiries should be sent to the Acting Secretary, Mr. M. West, 76 Lingfield Ave., Kingston-upon-Thames, Surrey. Tel: 01-546 3381. An inaugural meeting is to be arranged to elect officers and committee members.

* * *

SHOW CANCELLATIONS

DUE to unforseen circumstances, **Hetton County A.S.** have had to cancel their open show which was to have been held on 14th July.

* * *

OWING to a fall off in membership and other local causes, **Plymouth A.S.** have decided that they would not be able to stage a show worthy of the society so have cancelled this year's show.

* * *

AQUARIST CALENDER 1974

6th July: Basingstoke and District A.S. Open Show, at the Carnival Hall, Basingstoke. Details and Schedules from Show Secretary, R. Rich, 93 Pinkerton Road, Basingstoke, Hants.

7th July: Leamington & District A.S. Details from Mr Chamberlain. Tel: Leamington Spa 28597.

7th July: Lytham A.S. Open Show at Ansdell Institute, Woodlands Road, Ansdell, Lytham-St.-Annes, Lancs. Show schedules from show secretary, Peter Ham, 1 Wyndene Grove, Freckleton, Preston, Lancs. Telephone Freckleton 633182.

7th July: Billingham A.S. Annual Open Show in Billingham Community Centre. Schedules available later.

12th-14th July: Dagenham Town Open Show. Details from A. V. Wakenell, 73 Harlow Road, Rainham, Essex.

14th July: Grantham and District A.S. Open Show will be held at Walton Girls' Secondary School, Kitty Briggs Lane, Grantham, Lincolnshire. Schedules available mid-March from Joint Show Secretaries, Mr. and Mrs. M. Pattison, 27 Lynn Court, Grantham, Lincs.

20th July: Swansea A.S. Open Show at the Dynevor Comprehensive school, situated in the centre of Swansea.

21st July: Sandgrounders' A.S. Open Show. Mecl's Cop Secondary School, Southport.

27th July: Goldfish Society of Great Britain (meeting), Conway Hall, Holborn, London, W.C., 2.00 p.m.

28th July: Runcorn A.S. fourth Open Show will be held at Parish School, Church Street, Runcorn, Cheshire. Details from P. Hall, 13 Eskdale Close, Beechwood West, Runcorn, Cheshire WA7 2QX.

28th July,: Aireborough and District A.S. Open Show, Menston Community Centre, Main Street, Menston. Half-mile off A65 Leeds to Ilkley Road. Show Secretary, Mr. W. Clarke, 20 New Street, Staincross, Nr. Barnsley, S75 6BJ or phone: Pudsey 74609. (Note new date and venue from last year).

28th July: Ely and District A.S., Tropical Fish Exhibition at Bedford House, St. Marys Street, Ely. Open from 10.00 a.m. to 6.00 p.m., details from Mr. S. Porter, 54 Cambridge Road, Stretham, Ely, Cambs.

3rd-4th August: Tottenham and District A.S. Open Coldwater Show will be held in conjunction with Haringey Judges G.S.G.B. Further details of the show and show schedules can be obtained from the Show Secretary, S. Towzson, 1 Haslam Court, Waterfall Road, London N11 1NJ. Tel: 01-368 2091.

4th August: Tonbridge and District A.S. Open Show. Show Secretary: I. T. Mathieson,

33 Nortons Way, Five Oak Green, Tonbridge, Kent.

10th August: Newport (Mon.) A.S. Open Show, St. John's Hall, Victoria Avenue, Maindee, Newport, Mon. Schedules from Show Secretary, W. Gibbon, 65 Dunstable Road, Newport, Mon. Tel.: 74103.

11th August: Grimsby and Cleethorpes A.S. third Annual Open Show will be held at the Memorial Hall, Cleethorpes. Schedules later.

17th August: Anson Aquatic Club Annual Open Show to be held at Kings Hall Community Association, 155 Harlesden Road, Willesden, N.W.10. Details to follow.

15th-17th August: Midland Aquatic Festival, Bingley Hall, Broad Street, Birmingham.

17th-18th August: Harwich and District A.S. Annual Show at the Queens Hotel, Dovercourt.

18th August: Stroud and District A.S. will be holding their Open Show at Stroud Subscription Rooms, as last year. Further details to be announced later.

18th August: Huddersfield Tropical F.S. Open Show at Paddock Youth Centre, Beech Street, Huddersfield. Details from: H. Ackroyd, 51 Warrenside, Deighton, Huddersfield. 37997.

23th August: Bedworth A. and P.S. Open Show at Nicholas Chamberlains School, Bulkington Lane, Bedworth. Schedules from Mr. J. Salisbury, 261 Gadsby Street, Nuneaton.

25th August: Castleford A.S. Open Show, Civic Centre, Castleford. Further details from P. Hayes. Tel: Castleford 2782. Letters to Mrs. J. E. Asquith, 32 Lower Oxford Street, Castleford.

25th-26th August: Gt. Yarmouth and District A.S. Tropical Fish Exhibition at Youth and Adult Centre, St. Nicholas Road, Great Yarmouth. Furnished Aquaria, Tropicals, Show Fish, Coldwater and Marines, Trade stands, etc. Further details from Mr. P. Watson, Petnne, 31 Common Road, Hemsby, Gt. Yarmouth.

31st August: Weston-super-Mare and District T.P.C. Fifth Annual Open Show at St. John's House, Oxford Street, Weston-super-Mare. Details from Mrs. M. Tanner, Show Secretary, 6 Byron Road, Locking, Weston-super-Mare.

September: Goldfish Society of Great Britain Open Show. Date and venue to be announced later.

1st September: Wellingborough and District A.S. (F.B.A.S.) annual Open Show at the Queensway Hall, Goldsmith Road, Wellingborough, Northants. Show schedules are obtainable from F. Wallis, 12 Cherry Walk, Raunds, Northants.

1st September: Peterlee and District A.S. 13th annual Open Show. Schedules available later from A. Bebbington, 40 Marlborough Road, Hastings Hill, Sunderland.

1st September: Bethnal Green A.S. 25th Open Show at The Institute, 229 Bethnal Green Road, E.2. Schedules from Show Secretary, Sybil Hedges, "Koi Korner," 150 Ashburton Avenue, Ilford, Essex. F.B.A.S. Championship class to be announced. New members made welcome.

1st September: Newbury and District A.S. second Open Show will be held at The Plaza, Market Place, Newbury, Berks. Details and Schedules from G. Foster, 19 Jubilee Road, Newbury, Berks.

2nd September: Harlow A.S. Annual Open Show, Moot Hall, The Stow, Harlow. Show Secretary, 21 Brooklane Field, Harlow, Essex.

8th September: Bracknell, Didcot and Reading A.S. Joint Open Show to be held at the Students' Union, Reading University. Show Secretary: J. Horsey, 4 Rickman Close, Woodley, Reading, Berks., RG5 3LL. Tel: Reading 666917.

8th September: Slough and District A.S. Invitation Show at the Rotunda Club, Slough.

8th September: Cleveland A.S. Open Show at the Church Hall, Whitby Road, Guisbrough. Show schedules from B. Welford, 1 Railway Terrace, North Skelton, Saltburn.

8th September: Nuneaton A.S. Open Show, Friary Youth Centre, Abbey Street, Nuneaton, Warks. Schedules from show secretary, M. Short, 8 Greenhill Road, Stoke Golding, Nr. Nuneaton, Warks.

13th, 14th September: The Bristol A.S. show this year will take place at Bishopston Parish Halls. Further details can be obtained from the show secretary: Mr. E. Bowden, 12 Stoneleigh Walk, Knowle, Bristol, BS4 2RL.

14th September: Hounslow and District A.S. Annual Open Show to be held at Cecil Road Youth Centre, Hounslow. Secretary, H. Pratt, 23 Woodlawn Drive, Feltham, Middlesex. Tel:01-894 0923. Show venue to be confirmed.

14th September: Malvern & District A.S. first Open Show. Schedules are obtainable from show secretary, D. West, 9 Mamby Road Great Malvern, Worcs.

15th September: Grimwood A.S. third Open Show, to be held at the Quarry Bank Community Centre, Skelmersdale, Lancs. Details later.

15th September: Nelson A.S. Annual Open Show at the Civic Centre, Stanley Street, Nelson. Details from H. Illingworth, 94 Barrowfold Road, Colne, Lancs.

15th September: Goodyears End A.S. Second Open Show at George Street School, Bedworth. Details from: Mrs N. Nesbit, 104 Newcomen Road, Bedworth, Nuneaton, Warwickshire.

21st September: Annual Open Breeders Show for the East London Aquarist and Pondkeepers' Association will be held at Ripple Road School, Ripple Road, Barking, Essex. Show schedules are obtainable from Show Secretary, F. Vickers Esq., 13 Irons Way, Romford, Essex.

22nd September: Torbay A.S. proposes to hold its sixth Annual Open Show at the Torquay Town Hall. Show schedules from J. R. Davis, 43 Halden Road, Torquay, Devon.

22nd September: Hastings and St. Leonards A.S. Open Show. Show manager, M. Penfold, 44 St. Mary's Road, Hastings, Sussex.

22nd September: Buxton and District A.S. Open Show at Pavilion Gardens, Buxton. Show secretary, D. Cotterill, 15 Peacefield, Marple, Nr. Stockport.

28th September: Hendon and District A.S. Open Show. Further details to follow.

29th September: Hucknall and Bulwell A.S. Annual Open Show. Details later.

29th September: Chesterfield and District A.S. Annual Open Show. Venue, Clay Cross Social Centre, Chesterfield Road, Clay Cross, Nr. Chesterfield, Derbyshire. Exit 29 off M1. Follow signs four miles to show. The spacious venue is situated on the A61. For further details apply to Show Secretary, J. Tomlinson, 16 Bradbury Drive, Wingerworth, Chesterfield.

29th September: Northampton and District A.S. Open Show at the Drill Hall, Clare Street, Northampton. Show schedules from Show Secretary, G. Allatt, 30 Chiltern Avenue, Northampton, when available.

5th October: Newly formed Hampstead and District A.S. first Open Show at Blackfriars Hall, The Priory, Southampton Road, N.W.5. Details from T. Woolley, 20 Coppitts Close, N. Finchley.

5th October: Cardiff A.S. Open Show at St. Margarets Church Hall.

6th October: Vauxhall Motors Recreation Club Aquarist Section second Open Show. Details and Show Schedules available from the Show Secretary, A. D. Philip, 15 Hollybush Road, Luton, Beds. LU2 9HG.

6th October: Fifth annual Open Show organised by the Newcastle Guppy and Livebearer Society at the Civic Hall, Gosforth, Newcastle-upon-Tyne. This will be the first all livebearer show held in this country. Schedules available shortly from Mrs. J. Renton, 128 Dunstan Tower, Garth 18, Killingworth, Newcastle-upon-Tyne NE12 6TX.

6th October: Scunthorpe and District A.S. will be holding their first Open Show at St. Paul's Church Hall, Ashby High Street, Scunthorpe.

6th October: Hinckley and District A.S. Open Show at Heathfield High School, Belle Vue Road, Barl-Shilton. More information from Secretary, K. Bates, 6 Meervale Close, Hinckley, Leics. LE10 0PZ.

12th-13th October: British Aquarists Festival, Belle Vue, Manchester.

26th/27th October: The Irish Tropical Fish Society will hold their third Annual Show at the Mansion House, Dawson Street, Dublin 2. Information and Show Schedules may be obtained from J. P. Naismith, Hon. Secretary, Kilgobbin, Sandyford, Co. Dublin.

27th October: Doncaster and District A.S. Open Show at Brodsworth Miners Welfare, Welfare Road, Woodlands.

2nd November: Goldfish Society of Great Britain (meeting). Conway Hall, Holboen, London, W.C.2. 2 p.m.

10th November: Blackburn Aquarist Waterlife Society Open Show. Venue will be the "Windsor Hall," Blackburn. Details may be had from Show Secretary: B. Marshallsea, 10 Hawthorn Crescent, Oldham, Lancs.

10th November: Halifax A.S. Open Show at the Forest Cottage Community Centre, Cousin Lane, Illingworth, Halifax. Individual Furnished Aquaria, Plant and Marina classes included. Schedules from David Shields, "Cobblestones," Gainsit, King Cross, Halifax. Phone Halifax 60116.

10th November: Walthamstow and District A.S. Open Show.

10th November: Hartlepool A.S. 16th Annual Open Show. Longscar Hall, Seaton Carew. Schedules available later from M. Sneddon, 35 Spurn Walk, Hartlepool or S. Hay, 45 Ventnor Avenue, Hartlepool.

17th November: Bradford and District A.S. 27th Annual Open Show at East Bowling Unity Club, Leicester Street, Wakefield Road, Bradford.

1st December: Horsforth A.S. 5th Open Show at the new Civic Hall, Stanningley Road, Pudsey.