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Contents

OUR COVER	The international way of keeping marines successfully	616
American Bull-Frog	Whodunnit?	618
<i>Rana Gatesbeiana</i>	A guide for potential contributors	619
	Politics and fish in Peru	620
	Opening of Science Reference Library extension	620
	Waterlife pests and friends	621
	What is your opinion?	622
	<i>Barbus nigrofasciatus</i>	625
	Junior aquarist: the starfish	626
	Our readers write	628
	The British Aquarists' Festival, 1968	629
	Champion of Champions and other results	632
	Experiments in keeping discus	634
	The starworts <i>Callitriche</i> spp.	636
	Coldwater queries	637
	Tropical queries	639
	Breeding goldfish	641
	<i>Lagarosiphon muscoides</i> var. <i>major</i>	642
	News from aquarists' societies	643

The Editor accepts no responsibility for views expressed by
contributors.

Editor: Laurence E. Perkins

December, 1968

615

The international way of keeping marines successfully:

The marina method

part one

By the International Marine Study Society

AS MOST OF us are by now aware, there are three commonly labelled methods of keeping marine fishes, these being the so called "Standard" or clinical method, the "semi-natural" method, and the "natural" method. All, doubtless, have both their advantages and disadvantages as I hope to show here. The "Standard" method is one that one invariably reads about in most of the current popular marine books. This entails the removal completely by the fastest possible means of all impurities and bacteria in your tank, hence with this method one normally uses such gadgets as power filters, ozonisers, ultra-violet tubes etc. which are, we are told, the most effective gadgets for doing the work required. The "semi-natural" method is a combination of the "natural" and "standard" methods. It generally comprises a tank set up in the "natural" way but with the added safeguard of some form of filtration. One often sees tanks set up with this method using sub-sand or small outside filters. The third method is the "natural" one, and awe inspiring too is the sight of a well furnished tank using this method. Mr. Lee Chin Eng of Djakarta is perhaps the most well known pioneer of this type of marine biosystem although in fact one finds them now in operation throughout the world. These tanks set up in the natural "vein," rely on nothing more than an airstone, the only piece of modern gadgetry they use. They contain a cross-section of marine fauna some of which just cannot be maintained under "standard" methods.

Well, all of the above is by the way of an introduction to what follows.

What is wanted by anyone wishing to keep marines?

The answer to this one, of course, is a simple and successful, yet inexpen-

sive method. Well, we've got one . . . and here it is. If you try it, let us know; if it fails (and over a year of testing on many tanks—regardless of the opinions of the "paper experts" has proved to us that it will not) we shall be far more surprised than you. For want of a better name, as none of the other three are very acceptable terms for it, we have nicknamed it "The Marina System."

The Marina System

This was devised by the members of a research team of the International Marine Study Society. We make no claims about it being novel, but it works. The Marina system described is intended for use by amateur aquarists and not by the professional mariculturist—although it may provide even some of these with "food for thought."

Contrary to popular opinion, there are only two major facts to be taken into consideration when keeping marine fishes. They are an adequate diet and a healthy environment and these factors, indeed, apply to all captive animals. What does this entail? A healthy environment can be considered one that contains adequate facilities for optimum survival which, in the case of marine fishes, can be considered as heating, lighting, filtration, the tank itself, and the actual medium required for their survival—the water itself. An adequate diet can consist of as little as four or five different foods.

This may oversimplify somewhat the problems that can arise when setting up a marine aquarium and the conditions required for keeping marine life but these are often far less than one imagines—in fact marine fishkeeping can be a far more rewarding pastime than its freshwater counterpart.

Three single factors (or a combination of any or all of these factors) will normally influence the decision as to the size of the tank you purchase:

1. The eventual siting of the tank, or the size of the space allocated for the tank.
2. The numbers, sizes and types of fishes you intend keeping.
3. The capital outlay involved in the purchase as with large tanks this can sometimes be considerable.

The Tank

The commonest type of aquaria seen currently on the British market today is the standard angle-iron or pressed steel framed type which seems to be obtainable wherever one might live. If you decide to use an angle-iron tank, either for economy or because you possess one already, there are several methods that may be used to protect the metal against the corrosive activity of seawater. You can either coat the inside joints and the undersurfaces of the top frame with bitumen or a bitumastic paint or compound, or with one of the more modern polyurethane paints. The best method, however, is to reglaze your aquarium with a non-setting, non-contaminatory black mastic, such as the one sold under the trade name of "Glasticon," also placing a fillet of this around the top angle to prevent contact between the seawater and the angle. This mastic also has the advantage that even after a period of seven years it remains extremely pliable, and therefore leaks are rare in a tank glazed with it.

Although angle-iron tanks are both popular and reasonably priced, they are not the most suitable for the marine aquarist, and with the availability of modern finishes such as nylon-coating, and stainless steel frames, now increasing, the work involved in preparing an angle-iron tank does not seem worthwhile. Nylon coated aquaria are, in all probability, the best buy for the marine aquarist, being both non-contaminatory and reasonably priced. They also have the advantage over stainless steel of being easily obtainable in any specified size. The stainless steel aquaria,

on the other hand have the advantage of being much the more presentable if display is the prior objective—although this is counterbalanced somewhat by the extra cost and limited range of sizes of stainless steel aquaria.

When ordering a nylon coated aquaria it is wise first to ascertain prior to purchase, confirmation of the glazing mastic's suitability for marine use and if it is found to be unsuitable, then it would probably be more economical for you to order the frame and glass and glaze the tank with "Glasticon", or to seal the inside joints of the tank with say, silicone rubber sealant.

There are many types of aquaria suitable for use with marines, in addition to those mentioned above. Below we have listed some of those most commonly seen in general use. Types not listed also have various advantages and disadvantages but are precluded from insertion either through reasons of cost or difficulty of construction.

Angle-iron Aquaria. Rusts easily but are inexpensive by comparison.

Nylon-coated Angle Iron. Rustproof; only slightly dearer than above.

Polythene coated pressed steel. As a temporary measure only. They are weakened by constant usage.

Stainless steel Aquaria. Expensive. Showpieces. Rust can be wiped off.

Perspex Aquaria. Expensive again by comparison; perfectly O.K., though as long as light fittings or cover are not metal.

All-glass Aquaria (moulded). Ideal, but recently outdated by . . .

All-glass Aquaria (constructed with silicone rubber sealants.) These aquaria can be constructed in all sizes up to 72 in. x 18 in. x 15 in. and possibly larger. If one is prepared to construct one, then they are probably one of the best. Can be constructed in all sizes as can nylon-coated aquaria.

The above is but a brief résumé of tanks, but gives some indication as to what is available.

Base Media

There is in fact a reasonably wide choice of base mediums that can satisfactorily be used in marine aquaria. Firstly, and probably the most widely used medium, is silver sand or an equally fine sand. We have even used the loose sand sold expressly

as a base medium for birdcages. It also has an added advantage of containing calcium chippings. We do not recommend this type, however, due to the lengthy preparation required. Silver sand is probably the most convenient and easiest obtainable medium to use and can be obtained from most aquatic suppliers or, failing this, your nearest horticultural suppliers. After thorough and careful washing it will be ready for use.

Before finally committing ourselves to the use of silver sand, however, let us discuss the other possibilities: Coral sand—an assortment of finely smashed coral fragments—can be used quite effectively and also, like "bird" sand has the added advantage of slowly neutralising any acids produced. It has one disadvantage, however, that the particle size is large enough to allow uneaten food and detritus to remain undetected in the tank. Fine aquarium gravel, although far less attractive than silver or coral sand, can be used in a thin layer with a moderate amount of success although for other reasons too numerous to mention we do not recommend this as the best possible choice.

Finally—the use of a cement lined tank is rather an unusual and fascinating deviation from the standard practice. Only advantages can be listed for this method as it has no obvious disadvantages. It enables the owner to landscape the inside of his tank to a far greater degree than is normally possible. Corals and sea-fans can be stuck directly into the damp cement before it sets, as can any additional tank ornaments such as shells. The procedure for making your "cement" tank is as follows: Using a mixture of three parts of fine sand and one part best portland cement, you add water and mix until the mixture attains a consistency slightly drier than ordinary cement mixtures. You then add this to the tank, portion by portion, sculpting it up the glass back and sides of your tank, taking care to leave the base area clean. It is at this stage that you add your shells and corals, propping these up where necessary, until the cement has set. Once set, fill the tank with water to which has been added a couple of pounds of ordinary cooking salt, and leave for about a week; drain thoroughly, wash with fresh water and then add your synthetic seawater. This method

is thoroughly reliable but for those who doubt it we can only say "Try it". This form of "interior decoration" has also the advantage that it, in conjunction with coral sand, also adds lime slowly to the water.

A complete range of aquaria successfully decorated in this fashion can be seen at the aquarium of the Marine Biological Association of the U.K. at Plymouth, Devon.

A note of warning should be added here—once you have designed a tank in this fashion, it is extremely difficult, if not impossible, to extract without the risk of breaking one or more glasses of the tank.

Additional Decorative Effects

The most commonly used material for the internal decoration of tropical marine aquaria is undoubtedly coral, in all its various shapes and forms. They come in a range of varieties from the fragile red organ pipe coral and the sea-fans, to the large white branched elk's horn coral. When choosing coral you should beware of all brightly coloured ones that you see for sale as some of these could be artificially dyed and unless treated the dye could come off after the coral has been introduced into your tank. If you suspect that purchased coral has been dyed it will need to be boiled and then soaked for at least a week, after which it should be thoroughly washed before being introduced into the tank. The best corals to obtain are those which still retain their original natural base as this facilitates easy positioning in the tank. If they do not still have a base attached, then a cement base will have to be added.

Non-dyed coral should also undergo a "curing" process as a safety precaution and although rather long, the method described above is quite adequate.

Although not to everyone's taste, plastic plants and ornaments can be used, and these can provide a splash of additional colour to the tank. All plastics should undergo the curing process as described for corals.

In fact, assessing the materials available, one can only draw the conclusion that the marine aquarist has as wide a range of materials for landscaping his tank as does his freshwater counterpart.

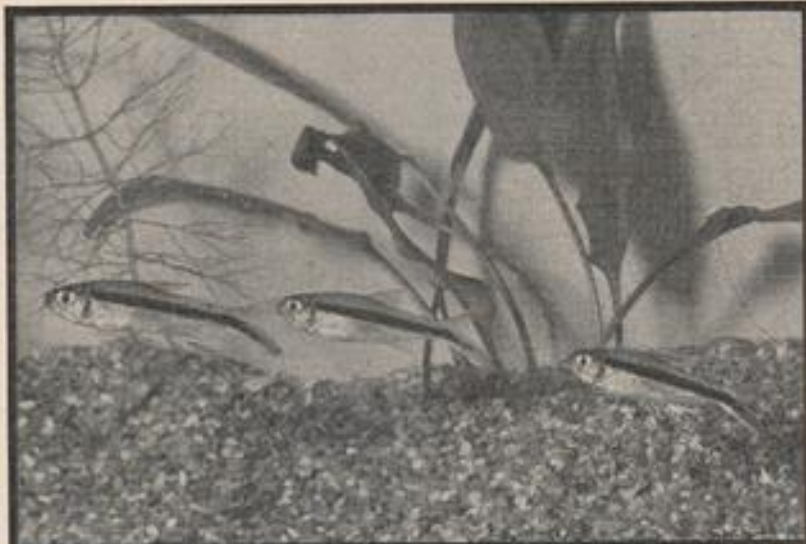
WHODUNNIT?

by Michael O'Keefe

ONE OF THE very true axioms in respect of this hobby of ours is that big fish and little fish just do not mix, but what is not so often emphasised is that, very often, little fish and little fish will not mix either. In this short article I would like to focus attention on these species which, for one reason or another, should be carefully watched when residents of a community tank.

Through my leisure tropical-fish-breeding activities I come into contact with many other hobbyists and my observations are based both on their comments to me, and on my own personal experience. But let me say at the outset that one of the first principles I learned about fish is that it is always unwise to be dogmatic. In other words, my remarks should not be taken as implicit since there will always be exceptions to the rule. I hope, however, that they may serve as a useful guide to the newcomers to our ranks.

First let us take the ever popular Swordtail (*Xiphophorus helleri*) probably ranking with the Guppy and the Mollie as an "essential" first purchase for the new adherent. Whilst the female of the species will live happily with every other occupant of the community tank and, indeed, with males and females of its own kind in any number, in my experience the inclusion of two males, irrespective of the number of females present, will invariably result in bitter harassment of the weaker of the two males to the point where death is inevitable. Here I would like to interpose the point that too little appears to be made of the psychological effect on a fish of constant "worrying" by one of its tank-mates. So often have I seen an otherwise perfectly healthy fish literally worn down in spirit, driven away from food and, eventually, through sheer low mental ebb, succumbing to internal ulceration or mouth fungus or some other physical disorder. The simple fact is that a fish in constant mental turmoil is a prey to organic disorders to which, normally, it would not be susceptible.



Penguin fish

In fact, the more one studies fish behaviour, the more one comes to the realisation that in many respects they are not so very different from humans.

Another popular tank inmate about which one rarely hears anything but good is the red-tailed black shark, (*Labeo bicolor*) but here again similar remarks apply. Keep two labeos in one tank and you will almost certainly find that, in time, one fish will flourish whilst the other appears to be diminishing in stature, loses its dense blackness to a muddy grey and spends most of its time in hiding. *Labeo bicolor* has, to my mind, the added disadvantage that a large and healthy specimen will in time become a real bully, harassing fish of twice its size and more. So, if you have two labeos in your community tank, keep a watchful eye on them and separate them before it is too late.

The popular penguin fish, *Thayeria obliqua*, is another colourful little inhabitant of the community tank which requires watching. I had an adult pair in one of my community tanks and discovered the poor male one day with his caudal fins literally

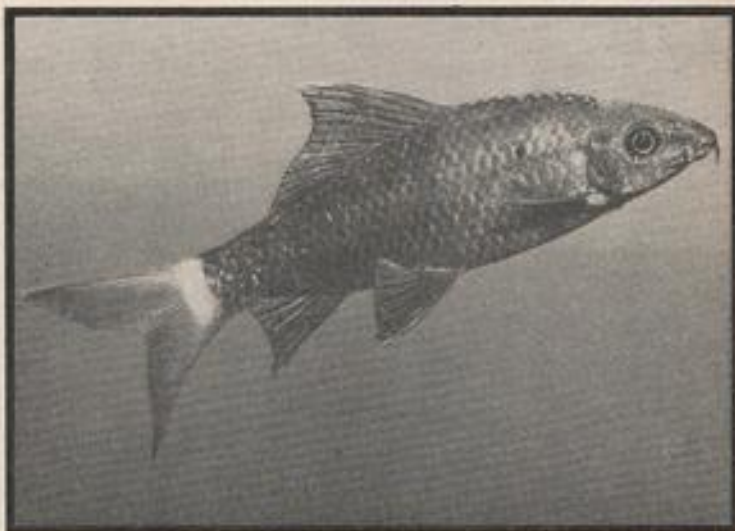
eaten back to the body; I watched points carefully for several days, eliminating suspects one by one and eventually I found, to my surprise, that the assailant was none other than his mate, the female penguin. Shortly afterwards I saw a tank full of young penguins in my dealer's shop. Almost every fish was minus its caudal fins! So be warned.

Much has been said and written about the all-time favourite, the Siamese fighting fish, *Betta splendens*, and many are the tales of its ferocity; but the fact of the matter is that, apart from its propensity for attacking males of its own species, a more harmless and inoffensive animal would be hard to find; so much so that it is completely unsuited to the community tank. Its bright colours and long plumage make it an easy prey for any small "nipper," and it simply will not retaliate. I have heard so many forlorn stories from people who have paid, by average standards, quite large sums for male fighters only to find, in a very short space of time, a lifeless body in their community tank one morning. But what did it die of?

they say; it had no visible signs of disease. Once again, it is a safe bet that it died from constant assaults by other inmates. In other words, it simply lost the will to live. Another point to remember about the fighter is that he has been reared in isolation so that the day you drop him into your community tank is the first time he has been in the company of other adult fish. Surely another very good reason why he is ill equipped to deal with hit and run attacks?

Another animal worth keeping a wary eye on is *Gyrinocheilus aymonieri*, or to give him his popular name, the sucking loach. Famed for his algae eating capabilities (which, in my opinion are somewhat overrated), he is a handsome fellow. Because of his peculiar mouth he may not be able to do so much damage as a toothed carp, for example, but he can and frequently does develop into a pugnacious and quarrelsome fish, constantly chasing even quite large inhabitants of the community tank, and moving at lightning speed.

Young gouramis of the species with antenna-like ventral fins, i.e., *Colisa lalia*, *Colisa labiosa* and the Trichogasters, should not really be placed in the community tank whilst small, as their thread-like feelers are a magnet for fin-nippers. All right, I



Labeo bicolor

can hear you say, but the fins grow again. And so they do; but I somehow doubt if you would treat the matter quite so lightly if you were a young dwarf gourami.

There are, of course, several other species which are known nippers and truculents; prominent amongst them is our old friend *Barbus tetrazona*,

the tiger barb, but I hope that I have said enough to make you realise that the culprit is not always the poor old butler. The next time you see a frightened and wounded fish in your community tank, start investigating some of the least likely looking occupants. You may be very surprised at your findings.

A GUIDE FOR POTENTIAL CONTRIBUTORS

NUMEROUS ENQUIRIES HAVE been received from readers who would like to submit articles but who are deterred by their lack of experience in the field of writing. The main cause for concern seems to devolve upon presentation, some believing that nothing but typewritten MSS can be accepted. This is not the case although typewritten scripts do ensure a degree of legibility.

Articles on all subjects covered by this magazine are always gladly received and given every consideration. While a high quality of presentation may assist the editorial staff, no marks are given for neatness and rejection in this connection only results from complete illegibility. Illustrations supplied by an author (photographs, clearly drawn diagrams and sketches) are also always accept-

able but if they cannot be supplied, suitable illustrations can usually be obtained from other sources.

Basic requirements are: original, instructive and well informed articles stemming, where possible, from personal experience and observation and of any length up to approximately 2,000 words. Payment is arranged at the time of acceptance and made within a week of publication.

POLITICS AND FISH IN PERU

by Val Clear

THE PRICE of neon tetras and other Peruvian tropical fish was scheduled for a huge increase under the regime that was replaced by a military coup in early October.

As of the present moment the issue is dead, but the new revolutionary government has serious monetary problems and may be tempted to do by administrative decree what the deposed Belaunde government had found unworkable due to public pressures.

The proposal in question involved imposing a new export tax on tropical fish leaving Peru. In exercising the extra-ordinary emergency powers granted his administration by parliament, President Belaunde announced the new tax virtually without warning and apparently without much advance study of its probable effect on the industry.

The tax was only one *sol* per fish—roughly 2½d. each—but the greatest volume of species shipped is of the neon tetra, and they sell for less than one *sol* at the shipper's point in Iquitos! That meant that the export tax being imposed by the government would double the price; in fact, more than double it. The tax would be collected on all fish leaving Peru, and since sometimes half of the shipment arrives dead that part of the tax would have to be included in the delivered price of the live ones.

When the word got around there was general consternation among the 7,000 families making their living on tropical fish in Peru. Sr. Rafael Eguren Orgosgoitia, the legislator representing the area of the jungle most affected, sought publicity and brought all the pressure he could muster to kill the order. In 1967 his region had brought over £80,000 sterling into the country and 1968 was even better, so he had some sound logic on his side. The industry must be protected from a deadly tax. It was obvious that Peruvian fish were about to be priced out of the market.

At best the business of collecting tropical fish is difficult. Most col-

lecting is done several days upstream from Iquitos, in the headwaters of the Amazon River. There are eleven export companies centered in that focal city of all Amazon commerce. They have runners who float the catch downstream in balsa rafts or dugout canoes to the shipping center where the fish are subsequently processed for delivery overseas by air.

All collecting has to be done in about six months of the year. When the water is high the fish cannot be caught, when it is low they cannot be found, and when they are breeding they disappear for survival purposes. The financial margin is adequate but not generous and to have the heavy tax laid on top of all the other handicaps would have been fatal.

Peru is beset by many problems, not the least of which are its financial ones. The Belaunde government had faced many of them successfully and seemed well on the way to economic stability. Its diligence in searching out new sources of revenue was illustrated by the tropical fish tax, and its common sense by the fact that when it became obvious that it was an unwise tax it was dropped.

The new revolutionary government of General Velasco is composed entirely of military men who rule by decree; parliament has been dismissed. But the new men face the same financial problems—perhaps even more since they expropriated the huge oil installations of International Petroleum Company, thus discouraging any foreign investment in Peru. How the new government will handle its problems remains to be seen.

Perhaps, like Belaunde, they will look about for untapped sources of tax income. Perhaps, like Belaunde, they will come upon the millions of tropical fish leaving the country. Belaunde cancelled the tax after a week because of political and public pressures. No machinery now exists in Peru for such democratic ferment to be registered. There is that very significant difference.

The likelihood is that the history of Belaunde's attempt will deter the new government from re-imposing the tax. Perhaps those now in power in Peru will see that to do so would be to kill the fish that lay a small portion of Peru's golden eggs.

Opening of Science Reference Library extension

ON 29TH OCTOBER, the recently formed Bayswater Division of the National Reference Library of Science and Invention opens for direct use by the public. This step introduces a new phase in the growth of Britain's major technical research library. Hitherto, books and periodicals from the Division's rapidly growing stock have had to be transported to the Holborn Division whenever they were needed.

The Bayswater Division is at 10 Porchester Gardens, Queensway, London, W.2, a short walk only from the Bayswater or Queensway underground stations. It will be open from 10 a.m. to 4 p.m., Monday to Friday. Admission will be on the same basis

as at the Holborn Division where no ticket or prior appointment is necessary.

Because of the limitations of the Division's temporary quarters, only abstract journals, reference works and dictionaries are on open access, but readers will receive other volumes from the stack within a few minutes. The Bayswater Division already contains over 9,000 different periodicals and 17,000 books and a scientifically qualified staff is available to help users exploit them.

For further information contact: The Keeper, N.R.L.S.I., 25 Southampton Buildings, London, W.C.2. Telephone: 01-405 8721, ext. 211.

WATERLIFE PESTS AND FRIENDS

by Bill Simms

THE MUD-DWELLER BEETLE

THERE IS A surprising amount of serious work that the amateur aquarist can undertake, should he be so inclined, particularly in finding out more details about various common water creatures.

The present subject, *Ilybius ater* (Mud-dweller) is one such instance. It is a water beetle, black, just over half-an-inch long, and can be found in still waters all over Britain.

Because it is so widespread this beetle can turn up in any coldwater aquarium, and because it, and its larvae, are carnivorous where little fish are concerned, it should be winkled out immediately. Although it is mainly black there is a pronounced brassy glint to any reflections of light.

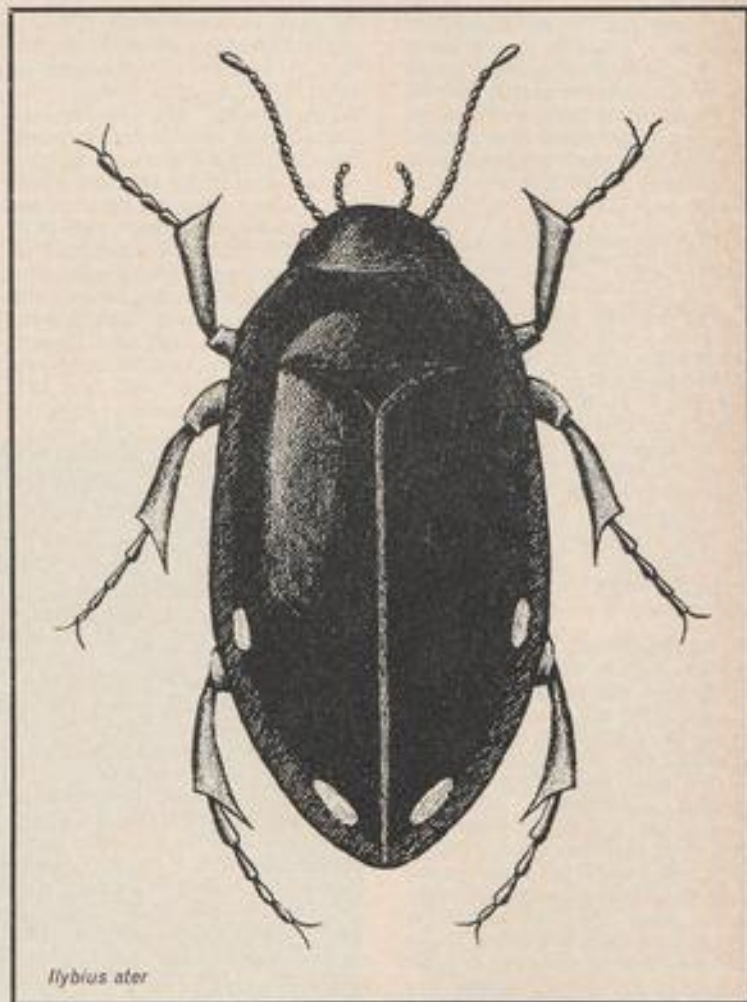
There are other *Ilybius* species, but these are all smaller, so there should be no real difficulty about identifying *I. ater*.

One of the many things about this beetle that are not clearly known is the kind and variety of food that it eats. Apart from the fact that it is a carnivore, little is known. One specimen, kept alone in an aquarium, and supplied with plenty of small creatures as food over a long period, should help to settle this point. Such work is easily within the scope of any serious amateur.

What is known, at present, is that the female lays her eggs in the tissues of living plants such as *Potamogeton* on most occasions, but sometimes uses filamentous algae for this purpose.

Eggs are laid in autumn, and must over-winter, for the smallest larvae are not observed until the following August. These larvae grow rapidly that year, also over-winter, and then change into adult beetles in June-July. So that about 2 years is taken from egg to adult.

Winter hibernation of the beetle appears to be usually on mud under some moss (hence the name of Mud-



Ilybius ater

dweller) but this point also needs clarification. The hibernation of the larvae is probably under water; but you will note the word "probably".

This beetle usually occurs in stagnant water, and because of this should be fairly easy to locate in your own district. Try for it in the months from May to September, and you should find some.

Sometimes it is found in brackish waters, and occasionally in peaty water, but does not appear in any waters that are on hills or mountains—so it must be a low-level inhabitant.

These details will give some idea of how little we know about this quite common species. It also shows the vast amount of work remaining for the amateur to carry out.

WHAT IS YOUR OPINION?

by B. Whiteside

THE LAST LOT of questions have produced a better result letter-wise and I would like to thank those readers who take the trouble to write to this feature. Remember its success depends upon you, the reader. Several letter-writers are now regular contributors and I look forward to hearing from them.

Mr. H. Parkinson, of Bournemouth, Hants., writes on the subject of leaving his fish whilst on holiday. The lights on his aquarium are controlled by a time switch and his air-pump to the filter is connected by a junction plug to the thermostat of the tank, and so the filter is switched on at the same time as the heater. On the day before going on holiday, Mr. Parkinson feeds his fish with liberal quantities of tubifex and, just before leaving, he places a well-known feeding block in the water. He has found his method to be satisfactory, not having to worry about anyone looking after his fish.

Seventeen-year-old K. Forsyth, of Heyside, Royton, made up 14 small cartons each containing enough food for one day, and his sister-in-law tipped the contents of one into the tank each day. On his return all of his fish were well. Regarding the question of favourite fish, Mr. Forsyth saw a shoal of neons in a shop about two years ago and bought a number. He still has the neons and finds them most attractive, especially as they shoal. He likes tropical fish best because there is a bigger choice of colour than in coldwater fish and they are easier to keep. Although they are dearer to start with, he finds them well worth the price in the long run. He goes on by saying that when coldwater fish get diseases, it's ten to one that they don't survive whereas tropical fish can have the temperature raised to 85°F and a remedy added. The choice of tropical plants is also much wider than coldwater ones.

A regular writer, Peter K. Brown, of Wellington, Salop, is at present away from home for nine months in

the year and during this time his mother looks after his fish by feeding them once a day and switching the lights on and off. Nothing else happens to the fish and they are normally well when he returns home. When Mr. Brown goes on holiday, it is usually no longer than two weeks and he may leave his fish without food or ask a neighbour to feed them once. He once tried a holiday food block but his fish almost refused to eat this food. Regarding his favourite fish, he finds it a dead heat between the neon and the angel fish. He goes on to say that neons are cheap and that the only thing which is as nice as a tankful of neons is a tankful of angels, especially the black variety. Mr. Brown thinks that there are two types of hobbyists. One keeps a tank of tropicals in the front room and it makes a colourful and attractive piece of furniture which adds character to the room. The other type of hobbyist is the genuine aquarist who has fish because they are a challenge in breeding, hybridizing and keeping new, old and unusual fish. One can have hundreds of tropical fish and many tanks in a small room whereas coldwater fish need more space and, he says, preferably an outside pond.

From Bitterne, Southampton, comes a letter from Mr. H. J. Gilbert, who says that he has learned by experience that it is not fair to give anyone the bother of looking after his set-up of three garden ponds, 28 tanks in his fish-house and four tanks in various parts of his home. Before going on holiday, Mr. Gilbert makes some preparations. He checks over and tops up the ponds, if necessary; he cleans out and tops up all his tanks; he checks over all electrical apparatus and isolates any problem fish. Tanks of fry are provided with extra plants and algae but no extra feeding is carried out beforehand as this can be dangerous. This system has worked for periods of up to five weeks (not all holidays) during which *Pelmatochromis kribensis* spawned and raised fry, as did mountain minnows



Angel fish: Mr. Brown "finds it a dead heat" between the angel and neon fish

and Australian rainbow fish. Broods of young zebbras and barbs came to no harm, except for a few losses, when housed in tanks prepared as above.

Regarding coldwater fish, Mr. Gilbert thinks that most people have not got the patience or facilities to cope with them to the same extent as with tropical fish. Coldwater fish-keeping and breeding is essentially a long-term process, whilst from the point of view of the one-tank man, he probably needs a tank to interest everyone in the family. A tropical tank can do this, with its variety of small fish which are available. A coldwater tank with one or two varieties cannot.

Mr. S. Goodwin of Congleton, Cheshire, left his fish for two weeks with only a holiday block of fish food in each tank. The fish were varied, ranging from guppies to angels and gouramies. All of his tanks had a reasonable amount of plant life and it was this which had suffered more than the fish, when he got home.

Not one fish was lost. Mr. Goodwin admits that the week-old or so fish are more difficult and he would like to know what other readers do about these. His choice of favourite fish changes from month to month. At the moment it is the guppy but overall he really likes the Jack Dempseys which he once had. Their colours were top class and the fish were such individuals; however, his enjoyment was to end on a day when he returned home from work to find a battle taking place from which only one fish was to survive. The surviving fish was given to a friend but when-

ever Mr. Goodwin gets a bigger tank, these are fish which he would like to have a go at again.

On the question of coldwater v. tropical fish, Mr. Goodwin thinks that the tropicals are more popular because of their endless variety and colour variation. They are much more pleasant to watch in the house and do not seem to be as ill treated as goldfish, due perhaps to the fact that they need a proper tank and equipment and so the owner is rewarded with a better show. Cold-water plants also do not seem to flourish too well, due in some cases

to being uprooted continuously, and in others by not getting enough care. Mr. Goodwin started with coldwater fish but none of the enjoyment which he got from them could ever equal that got when he bred his first guppy. This sealed matters for him, and there's no going back now.

Another regular writer, Mr. J. A. Higham, of St. Helens, Lancs., makes no special arrangements for his fish during his holiday, except for trying to give them some extra live food for a week or two beforehand. Then he simply removes the hood, leaving the cover glass in place, so as to get what little daylight there is—not much in his case—and they survive a week without food, quite unharmed. The plants usually look a bit leggy, and the lack of filtration makes a clean-out necessary, but even this would not be required in a tank of small species, planted with such plants as *Cryptocorynes* or other slow-growers.

After the usual beginner's habit of buying everything in sight, Mr. Higham has come to like cichlids best and of these he gives his vote to the angel for having the most points in the largest number of categories of aquarium virtue: 1, beauty; 2, long life; 3, tolerance of water chemistry; 4, hearty appetite and catholic choice of foods; 5, readiness to breed in the aquarium; 6, peaceful temperament and deportment in the tank, and 7, arising from these, reasonable price. While admitting to just a touch of sour grapes, he doesn't think that the discus can show a score to equal this.

Regarding the popularity of tropical aquaria, Mr. Higham offers a number of reasons, the first being the greater range of fish available and, in most cases, their obvious range of colours and beauty. The provision of tropical conditions has been so simplified these days that it is really no problem at all and in fact is usually easier than providing coldwater species with their relatively greater oxygen requirements. While it is nice to be able to go out and gather one's own plants, he has found

Goldfish . . . which Mr. Goodwin feels are apt to be ill treated



WHAT IS YOUR OPINION?

continued from page 623

that while these will usually grow splendidly in the open air, they don't appreciate life in the indoor aquarium nearly as well as the tropical types. If the coldwater tanks in public aquaria are compared with the adjacent tropical tanks, there will be found to be a striking difference in presentation—mostly due to the lack of plants, etc. However, when it comes to the question of marine tanks, there is a definite place for the coldwater aquarium, not only as a first step towards the ultimate coral fish set up. Marine life is beauty, as anyone will agree, who has brought home some blennies and a few anemones from the seaside and found that they will feed from the fingers straight away.

A few views of my own now. I am lucky in that I have aquaria both at home and in the school in which I teach. I keep, amongst other fish, a variety of smaller cichlids in school, and have grown very fond of some of the larger fish. I think that one can become more emotionally attached to one or two large fish than one can to a shoal of smaller ones. At home I keep a variety of species, mainly guppies and tetras. I would put the cardinal as my second favourite with the guppy as my number one fish. The choice of the cardinal is obvious to anyone who has seen it, and its fantastic looks are combined with a hardy, long lived little fish which is not choosy about food. Its main faults are that it is very liable to contract white spot if there is any about, and that it is difficult to breed. However, at a cost of about 6s. 6d., a cardinal is, to me, an excellent investment if one quarantines new specimens and does not want a fish which will be required to spawn on command.

The attractions of the guppy are again obvious to anyone who has seen a really good pair of fish. Although good guppies are very expensive, and the chance of a good pair of adults producing good youngsters rather remote, there is the excitement of crossing a male and female fish, and

quickly getting a brood of live young, some of which may be the illusive beauties for which the guppy-breeder searches.

I was surprised that I had no letters from people defending coldwater fish. Where are all the keen coldwater fish keepers? Do you not think that you have let your side down? What about a few letters in support of the coldwater hobby? How many people, like myself, started off with a goldfish in a large glass jar? One point which I would put forward to dealers regarding coldwater fish is that the smaller shops, which stock many tropicals and only a few coldwater tanks, are very warm inside and, to keep coldwater tanks cold, they have no lights in them. This means that one has to peer into dark corners to see the faint outlines of coldwater fish, and who wants to bother straining one's eyes when there are a host of well-lighted and planted tropical tanks which can easily be seen? Are the dealers helping to kill the coldwater hobby, do you think, or are my limited examples which I have seen not typical of the majority of dealers? Views, please.

A couple of other questions for comment: Mr. Higham asks if readers have their own particular ideas on the perfect aquarium hood. He has

The cardinals with their fantastic looks



Good guppies are very expensive

seen many different designs in people's homes and finds that the best designed ones are home-made. What sort of hood do you use, and what are its advantages and disadvantages? How could it be improved? Mr. Higham also asks if there are any more than a mere couple of dozen books and a hundred or so pamphlets suitable for the reasonably literate aquarist? He would like to hear of any good books currently available which are not advertised in the aquarist press.

Another question or two: Where do you keep, and on what do you feed your white worms? What are your views on plastic decorations for the aquarium? What are your views on aquarium societies?

In conclusion, let me wish all readers and letter writers the compliments of the season. Thank you for sending your letters. I, and many others have learned a great deal from them. Keep the letters coming. Remember, this is your feature and your chance to air your views.

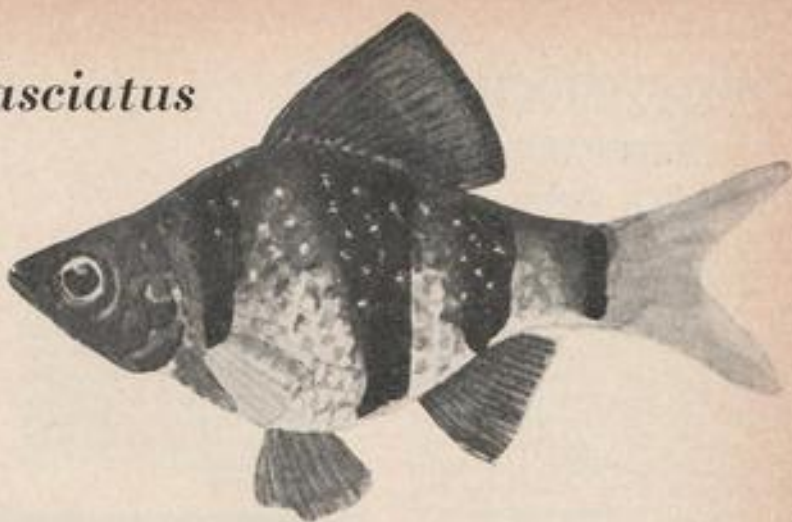
Barbus nigrofasciatus

by Jack Hems

FOR THOSE READERS who have a liking for barbs, may I recommend for their special attention and enjoyment *Barbus nigrofasciatus*, popularly called the nigger or purple-headed barb in this country and the black ruby barb in the U.S.A. This enchanting little fish, which was first introduced to tropical aquarists in 1935, is indigenous to the non-turbulent coastal fresh waters of southern Ceylon, where it attains a length of about 2½ in. Tank bred specimens reach about the same size.

The chief attraction of *B. nigrofasciatus* is, unquestionably, the coloration of the male. Frequently, and always when it is sexually excited, the anterior half of its body, that is from the barbless snout to a point in line with about the middle of the dorsal fin, assumes a splendid purplish hue, the colour of blood, that weakens to silvery pink posteriorly. Four black bars adorn the sides: the first just behind the head, the second under the dorsal fin, the third between this fin and the caudal peduncle, and the fourth across the root of the tail. The scales are rather large and reflect silver, green and gold lights. The dorsal and ventral fins are sooty-black, with red showing through; the anal fin is black in the base shading to grey along the margins. The caudal fin is pink to pinkish-orange. The pectoral fins are clear. Out of colour the male is greenish-brown on the back, with the spaces between the dark vertical bars silvery-grey to white flushed with pink. The head, as always, is suffused with red. The sexes are easily distinguished; for the female is heavier bodied and paler in coloration than the male.

The species is quite hardy—for a fish that hails from so near the equator—and has a temperature range of from about 66°F (18°C) to 85°F (29°C). For normal maintenance, however, a temperature range of from 72°F (22°C) to 75°F (24°C) is as good as any. Like most, if not all, aquarium barbs, *B. nigrofasciatus* is no problem to feed: it will accept anything alive or dried. But as in all active fishes—and the nigger barb is



always on the go—it flourishes best on a diet rich in live food and meat—red meat, of course, and shredded to a swallowable size. And it keeps in prime condition and lives longest—some three to three and a half years—when it is given more than two meals a day.

B. nigrofasciatus is among those fishes that need plenty of room. An 18 in. by 10 in. by 10 in. tank is about the smallest size for a single pair or trio, and if a couple or more are placed in a community tank one must guard against any overcrowding. A tank to please a nigger barb must be thickly planted, but with a space kept open along the front for free swimming. There is no need to fuss over the quality of the water: any type of water will do, provided it is clean and not markedly hard or alkaline. If anything, though, a soft and acid water suits it best. The lighting should be bright.

Separation of the sexes—in a tank divided across the middle by a sheet of glass held in position by rubber wedges or inverted U-shaped lead strips—adds considerably towards a successful planned spawning. During separation, which need not be longer than a fortnight or so, the temperature should be raised and maintained slightly above normal. Also, plants with bushy or feathery foliage should crowd the ends. When the fish show enhanced colours and greater activity (and increased girth in the female) it is time to remove the glass partition. This is best done last thing at night or early in the morning.

In the main the fish spawn in the regular way of barbs. That is to say, the male drives the female all over the aquarium. Every now and again the couple come together and jostle side-by-side, or circle about: snout butting snout or head and tails tilted upwards or downwards. Usually these pauses take place in or near the plants, and there, among the tangle of greenery, the female scatters her sticky-coated eggs. Egg-laying lasts for half an hour or longer.

As soon as the male loses his ardour and the female shows signs of exhaustion and wear—splits in her fins and, perhaps, rubbed scales—it is time to think about removing them from the aquarium; for they are avid eaters of their own eggs.

At a temperature of about 78°F (25°C), the eggs hatch inside three days. The fry, that look like minute splinters of glass, cling head-up to the sides of the aquarium and the plants and exist on the rapidly diminishing supply of nourishment contained in the yolk-sac. But a day or two later, with this used up, they let go their resting places and swim off on an even keel in search of food.

The first food should be infusoria or the water from a healthy aquarium or garden pond that has turned green (pond water should be strained through fine nylon fabric to guard against the introduction of predatory creatures). Then there are prepared fry foods, sold by dealers. Or one can reduce a few pinches of a well-balanced dried fish food to a powder and feed a little several times a day.

THE STARFISH: A NIGHTMARE OF THE SEAS

by R. T. F. Gantes

AT FIRST SIGHT, nobody would think of considering the starfish as a beast of prey. When one watches it creep across the sea bottom one realises it will never be a racing champion. It cannot swim either and when turned on its back it has to go through a process of complicated contortions before managing to get itself straight again. It knows nothing of the art of camouflage and, in any case, has no tooth, claw, dart or tentacle with which it could seize a passing victim. If some tropical species are covered with venomous spines, these have a purely defensive role. In a word, nothing seems to correspond less to a tiger of the seas than this poetically shaped animal. And we take to dreaming of a fairy world of submarine-meadows constellated with starfish grazing peacefully like a herd of cattle.

The truth, however, is very far from this image. As soon as the hundreds of little feet of a starfish begin to patter on the ocean floor, panic spreads as when a hungry lion roars in the jungle! The hermit crabs take to their heels! The scallops clap their shells and swim away in a manner that reminds one of the clumsy flight of a terrified hen! The cockles bounce off in all directions, hopping on their unique foot! The oysters and the mussels close themselves as tight as they can and the sea-snails retire as far as possible into their shells! As for the *Scutellus*, a variety of flat, spineless sea-urchins, they cease feeding immediately, dig themselves into the sand and only reappear half an hour after the starfish has left the area!

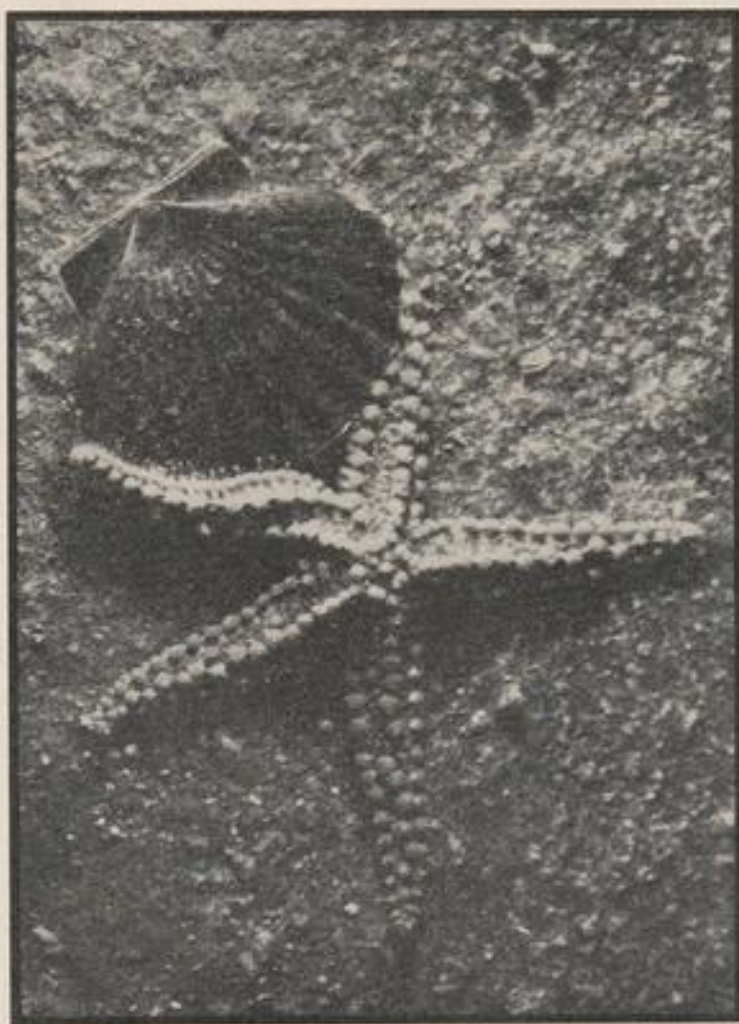
The instinct of these animals, formed by centuries of unhappy experiences, knows too well that the leisurely inoffensive aspect of the starfish hides an insatiable appetite, a stomach an ostrich could envy, an incredible muscular strength and that faced with such a monster there are only two issues: disappear or die.

Indeed, though toothless, the starfish is capable of devouring any

animal of a possible size it can lay "arms" on. It seems to ignore such things as indigestion, heartburn, intestinal occlusion, etc. Tender slender worms are absorbed with ease, whether they have stinging bristles or not, and gastropods are swallowed up whole, shell and all: the shell is later vomited after all the flesh inside has been digested.

JUNIOR AQUARIST

This way of eating winkles is certainly more expedient than ours, but we will refrain from advising it to our fellow kin: apart from the fact that it might not agree with a human organism, it also represents one of these little signs that enable us to mark the difference between a gourmet and a glutton. However, the starfish is not a pure glutton.



OUR READERS WRITE

Sorting Out

In your issue of November (p. 604), Mr. H. R. Coles remarks that Mr. M. J. Parry marred his recent article on carps suited to the tropical aquarium by using "the obsolete *Barbus* as the generic name of the barb family." Mr. Coles then went on to remind us that, Dr. L. P. Schultz, an American ichthyologist sorted out the barbs into the following categories: no barbels, *Puntius*; two barbels, *Capoeta*; four barbels, *Barbodes*. It seems, though, that Dr. Schultz's reclassification is not accepted by all ichthyologists, and until this is the case then the sensible thing to do is to go on using the generic name of *Barbus* for the aquarium barbs we know. If we do this we can make ourselves understood among aquarists who cannot keep pace with, or remember, the changes made by the professors. Besides, we have no guarantee that the names given to fishes by ichthyologists will not be altered as are so many of the names given to plants and trees by botanists. Obviously, Mr. Coles has had little to do with barbs. He says that: "when the males assume adult coloration (breeding coloration) they will keep this coloration continuously and will not lose it although they are not breeding." It is hardly necessary to point out that this is not true. Many male barbs, which display fine colours at all times, assume a greater variety of tints and a greater brilliance when courting or actually spawning.

One more thing. Mr. Coles ends his letter by saying that: "Although both generic names of the neon tetra are correct it is more correct to use *Paracheirodon*." I should like to point out that a thing is either correct or not correct. One cannot have a thing more correct than correct.

JACK HEMS.

Lighting Problem Solved

I am writing in order to help other young aquarists to overcome problems of expense.

Recently I faced the problem of lighting a tank in front of a window.

Without a background to the tank, too much light entered and with one too little entered. The expense of buying a hood and light for it put me off. My own solution was to make use of daylight.

This took the form of an all-over hood of hardboard lined with aluminium foil. The back was omitted and the flat top was inclined at about 60°, the sides were fixed with 1 in. batten. All the inside was lined with foil. The hood was then supported below the top frame to protect the frame from condensation. The outside was painted to produce a neat finish.

My own experience is that enough light for the plants is provided; also I was able to use a background.

S. R. WINTER (16)

Frameless Tanks

So, because Mr. T. Wild has failed miserably in his attempt to build an all glass tank of a mere 30 gallons capacity, written statements that tanks of 50 gallons and more can be made without frames are erroneous. What utter nonsense! and from someone who, as marine correspondent for *The Aquarist* magazine, should know better. I believe the all glass tank using Dow Cornering or R.T.V. sealant to be the ideal receptacle for marine life. Mr. Wild should come

to South Wales, where to my own knowledge several all glass "frameless" tanks of 50, 40 and 20 gallon capacity are to be seen in use in the homes of myself and friends.

The secret in making these tanks lies in scrupulous cleaning of the glass ($\frac{1}{2}$ in. plate), careful application of the sealant to avoid air voids at the joints, and the final application of a generous fillet of sealant squeezed all round the interior seams.

Commonsense tells us that glass is not very flexible so that at the first filling and in subsequent use these tanks must be stood on a flat and rigid base, this is of paramount importance. The thought of filling one on an uneven garden surface would appear foolish to say the least, and would probably cause a framed tank to leak.

I apologise if this letter appears a little irate, but after many years as a tropical marine aquarist, I get very annoyed at the dogmatic way certain views are expressed, often with very limited experience to back them up.

If Mr. Wild gets hold of a current copy of Mr. R. Straugham's "Salt-water Aquarium Magazine," he will find detailed instructions on the building of such tanks, or failing this he is most welcome to come and see mine.

DEREK BEVAN,

F.I.M.S.S.

THE CHAMPION OF CHAMPIONS CONTEST



RESULTS

PAGE 630

BRITISH AQUARISTS' FESTIVAL, 1968

by A. Boarder

THE EIGHTEENTH British Aquarists' Festival, sponsored by *The Aquarist and Pondkeeper*, was held on 26th and 27th October, 1968, at Belle Vue, Manchester. It was a great success and appears to go from strength to strength. Last year the hall was packed out with visitors on both days, the Sunday being especially busy. In consequence the hall was lengthened by 50 yards this year, but still it was filled with people on the Sunday and just about comfortably on the Saturday. Anyone who has never visited this exhibition can have little idea as to what it resembles. It is also rather difficult to describe to such people what the hall is like.

The length of the hall occupied was 540 feet and it was 78 feet wide. Refreshments and other amenities are excellent with plenty of seating accommodation available and the whole area is comfortably warmed and well lighted. All along the sides are exhibitors' and dealers' stands and many stands are also down the centre of the hall. To convey some idea of the extent of the dealers' stands it may come as a surprise to many to learn that one was 150 feet long, and even at that, the section selling fishes was nearly always besieged by buyers three or four deep.

At one end of the hall was *The Aquarist and Pondkeeper's* stand with an imposing array of cups and other awards. About forty of these were prominently displayed and a large shield showed the awards for the Champion of Champions. A closed-circuit television set with two screens was in operation throughout the show and visitors were able to see themselves on television. This proved a great attraction, and plenty of amusement when people were told by their friends that they were on display by the sets. Many useful books were on sale on the stands and the magazine binders were in great demand. Experts were on duty on the stand and were kept busy answering "fishy" questions.

Most readers of this magazine will be aware of the type of exhibiting

which is used at this show. Each competing society or club has a stand to itself where the numerous entries are displayed in an attractive setting. These stands are mostly very well constructed and several are not only so but are also very original. Each year sees a fresh approach by a few societies and this year was no exception. Each particular stand provides tanks for furnished aquaria, novelty tanks or those for individual fishes, pairs or teams. Therefore, instead of visitors having to gaze at rows of tanks containing perhaps a small fish, they find the fishes displayed on attractive stands which in themselves would be worth travelling a long way to see.

One of the more unusual stands was in the shape of a huge whale, even complete with a spout of water from the blow-hole. This was a fine attempt to win the best stand award but I feel it fell down a little by the fact that the "skin" of the whale was rather wrinkled; but I can realise the difficulties involved. Another stand was a television dealer's shop with 24 sets arranged on display. Each set contained a tank in place of a tube and the whole display was very well executed. This stand won the first prize in the competition. An enterprising society was the Dewsbury & District A.S., and their stand was a reproduction of an old motor car, with tanks incorporated, which was greatly admired by many visitors. This exhibit contained an aquascape with excellent models of prehistoric monsters, well arranged with imitation fern-trees as existed millions of years ago.

Another stand was in the form of a set of large whiskey bottles with suitable labels, etc., and this stand was very well constructed. Wakefield's stand had a large music score all along the front and the tanks were let in as notes. Glossop used a games theme and the whole front was decorated with dominoes, cards, dart-boards, etc. Blackpool stand was like a section of a fun-fair and each tank was inset in an imitation viewing machine



Third prize winner: Dewsbury A.S.

with signs such as: "What the Butler saw," and similar invitations. Another very good effort was by Stretford with a huge tank frame, 30 x 15 x 15 feet, in which were the small fish tanks inset in the rock-work of an imitation furnished tank. Another innovation was in the form of a stamp album with the tanks as stamps; this was by Northwich Society.

The stand of Loynes Society was in the form of an R.A.C. box, with tanks let in around the sides. I was very impressed by the stand put up by Sheffield. It was very attractive, colourful and neat. Many of the other stands were neat but rather formal, displaying the tanks well but not showing much in the way of originality. There is no doubt that most societies make a very good effort with their stands and it is surprising what can be done with the aid of a few tables and forms, disguised with hardboard, brick-like wall paper and endeavour. I would like to congratulate all the exhibiting societies for such a wonderful effort which made what could have been an uninteresting conglomeration of rows of fish tanks into such an exciting exhibition of fishes which was such a colourful change for those many people who were not aquarists but who found plenty to admire in this presentation of fishes.

There were thirty-six Societies exhibiting and sixteen trade stands.

Continued on page 632

CHAMPION OF CHAMPIONS 1968

1st **J. & H. DERNIE**
Worksop A. & Z.S.
89.2 pts.

2nd **K. PARKES**
Merseyside A.S.
87.2 pts.

3rd **J. D. WILSON**
Catford A.S.
85.2 pts.

HERE ARE THE RESULTS OF THE 1968 COMPETITION

Best Fish of the Show: K. Parkes (Merseyside A.S.). **Best Tropical Fish:** K. Parkes (Merseyside A.S.). **Best Coldwater Fish:** H. T. Jago (Bristol A.S.). - - **Best Other than Best Fish in the Show:** Tropical Egglayers: K. Parkes (Merseyside A.S.). **Tropical Livebearers:** B. Smith (Worksop A. & Z.S.). **Coldwater:** H. T. Jago (Bristol A.S.). **Best Society Furnished Aquarium (Tropical):** 1, Halifax A.S., 84 pts.; 2, Blackpool A.S., 79 pts.; 3, Thurrock A.S., 77 pts. **Coldwater:** 1, Accrington A.S., 71 pts.; 2, Northern Goldfish 70 pts.; 3, Northern Goldfish, 67 pts. **Best Individual Furnished Aquarium (Tropical):** 1, P. Reynolds (Worksop A. & Z.S.), 82 pts.; 2, B. Lattler (Blackpool A.S.), 81 pts.; 3, A. Firth (Bradford & D.A.S.), 77 pts. **Best Individual Furnished Aquarium (Coldwater):** 1, H. Smith (Accrington A.S.), 83 pts.; 2, Mrs. M. Firth (Bradford A.S.), 80 pts.; 3, M. Goodchild (Valley A.S.), 74 pts. **Best Aquascaper:** 1, K. Boothroyd (Dewsbury) 80 pts.; 2, Mrs. Matthews (Northern Goldfish) 77 pts.; 3, Mrs. K. Cassidy (Dewsbury A.S.) 75 pts. **Novelty Aquascaper:** K. Boothroyd (Dewsbury A.S.) 75 pts.; 2, Miss L. Wilson (Worksop A. & Z.S.) 72 pts.; 3, Mrs. M. Knowles (Sheffield A.S.) 70 pts. **Common Goldfish and Comet:** 1, H. T. Jago (Bristol A.S.) 75 pts.; 2, Mrs. Matthews (Northern Goldfish) 74 pts.; 3, N. Chadborn (Northern Goldfish) 73 pts. **Shubunkins:** 1, B. M. Rothwell (Northern Goldfish) 75 pts.; 2, H. T. Jago (Bristol A.S.) 72 pts.; 3, B. M. Rothwell (Northern Goldfish) 71 pts. **Moors:** 1, H. T. Jago (Bristol A.S.) 76 pts.; 2, J. Hodgetts (Accrington A.S.) 63 pts.; 3, J. Hodgetts (Accrington) 56 pts. **Veltails:** 1, W. Ramsden (Northern Goldfish) 64 pts.; 2, H. T. Jago (Bristol A.S.) 61 pts.; 3, C. H. Whitney (Accrington A.S.) 58 pts. **A.O.V. Fancy Goldfish, Fantails, Grassies, Lionheads and any "New" Variety:** 1, Mrs. A. Buckley (Bury A.S.) 65 pts.; 2, N. Farrell (Northern Goldfish) 64 pts.; 3, Mrs. Baxter (Northern Goldfish) 61 pts. **Any species of Coldwater Fish other than those in above classes:** 1, R. Wagstaff (Northern Goldfish) 56 pts.; 2, J. Frazer (Northern Goldfish) 48 pts.; 3, Mrs. Matthews (Northern Goldfish). **Guppies (Single fish):** 1, J. Blamires (Huddersfield A.S.) 76 pts.; 2, Mrs. B. Wolstencroft (Heywood A.S.) 74 pts.; 3, W. Orton (Salford A.S.) 73 pts. **Guppies (Pairs):** 1, A. Watt (Lanarkshire A.S.) 74 pts.; 2, V. Brothwood (Gorton and Openshaw A.S.) 71 pts.; 3, V. Brothwood (Gorton & Openshaw A.S.) 68 pts. **Livebearers (Pairs):** 1, B. Smith (Worksop A. & Z.S.) 79 pts.; 2, J. Dornie (Worksop A. & Z.S.) 75 pts.; 3, G. Kershaw (Heywood A.S.) 72 pts. **Livebearers (Single Fish):** 1, S. A. Foley (Salford A.S.) 79 pts.; 2, D. & R. Standen (Loyne A.S.) 77 pts.; 3, B. Smith (Worksop A. & Z.S.) 75 pts. **Angels (Pairs):** 1, J. Shepherd (Salford A.S.) 60 pts. **Angels (single fish):** 1, J. Tunney (Stockbridge & D.A.S.) 78 pts.; 2, M. Jones (Valley A.S.) 73 pts.; 3, G. Edmonds (Salford A.S.) 70 pts. **Dwarf Cichlids (Pairs):** 1, J. Dornie (Worksop A. & Z.S.) 74 pts.; 2, N. Kirby & Son (Merseyside A.S.) 73 pts.; 3,

K. Hill (Heywood A.S.) 67 pts. **Dwarf Cichlids (single fish):** 1, J. V. Hill (Ashton-u-Lyne A.S.) 77 pts.; 2, J. V. Hill 76 pts.; 3, J. Dornie (Worksop) 75 pts. **Cichlids A.O.V. (pairs):** 1, R. Antonio (Northwich & D.A.S.) 77 pts.; 2, H. G. Naylor (Halifax A.S.) 76 pts.; 3, Mrs. J. Price (Hale A.S.) 73 pts. **Cichlids A.O.V. (single fish):** 1, K. Parkes (Merseyside A.S.) 80 pts.; 2, D. Kennedy (Bradford A.S.) 78 pts.; 3, P. Devine (Ashton-u-Lyne) 76 pts. **Fighters:** 1, D. C. M. Durrant (Thurrock A.S.) 76 pts.; 2, J. Dornie (Worksop A. & Z.S.) 75 pts.; 3, J. Dornie 73 pts. **Gouramis A.V. and Paradise (Pairs):** 1, A. E. Whinlock (Tadcaster A.S.) 76 pts.; 2, F. Mulla (Merseyside A.S.) 72 pts.; 3, J. Dornie (Worksop A. & Z.S.) 70 pts. **Gouramis A.V. and Paradise (Single fish):** 1, Mr. and Mrs. R. Bone (Huddersfield A.S.) 78 pts.; 2, J. Dornie (Worksop A. & Z.S.) 75 pts.; 3, J. Kirby and Son (Merseyside A.S.) 73 pts. **Barbs A.V. (Pairs):** 1, K. Parkes (Merseyside A.S.) 87 pts.; 2, J. Dornie (Work-

sop A. & Z.S.) 83 pts.; 3, E. Pearnough (Chapelton A.S.) 78 pts. **Barbs (Single fish):** 1, J. Dornie (Worksop A. & Z.S.) 84 pts.; 2, B. Jones (Worksop A. & Z.S.) 82 pts.; 3, R. Taylor (Aireborough A.S.) 76 pts. **Characins (Pairs):** 1, B. Parkin (Huddersfield A.S.) 69 pts.; 2, D. & R. Standen (Loyne A.S.) 69 pts.; 3, B. Johnstone (Heywood A.S.) 68 pts. **Characins (Single fish):** 1, J. Robinson (Merseyside A.S.) 84 pts.; 2, A. G. Whyte (Halifax A.S.) 79 pts.; 3, J. Tunney (Stockbridge) 78 pts. **Carp and Minnows (Pairs):** 1, Price and Hodgkinson (Gorton & Openshaw A.S.) 76 pts.; 2, J. Mitchell (Sheffield) 70 pts. **Carp and Minnows (Single fish):** 1, Price and Hodgkinson (Gorton & Openshaw A.S.) 80 pts.; 2, A. G. Whyte (Halifax A.S.) 77 pts.; 3, R. Hughes (Gorton & Openshaw A.S.) 76 pts. **Catfishes (Pairs):** 1, R. Davies (Belle Vue Manchester A.S.) 79 pts.; 2, D. Jamieson (Lanarkshire A.S.) 71 pts.; 3, F. Mulla (Merseyside A.S.) 71 pts. **Catfishes (Single fish):** 1, A. Bobbington (Stretford A.S.)





80 pts.; 2, A. G. Whyte (Halifax A.S.) 77 pts.; 3, R. Hughes (Gorton & Openshaw A.S.) 76 pts. **Egg-laying Tooth Carp (Pairs):** 1, G. Richardson (British Killifish) 78 pts.; 2, P. Graver (Sheffield) 75 pts.; 3, B. Betterley (British Killifish) 73 pts. **Egg-laying Tooth Carps (Single fish):** 1, R. Cooper (British Killifish) 82 pts.; 2, G. Jones (Blackpool) 81 pts.; 3, G. Richardson (British Killifish) 75 pts. **Loach A.V.:** 1, B. Parkin (Huddersfield A.S.) 79 pts.; 2, G. Kershaw (Heywood A.S.) 75 pts.; 3, F. Harkins (Thurrock) 73 pts. **A.V. other than above classes:** D. & R. Standen (Leyne A.S.) 80 pts.; 2, D. & R. Standen (Leyne A.S.) 79 pts.; 3, J. Dornie (Workop A. & Z.S.) 78 pts. **Breeders (Egg-layers):** 1, J. Smithson (Bridgend A.S.) 80 pts.; 2, A. Watt (Lanarkshire A.S.) 79 pts.; 3, E. Watson (Lanarkshire A.S.) 78 pts. **Breeders (Livebearers):** 1, J. Tunney (Stockbridge) 77 pts.; 2, M. Killock (Lanarkshire A.S.) 76 pts.; 3, S. A. Foley (Salford A.S.) 75 pts.



Top: The Aquarist and Pondkeeper Stand

Left: Winner of the 1968 Champion of Champions J. Dornie, presented with the silver-plated plaque, solid gold lapel pin and 20 gns. cheque by Dr. J. F. Wilkinson, President of the F.N.A.S.

Breeders (Coldwater): 1, 2 and 3, H. T. Jago (Bristol A.S.). **Special award for Exhibitor gaining most cards in the Breeders Sections:** 1, H. T. Jago. **Plants A.V.:** 1, F. R. Hardman (Hury A.S.) 85 pts.; 2, J. Turner (T.A.B.) 84 pts.; 3, B. J. Smithson (Bridgend A.S.) 83 pts. **Best Marine furnished aquarist:** 1, P. Meechouse (Bradford A.S.) 78 pts.; 2, A. Harper (Glossop A.S.) 69 pts. **Best Display Stand:** 1, Workop A. & D.S., 2, Lanarkshire A.S., 3, Dewsbury A.S., 4, Stockbridge A.S. **Special Award to society whose members won the most points for its four highest pointed awards:** Workop A. and Z.S. **Individual Exhibitor gaining Most awards:** J. Dornie (Workop A. and Z.S.) **Roses Shield:** Lancashire.

BRITISH AQUARISTS' FESTIVAL, 1968

continued

Almost anything needed by aquarists and pondkeepers could have been obtained from fishes to foods, rocks to tanks and plants to aerators. One could even have purchased some poisonous snakes, such as cobras and rattlers, as there were some on the stand of one dealer. I did not see anyone buying one and so presume that the old jokes about mothers-in-law exists no longer as facts.

The Champion of Champions were all staged in a double row and it made a motley array with large cichlids alongside Golden Rudd and a Veiltail. It was interesting to note that the largest fishes did not win all the prizes as it was an Orange chromide (*Etroplus maculatus*) which was placed first. I was very surprised to find that some of the exhibitors in this class had taken so little trouble to study the comfort and health of their fish. One or two of the very large ones were without aeration and one particularly large one, at least a foot long, not only had no aerator but had a cover glass securely tied all over the top. Such a large fish was in

trouble through lack of oxygen and had not action been taken by the stewards the fish would have died. In a warm water tank such a large fish would soon have used up all the oxygen and as the top was almost hermetically sealed, no fresh oxygen could get to the water.

Tropical aquarists could find plenty of very fine specimens to admire and the general standard of the fishes was quite high and the judges must have had a difficult task to place the awards so well. This show is, in my opinion, the hardest one of all to judge. One fish in a class could be over a hundred yards away from others in the same class, and one can just imagine how a judge has to work to adjudicate in eight or more classes, all the entries being scattered over large distances.

The coldwater fishes were not quite as good on the whole. The common goldfish were again very good indeed but the fancy ones, with the exception of a few shubunkins, were not of a very high standard. One or two of the shubunkins had too deep a body for my liking, and one with a very nice



2nd Prize winner: Lanarkshire A.S.

stream-lined body was my choice, although it had rather a lot of blue with hardly enough of the other shades, but it was still one of the few with a stream-lined body which is desired in the Bristol shubunkin.

Many of the Societies had gone to town in Class 3A, Novelty "Aquascape." Belle Vue had a working model of the nursery rhyme, "The cat and the fiddle," and another had a scene of a country site ruined by litter. One amusing tank showed a Black

1st Prize winner: Workop Aquarists Society





Above: The Whale entry by Stocksbridge and District Aquarist Society
 Right: An outstanding exhibit, the Streetford and District Aquarist Society

Widow fish with three small figures of women in black beside small coffins.

I was rather disappointed at the lack of marine aquaria. I only saw one or two and the best exhibit was on the stand of a dealer. However, if anyone who visited this show could truthfully say that the whole exhibition was not a great success he would be very hard to please. Some new ideas have already been put forward for next year and so it is believed that the limit of attractions has not yet been reached.

Full results of the show are given elsewhere. Attendance figures were 10,814 not including exhibition stewards and traders.



EXPERIMENTS IN KEEPING DISCUS

PART ONE

FOREWORD

ALMOST TWELVE months ago, due to a number of unusual circumstances, I had arrive from South America a shipment of Discus. Under normal circumstances I would have been pleased but these arrived a fortnight before they were expected.

The premises were being re-equipped and the wholesale dept. stocked to its absolute capacity at that time due to receiving shipments on the previous days. There I was with one of the most beautiful and demanding of freshwater fish and nowhere suitable to keep them. Fortunately I remembered a great friend of mine who lives some 60 miles away, a serious aquarist and a Discus keeper. After rousing him from his slumbers (no mean feat to accomplish) I announced the problem. He was delighted to help and a short time later a rather dishevelled, unshaven character was banging on the door, his pyjamas still in evidence under an overcoat. He took my consignment of Discus and this system worked so well, both commercially and privately, that we continued to operate it.

Over this time, and for a little previously, my friend has had the opportunity to study and observe many specimens. Being something of a scribe he kept careful records and it is from these that he has written the article that follows below. We both hope that in some small way it helps contribute to the hobby and to the keeping of this wonderful fish.

Joe Williams,
Asiatic Aquatics.

THIS ARTICLE is an honest account of my experiences in keeping two species of Discus, *Symphysodon discus* and *Symphysodon aequifasciata axelrodi*. I have made an attempt to give the information necessary to enable aquarists to keep them.

When I obtained my first pair I was bombarded with "You can't keep them", "Too expensive" and similar statements; undeterred I pressed on.

I quickly found, as many Discus Keepers have, that there is little real information readily available about them.

My only qualifications are my experiences with them, a great affection for them and an ardent desire to see more aquarists keeping them.

If you embark on the trail of Discus-keeping, the Boy Scout motto could not be more applicable. . . . Be Prepared . . . To . . .

Spend a considerable amount of money . . .

Be disappointed and suffer setbacks . . .

For countless hours of enjoyment the like of which no other fish will ever manage to give . . .

I found when I began that fish keeping was no longer a hobby but became an involvement, for once you have kept Discus the more mundane fishes will not satisfy you. It becomes a sort of obsession; why I don't know nor do many other aquarists who keep them. This article is not intended to give all the answers simply because I don't know them; however, the problems that I had to face and how I overcame them I have endeavoured to describe fully. It is not designed for the beginner nor for the advanced aquarist but for the serious aquarist who would like to keep them but is dubious of how to set about it.

My sincere thanks to Dr. Gottfried Schubert of Stuttgart for his help and kindness, and to Mr. Joe Williams of Asiatic Aquatics without whose help I would not have had the opportunity to observe so many specimens.

Preparation

Read all the information you can obtain, particularly magazine articles, as these are usually written by people who actually keep them. If you know anyone already keeping them try and talk to them as their help will be extremely valuable.

Prior to keeping Discus keep a few fish that are finicky feeders and require special water requirements (Chocolate Gouramis, Archer fish, *Rasbora maculata*). The idea is to become accustomed to altering water to particular

requirements. Usually, those fish that require particular water conditions also are fussy feeders. It is also a good idea to keep a few cichlids other than Discus beforehand as they are renowned for their hearty appetites and love of live food. This enables one to become accustomed to feeding large quantities of live food at the same time controlling the bacteria within the tank. As they are of the same family most cichlids display similar characteristics to Discus and all are prone to a particular infection that appears to be common to cichlids alone. (See Diseases in the following issues).

In the following paragraphs I have stated what I consider to be the most suitable conditions followed by my reasons for saying so:

Tank

It should be as large as possible; a deep tank 18 in. or over is preferable. Nothing smaller than 30 x 18 x 15 in. should be considered. If the pocket allows, a nylon-dipped one would be advisable. The inside should be sealed with Dow Aquarium Sealant or Hykro Sealer. If you cannot afford a nylon-dipped tank or wish to use one you have already, the frame can be coated with Araldite (AY 103 with Hardener 951 or 956) or Propol 820.

The air above the tank should be kept humid and to accomplish this I made a hood from Perspex with a removable glass lid (see part 2). The lighting was mounted above this. This type of hood also allows the housing of an unorthodox filter (see Filtration) and a carpet of floating plants. In my case *Pista striates* which are recommended to help remove carbon dioxide from the surface layers and help in preventing it from entering the tank by mechanically shielding the water surface. Discus are shade loving and the floating plants assist in providing this requirement.

Tank location should be where it will enjoy some natural daylight; a location where there is considerable activity (near a door or a greatly used cupboard, above or in the direct vicinity of any equipment that provides music, etc.) should be avoided. Too quiet a

location should also be avoided (except at breeding times).

Reasons

In their natural habitat *Discus* are apparently found in huge deep expanses of water or deep flooded rivulets and the land temperature is higher, consequently the air above them is humid. Their natural location would be very difficult to simulate exactly; however, a large deep tank does appear to make them feel at home. The tank should be coated to prevent toxic elements entering it (old paint, rust, etc.). *Discus* are sensitive to almost undetectable toxic elements (see Diseases). The hood was made from Perspex for this same reason. The tank should be sealed inside to eliminate the chance of oil from the mastic reaching the water as this is often fatal if left. At times I found that if the room light was switched on when the room had been previously dark, it would startle them. If natural daylight is present it acts as a buffer for the room light; this is, of course, besides the obvious advantages. *Discus* do not like great activity in the tank vicinity and hide if it is present and the same is applicable to noise and vibrations. They are naturally shy and this should be respected. If too quiet a location is chosen I find they skit at the slightest movement and this is not only harmful to them but renders tank maintenance (which is considerable) somewhat hazardous. If they are to be kept in the living or dining rooms take care to ensure that the television does not flash light into the tank; should the location be near a window also check that the lights from passing vehicles do not do the same. One pair of Heckel that I had would at times skit when no one was in the room for no apparent reason. Quite by accident I found that lights from passing traffic were entering via the sides of the venetian blinds at about the same time I had to carry out one or two adjustments to the television and to do this the screen had to be turned towards the tank. The reaction from the *Discus* was immediate and the behaviour that I had previously observed from

another room via a glass divider prevailed until the screen was turned away. The necessary steps were taken and this behaviour was not seen to occur again.

Tank Furnishings

The substrate should be completely neutral or should not be used. It should be small ($\frac{1}{4}$ to $\frac{1}{8}$ in.), smooth and round. Granite chips, however small, should not be used as it is virtually impossible to remove the sharp edges.

Reasons

Gravel I have found (even the type that seedsmen use for lime-hating plants) will harden and alkaline the water after a considerably short time. Treatment with Hydrochloric Acid will rectify this. I find that a pint of the commercial Spirit of Salts used for neutralising ponds is usually sufficient to treat 2 cwt. of the prementioned gravel.

Method

Use an old tank all glass if possible (old battery jars are ideal). Dilute the acid until the gravel is just covered; forget it for a week or so, then take samples, wash and boil; place the sample in a beaker containing water of known hardness and p.h. After a further 7-14 days there should be little or no change. If this cannot be done do not use a substrate but put the plants in pots.

On occasion the most careful aquarist will commit an indiscretion and cause his *Discus* to "skit" (my two-year-old son is always doing it). If the gravel (or rocks) is too sharp considerable damage can ensue caused by them dashing wildly about the tank.

In their natural environment the waters they inhabit have sandy bottoms and I believe that natural conditions should be copied where possible. *Discus* prefer to feed from the bottom if the gravel is kept small as the worms etc. are more easily retrieved. *Discus* also have a quaint habit of blowing any worm that they cannot get at out of the gravel and this is difficult for them if the substrate is too large. In addition, if sub gravel filters are employed, the

filtration is greater through small compost and plants appear to do better.

Rocks

As you may know, the study of rocks is a science in itself. However, as aquarists we put them into two classes Calcerous and Non-Calcerous, the latter being the one in which we are interested. These rocks usually take the form of Acidic rocks; that is those that are rich in silica. Granite is an acidic rock and there are many others the availability of which varies from area to area. Personally, I use thin slabs of coal, slate or granite the edges of which are polished as smooth as possible. Briefly, rocks that are non-calcerous, thin and flat are the most suitable. If you wish to use a particular type of rock, reference to any good book on mineralogy (quartz family) will give the necessary information.

Wood

Roots are useful in buffering the water and helping to keep it acid and are present in the fishes' natural home. They should be well rotted back to the heartwood, free from decay, and completely dead or they will fungus when put into the tank water. Oak is the most suitable. If you would like to use roots purely as decoration (or any roots that are suspect, for that matter) they can be coated in Araldite (AY 103 with hardener 951 or 956) or Propol 820. Be sure to follow the manufacturer's instructions to the letter.

The roots to be used should be well scoured and boiled in a saline solution (cooking salt) followed by boiling in clean water. They should be dried thoroughly and if you have an understanding wife, this can be done in the oven. Allow them to cool and keep them in a warm place (the airing cupboard is ideal). Coat them at your leisure. I repeat, stick to the manufacturer's instructions, particularly those concerning safety. When they have been coated and allowed to cure (this takes 1 to 2 months to be absolutely safe) attach them to slate with Araldite (the easily available twin pack). If they refuse to sink or stay where you want them, rock weights

Part two of this article
will continue in the January issue.

can be attached in the same way. Driftwood well washed is ideal and does not require the above treatment.

Reasons (other than those mentioned). Rocks should afford numerous hiding places but restrict swimming space as little as possible if they are thin and flat they accomplish this. Avoid bulky pebbles. I find that when tested with hydrochloric acid, the "skin" may appear safe but after a time they begin to emit alkaline traces into the water. Little is more annoying or dangerous than removing large rocks after fish have been introduced. The ultimate aim is to give ample cover with the minimum of restriction to swimming space. Like many shy fish, Discus will be seen more often if they know they can hide quickly. The rocks must be as smooth as possible to avoid damage to them and this can be achieved with a good file and emery cloth and a hell of a lot of elbow-grease.

Plants

Here again we must refer to their natural environment. Discus spend most of the daylight hours frequenting areas of plant thickets, tangles of roots and overhanging branches; this should be imitated as nearly as is practically possible.

Reed-like plants should be chosen (*Vallis*, *Sag*, *Echinodorus*, *Aponogeton* and *Cryptis*; avoid *Cryptocoryne hartelliana*). Bushy plants, i.e. *Cabomba*, *Wisteria*, etc., should not be used. Plants must be well cleaned and all snails and their eggs removed. Purists can stick rigidly to those plants that come from the same area as the fish.

Reasons

Reed-like plants are the closest to the natural surroundings. Bushy plants, even though they give good cover, inhibit swimming space and restrict tank trails and do not appear to do well in the temperature range that Discus

prefer. Previously I mentioned tank trails and it is my honest opinion that Discus select set trails through the tank. On more than one occasion when I thought that the tank in places looked a little bare and required more plants, the Discus have pulled them up faster than I could plant them. When I finally give in and move them to the already planted area, they leave them alone. *Cryptocoryne hartelliana* should be avoided as it tends to make the water alkaline.

Ensure that the plants are well cleaned because they can be a source of infection particularly if snails and their eggs are not removed (see Diseases). The tank should be well planted but not too densely. I find it is better to plant in ranks, leaving trails at the rear middle and front. The area directly below the feeder should be unplanted to enable fallen food to be retrieved and allow easy cleaning.

THE STARWORTS *Callitriche* spp by Philip Swindells

THE STARWORTS (*Callitriche* spp.), although somewhat temperamental, are extremely useful plants for either pool or aquaria. Their luxuriant cress-like foliage is loved by goldfish and provides the necessary green material for their diet.

It is a cosmopolitan genus of about 25 species, which for taxonomic purposes has been split into two groups; the true *Callitriche* and the *Pseudocalitriche*. The former possessing both floating and submerged leaves and the latter only submerged foliage. This division is vital, as not only does the foliage have to be studied before a positive identification is made, but also both the fruit and flower types.

By far the most popular species in commerce are *C. platycarpa* and *C. hermaphroditica* (Autumnal Starwort). More commonly known by their old

names of *C. verna* and *C. autumnalis* these two useful characters will readily establish themselves in shallow water in an outdoor pool. Both look very similar in outward appearance, having small fresh green, narrowly elliptical leaves in dense terminal whorls, but *C. platycarpa* will be seen to produce occasional rosettes of broadly elliptical floating leaves, whereas *C. hermaphroditica* remains completely submerged. The latter, does have the advantage of remaining evergreen, even in an outdoor pool; a characteristic which no other species seems to possess.

Indeed, *C. stagnalis*, an attractive inhabitant of ponds and ditches throughout the British Isles, does not even seem reliably perennial under cultivation; its oval leaves often disappearing as soon as fruiting has taken place. I find the smaller form *C. stagnalis* var. *serpyllifolia* more amenable, although its floating leaves are in no way comparable with those of the species.

A variety barely distinguishable from *C. stagnalis* in the early stages of

growth is *C. obtusangula*, but any fear of confusion is soon allayed when the dense clusters of handsome rhomboidal floating leaves appear. A rare but improved hybrid form *C. X. lachii* (*C. obtusangula* X *C. intermedia*) is far superior to this, but difficulty may be experienced in obtaining a specimen. Its floating leaves exhibit the characteristics of *C. obtusangula*, being almost diamond shaped, whilst the submerged ones are long and narrow, like those of *C. intermedia*.

Finally we come to one of the most distinctive species, *C. truncata*, a splendid aquatic with slender reddish stems and dark blue-green foliage. This is an ideal subject for the cold-water aquarium as it will rarely outgrow its allocated space and never produces floating leaves. When obtaining plants of this variety it is best to avoid the wild collected British form, as this is invariably the coarse and more robust *C. truncata* var. *occidentalis*, whose dense leafy growth destroys the delicate filigree effect so beautifully created by a well-grown plant of the type.

COLDWATER QUERIES

Answered by A. Boarder

I have read of goldfish suffering from Goitre, what is the cure, please?

I have never heard of a goldfish which was suffering from goitre. Some may develop a throat tumour which I suppose could be called a goitre. It is very doubtful if it would be possible to cure such a fish and in any case if this was possible the fish would not be worth keeping for breeding from. The cause of this trouble is lack of iodine but such a little would have to be given in the food that anyone unqualified who administered this could do more harm than good.

I have a goldfish which had some nice black markings on it. These have now disappeared. Will they return, please?

The black markings are not likely to return. All goldfish which have visible scales are bronze in colour when young. They later change to red and as they do so the black turns quite black as do the upper parts of the fish including the dorsal and caudal fins. This black usually disappears but some fish may keep some of the black for a year or two. If a fish is damaged the place grows again and the new flesh is often black. This will later fade away.

Please advise me when it is the best time to empty a garden pond for sealing and cleaning?

Wait until most of the plant life such as water lilies have died down and any leaves from nearby trees and shrubs have fallen. This is usually in early November.

I have lost some goldfish through what looks like anchor worm. What is the cure?

Anchor worm (*Lernaea*), attaches itself securely to a fish and if it is pulled off with tweezers a nasty wound can result. The best treatment is to touch the worm with a strong solution of permanganate of potash. Do not allow this to get on the fish if it is a small one. The treatment kills the worm which becomes soft and will soon drop off. Any wound can be

treated with the usual salt-bath method.

Some of my goldfish in a garden pond are suffering from a trouble which makes red wounds, small ones, in various parts of the body. These wounds then become covered with fungus. What is the cause and treatment, please?

It appears that the fish are attacked by fish lice (*Argulus*). These are like miniature plaice and attach themselves to a fish and suck its blood leaving a wound. The lice can be picked off with tweezers but a better way is to insert the fish into a solution of Dettol or T.C.P. This must not be strong and half a teaspoonful to a gallon of water is ample. Keep the fish under supervision whilst it is under treatment and remove it after a minute, or less if it turns over. It will recover when placed in fresh water. The lice will leave a fish as soon as it is put in the solution.

I have built a fish tank, 24 x 24 x 15 in. How many fish can I keep, what plants do I need and how can I tell boy from girl?

The tank will hold 24 inches of fish without allowing for the tail.

You can always keep more fish alive in such a tank by using aeration, but even so the fish will not thrive and grow as well as they would do in less crowded conditions. One or two kinds of water plant such as *Egeria densa*, *Lagarosiphon major* or *Ceratophyllum demersum* will be enough. It is a mistake to try to grow too many kinds in one tank. Male goldfish are slimmer in the body than females of the same variety and show small white raised tubercles on the gill plates and often on the front edge of the pectoral fins, when in breeding condition.

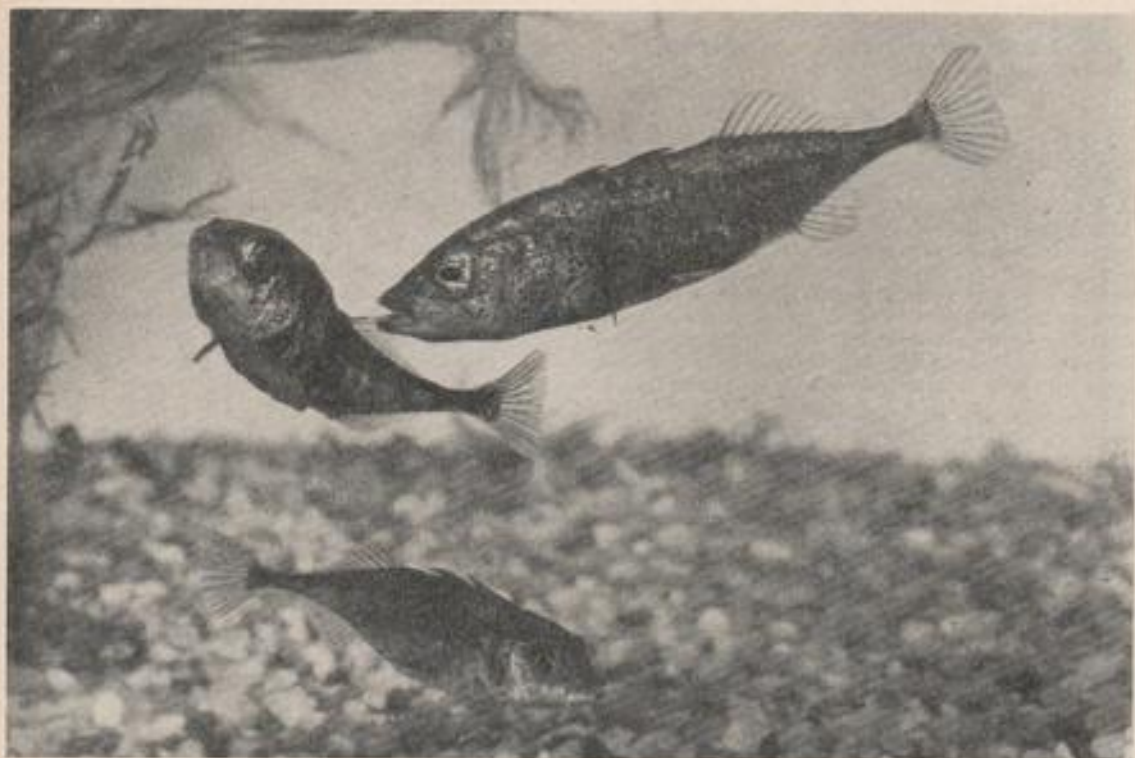
Is the Golden Orfe a hybrid; where was it developed and can it be bred?

The Orfe (*Idus idus*, golden variety), turns up among silver orfe occasionally. These fish are bred in Germany but little is known of their origin. They appear to turn up as mutations and in some strains more are produced than in others. In the Dinkelsbühl district of Bavaria, nearly all the young bred turn gold. The Orfe can grow to 18 inches in length and can be bred when about a foot long. They like a well oxygenated water.

Tench or "Doctor Fish"



OUR EXPERTS' ANSWERS TO YOUR QUERIES



Above: Male Stickleback driving off another male. Female below

Below: Young Bubble-Eye goldfish showing colour change taking place and black pigment "migrating" to the dorsal area and caudal fins



638

I would appreciate advice on fish which are likely to breed in a classroom aquarium, 12 x 9 x 9 in. I wondered if Bitterling would be suitable?

Your tank is so small that it is doubtful if you could succeed in even keeping fish alive for long in it let alone breeding fish in it. Bitterling carp breed by the female inserting a tube into a freshwater mussel and laying her eggs inside, where they hatch. You could not keep mussels alive without plenty of mulm or mud at the bottom of the tank. The only fish with which you might have some success is the Stickleback. One male to two females. The females would have to be removed after having laid

their eggs. Do try and get a larger tank or you may be in for disappointment.

Would it be safe to use rocks from a seashore in my freshwater tank?

These would be all right providing they were boiled to remove any salt. A little salt may do no harm but if too much salt is in the water it can turn foul before many days.

Last week whilst clearing some blanket weed from my pond I caught a small crayfish. How can I keep it and where could it have come from?

Continued on page 640

THE AQUARIST

TROPICAL QUERIES

Can you tell me how to keep and breed the livebearing half-beak (*Dermogenys pusillus*)?

This interesting species flourishes best in slightly brackish water kept at a temperature of about 72°F (22°C). A level teaspoonful of seasalt to every gallon of aquarium water is about right and will not inhibit the growth of, or destroy, plants. Plants are essential because the half-beak is easily scared and unless it has cover is liable to dash itself against the sides and damage its protuberant lower jaw. Food is taken at or near the surface. The best foods for it are fruit-flies, mosquito larvae, *Daphnia* and tubifex worms, which will be snatched as they wriggle through the bottom of a perforated worm-feeder. Dried flake foods are usually taken. In common with all livebearers, the female drops young every now and again. Unfortunately broods are small and the fry rather delicate. It is best to separate the fry from parent fish at the earliest opportunity.

The temperature of my tropical aquarium goes up and down in every 24 hours. Will this fluctuation harm the fish?

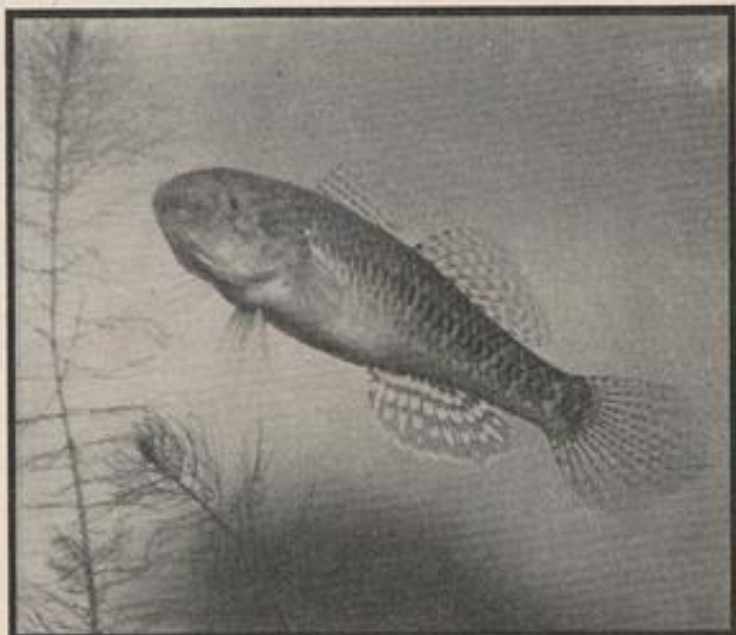
A slight variation of temperature in every 24 hours does fish no harm. It is an abrupt change in temperature that brings about trouble.

Please tell me the scientific name of a fish my dealer says is called the spotted sleeper. Also, is this fish easy to keep in the aquarium?

The scientific name of the spotted sleeper, that ranges from the southern states of the U.S.A. southwards to Brazil, is *Dormitator maculatus*. Small specimens are shy and inoffensive, but large specimens will soon kill or maim smaller fishes. Live food and meat is taken freely. Thickets of plants are needed for shelter. A temperature in the lower to middle seventies (°F) is quite satisfactory.

Will a needle fish live contentedly in a community tank?

Needle fish (*Farionella* spp.) need



Dormitator maculatus

peace and quiet if they are to remain alive for any length of time. If you can give them this (a well-planted tank with no boisterous or chasing fishes present) then they should do quite well. They do best at the usual tropical aquarium range of temperature and need soft algae or some substitute such as cooked spinach to feed on. They will also feed on small soft worms and *Daphnia*.

Could one of your experts inform me about how many barbs are found in south-east Asia and Africa?

There are upwards of 200 species and sub-species of barbel distributed over Africa and about 30 different species and sub-species indigenous to Asia.

Last summer I caught a small stone loach (*Nemacheilus barbatula*) and introduced it into a heated

aquarium. This fish is still going strong although the temperature ranges from about 70°F (21°C) to 75°F (24°C). Have I achieved something very unusual in keeping this fish in a tropical aquarium?

The stone loach is more accommodating than many people would have us believe, and if it is given well-aerated water and clean conditions temperature is of no great importance, provided it is kept within a reasonable range. All the same, we doubt whether it would live all the year round at a so-called tropical temperature.

I have been told of a preparation on the market which, when watered over a lawn, will bring worms to the surface. Do you think that worms collected by this method would poison my cichlids?

As you did not supply us with the name of the preparation said to bring worms wriggling out of the ground we cannot give you a definite answer, but we can say at once that worms will also come out of the ground if you sprinkle it about dusk with a solution of permanganate of potash. Stir sufficient crystals into two gallons of water to colour it deep pink. This trick works best in mild weather. Worms caught will not poison the fish.

At one of our club meetings, a member expressed the opinion that water plants root best in washed sand alone. Yet the experienced writers on aquarium management usually recommend a mixture of peat, clay, and fine grit as a planting medium. I should appreciate your comments.

Neither your club member nor the experts are wrong. There is less danger of a newly purchased plant rotting away from the crown downwards if it is anchored in washed sand alone. But after a root system has been produced the plant does best with something to feed on, such as a compost made up of clay and peat,

and some coarse sand or grit to keep it open.

Recently, I obtained some small silver tetras (*Ctenopoma spilargenteum*). What chance is there of spawning this fish in a 24 in. by 12 in. by 12 in. tank?

A very good chance indeed, but you will have to wait until the fish reach a length of at least 1½ in. A ripe female may be distinguished by her heavier body and the red in her anal fin. After some chasing, with the female fleeing before the male, eggs are scattered in the plant life. Remove the parent fish from the eggs and give these two or three days to hatch out. Two days later the fry should be swimming about and taking food. Give them *Infusoria*, powder-fine dried food, or a proprietary fry food.

Is any advantage to be gained in adding Epsom salt to a tropical aquarium?

Some aquarists drop crystals of Epsom salt into their aquariums in the hope that fishes suffering from constipation will swallow the salt and benefit from the experience. But as a rule more of the salt drops straight

to the bottom and dissolves there than is taken by the fishes, and an accumulating quantity of Epsom salt in an aquarium is not the best thing that can happen to plants or fishes.

Please give me some information about *Arnoldichthys spilopterus*.

A. spilopterus is commonly called the red-eyed characin. It is native to West Africa and has been known to serious collectors of tropical aquarium fishes for the past 60 years. All the same, it is not often seen in dealers' tanks. It is peaceful and reaches a length of some 2½ to 3 in. It appears to do best in soft and acid water. It will take dried and live food. We do not believe it has been bred in captivity.

What conditions are most suited to a plant called cardamine?

Plants of the genus *Cardamine* are essentially dwellers in water meadows or bogs. Two or three species are in cultivation as aquarium plants. They need a strong light, a compost richer than sand alone, and water on the shallow side (to give of their best). The species known as *rotundifolia* does well in the coldwater tank, but poorly in warm water. The plants spread by runners.

COLDWATER QUERIES

continued

The crayfish could have been introduced into your pond with live food when it was very small or on water plants. These crustaceans are carnivorous, living on small insect larvae and worms, etc. They would not harm large fish but could eat small fry. A good book which will give you information on the crayfish is, "The Freshwater Life of the British Isles," by John Clegg, published by Warne, and the old price was 21s., but I do not know if it is still available at this amount.

Crayfish



THE AQUARIST

BREEDING GOLDFISH

FEEDING THE YOUNGSTERS IN WINTER

by A. Boarder

THE CARE OF the current year's young goldfish may present problems to some aquarists and pondkeepers. Many goldfish which are bred in garden ponds are lost during their first winter. There can be no doubt that hundreds of such fish are lost every year. Many are left in the pond where they were reared throughout the winter and although a few may survive it is probable that many will perish. If the fry are ordinary goldfish their loss may not be anything to worry over, but if they are from a good strain of fancy goldfish it would be profitable to take some care of them so that a large proportion could be reared.

There are two main methods of getting these fish through the winter, either they are left to take their chance in the pond where they were bred or they are taken indoors and kept in tanks. This method may mean that the fry can be grown on well and this is unlikely to happen had the fish been left in the outdoor pond. The young goldfish which are left to take a chance in the pond will hardly ever need feeding. This may seem strange but it must be realised goldfish can only eat and digest their food at a fair rate if the temperature of the water is at or above 50°F. The warmer the water, within reason, that is up to about 75°F, the faster can the fish digest their food and the more often can they be fed. There is no question that this is not so, as experiments I have made have proved conclusively that fish can eat well and often when the temperature of the water is about 70°F, but as this warmth decreases so do the appetites of the fish.

From this can be seen that to rear the young goldfish successfully indoors in tanks during the winter months, some definite alterations must be made for their treatment other than the conditions which would be found in the open pond. The first of these is that some form of warmth must be used and I know of nothing better than a hundred-watt heater in a 24×12×12 in. tank, regulated by



Young veiltails over-wintering indoors to promote growth

a thermostat. The latter should be set at 70°F, so that a good temperature is kept all through the winter. It may be found that this will vary somewhat during differing weather conditions but this will not upset the fish. Having ensured that this temperature keeps up the fish can be fed at least twice a day. With this warm treatment the fish will keep healthy and feed well but they will not thrive unless they have plenty of space. The use of an aerator is essential if the fish are to be kept in rather crowded conditions. The rule of an inch of fish, not measuring the tail, to 24 square inches of surface area still holds good and unless this is provided the fish will not grow. They can be kept quite healthy when in crowded conditions but they will not grow. I have experimented with a number of young fantails this season and using some of my concrete tanks have crowded the youngsters far above the safe conditions. The result has been that although the fish have remained in perfect health they have not grown anywhere near as fast as fish which I had previously raised in the same tanks but where they were not crowded.

Last winter I had not more than four fish to a tank and at four months old they were at least three inches long and had fully coloured. This year I have had up to seventy fish in the same tanks and at four months

old they still have only inch-long bodies. Many have coloured and I have not lost a single fish among a few hundred. The fish have now been spread out to fifteen in each tank. This I realise is not wise but with all my tanks occupied I have had to overcrowd. They are being fed as often as were the fish which I reared last season and have about the same temperature of water. However, they still have not grown nearly as fast as did the fish which had more space. I can, therefore, state categorically that to grow goldfish at a reasonable speed three main conditions are necessary; warmth, food and space. The aeration is not essential if the fish have plenty of space, but if this is lacking, aeration must be supplied. I found that even with 80 young fish in one of my concrete tanks with a surface area of just under 24×12 in., I could keep the fish healthy and feeding well but they did not grow as fast as they would have done with more space.

Those young fish which are left in the pond will not need artificial feeding unless the temperature of the water rises above 50°F. Any food given then should be live, if possible, and only a very little at a time, so that it is soon cleared up. At various times during most winters there is a spell or two of warm weather when the fish become active. This is a good time to give a little food to the fish. Should the fish remain inactive it is of little use feeding them. During any time of the year it will be seen that when the fish are on the feed they will be browsing about among the water plants or at the sides of the pond. They are then searching for soft algae, etc., which they suck from plants and pond-side. Even if young goldfish are never artificially fed in a pond it is probable that they will be able to find sufficient food from the soft algae and minute forms of life living therein.

The fact that fry cannot digest their food well when the temperature of the water is low was demonstrated to me very forcibly this year. I had a

very large hatching of fantail fry in a small pond. As all my hatching tanks were occupied, I had transferred bunches of water weed with many eggs attached, to a small pond. The weather was dull and the pond partially shaded. The water was on the cool side all the time. Hatching was, of course, delayed and the fry grew very slowly. As there were so many fry I felt that it would be better to supplement my usual feeding of Liquifry, with some egg yolk. This was obtained by hard boiling an egg and then pushing the yolk through a tea strainer. This added to water made a good suspension. It was soon obvious that the fry were taking it well, as before this they had been difficult to see in the pond, they now showed up quite plainly by the yellow in their bellies. The temperature of the water was just below 50°F, and in two days the fry were

in trouble. They had not been able to digest the egg yolk in such cool conditions. They began to show a film of fungus all over them and many were lost. It became obvious that although it might be safe to feed fry on egg yolk when the water was warm it was very dangerous to do so when the water was cold. I then remembered that I had done the same thing many years ago. It is surprising how one can forget these things but this had happened over 20 years ago. I had no doubt made a note of this in a diary but these diaries are usually discarded each year which is a bad way of keeping records. As a rule when I make a mistake I do not do the same again, but in this case I did and I trust that I shall have learnt my lesson.

When I saw the fry in trouble I immediately added a fair amount of sea salt to the water. This cured

many fry but after about four days the water turned a pale brown colour like beer, and started to smell. This is a danger sign which usually follows the use of salt in water. Although salt is a good cure for many external troubles with fish, it is dangerous to leave salt water for long as it will turn foul. I then flushed the pond with fresh tap water and having got the water back to a good clearness found that the fry soon recovered and are still well. However, as the water has been so cold the fry have not grown as fast as in warmer water.

There is little doubt that to rear fry fairly quickly one must provide some extra warmth, plenty of food and also as much space as is possible. In crowded conditions the fish can be kept healthy with aeration but they cannot be expected to grow at their maximum rate unless more space is provided.

Lagarosiphon muscoides var. *major*

by B. Fry

ONE POINT to be noted by those who like the look of this curly-leaved plant is that it will not last long in warm water. In short, it is not suited to a tropical aquarium. Yet in a coldwater aquarium, or, better still, in a garden pond, it will grow away rapidly in a good light and is a first-class oxygenator. It also provides excellent cover for shy or spawning fishes or their fry. That it is intolerant of warm water is rather surprising because it is not a native of Europe, but of South Africa.

Not until the aquarium keeping hobby was well advanced was its old name of *Elodea crispata* changed to *Lagarosiphon muscoides* var. *major*.

All the same, the plant does resemble an elodea in its manner of growth and appearance. The brittle stems attain about 5 to 6 ft. in length and are densely clothed with rather narrow curved foliage. In colour it is bright to dark green.

Colin D. Roe, in his reliable and well-written *Manual of Aquarium Plants*, says the plant should be started off in shallow water and the water level raised as the stems lengthen. The plant bears flowers, but H. C. D. De Wis, the Dutch authority on water plants, says that he has never heard of it flowering in Europe.

There seems to be no question that the sturdiest growth is obtained when the plant is grown in water with a tendency towards alkalinity rather than acidity. Propagation is easy: all that is necessary is to break a stem into short lengths and anchor them in the compost. Rooting takes place (in the summer, at any rate) within a week or two.

OBITUARY

I regret to announce the death of my old friend and business associate Mr. Bill Bowler of South Coast Aquatics on 9th October. Mr. Bowler, who was in his sixties was very well known in the Pet Trade as a manufacturer, importer and exporter.

He had been in the trade some 30 years, beginning the earlier part of his career in a shop at Southampton and Aquatic Nurseries at Parkstone. One of his biggest achievements was the opening of the aquarium at South Bank. He then opened a large establishment at Colnbrook for the importation of tropical fish and plants and accessories, this is now run by his sole surviving son, Mr. Eric Bowler.

He leaves his wife, Mrs. Flora Bowler, and son, who is managing director of the family business.

T. Horeman



from AQUARISTS' SOCIETIES

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

THE result of the election of officers at the Barry A.S. annual general meeting was as follows:—President: J. Brockhurst; Vice-President: Mrs. F. Curry; Vice-President: W. Forse; Chairman: S. Nelson; Vice-Chairman: T. Gunter (1), A. Ibberson (2); Asst. Secretary: D. Richards; Show Secretary: P. Harris; Treasurer: Mrs. E. Steer. Additional help, exclusive of committee: Asst. Show Secretary: Mr. Leyland; Librarian: G. E. Tippins. A Table Show was held with results as follows:—Class A (Egg-layer): 1, A. Rock; 2 and 3, A. Harris. Class B (Livebearer): 1, A. Harris; 2 and 3, Mr. Kirkpatrick. Junior Class: 1, Miss Curnow; 2, P. Ellis; 3, S. Johnson.

AT the Annual General Meeting of Swillington A.S. the following officers were elected: President: P. Reynolds; Vice-President: W. Emmett; Treasurer: R. Stringer; Show Secretary: W. Gawthorne; Social Secretary: Mrs. Stringer. G. Nash was re-elected as Secretary. W. Emmett finished the meeting off with a short talk on filtration for the benefit of Swillington's newer members. The entertainment of other meetings held recently has been provided by K. Bateman, who gave a talk on fish foods and feeding in relation to the needs of fish, and W. Emmett, who provided a crossword quiz and taped musical quiz.

Winners of the table shows have been: Plants: 1, 2, and 3, J. Linden; Large Cichlids: 1, G. Hinks; 2, W. Gawthorne; Small Cichlids: 1, M. P. J. Linden; 2, G. P. Nash; 3, M. Cole. Furnished Jars: 1, M. P. J. Linden; 2, Mr. and Mrs. Flint; 3, Mr. and Mrs. Stringer. Livebearer Pairs: 1, Mrs. Emmett; 2, Mr. and Mrs. Stringer; 3, G. P. Nash.

SOCIETIES are cordially reminded that if they have many members interested in keeping marine fishes, that they can affiliate as a group to the International Marine Study Society for as little as 30s. per annum. Affiliations are also accepted from business organisations. Advantages of affiliation are many: 1. Access to the IMSS Technical Panel for expert advice and guidance. 2. Receipt of all IMSS publications and Library. 3. Free slide lectures and talks on many marine topics. This applies wherever your Society may be sited. Individuals of course can also join, the fee covering all the above services and many more. Send for full details now—ready for next year's programme, to: T. R. Hall, General Secretary IMSS, 49 Broadhurst Gardens, London, N.W.6, England. We are International. Our Journal is free.

THE Southend, Leigh and District A.S. were hosts recently to Basildon, East London and Thurrock Societies in the fourth leg of a four round series of table shows. The results of his

show were:—A.O.V. Tropical: 1, H. Nicoll (Thurrock); 2, Mr. Markings (Thurrock); 3, Mr. Green (East London); 4, B. Dunn (Southend). A.O.V. Coldwater: 1, R. Stradwick (Thurrock); 2, R. Dodkins (East London); 3, S. Hendle (Thurrock); 4, R. Armitage (East London). Characins: 1, Mrs. Armitage (East London); 2, J. Boss (East London); 3, M. Goodall (Southend); 4, G. Eaton (Thurrock). Mollies: 1, D. Durrant (Thurrock); 2, W. Corby (East London); 3, G. Green (East London); 4, D. Edwards (Southend). The judges were Messrs. Jessop and Stewart of the P.B.A.S. The points gained by the Societies for this show were:—East London 18, Thurrock 18, Southend 4, Basildon 0, and the total points gained over the whole series were:—Thurrock 49, East London 45, Southend 44, Basildon 2. A trophy (an inscribed gravel and block) was presented to the winning club—Thurrock.

AT the October meeting of the Bournemouth A.S., about forty members and guests heard H. Earl and L. James give an illustrated talk entitled "Freshwater Life." During the interval, a raffle was held; and the table show of the month was judged by J. V. Jeffery, with the following results:—A.O.V. Coldwater: 1, Mr. Chaney, perch, 70 pts.; 2, Mr. Sample, minnow, 59 pts.; 3, Mr. Hillier, sun bass, 58 pts. Catfish and loaches: 1, Mr. Ryan, Corydoras Julii, 73 pts.; 2, Mr. Waddilove, Corydoras Paleatus, 59 pts.; 3, Mr. Pink, Gyrinocheilus Aymonieri, 58 pts.

THE annual members only show of the Thurrock A.S. always attracts a good number of people and the members did not let the public's image of fishkeeping down, in fact, the fish and the eye catching furnished aquaria were of a very high standard.

The individual fish were judged by C. Creed of the F.R.A.S. Guppies: 1, D. Durrant; 2, Master T. O'Bryan; 3, K. Appleyard; 4, D. Hornsby. Mollies: 1 and 2, S. Hendle; 3, G. Eaton. Platies: 1, K. Appleyard; 2, Miss D. O'Bryan; 3, H. Juson. Swordtails: 1, J. Hartlebury; 2, P. O'Bryan; 3, D. Hornsby; 4, K. Appleyard. Fishers: 1, D. Durrant; 2, Miss P. Durrant; 3, Miss I. Durrant. A.O.V. Labyrinth: 1, G. Eaton; 2, Miss C. Durrant; 3 and 4, J. Elstob. Dan/Ras/Min.: 1, R. Nicholls; 2, P. O'Bryan; 3, D. Durrant; 4, K. Appleyard. Barbs: 1, R. Nicholls; 2, E. Nicoll; 3, D. Durrant; 4, E. Nicoll. A.V. Catfish: 1, P. Hincley; 2, E. Nicoll; 3, Miss D. O'Bryan; 4, J. Hartlebury. Characins: 1, E. Nicoll; 2, F. Harkin; 3, G. Eaton; 4, R. Nicholls. A.O.V. Tropical: 1, R. Nicholls; 2, Miss L. Durrant; 3, P. Harkin; 4, G. Eaton. 1 and 2, R. Stradwick; 3, H. Juson. Furnished Aquaria: 1, K. Appleyard; 2, D. Durrant; 3, H. Juson; 4, P. Hincley. Best Fish in Show: Goldfish—R. Stradwick.

THE Cardiff A.S. second annual open show was held in September and there were 540 entries. The following is the list of the awards. Best fish in the show was awarded to P. A. Player (Barry), also best Egg-layer. Best livebearer went to Master A. Rogers (Llantwit Major), most points in show went to J. Parsons (Cardiff). Male Guppies: 1, R. S. Chard (Cardiff); 2, Mr. Tanner; 3, Mrs. V. Player (Barry); 4, Mr. Smithson (Bridgend). Female

Guppies: 1, F. Brown (Bristol); 2 and 4, Mrs. V. Player (Barry); 3, C. Smith (Cardiff). Mollies: 1, J. Parsons (Cardiff); 2, C. Harding (Cardiff); 3 and 4, Mr. Smithson (Bridgend). Swordtails: 1, R. Tippet (Bristol); 2, Mr. Smithson (Bridgend); 3, W. Chapman (Newport); 4, C. Harding (Cardiff). Platies: 1, Master A. Rogers (Llantwit); 2, Mr. Smithson (Bridgend); 3, S. N. Steer (Barry); 4, D. Bishop (Newport). A.O.V. Livebearers: 1, 2 and 4, J. Parsons (Cardiff); 3, B. Snell (Yate). Siamese Fighters: 1 and 2, F. Brown (Bristol); 3 and 4, D. Fellows (Bristol). Labyrinths: 1, B. Gorwill (Cardiff); 2, C. Harding (Cardiff); 3, Mr. Smithson (Bridgend); 4, A. Patne (Cardiff). Barbs (under 3 in.): 1, R. S. Chard (Cardiff); 2, J. Harding (Cardiff); 3, D. R. Warmant (Cardiff); 4, J. Parsons (Newport). Barbs (over 3 in.): 1, R. S. Chard (Cardiff); 2, C. W. Gorwill (Cardiff); 3 and 4, J. Parsons (Cardiff). H. and H.: 1 and 2, D. Noble (Bristol); 3, J. Fellows (Bristol); 4, F. Brown (Bristol). A.O.V. Characins: 1, C. W. Gorwill (Cardiff); 2, Master A. Rogers (Llantwit Major); 3, Mr. Smithson (Bridgend); 4, J. Parsons (Cardiff). Cichlids (large): 1 and 2, C. W. Gorwill (Cardiff); 3, J. Parsons (Cardiff); 4, B. A. Harding (Cardiff). Cichlids (dwarf): 1, D. R. Warmant (Cardiff); 2 and 4, J. Parsons (Cardiff); 3, R. Wilkie (Cardiff). Angels: 1, W. Chapman (Newport); 2, P. A. Player (Barry); 3, J. Parsons (Cardiff); 4, E. Antonio (Cardiff). Corydoras: 1, Mr. Smithson (Bridgend); 2, D. R. Warmant (Cardiff); 3 and 4, B. A. Harding (Cardiff). A. O. V. Catfish: 1 and 2, F. Brown (Bristol); 3 and 4, C. W. Gorwill (Cardiff). Kribbas, Dantons, Minnows: 1, D. Fellows (Birmingham); 2, B. Snell (Yate); 3, C. Harding (Cardiff). 1, P. A. Player (Barry). Best Fish in Show: 1, F. Brown (Bristol); 2, S. Green (Cardiff); 3, S. Green (Cardiff); 4, W. Chapman (Newport). Egg-layer Tooth Carps: 1, D. Fellows (Birmingham); 2, G. W. Churchill (Cardiff); 3, F. Brown (Bristol); 4, R. S. Chard (Cardiff). A.O.V. Egglayers: 1, B. A. Harding (Cardiff); 2, J. Stevens (Cardiff); 3, G. W. Churchill (Cardiff); 4, J. Parsons (Cardiff). Breeders Egglayers: 1, F. Brown (Bristol); 2, D. R. Warmant (Cardiff); 3, J. Parsons (Cardiff); 4, G. W. Churchill (Cardiff). Breeders Livebearers: 1, P. A. Player (Barry); 2, Mr. Smithson (Bridgend); 3, Mr. Patne; 4, Mrs. V. Player (Barry). Sexed Pairs: 1, R. Wilkie (Cardiff); 2, B. A. Harding (Cardiff); 3, J. Parsons (Cardiff); 4, P. A. Player (Barry). Furnished Jars: 1, R. S. Chard (Cardiff); 2, D. Bishop (Newport); 3, Master B. Roberts (Cardiff); 4, D. R. Warmant. Junior Class (Egglayers): 1, Miss D. Player (Barry); 2, Master N. N. Rowlands (Bridgend); 3, Master B. Roberts (Cardiff); 4, Master M. Wilkie (Cardiff). Junior Class Livebearers: 1, Master G. Rowlands (Bridgend); 2 and 3, Master E. Boot (Rhonda); 4, Master M. Wilkie (Cardiff).

THE Hounslow and District A.S. open show winners were as follows: Labyrinth: 1, J. Fisher; 2, F. Young; 3, B. Harvey. Corydoras: 1, J. Norris; 2, R. Biggs; 3, T. Summers. A.O.V. Cat or Loach: 1, M. Carter; 2, B. Dunn; 3, G. Greenhalf. A.O.V. Trop. Egg-layer: 1, Mrs. Thorne; 2, J. Fisher; 3, B. Harvey. Tropical Pairs: 1, R. Armstrong; 2, Mrs. Thorne; 3, J. White. Breeders Tropicals (Egglayers): 1, R. Armstrong; 2 and 3, T. Walker. Breeders Tropicals (Livebearers): 1, R. Cos; 2, G. Greenhalf; 3, C. Walker. Common Goldfish: 1, K. Hope; 2, V. Voysey; 3, B. Harvey. A.V. Shubunkin: 1 and 2, L. Roberts; 3, K. Hope. A.O.V. Fancy Goldfish: 1 and 2, L. Roberts; 3, P. Glynn. A.O.V. Coldwater: 1 and 2, V. Voysey; 3, V. Hunt. Miniature Furnished Aquaria: 1, A. Welsh; 2, A. E. Welsh; 3, P. Cairns. Specialist Class: 1, J. Thorne; 2, J. Soumers; 3, R. Armstrong. Any Variety Platy: 1, R. Wingrove; 2, F. Young; 3, L. G. Little. Any Variety Molly: 1, B. Punnell; 2, Mrs. Nicoll; 3, A. Welsh. Any Variety Swordtail: 1, R. G. Cox; 2, Mrs. Nicoll; 3, A. French. A.O.V. Livebearer: 1, B. Harvey; 2, M. Whitney; 3, R. Cooper. Characins: 1, R. Wingrove; 2, Mrs. Thorne; 3, J. Thorne. Dwarf Cichlid: 1, B. Dunn; 2, J. Thorne;

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3, B. Pearson, A.O.V. Cichlid: 1 and 2, J. Thorne; 3, B. Davison, Toothcarps: 1, T. Walker; 2, R. Armstrong; 3, B. Pawley, Danio Rasbora and WCMM: 1, J. Thorne; 2, T. Walker; 3, P. Ginger, Large Barbs: 1 and 3, P. Ginger; 2, J. Thorne. A.O. Barbs: 1, R. Nelbans; 2, P. Grosvener; 3, T. Walker, Fighters: 1, R. J. Wynd; 2, A. Welsh; 3, M. Bradford. Best Fish in Show: J. Thorne (C. Severum).

THE annual general meeting of the Leek and District A.S. was held at the Central Liberal Club. During this meeting the "Aquarist of the Year" cup was received on behalf of R. Billing the winner by Mr. Ash, Mr. Billing being unable to receive the cup in person owing to his being at college in Portsmouth at the time of the meeting. The shield for the "Junior Aquarist" was won by Garry Thompson who is the Society's youngest active member.

In his report the Chairman, Mr. W. Ash, gave a review of the past year and gave details of the future activities for the coming year.

The committee for the next year was elected as follows: Chairman, W. Ash; Vice-Chairman, F. Clowes; Secretary, C. K. Morris; Show Secretary, M. Gerrard; Treasurer, P. Ormeroyd. Committee members: Messrs. R. Tunncliffe, G. Thompson and F. Myatt.

MEMBERS who attended the October meeting of Tonbridge and District A.S. were entertained by an account of the experiences of Mr. Albert Villiers, who deals in live foods. His talk, while very informative, was spiced with humorous anecdotes which kept the members amused. Mr. Villiers also showed a cine film of tubifics being collected from the River Thames.

Terry Amos judged the table shows with the following results: Angels: 1, Mrs. I. Bellingham; 2, Mrs. D. Mathieson, A.O.V. Cichlid: 1, R. Taylor (P. Kribensis); 2, I. T. Mathieson (P. Kribensis); 3, J. Bellingham (Firemouth). The club library has been augmented by a few books donated by Mr. Burgess of Tunbridge Wells.

Since the last club meeting members had taken part in an inter club show, coming third of the five clubs which participated.

AT the Bracknell A.S. Annual General Meeting the following officers were elected. President, K. Roberts (Landlord of The Admiral Cunningham where the Bracknell Club meet every first and third Monday in the month); Vice-President, Mrs. Joyce Roberts; Chairman: Alan Keith, 10 Cabot Road, Farnborough; Vice-Chairman: J. Norris; Secretary, Mrs. Gill Carter, The Old Court House, Ascot; Treasurer, R. Dove; Show Secretary, L. Little, 126, Shepherds Lane Bracknell; P.B.A.S. Delegate, R. Armstrong; Three Counties Delegate, Les Jordan and M. Carter and Publicity Officer, Tony Cockert.

The chairman in his report said that it had been a very successful year and that Bracknell had again retained the Three Counties Bottle League Cup. The Treasurer and Show Secretary also gave their reports. Finally the name of the club was discussed and it was decided that in future the title would be The Bracknell Aquarist Society. The Society would also like to take this opportunity of wishing all fellow aquarist societies the Compliments of the Season.

THE Goldfish Society of Great Britain Convention 1968. The Society held their twelfth Annual Convention in October. Speakers during the afternoon were L. Emery of the G.S.G.B. and the Bristol A.S., and T. L. Dodge from the Midland Aquarium and Pool Society. These two gentlemen both gave extremely interesting and informative talks, illustrated by coloured slides and films. A point of interest to note was that, knowing that both speakers are very successful and knowledgeable goldfish breeders, they employed quite different techniques to one another regarding certain aspects of management, to eventually achieve similar results.



1969

BRITISH AQUARISTS' FESTIVAL

18th and 19th October
at Belle Vue, Manchester

Fifteen fully open competitive Goldfish classes were held during the afternoon, judged by Messrs. L. C. Betts, W. L. Wilson, M. D. Chase, G. H. O'Neill and J. C. Stillwell.

The results of the Show were as follows: Singletails: 1, R. M. Whittington; 2, S. Freeman; 3, D. Morris, Metallic Twintails: 1, D. Morris; 2, N. Giles; 3, J. Linale, Nacreous Twintails: 1, W. Leach; 2, R. Dudley; 3, J. Roberts, Globe-flyes: 1 and 3, D. Morris; 2, J. Linale, Brambleheads: 1, J. Linale; 2, R. Berger; 3, R. Whittington, Pearlscales: 1, R. Dudley, Celestials: 1, H. T. Jago, Bubble-Eyes: 1, J. Bundell, Common Goldfish: 1, W. Leach; 2, P. E. Whittington; 3, H. T. Jago, London Shobunkins: 1, T. Leach; 2 and 3, P. E. Whittington, Comets: 1, W. Leach; 2, R. Dudley; 3, S. Freeman, Metallic Fantails: 1, J. Roberts; 2, H. Berger; 3, D. Morris, Nacreous Fantails: 1 and 3, G. Fern; 2, R. Whittington, Orandas: 1 and 2, A. Tagg; 3, H. T. Jago.

EARLY in October, the British Aquarist Study Society (BASS) held its annual general meeting when the following members were elected—President: D. Cook; Chairman: H. J. Aylott; Vice-Chairman: P. Bird; Secretary: F. Tomkins; Treasurer: F. Keens.

After the meeting, Phillip Gurr gave an excellent lecture on the 'History of Modern Fish'. This talk was illustrated with slides and fossil specimens. The Guppy was the subject of the lecture after tea—given by Frank Tomkins and Brian Hawkins (F.G.A.). The meeting closed with a visit to the Aquarium of the London Zoo.

THE results of the fourth open show of the Stone A.S. were as follows: Jouble Trophy and Aquarist Gold Pin, for best fish of the show: B. C. Roberts, Solihull (Neon Tetra). Plants A.V. Aquatic: 1, 2, and 4, E. G. Leadley (Stone); 3, B. Bewick (Warrington). Breeders (Livebearers): 1, R. T. Scally (Bedworth); 2, R. Potts (Top Ten); 3, J. Lee (North Staffs); 4, B. Bewick (Warrington). Breeders (Livebearers): 1, J. Lee (North Staffs); 2 and 4, K. J. Harvey (Stone); 3, K. Binns (Nottingham and Dist.). Pairs (Livebearers): 1, Mrs. P. Delves (Bedworth); 2, Mr. and Mrs. Grimshaw (Sunnybrow); 3 and 4, R. Trippas (North Warwick). Pairs (Igg-layers): 1, K. J. Harvey (Stone); 2, B. Sheehy (Coventry); 3, B. Bewick (Warrington); 4, R. Hough (North Warwick). Guppies: 1 and 2, R. Brothwood (Gorton and

Openshaw); 3, R. T. Scally (Bedworth); 4, P. J. Saunders (Nottingham, Unattached). Platies: 1, Mrs. P. Delves (Bedworth); 2, R. T. Scally (Bedworth); 3, Milton and Watson (Sunnybrow); 4, J. Sanders (Stone). Sword-tails: 1, N. W. Wetherer (South Staffs); 2, A. Peake (North Staffs); 3, P. Yates (Tamworth K. & A. Group); 4, R. Trippas (North Warwick). Mollies: 1, F. Everett (South Staffs); 2, 3, and 4, Goodwin Bros. (North Staffs). Rasboras: 1, J. D. Fellows (M.A.P.S.); 2, R. Trippas (North Warwick); 3, B. C. Roberts (Solihull, Unattached); 4, G. H. Roberts (Solihull, Unattached). Danios, White Cloud MM Rainbows: 1 and 4, Goodwin Bros. (North Staffs); 2, G. Steed (Tamworth); 3, J. Sanders (Stone). Toothcarps: 1 and 3, D. Parsons (B.K.A.); 2, P. R. Shakespeare (Bedworth); 4, J. Whitehurst (Tamworth). Fighters: 1, J. D. Fellows (M.A.P.S.); 2, F. Underwood (Leamington); 3, Colclough Bros. (North Staffs); 4, J. Whitehurst (Tamworth). A.O.V. Anabantids: 1 and 2, R. Trippas (North Warwick); 3, B. C. Roberts (Solihull, Unattached); 4, L. Kaye (Top Ten). Barbs (under 3 ins): 1, R. Hough (North Warwick); 2, J. Greay (Sunnybrow); 3, B. Bewick (Warrington); 4, R. Trippas (North Warwick). Barbs (over 3 ins): 1, S. Kaye (Top Ten); 2, J. Saunders (Stone); 3, A. Peake (North Staffs); 4, R. Hough (North Warwick). Cichlids (Dwarf): 1, B. Bewick (Warrington); 2, P. R. Shakespeare (Bedworth); 3, Mrs. B. Smart (North Staffs); 4, R. Trippas (North Warwick). Cichlids (Large): 1, K. J. Harvey (Stone); 2, R. Hough (North Warwick); 3, K. Binns (Nottingham and Dist.); 4, F. Everett (South Staffs). Characins (under 3 ins): 1, B. C. Roberts (Solihull, Unattached); 2, J. Pimlott (Meir, Unattached); 3, D. Barlow (North Staffs); 4, Mrs. P. Delves (Bedworth). Characins (over 3 ins): 1, K. J. Harvey (Stone); 2 and 3, R. Hough (North Warwick); 4, L. Sheehy (Coventry). Labos and Sharks: 1, N. W. Wetherer (South Staffs); 2, P. Everett (South Staffs); 3, P. Clifton (Stone); 4, R.

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

Trippes (North Warwick). Corydoras Catfish: 1, R. Potts (Top Ten); 2, F. R. Shakespeare (Bedworth); 3, N. G. Knight (North Staffs); 4, J. Pimlott (Meir, Unattached). A.O.V. Catfish: 1, F. Everett (South Staffs); 2, G. Stead (Tamworth); 3, L. Kaye (Top Ten); 4, Mrs B. Smart (North Staffs). Loaches: 1, S. Dean (Tamworth); 2, Milton and Watson (Sunnybrow); 3, I. Brough (Stone); 4, F. Yates (Tamworth). A.O.V. Tropical: 1, Milton and Watson (Sunnybrow); 2, E. Sheehy (Coventry); 3, R. Hough (North Warwick); 4, A. Peake (North Staffs).

MEMBERS of the Burton and District A.S. participated recently in an Inter-Society Show with Tamworth Society, this was a return match for the one held last year, and proved to be very successful for the Burton members, as they gained a total of forty points against Tamworth's twenty-four points. Results were as follows: Cichlids: 1 and 2 Tamworth; 3, R. Pointon (Burton); 4, G. Degg (Burton). Livebearers: 1 and 4, Tamworth; 2, G. Degg (Burton); 3, J. Hunt (Burton). Cats and Loaches: 1, J. Hunt (Burton); 2, J. Quinn (Burton); 3, G. Degg (Burton); 4, Tamworth. Anabantids: 1, C. Parker (Burton); 2, T. Mear (Burton); 3 and 4, Tamworth. Barbs: 1 and 3, Tamworth; 2, C. Parker (Burton); 4, T. Mear (Burton). Characins: 1, J. Hunt (Burton); 2 and 4, R. Pointon (Burton); 3, Tamworth. Best Fish in Show: C. Parker (Burton).

Members who attended the above function also participated in an Imitation Judging Contest to find who would be the best judge of fish. This resulted in an overall win for Burton who won first, second and third places. There were approximately fifty aquarists taking part, so it is hoped that these results will help Burton members to progress to even better things in the future.

Another interesting evening was spent at the October monthly meeting. The proceedings took the form of a Problem, Question and Answer between members where many of the difficulties experienced by some of the newer members were answered by the longer-established members of the Society. This provided useful information and ideas for all aquarists of varying degrees of experience. At the November meeting held at the Fox and Goose Hotel, Bridge Street, the main item of interest was a competition of Members' Miniature Furnished Aquaria (in jars). New members will always be made welcome at any meeting.

AMONG the latest activities of the Hull A.S. has been a film show provided by the "White Fish Authority" showing life aboard a deep sea trawler. A lecture by Mr. R. Holt of Hull University on Plant life in an aquarium and finally, Mr. Wardlaw, the renowned Fancy Coldwater Fish Breeder of Driffield exhibited over 100 of his latest classes of coldwater fish and also gave a talk on his experiences in keeping and breeding fancy coldwater fish. This proved one of the most popular and enjoyable evenings and was attended by a large number of members and visitors.

The following awards were won during the evening. Fish of the Night: 1, A. Harrison; 2, C. Burrows; 3, T. Collingwood. A.O.V.: 1 and 2, W. Jades; 3, T. Collingwood.

The Chairman, Mr. A. Douglas was pleased to announce that the one hundredth member had been accepted and hoped to see this figure reach 150 during 1969.

The annual dinner and dance will be held in the Skyline Ballroom, Hull on Saturday,

14th December and those interested should write to the treasurer, Mr. T. Storey, 141, Collage Road, Hull.

The meetings are held every first and third Wednesdays of the month at 8 p.m. at the Railways Club, Anlaby Road, Hull. All visitors are sure of a very warm welcome. Neighbouring society secretaries are invited to write if interested in matches and events for 1969.

THE members of the Brighton and Southern A.S. were privileged to hear during October an interesting and informative lecture held from the B.K.A. on the subject of "Fish House Construction." It was of particular note that, provided the correct insulation is carried out in the construction of the fish house, something in the region of a saving of 80% could be made in heating costs when comparing space heating with the conventional thermostat and heater. The fish house constructed in this particular case was primarily used for the breeding of Killies and a glass roof light was not included in the assembly. This appeared to be the important feature in preventing heat loss.

The Society has been active on the side of table shows as Brian Baker from Uxbridge was welcomed at an earlier meeting and for the first time in the Club's history a class for single rooted tropical plants was included. This was very well supported with some unusual plants and it was of particular note to see the ingenuity used by one member in constructing special containers of perspex to show and transport his plants. The awards in this class were made as follows: 1 and 2, J. Kail; 3 and 4, D. Soper. Another class for Rasboras, Danios and Minnows brought forth from Mr. Baker compliments on the quality of the fish in this class suggesting that perhaps the water in this particular part of the country especially suited them. Awards: 1, N. Short; 2, 3 and 4, D. Soper. The final class for cichlids was adjudicated as follows: 1, F. Aylward; 2 and 3, D. Soper; 4, S. Ward. Any person interested in joining the Society may contact the Secretary, B. Shelton, 45, Coventry Street, Brighton.

AN inter-club show was held recently between Weston-super-Mare and District Tropical Fish Club and Taunton A.S. which was won narrowly by Weston with 77 points against 62. The Best fish in the show was a thick lip gourami owned by M. Locke (W-S-M). Labrynth: M. Locke (W-S-M). Characins: M. Locke (W-S-M). Cichlids: D. Pimley (W-S-M). Small Cichlids: A. Cavill (Taunton). Barbs: M. Locke (W-S-M). Catfish: A. Cavill (Taunton). A.O.V. Egglayers: M. Locke (W-S-M). Swordtails: J. Rooney (W-S-M). Platies: W. Beavis (Taunton). Molliis: M. Locke (W-S-M). Fighters: A. Cavill (Taunton). Egg-laying Tooth Carps: M. Locke (W-S-M). Breeders (Egglayers): J. Rooney (W-S-M). Breeders (Livebearers): W. Carrick (Taunton).

THE Reading & District A.S. report a change of officers. The New Chairman is C. Masters, 16 Moorcombe Ave, Caversham, Reading, Berks., and the Secretary, Mr. P. Merritt, 10 Short St., Caversham, Reading, Berks.

THE Lytham A.S. held its third Annual General meeting on 2nd October and officers elected for the coming year were:—Chairman: E. Smith; Secretary: K. Townsend; Assistant Secretary: W. Tait; Treasurer: D. Richardson; Show Secretary: G. Willert; Assistant Show Secretary: E. England; Club Editor: E. Thomson. The president of the club is Jim Kelly.

The date of the clubs next annual open show has been fixed for 6th July, 1969, and it will be held at Lowther pavilion, Lowther Gardens, Lytham, Lancashire. Any further information may be obtained from Miss Wendy M. Tait, Assistant Secretary, 240 Heyhouses Lane, Lytham St. Annes, Lancashire.

THE October meeting of the New Forest A.S. was unusual in that the two main items were presented by members of the club. These were most interesting and consisted of a practical demonstration by Colin Knapp on glazing tanks, followed by a discussion on the various merits of treatment of the metal frame. The second talk was by Ron Moseley on his experiences of keeping and breeding two Cichlids, *Apistogramma agassizi* and *A. ramirezi*, and was illustrated by excellent coloured pictures. This was also followed by a discussion on the difficulties of feeding the young fish in the early days. The secretary reported that the problem of the monthly newsletter and duplication had been solved, thanks to the Warden of the Community Centre. During the evening, young fish reared by members were auctioned and various proprietary goods were on sale for club members, to assist club funds.

The table show results, judged by K. Harron and D. Harding were: Shubunkins: 1 and 2, D. Letts; 3, R. Travers; 4, A. Williamson. The special awards were given to fish shown by L. Menbenner. Breeders Trophy: 1, M. Lee; 2 and 3, R. Moseley; 4, D. Tuckwell.

CONSIDERABLE success was enjoyed by the Hounslow and District A.S. with their fifth Open Show. Entries were close on the 600 mark and were of a very high standard.

Normal meetings are continuing to be well attended and prove very enjoyable for all members. Recent lectures have included a very interesting illustrated slide lecture by Mr. Dave Ellis on Killifish and this stimulated members interest in this class of fish to a very great extent. Table shows are a regular feature of the club's activities and recent results include the following: A.O.V. Cats and Loaches: 1, John Thorne (Talking Catfish); 2, Rona Brewer (Kuhli Loach); 3, Norman Wade (Otocinclus Cat). Livebearers: 1, John Thorne (Guppy); 2, Arthur French (Swordtail); 3, Peter Cairns (Red Platy).

Another very successful event was a trip to the Bournemouth Aquarist Society for a social and inter-club show. The host club made the Hounslow members very welcome, and the show which was won by Hounslow was voted a success of the first magnitude. Hounslow and District A.S. now look forward to returning the compliment and hospitality to the Bournemouth club in due course. New members to the Society are always welcome at the club meetings on alternate Wednesdays at Idsworth Community Centre, at Clifton Road, Idsworth at 8 p.m.

THE 1968 September Convention in Scotland was held in Templehall Secondary School, Kirkcaldy, Fife, when the Templehall School A.S. was the Host Society. The Convention was addressed by Mr. F. W. Harvey of Colchester and the subject of his lecture was "Management of Tropical Fish." The results of the table show were as follows: Guppies: 1, E. Poders (Glasgow F.G.A.); 2, J. McKerr (Edinburgh); 3, I. Jack (Falkirk); 4, N. Baines (Ayrshire). Molliis: 1, T. Donaldson (Edinburgh); 2, J. Gardner (Falkirk); 3, R. Paterson (Lanarkshire); 4, A. Watt (Aloa). Characins "A": 1, D. Jamieson (Lanarkshire); 2, D. Sharkie (Lanarkshire); 3, G. Reid (Aloa); 4, A. Donaldson (Ayrshire). Characins "B": 1, R. K. Fernie (Dunfermline); 2, J. McGeochie (Dundee); 3, A. MacDonald (Lanarkshire); 4, S. D. Gould (Finty Community Centre). Characins "C": 1, W. Low (Lanarkshire); 2, J. Taylor (Aloa); 3, A. Donaldson (Ayrshire); 4, O. Sharkie (Lanarkshire). Rasboras: 1, F. Smythe (Weir); 2, R. Ferguson (Falkirk); 3, F. McNaughton (Dundee); 4, I. Rawlings (Moray). Danio Malabaricus: 1, J. G. B. Graham (Ayrshire); 2 and 4, G. McKechnie (Falkirk); 3, J. Taylor (Aloa). All Other Danos and Tropical Minnows: 1, P. McNaughton (Dundee); 2, J. G. B. Graham (Ayrshire); 3, G. Reid (Aloa); 4, J. McGeochie (Perth). Catfish "A": 1 and 3, D. Jamieson (Lanarkshire); 2, W. Low (Lanarkshire); 4, R. Ferguson (Falkirk). Catfish "B": 1, K. Jenkinson (Lanarkshire).

DISINFECT NEW PLANTS AND FISH WITH  **Hillside Aquatics London N12**

2, J. Langan (Scottish); 3, W. Low (Lanarkshire); 4, J. Taylor (Ailou). Loaches: 1, W. Low (Lanarkshire); 2 and 4, G. McKechnie (Falkirk); 3, Mr. and Mrs. Love (Lanarkshire). Coldwater Native: 1, 2 and 3, N. Baines (Ayrshire); 4, J. Montgomery (Ayrshire). Coldwater: 1, P. Donald (Edinburgh); 2, 3 and 4, K. L. Brown (Scottish). Nominated Pair—Yellow Wagtail Normal Pin Plates: 1, Ayrshire A.S.; 2, Lanarkshire A.S.; 3, Scottish A.S.; 4, Weir A.S. Aquarium Plates: 1, A. Smith (Lanarkshire); 2, A. Inach (Dundee); 3 and 4, R. M. Cooper (Kirkcaldy). Breeders (Livebearers) "A": 1, J. Turner (Kirkcaldy); 2, J. Hutchison (North Warwick); 3, J. Taylor (Ailou); 4, A. Best (Parbh). Breeders (Livebearers) "B": 1, M. Kellock (Lanarkshire); 2, D. Towns (Dundee); 3, Mr. and Mrs. Love (Lanarkshire); 4, D. Jamieson (Lanarkshire). Breeders Guppies: 1, E. Pederis (Glasgow F.G.A.); 2 and 3, Mr. and Mrs. Love (Lanarkshire); 4, M. Kellock (Lanarkshire). Breeders (Egg-layers) "A": 1, S. Naismith (Lanarkshire); 2, J. Wilson (Edinburgh); 3, C. Murray (Weir); 4, C. Bryson (Falkirk). Breeders (Egg-layers) "B": 1, 3 and 4, E. Watson (Lanarkshire); 2, J. Wilson (Edinburgh). Breeders Coldwater: 1, K. L. Brown (Scottish).

ON the 8th December the **Horsforth A.S.** are holding their "Aquarist's Convention" for which there has been a steady demand for tickets. There are two slide shows with commentaries by two well known speakers, G. Jennings of London and N. Mason-Smith of Cambridge. Anyone requiring more information please write or phone the Secretary, Mrs. B. Helm, 29, Wellington Road, Leeds, 12. Tel.: Leeds 9-21025. The tickets can be bought by Mr. W. Andley, 1, Springfield Walk, Horsforth, adults 3s. 6d., juniors 2s. 6d.

At the monthly meeting slides of furnished aquarium were shown with remarks on why some were given more points than others by the judges Mrs. B. Helm and Miss J. Helm. There were also some slides on show taken at the aquarium exhibition held in Beadford on June. The winners of the monthly table show were: Specified Glass: 1, C. E. Tate; 2, A. Jobbins; 3, Mr. Bowland. A.O.V.: 1, Mrs. P. Hall; 2, C. J. Girdham; 3, W. Andley. A.O.V. Juniors: 1, Master D. Shaw; 2, Master S. Elarub; 3, Master S. Holmes. Best in Show: Mrs. P. Hall.

A COLLECTION of cine films were shown dealing with aquatic subjects at the last meeting of the **Torbay A.S.** These proved to be a great success and were shown in the new club headquarters in **Wimber Hill Road, Paignton.** These premises are also the headquarters of the **Torbay Cine Society** and are fitted out as a small cinema with all the effects of any large cinema.

The highlight in December will be the return match with **Plymouth** which will take place on 17th December and as this will be the last meeting before the Christmas holiday we expect to have a light hearted quiz while the exhibits are being judged. If there are any persons interested in the hobby, living in or near the **Torbay Area**, please contact the Hon. Secretary for full details of these and other items on the programme for the winter months. The Secretary is **John Haynes**, 6, Cleveland Road, Paignton. Telephone number 57400.

RECENTLY the members and visitors of the **Merseyside A.S.** gathered to see and hear a slide/tape lecture prepared by Mr. Jim Kelly—"A Master of Breeding".

Both slides and tape were of the same high quality as in the previous lecture and at the end of the meeting everyone expressed their pleasure and satisfaction with the evening's entertainment. Thorough as ever, Mr. Kelly covered every facet of preparation for successful breeding, explaining the need for creating, as nearly as possible, the natural conditions in which the particular species of fish live in the wild state. He covered the subject of water conditions, filtration, plants, spawning sites and explained how the resourceful aquarist can very often



The Aquarists' Badge

PRODUCED in response to numerous requests from readers, this attractive silver, red and blue substantial metal emblem for the aquarist can now be obtained by all readers of *The Aquarist*. The design is pictured here (actual size). Two forms of the badge, one fitting the lapel button-hole and the other having a brooch-type fastening, are available.

To obtain your badge send a postal order for 3s. 6d. to *The Aquarist*, The Butts, Half Acre, Brentford, Middlesex, and please specify which type of fitting you require.

save money by the use of a little ingenuity. He also went thoroughly into the subject of feeding and stressed the importance of not mixing dried foods together, since each food has been carefully prepared and balanced by the manufacturer. Hints were given for the successful hatching of brine shrimp, cleansing of live foods and were advised, when feeding fry, to always chop these foods very finely.

The Society have also had a talk from Mr. H. J. Leech about "Dangerous Sea Animals". Fully expecting a talk to concern Sharks, Sea Snakes, Electric Eels and the like, the members were very surprised to find that very much a candidate for inclusion with the foregoing, are species of sea shells! Mr. Leech had brought along a wonderful array of shells of varying sizes and shapes, all of which, with one exception had been collected from the rocks and surrounding waters of the island of Toorini.

Meetings are held on alternate Mondays—Bank Holidays excepted, at **Monrose Athletic and Social Club**, 5, Richmond Terrace, off Brock Road, Liverpool, 6, and the secretary is Mr. Robert Moorcroft, 24, Frankby Road, Liverpool 4. New members are assured of a warm welcome.

CHANGE OF NAME

THE Pontefract and District A.S. is to disband on the 7th of December, 1968. The Society will reform in January 1969 under its new name of the—**Castleford and District Aquarist Society**. Meetings will be held at the **Castleford Boys' Modern School**, Pontefract Road, Castleford.

The new society has been given the full approval of **Castleford Borough Council** and has been given permission to display the **Castleford Coat of Arms** on its Prize Cards and Stationery. Great interest has been shown by the local press and membership is expected to increase greatly.

NEW SOCIETIES

B.A.C. Welfare A.S. (Bristol Aeroplane and Rolls Royce (Hensol) Ltd.) Mr. J. R. Webb, 47, Hungerford Road, Lower Weston, Bath.

THE reformed Grimsby and Cleve A.S. held its first full meeting on Wednesday recently at **Community Centre, Central Hall, Grimsby**.

Approximately 80 people attended of which fifty-three joined the society. Officers elected were as follows: Chairman: R. Cullam; Secretary: C. Freear; Treasurer: L. Evans. Details of membership may be obtained from the Secretary C. Freear, 23, Lindsey Drive, Healing, Near Grimsby, Lincs.

AN Association called **South Thames Aquarist Group**, has been formed and the committee elected as follows:—Chairman: R. E. Dudley of S.P.A.A.S.; Secretary: G. Licence of Croydon; Treasurer: P. M. Howes of Porellance; Committee Members: Mr. Leaver of Lavengro, C. Felleman of Clapham. Members already affiliated to S.T.A.G. are:—Clapham A.S., Croydon A.S., Dulwich A.S., Porellance A.S., Lavengro A.S., S.P.A.A.S. Aquarist Societies, South of the Thames will be welcomed. Please contact the Secretary: G. Licence, 217, Mowland Road, Croydon, CR0 6 HE, Surrey. The purpose of S.T.A.G. is to promote Inter-Club activities amongst Member Clubs.

THE first meeting of the newly-formed Whitstable and District Aquarist Club was held recently when Mr. H. G. Dempster was elected chairman, Mr. Hovenden secretary and Mr. S. J. Easton treasurer. More members are needed. Anyone who has only one fish in a bowl is welcome. Those interested should contact the secretary, 222, Tankerton Road, Whitstable.

SECRETARY CHANGES

Canterbury and District A.S. G. Marsh, 8, Pine-side Road, Littlebourne, nr. Canterbury, Kent.

Reading and District A.S. P. Merritt, 10, Short Street, Caversham, Reading, Berks.

AQUARIST CALENDAR

9th March: Huddersfield Tropical Fish Society. Open Show at the Drill Hall, St. Paul's Street, Huddersfield.

12th April: East Dulwich A.S. First Open Show at St. Barnabas Parish Hall, Dulwich Village, London, S.E.21. Further details will be announced later.

18th May: Rainworth and District A.S. Open Show at the Showrooms of E. Taylor and Sons, West End Garage, West Gate, Southwell, Notts.

6th July: Lytham, A.S. Annual Open Show, Lowther Pavilion, Lowther Gardens, Lytham, Lancs.

Buyers' Guide

Buyers' Guide is being prepared for 1969 and instructions for insertion in this section should be received at the **Aquarist Offices** by **Thursday, 6th February, 1969.**

Forms available on application to:
The Advertisement Manager,
The Aquarist and Pondkeeper,
The Butts, Brentford,
Middlesex
Telephone: 01-560 6221